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Portfolio Behavior of Commercial Banks in Bangladesh

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PORTFOLIO BEHAVIOR OF COMMERCIAL BANKS IN BANGLADESH

Ph.D Dissertation

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A Dissertation

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in
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Institute of Bangladesh Studies (IBS)
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Rajshahi, Bangladesh

October 2008

Dedicated to the Memory of the Freedom Fighters Who Sacrificed Their Lives for the Liberation of Bangladesh in 1971

Certificate

Certified that the thesis entitled **Portfolio Behavior of Commercial Banks in Bangladesh** is a record of independent research work carried out by Mr. A. H. M. Ziaul Haq, under my supervision and guidance. I also certify that I have gone through the draft and final dissertation and found it suitable for submission to the Rajshahi University for the degree of Doctor of Philosophy in Finance and Banking.

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Declaration

I declare that the thesis entitled **Portfolio Behavior of Commercial Banks in Bangladesh** submitted to the Institute of Bangladesh Studies, Rajshahi University for the degree of Doctor of Philosophy in Finance and Banking is a record of independent research work carried out by me under the supervision and guidance of Dr. M. Zainul Abedin, Professor of Economics, Institute of Bangladesh Studies. This has not been previously submitted to any other university or Institute for the award of any Degree, Diploma, Associateship or other similar purposes.

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Acronyms and Abbreviations

BA : Bank Asia
CAR : Capital Adequacy Ratio
CRR : Cash Reserve Requirement
CT : City Bank Ltd.
DBBL : Dutch Bangla Bank Ltd.
DCBs : Denationalized Commercial Banks
DHK : Dhaka Bank Ltd.
EBL : Eastern Bank Ltd.
EC : Equity Capital
EPS : Earnings Per Share
FCBs : Foreign Commercial Banks
GOBs : Government Owned Banks
INV : Investment
IOU : I owe you
LAD : Loan and Advance
LCBs : Large Commercial Banks
LLP : Loan Loss Provisions
LQA : Liquid Asset
MA : Miscellaneous Assets
MCBs : Medium-sized Commercial Banks
MCT : Mercantile Bank Ltd.
MTBL : Mutual Trust Bank Ltd.
NBL : National Bank Ltd.
NCBs : Nationalized Commercial Banks
NDB : Non Deposit Borrowings
NII : Net Interest Income
NIM : Net Interest Margins

NPL : Non Performing Loan
OBL : One Bank Ltd.
PBT : Profit Before Tax
PCBs : Private Commercial Banks
PG : Period Growth
POBs : Private Owned Banks
PRME : Prime Bank Ltd.
PRMR : Premier Bank Ltd.
PUB : Pubali Bank Ltd.
SBL : Standard Bank Ltd.
SCBs : Small Commercial Banks
SE : South East Bank Ltd.
SLR : Statutory Liquidity Requirement
SNC : Syndicated National Credits
SOE : State Owned Enterprise
ROA : Return on Assets
ROD : Return on Deposits
ROE : Return on Equity
RUP : Rupali Bank Ltd.
UBL : Uttara Bank Ltd.

Abstract

As a profit-seeking organization, commercial banks also try to have the highest profits by managing its portfolio. But for a successful and reliable activity and in a long-term perspective, the profits are not enough for a commercial bank. It is more important to the management to assure bank's liquidity to fulfill its obligations every moment it may be necessary. And un-doubtfully, besides the mentioned two principles of profitability and liquidity, it is of high importance for a bank to be safe, i.e. to minimize its risk. So, the successful management of a commercial bank is very careful in consideration of three important objectives: liquidity, safety, and income. In addition, they also evaluate their asset quality by calculating credit risk of loans they provide.

To attain the objectives of liquidity, solvency, asset quality and profitability, commercial banks in practice need to set up a certain pattern and distribution of their assets in their portfolio composition. Management needs to decide as to what constitutes the best distribution of assets in the quest for attaining those objectives.

However, the asset composition of all commercial banks in Bangladesh shows the high concentration of loans and advances in total assets in last seven years. In result, net interest income has been increased in all commercial banks though growth of some profitability indicators show negative trend in 2006. But the high concentration of loans and advances indicates vulnerability of assets to credit risk, especially since the portion of non-performing assets is significant. Because the more commercial banks are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to them.

A huge infected loan portfolio has been the major difficulty of commercial banks. It appears that in aggregate, the banks have been continuously failing to maintain the required level of provisions against their NPLs. Liquidity indicators show a massive decreasing trend during the study period. The commercial banks of Bangladesh could not attain the required level due to shortage in owner's equity, provision shortfall and overburdened expenditure incurred from operation time to time.

Hence, the focus of the study is to provide an overview of allocation of banks funds to different types of assets and to examine the impact of portfolio of assets on liquidity, solvency, credit risk and profitability of the commercial banks.

The study was confined to the listed commercial banks at Dhaka Stock Exchange only. The sample of this study contained 20 commercial banks, which was accounted for 74.07% of the population. The main basis of the selection of the sample is the easy access and availability of the requisite data and information. The study covered a period of seven years from 2000 to 2006.

The study was based on secondary data. Those data were collected from annual reports of the selected banks, Bangladesh Bank reports and from Resume of the Activities of Financial Institutions in Bangladesh published by the Ministry of Finance, Government of Bangladesh.

The study followed both time series and cross-sectional analysis. Initially, the study presented the mean values of important growth indicators such as asset, deposit, loan and equity of each commercial bank with their period growth. Then major asset composition of the selected commercial banks were exhibited. Impact of asset compositions on liquidity, profitability, credit risk and solvency of those banks were illustrated next. The study continued the same analysis by splitting the sample banks in large, medium and small groups in terms of their total assets value based on 2006. The sample commercial banks were classified again in private commercial banks (PCBs) and de-nationalized commercial banks (DCBs) based on their ownership status to continue the same analysis.

The techniques employed to study the relationship between the variables ranged from simple descriptive statistical tools like mean, period growth, maximum and minimum value to complex techniques like correlation and regression analysis.

Although the concept of portfolio management is not quite new in Bangladesh but the fact is that very few research works have been done in this area. There has been no study as to how the banks performed in liquidity, profitability, credit risk and solvency during 2000-2006. The previous studies on profitability and other measures are far from satisfactory. Those studies used neither statistical technique nor made inter-temporal and inter-bank comparisons with different categories of commercial banks. So, the present study intends to evaluate the portfolio behavior of commercial Banks by using the above mentioned criteria. This study is different from earlier studies with respect to contents, coverage of years and methodology.

The discussion on portfolio composition and its impact on liquidity, profitability, credit risk and solvency were made in three parts. In part one, portfolio behavior of individual commercial bank was exhibited. In second part, the same discussion was made on three different sizes of banks. Part three analyzed portfolio behavior of PCBs and DCBs.

It is evident from the study that all types of banks preferred to provide more funds as loan for making more income and profit. Among the different bank groups, DCBs achieved the highest PG in ROA in last seven years although loan to total asset ratio of this group of banks showed negative during the study period. So, loan had no capability to influence profitability of DCBs. But the study found a statistical significance between loan and profitability for the sample commercial banks. There exists a significant correlation between the variables in case of SCBs also. However, in both the cases, profitability is negatively correlated with loan. So, increase of loan in the study has produced a result of decrease in profitability.

However, employment of lions' percentage of funds in loans and investments means fewer funds were available for maintaining minimum liquidity for the banks. Liquid assets in relation to total assets of sample commercial banks have alarmingly decreased by 47.05 percent during the same period. So, liquidity of sample commercial banks is negatively related with loan. Correlation and regression analysis also go in favor of the hypothesis. However, liquidity scenario is noticed more appalling for SCBs and PCBs as compared to MCBs, LCBs, and DCBs. But except LCBs, the study found no statistical relationship between liquidity and loan variable in those cases.

On the other hand, since loans are considered as one of the risky assets, so the banks were involved in more credit risk and they were forced to keep more provision against their loan losses. But the study observes an encouraging (declining) trend in NPL to total loan ratio for all groups of banks during the years under review. LCBs were able to reduce their credit risk to a large extent. They are followed by SCBs and PCBs. But the study found no statistical significance between loan and credit risk for LCBs and DCBs. In rest of the cases there exists a positive correlation between credit risk and loan of the commercial banks. So, according to the study, providing more loans means inviting more credit risk.

However, what is annoying for the banks is that their risk-weighted asset has increased alarmingly during the years under review as compared to their capital. Since loan is considered as one of the most risky assets, so provide more loans means inviting more risk-weighted assets for the commercial banks. Accordingly, they were required more capital for maintaining a minimum CAR (solvency). But during the years under review, the study found a decreasing trend in CAR. But the study found no statistical significance between loan and credit risk for MCBs, LCBs and DCBs. In rest of the cases there exists a negative correlation between solvency and loan of the commercial banks. So, according to the study, additional loans created shortage of solvency for the banks.

The overcome the problems, the study suggests for strong monitoring of Bangladesh Bank over commercial banks to ensure that they maintain minimum liquidity reserve. The study further suggests for allowing DCBs to raise new capital from security market for investment to arrest the declining trend of profitability; initiating efforts that can provide more information regarding credit-worthiness of borrowers. To improve the knowledge in assessing risks, the banks should invest more funds in credit research and monitoring. The study further recommends for imposition of minimum CAR requirement of the commercial banks which will contribute to a decrease in the banks' willingness to supply loans. This situation would lead commercial banks tend to put their excess liquidity in low risk assets.

The study concludes that providing more loans of the sample banks is very much dependent on their additional deposit collection. But more lending does not always give the guarantee to earn more profit to them. Rather it creates more credit risk and more pressure to maintain a minimum CAR (solvency) for the commercial banks.

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Chapter 1

Introduction

1.1 Prelude

Bangladesh has a unique banking system with multiple types of banking with nationalized commercial banks, denationalized commercial banks, pure private commercial banks, foreign commercial banks, Islamic banks, government owned specialized development banks and the cooperative banks. At the top of these, there is the central bank, named as Bangladesh Bank that performs controlling and supervisory functions.

The commercial banking sector of Bangladesh comprises of three categories of scheduled banks. These are: nationalized commercial banks (NCBs), private commercial banks (PCBs) and foreign commercial banks (FCBs). The sector has 43 banks (at the end of 2006) consisting of 4 NCBs, 9 foreign banks, 24 private sector commercial banks and the remaining 6 private sector banks were operating on Shariah principles. Structure of the banking sector with breakdown by type of banks is shown in Table 1.1.

At the end of 2006 the nationalized commercial banks (NCBs) held 35.45 percent of the total industry's assets. PCBs' share rose to 51.72 percent. The foreign commercial banks (FCBs) held 12.84 percent of the industry's assets. Total deposits of the banks in 2006 rose to Taka 1760.4 billion. The NCBs' (comprising of 4 largest banks) share in deposits were 37.16 percent. On the other hand, PCBs' deposits in 2006 amounted to Taka 955.5 billion or 54.28 percent of the total industry's deposit. FCBs' deposits in 2006 were Taka 150.8 billion (8.57%).

Table 1.1
Commercial Banking Structure in Bangladesh (Taka in billion)

Bank Type	Assets	Percentage	Deposits	Percentage
NCBs	786.7	35.45	654.1	37.16
PCBs	1147.8	51.72	955.5	54.28
FCBs	284.9	12.84	150.8	8.57
Total	2219.4	100	1760.4	100

Evidently, NCBs' domination in this area is showing a declining trend. The market share of private sector banks, on the other, is in increasing trend. The Government has the plan to ultimately privatize the NCBs. At the end of 2006, 24 private sector commercial banks in Bangladesh, relatively larger compared with other depository financial institutions, accounted for 54.28% of total deposits accepted and 51.72% of total assets.

Commercial banks' success depends on the ability of the management to allocate its available funds to different types of assets.[1] But there is no standard or uniform policy for such allocation of assets. Usually it depends on various external and internal factors especially on the condition of money market and also on the policy of the top management.

To attain the objectives of liquidity, solvency and profitability commercial banks in practice need to set up a certain pattern and distribution of their assets in their portfolio composition. Management needs to decide as to what constitutes the

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1. M. Randhaswami and S. V. Vasudevan, *A Text Book of Banking: Law, Practice and Theory of Banking* (New Delhi: S. Chand and Company Pvt. Ltd., 1987), p. 48.

best distribution of assets in the quest for liquidity, solvency and income. Here, precisely lies the difficult task of a bank's fund management, specially, in solving the basic conflict between the liquidity and solvency on the one hand and income on the other.

1.2 Statement of the Problem

The asset composition of all commercial banks in Bangladesh shows the high concentration of loans and advances in total assets during the study period. In result, net interest income has been increased in all commercial banks though growth of some profitability indicators show negative trend in 2006. But the high concentration of loans and advances indicates vulnerability of assets to credit risk, especially since the portion of non-performing assets is significant. Because the more commercial banks are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to them. Defaults directly reduces bank capital and lending capacity and bank lending will be further reduced by the effects of loan overhang as outstanding loans in the depressed sector become more risky and less liquid.

A huge infected loan portfolio has been the major difficulty of the banks. It appears that the net non performing loans to total loans after adjustment of actual provision and interest suspense stands at 7.1 percent in the banking sector of Bangladesh in 2006. It further reveals that in aggregate, the banks have been continuously failing to maintain the required level of provisions against their NPLs.

Liquidity indicators measured as percentage of demand and time liabilities (excluding inter-bank items) of the banks indicate that all the banks had excess liquidity. But liquid assets to total assets ratio shows a massive decreasing trend during the study period.

Banks in Bangladesh have to maintain a minimum Capital Adequacy Ratio (CAR) of not less than 9.0 percent of their risk-weighted assets (with at least 4.5 percent in core capital) or Taka 1.00 billion, whichever is higher. But the commercial banks of Bangladesh could not attain the required level due to shortage in owner's equity, provision shortfall and overburdened expenditure incurred from operation of time to time.

Hence, **the focus of the study is to provide an overview of allocation of commercial banks funds to different types of assets and to examine the impact of portfolio of assets on commercial bank liquidity, solvency, credit risk and profitability**. The key issues which need to be addressed are: How are the commercial banks funds allocated in different assets? Are their sufficient funds available to meet the banks liquidity needs? Do the portfolio policies provide any assurance that bank lending and investing will be returned safely? Are the banks portfolios able to generate sufficient incomes for meeting their necessary expenses? Are there any relationship between ROA (ROE) and NPL? Are the banks less profitable that rely largely on deposits for their funding? What is the relationship between loan and deposit growth? Has bank profitability any effect on loan growth? What is the effect of provision for loan losses on bank profitability? Is relationship between the level of liquidity and profitability significant? What is the relationship between bank capital and its earnings? Have the banks with higher equity a greater growth in risk weighted assets? Have well-capitalized banks higher net interest margins and are more profitable? Is the lower equity capital ratio associated with higher profit efficiency? What are the relationships among measures such as bank's size, operational efficiency, asset management, return on assets (ROA), and interest income? What are their impacts on the bank's performance? Is bank profitability related with its size? Is size related to the capital adequacy of a bank? Is the ownership status of a bank related or irrelevant to its profitability? What is the effect of ownership structure on performance and risk in the commercial banking of Bangladesh? Have privatized government-owned banks significantly higher financial performance index than private banks? Is the bank profitability related with government ownership? The study, by finding answers to these questions, **would make an attempt to evaluate the portfolio behavior of commercial banks of Bangladesh**.

1.3 Objectives of the Study

The specific objectives of the study are as follows:

1) To provide an overview of allocation of commercial banks' funds to different types of assets.

2) To examine the impact of portfolio of assets on commercial banks' profitability.

3) To see the result of asset structure on bank liquidity.

4) To look at the impact of asset portfolio on credit risk of the commercial banks.

5) To analyze the effects of asset composition on the banks' solvency.

1.4 Review of Related Studies

Review of literature is an integral part of conducting a research. It is necessary to find out the knowledge gap in the field of study. But very limited works were conducted earlier in Bangladesh in this particular field of study. No in depth study was undertaken by any researcher on this subject. However, several relevant studies on commercial banks have been undertaken in abroad. Some of the widely quoted studies are viewed here. All studies are mostly focused on liquidity, solvency, and profitability of different types of commercial banks with their dependent and independent variables.

Molyneux and Thornton[2] (1992), among others, find a negative and significant relationship between the level of liquidity and profitability. In contrast, **Bourke[3] (1989)** reports an opposite result; while the effect of credit risk on profitability appears clearly negative **(Miller and Noulas[4], 1997)**. This result may be explained by taking into account the fact that the more financial institutions are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to many commercial banks.

Sharpe[5] (1995) identifies two results in his study that bank profitability has a positive effect on loan growth, and loan losses have the opposite effect. Since profits tend to increase and loan losses decrease bank capital, these findings are consistent with a positive association between bank capital and loan growth. In more recent work,

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2. P. Molyneux and J. Thornton, "Determinants of European Bank Profitability: A Note", *Journal of Banking and Finance* 16, 1992, 1173-1178.

3. P. Bourke, "Concentration and Other Determinants of Bank Profitability in Europe, North America and Australia", *Journal of Banking and Finance*, 13, 1989, 65-79.

4. S. M. Miller, and A.G. Noulas, "Portfolio Mix and Large-Bank Profitability in the USA", *Applied Economics*, 29 (4), 1997, 505-512.

5. S. Sharpe, "Asymmetric Information, Bank Lending, and Implicit Contracts: A Stylized Model of Customer Relationships", *Journal of Finance*, 55, 1990, 1069-1087.

Beatty and Gron[6] **(2001)** find evidence suggesting that banks with higher capital growth relative to assets have greater increases in their loan portfolios.

Buser, Chen and Kane[7] **(1981)** have examined the theoretical relationship between bank profitability and bank capitalization. **Berger**[8] **(1995)** provides empirical evidence that for U.S. banks there is a positive relationship between bank profitability and capitalization. The author notes that well-capitalized firms face lower expected bankruptcy costs for themselves and their customers, thereby reducing their cost of funding.

Papers from **Hancock and Wilcox**[9] **(1993, 1994a, 1994b)** and **Berger and Udell**[10] **(1994)** focus on how capital affect the supply of loans. But no clear consensus about the relation between bank capital and loan supply arises from their literature, although it appears that increases in nonperforming loans reduce loan supply. The idea is supported by other literature include **Hall**[11] **(1993)**, **Haubrich and Wachtel**[12] **(1993)**, and **Peek and Rosengren**[13] **(1995)**.

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6. Beatty, Anne and Anne Gron, "Capital, Portfolio, and Growth: Bank Behavior under Risk-Based Capital Guidelines", *Journal of Financial Services Research*, 20:1, 2001, 5-31.

7. Stephen A. Buser, Andrew H. Chen, and Edward J. Kane, "Federal Deposit Insurance, Regulatory Policy, and Optimal Bank Capital", *Journal of Finance*, 35, 1981, 51-60.

8. A. N. Berger, "The Profit-Structure Relationship in Banking-Tests of Market Power and Efficient Structure Hypotheses", *Journal of Money, Credit and Banking*, 27, 1995, 404-431.

9. D. Hancock, A. Laing, and J. Wilcox, "Bank Capital Shocks: Dynamic Effects on Securities, Loans, and Capital", *Journal of Banking and Finance*, Vol. 19, 1995, pp. 661-677.

10. A. Berger and G. Udell, "Did Risk-Based Capital Allocate Bank Credit and Cause a "Credit Crunch" in the United States?" *Journal of Money, Credit and Banking*, Vol. 26, 1994 pp. 585-628.

11. Brian Hall, "How Has the Basel Accord Affected Bank Portfolios?" *Journal of the Japanese and International Economies,* Vol. 7, 1993, pp. 408-440.

12. Joseph Haubrich and Paul Wachtel, "Capital Requirements and Shifts in Commercial Bank Portfolios", *Federal Reserve Bank of Cleveland Economic Review,* Vol. 29, 1993, 2-15.

13. Joe Peek and Eric S. Rosengren, "How Well-Capitalized Are Well-Capitalized Banks?" *New England Economic Review*, September-October, 1997, pp. 41-50.

Kashyap and Stein[14] (1995) suggest that deposit growth is positively correlated with loan growth. An analysis of bank-level data provides results consistent with the aggregate results, and also suggests that the positive relationship between loan and deposit growth appears to be stronger for small banks.

Mannan[15] (1992) evaluates the relationship of earning assets in the NCBs of Bangladesh to relevant variables and analyzes the organization and management structure of earning assets. **Bhattachargee and Saha (1989)[16],** on the other hand, analyzed the performance of NCBs for the period of 1973-87 on the basis of five sets of indicators and found upward trend in almost all the performance measures in spite of disinvestment of two NCBs and growing importance attached to the development of private banking.

Abedin, Roy and Mustafi (1989)[17] measures the level of productivity as the ratio of the incremental output (income) and incremental input (expenditure) and finds variations in the levels of productivity of different types of commercial banks of Bangladesh.

Cookson (1989)[18] observes that the productivity in PCBs was twice than that of the NCBs. But he finds no clear evidence of an increasing trend in PCB's

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14. A. K. Kashyap and J. C. Stein, "The Impact of Monetary Policy on Bank Balance Sheets", *Carnegie-Rochester Series on Public Policy*, Vol. 42, 1995, pp. 151-195.

15. M. A. Mannan, "Earning Assets Management in the NCBs of Bangladesh", *The Journal of ICMA of Bangladesh*, Vol. XX, No. 6 (Nov. & Dec. 1992), pp. 37-45.

[16] Durgadas Bhattacharjee and Saroj Kumar Saha, "An Evaluation of Performance of NCBs in Bangladesh", *Bank Parikrama*, Vol. XIV, Nos. 1 and 2 (March and June, 1989), pp. 1-11.

17. M. Zainul Abedin, Mihir Kumar Roy, and Fakhrul A. A. Mustafi, "A Preliminary Note on Measurement of Productivity in the Commercial Banks of Bangladesh", *Bank Parikrama*, Vol. XIV, Special Issue, Nos. 3 and 4 (Sept. and Dec., 1989), pp. 67-76.

18. Forrest Cookson, "Productivity in the Banking Industry in Bangladesh", *Bank Parikrama*, Vol. XIV, Special Issue, Nos. 3 and 4 (Sept. and Dec., 1989), pp. 27-34.

productivity. **Shakoor (1989)**[19] investigates into the nature of productivity of NCBs during 1972-86 and PCBs during 1983-86. He finds productivity of the selected PCBs showed better situation when compares with that of NCBs during the period under study.

McAllister and McManus[20] **(1993)** point out that larger banks have better risk diversification opportunities and thus lower cost of funding than smaller ones. As a result, larger banks should exhibit relatively higher levels of Net Interest Income.

Smirlock[21] **(1985)** finds a positive and significant relationship between the size and the bank's profitability. **Demirguc-Kunt and Maksimovic**[22] **(1998)** suggest that the extent to which various financial, legal and other factors (e.g. corruption) affect bank profitability is closely linked to firm size. In addition, as **Short**[23] **(1979)** argues, size is closely related to the capital adequacy of a bank since relatively large banks tend to raise less expensive capital and, hence, appear more profitable. Using similar arguments, **Bikker and Haaf**[24] **(2002)** and **Goddard *et***

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19. S.A. Shakoor, "Measurement of Productivity in Commercial Banks in Bangladesh", *Bank Parikrama*, Vol. XIV, Special Issue, Nos. 3 and 4 (Sept. and Dec., 1989), pp. 35-61.

20. P.H. McAllister and D.A. McManus, "Resolving the Scale Efficiency Puzzle in Banking", *Journal of Banking and Finance*, Vol. 17, 1993, pp. 389-405.

21. M. Smirlock, "Evidence on the (Non) Relationship between Concentration and Profitability in Banking", *Journal of Money, Credit, and Banking*, Vol. 17, 1985, pp. 69-83.

22. A. Demirguc-Kunt and V. Maksimovic, "Law, Finance and Firm Growth", *Journal of Finance,* Vol. 53(6), (1998), pp. 2107-2137.

[23] B.K. Short, "The Relation between Commercial Bank Profit Rates and Banking Concentration in Canada, Western Europe and Japan", *Journal of Banking and Finance,* Vol. 3, 1979, pp. 209-219.

24. J.A. Bikker and H. Hu, "Cyclical Patterns in Profits, Provisioning and Lending of Banks and Pro Cyclicality of the New Basel Capital Requirements", *BNL Quarterly Review,* Vol. 221 (2002), pp. 143-175.

***al.* (2004)**[25], all link bank size to capital ratios, which they claim to be positively related to size, meaning that as size increases – especially in the case of small to medium-sized banks – profitability rises. However, many other researchers suggest that little cost saving can be achieved by increasing the size of a banking firm (**Berger *et al.*, 1987)**[26], which suggests that eventually very large banks could face scale inefficiencies.

Bank expenses are also a very important determinant of profitability, closely related to the notion of efficient management. There has been an extensive literature based on the idea that an expenses-related variable should be included in the cost part of a standard microeconomic profit function. For example, **Bourke (1989)** and **Molyneux and Thornton (1992)** find a positive relationship between better-quality management and profitability.

Better capitalized banks may reflect higher management quality, thereby generating a positive coefficient sign in the income regression, resulting in an expected positive impact on the profit variable. Moreover, as pointed out by **Berger**[27] **(1995)**, well capitalized firms face lower expected bankruptcy costs, which in turn reduce their cost of funding and increase their income. A third interpretation relies on the effects of the Basel Accord, requiring banks to hold a

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25. J. Goddard, P. Molyneux, and J.O.S. Wilson, "The Profitability of European Banks: A Cross-Sectional and Dynamic Panel Analysis", *Manchester School,* Vol. 72 (3), 2004, pp. 363- 381.

26. A.N. Berger, G.A. Hanweck, and D.B. Humphrey, "Competitive Viability in Banking: Scale, Scope and Product Mix Economies", *Journal of Monetary Economics,* Vol. 20, 1987, pp. 501-520.

27. A.N. Berger, "The Profit-Structure Relationship in Banking-Tests of Market Power and Efficient Structure Hypotheses", *Journal of Money, Credit and Banking,* Vol. 27, 1995, pp. 404-431.

minimum level of capital as a percentage of risk-weighted assets. Higher levels of capital may therefore denote banks with riskier assets. According to this interpretation, a positive coefficient would be expected for this variable in the income regression.

Regarding the nature of owners, the property rights hypothesis (e.g. **Alchian, 1965)**[28] suggests that private firms should perform more efficiently and more profitably than government-owned firms. In the case of government-owned firms, as **Shleifer and Vishny**[29] **(1997)** point out, while they are technically "*controlled by the public*", they are run by bureaucrats who can be thought of as having "*extremely concentrated control rights, but no significant cash flow rights*". Additionally, political bureaucrats have goals that are often in conflict with social welfare improvements and are dictated by political interests. This may cause inefficiency as the benefits of concentrated ownership are forgone.

Abedin (1990)[30] analyzes the impacts of nationalization of commercial banks on different regions and sectors of Bangladesh economy after independence of the country. The study identifies that regional economic disparities led to the growth of regional imbalances in the distribution of banking facilities. The political economy of the monetary policy and banking is also responsible for this.

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[28] A.A. Alchian, "Some Economics of Property Rights", *Il Politico*, Vol. 30, 1965, pp. 816-829.

[29] A. Shleifer and R.W. Vishny, "A Survey of Corporate Governance", *Journal of Finance*, Vol. 52, 1997, pp. 737-783.

[30] Abedin, *Commercial Banking in Bangladesh: A Study of Disparities of Regional and Sectoral Growth Trends (1846-1986)*, p. 355.

Moniruzzaman and Rahman (1991)[31] make a comparative study of pre and post denationalization periods. They observe that the profitability performance of Uttara Bank Limited and Rupali Bank Limited become unsatisfactory after denationalization. But in case of Pubali Bank Limited, they observe a decreasing trend before denationalization and increasing trend after denationalization.

Choudhury (1990)[32] examines the productivity and profitability of the NCBs and PCBs for the period 1983-1986. He observes that the comparative profitability performance of PCBs has been higher than that of NCBs during the examined period.

As far as the relative performance of government-owned banks (GOBs) is concerned, **Altunbas**[33] ***et al.* (2001)**, focusing on the German banking industry, find little evidence to suggest that private-owned banks (POBs) are more efficient than GOBs, although the latter have slight cost and profit advantages over POBs.

In an effort, **Hoque and Khan**[34] **(2001)** provided an account of financial performance of the banks of Bangladesh. The authors argued that nationalized banks are very much desirable from social point of view despite the constraint that these banks cannot be as profitable as foreign banks or private commercial banks due to the profit seeking motives of the later.

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[31] M. Moniruzzaman and Md. Sydur Rahman, "Profitability Performance of Denationalized Banks: A Comparative Study of the Pre and Post Denationalization Periods", *Bank Parikrama*, Vol. XV and XVI (1990 and 1991), pp. 85-97.

[32] Toufic Ahmad Choudhury, "An Evaluation of the Performance of Commercial Banks of Bangladesh", an unpublished Ph.D Thesis, Department of Economics, Himachal Pradesh University, Shimla, 1990, p. 335.

[33] Y. Altunbas, L. Evans, and P. Molyneux, "Bank Ownership and Efficiency", *Journal of Money Credit and Banking,* Vol. 33, 2001, pp. 926-954.

[34] Hafiz Al Asad Bin Hoque and Azizur Rahman Khan, "Financial Performance of Banks: A Statistical Analysis", *Dhaka University Journal of Business Studies*, XXII, No. 1, June 2001, pp. 27-49.

In an article, **Choudhuri and Choudhury (1993)**[35] analyze the performance of PCBs vis-à-vis banking sector as a whole. They observe that the results of denationalization and privatization in the banking sector of Bangladesh so far did not indicate clear-cut improvement in the efficiency of the banking system. Moreover, the efficiency of the DCBs deteriorated in all respects during 1983-92.

Hossain (2000)[36] in his dissertation titled "A Study on the Performance of Public and Private Sector Commercial Banks in Bangladesh" tries to identify the factors influencing productivity and performance of the banks. Empirical estimates of his study indicate that priority sector lending and rural banking have no significant influence on the productivity and profitability performance of the commercial banks. He observes that high proportion of fixed to total deposits significantly affects the productivity and profitability performance of both NCBs and PCBs. He finds not a single variable that have a significant positive influence on the productivity and profitability performance of the NCBs. The study, however, discovers that manpower expenses ratio and spread ratio have a significant positive influence on the productivity and profitability performance of the PCBs.

Sapienza[37] **(2004)** focuses on banks lending relationships in Italy, comparing the interest rate charged to two sets of companies with identical credit scores which are borrowing either from GOBs or POBs, or both. She finds that GOBs tend to

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35. A. H. M. Nurul Islam Choudhuri and Toufic Ahmad Choudhury, "Performance of Private Commercial Banks Vis-à-vis Banking Sector", *Bank Parikrama*, Vol. XVIII, Nos. 1 and 2 (March and June 1993), pp. 52-63.

36. Mohammed Jahangir Hossain, "A Study on the Performance of Public and Private Sector Commercial Banks in Bangladesh", an unpublished Ph.D. Thesis, Institute of Bangladesh Studies, Rajshahi University, 2000, pp. IX-X.

37. P. Sapienza, "The Effect of Government Ownership on Bank Lending", *Journal of Financial Economics*, Vol. 72, 2004, pp. 357-384.

charge lower interest rates than POBs. By examining the profitability of a large sample of banks from both developing and developed countries, **Micco**[38] ***et al.* (2004)** find that in industrial countries there is no significant difference between the Return on Assets of GOBs and that of similar POBs. Finally, **Berger**[39] ***et al.* (2005)** find that GOBs in Argentina have lower long-term performance than that of POBs.

A paper in the title of efficiency, customer service and financing performance among Australian financial institutions, **Elizabeth Duncan, and Elliott**[40] **(2004)** showed that all financial performance measures as interest margin, return on assets, and capital adequacy are positively correlated with customer service quality scores.

As far as ownership concentration is concerned, **Kwan**[41] **(2004)** compares profitability, operating efficiency and risk taking between publicly traded and privately held US bank holding companies, finding that publicly traded banks tend to be less profitable than privately held similar bank holding companies, since they incur higher operating costs, while risk between publicly held and privately owned banks is statistically indistinguishable.

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[38] A. Micco, U. Panizza, and M. Yanez, "Bank Ownership and Performance", *Inter-American Development Bank Working Paper,* No. 518, 2004.

[39] A.N. Berger, G.R.G. Clarke, R. Cull, L. Klapper, and G.F. Udell, "Corporate Governance and Bank Performance: A Joint Analysis if the Static, Selection and Dynamic Effects of Domestic, Foreign, and State Ownership", *World Bank Policy Research Working Paper,* 3632, 2005.

[40] D. Elizabeth and Greg Elliot, "Efficiency, Customer Service and Financial Performance among Australian Financial Institutions", *International Journal of Bank Marketing*, Vol. 22, No. 5, 2004, pp. 319-342.

[41] S.H. Kwan, "Risk and Return of Publicly Held versus Privately Owned Banks", *Federal Reserve Bank of San Francisco Economic Policy Review*, 2004, pp. 97-107.

Moreover, several papers (**Gorton and Rosen**[42]**, 1995**, and **Demsetz**[43]**, *et al.*, 1997**) find a significant effect of ownership concentration on risk taking, although no consensus exists on the sign of this relationship.

Miller and Noulas[44] **(1996)** measured technical inefficiency of 201 large U.S. banks during the years of 1984 to 1990 and concluded that banks with relatively larger size are more profitable and more technical efficient. **Chen, and Yeh**[45] **(2000)**, on the other hand, finds that in Taiwan privatized government-owned banks are less technically efficient than private banks in 1996.

Aly[46] **et al. (1990)** suggest that, based on a sample of 322 U.S. independent banks in 1986, bank efficiency is positively correlated with bank size and is negatively related to product diversity. Using a sample of 580 branches of a commercial bank in the UK, **Athanassopoulos**[47] **(1998)** find technical inefficiency and diseconomies of scale existed at the branch level. The empirical evidence in **Avkiran's**[48] **study (1999)** indicates that bank efficiency rises slowly

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42. G. Gorton, and R. Rosen, "Corporate Control, Portfolio Choice, and the Decline of Banking", *Journal of Finance*, 50, 1995, pp. 509-527.

43. R. S. Demsetz, M. R. Saidenberg, and P. E. Strahan, "Agency Problems and Risk Taking at Banks", *Federal Reserve Bank of New York Staff Reports*, No. 29, 1997.

44. S.M. Miller and A.G. Noulas, "The Technical Efficiency of Large Bank Production", *Journal of Banking & Finance,* Vol. 20, 1996, pp. 495-509.

45. T.Y. Chen and T.L. Yeh, "A Measurement of Bank Efficiency, Ownership and Productivity Changes in Taiwan", *Service Industries Journal,* Vol. 20, 2000, pp. 95-109.

46. H.Y. Aly and R. Grabowski, C. Pasurka and N. Rangan, "Technical, Scale, and Allocative Efficiencies in Banking: An Empirical Investigation", *Review of Economics and Statistics,* Vol. 23, 1990, pp. 211-218.

47. A. D. Athanassopoulos, "Nonparametric Frontier Models for Assessing the Market and Cost Efficiency of Large-Scale Bank Branch Networks", *Journal of Money, Credit and Banking,* Vol. 30, 1998, pp. 172-192.

48. N.K. Avkiran, "The Evidence on Efficiency Gains: The Role of Merger and the Benefits to the Public", *Journal of Banking and Finance,* Vol. 23, 1999, pp. 991-1013.

and steadily in Australia from 1986 to 1995. **Bauer, Berger, and Humphrey**[49] **(1998)** investigate the consistency and differences of measured operation efficiency obtained using different approaches.

Kraft and **Tirgiroglu**[50] **(1998)** build that during 1994 and 1995 in Croatia, new banks were more X-inefficient and scale-inefficient than old banks and profitability was negatively correlated to X-efficiency. **Berger** and **DeYoung**[51] **(1997)** analyze the relationship between loan quality and cost efficiency in commercial banks and found that cost efficiency was a good indicator of future problem loans or problem banks. By controlling for scale, **Kwan** and **Eisenbeis**[52] **(1996)** find that small banking firms in U.S. were, on average, less X-efficient, and the degrees of X-inefficiency varied a lot among small banks than large banks. In addition, banks with more capital are more efficient than those with less capital; less efficient banks are higher risk-taking than more efficient banks.

There have been numerous studies analyzed the efficiency of financial institutions. Among these, **Rangan N. and Grabowski (1988)**[53] use data envelopment analysis to analyze technical efficiency in US banking into pure

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49. P.W. Bauer, A.N. Berger, G.D. Ferrier and D.B. Humphrey, "Consistency Conditions for Regulatory Analysis of Financial Institutions: A Comparison of Frontier Efficiency Method", *Joumal of Economics and Business,* Vol. 50, 1998, pp. 85-114.

50. E. Kraft and D. Tirgiroglu, "Bank Efficiency in Croatia: A Stochastic-Frontier Analysis", *Journal of Comparative Economics,* Vol. 26, 1998, pp. 282-300.

51. A.N. Berger and R. DeYoung, "Problem Loans and Cost Efficiency in Commercial Banks", *Journal of Banking and Finance,* Vol. 21, 1997, pp. 849-870.

52. S. Kwan and R. Eisenbeis, "An Analysis of Inefficiencies in Banking: A Stochastic Cost Frontier Approach", *FRBSF Economic Review*, 1992.

53. N. Rangan and R. Grabowski, "The Technical Efficiency of US Banks", *Economic Letters*, Vol. 28, 1988, pp. 169-175.

technical and scale efficiency. **Field (1990)**[54], **Chu-Meiliu**, **(2001)**[55], **Tser- Yieth Chen,** and **Tasi Yeh**, **(1998)**[56], and **Leigh D**., and **Howcroft, B**., **(2002)** [57] have conducted some studies into banking efficiency.

Elyasiani and Deng[58] **(2004)** carry out a corresponding study for the banks in the United States. They find that diversified banks have lower returns, but at the same time these banks are less risky, hinting at a typical tradeoff of risk and return. **Hayden et al**. **(2005)**[59] perform a study close to **Acharya et al**. **(2004)**[60] with data for German banks. They find that diversified banks tend to show weaker results than specialized banks.

Winton (1999)[61] explicitly models the tradeoff between diversification and specialization. In his model the gains from diversification and those from focusing depend on the riskiness of the bank. According to his model the gains from

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54. K. Field, "Production Efficiency of British Building Societies", *Applied Economics*, Vol. 22, 1990, pp. 415-426.

55. Chu Mei Liu, "An Assessment of Banking Operation Strategies of Private Banking Institutions in the Philippines", *Asia Pacific Journal of Marketing and Logistics*, Vol. 13, No. 1, 2001, pp. 57-71.

56. C. Tser Yieth, and Y. Tasl, "A Study of Efficiency Evaluation in Taiwan Banks", *International Journal of Service Industry Management*, Vol. 9, No. 5, 1998, pp. 402-415.

57. D. Leigh and H. Barry, "An Insight into Size Efficiency of UK Bank Branch Net Work", *Managerial Finance*, Vol. 28, No. 9, 2002, pp. 24-36.

58. E. Elyasiani and E. Deng, "Diversification Effects on the Performance of Financial Services Firms", *Working Paper*, Temple University, Philadelphia, 2004.

59. E. Hayden, D. Porath, and N. Von Westernhagen, "Does Diversification Improve the Performance of German Banks? Evidence from Individual Bank Loan Portfolios", *Working Paper*, Osterreichische Nationalbank and Deutsche Bundesbank, 2005.

60. V. Acharya, I. Hasan and A. Saunders, "Should Banks Be Diversified? Evidence from Individual Bank Loan Portfolios", *Working Paper*, London Business School, London, 2004, Forthcoming in *Journal of Business* (July 2006).

61. A. Winton, "Don't Put All Your Eggs in One Basket? Diversification and Specialization in Lending", *Working Paper 9903*, Finance Department, University of Minnesota, Minneapolis, 1999.

diversification are most dominant when the bank has a medium risk level; for low risk and for high risk banks it pays to run a specialization strategy.

Stiroh (2004)[62] and **Laderman (2000)**[63] empirically analyze the benefits from strategic diversification in the case of banks. According to their studies the gains from diversification in terms of reduced risk are only weak. ✓**Heitfield et al. (2005)**[64] analyze portfolios of Syndicated National Credits (SNC). They show that the portfolio risk goes up when the name and industry concentration is increased. They analyze the portfolio diversification as well as risk and return figures of Italian banks and conclude that "diversification is no guarantee of superior performance or greater bank safety and soundness".

Generally, the financial performance of the banks has been measured by using a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies (**Avkiran, 1995)**[65]. The financial statements of corporations in **Oman** that published commonly contain a variety of financial ratios designed to give an indication of the corporation's performance. **In this research, however, ROA ratio with interest income size is used to measure the performance of Omani commercial banks**. Asset management,

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✓ [62] K.J. Stiroh, "Diversification in Banking: Is Non-interest Income the Answer?" *Journal of Money, Credit, and Banking,* Vol. 36(5), 2004, pp. 853-882.

[63] E.S. Laderman, "The Potential Diversification and Failure Reduction Benefits of Bank Expansion into Nonbanking Activities", *Working Paper 2000-2001*, Federal Reserve Bank of San Francisco, 2000.

[64] E. Heitfield, S. Burton, and S. Chomsisengphet, "The Effects of Name and Sector Concentrations on the Distribution of Losses for Portfolios of Large Wholesale Credit Exposures", *Working Paper*, Board of Governors of the Federal Reserve System, 2005.

[65] N.K. Avkiran, "Developing an Instrument to Measure Customer Service Quality in Branch Banking", *International Journal of Banks Marketing*, Vol. 12, No. 6, 1995, pp. 10-18.

the bank size, and operational efficiency are used together to investigate the relationships among them and the financial performance.

Much of the current bank performance literature describes the objective of financial organizations as that of earning acceptable returns and minimizing the risks taken to earn this return ✓ (**Hempel G. Coleman**, **1986)**[66]. There is a generally accepted relationship between risk and return, that is, the higher the risk the higher the expected return. Therefore, traditional measures of bank performance have measured both risks and returns.

Spathis, and Doumpos, **(2002)**[67] investigated the effectiveness of Greek banks based on their assets size. They used in their study a multi criteria methodology to classify Greek banks according to the return and operation factors, and to show the differences of the banks profitability and efficiency between small and large banks.

Arzu Tektas, and **Gunay (2005)**[68] discussed the asset and liability management in financial crisis. They argued that an efficient asset-liability management requires maximizing bank's profit as well as controlling and lowering various risks, and their study showed how shifts in market perceptions can create trouble during crisis.

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[66] G. Hempel, A. Coleman, and D. Smon, *Bank Management Text and Cases*, Wiley, New York, 1986.

[67] K. Spathis, and M. Doumpos, "Assessing Profitability Factors in the Greek Banking System: A Multi Criteria Methodology", *International Transaction in Operational Research*, Vol. 9, Issue, September 2002, p. 517.

[68] Arzu Tektas, and Gokhan Gunay, "Asset and Liability Management in Financial Crisis", *The Journal of Risk Finance*, Vol. 6, No. 2, 2005, pp. 135-149.

Many researches have given too much focus on asset and liability management in the banking sector, some of these studies are: **Richard, B., and Moloney, J., (2003)**[69] and **Ruth, F., (2001)**[70]. However, the literature concerning the asset and liability management for banks strongly suggests that risk management issues and its implications must be concentrated by the banking industry.

Jon R. Presely (1992)[71] concludes from his study that there is a need for greater risk management in relation to more effective portfolio management, and this requires a greater emphasis upon the nature of risk and return in bank asset structure, and greater diversification of assets in order to spread and reduce the bank's risks.

In a study conducted in Kuwait by **Mazhar (2003)**[72] determined the importance of selection factors used by Kuwait business consumers in choosing banks. Findings of this study show that the highest – ranking determinant factors of selection of a bank in Kuwait by business firms were size of bank assets, personnel efficiency, banking experience, friendliness of staff, reputation, and availability of branches abroad.

The detailed review of the aforesaid research studies reveals that many of the studies have been done on banks' financial performance, asset and liability

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[69] B. Richard, and M. James, "Asset and Liability Management: What Does the Future Have in Store?", *Journal of Intellectual Capital*, Vol. 6, No. 2, 2003, pp. 135-149.

[70] F. Ruth, "Asset and Liability Management for Banks: A Lawyers Perspective", *Balance Sheet*, Vol. 9, No. 3, 2001, pp. 20-23.

[71] John R. Presely, "The Problem of Risk Management in Banking in Oil-Rich Gulf Economies", *International Journal of Bank Marketing*, Vol. 10, No. 1, 1992, p. 77.

[72] Mazhar M. Islam, "Development and Performance of Domestic and Foreign Banks in GCC Countries", *Managerial Finance*, Vol. 29, No. 2, 2003, pp. 42-71.

management, relationship between the level of liquidity and profitability, relationship between loan and deposit growth, tradeoff of risk and return, diversification, specialization, relationship between the performance of government-owned banks and private owned banks, risk taking between publicly and privately traded banks, ownership concentration on risk taking and efficiency and bank size. But no such study has been done on portfolio behavior of commercial banks. Keeping that research gap in mind, the present study is planned and it would be of immense help to the policy makers and other decision makers, bankers, students, teachers and to those who take interest in banking.

1.5 Hypotheses of the Study

The following hypotheses have been drawn based on intensive review of the literature and research studies done earlier.

1) Liquidity, profitability, credit risk and solvency objectives of commercial banks are significantly correlated with their portfolio compositions.

2) Asset composition is positively and significantly correlated with deposit of commercial banks.

3) Liquidity, profitability, credit risk and solvency variables are influenced by loan variable.

4) Capability of loan seems to influence the smaller banks strongly.

5) Loan seems to be less capable to influence DCBs than PCBs.

1.6 Rationale of the Study

Although the concept of portfolio management is not quite new in Bangladesh but the fact is that very few research works have been done in this area.

There has been no study as to how the bank performed in liquidity, profitability, credit risk and solvency during 2000-2006. The previous studies on profitability and other measures are far from satisfactory. Those studies used neither statistical technique nor made inter-temporal and inter-bank comparisons with different categories of commercial banks. However, such issues are very important to depositors and investors. So, the present study intends to evaluate the portfolio behavior of commercial banks using the above mentioned criteria. This study is different from the earlier studies with respect to contents, coverage of years and methodology.

The importance of this study may be viewed from its contribution to fill an important gap in literature. That is, findings of this study can add to the existing body of the literature, and can serve as a staring point on which future studies can be done. On the practical dimension, this study may help the executives and other policy makers of commercial banks in Bangladesh to arrive at pragmatic decisions for portfolio management. The findings of the study will also have academic value and policy implications. This study may also help bank decision makers to focus on the major banking activities that may increase the bank ranking and financial performance positions comparing with other banks. Such information should help the management of commercial banks in creating appropriate financial strategies for attaining the required planned financial performance.

1.7 Scope of the Study

The scope of the study covers a brief review of the comparative growth trends of commercial banks in Bangladesh covering the period from 2000 to 2006. The analysis includes growth of bank deposit mobilization, loans and advances, assets, capital, liquid assets, investments, income, profit, profitability, credit risk, solvency etc. It also analyses the return and risk of different categories of commercial banks. The study provides an overview of allocation of banks funds to different types of assets. It also examines the impact of portfolio of assets on liquidity, profitability, credit risk and solvency of commercial banks.

The central theme of the study is to conduct an in-depth comparative analysis of liquidity, profitability, credit risk and solvency of different categories of commercial banks during the period from 2000 to 2006. The study covers twenty private sector commercial banks including three denationalized commercial banks (a detail is shown in section 2.7 of Chapter-2). The main contribution of this study is to examine the pattern of deposit and asset structure of the selected commercial banks and their impact on credit risk, solvency, liquidity and profitability position. The study also examines the trend of liquidity, profitability, credit risk and solvency of the sample banks during the period of the study.

Finally, the study develops relationship of banks' solvency, liquidity, credit risk and profitability with size and ownership of commercial banks in Bangladesh. The study tries to find out relationship between liquidity, profitability, credit risk and solvency objectives of commercial banks and their portfolio compositions.

1.8 Limitations of the Study

Like any other study, this study is also not without its limitations. One of its limitations is that it does not include all the commercial banks working in Bangladesh, because the data were unavailable to the researcher. The study covers structural arrangement of asset management only. But issues like policy formulation, decision aspects, personality trait which governs the portfolio management etc were not included. The study also did not cover foreign commercial banks due to non-availability of all the relevant information and some other relevant problems. The modern techniques of fund / asset allocation have not been used in this study as these found not appropriate in the context of non-availability of some important data relevant to the use of modern technique. The lack of modern asset management approach of commercial banks in Bangladesh was also the other important limiting factor.

Finally, the study develops relationship of banks' solvency, liquidity, credit risk and profitability with size and ownership of commercial banks in Bangladesh. The study tries to find out relationship between liquidity, profitability, credit risk and solvency objectives of commercial banks and their portfolio compositions.

1.9 Organization of the Study

Findings of the study are presented here in the form of a dissertation. The structure of the dissertation is planned as follows:

Chapter 1	**Introduction:** It includes the prelude, statement of the problem, objectives of the study, existing literature in this area, hypotheses of the study, justification, scope and limitations.

Chapter 2	**Methodology and Conceptual Framework:** This chapter describes the methodology of the study and illustrates the conceptual frameworks.
Chapter 3	**Portfolio Management of Commercial Banks: An Overview:** this Chapter offers theoretical considerations concerning commercial banks, its financial statements, theories, evaluating factors, portfolio management.
Chapter 4	**Impact of Portfolio Behavior:** Empirical results are presented in this chapter. It is conducted to show portfolio behavior of commercial banks and its impact on profitability, liquidity, asset quality and solvency.
Chapter 5	**Association between the variables used in the study:** An attempt is made in this chapter to examine the association between the important variables used in the study.
Chapter 6	**Summary, Recommendations and Conclusion:** the chapter summarizes the whole thesis and concludes it with policy recommendations.

Chapter 2

Methodology and Conceptual Framework

The chapter discussed methodological aspects highlighting selection of methods, selection of sample, tools for data collection, sources of data, period covered to be followed for the present study. Discussion is also made on framework of analysis, different ratios and statistical tools that are used in this study.

2.1 Methodology

2.1.1 Definition

Methodology means the way of doing research systemically. A method involves a process or technique in which various stages or steps of collecting data are explained and the analytical techniques are defined[1]. And research method is the functional action strategy to carry out a research project in the light of the theoretical framework and guiding research questions[2]. It denotes the detail framework of the unit of analysis, data gathering techniques, sampling and interpretation strategy and analysis plan. A 'Dictionary of Social Sciences' observes methodology as the systematic and logical investigation.

2.1.2 Selection of Methods

Selection of a research method is inevitable for conducting any research work. Though methodology is the prime concern of any research work, the methods

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[1]. M. Zainul Abedin, *A Handbook of Research for the Fellows of M.Phil. And Ph.D. Programmes* (Dhaka: Book Syndicate, 1996), p. 52.

[2]. Salahuddin M. Aminuzzaman, *Introduction to Social Research* (Dhaka: Bangladesh Publishers, 1991).

sometimes differs from one research work to another. From the beginning the researcher was very keen about selection of an appropriate method for his study. Since it was an attempt to find out what has happened in the commercial banking portfolio selection in the course of time and correlate the events within the limits of available materials the study followed documentary analysis or content analysis method. Because, this method critically and objectively reviewed the published facts, figures, data and even the symbols in the light of the contents' values. Official records, accounts, reports were used as sources of data in this method. The present study makes an attempt to apply the descriptive method also to describe systematically and accurately the facts and characteristics of portfolio of sample commercial banks. However, observation method has also been used in this study along with content analysis method and descriptive method.

2.2 Selection of Sample for the Study

The study was limited to the listed commercial banks at Dhaka Stock Exchange only. The sample of this study contained 20 commercial banks, which was accounted for 74.07% of the population (number of commercial banks listed at Dhaka Stock Exchange was 27 in 2006, see the Exhibit-2.1). The main basis of the selection of the sample is the easy access and availability of the requisite data and information. However, 6 commercial banks based on Islamic Shariah were not included in this study because of their different nature of banking. Islamic commercial banks are functioning on the basis of Islamic Shariah (principles) instead of traditional commercial banking principles. Their accounting principles and practices, concepts and conventions are also different from those of other commercial banks. The measuring tools would be used for other commercial banks could not be used evenly for those types of banks. Therefore, the Islamic commercial banks are overlooked in the path of the study. For making the study more competent in respect of data, it is also decided to exclude the Oriental Bank (currently operating as ICB Islamic Bank) which was not in operation during the period of the study.

Exhibit 2.1
Commercial Banks (in Bangladesh) with their Asset Size (Taka in million)

Serial No.	Name of the Bank	Total Asset (based on 2006)	Size
1	Standard Bank Ltd.	16861	**Small**
2	One Bank Ltd.	23143	Small
3	Mutual Trust Bank Ltd.	26218	Small
4	The Premier Bank Ltd.	27170	Small
5	United Commercial Bank Ltd.	28813	Small
6	Bank Asia	30438	Small
7	NCC Bank Ltd.	32605	Small
8	Eastern Bank Ltd.	35971	Small
9	IFIC Bank Ltd.	36081	Small
10	Mercantile Bank Ltd.	37160	Small
1	Uttara Bank Ltd.	45217	**Medium**
2	Dutch Bangla Bank Ltd.	45493	Medium
3	National Bank Ltd.	46796	Medium
4	The City Bank Ltd.	47446	Medium
5	Arab Bangladesh Bank Ltd.	47989	Medium
6	Dhaka Bank Ltd.	48142	Medium
1	South East Bank Ltd.	54825	**Large**
2	Pubali Bank Ltd.	58405	Large
3	Prime Bank Ltd.	60899	Large
4	Rupali Bank Ltd.	76125	Large

2.3 Tools for Data Collection

This study used income statements and balance sheets data of the sample commercial banks.

2.4 Sources of Data

The study was based on secondary data. Data required for the study were collected from annual reports of the selected banks, Bangladesh Bank's reports and from Resume of the Activities of Financial Institutions in Bangladesh published by the Ministry of Finance, Government of Bangladesh. In addition, another source of data was through reference to the library and the review of different articles, papers, and relevant previous studies.

2.5 Period Covered

The study covered a period of seven years from 2000 to 2006.

2.6 Framework of Analysis

The data thus collected were tabulated on the basis of their different characteristics. Different accounting and statistical methods such as ratio analysis, average, period growth, correlation, regression etc. were used to interpret that data and draw inferences there from.

The study followed both time series and cross-sectional analysis. Initially, the study presented the mean values of important growth indicators such as asset, deposit, loan and equity of each commercial bank with their period growth. Then major asset composition of each selected commercial bank were exhibited. Impact of asset compositions on liquidity, profitability, credit risk and solvency of those banks were illustrated next. The study continued the same analysis by splitting the sample banks in large, medium and small groups in terms of their total assets value based on 2006. Of them, 4 of these banks were ‘large’ (taka over 50 million), 6 of them were ‘medium’ (taka more than 40 million but less than 50 million), and the rest 10 were considered as ‘small’ banks (less than taka 40 million). Exhibit 2.1 exhibits sample commercial banks with their asset value based on 2006.

The sample commercial banks were classified again in private commercial banks (PCBs) and de-nationalized commercial banks (DCBs) based on their ownership status to continue the same analysis. Exhibit 2.2 exhibits sample commercial banks with their ownership status.

In order to conduct a cross-sectional analysis the study computes correlation and regression across time for each individual bank and then makes the averages of all sample banks of the country.

Exhibit 2.2
Commercial Banks (in Bangladesh) with Ownership Status

Serial No.	Name of the Bank	Ownership Status
1	Arab Bangladesh Bank Ltd.	Private Commercial Bank
2	Bank Asia	Private Commercial Bank
3	The City Bank Ltd.	Private Commercial Bank
4	Dutch Bangla Bank Ltd.	Private Commercial Bank
5	Dhaka Bank Ltd.	Private Commercial Bank
6	Eastern Bank Ltd.	Private Commercial Bank
7	IFIC Bank Ltd.	Private Commercial Bank
8	Mercantile Bank Ltd.	Private Commercial Bank
9	Mutual Trust Bank Ltd.	Private Commercial Bank
10	NCC Bank Ltd.	Private Commercial Bank
11	National Bank Ltd.	Private Commercial Bank
12	One Bank Ltd.	Private Commercial Bank
13	The Premier Bank Ltd.	Private Commercial Bank
14	Prime Bank Ltd.	Private Commercial Bank
15	Pubali Bank Ltd.	De-nationalized Commercial Bank
16	Rupali Bank Ltd.	De-nationalized Commercial Bank
17	South East Bank Ltd.	Private Commercial Bank
18	Standard Bank Ltd.	Private Commercial Bank
19	Uttara Bank Ltd.	De-nationalized Commercial Bank
20	United Commercial Bank Ltd.	Private Commercial Bank

2.7 The Variables Used in this Study

The study used sixteen variables to measure the impact of portfolio on liquidity, profitability, credit risk and solvency of commercial banks. The following Exhibit 2.3 shows a list of those variables in this context.

Variables were used to describe different objectives of the study. A brief description of those variables is given in the following sections:

2.7.1 Asset Composition of Commercial Banks

To understand the impacts of asset structure of commercial banks on liquidity and profitability in the following variables were used the study.

(1) The Ratio of Loans to Total Assets

Loans might be more profitable than other types of assets, such as securities; hence, the study expected a positive coefficient sign for this variable in the profitability regression.

(2) The Ratio of Investments to Total Assets

Investment is considered as the second important earning assets of the banks. The more the investment amount in relation to total assets the more the income and profit of the banks.

Exhibit 2.3
The Variables Used in this Study

Number	Variables
1	Loans and advances to total assets
2	Investments to total assets
3	Liquid assets to total assets
4	Earning assets to total assets
5	Net interest income to total assets
6	Profit before taxes to total assets
7	Return on assets
8	Return on equity
9	Return on deposits
10	Deposits to total assets
11	Risk-weighted assets to total assets
12	Credit deposit ratio
13	Liquid assets to total deposits
14	Non performing loan to total loan
15	Loan loss provision to total loan
16	Capital adequacy ratio

(3) The Ratio of Liquid Assets to Total Assets

While liquid assets reduce the bank liquidity risk, they typically generate a relatively lower return and are less costly to handle. Therefore, the study expected a negative coefficient sign both in the income and costs regressions. Perfect liquidity implies that liabilities ranked by maturity be matched by corresponding assets. The size of deposits over total assets gives a rough estimate of liquidity risk, associated with deposit withdrawal.

(4) The Ratio of Earning Assets to Total Assets

Earning assets for banking system consist of securities, shares, debentures, bonds, loans, advances and bills discounted and purchased.[3] Earning assets provide income to the banks to pay off interest to the depositors, meet operational expenses and remuneration to the owner for the capital supplied. On the other hand, non earning assets are necessary to maintain liquidity and for smooth running of the organization.

2.7.2 Earnings of commercial banks

Earnings of the commercial banks were measured in this study by net interest income and profit before tax approach.

(1) Net Interest Income to Total Assets

The ratio is calculated by subtracting total interest expenses from total interest income.

(2) Profit before Tax

To reflect bank profitability, the study considered the bank's profits before-tax over total assets, or *profit before tax /ta.* The ratio is calculated by profit before taxes by total assets.

2.7.3 Profitability of Commercial Banks

The profitability variable of the study was represented by three alternative measures.

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[3] Ramesh C. Bhatia, *Banking Structure and Performance* (Bombay: National Institute of Bank Management, 1992), p. 35.

(1) Return on Assets (ROA)

A straightforward measure of bank profitability is the net profit after-tax per unit of assets, or return on assets (ROA). As it is known, this measure contains two elements, efficiency (total assets turnover), and effectiveness (profit margin). It shows how well the bank is being managed, by conveying how much profit the bank earns per unit of assets.

(2) Return on Equity (ROE)

It is also important for the shareholders to know the return on their invested equity in a bank. A useful summery of this information is provided by net after-tax profit per unit of bank equity capital, return on equity (ROE). ROE indicates the return to shareholders on their equity. Banks with lower leverage (higher equity) will generally report higher ROA, but lower ROE.

(3) Return on Deposits (ROD)

However, after ROA and ROE, financial analysts now consider ROD as another measure of bank's profitability performance. It is calculated through dividing net profits by total deposits. This ratio reflects the bank management's ability to utilize the customers' deposits in order to generate profits.

2.7.4 Credit Risk of Commercial Banks

While return figures can easily be derived from balance sheet data it is by far less clear how the risk of a bank's loan portfolio should be estimated. The study used the loan loss provision ratio (LLP) or the non-performing loan ratio (NPL) to measure the bank's credit risk.

(1) Non-performing loan ratio (NPL)

The most important indicator intended to identify problems with asset quality in the loan portfolio is the percentage of non-performing loans (NPLs) to total advances. This ratio evaluates the proportion of bad loans over total loans. A high ratio is supposed to mean a bad quality of assets. Riskier loans should produce higher interest income, with a positive impact on income. On the other hand, a poorer asset quality should increase the bank cost of funding, thus reducing income.

(2) Ratio of Loan Loss Provisions to Total Loans (LLP)

The way to measure bank credit risk is the ratio of loan loss provisions to total loans. LLP simply measures actual provisioning for bad debts. It is defined as the ratio of a bank's loan loss reserve over its total lending. The loan loss reserves comprise specific allowances for bad debts, unidentified loss reserves and provisions for bad debts.

Theory suggests that increased exposure to credit risk is normally associated with decreased firm profitability and, hence, the study expected a negative relationship between ROA (ROE) and NPL. Banks would, therefore, improve profitability by improving screening and monitoring of credit risk and such policies involve the forecasting of future levels of risk. Additionally, central banks set some specific standards for the level of loan-loss provisions to be adopted by the country's banking system. In view of these standards, bank management adjusts provisions held for loan losses, the level of which is decided at the beginning of each period.

2.7.5 Liquidity of Commercial Banks

The following ratios are used in the present study to measure liquidity of commercial banks.

(1) The Ratio of Liquid Assets to Deposits

Liquid asset consist of primary reserve and secondary reserve. Primary reserves are those non earning asset of commercial banks made up of cash and its equivalent. The term includes statutory, excess and working reserves. Primary reserves specifically include cash in the vault, the deposits carried by member banks, cash items, such as cheques held on in the process of collection and deposits held in other banks, which are usually referred to as correspondent bank balances. The secondary reserve of a commercial bank consists of its highly liquid earning assets which may be converted into cash without delay or appreciable loss.

(2) Deposit to Total Assets

Liquidity of a bank can be measured in other ways also. Deposit position of a bank in relation to its total assets can be used to measure liquidity of a bank. If any bank is able to collect more deposit she would not face any difficulty in meeting her liquidity demand.

(3) Credit to Deposit Ratio

Another way to measure liquidity of commercial banks is the supply of credit against their deposit. A high credit-deposit ratio is considered a positive index of performance of banking system because the credit need of the customers is best served through intermediate of banks. But in that case few amounts would be available for maintaining liquidity of a bank.

(4) Risk-weighted Asset to Deposit Ratio

Another way to measure risk of liquidity is the risk-weighted asset (loan and advances plus investment) to deposit ratio. If any bank has more risk-weighted assets it means the bank has few funds available for maintain its liquidity requirements.

2.7.6 Capital Adequacy (Solvency) of the Commercial Banks

Capital refers to the amount of own funds available to support a bank's business and, therefore, bank capital acts as a safety net in the case of adverse developments. Equity includes preferred shares and common equity. Capital adequacy focuses on the total position of bank capital and protects the depositors from the potential shocks of losses that a bank might incur. It helps absorbing major financial risks like credit risk, market risk, foreign exchange risk, interest rate risk and risk involved in off-balance sheet operations.

(1) Capital Adequacy Ratio

Banks in Bangladesh have to maintain a minimum Capital Adequacy Ratio (CAR) of not less than 9.0 percent of their risk-weighted assets (with at least 4.5 percent in core capital) or Taka 1.00 billion, whichever is higher. Minimum capital adequacy ratios (CAR) have been designed to ensure that banks can absorb a reasonable level of losses before becoming insolvent. It is a ratio of *solvency*. The higher the capital adequacy ratios a bank has, the greater the level of unexpected losses it can absorb before becoming insolvent.

In addition to the ratios discussed above, the present study used two more variables namely total assets and ownership status. ‘Total Asset’ is used to measure the size of a bank and ‘ownership’ is used to compare PCBs and DCBs.

2.7.7 Size of a Commercial Bank

One of the most important questions underlying bank policy is which size optimizes bank profitability. Generally, the effect of a growing size on profitability has been proved to be positive to a certain extent. However, for banks that become extremely large, the effect of size could be negative due to bureaucratic and other reasons. To measure the size of a bank the study uses the bank’s total assets(TA).

(1) Ownership Status

A relationship between bank profitability and ownership may exist due to spillover effects from the superior performance of privately-owned banks compared with denationalized and publicly-owned banks, the later do not always aim at profit maximization.

2.8 Statistical Tools Used in the Study

The techniques employed here are to study the relationship between the variables ranged from simple descriptive statistical tools like mean, period growth, maximum and minimum value to complex techniques like correlation and regression analysis. Simple linear regression analysis was undertaken to express the underlying relationship between the dependent and independent variables. The co-efficient of variations (R^2) is used to know how much of the variations in the dependent variable are explained by the independent variable included in the regression analysis. The emphasis in the study was on determining association; hence independent variables in the regression models were used for explanatory and not for predictive purposes. The t test and F statistics were applied to test the correlation and regression co-efficiency.

2.9 Conclusion

This chapter gives an overview of the methods and tools that are used in the study. It highlights selection of methods, selection of sample, tools for data collection, sources of data, period covered to be followed for the present study. Discussion is also made on framework of analysis, different variables and statistical tools that are used in this study. The next chapter explains the portfolio management aspects of the commercial banks.

Chapter 3

Portfolio Management of Commercial Banks: An Overview

3.1 Prelude

This chapter attempts to present the theoretical concepts relating to banking activities and functions along with their historical role which they have been playing in the economy and finance for over the past centuries. It is necessary to introduce such a landscape on banking industry as a whole to draw out the background canvas of the present study on the commercial bank's portfolio management.

Banks are among the most important financial institutions in the economy. It is a financial intermediary accepting deposits and granting loans; offers the widest menu of services of any financial institutions[1]. They are principal source of credit for millions of individuals and families and many units of local businesses ranging from grocery stores to automobile dealers, banks are often the major source of credit to stock the shelves with merchandise or to fill a dealer's showroom with new cars. In most years, they are among the leading buyers of bonds and notes issued by governments. Moreover, bank reserves are principal channel for government policy to stabilize the economy[2].

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[1]. Peter S. Rose, *Money and Capital Markets*. 6th ed. (Homewood, Ill.: Richard D Irwin, 1997), chap. 4.

[2]. William H. Baughn and Charles E. Walker, *The Bankers' Handbook*, 4th ed. (Homewood, Ill.: Business One Irwin, 1990).

Banks can be classified into various types on the basis of their functions, ownership, domicile, etc. On the basis of function, banks can be classified into commercial, industrial, agricultural, exchange, investment and savings banks. On the basis of ownership, banks can be classified into public sector banks and private sector banks. Majority of the commercial banks in Bangladesh are in the private sector. And on the basis of domicile, banks are divided into domestic and foreign banks.

The banks which perform all kinds of banking businesses and generally finance trade and commerce are called commercial banks. Since their deposits are for a short period mainly, these banks normally advance short term loans to the businessmen and traders and avoid medium and long term lending. However, recently, the commercial banks have also extended their areas of operation to medium term and long term finance.

3.2 The Services Which the Banks Offer to the Public

Banks are financial service firms, producing and selling professional management of the public's funds and performing many other roles in the economy[3]. This section presents an overview of banking service menu.

3.2.1 Services that the Banks Have Offered Throughout History

Carry Out Currency Exchanges. History shows that one of the first services offered by banks was currency exchange. In today's financial marketplace, trading in foreign currency is carried out primarily by the largest banks.

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[3]. Charles P. Kindleberger, *A Financial History of Western Europe* (Boston: Allen and Unwin, 1984).

Discounting Commercial Notes and Making Business Loans. Early in their history, bankers began discounting commercial notes; in effect making loans to local merchants who sold their debts (account receivables) they held against their customers to a bank to raise cash quickly.

Offers Savings Deposits. Making loans proved so profitable that banks began searching for ways to raise additional loanable funds. One of the earliest sources of funds consisted of offering savings deposits, interest-bearing funds left with banks for period of weeks, months or years, sometimes bearing relatively high rate of interest.

Safekeeping of Valuables and Certification of Value. During the middle ages, banks began the practice of holding gold, securities, and other valuables owned by their customers in secure vaults.

Supporting Government Activities with Credit. During the Middle Ages and the early years of Industrial Revolution, the ability of bankers to mobilize large amounts of funds and make loans came to the attention of governments in Europe and America.

Offering Checking Accounts. The Industrial Revolution in Europe and the United States ushered in new banking practices and services. Probably the most important of the new services developed during the period was the demand deposit that permitted the depositors to write drafts in payment for goods and services that the bank had to honor immediately.

Offering Trust Services. For many years banks have managed the financial affairs and property of individuals and business firms in return for a fee that is often based on the value of properties or the amount of funds under management. This property management function is known as trust services.

3.2.2 Services that the Banks Have Developed More Recently[4]

Granting Consumer Loans. Following Word War II, consumer loans were among the fastest growing forms of bank credit. It is one of the most important sources of bank revenue today.

Financial Advising. Many banks offer a wide range of financial advisory services, from helping to prepare tax returns and financial plans for individuals to consulting about marketing opportunities at home and abroad for their business customers.

Cash Management. A bank agrees to handle cash collection and disbursements for a business firm and to invest any temporary cash surpluses in short-term interest-bearing securities and loans until the cash is needed to pay bills. There is a growing trend today toward offering services for consumers.

Offering Equipment Leasing. Many banks have moved to offer their business customers the option to purchase needed equipment through a lease arrangement in which the bank buys the equipment and rents it to the customer.

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[4] Joanna Stavins, "Checking Accounts: What Do Banks Offer and What Do Consumers Value?", *New England Economic Review,* Federal Reserve Bank of Boston, March/April, 1999.

Making Venture Capital Loans. Banks have become active in financing the start-up costs of new companies, particularly in high-tech industries. Because of the added risk involved in such loans, this is generally done through a venture capital firm.

Selling Insurance Services. For many years, bankers have sold credit life insurance to their customers receiving loans, thus guaranteeing loan repayment if borrowers die or become disabled.

Selling Retirement Plans. Banks sell deposit retirement plans to individuals holding these deposits until the funds are needed for income after retirement.

3.2.3 Dealing in Securities[5]

Offering Securities Brokerage and Security Underwriting Services. One of the biggest of all banking service targets in recent years has been dealing in securities, executing buying and selling orders for security trading customers and marketing new securities to raise funds for corporations and other institutions.

Offering Mutual Funds. Mutual funds are professionally managed investment programs that acquire stocks, bonds, and other securities that appear to 'fit' the funds' announced goals (such as to maximize income or to achieve long-term capital appreciation). Some banking firms have organized special subsidiary organizations to market these services or entered into joint ventures with security brokers and dealers.

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[5]. Jerry L. Jordan, "The Functions and Future of Retail Banking", *Economic Commentary*, Federal Reserve Bank of Cleveland, September 15, 1996.

Offering Merchant Banking Services. These services are officially defined as the temporary purchase of corporate stock to aid the launching of a new business venture or to support the expansion of an existing company.

3.3 Portfolio Management of Commercial Banks

The primary function of the banks today is to produce and sell financial services demanded by the public. One of the most vital of those services is granting loans. Yet not all bank funds can be allocated to loans. For one thing, most loans are illiquid—they cannot easily be sold prior to maturity if the bank needs cash in a hurry. Another problem is that loans are among the riskiest bank assets, carrying the highest borrower default rate of any form of bank credit. So, the commercial banks generally seek to reduce their risks by diversifying their activities across various lines of business.

None of the commercial banking functions can achieve its maximum potential unless its' portfolio investment is efficiently planned, executed and controlled. As every profit-seeking organization, a commercial bank also tries to have the highest profits by managing its portfolio. But for a successful and reliable activity and in a long-term perspective, the profits are not enough for a commercial bank. It is more important to the management to assure bank's liquidity to fulfill its obligations every moment it may be necessary. And un-doubtfully, besides the mentioned two principles of profitability and liquidity, it is of high importance for a bank to be safe, i.e. to minimize its risk. So, the successful management of a commercial bank fund requires careful consideration of three important objectives: liquidity, safety, and income.[6]

3.3.1 Balancing the Conflicting Objectives

A bank's portfolio policies are designed to enable the bank to meet its ***liquidity*** requirement. Since the bank liability is subject to withdrawal either on demand or at a very short notice, bank portfolio policies must therefore be guided by prudence that her lending or investing will be returned. So the bank must keep adequate amount of liquid assets with them to meet the demand from the depositors. A bank is solvent when the value of its assets is enough to cover all of its liabilities except those to owners. Minimum capital adequacy ratios have been designed to ensure that the banks can absorb a reasonable level of losses before becoming insolvent. As it is a ratio of solvency, the higher the capital adequacy ratios a bank has, the greater the level of unexpected losses it can absorb before becoming insolvent. Clearly, asset quality and hence the ***solvency*** considerations are in the foreground of this objective. In addition to the maintenance of liquidity and solvency, bank policies should be geared towards achieving sufficient ***income*** on bank portfolio so that operating costs can be met and the bank can continue profitably as going concern.[7]

So, the central problem of bank management is to reconcile the conflicting goals of solvency, liquidity and profits[8]. However, portfolio management of a bank is a

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[6]. E. W. Reed, *Commercial Bank Management* (New York: Harper of Row and John Weatherhill Inc., 1964), p. 115.

[7]. W. Harold, *Principles of Bank Operations* (USA: American Institute of Banking, 1975), p. 233.

[8]. M. Zainul Abedin, "A Preliminary Note on Measurement of Productivity in the Commercial Banks of Bangladesh", *Bank Parikrama*, Vol. 10, 1994, pp. 67-76.

complex problem which needs careful attention and periodic review. Factors like economic condition of the country, monetary policy, authority of the central bank, objectives of the banks, management philosophy of the top management, previous experience etc. combinedly guide the portfolio management principles of the bank. It is rather difficult to find the optimal interrelation of these factors due to their contradictory nature. Theses are:

(i) Wishing to keep required liquidity, a bank must optimize (maximize) the quantity of short-term loans;

(ii) Wishing to achieve a higher profitability, a bank must maximize the quantity of the long-term loans (higher percents);

(iii) Wishing to assure safety, a bank has to be selective in choosing its clients.

Depending on the situation, every single bank may prefer one or another objective to the rest[9]. The main tasks for an effective portfolio management is the effective usage of credit funds achieving the maximum benefit with minimum inputs for a bank (the highest economic effect) and also by providing clients with the most favorable conditions for their business developments.

3.3.2 Theories of Portfolio Management

Commercial banks' success depends on the ability of the management to allocate its available funds to different types of assets.[10] Because none of the

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[9]. I. Macerinskiene, L. Ivaskeviciute, "Methodological Aspects of Bank Loan Portfolio", *Research // Socialiniai Mokslai*, 2000, Nr. 5 (26), pp. 41–53.

[85]. M. Randhaswami, and S. V. Vasudevan, *A Text Book of Banking: Law, Practice and Theory of Banking* (New Delhi: S. Chand and Company Pvt. Ltd., 1987), p. 48.

commercial banking functions can achieve its maximum potential unless portfolio investment is efficiently planned, executed and controlled.

The Banks expect to make loans and manage other assets fruitfully by maintaining liquidity, profitability and solvency. In such a context, the interdependence which exists among all the various income statement and balance sheet items of the banks must be recognized and managed if maximum benefits are to be obtained. It is observed that various theories and models were developed to manage the banks' assets, liabilities or both. Thus while an attempt is made to evaluate asset management principles, a brief review of commercial banking theories may be worth undertaking. Following is an attempt in this regard.

(i) The Real Bills Doctrine / The Commercial Loan Theory

It is perhaps the earlier theory prevailing till 1920s. It holds that bank liquidity was assured as long as its earning assets were composed of short term loans liquidated in the normal course of business.

The real bills doctrine states that the commercial banks should make only short term, self-liquidating, productive loans. This should be followed strictly because of the nature of their liabilities. Since the bulk of commercial bank liabilities are payable on demand, it was argued that its assets should similarly be as short-term as possible. The short-term business loans for working capital purposes with a maximum maturity of about three months were considered as ideal assets. It was forbidden to make loans or investments for longer duration except to the extent of banks' capital accounts. The 'self-liquidity aspect of the commercial loan theory meant that the funds for a borrower to repay a loan were supposed to arise out of the very transaction being financed by that particular loan. A loan to finance inventories, the classic example, would be repaid by the businessmen out of his receipts from the sale of those very inventories. The sale of proceeds from the transaction being financed would give rise to the automatic self-liquidation of the bank's earning assets[11].

(ii) Doctrine of Asset Shiftability

In 1920s banks evolved a variant of productivity theory of credit and emphasized on theory of shiftability of market with reference to their investment portfolio. Under the theory, banks made 'shiftable' loans-call loans (payable to the bank with one days notice) secured by stock exchange collateral. The shiftability theory is based on the proposition that a bank's liquidity is maintained if it holds assets that could be shifted or sold to other lenders or investors for cash. If loans are not repaid, the collateral from the secured loans (marketable securities, for example) could be sold in the market for cash; if funds are needed, loans could be shifted to the central bank. Thus individual commercial bank should be able to meet its liquidity needs, provided it always has assets to sell; similarly, the banking system would be liquid provided that the central bank stands ready to purchase assets offered for discount[12].

(iii) Anticipated Income Theory

During the 1930s and 1940s banks evolved the anticipated income theory of lending. This theory states that banks may properly make longer-term loans with

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[11]. S. Ritter Lawrence and William L. Silber, *Principles of Money Banking and Financial Markets*, 3rd edition (New York: Basic Books Inc., 1980), p. 130.

[12]. Edward W. Reed, Richard V Cotter, Edward K. Gill, and Richard K. Smith, *Commercial Banking* (New Jersy: Prentice Hall, Inc. 1976).

repayments schedule from future income. A bank's liquidity can be planned if scheduled loan payments are based on the future income of the borrower[13]. Recovery of loans on installment basis also contributes regularly to a bank's liquidity. These enable the bankers to see that consumer loans, mortgage loans and term loans to business are no different from the traditional short-term business loan that finances inventories. The latter is repaid in a lum sum at the maturity of the loan while the former loans being repaid in installments ensure continuous cash inflow or bank liquidity.

(iv) Liability Management Theory

Liability management represents a distinct break with the tradition. The basic thrust of liability management is to purchase funds by issuing liabilities in the money markets to meet increased loan demand and other needs for liquidity. This theory states that the banks can meet liquidity requirements by bidding in the market for additional funds. Thus the trend of looking for liquidity entirely on assets' side of a balance sheet has been changed and the liabilities' side of the balance sheet has been attaining prominence since 1960s. The banks now increasingly draw their liquidity from the liabilities side of the balance sheet. Instead of taking their liability structure as given and tailoring their assets to fit in, they began to take a target asset growth as given and adjust their liabilities to suit their needs.[14] Thus a bank can borrow from the central bank and the other commercial banks to meet its liquidity needs in times of emergency. It, however, goes well so long the central bank is accommodating.

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[13]. Reed, *et al., op. cit.*, p. 127.

[14]. Ritter and Silber, *op. cit.*, p. 134.

(v) Theory of Discretionary Funds Management

It is a modified version of the liability management theory. It revolves around the strategic employment of interest-sensitive funds—whether liabilities or assets that can be increased or decreased at the bank's initiative.[15] Whether a discretionary item is an asset or a liability is relatively unimportant in the bank's financial decision. Here the only consideration is to raise funds at a minimum cost or to allocate a surplus to maximize profit. Thus while the liability management theory looks into the liabilities side of the balance sheet for bank's liquidity, the discretionary funds management theory depends on both the assets and liabilities' sides of the balance sheet for the same.

(vi) Pool-of-Funds Approach

The pool-of-funds approach gained wide acceptance in the 1930s and 1940s. This approach holds that bank funds' sources comprise a pool-of-funds from which asset allocations are made.

(vii) Asset Allocation Approach

The method of 'asset allocation' gained wide acceptance in the 1950s as an improvement in the pool-of-funds approach. Asset allocation recognizes a number of asset/liability linkages. It is based on the promise that available funds should be allocated to assets of the type and maturity appropriate to the turnover of these funds.

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[15]. *Ibid.*, p. 138.

(viii) Balance Sheet Management

It is a new methodology to bank decision making which applies analytical techniques to the solution of complex large-scale organizational problems. Modern techniques such as rate mix analysis, gap analysis, linear programming etc. are utilized in this approach.

(ix) Asset / Liability Management

Some modern techniques are also used for asset and liability management of commercial banks. Different statistical tools and methods are used for this purpose.

The above various approaches of portfolio management have evolved over the years in response to changing circumstances, environment and desire of the banks to maximize profit. These actually evolved from the long experiences of the past.

3.3.3 Factors Governing Portfolio Management

Portfolio management of a bank is a complex problem which needs careful attention and periodic review. Factors like economic condition of the country, monetary policy, authority of the central bank, objectives of the banks, philosophy of the top management, previous experiences etc. combinedly guide the portfolio management principles of the bank. Bank's assets require to be managed through planning. In this planning, the banks consider a number of factors of which the following are the most important:

(a) Obligations to meet the interest of shareholders and depositors,

(b) Obligations to fulfill liquidity requirements,

(c) Environmental factors affecting lending and investment operations,

(d) Operative non-monetary policies and guidelines of the government, and

(e) Goals and objectives as well as philosophy of the banks[16].

3.3.4 Setting the Priorities

To attain the objectives of liquidity, solvency and profitability, the commercial banks in practice need to set up a certain pattern and distribution of their assets in their portfolio composition. Management needs to decide as to what constitutes the best distribution of assets in its quest for liquidity, solvency and income. Here precisely lies the difficult task of a bank funds management, specially, in solving the basic conflict between liquidity, and solvency on the one hand and income on the other[17].

Despite existence of conflict, there are certain priorities with respect to bank funds that simply cannot be ignored. The order of priorities may be stated as follows:

(1) The need to provide primary reserve, that is, legal reserve, working capital and an adequate cash inventory.

(2) The need to provide for a reservoir of highly liquid investment assets sufficient to cope with unexpectedly sharp deposit withdrawals.

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[16]. Harold Wallgren, *Principles of Bank Operations* (USA: American Institute of Banking, 1975), p. 233.

[17]. Emmanuel N. Roussakis, *op. cit.*, pp. 50-51.

(3) The need to provide enough additional liquidity in asset structure to enable the bank to perform its main function of satisfying the legitimate credit demands of the community.

(4) Finally, the need to provide a minimum nucleus of intermediate and long term investment assets to serve as security for public deposits as required, as collateral for emergency temporary loans and as a source of additional income.

3.4 Measuring and Evaluating Portfolio Behavior of a Commercial Bank

The banks today are under pressure to perform—to meet the objectives of their stockholders, employees, depositors, and borrowers, while somehow keeping government regulators satisfied meaning that the bank's policies, loans, and investments are sound. As banking organizations have grown in recent years, more and more of them have been forced to turn to the money and capital markets to raise funds by selling stocks, bonds, and short-term IOUs. This means that banks' financial statements are increasingly being scrutinized by investors and by the public. This development has placed management under great pressure to set and meet the bank's performance goals.

Competition for banks' loan and deposit market has recently increased dramatically. Finance and leasing firms, insurance companies, brokerage firms, and even chain stores are fighting for a slice of nearly every loan and deposit market traditionally served by banks[18]. So bankers have been called upon to continually reevaluate their loan and deposit policies, review their plans for

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[18]. Thomas F. Siems and Klemme Kelly, "Banking in a Changing World", *Financial Industry Issues*, Federal Reserve Bank of Dallas, Second Quarter 1997, pp. 1-6.

expansion and growth, and assess their return (profitability) and risk (liquidity, solvency, credit) in the light of this new competitive environment.

Banks expect to make loans and manage other assets fruitfully by maintaining the conflicting goals of liquidity, solvency and profitability. In such a context, the interdependence which exists among all various balance sheet items of the banks must be recognized if maximum benefits are to be obtained[19]. As a result, balance sheet management is considered more appropriate and that entire balance sheet should be regarded as the portfolio for which planning to be undertaken.

However, for measuring and evaluating behavior of portfolio, analyzing of financial statement is essential. Because, return (profitability) and risk (liquidity, earnings, credit, solvency) of a commercial bank can be measured by different components of her income statement and balance sheet.

3.5 The Financial Statements of a Bank

The two main financial statements that the bank managers, customers, and the regulatory authorities look at are the income statement and the balance sheet. The income statement indicates the amount of revenue received and expenses incurred over a specified period of time. In contrast, the balance sheet shows the amount and composition of funds' sources the bank has drawn upon to finance its lending and investing activities and how much has been allocated to loans, securities, and other funds' uses at any given time[20].

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[19]. S. Ahmed and M. S. Uddin, "Asset Structure and Aspect of its Management in the Private Commercial Banks in Bangladesh", *Chittagong University Studies (Commerce)*, Vol. 10, 1994.

[20]. William F. Bassett and Egon Zakrasek, "Profits and Balance Sheet Developments at U.S. Commercial Banks in 1999", *Federal Reserve Bulletin*, June 2000, pp. 367-395.

3.5.1 Income Statement

The principal source of bank revenue is the interest income generated by the bank's earning assets, mainly its loans, securities, any interest-bearing deposits that are part of cash assets held with other banks, and any miscellaneous assets generating revenue. The major expenses incurred in generating this revenue include interest paid out to depositors, interest owed on non deposit borrowings, the cost of equity capital, salaries, wages, and benefits paid to bank employees, overhead expenses associated with the bank's physical plant, funds set aside for possible loan losses, taxes owed, and miscellaneous expenses. The difference between all expenses and revenues is net income[21]. Therefore, bank's income statement can be represented as a report of financial inflows (revenues) and financial outflows (expenses).

Table 3.1
The Income Statement of a Bank

Financial Inflows	**Financial Outflows**
Loan income Security income Income from cash assets Miscellaneous income	Deposit costs Non deposit borrowing costs Salaries and wages expenses Miscellaneous expenses
Total financial inflows (all revenues) - Total financial outflows (all expenses) = Net income	

The above Table 3.1 can be divided into four main sections: (1) interest income, (2) Interest expenses, (3) Non interest income, (4) Non interest expenses.

(1) Interest Income: Interest and fees generated from loans account for most bank revenues (normally two-thirds or more of the total). Loan revenues are

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[21]. William H. Baughn and Charles E. Walker (eds.), *The Bankers' Handbook*, 3rd ed. (Homewood, Ill.: Business One Irwin, 1989).

usually followed in importance by investment earnings, and interest received on time deposits placed with other banks.

(2) **Interest Expenses:** The number one expense item for a bank is interest on its deposits. Another important and rapidly growing interest expense item in recent years is the interest owed on short-term borrowings in the money market.

Net Interest Income: Banks subtract total interest expenses from total interest income to yield net interest income. This important item is often referred to as the interest margin. It is usually a key determinant of bank profitability.

(3) **Non Interest Income:** It usually includes fees earned from offering trust services, service charges on deposit accounts, and miscellaneous fees and charges for other bank services.

(4) **Non Interest Expenses:** The key non interest expense item for most banks is wages, salaries, and other personal expenses. The cost of maintaining bank properties and rental fees on office space show up in net occupancy and equipment expense. The cost of bank furniture and equipment also appears under the non interest expense category, along with numerous small expense items including legal fees, office supplies, and repairing costs.

Loan Loss Expense. Another expense item that banks can deduct from current income is known as the provision for possible loan losses. It is a non cash expense, created by a simple bookkeeping entry[22].

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[22]. Randy O' Toole, "Recent Developments in Loan Loss Provisioning at U.S. Commercial Banks", *FRBSF Economic Letter,* Federal Reserve Bank of San Francisco, No. 97-21, July 25, 1997.

Net Income. Bank accounting practices call for the deduction of both interest expenses and non interest expenses (including the annual provision for loan losses) from the sum of interest and non interest income to yield income (or loss) before taxes.

3.5.2 The Balance Sheet of a Bank

Balance sheet of a bank lists the assets, liabilities, and equity capital held by in the bank on any given date. In banking, the assets on the balance sheet include four kinds of assets: cash in the vault and deposits held at other depository institutions (C), government and private interest-bearing securities purchased in the open market (S), loans and lease financing made available to customers (L), and miscellaneous assets (M). Liabilities fall into two principal categories: deposits made by and owed to various customers (D) and non deposit borrowings of funds in the money and capital markets (NDB). Finally equity capital represents long term funds the owners contribute to the bank (EC). Therefore, the bank's balance sheet identity can be written as follows:

$$C + S + L + MA = D + NDB + EC$$

$$\text{(Assets)} = \text{(Liabilities + Equity Capital)}$$

3.5.2.1 Principal Components of a Balance Sheet

Bank liabilities and equity capital provide the needed spending power for the bank to acquire its assets. A bank's assets, on the other hand, are made to generate income for its stockholders, pay interest to its depositors, and compensate the bank's employees for their labor and skill. Let's take a closer look at its principal components.

(A) Bank Assets

The asset side of the balance sheet shows the manner in which the funds of the bank are utilized. Given below are various assets of the bank arranged in an ascending order of profitability and descending order of liquidity.

(1) Cash

Cash includes the cash held in the bank's vault and deposits the bank held at other depository institutions, and the bank's reserve account held with the Bangladesh Bank (central bank). This item is known as *primary reserve* or which means that these are the first line of defense against deposit withdrawals and the first source of funds to look when a customer comes in with an unexpected loan request.

(2) Investment Securities: The Liquid Portion

A second line of defense to meet the demands for cash and serve as a quick source of funds is the bank's liquid security holdings, often called secondary reserves. These typically include holdings of short term government securities and privately issued money market securities. Secondary reserves occupy the middle ground between cash assets and loans, earning some income but held mainly for the ease with which they can be converted into cash on short notice.

(3) Investment Securities: The Income Generating Portion

Bonds, Notes, and other securities held by the banks for their expected rate of return are known simply as investment securities.

(4) Loans

By far the largest asset item is loans, which generally account for half to almost three-quarters of the total value of all bank's assets. A bank's loan account typically is broken down into several groups of similar type loans. For example:

(i) Commercial and industrial or business loans,
(ii) Consumer or household loans,
(iii) Real estate or property loans,
(iv) Loans made to other depository institutions,
(v) Foreign loans,
(vi) Agricultural production loans,
(vii) Security loans, and
(viii) Leases.

The banks have another loan category on their books called *nonperforming loans*, which are credits that no longer accrue interest income for the bank. Once a loan is classified or nonperforming, any accrued interest recorded on the bank's books, but not actually received, must be deducted from loan revenues.

(5) Miscellaneous Assets

A bank usually devotes only a small percentage of its assets to the institution's physical plant—that is, the fixed assets represented by buildings and equipments needed to carry on daily operations.

(B) Bank Liabilities

The liabilities of the balance sheet are relatively simple system. It consists of the following items.

(1) Deposits

The principal liability of any bank is in its deposits. They are typically the main source of funding for banks. There are three major types of deposits. These are:

(i) Noninterest bearing *demand deposits*, or regular *checking accounts*, generally permit unlimited check writing but they cannot pay any interest.

(ii) *Savings deposits* generally bear the lowest rate of interest offered to depositors by a bank but may be of any denomination and permit the customer to withdraw at will (twice a week).

(iii) *Time deposits* usually carry a fixed maturity and a stipulated interest rate but may be of any denomination, maturity, and yield interest agreed upon by the bank and its depositor.

(2) Non Deposit Borrowings (NDBs)

NDBs carried out mainly to supplement deposits and provide the additional liquidity that cash assets and securities cannot provide. While deposits typically represent the largest portion of the banks' sources of funds, sizeable amounts of funds come from miscellaneous liability accounts. Borrowings in the money market usually can be arranged in a few minutes. However, interest rates on NDBs are highly volatile.

(3) Equity Capital

The banks are among the most heavily leveraged of all businesses. Their capital accounts normally represent less than 10 percent of the value of their total assets. Equity capital supplies the long term, relatively stable base of financial support upon which the bank will rely to grow and to cover any extraordinary losses it incurs. Bank capital accounts typically include many of the same items that other business corporation display on their balance sheets.

3.6 Analyzing Financial Statement

The first step in analyzing financial statements is to decide what objectives the bank is seeking. A fair evaluation of any bank's performance should start by evaluating whether it has been able to achieve the objectives its management and stockholders have chosen.

3.6.1 Measuring Profitability

The present study discusses two key dimensions of portfolio behavior: profitability and exposure to risk. Profitability is clearly the more important, because satisfactory profits preserve the bank's capital, providing it with a base for future survival and growth. Among the most important ratio measures of bank profitability used today are the following:

(1) Return on assets (ROA) = $\frac{\text{Net income after taxes}}{\text{Total assets}}$,

(2) Return on equity (ROE) = $\frac{\text{Net income after taxes}}{\text{Total equity}}$,

(3) Net interest margin (NIM) = $\frac{\text{(Interest income from loans and security investments} \\ \text{—Interest expenses on deposits and on other debt issued)}}{\text{total assets}}$,

(4) Net operating margin = $\frac{\text{(total operating revenues} - \text{total operating expenses)}}{\text{total assets}}$, and

(5) EPS = $\frac{\text{net income after taxes}}{\text{common equity shares outstanding}}$.

ROA is an indicator of managerial efficiency; it indicates how capably the management of the bank has been converting the institution's assets into net earnings. ROE, on the other hand, is a measure of the rate of return flowing to bank's shareholders. It approximates the net benefit that the shareholders have received from investing their capital in the bank.

The net operating margin and net interest margin (NIM) are *efficiency* measures as well as profitability measures, indicating how well management and staff have been able to keep the growth of revenues ahead of rising costs. The NIM measures how large a spread between interest revenues and interest costs which the management have been able to achieve over bank earning assets.

3.6.2 Measuring Risk in Banking

Bankers are mostly interested to achieve high profitability but at the same time they should pay more attention to the risks they accept as well. A volatile economy and problems with loan have led bankers to focus increased attention on how banking risk can be measured and kept under control[23]. Bankers are concerned with some main types of risk. These are as follows:

(A) Credit Risk. The probability that some of the bank's assets, especially loans, will decline in value and perhaps become worthless is known as credit risk. The most widely used indicators of bank credit risk are the following:

(i) The ratio of nonperforming assets to total loans,

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[23]. Brewer, Elijah, III, and Cheng Few Lee, "How The Market Judges Bank Risk", *Economic Perspectives*, Federal Reserve Bank of Chicago, November/December 1986, pp. 25-31.

(ii) The ratio of net charge-offs of loans to total loans,

(iii) The ratio of the annual provision for loan losses to total loans, and

(iv) The ratio of allowance for loan losses to total loans.

Nonperforming assets are income generating assets, including loans, that are past due for 90 days or more. *Charge-offs*, on the other hand, are loans that have been declared worthless by the bank and written off its books. The final two credit risk indicator ratio reveals the extent to which a bank is preparing for loan losses by building up its loan-loss reserves (allowance for loan losses) through annual charges against current income (the provision for loan losses).

Another popular and long-standing credit risk measure is:

(v) The ratio of total loans to total deposits

As this ratio grows, the regulatory community may become more concerned because loans are usually among the riskiest of all bank assets. A rise in bad loans relative to the amount of a bank's deposits creates greater risk for the depositors.

(B) Liquidity Risk. Bankers also concerned about the danger of not having sufficient cash and borrowing capacity to met deposit withdrawals, loan demand, and other cash needs. Faced with liquidity risk, a bank may be forced to borrow emergency fund at excessive rate to cover its immediate cash needs, reducing its earnings.

Useful measures of liquidity risk exposure are the following ratios:

(i) Net loans to total assets,

(ii) Deposit balances tot total assets, and

(iii) Liquid assets tot total assets.

Liquid assets include vault cash held by bank premises, deposits the bank holds at the central bank, deposits held with other banks to compensate them for clearing checks and other interbank services, and cash items (checks) in the process of collection.

(C) Earnings Risk. The risk of the bank's net income is known as earnings risk. Earnings of a bank may decline unexpectedly due to internal or external factors[24]. Among the most popular measures of bank earnings risk, the following are very important:

(i) Standard deviation (σ) or variance (σ^2) of after-tax net income, and

(ii) Standard deviation (σ) or variance (σ^2) of the bank's ROA and ROE.

The higher the standard deviation or variance of bank income, the more risky the bank earnings picture is.

(D) Solvency (or Default) Risk: Bankers must be directly concerned about risks to their institutions' long range survival, usually called solvency risk. If the bank takes on an excessive number of bad loans or if a large portion of its security portfolio declines in market value, generating serious capital losses when sold,

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[24]. Jill L. Wetmore and John R. Brick, "The Basis Risk Component of Commercial Bank Stock Returns", *Journal of Economics and Business*, Vol. 50, 1998, pp. 67-76.

then capital account, which is designed to absorb such losses, may be overwhelmed[25]. A bank's solvency or default risk can be measured as:

(i) The ratio of equity capital to total assets, and

(ii) The ratio of equity capital to risk assets.

Decline in equity funding relative to total assets indicates increased risk exposure for the bank's shareholders and debt holders. Risk assets consists mainly loans and securities. The second ratio to measure solvency risk reflects how well current bank capital covers potential losses from those assets most likely to decline in value.

3.7 Impact of Bank Size on Portfolio Performance

When the performance of one bank is compared to another, bank size—usually is measured by total assets or total deposits which becomes a critical factor. Key earnings and risk measures change dramatically as we move from the smallest banks to the largest banking firms. For example, the most profitable banks in terms of ROA tend to be in the medium-size ranges, while the largest banks often report somewhat lower ROAs. However, ROE usually reaches the highest level among billion-taka-plus-size banks.

On the other hand, middle-size banks display the most favorable net interest and net operating margins. In contrast, the largest banks generally report the highest non interest margins because they charge fees for so many of their services. In

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[25]. Eugenia D. Short, "Bank Problems and Financial Safety Nets", *Economic Review, Federal Reserve Bank of Dallas*, March 1987, pp. 17-28.

terms of balance sheet ratios, many of which reflect the various kinds of risk exposure that the bank face, the smallest banks usually report higher ratios of equity capital to assets, while the largest institutions usually have much thinner capital to asset ratios[26]. Some bank analysts argue that larger banks can get by with lower capital-to-asset ratio because they are more diversified across many different markets and have more risk-hedging tools at their disposal. Smaller banks appear to be more liquid, as reflected in their lower ratios of total loans to total deposits, because loans are often among a bank's least liquid asset. However, the biggest banks hold larger proportions of cash assets relative to total assets because they hold the deposits of many smaller banks. The biggest banks also appear to carry greater credit risk as revealed by their higher loan loss ratios.

3.8 Conclusion

Commercial banks perform all kinds of banking business and generally finance trade and commerce. None of the commercial banking functions can achieve its maximum potential unless its' portfolio investment is efficiently planned, executed and controlled. As every profit-seeking organization, a commercial bank also tries to have the highest profits by managing its portfolio. But for a successful and reliable activity and in a long-term perspective, it is more important to the management to assure bank's liquidity to fulfill its obligations every moment it may be necessary. And besides the mentioned two principles, it is of high importance for a bank to be safe, i.e. to minimize its risk. So, the successful management of a commercial bank fund requires careful consideration of three important objectives: liquidity, safety or solvency, and income.

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[26]. Jeffrey W. Gunther and Robert R. Moore, "Financial Statements and Reality: Do Troubled Banks Tell All?", *Economic and Financial Review, Federal Reserve Bank of Dallas*, Third Quarter, 2000, pp. 30-35.

So, the central problem of bank management is to reconcile the conflicting goals of solvency, liquidity and profits. The banks expect to make loans and manage other assets fruitfully by maintaining these conflicting goals. In such a context, the interdependence which exists among all various balance sheet items of the banks must be recognized if maximum benefits are to be obtained. As a result, balance sheet management is considered more appropriate and that entire balance sheet should be regarded as the portfolio for which planning to be undertaken. However, for measuring and evaluating behavior of portfolio, analyzing of financial statements is essential. Because, return (profitability) and risk (liquidity, earnings, credit, solvency) of a commercial bank can be measured by different components of income statement and balance sheet. The next chapter deals with the impact of portfolio behavior on the banks.

Chapter 4

Impact of Portfolio Behavior of Commercial Banks

4.1 Introduction

This chapter discusses portfolio behavior of commercial banks of Bangladesh. Commercial banks arrange their assets in such a way so that after maintaining required liquidity they can earn sufficient income and at the same time keep adequate capital to maintain their solvency. So, the chapter evaluates all three objectives of portfolio management namely liquidity, profitability and solvency in addition to credit risk of the sample banks. The evaluation was made in three parts. In part one, portfolio behavior of individual commercial bank was exhibited. In second part, the banks were classified into three groups based on their asset's (taking base year as 2006) size i.e. small, medium and large. Then the same discussion was made on three different sizes of banks. Sample commercial banks then again, were classified into two groups based on their ownership status i.e., private commercial banks (PCBs) and denationalized commercial banks (DCBs). Part three analyzed portfolio behavior of these two types of banks in the same manner.

Part A

Before starting evaluation of portfolio, a brief description of some common growth indicators of the sample banks was shown. The study preferred to provide assets, deposits, credits, and equity information of those banks to get a better picture on them at a glance. The study next described the major asset composition of the sample banks. How much of the total assets of the sample banks employed as earning assets during the examined period the study explained that next. Then the income and profitability of the commercial banks were discussed. Finally, liquidity, credit risk and solvency of the banks were calculated from 2000 to 2006.

4.2 Important Growth Indicators of Sample Commercial Banks

Assets, deposits, loans and equity were analyzed as common growth indicators of the commercial banks. The Table 4.1 demonstrates the average amounts of those indicators with maximum and minimum figures during the period of 2000-2006. Period growth (PG) of each characteristic was also provided to show performance of those indicators during last seven years. As is shown in the table, commercial banks of Bangladesh grew significantly in last seven years (from 2000 to 2006). The average assets of sample commercial banks grew by 139.08% by this time. During the same period, amount and growth of deposits, loans, and equity capital of commercial banks were also increased. Taking 2000 as base year, amount of average deposits, loans, and equity were increased by 210.08%, 175.36%, and 333.13% respectively at the end of FY2006.

4.2.1 Assets

In FY of 2000, the amount of average assets of sample banks was Taka 16751 million and it became Taka 40,048 million at the end of FY2006. However, ranking the sample banks based on their total assets, Rupali bank (RUP) achieved top position and Standard Bank Ltd (SBL) got the last position during the period. RUP made Taka 64807 million assets on an average. However, Bank Asia (BA) carried the highest period growth in creating assets (1333.73%) and IFIC bank suffered with lowest growth rate in its assets (36.58%).

Table 4.1
Important Growth Indicators of Sample Commercial Banks (Taka in million)

(PG=Period Growth)

Banks	Assets	PG (%)	Deposits	PG (%)	Loans	PG (%)	Equity	PG (%)
AB	32277	116.76	26647	153.54	19591	146.72	668	2535.71
BA	14219	1333.73	11437	1572.55	9965	1897.85	92	786.36
CITY	27892	175.72	23293	186.67	17500	208.97	1202	498.11
DBBL	22938	555.90	19872	555.38	13872	517.37	909	269.53
DHK	25726	313.38	22767	286.58	16246	528.79	1353	470.69
EBL	22615	118.80	17145	87.19	14144	219.47	2835	43.34
IFIC	29325	36.58	20709	72.65	20623	47.24	1305	51.53
MCT	21052	296.80	19051	274.53	13809	585.97	1161	545.56
MTBL	11880	972.31	9840	1229.99	8073	2988.37	919	786.05
NCC	20690	162.35	17129	165.04	15025	209.83	1896	28.85
NBL	36185	49.60	29266	70.86	23650	76.31	2029	129.43
ONE	12159	750.22	10617	793.38	8049	862.02	1029	266.91
PRMR	15103	998.16	13351	996.96	11422	904.76	989	381.07
PRME	29551	374.07	25909	389.92	20872	484.01	2046	331.28
PUB	45509	60.59	39141	50.74	28314	71.25	2555	194.41
RUP	64807	63.64	56869	4.01	39768	71.37	(1274)	-
SE	28575	368.15	16405	226.30	16560	360.93	1349	404.78
SBL	8742	622.10	7076	592.36	6012	1580.05	665	515.96
UBL	38279	43.91	32267	51.72	21976	12.81	1578	159.98
UCBL	21932	80.99	17665	98.26	13701	114.01	1386	166.16
MEAN	26432	139.08	20670	210.08	17010	175.36	1186	333.13
MAX	64807	1333.73	56869	1572.55	39768	2988.37	2835	2535.71
MIN	8742	36.58	7076	4.01	6012	12.81	(1274)	28.85

Source: Appendix-1, 2, 3 and 4.

4.2.2 Deposits

The average of deposits for the sample banks as shown in Table 4.1 is Taka 20670 million at the end of FY2006. However, RUP claimed top position again in collecting deposits during the study period. Seven years of average deposits of that bank exhibited Taka 56868.5 million. But the bank had a very low growth rate (4.01%) during the period under review probably because of the process of selling Rupali Bank to a foreign buyer. To rank the banks based on their total deposits, Uttara bank (UBL) was considered as number three, National bank ltd. (NBL) was number four, and AB bank (AB), Prime bank (PRME), and City bank (CT) were five, six, and seven respectively (as shown in Table 4.1).

BA possessed a very high PG of 1572.55 percent, but seven years of average deposit of this bank was only TK.11437.14 million. The PG was 1230 percent for Mutual Trust Bank Ltd. (MTBL) with average deposits of Taka 9840.14 million. Furthermore, the Table indicates that growth rates of Premier Bank (PMR), One bank (OBL), and Dutch Bangla Bank Ltd (DBBL) were 996.96%, 793.38%, and 555.38% respectively. It is important to note that the banks which collected more deposits during the reviewing period were belonged to first and second generation banks, while the banks that possessed high period growth were belonged to third generation banks.

4.2.3 Loans

As shown in this table, the average of total loan for the sample banks was Taka 17010 million at the end of FY2006. RUP claimed again, the number one position in providing loans as average total credits of that bank during the study time exhibited Taka 39768 million. Based on the average total loans of the listed banks in the table, the ranks of the other important banks were as follows: PUB was the second, NBL was the third, and UBL, PRME, and IFIC were of the fourth, the fifth, and the sixth respectively. SBL was the lowest one.

MTBL obtained the highest PG (2988.37%) in providing loan but UBL had the lowest PG (12.81%) in 2006 comparing with loans in 2000. However, a bank with highest growth rate of total loans does not always mean having high average of total loans. Because, MTBL provided Taka 8073 million only as loan to its customers during the period. However, it is clear from column (6) and (7) of Table 4.1 that loan growth during the period for the sample commercial banks was lagged behind the expansion of the customer deposits. The combined deposit of these banks was increased by 210.08%, while net loans rose by only 175.36% in 2006.

4.2.4 Equity

Equity refers to the amount of own funds available to support a bank's business and, therefore, bank capital acts as a safety net in the case of adverse developments. Equity includes preferred shares and common equity. Equity position of a bank reflects its financial strength in order to absorb risks and create confidence among depositors. It is also a strong indicator of financial soundness of a bank. In Bangladesh, the overall capital position of the banks improved in recent years.

According to column 8 of the table, average equity formation of the sample banks reached at Taka 1186 million at the end of FY2006. The amount of the same of PUB reached at Taka 2555 million at that time. On the other hand, RUP had the negative equity in FY2006. AB achieved the highest growth among the sample banks in its total shareholders equity (2535.71%) in year 2006 comparing with its owners equity in the year of 2000. Shareholders equity of NCC bank grew slowly (28.85%) when compared to other banks. EBL ranked top position among the sample banks based on their total shareholders equity. Accordingly, as mentioned in Table 4.1, BA ranked to be the last one.

4.3 Major Asset Compositions of Sample Commercial Banks (in Percentage)

Table 4.2 shows the major asset composition (in percentage) of the sample banks with their period growth. It is observed from the table that commercial banks of Bangladesh employed more funds in loans and advances (61.06%) as usual which contribute to lion's share of earnings. They were followed by liquid assets (17.02%) and investment (11.14%). The table further reveals that trend of loans and advances (LAD) and investment (INV) were on the increase and liquid assets (LQA) was on the decrease.

4.3.1 Loans and Advances (LAD)

Loans and advances claimed top position among the major assets of commercial banks of Bangladesh as usual. Average percentage of this major asset during the period of study was 61.06. However, among the sample banks, NCC obtained top position providing 71.5 percent asset as LAD from 2000 to 2006. On the other hand, EBL provided 50.44 percent only as LAD during the same time and ranked the last.

When the study goes to assess growth of LAD of the sample banks, it is found that the major asset grew by 20.87 percent during the period of study. However, among the banks, MTBL claimed top position in achieving 188.21 percent of growth in LAD from 2000 to 2006. On the other hand, UBL suffered negative growth (-21.55%) during the same time.

Table 4.2
Major Asset Composition of Sample Commercial Banks (in percentage)

(PG=Period Growth)

Banks	Liquid Asset	PG (%)	Investment	PG (%)	Loans	PG (%)
AB	18.96	-69.57	12.57	19.09	60.16	13.79
BA	12.13	-24.38	12.64	80.33	65.97	7.15
CITY	20.19	-52.33	11.33	43.62	61.29	22.68
DBBL	21.76	-21.35	11.34	20.56	60.31	-5.89
DHK	25.24	-69.98	9.89	81.43	60.11	52.04
EBL	20.57	-37.83	12.41	12.73	50.44	46.06
IFIC	14.00	-11.67	8.30	-20.33	60.21	7.94
MCT	25.70	-80.95	10.51	204.17	61.03	72.73
MTBL	16.14	-27.77	9.19	9.14	58.71	188.21
NCC	10.77	-30.54	14.33	-21.58	71.50	18.10
NBL	16.20	-17.45	10.59	45.24	64.99	17.88
ONE	19.29	-30.53	9.29	63.64	64.23	13.19
PRMR	8.40	27.55	9.09	-16.98	62.20	4.82
PRME	17.90	-51.11	10.93	8.40	67.73	23.17
PUB	18.26	-28.30	11.19	16.04	61.83	16.69
RUP	7.59	-16.51	10.70	13.64	51.41	-9.37
SE	12.17	-41.80	9.74	-2.56	57.20	10.61
SBL	24.40	-49.27	7.30	-2.41	62.79	132.61
UBL	13.74	56.12	20.40	108.91	58.03	-21.55
UCBL	20.35	-2.54	13.13	-3.61	61.82	4.22
MEAN	17.02	-47.05	11.14	23.59	61.06	20.87
MAX	25.70	56.12	20.40	204.17	71.50	188.21
MIN	7.59	-80.95	7.30	-21.58	50.44	-21.55

Source: Appendix- 3, 5 and 6.

4.3.2 Investments

Another major asset of the commercial bank is investment. The average investment size of the sample banks during the period was 11.14 percent of total assets although the amount of investment of SBL during the same time was 7.3 percent only. On the other hand, UBL employed a handsome amount (20.4%) of its total asset as investment. However, when the study considers PG, it was found that investment assets grew by 23.59 percent during the study period. And the maximum PG went in favor of Mercantile bank (MCT) (204.17%) whereas it was negative for the NCC bank (-21.58%).

4.3.3 Liquid Assets

After LAD, the study found liquid assets as the second major asset of the sample banks. Since the sample banks were very much interested to invest more on investment and LAD, it created enormous pressure on liquid assets. In result, the average liquid assets were decreased by 47.05 percent during the period of study. The maximum decrease was seen in MCT. RUP kept only 7.59 percent of total assets as liquid although the Dhaka bank maintained 25.7% as liquid asset.

4.4 Earning Assets of Sample Commercial Banks

It is clear from the Table 4.2 that the commercial banks of Bangladesh are interested to provide more funds in earnings generating assets keeping little assets for maintaining their liquidity requirements. In this context, the present study thinks to be useful to evaluate earning asset (EA) to total asset (TA) ratio of the sample banks (Table 4.3).

Table 4.3
Earning Assets of Sample Commercial Banks (in Ratios)

(PG=Period Growth)

Banks	EA/TA	PG (%)
AB	72.73	14.64
BA	80.86	13.16
CITY	72.61	25.84
DBBL	71.66	-2.21
DHK	70.00	55.89
EBL	74.96	40.00
IFIC	79.94	3.47
MCT	71.54	86.27
MTBL	69.43	133.73
NCC	85.83	11.03
NBL	75.57	21.27
ONE	73.51	19.65
PRMR	83.17	2.08
PRME	78.66	20.72
PUB	73.01	16.60
RUP	72.47	-6.09
SE	78.10	8.47
SBL	71.06	105.16
UBL	78.43	-5.30
UCBL	74.94	2.73
MEAN	75.42	21.28
MAX	85.83	133.73
MIN	69.43	-6.09

Source: Appendix- 3 and 5.

Earning assets for banking system consist of securities, shares, debentures, bonds, loans, advances and bills discounted and purchased.[102] Earning assets provide income to the banks to pay off interest to the depositors, meet operational expenses and remuneration to the owner for the capital supplied. On the other hand, non earning assets are necessary to maintain liquidity and for smooth running of the organization. Table 4.3 shows the position of earning assets as a ratio to total assets for the sample banks individually.

It is evident from the above table that earning asset on the average of commercial banks constituted 75.42 percent of total assets. It means that banks employed more than three-fourth of their assets for earnings generation. The highest ratio was recorded at 85.83% in favor of NCC and the lowest ratio (69.43%) was recorded by MTBL. But MTBL maintained the highest period growth (PG) in investing earning assets. On the other hand, the table shows negative growth for RUP. Other things remaining same, profitability is likely to be favorably effected with higher ratio of earning assets to total assets which is explored in the table.

4.5 Earnings of Sample Commercial Banks

For commercial banks, lion's share of income is derived from interest on loans and investments. After maintaining liquidity, banks try to use their assets more profitably. In such a context, an attempt is made here to evaluate the impact of asset structure on earnings and profitability of sample commercial banks (Table 4.4).

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[102] . Bhatia, Ramesh C., *Banking Structure and Performance* (Bombay: National Institute of bank Management, 1992), p. 35.

Table 4.4
Earnings of Sample Commercial Banks

(PG=Period Growth)

Banks	NII	PG (%)	PBT	PG (%)
AB	1.37	212.50	0.50	825.00
BA	2.11	3.86	2.35	734.21
CITY	2.24	145.63	1.11	30.77
DBBL	1.85	58.02	2.06	-43.10
DHK	2.01	15.61	2.26	-10.45
EBL	2.93	-19.75	3.25	1.07
IFIC	1.53	90.68	0.71	186.44
MCT	2.21	66.67	3.00	54.63
MTBL	2.19	25.52	2.97	28.08
NCC	2.32	69.89	2.22	121.92
NBL	1.75	77.03	1.31	111.21
ONE	1.82	20.28	2.77	-23.35
PRMR	2.14	27.81	2.76	6.61
PRME	2.91	-10.87	3.48	-30.07
PUB	2.52	63.56	1.55	107.30
RUP	0.46	-220.51	0.41	63.64
SE	2.13	-2.02	2.39	22.04
SBL	3.35	-16.24	3.21	74.89
UBL	1.71	9.00	1.73	69.91
UCBL	2.62	-5.66	1.53	793.33
MEAN	2.11	28.09	2.08	36.47
MAX	3.35	212.50	3.48	825.00
MIN	0.46	-220.51	0.41	-43.10

Source: Appendix-7 and 8.

Table shows the earnings of sample banks with their period growth. The study used net interest income (NII) and profit before tax (PBT) in comparison to total assets as the tools to measure earnings of the banks. Because, assets' compositions of commercial banks have direct impact on earnings and profitability. Earlier, the growth of earning assets of the majority banks showed positive and upward trend so it reflected in interest income of the commercial banks.

4.5.1 Net Interest Income (NII)

Average net interest income (NII) of sample banks in comparison to total assets (TA) increased by 28.09 percent in last seven years to become 2.11 percent. A comparison of net interest income to total assets of sample banks shows that during the period of study, the performance of SBL was better than other sample banks. Rupali bank performed poorly as its average net interest earnings was only 0.46%. During the study period, average NII/TA of Rupali bank decreased by 220.51 percent. However period growth of AB (taking 2000 as base year) in terms of NII/TA outperformed the other commercial banks in the examined period.

4.5.2 Profit before Tax (PBT)

Profit before tax of sample commercial banks also showed (Table-4.4) positive and consistently upward trend during the study period. Average profit before tax during the same time became 3.48 percent of total assets. It grew by 36.47 percent during the period. PBT performance of Prime bank was much better than other sample banks. And Rupali bank showed worst performance again, in making sufficient profit. However, when the study calculated PG of PBT, it was found that AB outperformed the other banks by huge margins. On the other hand, PBT of DBBL has been decreased by 43.1 percent during the examined period.

4.6 Profitability of Sample Commercial Banks

For earning profit, the banks add value to inputs and deliver outputs. A straightforward measure of bank profitability is the net after-tax profit per unit of assets, or return on assets (ROA). As it is known, this measure contains two elements, efficiency (total assets turnover), and effectiveness (profit margin). It shows how well the bank is being managed, by conveying how much profit the bank earns per unit of assets. It is important for the shareholders to know the return on their invested equity in a bank. A useful summery of this information is provided by net after-tax profit per unit of bank equity capital, return on equity (ROE). However, after ROA and ROE, financial analysts now consider ROD (return on deposits) as another measure of bank profitability performance. It is calculated through dividing net profits by total deposits. This ratio reflects the bank management's ability to utilize the customers' deposits in order to generate profits. The summary of ROA, ROE and ROD ratios with their PGs during the period of 2000-2006 for each sample bank are presented in Table 4.5.

4.6.1 Return on Assets (ROA)

As shown in the table, average ROA of commercial banks increased by 38.32 percent. While the ratio of ROA to total assets of the sample banks in FY2000 was 0.88 percent, it became 1.08 percent at the end of FY2006. In order to rank the banks based on this ratio, Prime bank was the first, it had an average of ROA of 2.08%. The second position was for Standard Bank Ltd. (SBL) with ROA equals to 1.65%, and the last position belonged to Rupali bank with a negative growth (-137.38%). On the other hand, UCBL had highest period growth (1545.75%) in ROA.

Table 4.5
Profitability of Sample Commercial Banks

(PG=Period Growth)

BANKS	ROA	PG (%)	ROE	PG (%)	ROD	PG (%)
AB	0.54	56.32	12.05	15.28	0.66	33.65
BA	1.37	439.25	21.97	771.43	1.70	362.25
CITY	0.62	29.92	14.13	-39.87	0.74	24.95
DBBL	1.13	-55.49	31.60	-41.42	1.31	-55.46
DHK	1.34	-18.90	28.38	-41.24	1.50	-13.28
EBL	1.34	-18.90	19.32	-28.93	2.56	-26.13
IFIC	0.45	18.45	8.62	112.24	0.64	-6.30
MCT	1.34	28.35	27.97	-21.09	1.47	35.98
MTBL	1.48	430.67	20.07	542.18	1.81	327.86
NCC	1.14	88.23	21.84	5.65	1.39	86.32
NBL	0.65	47.99	11.70	-3.49	0.80	29.58
ONE	1.25	98.96	20.54	-17.07	1.43	95.77
PRMR	1.56	-25.65	26.09	12.77	1.88	-46.61
PRME	2.08	-38.36	28.92	-32.25	2.40	-40.36
PUB	0.88	62.60	16.72	-8.88	1.06	37.89
RUP	0.13	-137.38	(8.86)	-75.46	0.56	-37.75
SE	1.16	-61.48	26.03	-41.57	1.72	-47.74
SBL	1.65	111.94	17.51	104.54	2.06	121.05
UBL	0.64	-23.10	17.15	-57.43	0.78	-27.06
UCBL	0.71	1545.75	17.67	103.13	2.21	119.49
MEAN	1.08	38.32	19.33	0.76	1.43	23.38
MAX	2.08	1545.75	31.60	771.43	2.56	362.25
MIN	0.13	-137.38	8.62	-57.43	0.56	-55.46

Source: Appendix-1, 2, 4 and 9.

4.6.2 Return on Equity (ROE)

The return on equity (ROE) is considered to be one of the profitability performance ratios. The ROE is net profit after taxes divided by total owners' equity. It reflects the bank management's ability to generate net profits from using the owners' equity as one of the financial sources. But the average ROE of the sample banks increased by 0.76% only during the study. The average value of this ratio for the banks remained at 19.33 at the end of FY2006 while the same was 19.19 in FY2000. However, the study observed a higher value for DBBL bank (31.60) when compared with other sample banks. However, the highest PG (771.43%) of ROE went in favor of Bank Asia while the same was negative (-57.43%) for Uttara bank.

4.6.3 Returns on Deposits (ROD)

The Table 4.5 further shows that the returns on deposits (ROD) ratios of majority sample banks were positive and strong too. It is clearly shown that overall ROD ratios were fluctuated throughout the period for all banks. The average value of ROD of the sample banks as shown in the table was 1.43 which was increased by 23.38 percent during the study period. However, EBL achieved the highest amount of ROD (2.56) while the same was only 0.56% for Rupali bank during the period. It is important to note that almost half of the sample banks failed to retain their ROD at FY2000 level as their PG showed negative results. Comparing period growth with other banks, Bank Asia got the first position, and DBBL became the last with average of (-) 55.46%.

Strong earnings and profitability profiles reflect the banks' capacity to absorb losses by building the capital base, and through financing expansion programs and paying adequate dividends to its shareholders.

4.7 Liquidity of Sample Commercial Banks

From the above tables, the study reveals that as every profit-seeking organization, a bank is also trying to have the highest profits by managing its portfolio. But for a successful and reliable activity and in a long-term perspective, the profits are not enough for a commercial bank, as it is even more important to assure bank's liquidity to fulfill its obligations every moment it may be necessary.

The primary function of a commercial bank is to receive deposit and to lend money. Simultaneously, its primary responsibility is to maintain adequate liquidity. If it is not ensured adequately, it may face obvious difficulties. On the other hand, maintaining liquidity may retard earning.

4.7.1 Deposit to Total Assets (D/TA)

Liquidity of a bank can be measured in various ways. Deposit position of a bank in relation to its total assets can be used to measure liquidity. If any bank is able to collect more deposit it would not face any difficulty in meeting its liquidity demand. The Table 4.6 and column 6 shows that the average deposit collection of sample banks obtained about 83 percent of their total assets with a modest period growth of 6.5%. MCT collected the maximum deposit and both IFIC and EBL collected the minimum deposit of their total assets. Growth rate of D/TA was positive for most sample banks except for DHK, EBL, MCT and SBL. Commercial banks deposits are at present subject to a statutory liquidity requirement (SLR) of 18 percent inclusive of average 5 percent (at least 4 percent in any day) cash reserve requirement (CRR) on bi-weekly basis. The CRR is to be kept with the Bangladesh Bank and the remainder as qualifying secure assets under the SLR, either in cash or in government securities. In this connection, it is important to compare liquidity reserve that need to maintain by the sample bank on the basis of deposits as per rule.

4.7.2 Liquid Assets to Deposits (LQ/D)

Liquid asset consist of primary reserve and secondary reserve. Primary reserves are those non earning assets of commercial banks made up of cash and its equivalent. The term includes statutory, excess and working reserves. Primary reserves specifically include cash in the vault, the deposits carried by member banks, cash items, such as cheques held on in the process of collection and deposits held in other banks, which are usually referred to as correspondent bank balances. The secondary reserve of a commercial bank consists of its highly liquid earning assets which may be converted into cash without delay or appreciable loss.

Table-4.6 (column 2) reveals a continuous and tremendous downtrend in liquid assets at all sample commercial banks. It is evident from the table that the actual liquidity the sample banks maintain is less than their requirement. The average liquid asset to deposit ratio showed 22.61 percent during the period, it suffered a significant downfall (- 51.89%) in 7 years. EBL maintained the highest L/D ratio (31.26%). The ratios maintained by Bank Asia, NCC, PRMR, RUP and UBL were less than the required value that is prescribed by the central bank, Bangladesh Bank. The liquid assets against deposits have been decreased continuously for most banks except PRMR and UBL. More importantly, RUP maintained only 8.93% liquid assets of their deposits. This is not desirable and in case of emergency, banks will have to borrow money which may involve extra cost that adversely affecting profit and confidence of the public.

Table 4.6
Liquidity of Sample Commercial Banks (in percentage)

(PG=Period Growth)

BANKS	LQ/D	PG (%)	C/D	PG (%)	D/TA	PG (%)	R/D	PG (%)
AB	23.88	-74.00	73.84	-2.70	81.86	17.33	89.19	-1.89
BA	17.43	-59.42	82.97	19.45	79.57	16.90	99.00	22.52
CITY	24.39	-54.18	74.56	8.07	83.14	3.75	88.14	12.00
DBBL	25.13	-21.64	69.59	-5.84	86.57	0.00	82.70	-2.26
DHK	28.01	-67.95	67.63	62.68	89.14	-6.52	78.82	66.75
EBL	31.26	-0.66	91.59	27.62	70.33	-4.00	114.84	29.32
IFIC	23.81	-30.13	100.69	-14.69	70.17	25.40	114.67	-18.21
MCT	27.80	-79.74	88.36	-11.52	91.29	-5.26	78.84	97.23
MTBL	23.03	-61.89	71.93	132.23	80.43	25.00	83.14	170.55
NCC	13.01	-31.06	86.62	16.91	82.57	1.18	104.17	9.80
NBL	20.26	-27.76	80.74	3.18	80.43	14.67	93.92	6.21
ONE	25.63	-58.17	75.94	18.97	86.86	2.33	84.90	21.63
PRMR	11.07	541.28	85.56	-8.38	85.17	39.06	98.13	-9.93
PRME	20.68	-52.60	77.71	18.84	87.14	3.45	90.37	16.74
PUB	20.45	-46.75	74.92	13.61	83.00	0.00	87.75	8.43
RUP	8.93	-46.17	73.69	-2.86	84.50	3.61	97.00	-0.42
SE	24.44	-26.14	82.45	-4.52	79.00	13.70	96.89	-8.53
SBL	30.62	-75.59	79.30	142.67	79.86	-4.55	88.70	173.97
UBL	16.31	48.27	69.45	-25.66	84.14	4.82	93.58	-10.18
UCBL	25.52	-32.13	77.24	7.95	80.00	8.97	93.79	0.26
MEAN	22.61	-51.88	78.83	14.00	82.74	6.50	91.69	20.70
MAX	31.26	541.28	100.69	142.67	91.29	39.06	114.84	173.97
MIN	8.93	-79.74	67.63	-25.66	70.17	-6.52	78.82	-18.21

Source: Appendix-1, 2, 3, 5 and 6.

4.7.3 Credit to Deposit Ratio (C/D)

Another way to measure liquidity of commercial banks is the supply of credit against their deposits. A high credit-deposit ratio is considered a positive index of performance of banking system because the credit need of the customers is best served through intermediating of the banks. It is evident from the Table-4.6 (column 6) that the credit deposit ratio for sample commercial banks was about 78.83% i.e., these banks provided 78.83% as loan against their deposit. This means that 21.17% of deposit was available for other activities such as investment in government securities, maintaining minimum reserve for their liquidity requirement etc.

IFIC bank had the maximum C/D ratio while DHK had the minimum. This means that IFIC took more risk providing more credit against their deposit and kept very meager amount for meeting other activities mentioned earlier. On the other hand, DHK kept more money as liquid as compared to other banks. However, during the period of study, SBL bank achieved the highest growth in C/D ratio while the same was negative for UBL.

The fluctuations in the credit-deposit ratio from year to year may be due to the variation in amounts relevant to the types of deposit and the requirement for maintenance of primary and secondary reserves corresponding to the variation in deposit.

4.7.4 Risk-weighted Asset to Deposit Ratio (R/D)

Another way to measure risk of liquidity is the risk-weighted asset (loan and advances plus investment) to deposit ratio. Table-4.6 (column 8) shows that average risk-weighted assets of sample commercial banks were almost 92% of their deposit balance. Dhaka bank invested minimum among the sample banks in risk-weighted assets. But, the situation was more aggressive for EBL and IFIC. They invested more than their deposit balance in loans and advances and investment assets during the study period. This means that they had none or negative balance for maintaining liquidity requirement.

4.8 Credit Risk of Commercial Banks

Since the commercial banks have a tendency to provide more fund as loans and advances they involve in immense credit risk also. At the stage, the study prefers to estimate credit risk of the sample banks. Return figures can easily be derived from balance sheet data but it is by far less clear how the risk of a bank's loan portfolio should be estimated. The non-performing loan ratio (NPL) or the loan loss provision ratio (LLP) ratios are used in the study as a measure for the bank's risk in the loan portfolio.

4.8.1 Non-Performing Loans (NPL) in Bangladesh

The most important indicator intended to identify problems with asset quality in the loan portfolio is the percentage of non -performing loans (NPLs) to total advances. Table-4.7 (column 2) shows that the ratios of NPL to total loans of all sample banks have been shown an encouraging trend since 2000. The negative growth was shown in the average ratio of NPL to total loans for most sample banks during the examined period. Sample commercial banks had NPLs to total loans of 6.82 percent and it declined by 28.79 percent in last seven years. However, average NPL of IFIC in the study period was still 27.31 % whereas it was only 0.15% in case of MTBL. The decline in NPL ratios in the recent years can be attributed partly to some progress in recovery of long outstanding loans and partly to write-off of loans classified as 'bad' or 'loss'.

The average ratios of NPL/TL of BA, DBBL, DHK, MCT, OBL, PRMR, PRIME, SE and SBL banks over the past seven years were not similar to other banks. The amount of NPL during the period of these banks was less than 3%. On the other hand, IFIC, RUP, NBL, AB, UBL, UCBL had been suffering for their bad loans since 2000. It indicated that borrowers of these banks had difficulties in paying their payments. It also indicated that these banks' future charge-offs may be the highest among the groups.

The causes of non-performing loans vary over time and over countries. Among other reasons, abrupt changes in economic conditions and prices affect the performance of economic entities having impact on the amounts of non-performing loans in a country. Moreover, inefficient bank management, poor supervision, overoptimistic assessments of credit worthiness, and moral hazard resulting from generous government guarantees or the expectation of assured bailouts can result in accumulation of non-performing loans. After independence, Bangladesh accumulated huge amount of non-performing loans due to various reasons, e.g., politically motivated credit disbursement; and build up of bad loans in SOEs due to corruption, inefficient management, and low technical skills.

Besides, the persistence of relatively high interest rates contributed to increase in nonperforming loans in the country.

Table 4.7
Credit Risk of Sample Commercial Banks

(PG=Period Growth)

Banks	NPL	PG (%)	LLP	PG (%)
AB	15.41	-82.67	0.81	103.57
BA	1.66	7466.67	0.74	113.64
CITY	7.79	-31.49	1.88	123.77
DBBL	1.00	300.00	1.02	34.29
DHK	1.92	-4.65	0.86	-35.11
EBL	9.03	-71.84	0.67	-20.01
IFIC	27.31	5.73	1.52	33.33
MCT	2.38	37800	1.34	22000
MTBL	0.15	-	0.82	-49.00
NCC	8.21	-54.17	0.90	-57.94
NBL	16.90	-79.16	1.96	-91.55
ONE	1.49	-6.49	0.88	-59.69
PRMR	1.89	667.19	1.32	-22.82
PRME	1.34	-44.97	1.02	-10.31
PUB	13.43	-56.04	1.13	-81.31
RUP	21.93	-44.15	0.71	-53.93
SE	3.19	48.14	0.95	73.91
SBL	0.51	9700	0.36	25.00
UBL	15.60	-6.87	1.45	287.80
UCBL	14.73	-83.46	1.86	-40.56
MEAN	6.82	-28.79	1.18	-23.91
MAX	27.31	37800	1.96	22000
MIN	0.15	-83.46	0.36	-91.55

Source: Appendix-10 and 11.

4.8.2 Loan Loss Provision (LLP) of Commercial Banks

The other way to measure bank credit risk is the ratio of loan loss provisions to total loans. LLP simply measures actual provisioning for bad debts. It is defined as the ratio of a bank's loan loss reserve over its total lending. The loan loss reserves comprise specific allowances for bad debts, unidentified loss reserves and provisions for bad debts. The study witnesses sign of improvement in LLP against bad loans for all sample banks. Table-4.7 (column 4) shows that the average LLP ratio of the sample banks during the period was 1.18 percent. But important thing is this ratio had a declining trend. LLP declined by 23.91 percent in seven years. NBL maintained 1.96 percent of its total loan amount as LLP. However, SBL showed better performance during the study period in keeping LLP. Among the other sample banks, CT, IFIC, UBL, UCBL maintained comparatively larger amount for LLP although they also tried to come out from the worse situation.

4.9 Solvency of Commercial Banks

Capital adequacy focuses on the total position of bank capital and protects the depositors from the potential shocks of losses that a bank might incur. It helps absorbing major financial risks like credit risk, market risk, foreign exchange risk, interest rate risk and risk involved in off-balance sheet operations. Banks in Bangladesh have to maintain a minimum Capital Adequacy Ratio (CAR) of not less than 9.0 percent of their risk-weighted assets (with at least 4.5 percent in core capital) or Taka 1.00 billion, whichever is higher.

Table 4.8
Capital Adequacy Ratio of Sample Commercial Banks

(PG=Period Growth)

Banks	CAR	PG (%)
AB	9.29	-6.67
BA	9.86	-32.48
CITY	7.44	-1.88
DBBL	9.56	24.84
DHK	9.82	-5.42
EBL	11.06	-25.69
IFIC	5.12	29.72
MCT	10.04	-0.37
MTBL	13.69	*-75.39*
NCC	7.30	7.54
NBL	7.22	26.45
ONE	10.13	40.48
PRMR	10.04	-43.54
PRME	12.52	-34.45
PUB	7.19	80.14
RUP	(2.15)	-38.89
SE	6.72	-1.95
SBL	16.39	-53.64
UBL	5.19	91.08
UCBL	6.35	51.11
MEAN	9.07	-31.96
MAX	16.39	91.08
MIN	5.12	-75.39

Source: Appendix-3 and 4

Minimum capital adequacy ratios have been designed to ensure banks can absorb a reasonable level of losses before becoming insolvent. As it is a ratio of solvency, the higher the capital adequacy ratios a bank has, the greater the level of unexpected losses it can absorb before becoming insolvent. Table 4.8 shows that almost half of the sample banks were not maintaining the required CAR. Although the sample commercial banks had an average CAR of 9.07%, but City, IFIC, NCC, NBL, PUB, SE, UBL and UCBL were far away from the required CAR. And what was annoying for the banks that risk-weighted asset increased alarmingly as compared to their capital for all sample of banks. The study witnessed negative growth in CAR during the examined period.

4.10 Observation

It is clear from the above discussion that commercial banks of Bangladesh grew significantly in last seven years from 2000 to 2006. During the same period, amount and growth of assets, deposits, loans, and equity capital of commercial banks also increased. It was further observed from the above discussion that commercial banks of Bangladesh employed more of their funds in loans and advances which were followed by liquid assets and investment. The study further revealed that trend of loans and advances (LAD) and investment (INV) was on the increase and liquid assets (LQA) was on the decrease. It is seen that the largest part of all sizes of banks' assets consumes by loans and advances. It is also evident from the study that average earning asset of the commercial banks constituted more than three-fourth of total assets. Earnings and profit of the sample banks measured by NII and PBT showed positive and consistently upward trend during the study period. The study further shows that average ROA, ROE, and ROD of commercial banks increased during the study period. Liquidity performance was not good enough as the study revealed a continuous and tremendous downtrend in liquid assets of the sample banks. A high credit-deposit and risk-weighted assets ratio along with a modest growth in deposit collection brought the sample commercial banks in danger.

Among the sample banks, Rupali bank achieved highest growth in assets building, collecting maximum deposits, provided maximum loans during the study period, but at the same time its equity growth showed negative. Earning and profitability performance of this bank according to study was awful. The bank also failed to maintain minimum liquidity and solvency ratios. On the contrary, NCC obtained top position in providing its large portion of asset as LAD from 2000 to 2006. The highest earning asset was also recorded in favor of NCC. The study found IFIC bank as one of the risky banks as the bank conceded highest amount of NPL during the period of study. However, Standard Bank, one of the smallest banks, achieved highest NII although it had a very modest asset size, it failed to attract sufficient deposits and accordingly provided a small amount of loan to its' customers. On the other hand, highest PBT and ROA went in favor of Prime Bank. Maximum ROE and ROD were claimed by DBBL and EBL respectively. EBL, at the same time, maintained the highest L/D ratio also. The average NPL of MTBL during the study period was only 0.15 percent. In contrast, LLP was lowest of SBL. For maintaining minimum CAR, the study found MTBL as leader among the sample banks.

Part B

The study continues the same analysis by splitting the sample commercial banks in large, medium and small size in terms of their assets based on data of 2006. Common growth indicators, asset compositions and their impact on profitability, liquidity, and solvency of different sizes of banks are analyzed in the following sections. So, this part of the chapter can be considered as a comparative analysis of portfolio behavior between different sizes of banks.

4.11 Important Growth Indicators of Different Sizes of Commercial Banks

Table-4.9 illustrates common growth indicators of the commercial banks of different sizes with their period growth.

Table 4.9
Important Growth Indicators of Different Sizes Banks

(PG=Period Growth)

Banks	Asset	PG (%)	Deposit	PG (%)	Loans	PG (%)	Equity	PG (%)
SCBs	17662	194.53	18759	239.72	12005	279.09	852	794.32
MCBs	30550	133.01	25640	149.03	18806	148.03	1290	303.08
LCBs	41869	116.08	30944	424.09	27417	173.03	1788	241.31

Source: Appendix-1, 2, 3 and 4.

Note: SCBs=Small Commercial Banks (Less than Taka 40 million); MCBs=Medium-sized commercial Banks (Greater than Taka 40 million but Less than Taka 50 million); LCBs= Large Commercial Banks (Over Taka 50 million).

4.11.1 Assets

Although their asset size is large, it is evident from the study that growth of asset building of the large commercial banks' (LCBs) has been the lowest (116.08%) of the three groups of banks. On the other hand, during the same period small commercial banks (SCBs) achieved the highest growth in building their total assets (194.53%) although they are small in asset size.

4.11.2 Deposit

At the end of FY2006, the total deposits of LCBs rose to TK. 51700 million. More deposit helps large banks to maintain sufficient liquidity, to provide more loans to their clients and in result earn more profit for them. It is further revealed that the maximum deposit growth was shown (424.09%) in favor of LCBs and the lowest growth (149.03%) went to medium commercial banks (MCBs) (Table 4.9).

4.11.3 Loans

As shown in this table, MCBs had the lowest loan growth during the study period as compared with other sizes of banks. It is further clear from the table that SCBs had the highest growth (279.09%) in providing loans. However, the bank with highest growth rate of total loans does not always mean having high average of total loans. Providing more loan means earn more income but at the same time the banks have less fund available for maintaining their liquidity requirement.

4.11.4 Equity

Equity position of a bank reflects its financial strength in order to absorb risks and create confidence among depositors. It is also a strong indicator of financial soundness of a bank. In Bangladesh, the overall equity position of the banks improved in recent years. Overall capital of SCBs, MCBs and LCBs grew by 794.32%, 303.08%, and 241.31% in FY 2006 from 2000. Among the different groups of banks, equity position of SCBs stood at Tk. 18.08 billion, MCBs at Tk. 24.21 billion, and LCBs at Tk. 41.94 billion at the end of FY2006 (see Appendix)

So the position of SCBs was much better than other sizes of banks. SCBs achieved highest growth in building total assets, provided maximum credits, and they had the highest growth in maintaining equity position also. LCBs took the leading position in collecting deposits but during the period of study their growth was lowest among the bank groups in maintaining equity position. However, the study shows poor performance of MCBs among the three different sizes of banks. Their position was last in collecting deposits and providing credit. MCBs' position was slightly better than LCBs in asset growth and equity growth.

4.12 Major Asset Compositions in Different Sizes of the Commercial Banks

Table-4.10. shows major asset composition of different sizes of the commercial banks in Bangladesh.

4.12.1 Loans and Advances

It is observed from the table that the largest part of all sizes of banks' assets was consumed by loans and advances. However, SCBs surpassed MCBs and LCBs in providing their assets to loans and advances which contributed to lion's share of earnings. They had the highest PG also. MCBs placed last position among the groups of banks. Also they achieved lowest growth in providing loans and advances during the period.

Table 4.10
Major Asset Composition of Different Sizes of the Banks (in percentage)

(PG=Period Growth)

Banks	Liquid	PG (%)	Investment	PG (%)	Loan	PG (%)
SCBs	18.68	-62.33	11.39	12.75	64.77	45.54
MCBs	19.35	-46.62	12.69	51.06	60.81	10.05
LCBs	15.71	-36.48	11.73	15.31	63.42	17.42

Source: Appendix-3, 5 and 6.

4.12.2 Investment

After loans and advances, it is observed that all types of commercial banks provided a significant portion of their assets in another interest earning assets-investment. In this case, MCBs employed more fund to government and other first class securities as compared to other sizes of the banks. MCBs also the enjoyed highest PG (51.06%) in investment (Table 4.10).

4.12.3 Liquid Assets

Liquid assets decreased in all categories of commercial banks during the period of study. Of the three groups, SCBs suffered worst declining (62.33%) in liquid assets. On the other hand, MCBs occupied first position in maintaining liquid assets (Table 4.10).

4.12.4 Earning Assets of Different Sizes of the Commercial Banks

From the above Table 4.10, it is clear that commercial banks of Bangladesh irrespective of group had a tendency to invest more funds in earning assets. SCBs captured first position among the different bank groups in spending more funds

(76.52%) to earning assets. PG during 2000-2006 also went in favor of SCBs group (30.19%). Allocating more fund in earning assets means more income for the banks. The following section discusses earnings of different group of banks.

Table 4.11
Earning Assets of Different Sizes of the Commercial Banks (in Ratio)

(PG=Period Growth)

Banks	EA/TA	PG (%)
SCBs	76.52	30.19
MCBs	73.50	15.71
LCBs	73.63	20.14

Source: Appendix-3 and 5.

4.13 Earnings of Different Sizes of the Commercial Banks

Table 4.12 justifies SCBs' allocation of more funds in earning assets because they earned maximum net interest income (NII) as well as profit before tax (PBT) as compared to other bank groups. In both cases, MCBs performed poorly although they had a better PG over LCBs (Table 4.12).

Table 4.12
Earnings of Different Sizes of the Commercial Banks

(PG=Period Growth)

Banks	NII	PG (%)	PBT	PG (%)
SCBs	2.32	15.32	2.48	54.30
MCBs	1.82	59.12	1.49	20.05
LCBs	2.01	30.65	1.96	11.32

Source: Appendix-7 and 8.

4.14 Profitability of Different Sizes of the Commercial Banks

Table 4.13 shows the profitability of different bank groups with their PG. MCBs disappointed again to their managements, shareholders and depositors as this group of bank went down behind the other groups in generating returns for them. LCBs also demonstrated a decreasing trend in ROA and ROD during the examined period. However, they captured better position in case of ROE and ROD among the groups. But, maximum ROA went in favor of small banks' (1.24%) group with highest PG of 105.1% (Table 4.13).

Table 4.13
Profitability of Different Sizes of the Commercial Banks

(PG=Period Growth)

Banks	ROA	PG (%)	ROE	PG (%)	ROD	PG (%)
SCBs	1.24	105.10	20.46	88.18	1.65	101.32
MCBs	0.82	-9.81	18.10	-34.48	0.96	-12.25
LCBs	1.10	10.81	24.35	-35.16	1.72	-30.20

Source: Appendix-1, 2, 4 and 9.

4.15 Liquidity of Different Sizes of the Commercial Banks

Allocating more funds in earning assets, creates liquidity shortage for all groups of banks. According to Table, LCBs maintained only 20.53% as average of liquid asset which was decreased alarmingly by 58.02 percent in last seven years. Probably, they took more risk holding less liquid assets because large banks had a good growth of deposit collection. MCBs had more liquid assets (23%) because they provided less credit (72.64%) against their deposits collection (84.22%). Liquidity position of SCBs seemed worst because their average liquid asset holdings decreased awfully by 53.54 percent from 2000 to 2006. In addition to that they provided more credit (83.05%) to their customers as compared to other bank groups. But because of their small size they failed to collect more funds from the depositors (80.85%). So, liquidity position of SCBs was in danger.

Table 4.14
Liquidity of Different Sizes of the Commercial Banks

(PG=Period Growth)

Banks	LQ/D	PG (%)	C/D	PG (%)	D/TA	PG (%)
SCBs	22.56	-53.54	83.05	22.59	80.85	6.31
MCBs	23.00	-49.11	72.64	2.59	84.22	5.08
LCBs	20.53	-58.02	78.01	8.89	83.65	8.22

Source: Appendix-1, 2, 3 and 6.

4.16 Credit Risk of Different Group of the Commercial Banks

At this stage, the study wants to analyze credit risk of the commercial banks of different sizes. The study earlier used NPL and LLP to measure credit risk of the banks. It is seen that overall credit risk of all groups of banks was reduced during the study period. Table 4.15 shows that LCBs improved their risky position as compared to other bank groups in both cases in the last seven years. During the period from 2000 to 2006, NPL of LCBs was reduced by 63.06% and at present their average NPL became to 4.90. Amount of provision against loan losses of this group was reduced by 34.85% during the period. The result reflected in average LLP which appeared less than 1 percent during the same time. Among the other groups of banks, MCBs performed poorly to reduce their credit risk in seven years as their position appears unpleasant in both the cases (Table 4.15).

Table 4.15
Credit Risk of Different Group of the Commercial Banks

(PG=Period Growth)

Banks	NPL	PG (%)	P/L	PG (%)
SCBs	6.51	-55.10	1.03	-8.35
MCBs	8.87	-28.30	1.35	-10.65
LCBs	4.90	-63.06	0.96	-34.85

Source: Appendix-10 and 11.

4.17 Solvency of Different Group of Commercial Banks

For testing solvency of different bank groups, the study again used the capital adequacy ratio as it used the ratio earlier to test the solvency of commercial banks. From the Table 4.16, it is seen that in all groups of banks PG of CAR declined during the study period although SCBs and LCBs maintained a minimum CAR as it is instructed by Bangladesh bank. But MCBs were away from that point. SCBs ranked top for keeping adequate capital against their risk weighted asset. But their average CAR reduced by about 55% during the examined period (Table 4.16).

Table 4.16
Capital Adequacy Ratio of Different Group of the Commercial Banks

(PG=Period Growth)

Banks	CAR	PG (%)
SCBs	10.33	-54.95
MCBs	8.72	-18.88
LCBs	9.24	-8.79

Source: Appendix-3 and 4.

4.18 Observations

From the above discussion, it is clear that all groups of commercial banks had a good growth in asset building, deposit mobilizing, loan providing, and equity creating activities. However, the position of SCBs was much better as compared to other sizes of banks. SCBs achieved the highest growth in building total assets, provided maximum credits, and they have the highest growth in maintaining equity position also. LCBs took the leading position in collecting deposits only. It is common that the largest part of all sizes of banks' assets consumes by loans and advances. However, SCBs surpassed MCBs and LCBs in providing a large amount of their assets to loans and advances. After loans and advances, all types of commercial banks provided a significant portion of their assets in another interest earning assets- investment. On the other hand, liquid assets decreased in all categories of commercial banks during the period of study. From the above discussion, it is clear that commercial banks of Bangladesh irrespective of group had a tendency to invest more funds in earning assets. SCBs captured top position among the different bank groups in spending more funds to earning assets. It proved justified because maximum NII as well as maximum PBT as compared to other bank groups went in favor of SCBs during the study period. PGs of ROA, ROE, and ROD also went in favor of them. However, amount of ROE and ROD placed in favor of LCBs. Allocating more funds in earning assets created liquidity shortage for all groups of banks. According to the study, LCBs maintained only 20.53% as average of liquid asset which decreased alarmingly during the study period. Large banks, however, may be able to use alternative risk management techniques to reduce overhang effects.

Liquidity position of SCBs, however, appeared worst because their average liquid asset holdings decreased awfully from 2000 to 2006. In addition to that they supplied more credit to their customers as compared to other bank groups. But because of their small size they failed to collect more funds from the depositors. It is further seen that overall credit risk of all groups of banks reduced during the study period. Among the banking groups, LCBs improved their credit risk position by reducing average NPL and LLP percentages significantly as compared to other bank groups in the last seven years. From the study, it is seen that in all groups of banks PG of CAR declined during the study period although SCBs and LCBs maintained a minimum CAR as it is instructed by Bangladesh bank (central bank).

Part C

In this part of the chapter, sample commercial banks are classified again in Private Commercial Banks (PCBs) and Denationalized Commercial Banks (DCBs) on the basis of their ownership status. Then the same tools and ratios are applied on these two types of banks. Common growth indicators, asset compositions and their impact on profitability, liquidity, and solvency of different sizes of banks are analyzed in the following sections. So, this part of the chapter is considered as comparative analysis between the portfolio behavior of PCBs and DCBs.

4.19 Important Growth Indicators of PCBs and DCBs

Table 4.17 shows the important growth indicators of PCBs and DCBs with their PGs. It is revealed that PCBs' performance was much better in all areas except equity. Average amount of asset creation, deposit mobilization and credit expansion of PCBs were more than double of DCBs during the period of study. Average capital standing (equity) of DCBs was 1844 million taka while it was 1112 million taka for PCBs. PGs of these indicators were also encouraging for PCBs than DCBs (Table 4.17).

Table 4.17
Important Growth Indicators of PCBs and DCBs (Tk. in million)

(PG=Period Growth)

Bank	Asset	PG (%)	Deposit	PG (%)	Credit	PG (%)	Equity	PG (%)
PCBs	22479	202.62	18392	227.71	14767	260.62	1112	373.28
DCBs	48913	35.97	37077	69.67	29686	40.28	1844	227.79

Source: Appendix-1, 2, 3 and 4.

Note: PCBs= Private Commercial Banks; DCBs=Denationalized Commercial Banks

4.20 Major Asset Compositions of PCBs and DCBs

Table 4.18 demonstrates major asset compositions of PCBs and DCBs with their period growths. It is observed from the table that both PCBs and DCBs allocate largest part of their assets in loans and advances. However, PCBs' allocation in LAD was more than that of DCBs. After loans and advances, DCBs allocated a significant portion of their assets (19.59%) in another interest earning assets- i.e., investment. But average investment size of PCBs was much less than DCBs. DCBs also maintained higher PG during the study period in allocating assets in government and other first class securities as compared to PCBs. However, both PCBs and DCBs did not keep sufficient liquid assets for meeting their requirement as instructed by Bangladesh Bank. DCBs kept only 13.62 % (average) liquid assets during the period of study. And liquid asset declined by 57.82% in case of PCBs during 2000-2006.

Table 4.18
Major Asset Composition of PCBs and DCBs

(PG=Period Growth)

Banks	Liquid	PG (%)	Investment	PG (%)	Loans	PG (%)
PCBs	19.02	-57.82	11.29	51.06	64.06	32.58
DCBs	13.62	9.98	19.59	58.04	59.95	-4.66

Source: Appendix-3, 5 and 6.

4.21 Earning Assets of PCBs and DCBs

Table 4.19 showed no significant difference between PCBs and DCBs in question of allocating funds in earning assets. Average earning assets of DCBs was slightly higher than that of PCBs. However, PG in allocating funds went in favor of PCBs.

Table 4.19
Earning Assets of PCBs and DCBs (in Ratio)

(PG=Period Growth)

Banks	EA/TA	PG (%)
PCBs	75.56	25.42
DCBs	76.01	17.26

Source: Appendix-3 and 5.

4.22 Earnings of PCBs and DCBs

Although average earning assets of DCBs was slightly higher than that of PCBs (from previous table), they failed to generate more earnings from their operation. Both NII and PBT were much higher for PCBs. Table 4.20, however, demonstrates higher PG in favor of DCBs.

Table 4.20
Earnings of PCBs and DCBs

(PG=Period Growth)

Banks	NII	PG (%)	PBT	PG (%)
PCBs	2.21	23.39	2.23	31.58
DCBs	1.57	63.97	1.23	88.24

Source: Appendix-7 and 8.

4.23 Profitability of PCBs and DCBs

Table 4.21 shows profitability of PCBs and DCBs with their period growths. DCBs disappointed again to their management, shareholders and depositors because in all the cases they performed poorly as compared to PCBs. Average ROA of DCBs during the study period was only 0.59 while it was 1.17 for PCBs. PG of ROE showed negative results for both categories of banks. But average ROE of PCBs was much higher than that of DCBs. They also appeared far behind to generating sufficient return from deposits.

Table 4.21
Profitability of PCBs and DCBs

(PG=Period Growth)

Banks	ROA	PG (%)	ROE	PG (%)	ROD	PG (%)
PCBS	1.17	25.33	21.53	-7.06	1.50	24.29
DCBS	0.59	218.09	13.54	-45.42	0.88	36.67

Source: Appendix-1, 2, 4 and 9.

4.24 Liquidity of PCBs and DCBs

Deposit mobilization of both categories of banks exhibited (in the above table) no significance difference. Overall performance of PCBs' in collecting deposits was slightly better than DCBs. But PCBs provided more credit than DCBs against their deposits between 2000 and 2006 periods. However, even though credit provided by DCBs was much less than PCBs, they did not maintain their minimum liquidity ratio as prescribed by Bangladesh Bank. They kept only 16.85% of their deposits as average liquid asset. Because DCBs invested a significant portion of their funds in government and other first class securities. PCBs maintained minimum liquidity ratio against their deposit collection during the study period. But liquid asset against their deposits decreased by 54.08% by this time (Table 4.22).

Table 4.22
Liquidity of PCBs and DCBs

(PG=Period Growth)

Banks	LQ/D	PG (%)	C/D	PG (%)	D/TA	PG (%)
PCBS	23.31	-54.08	79.79	17.16	81.88	6.17
DCBS	16.85	27.31	73.12	-14.59	81.04	3.18

Source: Appendix-1, 2, 3 and 6.

4.25 Credit Risk of PCBs and DCBs

At this stage, it would be better to analyze credit risk of both categories of commercial banks. PCBs showed better performance by declining their NPL position by 47.73%. But DCBs disappointed again as their average NPL during the study period was 19.43 while it was 6.45 for PCBs. Table 4.23 shows that average LLP against total loans during the period were almost identical for both types of banks. But in case of LLP, position of PCBs improved as it decreased by 30.33% during 2000-2006. On the other hand, LLP of DCBs increased awfully by 137.74% during the same period (Table 4.23).

Table 4.23
Credit Risk of PCBs and DCBs

(PG=Period Growth)

Banks	NPL	PG (%)	LLP	PG (%)
PCBS	6.45	-47.73	1.20	-30.33
DCBS	19.43	-31.64	1.22	137.74

Source: Appendix-10 and 11.

4.26 Solvency of PCBs and DCBs

For testing solvency of PCBs and DCBs, the study uses capital adequacy ratio. From Table 4.24, it is clear that DCBs were away from maintaining the minimum capital as it was instructed by Bangladesh bank. During the examined period, average CAR of DCBs showed only 5.9% against their risk weighted assets. PCBs kept adequate capital but their average CAR reduced by 35.67% (Table 4.24).

Table 4.24
Capital Adequacy Ratio of PCBs and DCBs

(PG=Period Growth)

Banks	CAR	PG (%)
PCBS	9.84	-35.67
DCBS	5.90	154.07

Source: Appendix-3 and 4.

4.27 Observations

It is revealed from the above discussion of the two groups of banks (based on their ownership) that PCBs' performance was much better in all areas except equity formation. Average amount of asset creation, deposit mobilization and credit expansion of PCBs were more than double of DCBs during the period of study. It is observed from the study that both PCBs and DCBs allocated largest part of their assets in loans and advances. After loans and advances, DCBs allocated a significant portion of their assets in investment. But average investment size of PCBs was much less than DCBs. However, both PCBs and DCBs did not keep sufficient liquid assets for meeting their requirement as instructed by the Bangladesh Bank. The study finds no significant difference between PCBs and DCBs in question of allocating funds in earning assets. Average earning assets of DCBs was slightly higher than that of PCBs. Despite the fact DCBs failed to generate more earnings from their operation. Both NII and PBT were much higher for PCBs. DCBs disappointed their management, shareholders and depositors as in all areas they performed poorly as compared to PCBs. Even though credit provided by DCBs was much less than PCBs, they did not maintain their minimum liquidity ratio as prescribed by Bangladesh Bank. It is further revealed that average LLP against total loans during the period were almost identical for both types of banks. PCBs showed better performance by declining their NPL position by 47.73%. From the study, it is clear that DCBs were far away from maintaining the minimum capital for keeping solvency as it is instructed by Bangladesh bank.

Capital adequacy, loan loss provisions and earning ability are all relevant criteria to predict distress of commercial banks. Loan losses affecting both profits and capital adequacy, is one of the main causes of deterioration of DCBs. The results show that DCBs are larger than PCBs. But increases in the size of a bank in terms of total assets cause less efficient in liquidity management, riskier and reduce profits. Relatively lower efficiency of DCBs is due to lack of motivation and performance-based earnings among employees of these banks. The high NPL of DCBs is mainly due to the past burden of non-commercial loans. Furthermore, poor appraisal and lack of proper supervision of loans disbursed by DCBs in the past resulted in accumulation of poor quality assets in their overall portfolio.

4.28 Conclusion

This chapter discusses portfolio behavior of the sample commercial banks. It evaluates all three objectives of portfolio management namely liquidity, profitability and solvency of the sample banks. In addition, credit risk of those banks was also evaluated in this chapter. The evaluation was made in three parts. In part one, portfolio behavior of individual commercial bank was exhibited. The same discussion was made on three different sizes of banks namely, SCBs, MCBs and LCBs in second part. In the third part, portfolio behavior of PCBs and DCBs was illustrated.

Chapter 5

Relationship between the Variables Used in the Study

5.1 Introduction

During the period of the study, it is seen that sample commercial banks of Bangladesh were able to mobilize huge deposits which helped them to form a very big asset structure. Assets of the commercial banks have three major components, namely, loans, investments, and liquid assets. Deposits are distributed among the three major asset components. It is further seen that the banks contributed their lion's share of deposits in loans and investments i.e., earning assets after keeping minimum amount for meeting their liquidity needs. But loan alone consumes over eighty percent of their earning assets.

Since the growth of earning assets of the majority banks showed positive and upward trend during the examined years, so it reflected their interest income and profit. Interest income and profit of the sample banks measured by NII and PBT showed positive and consistently upward trend during the study period. In result, profitability of the commercial banks also increased during the years under review. But liquidity performance of the banks was not good enough as the study revealed a continuous and tremendous downtrend in liquid assets of the sample banks. A high credit-deposit and risk-weighted assets ratio along with a modest growth in deposit collection brought the sample commercial banks in danger. In consequence, riskiness of sample banks increased. And since the risk-weighted assets of the banks increased in examined years, their required CAR also increased. But the study notified that almost half of them did not maintain the required CAR in the examined years.

From the above discussion, it is clear that loan is one of the important variables used in the study with other variables which was responsible for creating shortage of liquidity, credit risk, and solvency problems of the sample banks but at the same time it helped the banks for making profit. Because, it is evident from the study that the banks preferred to provide more funds as loan for making more income and profit. Accordingly, the banks were able to generate more returns for their depositors, stockholders, and management. On the other hand, employment of lion's percentage of funds in loans and investments means fewer funds were available for maintaining minimum liquidity for the banks. Since loans are considered as one of the risky assets, so the banks were involved in more credit risk, and they were forced to keep provision against loan losses. What was annoying for the banks is that their risk-weighted asset increased alarmingly as compared to their capital. In consequence, they were asked to maintain more capital for their required CAR.

So, it is proved that loan is important variable for making income and profit for the banks; but at the same time the variable was responsible for creating liquidity shortage, producing more credit risk and enhancing more risk-weighted assets for them. In short, loan variable is related not only with profitability but also with liquidity, credit risk and solvency. However, it is important to note that loan variable itself was dependent on deposit variable. So profitability, liquidity, credit risk and solvency variables were related with deposit variable also.

5.2 Hypotheses Testing

Based on average data for the important variables of the study specified above during the period 2000-2006 as shown in different tables, correlation and regression were calculated to examine the impact of portfolio variables on liquidity, profitability, credit risk and solvency variables.

5.3 Correlation of Important Variables

As mentioned earlier in this study, the first hypothesis was that 'there are significant relationships between the portfolio variable measured by loan and liquidity, profitability, credit risk and solvency variables'.

The result of correlation analysis between important variables used in the study showed (in Table 5.1) that loan variable was significantly correlated with profitability, liquidity, credit risk and solvency variables. According to the table, all variables, except the credit risk variable, were negatively correlated with loan variable. Correlation between liquidity and loan was significant at the 0.05 level. Other variables were correlated significantly with loan variable at the 0.01 level. Most important thing is that these variables were significantly correlated with deposit variable also. On the other hand, loan variable itself was positively and significantly correlated with deposit variable. Based on these correlations, then the first and second hypotheses are accepted. Thus, exist there significant relationships between liquidity, profitability, credit risk, solvency variables and loan variable; loan variable itself is significantly and positively correlated with deposit variable.

Table 5.1
Correlation between the Important Variables of the Sample Banks

Variables		Deposits	Liquidity	Loan	Profitability	Credit Risk	Solvency
Deposits	Pearson Correlation	1	-.476(*)	.978(**)	-.630(**)	.635(**)	-.686(**)
	Sig. (2-tailed)		.034	.000	.003	.003	.001
	N	20	20	20	20	20	20
Liquidity	Pearson Correlation	-.476(*)	1	-.489(*)	.263	-.279	.509(*)
	Sig. (2-tailed)	.034		.029	.262	.234	.022
	N	20	20	20	20	20	20
Loan	Pearson Correlation	.978(**)	-.489(*)	1	-.644(**)	.705(**)	-.734(**)
	Sig. (2-tailed)	.000	.029		.002	.001	.000
	N	20	20	20	20	20	20
Profitability	Pearson Correlation	-.630(**)	.263	-.644(**)	1	-.854(**)	.832(**)
	Sig. (2-tailed)	.003	.262	.002		.000	.000
	N	20	20	20	20	20	20
Credit Risk	Pearson Correlation	.635(**)	-.279	.705(**)	-.854(**)	1	-.754(**)
	Sig. (2-tailed)	.003	.234	.001	.000		.000
	N	20	20	20	20	20	20
Solvency	Pearson Correlation	-.686(**)	.509(*)	-.734(**)	.832(**)	-.754(**)	1
	Sig. (2-tailed)	.001	.022	.000	.000	.000	
	N	20	20	20	20	20	20

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Source: Table 4.1, 4.5, 4.6, 4.7 and 4.8

5.4 Regression Analysis

The correlation coefficient provides an insight into the relationship between the variables, but it does not explain the effects. Hence, regression analysis adopted to study how loan variable explain variation in different variables. The 't' test and "F" statistics were used for studying the significance of correlation co-efficient and regression co-efficient.

5.4.1 Regression of Liquidity against Loan

The results of the linear regression analysis in Table 5.2 shows that 23.9 percent of the liquidity is explained by loan variable alone.

Table 5.2
Regression Analysis of Liquidity against Loan

Model Summary (Liquidity)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.489[a]	.239	.197	5.50138

a Predictors: (Constant), Loan

Source: Table 5.1.

According to Table 5.2, a unit increase in loan variable keeping all other variables constant, would give 0.489 unit of decrease in liquidity.

Table 5.3
'F' Test of the Regression Analysis of Liquidity against Loan

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	171.346	1	171.346	5.661	.029[a]
	Residual	544.773	18	30.265		
	Total	716.119	19			

a Predictors: (Constant), Loan

b Dependent Variable: Liquidity

Source: Table 5.1

The results of 't' and 'F' tests were found to be highly significant (Table 5.3 and 5.4). This means the loan variable was capable of influencing the liquidity of the commercial banks.

Table 5.4
'**t**' Test of the Regression Analysis of Liquidity against Loan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	28.614	3.008		9.513	.000
	Loan	.000	.000	-.489	-2.379	.029

a Dependent Variable: Liquidity

Source: Table 5.1

5.4.2 Regression of Profitability against Loan

Table-5.5 shows a regression analysis of the profitability of commercial banks against loan variable. It is found that loan is the major variable which explains the profitability of sample commercial banks to a larger extent (R^2=0.415). The table shows that coefficient of determinants of the linear regression of the profitability against the loan is explained by 41.5 percent of the variation for the sample commercial banks.

Table 5.5
Regression Analysis of Profitability against Loan

Model Summary (Profitability)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.644[a]	.415	.382	.37826

a Predictors: (Constant), Loan

Source: Table 5.1

Slope coefficient of the regression equation (Table 5.6) explains that a unit increase in loan will cause 0.644 unit of decrease in ROA (profitability).

Table 5.6
'F' Test of the Regression Analysis of Profitability against Loan
ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.825	1	1.825	12.755	.002[a]
	Residual	2.576	18	.143		
	Total	4.401	19			

a Predictors: (Constant), Loan
b Dependent Variable: Profitability
Source: Table 5.1

The results of 't' test and "F" statistics were found to be highly significant. This means that the loan variable is capable of influencing the profitability (Table 5.7).

Table 5.7
't' Test of the Regression Analysis of Profitability against Loan
Coefficients[a]

Model		Unstandardized Coefficients		t	Sig.
1		B	Std. Error	B	Std. Error
	(Constant)	1.747	.207	8.447	.000
	Loan	-4.0E-005	.000	-3.571	.002

a Dependent Variable: Profitability
Source: Table 5.1

5.4.3 Regression of Credit Risk against Loan

A similar regression effort has also been conducted on credit risk against loan variable in Table-5.8. The table shows that the co-efficient of multiple determination (R^2) being 0.497, it indicates that 49.7 percent total association of the variables with credit risk was explained by loan variable alone.

Table 5.8
Regression Analysis of Credit Risk against Loan

Model Summary(Credit Risk)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.705[a]	.497	.469	5.92141

a Predictors: (Constant), Loan

Source: Table 5.1

According to Table 5.8, a unit increase in loan variable keeping all other variables constant, would give 0.705 unit of increase in credit risk.

Table 5.9
'F' Test of the Regression Analysis of Credit Risk against Loan

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	624.540	1	624.540	17.812	.001[a]
	Residual	631.136	18	35.063		
	Total	1255.676	19			

a Predictors: (Constant), Loan

b Dependent Variable: Credit Risk

Source: Table 5.1

The results of 't' test and "F" statistics were found to be highly significant. The coefficient of slope was statistically significant at 1 percent level. This means the loan variable is capable of influencing the credit risk (Table 5.9 and 5.10).

Table 5.10
't' Test of the Regression Analysis of Credit Risk against Loan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-4.176	3.238		-1.290	.213
	Loan	.001	.000	.705	4.220	.001

a Dependent Variable: Credit Risk

Source: Table 5.1

5.4.4 Regression of Solvency against Loan

The next regression effort is concerned with the solvency against loan variable. The regression estimates are presented in Table 5.11. The simple regression line demonstrates that loan variable explains the solvency of the sample banks to a larger extent. The co-efficient of multiple determination (R^2) is 0.538. It indicates that 53.8 percent of the total association of variables with solvency was explained by loan variable alone.

Table 5.11
Regression Analysis of Solvency against Loan

Model Summary (Solvency)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.734[a]	.538	.512	2.25722

a Predictors: (Constant), Loan

Source: Table 5.1

According to table 5.11, a unit increase in loan variable keeping all other variables constant, would give 0.734 unit of decrease in solvency.

Table 5.12
'F' Test of the Regression Analysis of Solvency against Loan

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.837	1	106.837	20.969	.000[a]
	Residual	91.711	18	5.095		
	Total	198.548	19			

a Predictors: (Constant), Loan

b Dependent Variable: Solvency

Source: Table 5.1

The results of ‘t’ and ‘F’ tests were found to be highly significant. This means that the loan variable is capable of influencing the solvency of the commercial banks. So, from the above discussion it is proved that loan variable is capable of influencing liquidity, profitability, credit risk and solvency of commercial banks (Table 5.12 and 5.13).

Table 5.13
‘t’ Test of the Regression Analysis of Solvency against Loan

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	14.011	1.234		11.353	.000
	Loan	.000	.000	-.734	-4.579	.000

a Dependent Variable: Solvency

Source: Table 5.1

5.4.5 Regression of Loan against Deposit

But loan variable itself is dependent on deposit variable. From Table 5.14, it is proved that loan variable is significantly and positively correlated with deposit variable. The study adopted regression analysis to find how deposit variable explains variation in loan variable. The co-efficient of determinants (R^2) of linear regression of deposit is 0.956 in Table 5.14. This shows that 95.6 percent of the total association of the variables with loan was explained by deposit variable alone (Table 5.14).

Table 5.14
Regression Analysis of Loan against Deposit

Model Summary (Loan)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.978[a]	.956	.953	1689.38517

a Predictors: (Constant), Deposits

Source: Table 5.1

It is seen from Table 5.16 that a unit increase in deposit variable keeping all other variables constant, would give 0.978 unit of increase in loan.

Table 5.15
'F' Test of the Regression Analysis of Loan against Deposit

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1E+009	1	1103869536	386.777	.000[a]
	Residual	51372400	18	2854022.249		
	Total	1E+009	19			

a Predictors: (Constant), Deposits

b Dependent Variable: Loan

Source: Table 5.1

The results of 't' and 'F' tests were found to be highly significant. This means the deposit variable is capable of influencing the loan of the commercial banks (Table 5.15 and Table 5.16).

Table 5.16

't' Test of the Regression Analysis of Loan against Deposit

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	2472.628	827.795		2.987	.008
	Deposits	.664	.034	.978	19.667	.000

a Dependent Variable: Loan

Source: Table 5.1

5.5 Portfolio Behavior of Different Sizes of Commercial Banks

The result of correlation analysis between the important variables of different sizes of banks showed that loan variable was significantly correlated with profitability, liquidity, credit risk and solvency variables.

On the other hand, loan variable is significantly correlated with deposit variable. It is important to note that all the variables are correlated with loan variable at the 0.01 significant levels. Credit risk and deposit variables are positively correlated with loan but profitability and solvency are negatively correlated with loan. Thus, in case of small banks, there are significant relationships between profitability, credit risk, solvency variables and loan variable; loan variable itself is significantly and positively correlated with deposit variable.

5.5.1 Correlations between Important Variables of Small Banks

According to Table 5.17, liquidity is not significantly correlated with loan variable. But profitability, credit risk, and solvency are significantly correlated with loan variable.

5.5.2 Correlations between Important Variables of Medium Sized Banks

Table 5.18 shows that liquidity, profitability, credit risk and solvency variables of medium sized banks are not correlated significantly with loan variables. Only deposit variable is significantly and positively correlated with loan variable.

Table 5.17
Correlations between Important Variables of Small Banks

Variables		Deposits	Liquidity	Loans	Profitability	Credit Risk	Solvency
Deposits	Pearson Correlation	1	.138	.946(**)	-.703(*)	.683(*)	-.774(**)
	Sig. (2-tailed)		.703	.000	.023	.030	.009
	N	10	10	10	10	10	10
Liquidity	Pearson Correlation	.138	1	.082	.111	.151	.361
	Sig. (2-tailed)	.703		.822	.760	.677	.305
	N	10	10	10	10	10	10
Loans	Pearson Correlation	.946(**)	.082	1	-.770(**)	.821(**)	-.777(**)
	Sig. (2-tailed)	.000	.822		.009	.004	.008
	N	10	10	10	10	10	10
Profitability	Pearson Correlation	-.703(*)	.111	-.770(**)	1	-.892(**)	.867(**)
	Sig. (2-tailed)	.023	.760	.009		.001	.001
	N	10	10	10	10	10	10
Credit Risk	Pearson Correlation	.683(*)	.151	.821(**)	-.892(**)	1	-.665(*)
	Sig. (2-tailed)	.030	.677	.004	.001		.036
	N	10	10	10	10	10	10
Solvency	Pearson Correlation	-.774(**)	.361	-.777(**)	.867(**)	-.665(*)	1
	Sig. (2-tailed)	.009	.305	.008	.001	.036	
	N	10	10	10	10	10	10

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Table 4.9, 4.14, 4.14, 4.15 and 4.16

5.5.3 Correlations between Important Variables of Large Commercial Banks

Table 5.19 shows that profitability, credit risk and solvency variables of large commercial banks are not correlated significantly with loan variables. Only liquidity and deposit variable is significantly correlated with loan variable. Liquidity is negatively correlated with loan variable.

Table 5.18
Correlations between Important Variables of Medium Sized Banks

Variables		**Deposits**	**Liquidity**	**Loans**	**Profitability**	**Credit Risk**	**Solvency**
Deposits	Pearson Correlation	1	-.884(*)	.934(**)	-.647	-.715	-.802
	Sig. (2-tailed)		.019	.006	.165	.110	.055
	N	6	6	6	6	6	6
Liquidity	Pearson Correlation	-.884(*)	1	-.784	.648	.622	.911(*)
	Sig. (2-tailed)	.019		.065	.164	.188	.011
	N	6	6	6	6	6	6
Loans	Pearson Correlation	.934(**)	-.784	1	-.698	-.704	-.709
	Sig. (2-tailed)	.006	.065		.123	.118	.115
	N	6	6	6	6	6	6
Profitability	Pearson Correlation	-.647	.648	-.698	1	.069	.612
	Sig. (2-tailed)	.165	.164	.123		.897	.197
	N	6	6	6	6	6	6
Credit Risk	Pearson Correlation	-.715	.622	-.704	.069	1	.664
	Sig. (2-tailed)	.110	.188	.118	.897		.150
	N	6	6	6	6	7	6
Solvency	Pearson Correlation	-.802	.911(*)	-.709	.612	.664	1
	Sig. (2-tailed)	.055	.011	.115	.197	.150	
	N	6	6	6	6	6	6

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Source: Table 4.9, 4.14, 4.14, 4.15 and 4.16

5.6 Regression Estimates of Different Sizes of Commercial Banks

To compare portfolio behavior of different sizes of the commercial banks the study took help of regression analysis of liquidity, profitability, credit risk, and solvency characteristics of small, medium, and large banks against loan variable. The regression estimates are presented in Table 5.20.

Table 5.19
Correlations between Important Variables of Large Commercial Banks

Variables		Deposits	Loans	Profitability	Liquidity	Credit Risk	Solvency
Deposits	Pearson Correlation	1	.998(**)	-.760	-.937	.883	.058
	Sig. (2-tailed)		.002	.240	.063	.117	.942
	N	4	4	4	4	4	4
Loans	Pearson Correlation	.998(**)	1	-.790	-.951(*)	.913	.034
	Sig. (2-tailed)	.002		.210	.049	.087	.966
	N	4	4	4	4	4	4
Profitability	Pearson Correlation	-.760	-.790	1	.700	-.856	.543
	Sig. (2-tailed)	.240	.210		.300	.144	.457
	N	4	4	4	4	4	4
Liquidity	Pearson Correlation	-.937	-.951(*)	.700	1	-.952(*)	-.219
	Sig. (2-tailed)	.063	.049	.300		.048	.781
	N	4	4	4	4	4	4
Credit Risk	Pearson Correlation	.883	.913	-.856	-.952(*)	1	-.048
	Sig. (2-tailed)	.117	.087	.144	.048		.952
	N	4	4	4	4	4	4
Solvency	Pearson Correlation	.058	.034	.543	-.219	-.048	1
	Sig. (2-tailed)	.942	.966	.457	.781	.952	
	N	4	4	4	4	4	4

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Source: Table 4.9, 4.14, 4.14, 4.15 and 4.16

The Table 5.20 shows that the coefficient of determinant of the linear regression of liquidity against loan of large banks is as much as 90 percent. In case of medium sized banks it is 61.5 percent, whereas only 0.7 percent of the variation has been explained in case of small banks. However, slope coefficients of the regression equations of small and medium sized banks are not significant at 5 percent level. So loan variable is capable of influencing the liquidity of large commercial banks.

Table 5.20
Regression Estimates of Different Sizes Commercial Banks

Variable	Small Bank			Medium bank			Large Banks		
	Intercept	Coefficient	R^2	Intercept	Coefficient	R^2	Intercept	Coefficient	R^2
Liquidity	20.820	.082	.007	39.612	-0.784	.615	35.206	-0.951	.904
't' value	(2.870)	(.233)		(5.939)	(-2.530)		(8.722)	(-4.330)	
significance	(.021)	(.822)		(.004)	(.065)		(.013)	(.049)	
Profitability	2.041	-.770	.593	2.007	-.698	.487	2.715	-.790	.624
't' value	(8.074)	(-3.417)		(3.244)	(-1.949)		(2.838)	(-1.821)	
significance	(.000)	(.009)		(.032)	(.123)		(.105)	(.210)	
Credit Risk	-11.894	.821	.673	-25.005	.938	.881	-14.678	.913	.833
't' value	(-2.376)	(4.062)		(-3.847)	(5.434)		(-1.951)	(3.156)	
significance	(.045)	(.004)		(.018)	(.006)		(.190)	(.087)	
Solvency	17.435	-.777	.603	14.652	-.709	.503	8.686	.034	.001
't' value	(7.527)	(-3.488)		(4.418)	(-2.011)		(1.702)	(.048)	
significance	(.000)	(.008)		(.012)	(.115)		(.231)	(.966)	

Source: Table 5.17, 5.18 and 5.19.

Similarly, coefficient of determinant of profitability against large banks is 62.4 percent. In case of medium sized banks it is 48.7 percent, whereas 59.3 percent of the variation has been explained in case of small banks. However, slope coefficients of medium and large banks are not significant at 5 percent level. So loan variable can influence the profitability of small banks only.

Coefficient of determinant of credit risk of large commercial banks being 83.3 percent, its slope coefficient is not significant at 5 percent level. On the other hand, R^2 of credit risk of small and medium sized banks are 67.3 percent and 88.1 percent respectively. Again, slope coefficients of both banks are significant at 5 percent level. So, loan variable contributes to the credit risks of small and medium sized commercial banks.

Coefficient of determinant of solvency of large banks shows only 0.1 percent against loan variable. The same of small and medium sized banks is 60.3 percent and 50.3 percent. Slope coefficient of medium sized banks is not significant at 5 percent level. So, loan is incapable of influencing solvency of large and medium sized banks (Table 5.20).

5.7 Portfolio Behavior of PCBs and DCBs

The final regression effort is concerned with the impact of loan on liquidity, profitability, credit risk, and solvency of PCBs and DCBs. But before that the study prefers to analyze correlation between the important variables of PCBs and DCBs.

5.7.1 Correlations between the Important Variables of PCBs

Table-5.21 shows that liquidity and profitability variables of PCBs are not correlated significantly with loan variables. On the other hand, credit risk, solvency and deposit variables are significantly correlated with loan variable. Deposit variable is significantly correlated at 1% level with loan variable.

Table 5.21
Correlations between Important Variables of PCBs

Variables		Deposits	Loans	Profitability	Liquidity	Credit Risk	Solvency
Deposits	Pearson Correlation	1	-.024	.943(**)	-.436	.440	-.480
	Sig. (2-tailed)		.928	.000	.080	.077	.051
	N	17	17	17	17	17	17
Loans	Pearson Correlation	-.024	1	-.115	-.060	-.007	.263
	Sig. (2-tailed)	.928		.660	.818	.978	.309
	N	17	17	17	17	17	17
Profitability	Pearson Correlation	.943(**)	-.115	1	-.469	.575(*)	-.594(*)
	Sig. (2-tailed)	.000	.660		.058	.016	.012
	N	17	17	17	17	17	17
Liquidity	Pearson Correlation	-.436	-.060	-.469	1	-.789(**)	.758(**)
	Sig. (2-tailed)	.080	.818	.058		.000	.000
	N	17	17	17	17	17	17
Credit Risk	Pearson Correlation	.440	-.007	.575(*)	-.789(**)	1	-.601(*)
	Sig. (2-tailed)	.077	.978	.016	.000		.011
	N	17	17	17	17	17	17
Solvency	Pearson Correlation	-.480	.263	-.594(*)	.758(**)	-.601(*)	1
	Sig. (2-tailed)	.051	.309	.012	.000	.011	
	N	17	17	17	17	17	17

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Source: Table 4.17, 4.21, 4.22, 4.23 and 4.24.

5.7.2 Correlations between the Important Variables of DCBs

Table-5.22 shows a peculiar picture between the variables of DCBs. Not any variable is shown correlated with loan variable. Even there exist no correlation between loan and deposit variables also.

Table 5.22
Correlations between Important Variables of DCBs

Variables		**Deposits**	**Loans**	**Profitability**	**Liquidity**	**Credit Risk**	**Solvency**
Deposits	Pearson Correlation	1	.917	-.425	.899	.932	.807
	Sig. (2-tailed)		.261	.721	.289	.236	.402
	N	3	3	3	3	3	3
Loans	Pearson Correlation	.917	1	-.750	.999(*)	.999(*)	.505
	Sig. (2-tailed)	.261		.460	.028	.025	.663
	N	3	3	3	3	3	3
Profitability	Pearson Correlation	-.425	-.750	1	-.779	-.723	.192
	Sig. (2-tailed)	.721	.460		.431	.485	.877
	N	3	3	3	3	3	3
Liquidity	Pearson Correlation	.899	.999(*)	-.779	1	.996	.466
	Sig. (2-tailed)	.289	.028	.431		.054	.692
	N	3	3	3	3	3	3
Credit Risk	Pearson Correlation	.932	.999(*)	-.723	.996	1	.539
	Sig. (2-tailed)	.236	.025	.485	.054		.638
	N	3	3	3	3	3	3
Solvency	Pearson Correlation	.807	.505	.192	.466	.539	1
	Sig. (2-tailed)	.402	.663	.877	.692	.638	
	N	3	3	3	3	3	3

* Correlation is significant at the 0.05 level (2-tailed).

Source: Table 4.17, 4.21, 4.22, 4.23 and 4.24.

5.8 Regression Estimates of PCBs and DCBs.

The regression estimates of PCBs and DCBs are presented in Table-5.23. The table shows that the simple regression lines of both groups of banks demonstrate very little functional relation. Specially, PCBs allocate more of their funds in loans as compared to DCBs. So, their liquidity, profitability, credit risk, and solvency should have a significant functional relation against loan variable. But coefficients of determinant of PCBs indicate very poor fit as none of the empirical line could have explained more than 36 percent. However, slope coefficients of credit risk and solvency of PCBs show significant at 5 percent level. On the other hand, coefficient of determination of liquidity, profitability, and credit risk of DCBs against loan variable signifies a higher percentage as compared to PCBs. However, none of their slope coefficient was significant at 5 percent level. So, in case of DCBs, loan is not capable of influencing the liquidity, profitability, credit risk, and solvency alone.

Table 5.23
Regression Estimates of PCBs and DCBs

Variable	PCBs			DCBs		
	Intercept	Coefficient	R^2	Intercept	Coefficient	R^2
Liquidity	25.168	-115	.013	29.819	-.750	.563
‘t’ value	(5.726)	(-.449)		(2.253)	(-1.135)	
Significance	(.000)	(.660)		(.266)	(.460)	
Profitability	1.782	-.469	.22	1.543	.779	.607
‘t’ value	(5.650)	(2.057)		(1.875)	(-1.242)	
Significance	(.000)	(.058)		(.312)	(.431)	
Credit Risk	-5.695	.575	.331	26.665	-.723	.523
‘t’ value	(-1.150)	(2.724)		(3.535)	(-1.048)	
Significance	(.268)	(.016)		(.176)	(.485)	
Solvency	14.565	-.594	.353	5.445	.192	.038
‘t’ value	(7.915)	(.2.862)		(1.597)	(.196)	
Significance	(.000)	(0.012)		(.356)	(.877)	

Source: Table 5.21 and 5.22.

5.9 Conclusion

The result of correlation analysis between important variables used in the study showed that profitability, liquidity, credit risk and solvency variables of the sample banks are significantly correlated with loan variable. In case of SCBs, profitability, credit risk, and solvency are significantly correlated with loan variable. Only liquidity is not correlated significantly with loan. But in MCBs, the study found no correlation between loan and liquidity, profitability, credit risk, and solvency variables. Deposit variable only is significantly and positively correlated with loan variable here. Correlation between the variables is almost identical in case of LCBs. Only liquidity and deposit variable is significantly correlated with loan variable here. The study found that credit risk, solvency and deposit variables of PCBs are significantly correlated with loan variable; but liquidity and profitability variables of the same group are not correlated significantly with loan variable. On the other hand, not any variable of DCBs is found correlated with their loan variable. Even there exist no correlation between loan and deposit variable in case of DCBs.

However, regression analysis proved that loan variable is capable of influencing liquidity, profitability, credit risk and solvency of sample commercial banks. Small banks are influenced too much by loan variable than medium and large banks. When compared PCBs with DCBs, we find no influencing capability of loan on DCBs. However, credit risk and solvency of PCBs are found dependent on loan variable. On the other hand, loan variable itself is positively and significantly correlated with deposit variable.

Chapter 6

Summary, Recommendations and Conclusions

6.1 Preamble

This study is undertaken to examine the portfolio behavior of the commercial banks of Bangladesh. The successful management of a commercial bank's fund requires careful consideration of three important objectives: liquidity, safety, and income. Commercial banks arrange their assets in such a way so that after maintaining required liquidity they can earn sufficient income and at the same time keep adequate capital to maintain solvency. Since the bank's liability is subject to withdrawal either on demand or at a very short notice, the bank must keep adequate amount of liquid assets with them to meet the demand from the depositors. A bank is solvent when the value of its assets is enough to cover all of its liabilities except those to owners. The banks' policies are also geared towards achieving sufficient income on the banks' portfolios so that operating costs can be met and the banks can continue profitably as going concern. In addition to the maintenance of liquidity, profitability and solvency, commercial banks also evaluate their asset quality by calculating credit risk of loans they provide.

To attain the objectives of liquidity, solvency, asset quality and profitability, commercial banks in practice need to set up a certain pattern and distribution of their assets in their portfolio composition. Management needs to decide as to what constitutes the best distribution of assets in the quest for attaining those objectives.

In practice, the asset composition of all commercial banks in Bangladesh shows the high concentration of loans and advances in total assets during the years under review. As a result, net interest income has been increased in all commercial banks though growth of some profitability indicators show negative trend in 2006. But the high concentration of loans and advances indicates vulnerability of assets to credit risk, especially since the portion of non-performing assets is significant. Because the more commercial banks are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to them.

A huge infected loan portfolio has been the major difficulty of the banks. It appears that the net non performing loans to total loans after adjustment of actual provision and interest suspense stands at 7.1 percent in the banking sector of Bangladesh in 2006. It further reveals that in aggregate, the banks have been continuously failing to maintain the required level of provisions against their NPLs.

Liquidity indicators measured as percentage of demand and time liabilities (excluding inter-bank items) of the banks indicate that all the banks had excess liquidity. But liquid assets to total assets ratio shows a massive decreasing trend during the study period.

The commercial banks in Bangladesh have to maintain a minimum Capital Adequacy Ratio (CAR) of not less than 9.0 percent of their risk-weighted assets (with at least 4.5 percent in core capital) or Taka 1.00 billion, whichever is higher. But the commercial banks of Bangladesh could not attain the required level due to shortage in owner's equity, provision shortfall and overburdened expenditure incurred from operations.

Although the concept of portfolio management is not quite new in Bangladesh, but the fact is that very few research works have been done in this area. There has been no study as to how the bank performed in liquidity, profitability, credit risk and solvency during 2000-2006. So, the present study intends to evaluate the portfolio behavior of commercial banks by using the above mentioned criteria. This study is different from the earlier studies with respect to contents, coverage of years and methodology. The importance of this study may be viewed from its contribution to fill an important gap in literature. On the practical dimension, this study may help the executives and other policy makers of commercial banks in Bangladesh to arrive at pragmatic decisions for portfolio management.

The major objectives of the study are as follows:

(i) To provide an overview of allocation of commercial banks' funds to different types of assets.

(ii) To examine the impact of portfolio of assets on commercial bank profitability.

(iii) To see the result of asset structure on bank liquidity.

(iv) To look at the impact of asset portfolio on credit risk of commercial banks.

(v) To analyze the effects of asset composition on banks' solvency.

Since it was an attempt to find out what happened in the commercial banking portfolio selection in the course of time and correlate the events within the limits of available materials the study followed documentary analysis or content analysis. Because, this method critically and objectively reviewed the published facts, figures, data and even the symbols in the light of the contents' values.

Official records, accounts, reports were used as sources of data in this method. The present study makes an attempt to apply the descriptive method also to describe systematically and accurately the facts and characteristics of portfolio of sample commercial banks.

The study was confined to the listed commercial banks at Dhaka Stock Exchange only. The sample of this study contained 20 commercial banks, which was accounted for 74.07% of the population. The main basis of the selection of the sample is the easy access and availability of the requisite data and information. The study covered a period of seven years from 2000 to 2006.

The study was based on secondary data. Income statement and balance sheet data of sample commercial banks were used in this study. Those data were collected from annual reports of the selected banks, Bangladesh Bank reports and from Resume of the Activities of Financial Institutions in Bangladesh published by the Ministry of Finance, Government of Bangladesh.

The study followed both time series and cross-sectional analysis. Initially, the study presented the mean values of important growth indicators such as asset, deposit, loan and equity of each commercial bank with their period growth. Then major asset compositions of each selected commercial bank were exhibited. Impact of asset compositions on liquidity, profitability, credit risk and solvency of those banks were illustrated next. The study continued the same analysis by splitting the sample banks into large, medium and small groups in terms of their total assets value based on 2006. The sample commercial banks were classified again into private commercial banks (PCBs) and de-nationalized commercial banks (DCBs) based on their ownership status to continue the same analysis.

The techniques employed to study the relationship between the variables ranged from simple descriptive statistical tools like mean, period growth, maximum and minimum value to complex techniques like correlation and regression analysis. Simple linear regression analysis was undertaken to express the underlying relationship between the dependent and independent variables. The co-efficient of variations (R^2) is used to know how much of the variations in the dependent variable are explained by the independent variable included in the regression analysis. The emphasis in the study was on determining association; hence independent variables in the regression models were used for explanatory and not for predictive purposes. The t test and F statistics were applied to test the correlation and regression co-efficiency.

The discussion on portfolio composition and its impact on liquidity, profitability, credit risk and solvency were made in three parts. In part one, portfolio behavior of individual commercial bank was exhibited. In second part, banks were classified into three groups in terms of their asset size (based on data 2006) i.e. small, medium and large. Then the same discussion was made on three different sizes of banks. Sample commercial banks then again were classified into two groups on the basis of their disinvestment i.e., private commercial banks (PCBs) and denationalized commercial banks (DCBs). Part three analyzed portfolio behavior of these two types of banks.

6.2 Portfolio Management of Commercial Banks: An Overview

Banks are among the most important financial institutions in the economy. It is a financial intermediary accepting deposits and granting loans; offers the widest menu of services of any financial institutions. The banks can be classified into various types on the basis of their functions, ownership, domicile, etc. Majority of the commercial banks in Bangladesh are in the private sector.

The banks which perform all kinds of banking business and generally finance trade and commerce are called commercial banks. Since their deposits are for a short period mainly, these banks normally advance short term loans to the businessmen and traders and avoid medium and long term lending. However, recently, the commercial banks have also extended their areas of operation to medium term and long term finance.

As every profit-seeking organization, a commercial bank also tries to have the highest profits by managing its portfolio. But in a long-term perspective, the profits are not enough for a commercial bank. It is more important to the management to assure bank's liquidity to fulfill its obligations every moment it may be necessary. And besides the mentioned two principles of profitability and liquidity, it is of high importance for a bank to be safe, i.e. to minimize its risk. So, the successful management of a commercial banks' fund requires careful consideration of three important objectives: liquidity, safety, and income.

The banks expect to make loans and manage other assets fruitfully by maintaining liquidity, profitability and solvency. In such a context, the interdependence which exists among all the various income statement and balance sheet items of the banks must be recognized and managed if maximum benefits are to be obtained. It is observed that various theories and models were developed to manage the banks' assets, liabilities or both.

However, for measuring and evaluating behavior of portfolio, analyzing of financial statement is essential. Because, return (profitability) and risk (liquidity, earnings, credit, solvency) of a commercial bank can be measured by different components of her income statement and balance sheet. The first step in analyzing financial statements is to decide what objectives the bank is seeking. A fair evaluation of any bank's performance should start by evaluating whether it has been able to achieve the objectives its management and stockholders have chosen.

The present study discusses two key dimensions of portfolio behavior: profitability and exposure to risk. Among the most important ratio measures of bank profitability used today are ROA, ROE, ROD, NIM, EPS, NOM etc. On the other hand, bankers are concerned with credit risk, liquidity risk, earning risk, solvency risk etc.

When the performance of one bank is compared to another, bank size becomes a critical factor. Size of a bank is usually measured by total assets or total deposits. Size of a bank is considered in this study on the basis of its assets.

6.3 Impact of Portfolio Behavior

Before starting evaluation of portfolio a brief description of some growth indicators of the sample banks was illustrated in Part A. The study preferred to provide assets, deposits, credits, and equity information of those banks to get a better picture at a glance on them. It is clear from previous discussion that commercial banks of Bangladesh grew significantly in last seven years from 2000 to 2006. Their average assets grew by 139.08% in this time. During the same period, amount and growth of deposits, credits, and equity capital of commercial banks were also increased. Taking 2000 as base year, amounts of average deposits, credits, and equity were increased by 210.08%, 175.36%, and 333.13% respectively at the end of FY2006.

After exhibiting about the common growth indicators of the sample banks the study illustrated major asset composition of those banks next. It is observed from the previous tables that commercial banks of Bangladesh employed more funds in loans and advances (61.06%) as usual which contribute to lion's share of earnings. They were followed by liquid assets (17.02%) and investment (11.14%). The table further reveals that trend of loans and advances (LAD) and investment (INV) was on the increase and liquid assets (LQA) was on the decrease.

It is clear from the above information that the commercial banks of Bangladesh were interested to provide more funds in earnings generating assets after keeping little assets for maintaining their liquidity requirements. In this context, the study thought to be useful to evaluate earning asset to total asset ratio of the sample commercial banks. It is evident from that assessment that average earning asset of the sample commercial banks constituted 75.42 percent of total assets. It means that the banks employed more than three-fourth of their assets for earnings generation. And loan constitutes lion's shares on earning assets. So, an attempt was made next to evaluate the impact of asset structure on earnings and profitability of the sample commercial banks.

The study used net interest income (NII) and profit before tax (PBT) as compared to total assets as the tools to measure earnings of the banks. Average NII of sample banks as compared to total assets was increased by 28.09 percent in last seven years. Average PBT during the same time became 3.48 percent of total assets. PBT grew by 36.47 percent during the period.

A straightforward measure of bank profitability is the net after-tax profit per unit of assets, or return on assets (ROA). It is also important for the shareholders to know the return on their invested equity in a bank. A useful summery of this information is provided by net after-tax profit per unit of bank equity capital, return on equity (ROE). However, after ROA and ROE, financial analysts now consider ROD as another measure of bank profitability performance. It is calculated through dividing net profits by total deposits. This ratio reflects the bank management's ability to utilize the customers' deposits in order to generate profits.

As shown in previous table, average ROA of commercial banks was increased by 38.32 percent. But the study found only 0.76% growths in average ROE during the period under review. However, ROD of the sample banks grew by 23.38 percent during the same period.

Liquidity of a bank can be measured in various ways. Deposit position of a bank in relation to its total assets (D/TA) can be used to measure liquidity. If any bank is able to collect more deposit it would not face any difficulty in meeting its liquidity demand. The previous table shows that the average deposit collection of sample banks obtained about 83 percent of their total assets, but PG of D/TA was only 6.5% in last seven years.

Another useful tool to measure bank's liquidity is liquid assets to total deposit ratio (LQ/TD). It is evident from the previous discussion that the liquidity actually maintained by the sample banks was less than the required amount. What is alarming for them is that the study noticed a significant downfall (51.89%) in the average LQ/TD in last 7 years.

Another way to measure liquidity of commercial banks is the supply of credit against their deposit i.e., credit-deposit ratio. It is evident from the previous discussion that the credit deposit ratio for sample commercial banks was about 78.83% i.e., these banks provided 78.83% as loan against their deposit. This means that 21.17% of deposit was available for other activities such as investment in government securities, maintaining minimum reserve for their liquidity requirement etc.

Some banks use the risk-weighted asset (loan and advances plus investment) to deposit ratio to measure their liquidity. Previous table shows earlier that average risk-weighted assets of sample commercial banks were almost 92% of their deposit balance. It means only 8 percent of their deposit balance, on an average, was left to meet their necessary requirements.

Since the commercial banks had a tendency to provide more funds as loans and advances, they involved in immense credit risk also. At the stage, the study preferred to estimate credit risk of the sample banks. It used the non-performing loan ratio (NPL) and the loan loss provision (LLP) ratios as a measure for the bank's risk in the loan portfolio.

The study noticed an encouraging trend in the average NPL to total loans ratio of all sample banks since 2000. The ratio has declined by 28.79 percent in last seven years. It is further revealed that the average LLP ratio of the sample banks during the period was 1.18 percent. But the important thing is that this ratio also has a declining trend. LLP has declined by 23.91 percent in seven years.

At the last phase of part one, the present study went for testing the solvency of sample commercial banks. Solvency means whether current bank capital can cover all potential losses from those assets most likely to decline in value. Capital adequacy ratio (CAR) is used here to test the solvency of banks. It is revealed from the analysis that the sample commercial banks have an average CAR of 9.07 percent which was slightly higher than their requirement as prescribed by Bangladesh Bank. But what was annoying for the banks that risk-weighted asset increased alarmingly during the period of study as compared to their capital for all sizes of banks. Another point to be noted is that CAR has decreased by about 32 percent in last seven years.

The study continued the same analysis by splitting the sample commercial banks into large, medium and small size in terms of their assets value based on the data of 2006. Important growth indicators, asset compositions of different sizes of banks and their impact on profitability, liquidity, and solvency were analyzed in part two of this chapter. So, this part of the chapter was rather a comparative analysis between different sizes of banks.

It is evident from the analysis that the position of small commercial banks (SCBs) was much better than other sizes of the banks. SCBs achieved highest growth in building total assets, provided maximum credits, and they had the highest growth in maintaining equity position also. Large commercial banks (LCBs) took the leading position in collecting deposits, but during the period of study, they showed the lowest growth in maintaining equity position. However, medium commercial banks (MCBs) performed poorly among the different sizes of commercial banks. Their position was last in collecting deposits and providing credit. However, they performed slightly better than LCBs in building assets and equity growth.

It is observed from the previous chapter that the largest part of all sizes of the banks' assets consumed by loans and advances. However, SCBs exceeded MCBs and LCBs in providing their assets as loans and advances which contribute to lion's share of earnings. They had the highest PG also. After loans and advances, all sizes of commercial banks provided a significant portion of their assets in another interest earning assets- investment. In this case, MCBs provided more assets in government and other first class securities as compared to other sizes of banks. They also enjoyed the highest PG (51.06%) in investment. Liquid assets have declined in all categories of commercial banks during the period of study. But SCBs suffered maximum in declining (62.33%) liquid assets. However, MCBs' position was top in maintaining liquid assets.

From the above evaluation it is clear that commercial banks of Bangladesh irrespective of groups had a tendency to invest more funds in earning assets. As usual, small banks again captured top position among the different bank groups in spending more funds (76.52%) in earning assets. PG during 2000-2006 also went in favor of small banks group (30.19%).

Allocating more fund in earning assets means earning more income for the banks. Income and profit figures justified small banks' allocation of more funds in earning assets because they earned more net interest income (NII) as well as profit before tax (PBT) as compared to other bank groups during the study period. In both the cases, medium sized banks performed poorly although they had a better PG over large banks.

SCBs have grown considerably more rapidly than MCBs and LCBs and have tended to meet or exceed them in some measures of profitability. MCBs disappointed their management, shareholders and depositors as this group of bank went down behind the other groups in generating returns for them. LCBs also demonstrated a decreasing trend in ROA and ROD during the examined period. However, they captured better position in case of ROE and ROD among the groups. But, maximum ROA went in favor of small banks' (1.24%) group with the highest PG of 105.1%.

Allocating more funds in earning assets creates liquidity shortage for all groups of banks. According to study, LCBs maintained only 20.53% as average of liquid asset which decreased alarmingly during the study period. Probably, they took risk of holding less liquid assets because LCBs had a good growth in collecting deposits. MCBs held more liquid assets because they provided less credit against their deposit collection. Liquidity position of SCBs seemed the worst because their average liquid asset holdings decreased awfully in seven years. In addition to that SCBs provided more credit to their customers as compared to other bank groups. But because of their small size, they failed to collect more funds from the depositors.

At this stage, the study preferred to analyze credit risk of these groups of banks. The study earlier used NPL and LLP to measure credit risk of the banks. According to study, LCBs improved their risky position as compared to other two bank groups in both cases in last seven years. During the period from 2000 to 2006, NPL of LCBs was reduced by 63.06% and at present their average NPL became to 4.90. Amount of provision against loan losses of this group was reduced by 34.85% during the period. The result reflected in average LLP which became less than 1 percent during the same time. Among the other groups of banks, MCBs performed poorly to reduce their credit risk in seven years as their position appeared unpleasant in both the cases.

For testing solvency of different bank groups, the study again used the capital adequacy ratio to test the solvency of commercial banks. It is clear from the evaluation that MCBs were far away from maintaining required capital as instructed by Bangladesh Bank. SCBs ranked first for keeping adequate capital against risk weighted asset. But their average CAR declined in seven years by about 55%.

Sample commercial banks were classified again into PCBs and DCBs on the basis of their ownership. The same tools and ratios were applied on these two types of banks. Common growth indicators, asset compositions and their impact on profitability, liquidity, and solvency of different sizes of banks were analyzed in different sections. So, this part of the chapter is a comparative analysis between the portfolio behavior of PCBs and DCBs.

When common growth indicators of PCBs and DCBs are evaluated it was found that PCBs' performance was much better in all areas. Average amount of asset creation, deposit mobilization and credit expansion of PCBs were more than double of DCBs during the period of study. PGs of these indicators were also encouraging for PCBs than that of DCBs.

Like other banks, PCBs and DCBs also allocated the largest part of their assets in loans and advances. However, PCBs' allocation in LAD was more than that of DCBs. After loans and advances, DCBs allocated a significant portion of their assets (19.59%) in another interest earning assets- i.e., investment. But average investment size of PCBs was much less than that of DCBs. DCBs also maintained higher PG in allocating assets in government and other first class securities as compared to PCBs. Average earning assets of DCBs were found slightly higher than that of PCBs.

DCBs failed to generate more earnings from their operation and both NII and PBT were much higher for PCBs. Findings indicate that DCBs are on average less profitable than PCBs. DCBs disappointed again, their management, shareholders and depositors because ROA, ROE, and ROD of these banks were far behind as compared to PCBs. However, both PCBs and DCBs did not maintain sufficient liquid assets for meeting their requirement as instructed by Bangladesh Bank.

DCBs again, failed to curb their credit risk position as both NPL and LLP increased during the years under review as compared to PCBs. Findings indicate that DCBs are on average more risky than PCBs. DCBs also were far away from maintaining the minimum capital as it was instructed by Bangladesh bank. PCBs kept adequate capital although their average CAR reduced by big percentage.

In summary, it is evident from the study that all types of banks preferred to provide more funds as loan for making more income and profit. Accordingly, the banks irrespective of groups were able to generate more returns for their depositors, stockholders, and management. Strong earnings and profitability profiles reflect the banks' capacity to absorb losses by building the capital base, and through financing expansion programs and paying adequate dividends to its shareholders.

SCBs performed much better as compared to other banks in generating more income and profit during the period of study. Profitability as measured by ROA, ROE and ROD is high in SCBs. Performance of DCBs was poor in this case. So, it is concluded that the bank with higher predictors of total assets, credits, deposits, or shareholder equity does not always mean that it has better profitability performance.

However, employment of lion's percentage of funds in loans and investments means fewer funds were available for maintaining minimum liquidity for the banks. Average liquid assets of the sample banks were declined by about 52% in relation to their deposits. In case of LCBs, PCBs and SCBs, the ratios were found much higher in the study. On the other hand, since loans are considered as one of the risky assets, so the banks were involved in more credit risk and they were forced to keep more provision against their loan losses. However, what is annoying for the banks is that their risk-weighted asset has increased alarmingly as compared to their capital. While the average CAR for all sample banks showed 9.07, the ratios were found worse in the case of MCBs and DCBs.

6.4 Associations between the Variables Used in the Study

However, from the above discussion, it is proved that loan is important variable for making income and profit for the sample banks, but at the same time the variable was responsible for creating liquidity risk, producing more credit risk and enhancing more risk-weighted assets for them. In short, loan variable is related not only with profitability but also with liquidity, credit risk and solvency. However, it is important to note that loan variable itself is dependent on deposit variable. So income, profit and profitability, liquidity, asset quality and solvency variables are related with deposit variable also.

Based on average data for all important variables of the study during the period 2000-2006 as shown in different tables, correlation and regression were calculated to establish the relationship between the important portfolio variables and their impact on profitability, liquidity, asset quality, and solvency of sample banks.

The first hypothesis of the study was that ‘profitability, liquidity, asset quality and solvency objectives of commercial banks are significantly correlated with their portfolio compositions’. Since the portfolio of commercial banks is heavily dominated by loan, the study used the variable to find its relationship with the aforesaid variables. The result of correlation analysis between important variables used in the study proved the hypothesis.

Second hypothesis was also accepted when correlation coefficient table exhibited that asset composition is positively and significantly correlated with deposit variable. Commercial banks provide maximum of their deposited amount as loan after keeping required liquid assets. Regression analysis showed that loan is influenced by deposit.

Regression estimates further proved that profitability, liquidity, asset quality and solvency variables of the commercial banks are influenced by loan variable individually. Another regression effort was there to compare capability of loan to influence aforementioned variables of different sizes of commercial banks. It is seen that capability of loan is stronger for small banks than that of medium and large sized banks.

6.5 Recommendations

In the light of the findings of the study, the following policy recommendations are made to improve the performance of portfolio of the commercial banks of Bangladesh. At the end of this section, some suggestions for further research are put forward.

(1) Productivity of the commercial banks may be raised by practicing better portfolio management, improving recycling of funds and developing other income from business activities of the banks.

(2) Liquidity position of the commercial banks should be improved from present alarming situation. The Bangladesh Bank should monitor actively to ensure that the commercial banks maintain their minimum liquidity requirements.

(3) Profitability is a prime question of survival of any organization. But the profitability performance of both DCBs and MCBs declined during the examined years. Therefore, both DCBs and MCBs should immediately arrest the declining trend of profitability.

(4) NPL adversely affects the profitability performance of the banks. Through selection of viable loan proposals, judging the entrepreneurs, and the quality of the clients; and by ensuring proper supervision and monitoring of the bank financed projects; NPL can be minimized and ultimately the burden of the profitability can be reduced.

(5) In order to bring down the burden of NPL, commercial banks need to explore all avenues to lower interest rates on lending which is likely to have positive impact on NPL as well.

(6) Credit risk, even though has been declining, is still relatively high in some banks, which may have led them to be cautious. To overcome this problem, there is an apparent need to initiate efforts that can provide more information regarding credit-worthiness of the borrowers while at the same time trying to continue boosting up the real side of the economy, if the banks are willing to approve new loans.

(7) Effort may be taken to reduce risk through the formation of credit bureau, credit guarantee scheme, credit rating, as well as law enforcement needs to be improved. These policies will improve transparency and availability of debtor information, thus reducing asymmetric information problem.

(8) To improve the knowledge in assessing risks, banks should be supported to invest more in credit research and monitoring.

(9) Each bank should be equipped with a computerized data bank and an effective research cell. So that individual bank can conduct research on regular basis with a view to explore their opportunities and threats. In addition, the external researchers can conduct researches by using those data banks. All these, ultimately influence the performance of the banks.

(10) It is observed that the contents of the annual reports of the sample banks are not published uniformly. It is necessary to make a standard format of the annual reports, including the audited balance sheets and profit and loss accounts. The publications of the ministry of finance should incorporate uniform data, which have similarities with those of the financial institutions.

(11) Periodical monitoring of the portfolio performance should be ensured by the bank management. Because, it can provide necessary feedbacks and trigger the process of corrective actions to improve the efficiency and health of the commercial banks.

(12) The imposition of CAR requirement, however, would contribute to a decrease in banks' willingness to supply loans. This situation would lead banks tend to put their excess liquidity in low risk assets.

(13) To reduce the bad impact of the NPLs on the profitability, the Government can establish an agency at the cost of waiver of loans and interest and to whom all NPLs can be transferred. Thus the banks can get rid of default culture.

(14) The maintenance of macro stability needs to be continued in order to enhance public confidence and reduce the perception of default risk.

(15) Though capital position of the banking systems has improved slightly in the recent years, yet a number of DCBs are observed to significantly undercapitalized. The banks should be allowed to raise new capital from the security market.

(16) The study suggests a reformulation regulation policy in the banking sector based on portfolio approach to regulation. Therefore, the authority needs to take various steps that include incentive and constrain.

6.6 Conclusion

It is revealed that the commercial banks provide about 79 percent of deposit as loan. It means that only 21 percent deposit is available for maintaining liquidity and other purposes of sample commercial banks. Among the different bank groups, SCBs provided the highest percentage of loan in relation to total assets.

Liquid assets in relation to total assets of sample commercial banks have alarmingly decreased by 47.05 percent during the same period. So, liquidity of sample commercial banks is negatively related with loan. Correlation and regression analysis also go in favor of the hypothesis. However, liquidity scenario is noticed more appalling for SCBs and PCBs as compared to MCBs, LCBs, and DCBs. But except LCBs, the study found no statistical relationship between liquidity and loan variable in those cases.

The study found a statistical significance between loan and profitability for the sample commercial banks. There exists a significant correlation between the variables in case of SCBs also. However, in both the cases, profitability is negatively correlated with loan. So, increase of loan in the study has produced a result of decrease in profitability.

The study found a decreasing trend in NPL during the period under review for all group of banks. LCBs were able to reduce their credit risk to a large extent. They are followed by SCBs and PCBs. But the study found no statistical significance between loan and credit risk for LCBs and DCBs. In rest of the cases there exists a positive correlation between credit risk and loan of the commercial banks. So, according to the study, providing more loans means inviting more credit risk.

Since loan is considered as one of the most risky assets, so provide more loans means more risk-weighted assets for the commercial banks. Accordingly, they require more capital for maintaining a minimum CAR (solvency). During the years under review, however, the study found a decreasing trend in CAR. The falling trend continued for all categories of commercial banks except DCBs. But the study found no statistical significance between loan and credit risk for MCBs, LCBs and DCBs. In rest of the cases there exists a negative correlation between solvency and loan of the commercial banks. So, according to the study, additional loans created shortage of solvency for the banks.

Two main objectives of the commercial banks are to mobilize deposits and provide loans from it. In last seven years, sample commercial banks achieved over two hundred percent growth in deposit collection. Deposited fund was then used to provide loan to their customers after keeping necessary amount for maintaining liquidity. Loan deposit ratio exhibited about 79 percent for the sample commercial banks although SCBs and PCBs claimed more than the average. The study also found very strong and positive correlation between deposits and loan variable. Regression result between the two variables also found significant statistically.

So, the study concludes that providing more loans of the sample banks is very much dependent on their additional deposit collection. But more lending does not always give the guarantee to earn more profit for them. Rather it creates more credit risk and more pressure to maintain a minimum CAR (solvency) for the banks.

To overcome this problem, the study suggests for initiating efforts that can provide more information regarding credit-worthiness of the borrowers. To improve the knowledge in assessing risks, the banks should invest more funds in credit research and monitoring. The study further recommends for imposition of minimum CAR requirement of the commercial banks which will contribute to a decrease in banks' willingness to supply loans. This situation would lead commercial banks tend to put their excess liquidity in low risk assets.

6.7 Suggestions for Further Studies

In view of the limitations of the present study and demand for further studies, the following areas of research are suggested:

(1) Separate study should be undertaken to show the relationship between liquidity and profitability incorporating broad based samples of commercial banks.

(2) A study can be done on profitability and solvency of the commercial banks.

(3) It is evident that ownership status has significant effect on bank efficiency. So another research can be done in this regard.

(4) It is revealed that large banks are more efficient than smaller banks. So, another study may be suggested on size of commercial banks and their efficiency.

(5) From literature review, it is understood that well capitalized banks are more profitable. So the study suggests for further research on profitability and capital of the banks.

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APPENDICES

Appendix-1
Assets of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	47989	33065	32509	32969	31919	25352	22139
BA	30438	23380	17811	12600	8458	4722	2123
CITY	47446	35304	26376	23699	24482	20726	17208
DBBL	45493	32279	24561	19966	17866	13463	6936
DHK	48142	33072	28178	20816	19104	19125	11646
EBL	35971	27400	23048	18716	18445	18284	16440
IFIC	36081	30201	29325	27103	28886	27259	26417
MCT	37160	28890	24098	18383	16383	13086	9365
MTBL	26218	19307	15931	9038	5832	4388	2445
NCC	32605	26114	21469	17440	18685	16091	12428
NBL	46796	38400	35127	36254	33777	31661	31281
ONE	23143	20105	13420	9975	8316	7431	2722
PRMR	27170	22768	20100	15103	11096	6037	3449
PRME	60899	41506	32362	24149	19359	15737	12846
PUB	58405	52732	46593	43502	41895	39069	36370
RUP	76125	76125	71580	67244	67250	60119	46521
SE	54825	43295	33745	23136	18842	14469	11711
SBL	16861	14442	11071	7174	5275	4038	2335
UBL	45217	42062	39700	36671	36973	35912	31420
UCBL	28813	28813	25059	22797	20653	18349	15920

Source: Annual Reports of Sample Commercial Banks

Appendix-2
Deposits of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	42077	27361	28299	27260	25525	19410	16596
BA	25289	18500	13471	10431	7008	3849	1512
CITY	39572	30648	22114	20046	19683	17184	13804
DBBL	40109	27241	21068	17134	15975	11458	6120
DHK	41554	28439	25700	18366	16854	17706	10749
EBL	25735	17978	17012	15649	11952	13748	N. A.
IFIC	28621	22505	20709	19799	19132	17617	16577
MCT	33318	25087	22385	16285	15150	12235	8896
MTBL	22264	16099	13164	7164	5158	3358	1674
NCC	28147	21478	16069	14673	16064	12849	10620
NBL	40351	32984	28973	27762	26276	24897	23616
ONE	20253	18030	10915	8848	7608	6399	2267
PRMR	24199	20290	18005	13351	10031	5374	2206
PRME	54724	36022	28483	21144	16477	13346	11170
PUB	48676	44503	39790	39141	35853	33730	32291
RUP	N.A.	N.A.	57987	56869	55750	N.A.	N.A.
SE	27931	19619	16940	16494	15343	10570	8560
SBL	14221	12063	8731	5612	4102	2749	2054
UBL	39360	36892	34615	31478	29154	28430	25943
UCBL	24559	20970	17665	17413	16417	14246	12387

Source: Annual Reports of Sample Commercial Banks

Appendix-3
Loans of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	31289	21385	17009	20435	19477	14862	12682
BA	22256	17870	11861	8190	5449	3013	1114
CITY	30789	23326	17028	14779	13885	12729	9965
DBBL	28325	20349	14976	11431	9392	8044	4588
DHK	34049	23372	16539	12887	11211	10246	5415
EBL	26008	17758	14973	11288	10891	9946	8141
IFIC	25491	21695	20623	20451	20597	18190	17313
MCT	26842	21857	17669	10776	8896	6707	3913
MTBL	18592	14373	11693	5904	3437	1910	602
NCC	24678	20533	15211	12851	13148	10789	7965
NBL	32710	27020	23130	22257	21678	20201	18553
ONE	15681	13851	9613	6051	5126	4392	1630
PRMR	20678	18033	15384	11422	8096	4281	2058
PRME	45010	31916	23220	16492	12687	9075	7707
PUB	40387	32640	27542	26283	26190	23583	21572
RUP	44921	45345	42110	41679	39768	38340	26213
SE	32551	22002	16560	15542	13027	9178	7062
SBL	12634	10184	7801	4952	3496	2265	752
UBL	25164	21852	18601	18786	22938	24187	22307
UCBL	20211	15385	14396	13701	11826	10942	9444

Source: Annual Reports of Sample Commercial Banks

Appendix-4

Equity of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	2583	1527	124	114	111	117	98
BA	1950	1567	1183	890	375	283	220
CITY	2530	1958	1417	797	784	503	423
DBBL	1504	1349	1024	792	626	664	407
DHK	2551	2216	1488	1210	895	661	447
EBL	3315	3071	2835	2631	2321		
IFIC	1635	1361	1305	1144	1079		
MCT	2253	1829	1442	1130	594	527	349
MTBL	1905	1547	1218	970	320	258	215
NCC	2135	1896	1657				
NBL	3274	2735	1862	1701	1629	1573	1427
ONE	1519	1286	1077	1029	847	414	
PRMR	1626	1134	1158	989	687	338	
PRME	3860	2808	2240	1732	1526	1258	895
PUB	4528	2881	2555	2308	2132	1941	1538
RUP	1274						
SE	2852	1649	1349	1300	971	757	565
SBL	1312	1100	857	665	285	220	213
UBL	2085	1865	1742	1697	1552	1305	802
UCBL	2092	1735	1386	1243	1075	786	

Source: Annual Reports of Sample Commercial Banks

Appendix-5

Investments Of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	6301	4061	6738	3336	3219	2704	2430
BA	3345	2256	3241	2497	1338	380	130
CITY	6405	3648	3161	3379	2511	1978	1614
DBBL	5877	3500	2034	2538	3292	752	742
DHK	6133	3926	3078	2046	1950	1274	814
EBL	5850	5009	4399	3611	2268	1258	1813
IFIC	3545	2971	2854	2406	4240	721	3241
MCT	5408	3518	3715	2107	1382	882	450
MTBL	3056	2496	1696	1532	996	631	315
NCC	3552	3010	4385	2966	2909	1757	1722
NBL	5730	3565	4374	4044	3840	2892	2627
ONE	3321	2165	1229	688	630	540	240
PRMR	2394	2243	2753	1614	1342	680	270
PRME	7844	3940	3084	2750	1996	1731	1525
PUB	4982	5537	5742	4939	4400	4166	3853
RUP	12903	12155	13203	13997	12491	10634	9704
SE	5113	3190	2711	2582	2282	1727	1370
SBL	1623	1263	943	866	623	482	262
UBL	9565	10062	12794	9883	6739	3692	3185
UCBL	2834	2877	3020	3022	3962	1962	2163

Source: Annual Reports of Sample Commercial Banks

Appendix-6
Liquid Assets of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	5037	2866	4341	5021	5294	8578	7641
BA	3241	2232	1900	1753	1507	1448	1216
CITY	5836	6271	4417	4053	6689	5016	4444
DBBL	6854	4704	5241	5097	4560	4191	1335
DHK	6107	4017	6923	4751	5089	6794	4930
EBL	8946	3699	2935	2871	4811	6647	6578
IFIC	5741	4148		2878	3309	7721	4760
MCT	3577	2621	2859	4739	5574	5112	4715
MTBL	3577	1540	1978	1977	1787	1569	1416
NCC	3790	2070	1409	1188	1724	2672	2075
NBL	5755	5759	6060	7602	5878	4901	4661
ONE	3096	3110	2676	2143	2979	2389	2339
PRMR	3382	2035	1697	1579	1420	894	48
PRME	6726	4934	5082	4081	4187	4042	2896
PUB	6139	9076	9057	8018	7056	7648	7697
RUP	9942	5628	5833	3622	6471	4425	4911
SE	3427	6890	3595	3743	2725	2963	2859
SBL	2056	2302	1778	1496	1203	1243	1217
UBL	6915	7408	5873	4959	4414	4772	3075
UCBL	4394	4472	5808	4413	3854	4493	3324

Source: Annual Reports of Sample Commercial Banks

Appendix-7
Net Interest Income of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	601	691	511	507	488	313	89
BA	656	445	372	268	184	107	44
CITY	1202	1079	700	580	529	371	177
DBBL	942	820	581	316	360	146	91
DHK	962	748	633	510	430	453	256
EBL	921	710	680	455	635	609	524
IFIC	813	657	469	429	276	328	312
MCT	836	733	612	473	358	264	126
MTBL	632	430	319	306	245	127	83
NCC	976	609	436	420	440	386	219
NBL	1225	614	592	541	520	571	464
ONE	398	315	385	166	169	109	39
PRMR	650	602	480	362	209	130	99
PRME	1500	1175	1025	751	565	497	355
PUB	2359	1596	984	798	709	966	899
RUP	340	761	437	491	336	198	-181
SE	1063	926	561	495	434	395	232
SBL	556	495	431	268	151	93	92
UBL	985	523	206	372	74	109	63
UCBL	1109	750	636	634	477	515	332

Source: Annual Reports of Sample Commercial Banks

Appendix-8
Profit Before Tax Of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	532	407	190	47	47	443	264
BA	967	604	461	381	206	107	8
CITY	240	541	823	203	66	223	67
DBBL	767	688	499	382	296	275	207
DHK	950	768	633	510	430	453	256
EBL	1134	967	850	638	631	552	462
IFIC	608	150	224	117	150	161	157
MCT	1179	967	822	575	461	404	192
MTBL	874	624	449	413	346	185	0.82
NCC	1057	688	446	335	385	351	181
NBL	1059	581	484	336	250	401	334
ONE	593	472	501	261	217	205	91
PRMR	700	514	856	445	391	132	73
PRME	1741	1201	1064	770	697	705	526
PUB	1660	1043	245	345	724	626	498
RUP	279	358	200	356	383	277	102
SE	1638	916	542	555	436	402	287
SBL	658	586	462	276	122	78	52
UBL	867	783	683	625	502	858	356
UCBL	852	626	417	403	155	175	23

Source: Annual Reports of Sample Commercial Banks

Appendix-9
Net Profit of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	532	162	90	17	24	263	157
BA	476	384	294	216	114	64	6
CITY	240	541	380	13	13	80	67
DBBL	362	368	236	210	178	163	124
DHK	580	463	358	269	234	290	173
EBL	513	546	483	358	371	323	224
IFIC	254	82	72	64	79	161	157
MCT	494	387	313	216	257	215	97
MTBL	478	336	247	190	99	49	8.4
NCC	479	352	285	79	214	232	97
NBL	507	272	170	88	142	274	229
ONE	347	302	195	184	91	114	56
PRMR	369	181	471	227	213	68	63
PRME	1052	568	612	375	418	483	360
PUB	846	573	135	190	398	407	324
RUP	94	189	101	248	383	84	-309
SE	910	374	295	256	254	271	173
SBL	352	312	243	152	65	31	23
UBL	249	143	101	197	250	507	225
UCBL	582	417	168	229	93	114	14

Source: Annual Reports of Sample Commercial Banks

Appendix-10
Non Performing Loans of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	1258	1756	1931	3934	4819	2546	2942
BA	505	495	391	143	82	0	0
CITY	2211	1332	1785	1776	1151	1651	655
DBBL	816	358	24	41	56	41	33
DHK	558	353	273	420	278	122	93
EBL	986	961	1077	1536	1466	1146	668
IFIC	5333	5019	6084	5810	4018	6962	3504
MCT	1017	905	726	444	37	5	0
MTBL	793	657	754	565	398	123	40
NCC	1222	990	1197	1253	1235	1067	860
NBL	1966	1908	3414	3951	4038	5593	6252
ONE	391	337	226	221	213	201	143
PRMR	1015	696	312	66	29	50	13
PRME	369	306	353	327	188	103	115
PUB	4009	4746	4690	4805	5271	6074	7985
RUP	5766	7722	7698	9376	9468	9838	12708
SE	1422	1091	593	325	259	255	208
SBL	124	46	34	23	18	16	0
UBL	5046	3785	3657	3529	3468	3194	2902
UCBL	901	1352	1612	1963	2033	2691	3188

Source: Annual Reports of Sample Commercial Banks

Appendix-11
Provision Against Loans of Sample Commercial Banks (Taka in millions)

BANK/YR	2006	2005	2004	2003	2002	2001	2000
AB	179	348	170	116	55	186	173
BA	105	197	187	25	12	1	1
CITY	842	118	99	472	486	185	122
DBBL	265	216	133	72	128	123	32
DHK	206	102	76	163	202	53	51
EBL	223	88	41	121	153	125	111
IFIC	255	400	297	505	155	228	236
MCT	594	523	343	145	12	1	0
MTBL	95	28	118	60	35	19	6
NCC	131	258	149	174	184	135	109
NBL	83	270	228	600	610	606	550
ONE	81	15	153	78	72	55	22
PRMR	238	385	150	110	75	64	26
PRME	390	320	174	249	123	114	105
PUB	150	330	314	520	420	116	89
RUP	977	521	738	669	534	189	108
SE	361	265	188	108	183	115	96
SBL	119	113	31	16	49	28	10
UBL	400	730	215	287	368	119	92
UCBL	300	231	284	294	229	137	129

Source: Annual Reports of Sample Commercial Banks