Submission of Dissertation
On

A Comparative Study on Non-Performing Loans of Some Selected State-Owned and Private Commercial Banks in Bangladesh

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Dissertation Submitted for the Fulfillment of the Degree of Doctor of Business Administration (DBA)

To

The Department of Banking and Insurance
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Under the Supervision of

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2019

Certificate

We have the pleasure to certify that the dissertation entitled "A Comparative Study on Non-Performing Loans of Some Selected State-Owned and Private Commercial Banks in Bangladesh" has been presented by Mr. Md. Ariful Islam, Doctor of Business Administration (DBA) Candidate of University of Dhaka and Unit Head & Senior Assistant Vice President of the wholesale division of Mutual Trust Bank Ltd. This thesis report has been prepared through field study analysis and empirical research. This research has maintained its originality and practicality that is a supplement to the researcher's relevant field of knowledge. No other individual was associated in the completion of this research. We have gone through the draft and the final version of the thesis report thoroughly and found it satisfactory for the submission to the Department of Banking and Insurance, University of Dhaka for the fulfillment of the degree of Doctor of Business Administration (DBA). To the best of our knowledge, any part of this work has not been submitted anywhere for any degree or diploma.

He is permitted to submit the thesis in its present form.

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Declaration

I do hereby affirm that the dissertation entitled "A Comparative Study on Non-Performing Loans of Some Selected State-Owned and Private Commercial Banks in Bangladesh" and the study presented has been done by me from both field survey and empirical perspective. The study has the potential to be an additional contribution to the field of knowledge. I most humbly submit this thesis to the Department of Banking & Insurance, University of Dhaka, Bangladesh, for the achievement of the degree of Doctor of Business Administration (DBA). The writings and comments of this thesis have neither partly nor fully been submitted to any other institutions for any academic degree or diploma.

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Abstract

This thesis utilizes the data gathered from 5 state-owned commercial banks along with the 16 private commercial banks for the time period of 2009 to 2017 to perform a comparative analysis. Dynamic panel data model (GMM estimation) has been employed with time dummies to determine the effect of non-performing loans, efficiency, loan recovery and loan write-off. Furthermore, questionnaire survey with five-point LIKERT scale has been conducted to formulate the important comparative factors under which the state-owned and private banks can be clearly distinguished.

Before performing the comparative analysis, this thesis also used the data gathered from 16 private commercial banks for the time period 2006 to 2017 to investigate the relationship between non-performing loans and its determining factors. Dynamic panel data model (GMM estimation) has also been employed in this case with time dummies to control for macroeconomic events to determine the effect of bank-specific factors on the performance of loans. Questionnaire survey with five-point LIKERT scale had been conducted to formulate the perception of bankers and borrowers about the prevailing factors affecting the condition of non-performing loans.

Before the comparative analysis between the state-owned and private commercial banks, this thesis analyzes the impact of the cost of fund, average lending rate and excessive loans from a long- run perspective. In this regard, lagged per-capita GDP and real interest rate have been used to control for macroeconomic factors. Time dummies were used to replace the macro-economic factors to find out the overall time-specific fixed effects on the condition of non-performing loans. Additionally, this paper uses the banks size and individual bank's loan to total loans of the banking industry as a measure of bank size and market power. This is a novel research in Bangladesh which specifically identifies the impact of lagged credit lending by banks up to four years. Moreover, this paper uses the lagged per-capita GDP up to two periods to investigate the impact GDP on the performance of bank's loan quality.

Empirical analysis in this study has found a significant relationship between lagged credit growth and the future non-performing loans. Loans which are disbursed today out of competition or aggressiveness have a huge probability of becoming default in the long-run. Furthermore, this research also uses inflation-adjusted cost of fund and average lending rate to find a significant long-run association with bad loans. Another finding of this research indicates

that an increase in the cost of fund induces a positive change in the lending rate in the following period which ultimately affects the credit quality in the long-run.

Empirical results have shown that there is a significant positive relationship between the banks' "cost of fund" and "non-performing loans" in the long-run but the relationship is not significant in the shorter time frame. The results highlight a strong long-run causality between banks' NPLs and COF in the PCBs of Bangladesh. Furthermore, results also suggest that higher NPLs for some banks can induce in the rise in banks' COF in a bidirectional form. Moreover, the results have shown that higher COF leads to the growth of NPLs and as a result, the provision for bad loans is also increased which ultimately reduces the income of the banks. This process forces the banks to write-off loans from the balance sheet to reduce the non-performing assets from the books.

In terms of the lending rate, the study found some interesting situations where higher lending rate causes the non-performing loans to fall and rise gradually. It has been found in the study that higher lending rate causes a decline in the demand of the loans which makes the current non-performing loans smaller. This situation does not prevail for a long period of time because banks ultimately increase the loan growth abruptly to maintain their earnings which causes the bad loans to increase in the long-run.

Based on the questionnaire survey, this thesis brings out the perception of bankers and borrowers in identifying the bank-specific and macroeconomic factors of non-performing loans in Bangladesh. This investigation used questionnaire survey on 75 bankers and 25 borrowers in 2018 to identify the effect of the cost of fund and average lending rate on the non-performing loans. The data have been collected through face to face interview, telephone and emails. The study found political stability, loan evaluation, banking corruption, energy-crisis and borrowers honesty to be significantly related to non-performing loans. The survey used face to face interview, emails and phone calls to question about the factors of bad loans. The study used SPSS software to find the reliability of the survey. The study used the variable cost of fund and lending rate to formulate a link in analyzing the relationship between cost of fund and non-performing loans.

Finally, the comparison between the state-owned and private commercial banks revealed important comparing factors under which the distinction between these different bank groups have been put forward. GMM estimation results found that cost efficiency, loan write-off and loan recovery (which was previously written off) does not affect the state-owned commercial

banks in the same manner as they affect the private banks. Non-performing loans were found to be significant for both bank groups that affected their profitability negatively. The effect of operating cost (measure of efficiency) was insignificant on the profitability of the state-owned commercial banks unlike the negative impact it posed on the income of the private banks. The comparative analysis found loan write-off to pose a negative impact on the pre and after-tax profit of the private commercial banks but the effect was not significant for the public banks. Loan recovery had a positive consequence on the profit of the private commercial banks as expected but the recovery of the written off loans did not increase the profit of the public banks.

Aside from the comparative analysis through secondary data, the study also employed another questionnaire survey through face to face interview to compare the pubic banks with the private banks. The study found non-performing loans, capital injection, use of advanced technology, corruption, branding and marketing, willful defaulters, cost inefficiency, loan against letter of credit acceptance (inland), customer service and political influence to be the important factors of comparison.

Keywords: Non-performing Loans, State-Owned Commercial Banks, Private Commercial Banks, Bangladesh, Bangladesh Bank, Comparison, Determinants, Cost of Fund, Lagged Credit Growth, Market Power, Per-Capita GDP, Lending Rate, Dynamic Panel Data, Time Dummy, and Time fixed effects.

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ACFID	Agricultural Credit and Financial Inclusion Department
AMC	Asset Management Company
BB	Bangladesh Bank
BIBM	Bangladesh Institute of Bank Management
BIS	Bank for International Settlements
BOD	Board of Director
BRPD	Banking Regulation & Policy Department
BSEC	Bangladesh Securities and Exchange Commission
CAR	Capital Adequacy Ratio
CEE	Central and Eastern Europe
CIB	Credit Investigation Bureau
COF	Cost of Fund
CRAR	Capital to Risk Weighted Asset Ratio
CRR	Cash Reserve Ratio
DSE	Dhaka Stock Exchange
ER	Exchange Rate
FCB	Foreign Commercial Bank
FSI	Financial Soundness Indicator
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
IFRS	International Financial Reporting Standard
IMF	International Monetary Fund
IR	Inflation Rate
IT	Information Technology
IV	Instrumental Variable
L/C	Letter of Credit
LCB	Licensed Commercial Bank
LGR	Loan Growth Rate
LR	Lending Rate
MB	Merchant Bank
MIS	Management Information System

MP	Market Power
MLC	Money Loan Court
NBFI	Non-Banking Financial Institution
NEER	Nominal Effective Exchange Rate
NII	Net Interest Income
NPL	Non-performing Loan
NSC	National Savings Certificate
OECD	Organization for Economic Cooperation and Development
PCB	Private Commercial Bank
PCGDP	Per Capita GDP
PEP	Politically Exposed People
RCOF	Real Cost of Fund
RLR	Real Lending Rate
ROA	Return on Asset
ROE	Return on Equity
SAARC	South Asian Association for Regional Cooperation
SCB	State-owned Commercial Bank
SD	Stock Dealers
SDB	Specialized Development Bank
SME	Small and Medium-sized Enterprises
SLR	Statutory Liquidity Ratio
SMA	Special Mention Account
SPSS	Statistical Package for the Social Sciences
SS	Sub Standard

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Chapter One: Introduction

1.1 Introduction

In the last two decades the banking sector of Bangladesh has undergone many changes in terms of policy reforms, addition of new banks, information system and merging. Within this time frame noticeable differences have been seen in terms of asset quality and the management efficiency. In this thesis, a comparative analysis between the state-owned and private commercial banks has been conducted through questionnaire survey and empirical analysis. This study also investigates the determinants of non-performing loans through questionnaire survey and empirical analysis along with the effect of excessive credit lending and cost of funds on the asset quality for the private banking sector. Before this study delves into the further history and analysis of loan classification, some important aspect of the condition of bank loan is worth mentioning. We begin with the definition of non-performing loans which is the main subject of this thesis around which different objectives have been formulated.

1.1.1 Non-performing loans

Loan constitutes a major portion of the banks' assets which is generally shown on the asset side of the balance sheet. This study uses the term "asset quality" to measure the quality or performance of the loans of the banking sector. In general, banks lend money to the borrowers in the form of loan which is utilized by the borrowers to provide the banks with "cost of fund" and spread. For every loan, banks must keep sufficient amount of provisions prescribed by the Bangladesh Bank (Central Bank of Bangladesh). After the general provision requirements have been met, if the banks have proper valid cause for the concern of any loans to become non-performing, they can keep extra provision which is specifically called the provision for non-performing loans. Non-performing loans are also called classified loans because they have been transferred from the unclassified (performing) category to the classified (non-performing) portion of the balance sheet. The classified category consists of sub-standard loans, doubtful loans and loss loans. These loan categories are called non-performing loans because banks usually don't receive any interest payments from these loans for at least 90 days. The transfer of loans from the performing category to the non-performing category usually results in maintaining extra specific provisions which is directly taken out from the capital of the banks thus resulting in a reduction in banks' profit. A detailed classification of loans and provisions

can be found in chapter 1.2. Some of the general definitions of non-performing are mentioned below for the convenience of the flow of the reading.

Different researchers have identified the definition of NPL more or less in a similar manner. According to Klein (2013) non-performing loans are those loans whose interest payments or principal repayments have not been made for a period of over 90 days. Minton et al. (2009) in their study mentioned that NPLs are those loans which are due for over 90 days. When obligations (interest payments) related to loans and advances becomes due for more than 90 days banks usually consider that the borrower is unlikely to pay any further payments and that is when the non-performing loan is created (D'Hulster et al. 2014). According to World Bank, a loan is classified as non-performing when obligations related to the loan become due for over 90 days. Many researchers have used this definition in defining the non-performing loans.

- Gross non-performing loans: Gross NPLs are loans which are past due for more than 3 months. They are classified as substandard, doubtful and loss. Gross non-performing loans include the provision amount held against them.
- *Net non-performing loans:* It is the outstanding amount of gross NPLs, net of provisioning for the purpose of non-performing loans (NPLs).

Although the above mentioned definition of non-performing loan is being used extensively around many parts of the world some caution is needed when making comparisons among different countries (Škarica, 2014). According to the Financial Soundness Indicator (FSI) compilation guide of March 2006, (IMF, 2006) loans (and other assets) should be classified as NPL when –

- Payments of principals and interest amount are past due by three months (90 days or more)
- Interest payments equal to three months (90 days) interest or more have been capitalized (reinvested in to principal amount), refinanced or rolled over

According to the Bank for International Settlements (BIS) the 90 day rule is used to identify a loan's performance and a loan is called default when a loan does not produce and interest payments for at least the above mentioned time period. Additionally, according to the IMF, the non-performing loans is usually categorized as –

- Substandard (interest and/or principal are overdue for 30 to 91 days)
- Doubtful (interest and/or principal are overdue for more than 91 to 180 days)

- Loss loans (loan is virtually uncollectible and loans are overdue for more than a year)

1.1.2 Scenario of non-performing loans in Bangladesh

In general, the quality of loans of the banking sector of Bangladesh has improved over the last two decades (Figure 2). Despite the decline of bad loans in general, the asset quality of the private commercial banks has raised concerns in last six years. Particularly, after the stock market crash of 2011, the quality of many loans of the private commercial banks has become non-performing (Figure 2). The reasons for the increase of non-performing loans of these banks since 2012 are quite significant. First of all, the inadequate and improper procedures in giving out the loans to improper clients are held responsible for this. It is quite acceptable for some non-performing loans to persist in every economy but any form of long term inclination of non-performing loans can be extremely detrimental. The arbitrary trend of rising NPLs in Bangladesh has created concern for the economic stability and the protection of the depositors' money. Each step in the loan disbursement procedure is as important as the other. However, the correct decision about the evaluation of the loans at the very beginning bears much of the weight whether a loan is going to properly be utilized or not. In Bangladesh, most of the loans are distributed by reference and without proper investigation. Many bank personals are heavily dependent on references for giving out the loans. This concern could be avoided by the banks' proper evaluation and investigation before sanctioning the loans.

In addition, the political influences and the poor management of the bank can be attributed to different types of management policy and inefficiency. Sometimes reference may not increase bad loans but the habit of not conducting evaluation can increase the chance of the performance of the loans in the long-run. This brings us to the relationship between bad management and influence of political power for getting loans. Inefficiency of the management can result from various sources namely, policy, cost management, fund diversion and inexperience. Sometimes, management becomes ineffective when political induction persists in the credit selection eventually leading to a failed banking system. Political influence has heavily plagued the financial sector in Bangladesh not for just the mere presence of it but rather for the sheer dominance in determining the sanction of a loan.

Coming back to the current condition of non-performing loans of Bangladesh it is important to follow certain trend of the loan quality before any assumption can be made. Regardless of the decline of non-performing loans to total loans in the last two decade the economy of Bangladesh particularly, from 2012 the banking sector has witnessed a vitriolic phenomenon

as mentioned at the outset. According to Bangladesh Bank, until June 2017, the total non-performing loans of the banking sector of Bangladesh stood at Tk. 741.5 billion. Total non-performing loan of Bangladesh has gone up from Tk. 224.8 billion to Tk. 741.5 billion in the time period of 2009 to June 2017. Another reality attached to the NPL history of Bangladesh is the rising trend of writing-off bad debts. The state-owned commercial banks and the private commercial banks have been in a marathon for writing off bad debts. Total loans which were written off in 2017 were 157% higher than the loans which were written off in 2010. The total written-off bad debts up to Dec 2016 were Tk. 447.3 billion. In this amount, the primary contributor is the state-owned commercial banks who wrote-off approximately 50% of the total written off loans up to December 2016. In figure 2 and figure 3 the rapidly declining bad loans can also be explained by the yearly write-off of the banking sector in many instances. Compared with the other countries in the south Asia and Europe, Bangladesh still remains in a critical position in handling the rising non-performing loans over the last five or six years. As this study centers on the conventional private commercial banks the classification of the banking industry in Figure 1 will reveal the area on which this study is based.

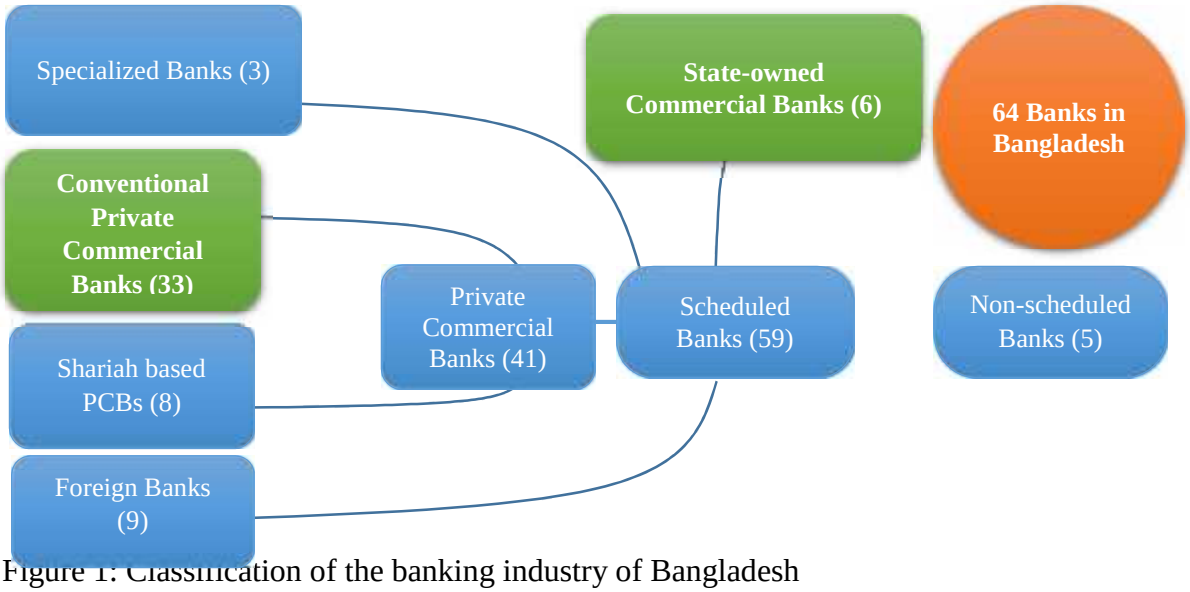


Figure 1: Classification of the banking industry of Bangladesh

Source: Bangladesh Bank

As of February 2019 there are 67 banks in Bangladesh both scheduled and non-scheduled in nature. Before the recently permitted Community Bank, Peoples Bank, Citizen Bank and Bengal Bank there were 63 banks in Bangladesh up to October, 2018. The newly included community bank has become the 41th local private commercial bank in Bangladesh which sets the number of conventional private commercial banks to 33. Despite the inclusion of community bank the number of publicly listed banks remains at 30. Community Bank received

permission from Bangladesh back in October, 2018. The rest of the three banks received confirmation from Bangladesh Bank in February, 2019.

Returning to the credit quality of the banking sector of Bangladesh, the scenario of non-performing loans is not that promising compared with other countries of similar level. South Asian countries like India, Bhutan, Afghanistan and Bangladesh has been in circle of inclining NPLs during the year 2011 to 2016. Apart from these SAARC nations, other south Asian countries like Maldives, Sri Lanka and Pakistan have been able to maintain a declining non-performing loan within the same time frame. In the current state of affairs of the rising non-performing loans in Bangladesh, it has become absolutely indispensable for the country to put a grip to this conundrum.

In this regard a glimpse of the history of the condition of the non-performing loans will reveal the rising concern to analyze the determinants of bad loan quality.

1.1.3 History of Non-performing loans in Bangladesh

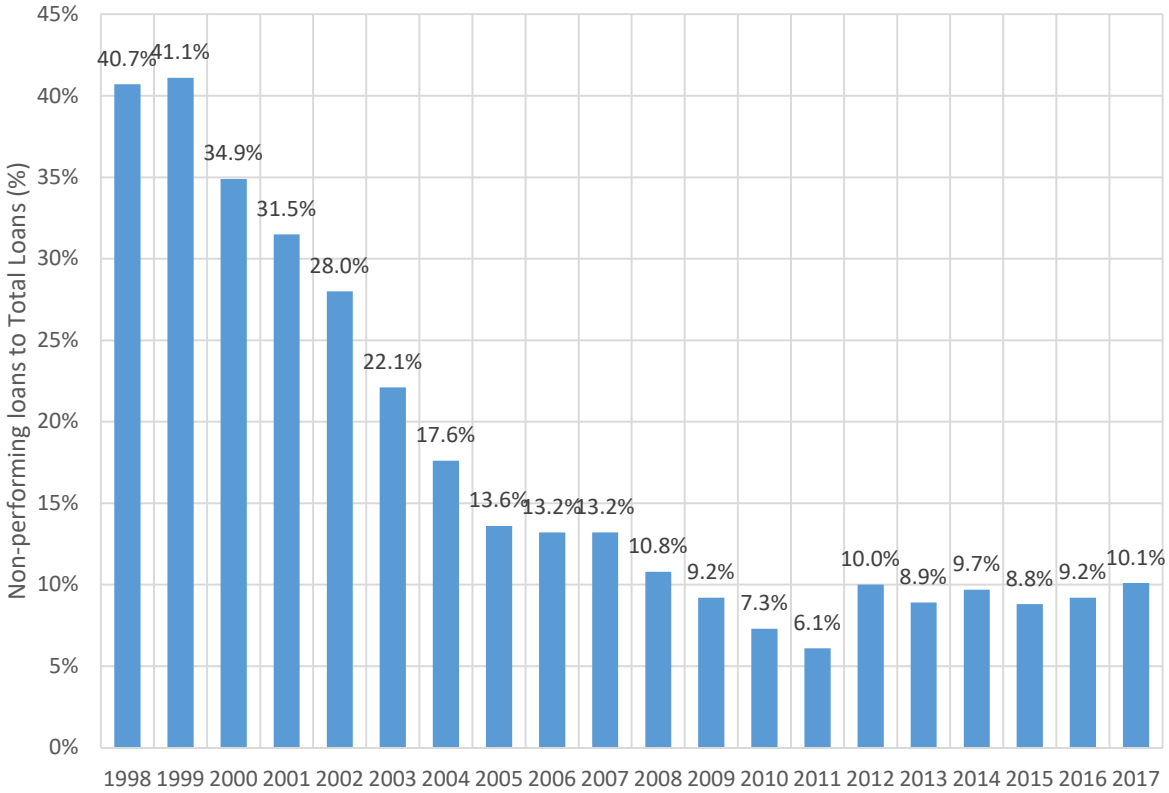


Figure 2: Non-performing loan as the percentage of total loans of the banking sector of Bangladesh during 1998 to 2017

Source: Bangladesh Bank Annual reports (1998-2017)

At a first glance, it may suggest that the trend of the NPL ratio of the private commercial banks of Bangladesh is declining (Figure 2). This is true if we take the trend of NPL to be constant overtime. The reality is that the responsiveness of the NPL ratio is not constant overtime. Figure 2 reveals that the rate at which the NPL was declining was altered and this shock was permanent because the trend at which the bad loans to total loans were declining clearly did not went back to its original track.

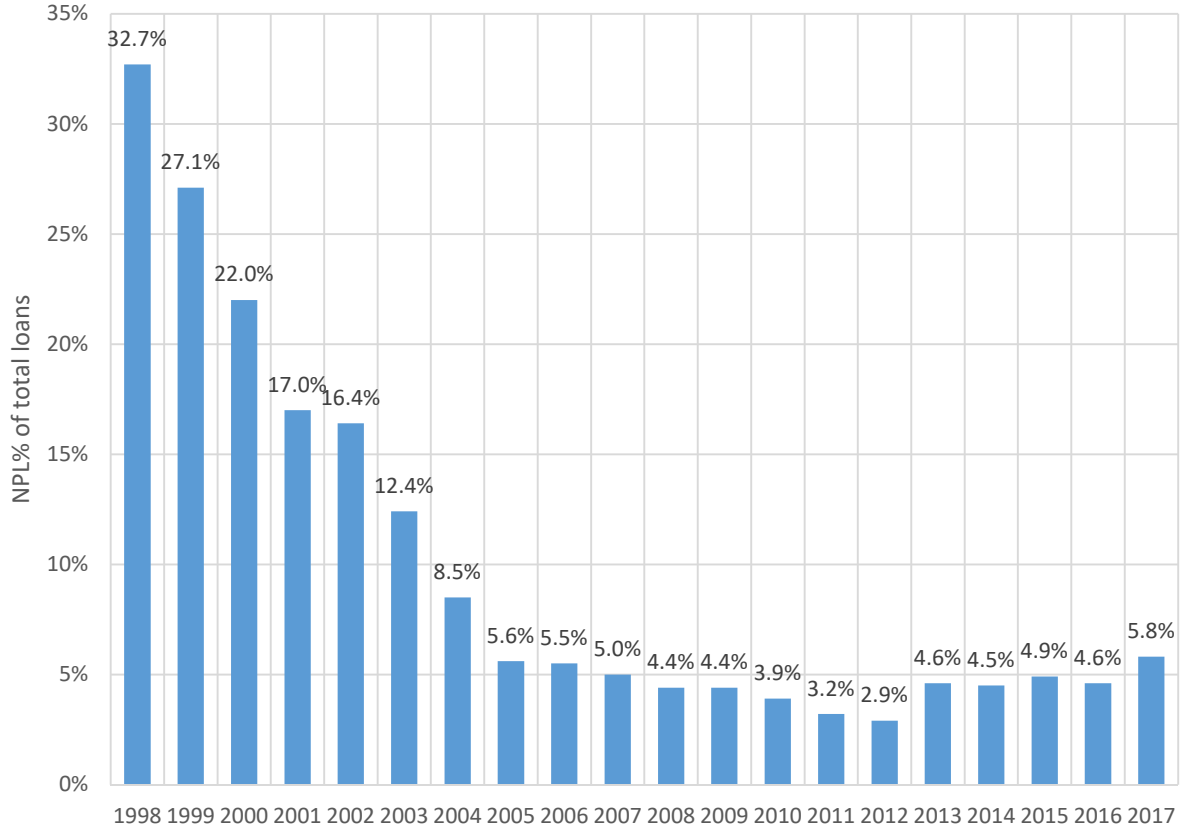


Figure 3: Non-performing loan as the percentage of total loans of the private commercial banks of Bangladesh during 1998 to 2017

Source: Bangladesh Bank annual reports (1998-2017)

Interestingly, there are noticeable striking points which were absorbed by the initial trend. From the graph it is evident that three types of trend of NPL ratio from 1998 to 2007. There was a sharp decline in the NPL ratio of the private commercial banks in Bangladesh from 1998 to 2005. From 2005 to 2012 the trend of decline of the NPL ratio was much slower compare to the first phase. This decline was followed by an increasing trend from 2012 onwards. The rising trend can be explained by the corruption of the banking sector particularly in the time period of 2012 to 2017 and the general economic shocks created by share market collapse and nationwide strikes before national election.

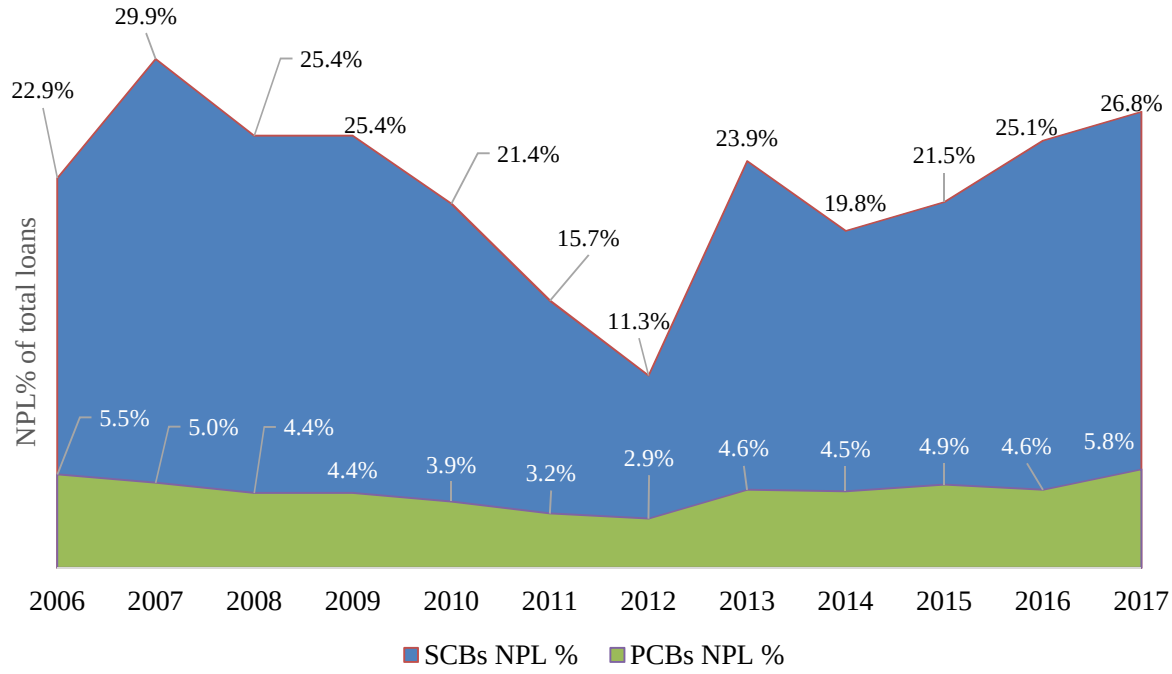


Figure 4: Non-performing loan as the percentage of total loans of the state-owned and private banks of Bangladesh during 2006 to 2017

Source: Bangladesh Bank annual reports (2006-2017)

Figure 4 shows a comparative view of the non-performing loans to total loans of the state-owned and private commercial banks of Bangladesh from 2006 to 2017. Clearly, the ratio of the bad debts or non-performing loans to total loans is much higher for the public banks for period. Compared to the public banks, the non-performing loans of the private commercial banks of the country have maintained a relatively stable rate over the years. The concern lies with the state-owned banks because of the sharp increase in bad loans for the last seven to eight years.

For the analysis of the causes and effects of non-performing loans it is essential to learn about pre-NPL and post-NPL situations of Bangladesh. In Bangladesh, it is overwhelmingly the prevailing situation of analyzing or discussing the post impact of whether the effect of NPLs is good for the economy or not.

Another issue in Bangladesh is about the loan loss provision which is used to cover the expected or unexpected loan loss or bad debts. Bangladesh Bank issues circular on a regular basis to keep the banks in line for maintaining the specific provisions for each type of loans. For the state-owned commercial banks and the private commercial banks the scenario of maintaining provisions for loan loss has been rather disappointing for the past years. Banks are reluctant to

maintain the provisions prescribed by the Bangladesh Bank because it directly affects the profitability of the banks.

This study centers around the impact of "excessive credit lending" and cost of fund on the quality of loans of the private commercial banks of Bangladesh. In this regard it is essential to portray the condition of the loans and their growth and cost of fund of banks over the years to underlay the importance this study.

1.1.4 Loan classification by Bangladesh Bank

According to the Bangladesh Bank, the non-performing loans are those loans which are in a default position or which are close to being in the default position. The loans which cease to produce income for the banks are called the non-performing loans. Non-performing loan is a multilevel concept rather than a single level idea and for that the NPLs can be classified into different varieties usually on the basis on the length of the overdue Chowdhury et al. (2002). The length is generally three months or more. Likewise, NPL is defined as the loans overdue by more than ninety (90) days. Louzis et al. (2012) NPLs can have huge detrimental effect on the economy because when the borrowers are unable to pay back the money lots of unproductive economic resources stand still while gradually being depreciated. According to Bangladesh Bank the categories of loans and advances are as follows-

1. **Continuous loans:** In this loan account transactions may be made within certain limit and the account has an expiry date for full adjustments. Examples are Cash Credit, Overdraft etc.

2. **Demand loans:** These types of loans are repayable on demand by the bank. Liabilities which are turned into forced loans (i.e. without any previous approval as regular loans) will be treated as demand loan. Such as Forced demand loan against imported merchandise, payment against documents, foreign bill purchased and inland bills purchased.

3. **Fixed term loans:** These types of loans are repayable within a specific time period under a specific repayment schedule.

4. **Short term agricultural and micro-credit:** These types of loans will include short term credit as listed under the ACFID (Agricultural Credit and Financial Inclusion Department) of Bangladesh Bank. Those credits which are repayable within 12 months in the agricultural sector will also be included herein. Short term micro credits will include any micro credits

not exceeding an amount determined by the ACFID of Bangladesh Bank from time to time and repayable within 12 months, be those termed in any names such as Non-agricultural credit, self-reliant credit, weaver's credit or bank's individual project credit.

According the banks for international settlements (BIS) the standard loan classifications are defined as follows:

- **Passed:** Loans paid back
- **Special mention:** Loans to incorporations, which may get some trouble in the repayment due to business cycle losses.
- **Substandard:** Loans whose interest or principal payments are longer than three months in arrears of lending conditions are eased. The banks make 10% provision for the unsecured portion of the loans classified as substandard;
- **Doubtful:** Full liquidation of outstanding debts appears doubtful and the accounts suggest that there will be a loss, the exact amount of which cannot be determined as yet. Banks make 50% provision for doubtful loans.
- **Virtual loss and loss (unrecoverable):** Outstanding debts are regarded as not collectable, usually loans to firms which applied for legal resolution and protection under bankruptcy laws. Banks make 100% Provision for loss loans.

1.1.5 Basis for loan classification:

A. **Past due/ overdue**

- Any continuous loan if not repaid/renewed within the fixed time limit for repayment will be treated as overdue from the following day of the expiry date.
- Any demand loan if not repaid within the fixed time limit for repayment or after the demand by the bank will be treated as "overdue" from the following day of the expiry date or demand date.
- In case of any installment(s) or part of installment(s) of a fixed term loan is not repaid within the fixed expiry date or due date, the amount of unpaid installment(s) as well as the loan will be treated as "overdue" from the following day of the expiry date or due date.

- The short term agricultural loan or micro credit is not repaid within the fixed time limit for repayment will be considered "overdue" after six months of the expiry date.

  If any loan or part of it or accrued interest thereon to any person/organization of his/its own or related concern remains "overdue" for more than six months, the borrower availing of such loan facility will be treated as defaulted borrower as per Section 5 of the Banking Companies Act, 1991.

B. All unclassified loans other than special mention account (SMA) will be treated as standard.

C. A Continuous loan, demand loan or a term loan which will remain overdue for a period of 2-months or more will be put into special mention account (SMA). Here the benefit of the special mention account is that the first sign of weakness and warning signals will show up to acknowledge potential problems in a focused manner. Loans in the special mention account will have to be reported to the credit investigation bureau (CIB).

D. Loans except short-term agricultural and micro-credit in the special mention account and sub-standard will not be treated as defaulted loan for the purpose of the section 27 ka (3) of the Banking company act, 1991.

E. Any continuous loans will be classified as –

- **Sub-standard**: past due/ overdue for 3 months or more than 3 months but not less than six months.
- **Doubtful:** if the loan is due for more than six months but less than nine-months.
- **Bad/loss:** If the loan is overdue for more than nine months.

F. Any demand loan will be classified as

- **Sub-standard:** If the loan remains past due/ overdue for 3 months or beyond but not over 6 months from the date of expiry of claim by the bank from the date of creation of forced loan.
- **Doubtful:** If the loan remains past due/ overdue for 6 months or beyond but not over 9 months from the date of expiry of claim by the bank from the date of creation of forced loan.

- **Bad/loss:** If the loan remains past due/ overdue foe 9 months or beyond from the date of expiry or claim by the bank or from the date of creation of forced loan.

1.1.6 Qualitative judgment for the basis of classification by Bangladesh Bank

Apart from the objective criterion which is the identifying of the default loans on timeframe, the qualitative judgment is done when any uncertainty arises in recovery of any continuous loan, demand loan or fixed term loan. If any doubt arises about the impairments of capital, decreasing collateral etc. the loans will have to be classified on the basis on the qualitative judgment.

1. Special mention

A. Bangladesh Bank has identified some deficiencies of the bank management and the obligor which if arises; the assets must not be classified higher than they are. The deficiencies of the bank management are-

- The loans was not made in compliance with the banks internal policies
- Failure to maintain adequate and enforceable documentations
- Poor control over collateral

B. Assets must be classified no higher than special mention if any of the following deficiencies of the obligor is present-

- Occasional withdrawal within the past year
- Below average or declining profitability
- Barely acceptable liquidity
- Problems in strategic planning

2. Sub-standard

A. If the following deficiencies of the obligor is present the assets must be classified no higher than the special mention –

- Recurrent overdrawn
- Low account turnover
- Competitive difficulties
- Location in a volatile industry with an acute drop in demand
- Very low profitability which is also declining
- Inadequate liquidity
- Cash flow less than repayment of principal and interest

- Weak management
- Doubts about the integrity of the management
- Conflict in corporate governance
- Unjustifiable lack of external audit
- Pending litigation of a significant nature

B. If the primary sources of repayment are insufficient to service the debt and the bank must look to secondary sources of repayment, including collateral, the assets must be classified no higher than Sub-standard.

C. If the banks have collected the asset without the types of adequate documentation of the obligor's net worth, profitability, liquidity and cash flow that are required in the banking organization's lending policy, or there are doubts about the validity of that documentation, assets must be classified no higher than Sub-standard.

3. Doubtful

If the following deficiencies of the *obligor* are present, the assets must be classified no higher than Doubtful-

- Permanent overdrawn
- Location in an industry with poor aggregate earnings or loss of markets
- Serious competitive problems
- Failure of key products
- Operational losses
- Illiquidity
- Including the necessity to sell assets to meet the operating expenses
- Cash flow less than required interest payments
- Very poor managements or hostile managements
- Doubts about the true ownership
- Complete absence of faith in financial statements

If the following deficiencies of the obligor are present, the assets must be classified on higher than Bad/loss-

- The obligor seeks new loans to finance operational losses.

- Location in an industry that is disappearing
- Location in the bottom quartile of its industry in terms of profitability
- Technological obsolescence
- Very high loses
- Asset sales at a loss to meet operational expenses
- Cash flow less than production costs
- No repayment source except liquidation
- Presence of money laundering, fraud, embezzlement or other criminal activity.
- No further support by owners.

In general, general provisions are balance sheet items representing funds set aside by a company as assets to pay for anticipated future losses. For Banks general provisions is considered to be supplementary capital under Basel Accord.

1.1.7 Maintenance of provisions by the banks

In the simplest term the provisioning is amount of money banks put aside or does not use to give out as loans to the borrowers. This is done to secure the money of the depositors who could for any reason claim the money they have deposited. Although it is unlikely all the depositors will claim their money before the money matures there is still some form of risk banks bear for not keeping 100 percent provisioning against all deposit. We know banking sectors' provisioning rises as the default loan increases.

1.1.8 Loan classification and provision by Bangladesh Bank

Table 1: Loan classification and provision by Bangladesh Bank

1	**Continuous loan**
	I) Small & Medium Enterprise Financing (SMEF)
	II) Consumer Financing (CF)
	III) Loans to Brokerage Houses/Merchant Banks/Stock Dealers
	IV) Other than SMEF, CF, BHs/ MBs,/SDs
2	**Demand loan**
	I) Small & Medium Enterprise Financing (SMEF)
	II) Consumer Financing (CF)

	III) Loans to Brokerage Houses/Merchant Banks/Stock Dealers
	IV) Other than SMEF, CF, BHs/ MBs,/SDs
3	**Fixed term loan**
	I) Small & Medium Enterprise Financing (SMEF)
	II) Consumer financing (Other than HF & LP)
	III) Housing finance (HF)
	IV) Loans for professionals to set up business (LP)
	III) Loans to Brokerage Houses/Merchant Banks/Stock Dealers
	VI) Others than SMEF, CF, HF, LP, BHs/ MBs,/SDs
4	**Short term agri. credit and microcredit**
	I) Short term agri. Credit
	II) Microcredit
5	Staff Loan

Source: Bangladesh Bank Circular letters

A. General provisions:

Table 2: General provisions

1%	**Against all unclassified loans (other than loans under consumer financing, loans to brokerage house, merchant banks, stock dealers etc. and special motion account).**
5%	Against unclassified amount for consumer financing other than house financing and loan to professional financing
2%	Against the unclassified amount for housing and loans to professional financing.
2%	Against unclassified amount for loans and brokerage house, merchant Banks, stock dealers.
5%	Against the outstanding amount of loans kept in the 'Special Mention Account' after deducting the amount of interest suspense account.
1%	Against the off balance sheet exposures. (Here Bangladesh Bank has stated that total exposure and the amount of cash margin or value of

	eligible collateral will not be deducted while computing off-balance sheet exposure).

Source: Bangladesh Bank Circular letters

B. Specific provisions:

Table 3: Specific provisions

		Sub-standard	Doubtful	Bad/loss
Classified	Continuous loans	20%	50%	100%
	Demand loans	20%	50%	100%
	Fixed term loans	20%	50%	100%

C. Provision for short term agricultural and micro-credits:

Table 4: Provision for short term agricultural and micro-credits

1	All credits except Bad/loss' (i.e. 'Doubtful', 'Sub-standard', irregular and regular credit accounts)	5%
2	Bad/loss	100%

Source: Bangladesh Bank Circular letters

1.1.9 Rate of provisions by Bangladesh Bank

Table 5: Rate of provisions by Bangladesh Bank

Particulars		**Short term agri. Credit**	**Consumer financing**			**SMEF**	**Loans to BHs/MBs/SDs**	**All other credits**
			Other than HF, LP	HF	LP			
Unclassified	Standard	1%	5%	1%	2%	0.25%	2%	1%
	SMA	1%	5%	1%	2%	0.25%	2%	1%
Classified	SS	5%	20%	20%	20%	20%	20%	20%
	DF	5%	50%	50%	50%	50%	50%	50%
	B/L	100%	100%	100%	100%	100%	100%	100%

Source: Bangladesh Bank Circular letters

CF=Consumer Financing, HF=Housing Finance, LP=Loans for Professionals to Set up Business, SMA=Special Mention Account, SS=Substandard, DF=Doubtful, B/L=Bad/loss

1. **Provisions to cover all expected losses:** Bangladesh Bank encourages the banks to set aside higher provisions if expected losses on the loans pools (for general provisions) or individual loans (for specific provisions) require.

2. **Base for provisions**

   Provisions will have to be made on the outstanding balance of the classified loans less the amount of interest suspense and the value of eligible collateral:

   a. Deposit with the same bank under lien against the loan,
   b. Government bond/savings certificate under lien,
   c. Guarantee given by Government or Bangladesh Bank.

3. **Provision calculation:**

   Provisions = Amount due – (interest suspense value + value of the eligible collateral)
   For every other eligible collateral, the provisions will be maintained at the stated rates under the General Provisions table mentioned above-

   a. outstanding balance of the classified loan less the amount of Interest Suspense and the value of eligible collateral; and
   b. 15% of the outstanding balance of the loan.

4. **Eligible collaterals**

   Generally, the collateral is an asset which the borrowers offer to the banks to take loans. On other hand it is the asset which the lenders take up to secure the loans if for any reason the borrowers fail to make regular loans payments to the banks. As per Bangladesh Bank guideline following collaterals will be included as eligible collateral in determining base for the provision against the loans to the borrowers-

   - 100% of deposit under lien against the loan
   - 100% of the value of government bond/savings certificate under lien.
   - 100% of the value of guarantee given by Government or Bangladesh Bank.
   - 100% of the market value of gold or gold ornaments pledged with the banks
   - 50% of market value of easily marketable commodities kept under the control of the banks.
   - Maximum 50% of the market value for last 6 months or 50% of the face value, whichever is less, of shares traded in stock exchange.

Generally, banks in Bangladesh revalue their collaterals every two years. Bangladesh Bank has provided the criteria under which the market value of eligible collateral has to be determined-

- Easily marketable goods, land and building

1.1.10 Loan rescheduling

When the borrowers become unable to repay the debt they can extend their loan by making a mutual agreement with the bank for an extension of the tenure or time. In this case the borrower can pay back their loans with longer terms. The interest rate can increase or decrease upon the discretion of the individual banks. Loan rescheduling can be done for any categories of the loan upon the discretion of the banks and the borrowers.

According to the Bangladesh Bank, loan rescheduling is often referred to as "prolongation" or "ever-greening" which is a common banking practice allowing for the renewal of a continuous and term loan. In many cases, it is possible that borrowers are in an unfortunate situation in which they are unable to repay the stipulated loan amount. Bangladesh Bank has provided the guidelines for loan rescheduling because in certain circumstances, banks overstate the capital in the balance sheet by showing the loans and advances at their full value even though those loans and advances have a low probability of repayment.

1.1.11 Classifications of the rescheduled loans

According to the Bangladesh Bank BRPD circular No. 08

a. Rescheduled loans shall be classified by the bank, with appropriate provisions.
b. For any category of loans neither the rescheduled loans will be considered as a "defaulted loans" nor will the borrower be considered a "defaulted borrower" unless such loans have not been repaid upon reaching the maximum number of allowable rescheduling.
c. Interest accrued on the rescheduled loans will be subject to the accounting treatment. The interest suspense account is show separately in the annual report of the banks.

1.1.12 Guidelines for considering application for loan rescheduling

According to the Bangladesh Bank guideline the following instructions must be considered for loan rescheduling of non-performing loans; classified into Sub-standard, Doubtful and Bad/loss-

a. **More strict rules for the rescheduling:** Banks must make a policy for loan rescheduling approved by the BOD (Board of Director). This policy will indicate the terms and conditions under which the loans will be rescheduled and must adhere to the circular published by Bangladesh Bank. The policy adopted by the banks must not be lenient in any case. Furthermore, the banks may adapt more strict regulation for any sort of loan rescheduling. The banks must maintain such a policy which will prohibit any form of routine scheduling and repetitive scheduling in cases where borrowers are experiencing financial difficulty or there is doubt that the full amount of the loan will not be recovered. Eventually, if banks make certain exception in providing rescheduling option to certain sector or businesses that do not meet the aforementioned guideline specific justifications must be provided for why those certain facilities were entertained.

b. **Cautious approach for identification of bad borrowers:** If borrowers ask for loan rescheduling the banks must deeply identify the reasons for their non-performing status. And if it is found that the funds were diverted for other purposes or the defaulter is habitual loan defaulter, the bank shall not consider the application for loan rescheduling and must make all necessary measures for legal constrictions to recover the loans.

c. **Actions for any down payments:** If the borrowers make down payment during the application for the loan rescheduling the banks must address the application within three months upon receipt. Any cheque, pay order or any other instrument against down payment paid should been cashed before any sort of processing of rescheduling starts. Any previous payments made before rescheduling should not be considered as a down payment.

d. **Consideration of the liability position of the borrowers:** Before banks process any rescheduling option to the borrower, they must make sure the borrowers will be able to repay all the debts and in case they have other debts with other banks the liability position of the borrowers should also be considered.

e. **Evaluation of specific documents of the borrowers:** Banks must vigorously go through the audited financial reports of the borrowers just in case something don’t go slipped which would be necessary to spot any probability for loan default.

f. **Factory or project visit for evaluation:** Banks should make physical visit to the business place of the clients to make sure that they would really be able to payback the taken loans

after their loans have been rescheduled. Banks should report to Bangladesh Bank by preserving those visit reports.

g. **Last dealings:** If, after all verifications, it becomes evident that the borrowers will be able to make the loan payment after rescheduling, the banks may make rescheduled programs. On the contrary if things seem volatile about the condition of the borrowers the banks must make every legitimate step to recover the loans.

h. **Proper justifications against loan rescheduling:** In case the banks actually reschedules any loans, they must identify the long term benefits and provide statements that the rescheduling will provide for the long term profitability and capital adequacy ratio (CAR) of the banks. The banks must also make statements about the impact of rescheduling on the liquidity position and the needs of other customers.

1.1.13 Time limits for rescheduling for the categories of loans

Bangladesh Bank BRPD Circular No. 06 dated May 29, 2013 prescribes regulations for the time limit for rescheduling continuous loans and demand loan. On the other hand BRPD Circular No. 08 dated June 14, 2012 provides time limit for rescheduling for fixed term loans and short term agricultural and micro credit loans. The later circular supersedes the information for fixed term and short term agricultural loans and micro credits from the previous circular.

a. Time limit for rescheduling Continuous Loan

Table 6: Time limit for rescheduling Continuous Loan

Frequency of rescheduling	Classified as sub-standard	Classified as doubtful	Classified as Bad/loss
First time	Maximum 12 months from the date of being classified as Sub-standard.	Maximum 9 months from the date of being classified as doubtful.	Maximum 6 months from the date of being classified as Bad/loss.
Second time	Maximum 9 months from the expiry date of 1st rescheduling.	Maximum 6 months from the expiry date of 1st rescheduling.	Maximum 3 months from the expiry date of 1st rescheduling.

Third time	Maximum 6 months from the expiry date of 2nd rescheduling.	Maximum 3 months from the expiry date of 2nd rescheduling.	Maximum 3 months from the expiry date of 2nd rescheduling.

Source: Bangladesh Bank Circular letters

Conditions made by Bangladesh Bank:

- Before any continuous loans to be rescheduled, the condition requires all required principal and interest payments must be made.
- Rescheduled amount should be repaid in monthly installments.
- In case the defaulted installments are equal to the amount of 3 month installments, the loan will be categorized as Bad/loss.

b. Time limit for rescheduling demand loan

Table 7: Time limit for rescheduling demand loan

Frequency of rescheduling	**Classified as sub-standard**	**Classified as doubtful**	**Classified as Bad/loss**
First time	Maximum 9 months from the date of being classified as sub-standard	Maximum 6 months from the date of being classified as doubtful	Maximum 3 months from the date of being classified as Bad/loss
Second time	Maximum 6 months form the expiry date of 1st rescheduling.	Maximum 3 months from the expiry date of 1st rescheduling.	Maximum 3 months from the expiry date of 1st rescheduling.
Third time	Maximum 3 months from the expiry date of 2nd rescheduling.	Maximum 3 months from the expiry date of 2nd rescheduling.	Maximum 3 months from the expiry date of 2nd rescheduling.

Source: Bangladesh Bank Circular letters

Conditions made by Bangladesh Bank:

- Before any demand loans to be rescheduled, the condition requires all required principal and interest payments must be made.
- Rescheduled amount should be repaid in monthly installments.
- In case the defaulted installments are equal to the amount of 3 month installments, the loan will be categorized as Bad/loss.

c. Time limit for rescheduling fixed term loan:

Table 8: Time limit for rescheduling fixed term loan

Frequency of the loan rescheduling	Classified as sub-standard	Classified as doubtful	Classified as bad/loss
First	Maximum 36 months	Maximum 24 months	Maximum 24 months
Second	Maximum 24 months	Maximum 18 months	Maximum 18 months
Third	Maximum 12 months	Maximum 12 months	Maximum 12 months

Source: Bangladesh Bank Circular letters

Although there are guidelines by Bangladesh Bank regarding the loan rescheduling, there are certain conditions that are to be maintained. They are as follows-

1. During the rescheduled period all necessary principal and interest payments must be made.
2. Rescheduled amount should be repaid in monthly/quarterly installments.
3. Now if the quantity of defaulted installments is equal to the amount of 6 month of 2 quarter installments, the loan will be classified as Bad/loss.

d. Time limit for rescheduling for short-term agricultural and micro-Credit:

For any rescheduling of any classified Short term Agricultural and Micro Credit, 6 months can be added after the expiry date of the last installment. This mainly determines the repayment schedule which starts from the day of rescheduling. According to the BRPD Circular No. 06 published in May 29, 2013, if the loans are rescheduled after the expiry date, the following time-limit will be pertinent:

First rescheduling	Repayment time limit for rescheduling should not exceed 2 years
Second rescheduling	Maximum one year
Third rescheduling	Maximum 6 months

1.1.14 Regulations regarding the down payment of term loans

a. When the borrower applies for loan rescheduling for the first time, the facility will be taken into consideration upon receiving cash payment of at least 25% of the overdue installments or 10% of the total outstanding amount, whichever is less.

b. Applying for the second time for rescheduling will be granted upon receiving cash payment of minimum 30% of the overdue installments or 20% of the total outstanding amount of loan, whichever is less.

c. Applying for the third time for rescheduling will be granted upon receiving cash payment of minimum 50% of the overdue installments or 30% of the total outstanding amount of loan, whichever is less.

d. Same regulations also apply for the short term agricultural and micro credit loans.

1.1.15 Regulations regarding the down payment of demand loans and continuous loans

a. As mentioned earlier, the demand loans are loans which are required or demanded by the banks upon the need of the bank.

b. Whenever a demand loan or continuous loan is converted into a term loan, according to the BRPD Circular no. 08 first rescheduling may take place against down payment on the basis of loan amount-

Loans that are overdue	**Rate of down payment**
Up to Tk.1.00 (one) crore	15%
Above Tk.1.00(one) crore and up to Tk.5.00(five) crore	10% (but not less than Tk.15.00 lac)
Above Tk. 5.00(five) crore	5% (but not less than Tk.50.00 lac)

c. Upon rescheduling of any continuous or demand loans for the second time the application for rescheduling of such loans shall be considered upon receiving cash

payment of minimum 30% of the overdue installments or 20% of the total outstanding amount of loan, whichever is less.

d. For the third rescheduling (second time after being converted partly or wholly into Term Loan) minimum 50% of the overdue installments or 30% of the total outstanding amount of loan, whichever is less, shall have to be repaid in cash.

1.2 Rationale of the Study

In order to ensure a stable and strong economy, a country must have a sound banking environment and a smooth banking process. Companies take part in business activities both domestically and internationally with the financial assistance from the banks. Apart from international trade, a country also consists of domestic infrastructures which are financed and extended by taking loans from the banks. Here the rationale of this study comes into play. If the banks become unable to collect the loaned amount overtime, the risk of non-performing loans becomes stronger. So the NPL inclines and creates a pressure over the bank and in turn it affects the profitability of the bank. This ultimately affects the economy in general and other performing loans and new loans as well. So a well empirical study is imperative to tackle these issues. Focusing more on the root cause can help alleviate this inclining problem in our country. In recent years the impact of rising non-performing loans has become severe because of the falling profit of commercial banks and declining loan growth.

It is necessary to understand the cause of non-performing loan because the impact it is having on our financial system and it will cause our economy to slow down if proper measures are not taken with utmost diligence and authority.

Various researches have shown that there is a positive correlation between non-performing loans and bank-specific and macro-economic variables. Beside these variables, some researchers have identified that management quality also affect the non-performing loans. Dimitrios (2011) showed that non-performing loans is influenced heavily by real GDP, unemployment rate, interest rate and other macroeconomic variables. As many researchers from various countries showed the positive relationship between bank-specific variables and macro variables the importance to conduct study in our country has become imperative and necessary. Regardless of the different impediments in identifying the variables, it is becoming very important to pin point the particular bank-specific and macro-economic factors for the stability of the financial condition of our country.

A country's financial stability is very much dependent on the banking system of a country. Money borrowed from the banks is transformed into investment by individuals to foster the economy and thus creating employment and running the income of the country. In the process of this economic growth, the default or close to being default loans imposes an impediment in the accumulation of the capital of the bank. The bank could have given these money to some other individual as loans and as the loans become non-collectible the banks pays the penalty by losing profitability and in turn creating an internal pressure on the bank. This opportunity cost causes a blockage in the economic development of the country.

In a pursuit to know the correct determinants of the non-performing loans and to find out the political and governance related reasons lot of research has been conducted to find out the source of the problem and it has become extremely necessary to identify the core factors for the bad loans in our country.

Many researchers have used comparative analysis between different bank groups (e.g. private, public, foreign and specialized etc.) to understand the effect of different variables on different banks. Here the research of the comparative implies that not all variables impose same impact on the credit quality or profitability rather the effect varies with different banks. For example, it is possible that bank size may be a problem for some banks and a burden for another. Similarly, some economic parameters may affect a particular type of bank in a particular time period whereas some banks may be unaffected with those same economic variables.

1.2.1 Uniqueness of this study

The contribution of this study aims to fill some of the gaps in the literature of NPL in the context of Bangladesh. The contribution of this study is mentioned below-

Although this paper focuses on the aggregate level of NPLs of the private commercial banks, different models used in this paper identifies how macroeconomic variables affect NPL differently in the context of different banks specific variables. This may suggest those certain macroeconomic factors and certain bank-specific factors affect certain bank-specific variables differently which in turn affect the credit risk of banks in a different way.

i. **Long-term impact of variables:** This study focuses on the long term impact and ramifications of bank-specific and macroeconomic variables for explaining the variation of the credit risk. Long term effects of bank-specific variables may indicate that certain actions of banks different from the market level or different from the

competitors may bring about risk in the loan condition even after a long time. Long term economic impact could suggest the sensitivity of banks to the overall economic phenomena. This indicates how a country's economic event affects the banks particularly the private commercial banks. We have used the per capita GDP instead of GDP to increase the sensitivity of the effect of GDP on the overall condition on the country. This will clearly show us the picture of the variation of the development of the country considering the population increase.

ii. **Long term impact of GDP:** The paper focuses how the private commercial banks are responding in terms of credit risk management in the current development period of Bangladesh when the GDP and GDP per capita are growing very rapidly. The study also alludes to the short and long impact of some macroeconomic factors.

As eluded earlier that certain bank-specific factors can have long term effects on the loan condition, this paper aims to find out the effect of loan growth, cost of fund, real cost of fund, average lending rate and real average lending rate from a long term point of view. The focus is on the understanding of the independent power of these variables to bring about changes in the credit risk from a long-run perspective. The use of different models in this paper also identifies of the mutual exclusivity of these variables in explaining the variation of the credit risk.

iii. **Long-run impact of cost of fund:** The impact of independent effect of cost of fund on the quality of loans can create long-run implications because of the liquidity crisis in the banks. If banks lend excessively there will be a shortage of funds and to make up for the possibility of sudden withdrawal by the depositors banks may have to borrow more deposits at higher cost which may affect the lending rate. A fact to note here is that the lending rate operates at float (which can change according to the market) and banks may raise the lending rate to cover the high cost of fund which can trigger delayed payments. This delayed payment can cost banks to keep provisions from their profit which can affect their earnings as well. So there is a possibility that high cost of fund can affect the quality of loans and affect the earnings of banks in the long-run.

iv. **Dynamic panel data with time dummies:** Finally, this paper considers two types of determinants in explaining the variation of the NPL ratio of the private commercial banks of Bangladesh. They are namely bank-specific variables and the macroeconomic (systematic) factors. The individual bank-specific heterogeneity has been accounted by

first differencing the explanatory variables through Arellano & Bond estimation. At this point one thing to be noted is that the effect of unobserved heterogeneity could be easily understood if different categories of banks were used in this study. As the sample in our study is more clustered towards a certain group it not easy to identify the individual effects and certain tactics need to be used to tackle with the risk of letting the unobserved heterogeneity remain in the estimation. Although it is possible to let the unobserved effects to stay as a random phenomenon in the estimation, this study have used GMM estimation with first differencing to remove the effect of individual heterogeneity. Regarding the two types of variables our aim is to identify the effect of loan growth rate, cost of fund and average lending rate after controlling for the same macroeconomic and bank-specific factors.

The methodology is to form a baseline model that has the highest explanatory power. Loan growth rate, cost of fund and average lending rate has been used in the bank-specific determinants part in different models with the same controlled variables. The different model approach should give insight how the NPL ratio changes with different interaction. The bank-specific variables have been selected from the literature of the determinants of NPLs.

v. **Questionnaire Survey with five point LIKERT scale:** Data gathered from field survey report has been analyzed with five point LIKERT scale for both the determinants of non-performing loans and the comparative analysis part.

1.3 Objectives of the Study

This research attempts to perform a comparative analysis between the state-owned and private commercial banks from questionnaire survey and empirical point-of-view. But before finding some of the important comparing factors, this thesis highlights the effect of excessive credit lending and cost of fund on the condition of non-performing loans of the private commercial banks of Bangladesh. Furthermore, to find the perception of borrowers and bankers regarding the determinants of non-performing loans and the relevant comparing factors to identify state-owned and private commercial banks the following objectives have been formulated.

1. To determine and identify the effects of excessive credit growth on the long-run credit quality
2. To understand the effect of cost of fund on non-performing loans.
3. To find out the causes of non-performing loans from the perspective of bankers and borrowers of Bangladesh
4. To compare the "non-performing loans" of selected state-owned and private commercial banks of Bangladesh.

1.4 Scope of the Study

The report and findings of this thesis is central to the conventional state-owned and private commercial banks of Bangladesh. The time period of the comparative analysis between state-owned and private commercial banks has been taken from 2009 to 2017. The time period for the analysis of the determinants of non-performing loans has been taken from 2006 to 2017. The study only accommodates state-owned and private commercial banks of Bangladesh. Field survey has been performed to formulate the general perception of bankers and borrowers regarding the important determinants of non-performing loans with specifically acknowledging the effect of cost of funds on the quality of assets. Another questionnaire survey has been conducted to bring out the perception of bankers and borrowers regarding the comparing factors between the state-owned and private commercial banks of Bangladesh. Likert scale has been used to formulate questionnaires. Regression analysis for all the secondary data has been performed with dynamic panel data model controlling for time dummies. Controlling for time dummies increases the chance to acquire more accurate effect of the bank-specific variables on non-performing loans. Despite controlling for macroeconomic variables with time dummies,

other important macroeconomic factors have been included in alternative models to better understand the impact of certain bank specific variables in different economic conditions.

1.5 Limitations of the Study

In this study all the selected banks are conventional private commercial banks and state-owned commercial banks and understanding the full picture of the banking industry requires understanding all the scenarios of all the banks. So, there is an opportunity for future study to conduct a project on all the banks of Bangladesh.

Different methods can be used to do this same research which may agree or disagree with this study. In this regard the future studies can emphasis on the particular sector like agriculture, SME, corporate and retail etc. to identify the variables for these particular sectors.

Sector wise non-performing loans are not available from most of the annual report of these banks which are necessary to conduct any industry specific analysis regarding asset quality.

Every bank does not follow the same categorical loan classification that could be used to compare various effects of non-performing loans on different industries.

Loan wise lending rate and even the weighted average lending rate is not available in the annual report which could have revealed the exact relationship between sector wise non-performing loans and the exact lending rate.

Chapter Two: Literature Review

2.1 Literature Review

The existing literature of the determinants of non-performing loans has been primarily divided into two parts. One part discusses the impact of bank-specific variables whereas the other portion of the literature is particularly concerned with the macroeconomic impact. Despite these two major portions of the literature, many researchers have conducted analysis on single variables to try to better understand the impact of any singly variable on the quality of loans.

Furthermore, many research focused on the comparative analysis of different bank groups. This thesis lean towards the comparative analysis of the state-owned and private commercial banks after establishing the effect of certain bank-specific and macro-economic variables on the condition of non-performing loans. Following from the next sections, the discussion centers on the determinants of non-performing loans and after that the relevant comparative analysis between these two banking groups have been put forward.

For the convenience of understanding, the following literature review has been divided into four sections. First section of the following literature discusses the general determinants of non-performing loans which involves both bank-specific and macro-economic variables. The second section discusses the studies which gives relative importance to the relationship between interest rate and non-performing loans. Third section provides the studies of the relationship between cost of fund and non-performing loans. The final section puts forward different research papers on comparative analysis between different bank groups from domestic and international point of view.

A majority of banking researches in Bangladesh has focused on common banking issues such as handling of classified loans or non-performing loans. The NPLs and their impact on the economic and financial stability of the country are also a highlight in many researches.

Lot of research has been conducted on the widespread issues of banking activities. Among the different banking activities the handling of classified loans or non-performing loans has become a common and serious issue for the banks in Bangladesh. Due to its detrimental impact on the profitability of the banks and the adverse effect on the economy lot of researches have been conducted to pinpoint the determinants of NPLs and the impact it has on the economic

and financial stability of the economy. Due to its importance and adverse effect on the economy, non-performing loans have a lot of literature due to its relevance to the banks.

The existing literature confirms that the bank-specific determinants, macroeconomic variables and regulatory framework influence the capital of a bank, which is highly instrumental for a bank's wellbeing. Specific factors such as real total loans and credit policy implemented by the banks are an important factor. Besides, macroeconomic determinants like real GDP per capita, interest rate, inflation unemployment rate etc. are also found in the relevant research. In addition, macroeconomic variables significantly affect the non-performing loans of the banks

We know that the banks need capital for the survival of their existence and it gets hampered when their ability to retain capital is disturbed. While talking about the different variables for non-performing loans there are bank-specific determinants, macroeconomic variables and regulatory framework. In case of bank-specific factors, lot of research have shown that variables like real total loans and credit policy implemented by the banks are important. On the other hand macroeconomic determinants like real GDP per capita, interest rate, inflation unemployment rate etc. are well known. Lots of studies have shown that macroeconomic variables like these play an important factor in affecting the non-performing loans of the banks. The following paragraphs show the relationships of these factors with NPLs rate.

Different countries follow different standards for determining non-performing loans. Generally and internationally, a non-performing loan (NPL) is defined as a sum of borrowed money upon which the debtors have not made his or her scheduled payments for at least 90 days. A non-performing loan is either default or close to being default.

Many researchers show a link between non-performing loans and bank's internal factors and external factors such as macro environment. They underline the relation between non-performing loans and its determinants because of the adverse effects it can pose on the smoother process of banking system. This thesis paper highlights the effect of loan growth rate, average lending rate and the cost of fund on the credit risk of the private commercial banks. It also presents the effects of these variables as the determinants of change in the performing condition of loans.

Regarding loan losses of banks the study of Keeton & Morris (1987) showed that the macroeconomic factors were responsible for the lower payback. Their research concluded that too much loaning in a sector is a major cause of high bad debts, because of the bad performance

in that sector. This study also highlighted that risk taking behavior of banks also lead to the greater loan losses ratios. Other studies advised that implementing a balanced issued of credit should be made for all sectors of the economy.

In the last decade, particularly after the crash of stock market, the banks in Bangladesh have witnessed a rise in non-performing loans. Rifat (2017) in his study of the non-performing loans in Banks of Bangladesh studied the determinants of NPL in non-banking financial institution (NBFI) sector of Bangladesh. Even in this case, the data showed that firm specific variables like loan growth and loan to asset ratio explained some of the fluctuations in the condition of the total credit risk of the non-banking financial institutions.

Another recent study by Rahman et al. (2016) identified the impact of financial ratios on non-performing loans of listed commercial banks in Bangladesh. A sample of 96 observations has been analyzed during 2010-2015 and robust correlations between gross non-performing loans and various bank-specific financial ratios were identified. This study demonstrated that credit-deposit ratio, sensitive sector's loan, priority sector's loan, net interest margin have a positive influence on the non-performing loans and unsecured loans, profit per employee, capital adequacy ratio, return on assets, investment deposit ratio have a negative impact on gross non-performing loan. They also argued that investigating credit assessment, credit monitoring, collateralized lending, and borrower's credit culture and lending interest rates have more powerful influences on the non-performing loans.

A relatively recent study on the determinants of non-performing Loans by Saba et al. (2012) concluded that macroeconomic factors such as interest rate and real GDP per capita have association with the NPLs rate. Their study showed that Real GDP per capita has the strongest (68%) relationship with NPL rate. Other variables also have significant relations of 40.7% (Interest Rate) and 28.1% (Total Loans). It is evident from the regression analysis that there is good multiple correlation (76.8%) among these variables.

Another study by Louzis et al. (2012) highlighted the determinants of the NPLs in the Greek banking sector. They also found that macroeconomic variables like the lagged real GDP growth rate, the unemployment rate, real lending rates and public debt have a strong effect on the level of NPLs. Moreover, bank-specific variables such as performance and efficiency possess additional explanatory power when added into the baseline model thus lending support to the bad management hypotheses linking these indicators to the quality of the performing loans.

Likewise, Messai & Jouini (2013) attempted to identify variables that can affect and influence doubtful accounts at credit institutions for a sample of European banks. The report showed that GDP growth and ROA of credit institutions have a negative impact on non-performing loans. The unemployment rate and real interest rate affect impaired loans positively. Another finding showed that the provisions of the banks increased with the non-performing loans.

Similarly, Makri et al. (2014) in their study found strong correlations between NPL and various lagged macroeconomic and bank-specific determinants. Their findings largely highlighted in terms of bank-specific variables, the rate of non-performing loans of the previous year, the capital ratio and ROE appeared to employ a dominant stimulus on the non-performing loans rate. At the same time, from macroeconomic perspective, public debt, GDP and unemployment seem to be three additional factors that affect the NPL index, unveiling that the state of the economy of Eurozone countries is clearly linked to loan portfolio quality.

Similarly, Škarica (2014) showed in the study that the real GDP growth was the main driver for the increase of the NPL ration during last 5 years taken into account by the report. Additionally, here the report assumed inflation rate caused the NPL growth. The estimates indicate that a 1 percentage point higher GDP growth rate lowers the NPL ratio growth rate by 3.97 percentage points. A 1 percentage point increase in the unemployment growth rate increases the NPL ratio growth rate by 1.006 percentage points. These estimates confirm the results obtained from previous empirical studies on NPLs, regarding their countercyclical nature: their levels are rising in recessions and falling in business cycle upturns. Both of these coefficients are highly statistically significant and economically very large, showing that recent economic developments in CEE countries have a strong negative impact on their financial stability.

Many studies emphasize the fact that real that real GDP is impacting the non-performing loans. Beck et al. (2013) showed with the econometric analysis of the empirical determinants of NPLs presented in this paper suggests that real GDP growth was instrumental for non-performing loan ratios during the past decades before publishing the report.

Supplementary to the previously mentioned literatures, in a very recent study by Dimitrios et al. (2016) other findings were accomplished which showed that macro variables such as unemployment and growth to exert a strong influence. Furthermore, bank-specific variables related to management skills and risk preferences were found to shape future NPLs. This empirical study investigated the role of tax on personal income and the output gap as the

potential explanatory variables. Both were found to be significant determinants of NPLs, a finding which could be useful when designing macro-prudential and fiscal policies and NPLs.

Mensah (2014) showed that the small banks in Ghana should pay attention to bank-specific factors when providing loans in order to restrain the level of NPLs, large banks should pay attention to both bank-specific and macroeconomics factors when providing loans in order to restrain the level of NPLs.

Bank-specific variables like (operating expense to income, ROA, loan to asset ratio, Loan loss provision, loan growth, GDP growth, inflation growth, and unemployment rate and market interest rate) were statistically significant (Ekanayake et al. 2015). Their analysis showed that bank-specific variables with macroeconomic variables explained 78 percent variation of the NPLs in LCBs (Licensed commercial Banks). ROA shows significant negative relationship with NPLs. At bank-specific level, operating expense to income ratio shows positive relationship with NPLs. According to this research, these findings are similar to the findings of (Berger & Young, 1997; Fofack, 2005; Al-Smadi & Ahmad, 2009).

According to the econometrics analysis by Beck et al. (2013), it added that the real GDP growth was the main driver of non-performing loan ratios during the past decade.

Vuslat (2016) presented the impact of global crisis on the dynamics of NPLs in the Turkish banking sector by an ownership breakdown during 2002Q4-2013Q3. The paper showed that global economic crisis had major economic impacts. According to the research, higher capital adequacy is related with higher NPLs across all ownership categories after the global crisis. Higher lending is associated with lower NPLs in non-state banks after the global crisis. The findings also suggested that higher inefficiency is associated with lower NPLs in non-state banks after the global crisis. In the case of bank size, he also concluded that correlation between NPLs and the Banks's size varied among the state-owned banks and the foreign banks. For foreign banks, increasing the asset size enabled better risk diversification for them whereas private and state-owned banks are bigger than the foreign banks and they took more risk which ended up with higher NPLs. Ultimately, the effect of macroeconomic and policy-related variables were evenly spread across different ownership categories.

Chaiporn Vithessonthi (2015) has put forward evidence from Japan about the deflation, bank credit growth, and non-performing loans. In the study, he wanted to show that credit growth and non-performing loans is positively correlated under low inflation and whether this

correlation is time dependent. Data were collected from 1990 to 2013 from publicly listed commercial banks. He has concluded that the relationship between banks' credit growth and the non-performing loans varies over time and the banks credit growth and non-performing loans are not associated with the banks' profitability.

Konstantinos et al. (2015) conducted their study on a quarterly basis from 2001-2015on the non-performing loans of Greece. They concluded that both macroeconomic and financial factor had a certain impact on NPL. They used the VAR-VEC model, which is generally used to capture the dynamic interdependencies among the variables. They also found that public debt and unemployment had a strong impact on the level of NPLs in Greece in the mentioned time period.

Abid et al. (2013) conducted their study on 16 Tunisian banks with the 10 years' data from 2003 to 2012 with the panel data method. This paper attempted to investigate the potential effects of both macroeconomic and bank-specific variables on the quality of loans. Their paper suggested that household NPLs in the Tunisian banking system is happening not only for the macroeconomic variables (real GDP growth rate, inflation rate, interest rates/real lending rate) but also for the bad management quality of the banking system. The performance (measured by ROE) and inefficiency measured by dividing the operating expenses by the operating income, known as the bank-specific variables had an explanatory power when they were incorporated in the method of the analysis.

Karim et al. (2010) in their research about the Malaysian and Singaporean banks have shown that there is a significant relationship between bank efficiency and the non-performing loans. The researchers have used the stochastic cost frontier method to find this relationship. Their identified cost efficiency score was 87.68% which indicates that banks were wasting 12.32% of their inputs. Additionally, their results also supported the bad management hypothesis which was proposed by Berger and De Young (1997) who found that poor management in the banking institution results in bad quality loans and therefore, escalates the level of nonperforming loans.

Perera et al. (2013) has conducted their study particularly on the selected South Asian countries like Bangladesh, India, Pakistan and Sri Lanka who seems to experience economies of scale as bank size is positively correlated with profitability. They also found that high level of industry concentration still permits the banks to make profit. Six macroeconomic variables (i.e. GDP growth, interest rate, inflation rate, CPI, exports and industrial productions) are significantly associated with NPLs and unemployment, real effective exchange rates and Foreign Direct

Investment are insignificantly associated with NPLs in Pakistani banking system. This generally indicates that as the country grows economically the debt paying ability of the individuals and firms consequently increase (Ahmad & Bashir 2013).

Hanef et al. (2012) in their study investigated the impact of risk management on non-performing loan and profitability of banking sector of Pakistan. They have suggested the recommendation which is necessary for controlling the NPLs through risk management. This study identifies the risk management techniques prescribed by the state bank of Pakistan (SBP). Some of the risk management techniques by BSD Circular No.07, dated 15 August 2008 suggests that gap analysis, measuring risk to net interest income (NII), measure of risk to economic value, full valuation approach, convexity and value at risk techniques should be used by the banks to cope with the higher non-performing loans. Shu (2002) found a negative relationship between non-performing loans and inflation rate.

The existing literature of the non-performing loans in Bangladesh does not portray the effect of long term effect of credit growth, lending rate and cost of fund to the best of our knowledge. This thesis intends to fill the gap in that aspect by considering previous years independent variables like cost of fund, lending rate and loan growth to investigate the relationship with future credit loss.

2.2 Literature on Loan/Credit Growth

One of the focuses of this paper is to determine the long term effect of lending behavior of private commercial banks (PCBs) in Bangladesh. In this regard, the following some of the background can set up the platform for which this part of research has been undertaken.

An early paper by Keeton (1999) used VAR model to find a positive association between non-performing loans and lagged loan growth. The paper concluded that an excessive credit today can increase the amount of problem loans when the economy slows. The paper also pointed out that credit growth can only increase the bad loans in the future only if there is a shift in the supply of bank credit.

Klein. N. (2013) used system GMM technique on 10 banks in each of 16 countries for the time period of 1998 to 2011 and found a positive (lagged 2) significant relationship between loan growth and non-performing loans. This result was true for both pre-crisis and post-crisis

periods. The analysis also found lagged euro area real GDP to be negatively associated with non-performing loans in a negative manner.

Ekanayake & Azeez (2015) analyzed 9 commercial banks in Sri-Lanka from 1999 to 2012 and found that there is a negative relationship between the previous year's loan growth rate and the current non-performing loans. This should not be surprising because different categories and different maturity loans can turn non-performing at different time period not necessarily in the same year or one or two years past. The negative relationship may suggest that the loan growth of previous year contributed to the NPL ratio by increasing long term loans which were still performing. Some banks may prefer to long term loans rather than short term credits which can explain the negative relationship. The result is similar to the research of Khemraj & Pasha (2009) who also found a negative relationship between the lagged 1, 2 loan growth and non-performing loans. They suggested that the negative relationship can indicate the conservative approach of the banks after bad lending experience that resulted in non-performing loans earlier. They also mentioned that banks may have reduced their loans in general which resulted in lower non-performing loans to total loans.

Apart from the negative relationship between loan growth and non-performing loans, the existing literature also shows positive association between loans growth and bad loans. Espinoza & Prasad (2010) found a positive link between non-performing loan and 2-period lagged loan growth when they analyzed 80 banks in the GCC region for the time period 1995-2008 using dynamic panel estimation. Similarly, Foos et al. (2010) observed 10,000 individual banks of 14 major western countries from 1997-2005 and found that a loan growth today leads to a surge in the loan loss provision three years later and a decrease in relative interest income which also lead to a lower capital ratio.

Jesus & Gabriel (2006) analyzed data from 1984 to 2002 and found a negative relationship between lagged 4 loan growth and the current non-performing loans. Their analysis also revealed that lagged GDP growth had negative significant relationship with non-performing loans. They also considered the effect real interest rate that might affect cost of fund and general lending rate. They found that lagged real interest rate had a significant positive impact on the non-performing loans.

2.3 Literature on Interest Rate

Beck et al. (2013) investigated 75 advanced economies for the period 2000 to 2010 and found GDP growth, nominal effective exchange rate (NEER), lending rate and share price to significantly relate to non-performing loans. The empirical study found significant positive relationship between one periods lagged lending rate and non-performing loans. They also found lagged real GDP to be positively associated with non-performing loans.

Louzis et al. (2012) found a positive relation between non-performing loans and lagged real lending rate at 10% significant level for consumer loans. They also used the macroeconomic real lending rate and found when economic lending rate (inflation-adjusted) inclines non-performing loans also inclines significantly. The paper also showed that one and two period lagged GDP growth is negatively associated with non-performing loans.

Akinlo & Emmanuel (2014) used error correction model to analyze the annual data for the time period 1981-2011 and found significant short term positive relationship between lending rate and non-performing loans. Furthermore, their analysis found economic growth to be negatively related with non-performing loans in the long-run.

Daumont et al. 2004, show the accumulation of nonperforming assets to be attributable to economic downturns and macroeconomic volatility, terms of trade deterioration, high-interest rates, excessive reliance on overly high-priced interbank borrowings, insider lending and risk.

The interest rate also affects the volume of bad loans causing floating interest rate. The investigation indicates that the effect of interest rates should be significant because the increase in payments of interest rates grow in debt and consequently the rise of non-performing loans (Bofondi and Ropele, 2011). Athanasoglou et al., (2006) studied the banking profitability determinants on Greek banking. The results indicate that equity level, productivity, inflation and cyclical output have significant positive impacts while loan loss provision and operating expenses have the significantly negative relationship with bank profitability.

Similarly, Caprioand Klingebiel (2002) opined that the amount of non-performing assets (NPAs) frequently connected with bank collapses and financial crises in both developing and developed countries. According to Kithinji and Waweru (2007), that banking problem is back-dated as early as 1986 culminating in bank failures (37 failed banks as at 1998) following the

crises of 1986 to 1989, 1993/1994 and 1998; they accused these crises to NPAs which is due to the interest rate spread.

For instance, when there is high intermediation cost, indicated in the high-interest rate spread, the borrowers may be unable to repay the loan due to the cost of such borrowings. That leads to a high risk of loan default for non-performance (Chand, 2002). As such, they are observed as high-risk borrowers. Because of high transaction costs associated, such borrowers are charged higher rates of interest.

Besides, Brock et al. (2000) showed that high operating costs increase spreads as produce high levels of non-performing loans, even though the volume of these effects differs across the countries.

In Europe, Fernandez de Lisetet al. (2000) econometrically identified loan losses through various banking and macroeconomic causes, using a panel data of Spanish commercial and savings banks for the period 1985-1997. The study shows that gross domestic product (GDP) growth rate should an adverse effect on classified loans, validating that in times of recession, problem loans increase.

Additionally, Bhattacharya (2001) has pointed that increasing interest rate push the quality borrowers over to other opportunities such as capital markets, internal accruals for their necessity of funds.

However, despite the implications of non-performing assets for the banking crisis, for investment and economic growth, and for expecting future banking and financial disasters, very few studies have been done on the impact of the interest rate spread on the level of non-performing assets in Sub-Saharan Africa (Caprio and Klingebiel, 2002).

Adela & Eulia (2010) used correlation analysis on the Romanian banking system from 2006 to 2010 and found a negative relationship between non-performing loans and average interest rates on deposits and loans. Sheefeni. J. P (2016) used co-changed and error correction model to find a positive and statistically significant relationship between interest spread and non-performing loans in Namibia during 2001 to 2014. As hinted earlier about the possibility of the macroeconomic event to induce a change in the interest rates of the banks, several studies have been conducted in this regard. Amidu. M (2006) used panel data analysis during 1998 to 2004 on the banking sector of Ghana and found that the lending behavior of banks is heavily affected by the monetary policy. As changes in money supply and the rate fixed by the Bangladesh

Bank is a proxy of monetary policy, it is imperative to find out the implications of the rising monetary policy rate on the non-performing loans of the bank.

Jiménez et al. (2014) in a recent paper identified the effect of monetary policy on credit risk taking and found that lower overnight interest rates induces banks to engage in higher risk-taking in their lending. A similar finding by Apel & Claussen (2012) also suggests that there is a risk taking channel through which lower monetary policy makes the firms to take more risks. They also mention that the classified loans or the non-performing loans and the risk weighted assets of the banks can be the measure of the risk assessment. Regarding the monetary policy Borio & Zhu (2012) focuses that there is a relationship between the changes in financial system and the risk taking channel.

We take these concepts of the channel of interest rates and explore to find out whether there are any short or long term relationships between the risk taking channel which is in this case the NPL and the cost of fund. The above discussions confirm a strong linkage between bank's cost of fund and non-performing loans through the change in economic factors mechanism of the country.

2.4 Literature on Cost of Fund

Munialo (2014) used the data from 43 commercial banks of Kenya for the time period of 2009 to 2013 on a yearly basis and found positive association between cost of fund and non-performing loans. The paper concluded that when cost of fund went up the banks raised the lending rate to maintain their earnings and as a result confronted with higher non-performing loans.

Although cost of fund may play a part in the surge of the lending rate but the lending rate depends on other things like the demand of loans, competition, development policy and fixed or floating interest rate (Suryanto, 2015). The determinant factors of lending rate constitute the analysis of cost of fund, overhead costs, net interest margin and banking tax (Dendawijaya, 2003; Suryanto, 2015). This finding is similar to a recent study of 2017 by the "microcredit interest rates in Mexico" which mentioned about the positive association between cost of funds and interest rates but emphasized on the various factors like investor's decision and market condition other than cost of funds which could increase the lending rate. The study also mentioned that the cost of funds of banks is determined by the financial markets. The cost of

fund can also be triggered by higher non-performing loans because banks have to keep extra provisions and the service and monitoring cost will also go up (Brochard, 2017).

Bhattarai (2015) analyzed 26 commercial banks of Nepal for the time period 2002 to 2012 and found significant positive relationship between real interest rate and non-performing loans. The paper suggested that higher real interest rate leads to an increase in the cost of fund which reduces the repayment capacity of the loans.

2.5 Literature on Comparative Analysis Between Different Bank Groups

Many researchers have used different bank groups such as private, local, foreign and state-owned commercial banks to conduct comparative analysis. Sensarma (2006) for instance conducted comparative analysis between state-owned, private and foreign banks from 1986 to 2000 of the Indian banking industry in terms of efficiency and productivity. The analysis was based on the stochastic frontier approach (SFA). Karim et al. (2010) also used stochastic frontier approach to investigate the relationship between non-performing loans and bank efficiency in Malaysia and Singapore. They used the tobit simultaneous regression equation to show that higher non-performing loans reduces cost efficiency. Likewise, lower cost efficiency increases non-performing loans. Their analysis used non-performing loans, total asset and the age of the banks as independent variables and efficiency as the dependent variable.

In a similar manner, Pavloska-Gjorgjieska & Stanojevic (2015) conducted comparative study among countries namely – Macedonia, Serbia and Croatia to find the individual bank's resilience to non-performing loans during the financial crisis in Greece.

Phuong (2014) conducted thesis on the sample of 6 state-owned and joint stock commercial banks in Vietnam for the period of 2005 to 2012. The study used fixed effect regression method to examine determinants of non-performing loans. Chaudhary & Sharma (2011) compared the state-owned and private commercial banks in terms of priority sector NPAs of agriculture and small scale industries.

2.6 Current Gap in the Literature

Firstly, this study aims to understand the effect of lagged (long-run) cost of fund and loan growth on the credit quality of the private commercial banks in Bangladesh through GMM panel data estimation. To the best of our knowledge, there is no literature regarding the effect of lagged loan growth or cost of fund on the quality of loans in the context of Bangladesh. No

such research has been undertaken specifically to address such lagged effect of variables to explain the rising NPL. This study aims to fill the gap of such study of lagged loan growth and cost of fund to conduct an empirical analysis to find relationship between non-performing loans and previous year's loan growth and cost of fund. Cost of fund and non-performing loan has been proposed in this study as determinant of future asset quality. Furthermore the effect of bank size on the economies of scale of the banks has also been portrayed. To understand the effect of the market share of different banks on their condition of non-performing loans the ratio of individual banks loans to the total loans of the banking industry has also been used.

In terms of macroeconomic variables the lagged value of per-capita GDP and real interest rate has also been applied to understand the long-term impact of such variables in the context of Bangladesh. The long-run impact of GDP on the economic indicators has extreme significance not because of the short term immediate effectiveness but for the delayed effectiveness of the GDP on the economic progress of banking sector.

Secondly, this research investigates the perception of bankers and borrowers through field survey to understand the effect of relevant factors which directly affect the quality of loans in Bangladesh. In this regard, the relationship between non-performing loans and cost of fund has also been analyzed through the direct questionnaire. Previously, no such field survey has been conducted to understand the perception of bankers and borrowers pertaining to the relationship between cost of fund and non-performing loans.

Finally, the research aims to conduct a comparative analysis between the state-owned and private commercial banks to formulate different comparative factors under which public and private banks can be differentiated. To the best understanding of the current literature available in Bangladesh, no such comparative analysis has been conducted to formulate specific variables through which state-owned banks can be differentiated from the private banks. Furthermore, the comparative analysis uses dynamic panel data econometric model to understand the effect of loan recovery, write-off, non-performing loans and efficiency on the pre and after-tax profitability of state-owned and private commercial banks in Bangladesh.

In this research the following key questions will be investigated to identify the above-mentioned gaps in the light of questionnaire survey and secondary data analysis. The keys questions are as follows –

1. What are the effects of excessive credit growth on the long-run credit quality?
2. What are the effects of cost of fund on non-performing loans both in the short and long-run?
3. What are the determinants of non-performing loans from the perspective of bankers and borrowers of Bangladesh?
4. What are the comparative factors that differentiate the state-owned banks from the private commercial banks?

Chapter Three: Framework Development of the Study

3.1 Conceptual Framework

Historically, the non-performing loans of Bangladesh were in a downward trend up until 2011. From 2011 to 2017, the non-performing loans of Bangladesh increased tremendously. In the recent years, Bangladesh is facing severe problem in handling its non-performing loans. It seems that the banking industry is gradually piling up severely large amount of irrecoverable money. Up to December, 2017, the gross NPLs in Bangladesh have reached a staggering BDT 743.02 billion.

According to a report by financial stability report, 2017 by Bangladesh Bank, above 50% of the total loan disbursement was inserted into the four major sectors (i.e. RMG & Textiles, construction loans, commercial loans, agriculture). 63% of total gross comprised in the above-mentioned sectors.

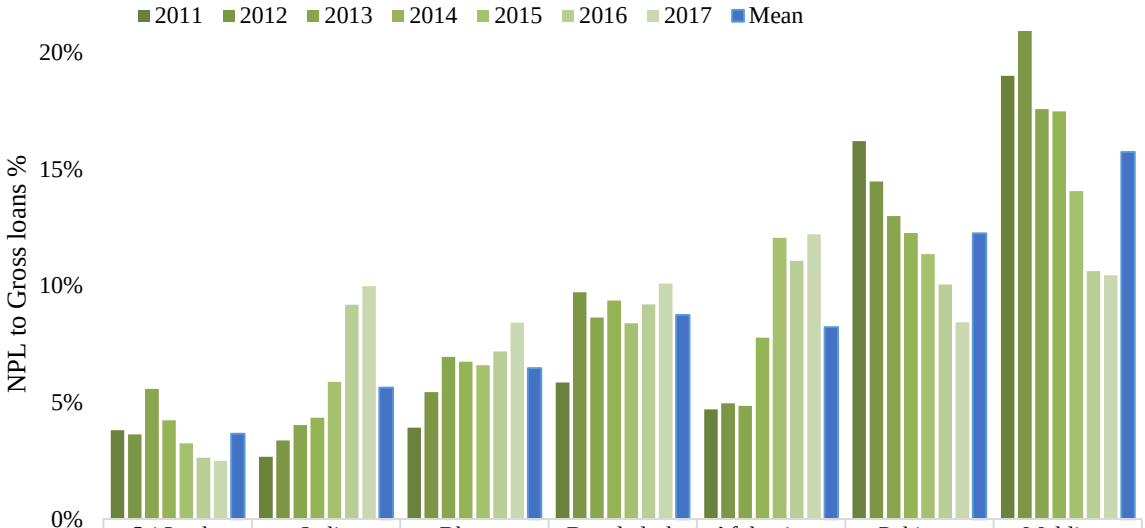
State-owned commercial banks have been the major house in which most of the NPLs of banks of the country has taken place. SCBs' trend of rising NPLs in the recent years has not shown any trend of slowing down. According to the field survey report by Bangladesh Bank, from Dec 2016 to June 2017, the state-owned commercial banks have contributed 47% of the overall non-performing loans. Within that six months the private commercial banks were also hit by the rising NPLs which contributed 43 % of the total NPL of the country.

Other South Asian countries are also struggling with the rising NPLs but they are determined enough to tackle this issue through consolidation of the law and the monitoring system. For example, Pakistan, Maldives and Sri Lanka brought down their NPLs significantly from the year 2011 to 2016. But other countries like India, Bangladesh, Bhutan and Afghanistan have faced with the staggering growth of the non-performing loans at the same time.

Lot of research about the NPL has showed the detrimental effect of the NPLs in the economy of Bangladesh. A comparative study about the determinants of the NPLs in Bangladesh, Pakistan and India by Waqas et al. (2017) showed that the determinants of NPLs across the country is not only because of the macroeconomic factors but also for the bad internal policies, lack of experience, steady and weak decision making power and bad centralized managerial control. Their findings also showed that the mean value of NPLs across Pakistan, India and Bangladesh are 13.1%, 2.9% and 6.8%. They concluded that due to the higher variability and

dispersion in the NPL amount of Pakistan the default risk is higher in Pakistan and Bangladesh is also in a higher default position than India. The current trend of NPLs in Bangladesh is very much agreeable with their findings.

Figure 5 shows the comparative ratio of non-performing loans to total loans of the SAARC regions from 2011 to 2017. This shows that they are also struggling with non-performing loans. During the year 2011 and 2017 the non-performing loans of Pakistan, Maldives, and Sri Lanka has declined at a noticeable rate compared to the rising trend of Bangladesh.



	Sri Lanka	India	Bhutan	Bangladesh	Afghanistan	Pakistan	Maldives
2011	3.82%	2.67%	3.92%	5.85%	4.70%	16.21%	19.00%
2012	3.63%	3.37%	5.44%	9.73%	4.96%	14.47%	20.93%
2013	5.58%	4.03%	6.95%	8.64%	4.85%	12.99%	17.57%
2014	4.23%	4.35%	6.75%	9.37%	7.78%	12.27%	17.48%
2015	3.24%	5.88%	6.59%	8.40%	12.05%	11.36%	14.06%
2016	2.63%	9.19%	7.19%	9.20%	11.07%	10.06%	10.63%
2017	2.50%	9.98%	8.42%	10.10%	12.20%	8.43%	10.46%
Mean	3.66%	5.64%	6.47%	8.75%	8.23%	12.25%	15.73%

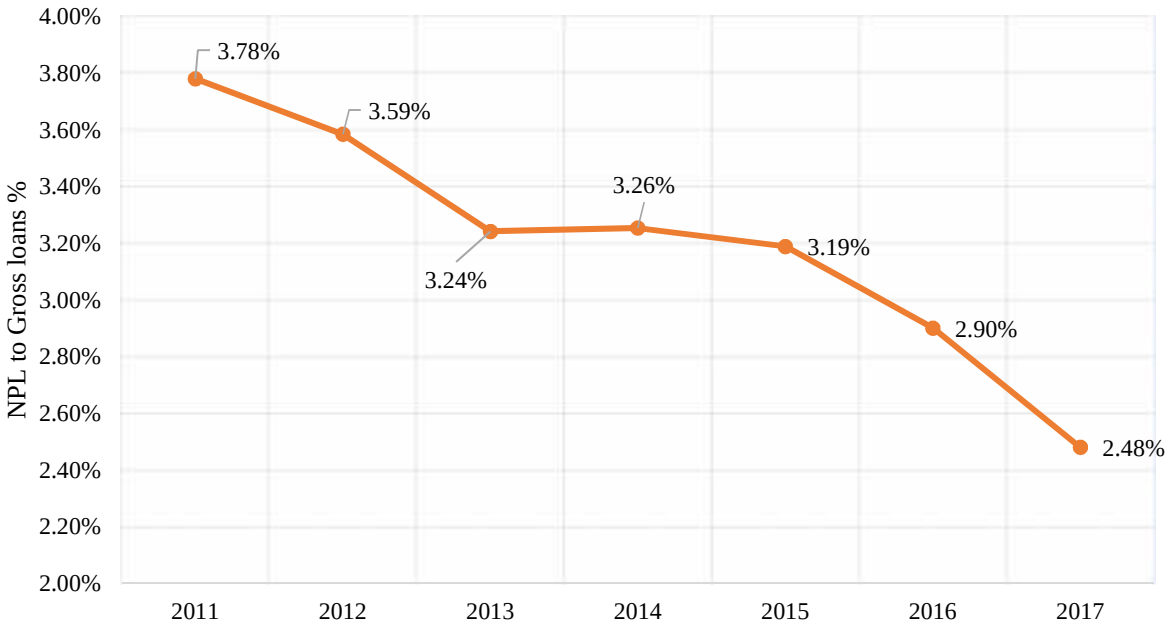
Source: World Bank

Figure 5: Non-performing loan percentage (%) to Total Loans of the SAARC (South Asian Association for Regional Cooperation) member countries

Now if we move our viewpoint to more developed countries, we see a different but rather positive scenario. For instance, the non-performing loan scenario among the member countries of the OECD (Organization for Economic Cooperation and Development) has been a positive trademark in the management of the NPLs. Despite the economic shock in the year 2008 most of the 35 member countries of OECD has been able to maintain a declining NPL rate for the period of 2011-2016, and in fact, the rate has been declining since that economic shock. Although the NPL ratio of some countries like Austria, Belgium, Greece, Italy, Portugal,

Sweden and Turkey has inclined or fluctuated, the NPL ratio of this community in general has declined from 3.78% to 2.48% between the 6-year period of 2011 to 2017 (Figure 6).

Germany, United Kingdom, and the United States in this regard who are also the major exporting partners of Bangladesh has shown their tremendous success in keeping their non-performing loans at bay. It has been observed from the World Bank data that Germany, UK and USA have been able to bring down their NPL ratio largely, within the period 2011-2017. In contrast, Bangladesh has faced with the consequence of a deadly inclination in the non-performing loans within that same period.



Source: World Bank

Figure 6: OECD (Organization for Economic Cooperation and Development) Countries NPL 2011-2017 in percentage (%)

The trend of the rising NPLs in Bangladesh has shown some form of recovery in some years but the overall recovery amount of the banks has not been up to the mark. For example, the NPL ratio of Bangladesh was declining from 2009 to 2012 (Figure 2). The amount of loans was also increasing at a tremendous rate in the same time period so it cannot be concluded that sufficient amount of loan was recovered in the time period.

Another way to approximate the loan recovery is by the loans which are generally written off by the banks. Up to Dec 2016, total written-off loans stood at BDT 44.7 billion. An extra amount of BDT 3.5 billion write-offs were added in the year 2017 which put the total amount of loan write-off up-to December 2017 to BDT 48.2 billion.

In Bangladesh many banks are forced to write off loans under the pressure of politically exposed and higher influential persons. Lots of bank officials and researchers have suggested that these staggering cases of NPLs can be resolved to a greater degree by strengthening the legal process with the money loan court. According to the policy of the Bangladesh Bank, loans are written off after sufficient amount of provisions are made. Banks take tax advantage with this malleable process from the Bangladesh Bank but the banks are still obligated to continue their recovery efforts. They have emphasized on the money loan court because the banks are required to file law suits in order to write off specific loans. Many institutions and organizations have suggested to amend the money loan court act (2003), bank company act (1991) and the Negotiable instrument Act (1881) and the Anti-money laundering Act (2012) to better ensure the proper measure in controlling the non-performing loans and the trend of writing off loans.

3.2 Theoretical Development

In the economy, there are those who have funds and there are those who are in need of funds. Due to the deficiency of communication among the different user groups and due to the problem of maintaining trust among different individuals the role banks and non-banks financial institutions comes into play. They play an important role in channeling the funds of the economy from the surplus group to the deficit group or the right user (by proper investigation). In this way, the banks play the role as the financial intermediaries to serve the deficit economy.

As mentioned earlier, banks lend money to the borrowers in the form of loan which is utilized by the borrowers to provide the banks with "*cost of fund*" and spread. For every loan, banks must keep sufficient amount of provisions prescribed by the Bangladesh Bank (Central Bank of Bangladesh) according to the category of loans also dictated by the Central Bank. After the general provision requirements have been met, if the banks have proper valid cause for the concern of any loans to turn to non-performing, they can keep extra provisions which are specifically called the provision for non-performing loans.

Regarding the general notion of the non-performing loans, the definition can vary across the globe but not to extent where they are completely different. Generally, the loans in which the interest has not been paid for more than three months are classified as non-performing loans. They can be gross and net. In case of the gross non-performing loans the NPLs are without the

deduction of provisions. The provisions are included in them but the net NPLs are those from which the provisions have been deducted.

Although the definition of NPL can vary across the globe for different geographical purposes and for the terms of contract, the loans in Bangladesh are generally classified as non-performing if that loans do not generate income for three months or more. In Bangladesh the loans are generally classified in the unclassified and classified portion. The unclassified portion contains standard loans and special mention account.

Non-performing loans are "financial pollutions" which in a financial system of a country can harm the economic condition of a country and the social welfare of the citizens. Zeng (2012) The non-performing loans are the amount of past due which cannot be paid as the agreed term as well as the amount which is 90 days or past due Festic et al. (2009). Although NPLs are sometimes considered as the expression of low quality of loans, it is not the whole point of view. The qualitative measure of the entire loan portfolio of banks also counts (Filip, 2013). In the context of Bangladesh, Bangladesh Bank has consistently published reports on the actual definition of NPLs and set the actual provision and capital adequacy limits for the banks.

3.2.1 Credit/loan growth

Generally, the overall business flow and the performance of banks is hugely affected by the growth of loans and deposits at any point of time. The condition of loans becomes better or worse through the inclusion of new credit and as well as through the existing credit. The sanctioning of new loans is not generally possible without the growth of funds received through deposits. Because the banks must maintain a certain amount cash reserve ratio (CRR) and statutory reserve ratio (SLR) prescribed by the Bangladesh Bank.

- ***Cash reserve ratio (CRR):*** CRR ratio is the proportion of deposit amount which the commercial banks are required to maintain as cash according to the directions of the central bank. This is an important tool used by the central bank to control money supply in the economy. When the central bank wants to increase money supply in the economy it lowers the ratio which encourages the banks to give more loans and thus channels the money in the economy. In the fiscal year 2017 the cash CRR for the scheduled banks with the Bangladesh Bank was 6.5% on a bi-weekly basis provided that the CRR would not be less than 6% in any given day. CRR has been revised at 5.5% from 6.5% and minimum 5% on daily basis effective from April 15, 2018, according to a circular issued by BB.

- ***Statutory Liquidity ratio (SLR):*** SLR ratio is the proportion of deposits which the banks must maintain with the central bank in the form of gold, cash, government approved securities or any other liquid assets. This is also a monetary tool used by the central bank to restrict the banks in channeling money into the economy as loans or investments. Unlike CRR the SLR can be held by banks in the economy under the direction by the central bank. According to the guideline of BB, conventional banks must maintain 13% and 5.5% for Islamic shariah based banks of their total demand and time liabilities.

The ADR is re-fixed at 83.50% for conventional banks and 89% for shariah based Islamic banks by BB. The current ratios are 85% and 90% accordingly, revise rate to be implemented by March 2019. Setting aside the existing loans, the inclusion of every new deposit creates the possibility of the conditions of loans to become good or non-performing. Every bank knowingly or unknowingly operates under the condition of the demand of loans and supply of funds. If there is any discrepancy in the proportion of loans and deposits, the risk exposure of banks changes. Higher loans relative to deposits increase the risk exposure of banks. This is the risk for any sudden demand of withdrawal by the depositors. Higher loan-deposit ratio also indicates higher demand of loans relative to deposits for investments activities. This does not necessarily imply that higher demand of loans will result in higher return for banks. This may indicate that higher politicized environment has created enough demand which would not have been possible if the condition of the country was relatively less politicized. Several factors come into play and not considering some of them should underweight the factors that determine the demand of loans.

In general, the banking industry has been experiencing a declining growth rate of loans since around 2006 (Figure 7). Particularly, since 2011 just after the share market crash the loan growth rate declined tremendously. It makes sense because before the share market collapse huge amount of loans were diverted into share market investment which did not see any profit at all. For this reason banks became cautious in the following years in disbursing loans. In this scenario higher loan growth has become a concern for banks in the past six or seven years because of higher risk of incurring bad loans. With this risk involved the decision to increase loan with accumulating higher deposits with higher cost of fund poses serious risks for banks. But banks sometimes go beyond the market norm and try to capitalize the higher deposits irrationally in good time which results non-performing loans in the long-run.

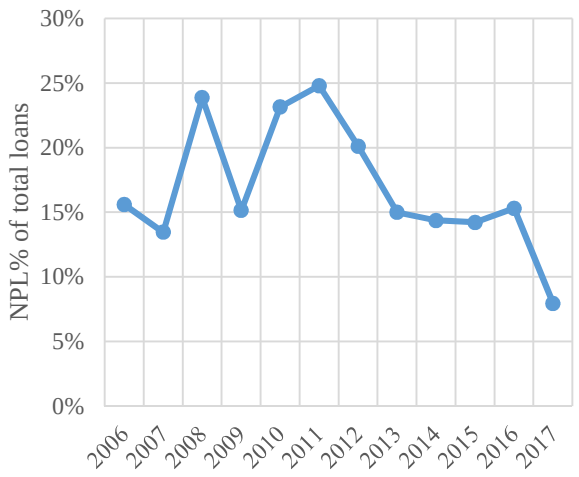


Figure 7: Loan growth rate of the total banking sector of Bangladesh (2006 FY-2017 FY)

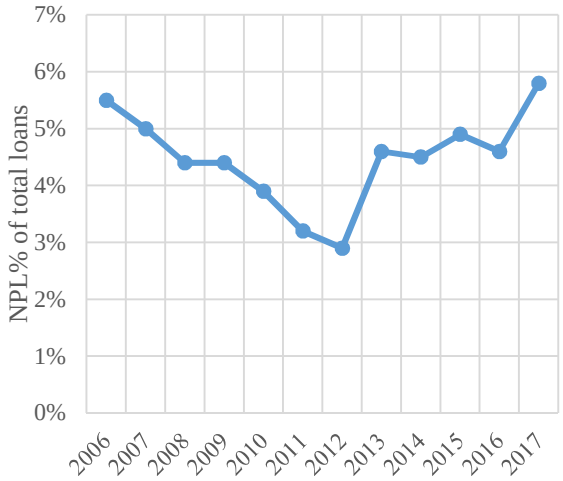


Figure 8: Non-performing loans to total loans of the total banking sector of Bangladesh (2006 FY-2017 FY)

Source: Bangladesh Bank

Generally, when the banks increase their credit growth it does not necessarily imply that those loans will turn to non-performing. Rather it is important to identify when the banks generally inclines towards higher credit disbursement than usual. When the economy is experiencing growth, banks may become comfortable to increase its lending activity. The decision to lend higher than usual can bear results both in a positive or negative manner. Assuming all the borrowers have excellent credit worthiness the decision to lend more than usual will bring huge earnings for the banks. But not all the borrowers are of equal status and more importantly it is not guaranteed that all the borrowers will be able to pay back regularly. Banks strive to maximize profit and they will try to capitalize every opportunity they come across. So the opportunity of lending more in good times can result in an increase in deposit collection with higher cost of fund. The opportunity to lend excessively in good times may not increase bad loans in the short run but if the economic growth is prevalent with high management inefficiency and corruption loans can turn to non-performing in the long-run. The previous section hinted towards the rising of cost of funds which is also one of this study's interests of investigation. The following section will provide the definition of cost of fund and the impact it can have on the lending rate which has the potential to influence the asset quality in the long-run.

3.2.2 Cost of fund

In simple term, "Cost of fund" is the interest rate paid by financial institutions to depositors for the funds that they collect. In other words, it is the weighted average interest rate of interest

bearing liabilities of financial institutions. These weighted average deposit rates are determined by the interest rate paid to depositors on financial products, including savings accounts and time deposits. Although the term 'cost of funds' is often used with regards to financial institutions, most corporations are also indirectly affected by the cost of funds when borrowing. Cost of funds can be interest bearing funds and interest bearing funds excluding the low cost specific purpose scheme funds.

The cost of funds is one of the most important input costs for a financial institution, since lower cost of fund will attract less depositors and higher cost of fund will attract more depositors. The rate at which banks collect fund affects the lending rate of the banks which ultimately determine the spread at which they operate. So to strike a balance between cost of fund and lending rate is one of the primary activities of banks.

Cost of funds and net interest spread are conceptually key ways in which many banks make money. Commercial Banks charge interest rates on loans and other products that consumers, companies and large scale institutions need. The interest rate that the banks charge on such loans must be greater than the cost of fund or funding cost. Deposit is the primary source of funding of banks in Bangladesh aside borrowing and equity funding. Deposits (often called core deposits) are a primary source, typically in the form of checking or savings accounts, and are generally obtained at low rates. Banks typically need to finance long term deposits through higher cost of fund unlike short term funding. As mentioned earlier cost of fund can directly affect the lending rate of the banks which has short and long term consequences on the quality of loans. So understanding the effect of cost of fund on non-performing loan is very essential to know how the depositors and investors activity affect the quality of loans. In other words, how the price of deposits affect the loan quality in the short and long-run.

3.2.3 Impact of cost of fund on the loan quality

The importance of understanding the impact of cost of funds on the non-performing loans (NPLs) lies in the way the funding costs or cost of fund operate in the economic system to create noticeable fluctuations in the position of classified loans of the banks. As previously mentioned that cost of fund can affect the lending rate but the opposite is also possible. Cost of fund can be influenced by the lending rate, monetary policy, liquidity crisis or change in the rate of national savings certificate. This bi-directional relationship between cost of fund and lending rate is one of the reasons for this investigation.

The effect of cost of fund on the non-performing loans is important because cost of fund of the banks may change due to macroeconomic conditions and also through a cyclical process through lending rate in the long-run. In this context some researchers have hinted towards the fact that cost of fund or the deposit rates of the banks can influence the non-performing loans of the banks. Irungu (2013) argued that it is possible for banks to increase the lending rate and lower the cost of fund to widen the interest spread and thus maximize the profitability of shareholders. Sheefeni (2016) pointed an interesting fact that the cost of fund and lending rate can be a monetary policy transmission mechanism in an economy. The paper of Amarasekara (2005) conducted some empirical studies to find that in some countries when monetary policy rate are inclining retail lending rates respond quickly but the cost of fund or the deposit rate remain sluggish while the results are vice versa in the opposite scenario.

Regardless of the effect of monetary policy, this paper attempts to find out the independent effect of cost of fund on loan quality in the presence of real interest rate. The impact of independent effect of cost of fund on the quality of loans can create long-run implications because of the liquidity crisis in the banks. If banks lend excessively there will be a shortage of funds and to make up for the possibility of sudden withdrawal by the depositors banks may have to borrow more deposits at higher cost which may affect the lending rate. A fact to note here is that the lending rate operates at float (which can change according to the market) and banks may raise the lending rate to cover the high cost of fund which can trigger delayed payments. This delayed payment can cost banks to keep provisions from their capital which can affect their earnings as well. So there is a possibility that high cost of fund can affect the quality of loans and affect the earnings of banks.

3.2.4 Impact of efficiency, credit quality, write-off and loan recovery on the profitability of state-owned and private commercial banks

The last four to five year's persistent growth of non-performing loans of the state-owned commercial have triggered the need to analyze the reasons for such upsurge in inefficiency. Compared to the private commercial banks, the rate at which the bad debts of the public banks have inclined has created concern among the economists and researchers. Consequently, the write-offs in the public banks have also been rising at an alarming rate. Surprisingly, the write-offs in the private commercial banks have also been in alignment to the write-offs of the public banks. Despite this alignment, the rate of loan write-off was higher in the public banks compared to the private banks from 2009 to 2017. The subsequent table depicts the trend of the

loan write-offs of these bank groups. It indicates that banks of different groups can become responsive to external stimuli to take off the bad debts from their books almost at the same time frame. The graph below to the left shows an interesting trend among these different bank groups in terms of cost inefficiency. From 2009 to onwards the cost for one taka income for public and private banks has been changing at an opposite trend. The year when the inefficiency decreased for the private banks, the inefficiency arose for the public banks. As the profitability of both public and private banks had been declining and the inefficiency between these bank groups is moving oppositely each year, it can be assumed from just viewing the graph that the relationship between the profitability and inefficiency for these different bank groups will not be the same.

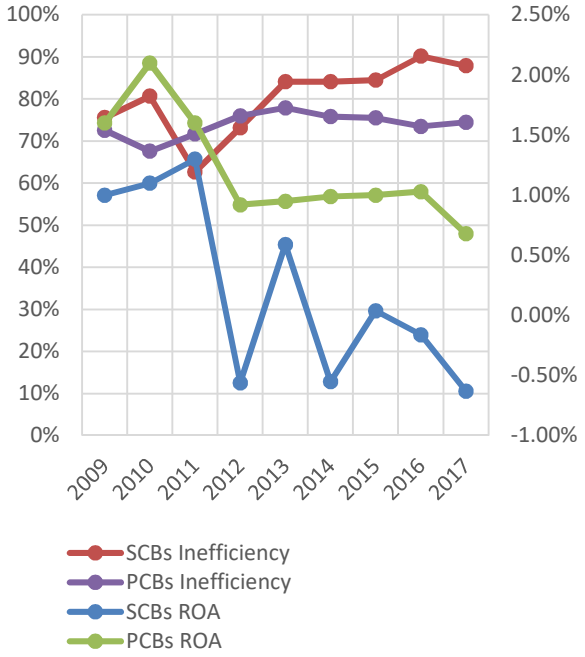


Figure 9: Comparison of the ROA & efficiency of the state-owned and private commercial banks

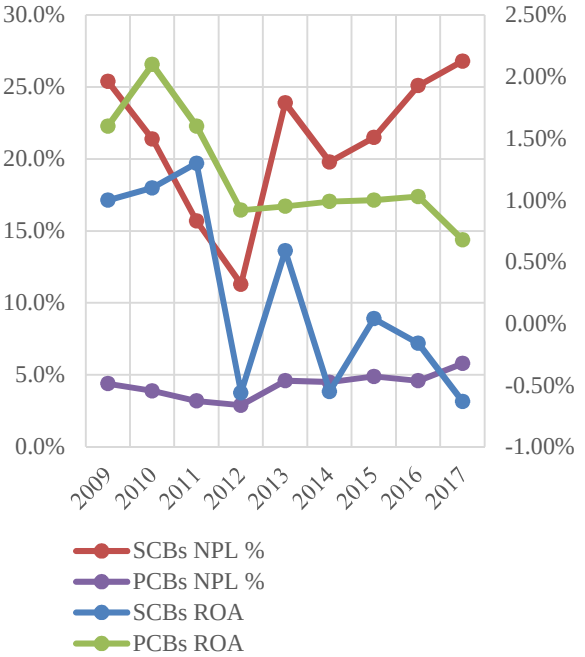
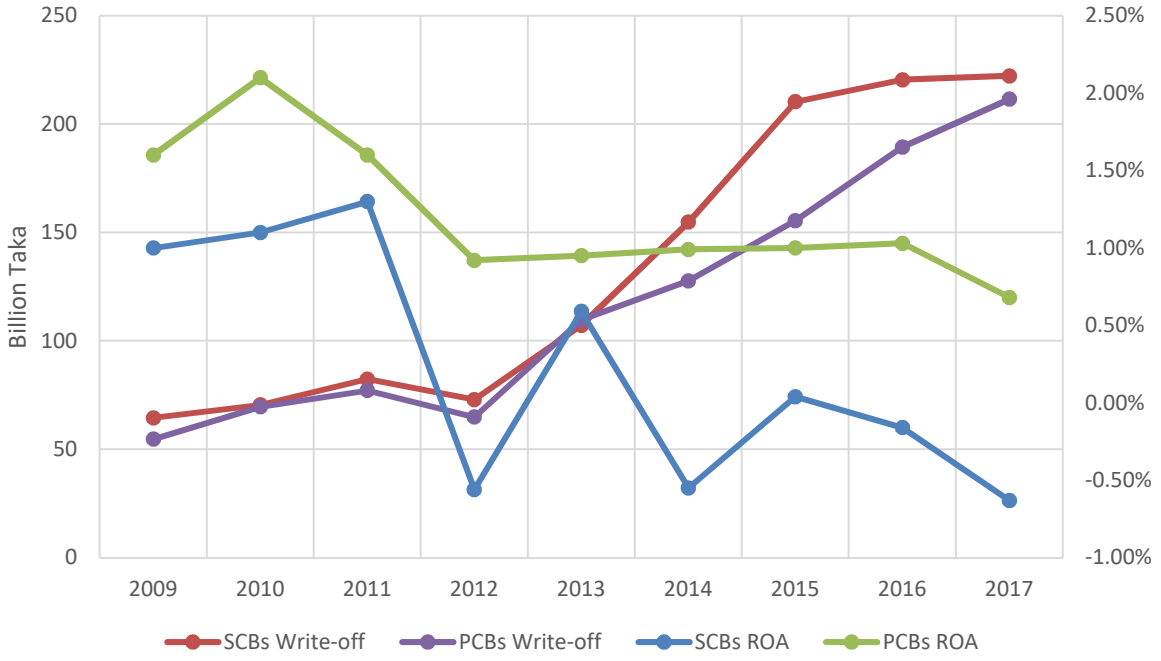


Figure 10: Comparison of the ROA and NPL % of the state-owned & private commercial banks

Source: Bangladesh Bank

The above left graph shows that there is direct negative correlation between the profitability and cost efficiency of both the banking groups. The private banks are more prone to the increased cost rather than public banks. The private banking industry seems to be extremely sensitive to the operating efficiency compared to the public bank. From the graph it is clear that in many year-end the profit of the private banks take the opposite trend when the inefficiency increases. In the case of public banks the condition is a bit interesting because in many cases the profitability moves in the same direction of the efficiency that is in many cases when the cost relative to income increases the profit also increases and vice versa.

The above right graph presents the overall scenario of the profitability and non-performing loans of the state-owned & private commercial banks in Bangladesh from 2009 to 2017. From the above graph it is evident that the profitability of the public banks is falling at a rapid pace with respect to the trend of private banks. Overall the trend of bad debts of both types of banks show a similar pattern from 2009 but the bad debts of public banks inclined at a faster rate from 2012 compared to the private banking sector. The general condition of both the banking groups are not so bright in terms of bad debts but the condition of the public banks are much worse to the condition of the private banks. From the above graph it can well correlated that as the bad loans or non-performing loans to total loans & advances are increasing the profitability of the both banking groups are taking a hit in the income in general.



Source: Bangladesh Bank

Figure 11: Comparison of the ROA & loan write-off of the state-owned and private commercial banks

The above graph shows the relationship between Return on Asset (ROA) and the loan write-off of the public and private commercial banks of Bangladesh from 2009 to 2017. The relationship reveals that the effect of loan write-off is clearly different for these banking groups. For most cases from 2009 the relationship between profitability and loan write-off has been negative for private commercial banks but the link has been positive for the state-owned commercial banks for most cases. This indicates that when the private banks are writing off loans which have been non-performing for some time the profit declined. For public banks the

positive relationship reveals that if the state-owned banks are clearing off loans from the books their profit was increasing. Clearly, the burden of excessive non-performing loans is extremely noticeable for public banks compared to the private banks.

These different relationships and trends between the public and private banks create the theoretical basis for analyzing the correlation between profit and different variables related to non-performing loans.

3.3 Research Questions

1. What are the effects of excessive credit growth on the long-run credit quality?
2. What are the effects of cost of fund on non-performing loans both in the short and long-run?
3. What are the determinants of non-performing loans from the perspective of bankers and borrowers of Bangladesh?
4. What are the comparative factors that differentiate the state-owned banks from the private commercial banks?

3.4 Research Hypotheses

H_1: There is a long term relationship between loan growth rate and non-performing loans.

H_2: There is a long term relationship between cost of fund and non-performing loans.

H_3: There is a long term relationship between lending rate and non-performing loans.

H_4: There is a negative relationship between efficiency and the profitability of the banks.

H_5: There is a negative relationship between market power and non-performing loans.

H_6: There is a negative relationship between GDP and non-performing loans.

Chapter Four: Methodology of the Study

4.1 Research Design

Cooper et al. (2003) identified research design as the process or mechanism of focusing on the researcher's perspective for the intention of a specific study. Kotzar et al. (2005) described research design as the plan and structure of investigation and the process in which researches are put together. Leedy & Ormrod (2005) mentioned that research methodology as a means of extracting meaningful sense from data.

4.2 Nature of the Study

The nature of this study is of both qualitative and quantitative. For quantitative analysis, secondary data has been collected from the annual report of the respective banks. The quantitative analysis regarding the determinants of non-performing loans has been done on a panel dataset of 16 conventional commercial banks of Bangladesh. In addition, macroeconomic data has been collected from the annual report of Bangladesh Bank and the World Bank database. Qualitative analysis regarding the determinants of non-performing loans has been conducted through questionnaire survey (questionnaire is attached in the Appendix) for which the bankers and borrowers have been interviewed.

Moreover, the comparison between the state-owned and the private banks has been done on a panel dataset of 5 public banks and the above mentioned 16 private banks for the time period of 2009 to 2017. For the identification of comparing factors between the state-owned and private banks another questionnaire (attached in the appendix) survey has been done with the same respondents.

4.3 Population Size

Currently, there are 64 banks in Bangladesh out of which 59 are scheduled banks under the supervision and affiliation of Bangladesh Bank (Figure 1). The recently added community bank has raised the number of local private commercial banks to 41. Out of these 41 private commercial banks, 33 of them are conventional PCBs and the other 8 are shariah based. The subject of this thesis is the analysis of the conventional (interest based) private commercial banks and state-owned commercial banks. So population size for this study is the 33 conventional private commercial banks and six state-owned banks.

4.4 Sample Size

A total of 16 publicly listed conventional private commercial banks has been randomly selected from 33 conventional private commercial banks for this research. For this reason the banks in Bangladesh have been clustered into different banking groups. From those clustered banking groups conventional banks were selected at random. The sample size is about 49% of the total conventional private commercial banks in Bangladesh. The time frame has been selected from 2006 to 2017 for constructing the determinants of non-performing loans along with the objective of formulating long-run relationship between loan growth and cost of fund with the non-performing loans of the banks. For the comparison between the state-owned and private commercial banks 5 state-owned commercial banks (SCBs) have been selected at random along with above mentioned 16 private banks for the time period of 2009 to 2017. Thus the sample size for the comparison is about 83%.

4.5 Sampling Design

Random sampling method has been used in this research from the population of 33 conventional private commercial banks. 64 scheduled banks have been classified into different clusters or groups (Figure: 1) from which the sample of 16 private commercial banks have been selected for the analysis. 5 state-owned banks have been randomly selected for the purpose of comparison with the private commercial banks.

4.6 Data Collection

For the empirical analysis, the quantitative data has been collected from the respective annual reports of the banks and from the website of Bangladesh Bank. As mentioned earlier, the data has been collected for a particular time frame for each sample banks. This is known as panel data or categorical data. For the primary data, 100 respondents were questioned through face to face interview, emails and phone calls. Out of 100 interviewers, 75 were bankers and 25 were borrowers. For the comparison, the qualitative analysis has been done with the above mentioned 100 interviewer.

4.7 Data Analysis

Both field survey and secondary data have been considered for analysis. For the quantitative and empirical analysis, the GMM technique has been used proposed by Arellano and Bond (1991). LIKERT scale has been used to formulate the questionnaires. Stata 12, Eviews 10 and SPSS 20 software were used to analyses the depth of different data source. The analysis of the

determinants of non-performing loans along with the comparison between the state-owned and private commercial banks have been conducted with the help of the above-mentioned software.

4.7.1 Qualitative approach

Qualitative research is an exploratory analysis which is used to gain an insight of the underlying reasons, opinions and motivations to develop ideas, gaps or hypotheses for potential quantitative research. The qualitative research is used to generate thoughts and important missing gaps and holes which forms the basis for the quantitative analysis. There are some common methods which include focus groups or other individual face-to-face interviews to collect data for further analysis and generate a better an understandings for the research. Qualitative data is the data which is involved in the understandings of the complexity, detail and context of the research subject, often consisting of texts, such as interview transcripts and field notes, or audiovisual material. Hox, J. J., & Boeije, H. R. (2005)

4.7.2 Quantitative approach

This particular approach is used to make numerical understandings of any problem by analyzing data which is generally transformed by using statistical methods and analysis. Data are those which can be described numerically in terms of objects, variables and their values (Hox & Boeije, 2005). In the research paradigm, a mixed approach combining qualitative and quantitative method of data collection is currently in use (Creswell & Clark, 2007). Quantitative research is used to formulate facts and uncover patterns from measurable data. This kind of data collection includes online surveys, paper surveys, mobile surveys, face-to face interview etc.

4.7.3 Mixed approach

Mixed research approach is generally the combination of the qualitative and quantitative approach. This method is used to make questions about the research and make a numerical attempt to make sense of the underlying the research point or subject. Valerie Caracelli mentioned in his studies that a mixed method study is one that plan fully juxtaposes or combines methods of different types (qualitative and quantitative) to provide a more elaborated understanding of the phenomenon of interest (including its context) and, as well, to gain greater confidence in the conclusions generated by the evaluation study. Many researchers have given different definitions of the mixed research approaches. For example, Huey Chen in his study mentioned that mixed methods research is a systematic integration of quantitative and qualitative methods in a single study for purposes of obtaining a fuller picture and deeper

understanding of a phenomenon. Mixed methods can be integrated in such a way that qualitative and quantitative methods retain their original structures and procedures (pure form mixed methods). Alternatively, these two methods can be adapted, altered, or synthesized to fit the research and cost situations of the study (modified form mixed methods).

4.7.4 Econometric model

Generally, econometric model refers to statistical model that holds relationship between multiple variables, relevant to particular economic events. To be more specific, an econometric model is one of the tools economists use to forecast future developments in the economy. Interestingly, econometric model consists of a deterministic part and a random part. There are systematic phenomena which can be described through empirical analysis and there are random components which are allowed to work under probability distribution. Greene (2003) mentioned that an econometric model consists of endogenous variables, exogenous variables and disturbances (error component). Endogenous variables are dependent variables that can be described through another variable within the model. On the other hand exogenous variables are independent variables that are independent of any other factors.

Chapter Five: Presentation and analysis of data

5.1 Types of Data

Primary data is the original data collected for a research goal and secondary data is the data that was originally collected for a different purpose and reused for another research question. Data sets collected by the university-based researchers are often archived by the data archives; these are organizations set up chiefly for the purpose of releasing and disseminating the secondary data to the general community. On the other hand most of the secondary data sets contain quantitative data; that is the information consists of studied objects whose characteristics are coded in variables that have a range of possible values. A qualitative database consists of documents, audiocassettes, or videocassette tapes, or the transcripts of these tapes Hox, J. J., & Boeije, H. R. (2005).

Panel data has been used for the quantitative analysis and ordinal data has been used for the qualitative analysis. Panel data refers to any data set with repeated observations over time for the same individuals (Arellano, 2003). Ordinal level data are represented by sets of labels or names (high, medium, low) that have relative values which can be ranked or ordered (Lind, 2000).

5.2 Primary Data

Primary data sources of information are the unique works of the researchers without interpretation or pronouncements that represents an official opinion or positive. On the other hand the secondary data are interpretation of primary data. Cooper, D. R et al (2006). They also mentioned in their book that primary data source is always the most authoritative because the information has not been sifted or interpreted by a second party. Some of the internal sources of information mentioned in their books are inventory records, personnel records, purchasing requisitions forms, and statistical process control charts and similar data. Primary data sources can be different internal sources like marketing documents and databases, Operations documents and database, information from the human resource management database, financial documents and database and management documents.

5.2.1 Source

Primary data source has been collected from the questionnaire made to the borrowers and employees of the banks. Their direct comments and perception about the problems have been highlighted which has been considered as the most direct and deep source of primary information. Bankers who were involved in the corporate business, credit risk management, special asset management division and credit evaluation were interviewed. Different levels of management were included in the questionnaire process. In the case of borrowers, managing directors and chief financial officer were interviewed.

5.2.2 Technique

Primary data is collected by questioning the bankers and borrowers about the non-performing loans. Banks provide loans in many sectors such as corporate borrowers, staff, agricultural, SME, Industries and others. These primary data has been collected through asking the clients of different sectors. In this research five point LIKERT scale has been used to measure the causes of non-performing loans and compare the performance of private commercial banks & state-owned banks from the perspective of bankers and borrowers. The scale is as follows-

1=strongly disagree

2=disagree

3=neutral

4=agree

5=strongly agree

5.2.3 Variables used in the qualitative analysis

Variables used in the qualitative analysis have divided into two parts. One part includes the variables used in finding the determinants of non-performing loans through questionnaire survey. Another part includes the variables used in comparing the state-owned and private commercial banks through the field survey data.

5.2.3.1 Variables used in finding the determinants of non-performing loans

Table 9: Variables used in the qualitative analysis

Variables	Acronym	Expected Sign	Expectations
Dependent Variable: Non-performing loan			
Explanatory Variables: Energy Crisis	EC	+	Higher energy crisis can result in poor business performance and high cost will result higher non-performing loans (NPLs)
Budgetary expenditure	BE	-	Higher budgetary expenditure will be more business conducive and thus the NPL will be lower.
Political instability	PI	+	Higher political instability will hinder daily business activity and delay regular procedure and thus will increase bad loans.
Number of banks	BANK	+/-	Higher banks can lead to more management inefficiency with less skillful manpower which can create the scope for NPL. On the other hand higher banks can be helpful to tackle NPL if the banks are kept free from political influence and nepotism.
Ease of doing business	EDB	+	Business friendly environment generally lowers the chance of NPL.
Merging of the banks	MER	+/-	NPL can be reduced through merging if the effective skill and management is utilized by sharing. Otherwise no impact.
exchange rate	ER	+/-	May vary in either way if banks are heavily exporting or importing.
unemployment rate	UR	+	Bankers perceive that higher the unemployment rate lower will be the income and the inability to repay loans thus will result higher NPL.
inflation rate	IR	+/-	Higher inflation can increase NPL if the price of raw materials or price of factor of productions goes up. If the income of the borrowers goes up with inflation the NPL may decline.
GDP growth	GDP	-	Normally higher GDP growth should result in lower NPL.
Bank profitability	PRO	-	Banks with higher profit can be more efficient in controlling loans and be more cautious in loan sanctioning and thus the NPL should be declining with higher profit.
Management efficiency	ME	-	Strong management should reduce NPL
Loan monitoring	LM	-	Better loan monitoring can foresee any future unexpected loss and make proper prediction which should lower any potential bad loans.
IT and MIS	IT	-	Better technology for open information access to every banker to monitor the loan status with proper loan monitoring can reduce NPL.
Lending rate	LR	+	Higher lending should create pressure on the borrowers and increase NPL as because the rate is floating.
Cost of fund	COF	+	Higher cost of fund can make the profit of banks lower so banks may pass the burden on the borrowers so NPL may increase.
Banking corruption	BCOR	+	High corruption or in fact any corruption increases NPL.
loan evaluation	LE	-	Better loans evaluation reduces the chance of NPL.
Collateral	COL	+/-	Higher collateral may or may not reduce NPL.
Borrower's honesty	BOHO	-	The performance of the loans depends a lot on the honesty of borrowers. So if the borrowers divert funds without consent they can increase NPL.

5.2.3.1.1 Sample size

Banking category = Conventional private commercial banks

Number of bankers questioned = 75

Number of borrowers questioned= 25

Location of the respondents = Dhaka

Bankers who were involved in the corporate business, credit risk assessment, credit-monitoring, retail and SME business positions were interviewed. Different levels of management were also included in the questionnaire process to the borrowers.

5.2.3.1.2 Descriptive statistics

Table 10: Bankers' perception on the determinants of non-performing loans (NPLs**)**

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

		Scale					Mean	Median	STD Dev	Total
		1	**2**	**3**	**4**	**5**				
1	NPL is critical in Bangladesh	0	0	5	40	30	4.33	4	0.60	75
2	High energy crisis increase the NPLs.	0	20	20	33	2	3.23	3	0.88	75
3	Timely budgetary expenditure reduce NPLs	0	8	24	38	5	3.53	4	0.78	75
4	Higher political instability increases NPLs	0	2	10	30	33	4.25	4	0.79	75
5	Higher number of banks increase NPLs	0	8	12	34	21	3.91	4	0.93	75
6	Declining "ease of doing business" increase NPLs	1	10	22	37	5	3.47	4	0.86	75
7	Merging of the banks can reduce NPLs	2	14	25	28	6	3.29	3	0.96	75
8	Higher exchange rate increase NPLs	4	22	18	30	1	3.03	3	0.99	75
9	Higher unemployment rate will cause higher NPLs	7	34	12	19	3	2.69	2	1.08	75
10	Higher inflation rate will induce higher NPLs	3	12	18	37	5	3.39	4	0.97	75
11	Rising GDP growth reduces NPLs	1	16	26	27	5	3.25	3	0.92	75
12	Less profitable banks incur more NPLs	4	18	18	29	6	3.20	3	1.07	75
13	Lower management efficiency increase NPLs	0	3	2	31	39	4.41	5	0.74	75
14	Better loan monitoring results lower NPLs	0	2	2	30	41	4.47	5	0.68	75
15	Banks with better IT and MIS incurs less NPLs	0	9	11	38	17	3.84	4	0.92	75
16	Higher lending rate causes the NPLs to rise	1	12	17	34	11	3.56	4	0.98	75
17	Higher cost of fund increases NPLs	2	14	20	28	11	3.43	4	1.04	75
18	Unhealthy competition increase NPLs	0	1	1	26	47	4.59	5	0.59	75
19	Higher banking corruption increases NPLs	0	1	2	26	46	4.56	5	0.62	75
20	Good loan evaluation lowers the chance of NPLs	2	1	1	35	36	4.36	4	0.82	75
21	Nepotism causes NPLs	0	2	9	35	29	4.21	4	0.76	75
22	Loans with inadequate collateral increases NPLs	0	21	7	30	17	3.57	4	1.13	75
23	Loan against L/C acceptance (inland) increase NPLs	3	34	15	21	2	2.80	3	0.99	75
24	Better credit rating of the clients reduce NPLs	0	12	17	40	6	3.53	4	0.86	75
25	Lower fund diversion by borrowers reduce NPLs	0	1	2	24	48	4.59	5	0.62	75

Source: The calculation is based on the field survey statistics of the researcher, 2018

Table 11: Borrowers' perception on the determinants of non-performing loans (NPLs)

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

		Scale					Mean	Median	STD Dev	Total
		1	**2**	**3**	**4**	**5**				
1	NPL is critical in Bangladesh	0	2	4	10	9	4.04	4	0.93	25
2	High energy crisis increase the NPLs.	0	3	4	16	2	3.68	4	0.80	25
3	Timely budgetary expenditure reduce NPLs	0	4	15	5	1	3.12	3	0.73	25
4	Higher political instability increases NPLs	0	0	2	18	5	4.12	4	0.53	25
5	Higher number of banks increase NPLs	0	2	3	17	3	3.84	4	0.75	25
6	Declining "ease of doing business" increase NPLs	0	0	17	5	3	3.44	3	0.71	25
7	Merging of the banks can reduce NPLs	0	3	2	18	2	3.76	4	0.78	25
8	Higher exchange rate increase NPLs	0	5	14	4	2	3.12	3	0.83	25
9	Higher unemployment rate will cause higher NPLs	1	4	15	4	1	3.00	3	0.82	25
10	Higher inflation rate will induce higher NPLs	1	1	17	5	1	3.16	3	0.75	25
11	Rising GDP growth reduces NPLs	0	4	8	13	0	3.36	4	0.76	25
12	Less profitable banks incur more NPLs	1	7	7	8	2	3.12	3	1.05	25
13	Lower management efficiency increase NPLs	0	0	0	15	10	4.40	4	0.50	25
14	Better loan monitoring results lower NPLs	0	0	0	14	11	4.44	4	0.51	25
15	Banks with better IT and MIS incurs less NPLs	0	4	5	13	3	3.60	4	0.91	25
16	Higher lending rate causes the NPLs to rise	0	1	5	13	6	3.96	4	0.79	25
17	Higher cost of fund increases NPLs	1	2	4	13	5	3.76	4	1.01	25
18	Unhealthy competition among banks increase NPLs	0	0	4	18	3	3.96	4	0.54	25
19	Higher banking corruption increases NPLs	0	0	4	8	13	4.36	5	0.76	25
20	Good loan evaluation lowers the chance of NPLs	0	0	0	17	8	4.32	4	0.48	25
21	Nepotism causes NPLs	0	0	2	18	5	4.12	4	0.53	25
22	Loans with inadequate collateral increases NPLs	0	3	6	12	4	3.68	4	0.90	25
23	Loan against L/C acceptance (inland) increase NPLs	0	11	10	4	0	2.72	3	0.74	25
24	Better credit rating of the clients reduce NPLs	0	2	4	16	3	3.80	4	0.76	25
25	Lower fund diversion by borrowers reduce NPLs	0	1	3	11	10	4.20	4	0.82	25

Source: The calculation is based on the field survey statistics of the researcher, 2018

Table 12: Total perception on the determinants of non-performing loans (NPLs)

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

		Scale					Mean	Median	STD Dev	Total
		1	2	3	4	5				
1	NPL is critical in Bangladesh	0	2	9	50	39	4.26	4	0.71	100
2	High energy crisis increase the NPLs.	0	23	24	49	4	3.34	4	0.88	100
3	Timely budgetary expenditure reduce NPLs	0	12	39	43	6	3.43	3	0.78	100
4	Higher political instability increases NPLs	0	2	12	48	38	4.22	4	0.73	100
5	Higher number of banks increase NPLs	0	10	15	51	24	3.89	4	0.89	100
6	Declining “ease of doing business” increase NPLs	1	10	39	42	8	3.46	4	0.82	100
7	Merging of the banks can reduce NPLs	2	17	27	46	8	3.41	4	0.93	100
8	Higher exchange rate increase NPLs	4	27	32	34	3	3.05	3	0.95	100
9	Higher unemployment rate will cause higher NPLs	8	38	27	23	4	2.77	3	1.02	100
10	Higher inflation rate will induce higher NPLs	4	13	35	42	6	3.33	3	0.92	100
11	Rising GDP growth reduces NPLs	1	20	34	40	5	3.28	3	0.88	100
12	Less profitable banks incur more NPLs	5	25	25	37	8	3.18	3	1.06	100
13	Lower management efficiency increase NPLs	0	3	2	46	49	4.41	4	0.68	100
14	Better loan monitoring results lower NPLs	0	2	2	44	52	4.46	5	0.64	100
15	Banks with better IT and MIS incurs less NPLs	0	13	16	51	20	3.78	4	0.92	100
16	Higher lending rate causes the NPLs to rise	1	13	22	47	17	3.66	4	0.95	100
17	Higher cost of fund increases NPLs	3	16	24	41	16	3.51	4	1.04	100
18	Unhealthy competition among banks increase NPLs	0	1	5	44	50	4.43	5	0.64	100
19	Higher banking corruption increases NPLs	0	1	6	34	59	4.51	5	0.66	100
20	Good loan evaluation lowers the chance of NPLs	2	1	1	52	44	4.35	4	0.74	100
21	Nepotism causes NPLs	0	2	11	53	34	4.19	4	0.71	100
22	Loans with inadequate collateral increases NPLs	0	24	13	42	21	3.60	4	1.07	100
23	Loan against L/C acceptance (inland) increase NPLs	3	45	25	25	2	2.78	3	0.93	100
24	Better credit rating of the clients reduce NPLs	0	14	21	56	9	3.60	4	0.84	100
25	Lower fund diversion by borrowers reduce NPLs	0	2	5	35	58	4.49	5	0.69	100

Source: The calculation is based on the field survey statistics of the researcher, 2018

Table 13: Bankers' perception in (percentage %) on the determinants of non-performing loans (NPLs)

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

		Scale and its percentage (%)					
		1	2	3	4	5	
1	NPL is critical in Bangladesh	0%	0%	7%	53%	40%	75
2	High energy crisis increase the NPLs.	0%	27%	27%	44%	3%	75
3	Timely budgetary expenditure reduce NPLs	0%	11%	32%	51%	7%	75
4	Higher political instability increases NPLs	0%	3%	13%	40%	44%	75
5	Higher number of banks increase NPLs	0%	11%	16%	45%	28%	75
6	Declining "ease of doing business" increase NPLs	1%	13%	29%	49%	7%	75
7	Merging of the banks can reduce NPLs	3%	19%	33%	37%	8%	75
8	Higher exchange rate increase NPLs	5%	29%	24%	40%	1%	75
9	Higher unemployment rate will cause higher NPLs	9%	45%	16%	25%	4%	75
10	Higher inflation rate will induce higher NPLs	4%	16%	24%	49%	7%	75
11	Rising GDP growth reduces NPLs	1%	21%	35%	36%	7%	75
12	Less profitable banks incur more NPLs	5%	24%	24%	39%	8%	75
13	Lower management efficiency increase NPLs	0%	4%	3%	41%	52%	75
14	Better loan monitoring results lower NPLs	0%	3%	3%	40%	55%	75
15	Banks with better IT and MIS incurs less NPLs	0%	12%	15%	51%	23%	75
16	Higher lending rate causes the NPLs to rise	1%	16%	23%	45%	15%	75
17	Higher cost of fund increases NPLs	3%	19%	27%	37%	15%	75
18	Unhealthy competition increase NPLs	0%	1%	1%	35%	63%	75
19	Higher banking corruption increases NPLs	0%	1%	3%	35%	61%	75
20	Good loan evaluation lowers the chance of NPLs	3%	1%	1%	47%	48%	75
21	Nepotism causes NPLs	0%	3%	12%	47%	39%	75
22	Loans with inadequate collateral increases NPLs	0%	28%	9%	40%	23%	75
23	Loan against L/C acceptance (inland) increase NPLs	4%	45%	20%	28%	3%	75
24	Better credit rating of the clients reduce NPLs	0%	16%	23%	53%	8%	75
25	Lower fund diversion by borrowers reduce NPLs	0%	1%	3%	32%	64%	75

Source: The calculation is based on the field survey statistics of the researcher, 2018

Table 14: Borrowers' perception in (percentage %) on the determinants of non-performing loans (NPLs)

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

		Scale and its percentage (%)					
		1	2	3	4	5	
1	NPL is critical in Bangladesh	0%	8%	16%	40%	36%	25
2	High energy crisis increase the NPLs.	0%	12%	16%	64%	8%	25
3	Timely budgetary expenditure reduce NPLs	0%	16%	60%	20%	4%	25
4	Higher political instability increases NPLs	0%	0%	8%	72%	20%	25
5	Higher number of banks increase NPLs	0%	8%	12%	68%	12%	25
6	Declining "ease of doing business" increase NPLs	0%	0%	68%	20%	12%	25
7	Merging of the banks can reduce NPLs	0%	12%	8%	72%	8%	25
8	Higher exchange rate increase NPLs	0%	20%	56%	16%	8%	25
9	Higher unemployment rate will cause higher NPLs	4%	16%	60%	16%	4%	25
10	Higher inflation rate will induce higher NPLs	4%	4%	68%	20%	4%	25
11	Rising GDP growth reduces NPLs	0%	16%	32%	52%	0%	25
12	Less profitable banks incur more NPLs	4%	28%	28%	32%	8%	25
13	Lower management efficiency increase NPLs	0%	0%	0%	60%	40%	25
14	Better loan monitoring results lower NPLs	0%	0%	0%	56%	44%	25
15	Banks with better IT and MIS incurs less NPLs	0%	16%	20%	52%	12%	25
16	Higher lending rate causes the NPLs to rise	0%	4%	20%	52%	24%	25
17	Higher cost of fund increases NPLs	4%	8%	16%	52%	20%	25
18	Unhealthy competition among banks increase NPLs	0%	0%	16%	72%	12%	25
19	Higher banking corruption increases NPLs	0%	0%	16%	32%	52%	25
20	Good loan evaluation lowers the chance of NPLs	0%	0%	0%	68%	32%	25
21	Nepotism causes NPLs	0%	0%	8%	72%	20%	25
22	Loans with inadequate collateral increases NPLs	0%	12%	24%	48%	16%	25
23	Loan against L/C acceptance (inland) increase NPLs	0%	44%	40%	16%	0%	25
24	Better credit rating of the clients reduce NPLs	0%	8%	16%	64%	12%	25
25	Lower fund diversion by borrowers reduce NPLs	0%	4%	12%	44%	40%	25

Source: The calculation is based on the field survey statistics of the researcher, 2018

Table 15: Total perception in (percentage %) on the determinants of non-performing loans (NPLs)

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

		Scale and its percentage (%)					
		1	2	3	4	5	
1	NPL is critical in Bangladesh	0%	2%	9%	50%	39%	100
2	High energy crisis increase the NPLs.	0%	23%	24%	49%	4%	100
3	Timely budgetary expenditure reduce NPLs	0%	12%	39%	43%	6%	100
4	Higher political instability increases NPLs	0%	2%	12%	48%	38%	100
5	Higher number of banks increase NPLs	0%	10%	15%	51%	24%	100
6	Declining “ease of doing business” increase NPLs	1%	10%	39%	42%	8%	100
7	Merging of the banks can reduce NPLs	2%	17%	27%	46%	8%	100
8	Higher exchange rate increase NPLs	4%	27%	32%	34%	3%	100
9	Higher unemployment rate will cause higher NPLs	8%	38%	27%	23%	4%	100
10	Higher inflation rate will induce higher NPLs	4%	13%	35%	42%	6%	100
11	Rising GDP growth reduces NPLs	1%	20%	34%	40%	5%	100
12	Less profitable banks incur more NPLs	5%	25%	25%	37%	8%	100
13	Lower management efficiency increase NPLs	0%	3%	2%	46%	49%	100
14	Better loan monitoring results lower NPLs	0%	2%	2%	44%	52%	100
15	Banks with better IT and MIS incurs less NPLs	0%	13%	16%	51%	20%	100
16	Higher lending rate causes the NPLs to rise	1%	13%	22%	47%	17%	100
17	Higher cost of fund increases NPLs	3%	16%	24%	41%	16%	100
18	Unhealthy competition among banks increase NPLs	0%	1%	5%	44%	50%	100
19	Higher banking corruption increases NPLs	0%	1%	6%	34%	59%	100
20	Good loan evaluation lowers the chance of NPLs	2%	1%	1%	52%	44%	100
21	Nepotism causes NPLs	0%	2%	11%	53%	34%	100
22	Loans with inadequate collateral increases NPLs	0%	24%	13%	42%	21%	100
23	Loan against L/C acceptance (inland) increase NPLs	3%	45%	25%	25%	2%	100
24	Better credit rating of the clients reduce NPLs	0%	14%	21%	56%	9%	100
25	Lower fund diversion by borrowers reduce NPLs	0%	2%	5%	35%	58%	100

Source: The calculation is based on the field survey statistics of the researcher, 2018

5.2.3.2 Variables used in comparison between the state-owned and private commercial banks

Table 16: Variables used in the qualitative analysis of the comparison between the state-owned and private commercial banks

	Variables	Acronym	Expectations/General perception
	Non-performing loans	NPL	Non-performing loans are higher in SCBs to PCBs
1	Political Influence	PI	Political influence is higher in SCBs than it is in PCBs
2	Bangladesh Bank regulation	BBR	Bangladesh Bank's regulation don't matter much for SCBs
3	Rescheduling	RES	Rescheduling is more prevalent in SCBs
4	Accuracy of financial statements	FSA	This can go in either ways
5	Cost inefficiency	CI	The effect of cost inefficiency should be higher in SCBs
6	Profitability	PR	Profitability is lower in SCBs
7	Loan write-off	LWO	Mixed reviews
8	Loan Recovery	LR	Mixed reviews
9	Capital Injection	CI	Capital injection is more in SCBs than it is in PCBs
10	Willful defaulters	WD	Willful defaulters generally persists in the SCBs
11	Branding and marketing	B&M	SCBs are less ahead in marketing their banking products
12	Corruption	CORR	Corruption is much in SCBs than it is in PCBs
13	Use of technology	TECH	SCBs are behind in using advanced banking technology
14	Bankers effort toward management	MANE	Bankers in SCBs are reluctant in coping with efficiency
15	Letter of Credit acceptance (inland)	L/C	Loan defaults against L/C acceptance (inland) is more in SCBs
16	Monitoring	MON	SCBs are less monitored by the regulatory authorities
17	Customer service	CS	Customer service quality is worse in SCBs than it is in PCBs

SCB: State-owned commercial bank; PCB: Private commercial bank

5.2.3.2.1 Sample size

Banking category = Conventional private commercial banks and state-owned commercial banks

Number of bankers questioned = 75

Number of borrowers questioned= 25

Location of the respondents = Dhaka

Bankers who were involved in the corporate business, credit risk assessment, credit-monitoring, retail and SME business positions were interviewed. Different levels of management were also included in the questionnaire process to the borrowers.

5.2.3.2.2 Descriptive statistics

In this part, the average, median and the dispersion statistics has been presented based on the likert scale of agreement. The average or mean value in the following tables represents the average agreement level (strongly disagree to strongly agree) of each of the comparing factors. The standard deviation shows how each respondent's agreement level varies from the average level.

1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree.

Table 17: Variables used in the qualitative analysis of the comparison between the state-owned and private commercial banks

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Median	Standard Deviation	Total respondents
		1	**2**	**3**	**4**	**5**				
1	Non-performing loans in State-owned commercial banks (SCBs) is more severe than it is in Private commercial banks (PCBs)	3	1	11	15	70	4.48	5.00	0.95	**100**
2	Political influence increases the NPLs of SCBs much more than it does in PCBs	4	9	32	7	48	3.86	4.00	1.23	**100**
3	Bangladesh Bank is less strict against the SCBs than PCBs	2	9	10	68	11	3.77	4.00	0.84	**100**
4	Rescheduling of NPLs is greater in SCBs than that in PCBs	11	9	23	14	43	3.69	4.00	1.39	**100**
5	Financial statements of SCBs are less reliable than those of PCBs.	12	10	21	15	42	3.65	4.00	1.42	**100**
6	Cost inefficiency has significant effect on the profitability of the SCBs than that of PCBs.	9	6	15	13	57	4.03	5.00	1.34	**100**
7	The effect of NPL on the profitability is more severe in SCBs than it is in PCBs.	5	3	12	10	70	4.37	5.00	1.13	**100**
8	The loan write-off has more effect on the PCBs profit than it has on the profit of SCBs.	4	16	15	21	44	3.85	4.00	1.26	**100**
9	Loan recovery has significant effect on the profitability of SCBs than PCBs	11	16	17	13	43	3.61	4.00	1.45	**100**
10	Capital injection is more in SCBs than it is in PCBs.	2	5	14	29	50	4.20	4.50	0.99	**100**
11	Willful defaulters are more interested in taking loans from SCBs than from PCBs.	10	6	13	13	58	4.03	5.00	1.37	**100**
12	SCBs are more aggressive towards branding and marketing of their products than PCBs	10	4	12	23	51	4.01	5.00	1.31	**100**
13	Corruption is more prevalent in SCBs than it is in PCBs	9	3	5	38	45	4.07	4.00	1.20	**100**
14	SCBs are more reluctant to advance technology than the PCBs	5	9	9	19	58	4.16	5.00	1.21	**100**
15	Banker are less bothered with the management of rising of NPLs than those in PCBs.	6	14	13	23	44	3.85	4.00	1.29	**100**
16	Loans against letter of credit (inland) are more likely to default in SCBs than in PCBs.	7	7	14	26	46	3.97	4.00	1.23	**100**
17	It is difficult for Bangladesh Bank to monitor the SCBs than PCBs	13	10	20	20	37	3.58	4.00	1.41	**100**
18	Private Banks provide better customer service compared to the SCBs	9	5	12	31	43	3.94	4.00	1.25	**100**

Source: The calculation is based on the field survey statistics of the researcher, 2018

From the previous table, the mean or average agreement level can be measured for each factor. Almost all of the respondents agreed that the severity of bad debts is more seen in state-owned commercial banks (SCBs) than in private commercial banks (PCBs).

Table 18: Percentage of respondents on the factors for the comparison between the state-owned and private commercial banks

		Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
		1	**2**	**3**	**4**	**5**
1	Non-performing loans in State-owned commercial banks (SCBs) is more severe than it is in Private commercial banks (PCBs)	3%	1%	11%	15%	70%
2	Political influence increases the NPLs of SCBs much more than it does in PCBs	4%	9%	32%	7%	48%
3	Bangladesh Bank is less strict against the SCBs than PCBs	2%	9%	10%	68%	11%
4	Rescheduling of NPLs is greater in SCBs than that in PCBs	11%	9%	23%	14%	43%
5	Financial statements of SCBs are less reliable than those of PCBs.	12%	10%	21%	15%	42%
6	Cost inefficiency has significant effect on the profitability of the SCBs than that of PCBs.	9%	6%	15%	13%	57%
7	The effect of NPL on the profitability is more severe in SCBs than it is in PCBs.	5%	3%	12%	10%	70%
8	The loan write-off has more effect on the PCBs profit than it has on the profit of SCBs.	4%	16%	15%	21%	44%
9	Loan recovery has significant effect on the profitability of SCBs than PCBs	11%	16%	17%	13%	43%
10	Capital injection is more in SCBs than it is in PCBs.	2%	5%	14%	29%	50%
11	Willful defaulters are more interested in taking loans from SCBs than from PCBs.	10%	6%	13%	13%	58%
12	SCBs are more aggressive towards branding and marketing of their products than PCBs	10%	4%	12%	23%	51%
13	Corruption is more prevalent in SCBs than it is in PCBs	9%	3%	5%	38%	45%
14	SCBs are more reluctant to advance technology than the PCBs	5%	9%	9%	19%	58%
15	Banker are less bothered with the management of rising of NPLs than those in PCBs.	6%	14%	13%	23%	44%
16	Loans against letter of credit (inland) are more likely to default in SCBs than in PCBs.	7%	7%	14%	26%	46%
17	It is difficult for Bangladesh Bank to monitor the SCBs than PCBs	13%	10%	20%	20%	37%
18	Private Banks provide better customer service compared to the SCBs	9%	5%	12%	31%	43%

Source: The calculation is based on the field survey statistics of the researcher, 2018

Around 80% of the respondents agreed that capital injection is much more in public banks than it is in private banks. Factors like corruption, use of technology willful defaulters, and default against L/C acceptance (inland) were the main agreement factors in comparing the public banks with private banks. In the case loan recovery which was previously written off there were some disagreements about the recovery being less in public banks. 27% disagreed and strongly

disagreed that it is possible that the loan recovery can be much higher in public banks as well. It is not impossible that the respondents may have referred to a particular year when the recovery of written off loans were much higher than that the recovery was in private banks. Many have suggested that the financial statements of the public banks are not much reliable compared to the private banks. This statement is although not shared by most of the respondents. In terms of branding and marketing, majority of the reviewers mentioned that the public banks are not enough aggressive towards promoting their products like the private banks. There were mixed reviews in terms of management efficiency and the overall efficiency from the respondents. These mixed reviews have been further analyzed with the secondary data to better understand the effect of efficiency, loan recovery and loan write-off.

5.3 Secondary Data

Secondary sources of data are the interpretation of the primary data. Cooper et al. (2006). They mentioned in their books that one of the secondary sources of information is the investors' annual report.

5.3.1 Source

Secondary data of the banks have been collected from the audited financial reports of the respected banks. A sample of 16 publicly listed banks have been selected of which 12 years of data has been used. The data has been collected on an annual basis. Macroeconomic data has been collected from Bangladesh Bank, World Bank and the International Monetary Fund. The amount of total non-performing loans and the ratio of gross NPL to total loan have been taken from the website of Bangladesh Bank. For the comparative analysis, the audited annual report of the public banks was also used. The comparison involved 5 state-owned commercial out of 6 which were randomly selected for of the purpose of analysis.

5.3.2 Method

The secondary data has been analyzed through the dynamic panel data method. Panel unit root test has also been conducted for prediction purpose. Sargan test, first order autocorrelation and second order autocorrelation test has also been performed. The GMM technique has also been applied in the comparative analysis with the above mentioned tests to identify the nature of the secondary data. Panel unit root test has also been performed on the different variables for the comparative analysis.

5.3.3 Variables used in the quantitative analysis

5.3.3.1 Variables used in findings the determinants of non-performing loans

Table 19: Variables used in the "determinants of non-performing loans

	Variables	Abbreviation	Definition
1	NPL ratio	NPL	Total non-performing loans divided by the total loans and advances
2	Real lending rate (RLR)	RLR	Industry nominal lending rate – inflation rate
3	natural log of Per capita GDP	ln(PCG)	natural log of real GDP divided by the natural log of total population
4	Loan growth rate	LGR	Average yearly growth of loan at which it inclines
5	Loan growth rate – yearly average	LGR_YIAVG	difference between individual bank's loan growth rate and
6	Cost of fund	COF	Weighted average rate of different deposits collected directly from the annual report.
7	Real Cost of fund	RCOF	Inflation-adjusted cost of fund
8	Average lending rate	ALR	Interest income divided by the total outstanding loan and advances
9	Real Average lending rate	RALR	Average lending rate minus inflation rate
10	Market power	MP	natural log of total loans of the individual banks divided by the natural log of loans of the banking industry
11	Size	SIZE	natural logarithm of total assets

A. Non-performing loans

According to World Bank, the most well acknowledged threshold or limit for classifying a loan as non-performing is when obligations related to the loan become over 90 days or more. The IMF's Financial Soundness Indicators (FSIs) also defined a loan as non-performing when the principal or interest amount is past due over 90 days. Regardless of the time limit of 90 days for a loan to be considered as non-performing, banks can have sufficient information before that time period to know about the condition of the loans. It should be noted that the limit of 90 days may be extended by the banks to comply a grace period which is granted to the borrowers for special purposes. So the time limit for a loan to stay performing may vary with region and types of loans (e.g. working capital versus mortgages). The financial stability of an economy is reflected by the banks' non-performing loans because this category of loan exhibits the asset quality, credit risk and efficiency in the allocation of resources to productive sectors (Rajan & Dhal, 2003).

B. Loan growth rate

This is the average rate at which loans grow within a year. Banks provide different categories of loans at for different time period. Moreover, banks have large portion of funds tied to FDR and other long term investments so loans can be turned to non-performing even after a long time after having performed for a while for even at the very end of maturity so the use of lagged loan growth in this research for understanding the effect of future non-performing loans is of great importance and relevant. Jesus & Gabriel (2006) used data over 1984 to 2002 and found a negative relationship between lagged 4 loan growth and the current non-performing loans. Their analysis also revealed that lagged GDP growth had negative significant relationship with non-performing loans. They also considered the effect real interest rate that might affect cost of fund and general lending rate. They found that lagged real interest rate had a significant positive impact on the non-performing loans. This research considers using up to four years of lagged lending rate similar to Jesus & Gabriel (2006) in understanding its effect on the non-performing loans of private commercial banks. The study expects a positive association between lagged loan growth and the current non-performing loans.

C. Real average lending rate of banks

This is the rate at which banks lend money to the borrowers. This rate is different for different types of loan category and terms. Banks do not provide the exact figure of this number, so a general approach has been used in this paper for calculating average lending rate. Vogiazas & Nikolaidou (2011) used the average interest rate of credit institutions charged on loans to nonfinancial corporations and households as a proxy for interest rate on loans.

This research uses the following ratio as the measure of the aggregate lending rate of banks. This similar approach was used by Ahmad & Bashir (2013) who used the ratio of interest expense and total deposit as the proxy of deposit rates as one of the determinant factors of non-performing loans. This study expects different results from the lagged lending rate.

Many existing literature leans toward the use of lagged lending rate in understanding the long term impact of interest rates. Louzis et al. (2012) found a positive relation between non-performing loans and lagged real lending rate at 10% significant level for consumer loans. They also used the macro-economic real lending rate and found when economic lending rate (inflation-adjusted) inclines non-performing loans also inclines significantly. P Abid et al. (2014) used one and two period of lagged real lending rate of individual banks and found

significant positive relationship with non-performing loans. Adebola et al. (2011) found long-run impact of average lending rate on the condition of non-performing loans.

We consider using both inflation-adjusted rate and average rate similar to Khemraj & Pasha (2009). This paper expects to find a positive association between real interest rate and non-performing loans.

D. Cost of fund

Cost of fund is the rate at which depositors or investors put their money in the bank. In other words this is rate at which banks collect fund from the depositors other than equity. Normally the cost funding can be short term, savings long term and even different borrowing rate. So in this paper weighted average of cost of fund has been used provided by the annual reports of the banks. Munialo (2014) used the data from 43 commercial banks of Kenya for the time period of 2009 to 2013 on a yearly basis and found positive association between cost of fund and non-performing loans. The paper concluded that when cost of fund went up the banks raised the lending rate to maintain their earnings and as a result confronted with higher non-performing loans. This study expects to find a positive relationship between cost of fund and non-performing loans.

E. Bank size

Bank size is measured by taking the natural logarithm of total assets. Researchers have used this variable to determine risk and the total area in which non-performing loans take place. Existing literature shows different result regarding the impact of size on the non-performing loans. Waqas et al. (2017) found a negative relationship between size and non-performing loans similar to Louzis et al. (2012). Other empirical research show a positive correlation between size and quality of loans (Chaibi et al. 2016); Abid et al. 2014). This study expects to find mixed results regarding bank size.

F. Market power

Existing literature have used the loans of individual banks to total loan of banking industry as a proxy of market power which tends to change over time and portrays the effort of banks in capitalizing their position in the market place. Ahmad & Bashir (2013) found insignificant association between market power and non-performing loans. This ratio is particularly important because it captures all the banks effort relative to the individual effort of the selected banks. Rising value of this ratio indicates that banks are competing for higher loans. This is a

good thing as long as every bank struggles to get loan. This study expects to find a negative association between market power and non-performing loans.

G. Per-capita GDP

Although some researchers have used per capita GDP as a measure of economic growth it is worth mentioning the effect of GDP growth rate that in many literature has found to be both positively and negatively related to non-performing loans in a significant manner. In general the relationship between economic growth and non-performing loans have produced similar results which is - when economic growth rises the bad loans relative to total loans also deteriorates. But some researchers have used lagged GDP growth and found different answers.

For example, Beck et al. (2013) used both current years and one-year lagged GDP growth and found that current year's GDP growth has a significant negative relationship with non-performing loans which is expected but found a positive significant relationship between lagged GDP growth rate and non-performing loans. They found positive relation between lagged GDP growth and non-performing loans for which they suggested that in boom period banks lend excessively which results in non-performing loans that is loose credit standard policy in economic prosperity increases non-performing loans in the long-run. They also suggested that the sum of lagged and present coefficient of the GDP growth is negative which indicates the overall negative relationship among GDP growth rate and non-performing loans. This finding is contrary to the findings of Klein. N. (2013) who found negative link between lagged real GDP growth with non-performing loans.

Louzis et al. (2012) found a significant negative link between one and two period lagged GDP growth rate and non-performing loans. They mentioned that a slowdown in the economy results in higher bad loans and when the economy boosts the non-performing loans also declines. Makri et al. (2014) found no significant lagged relationship between lagged GDP growth and non-performing loans but found negative link with the current GDP growth at 10% significant level.

This paper considers using the per capita GDP as a measure of economic growth similar to (Saba et al., 2013; Fofack, 2005; Gonzalez-Hermosillo et al. 1997) who found a negative relationship between bad loans and per capita GDP. This study hypothesizes to find a negative association between GDP and non-performing loans.

H. Real interest/lending rate

Real interest rate is the inflation-adjusted rate at which loan are received from financial institutions. Khemraj & Pasha (2009) constructed this variable for each bank by subtracting the inflation rate from the weighted average lending rate of individual banks. They portrayed this variable as bank-specific rather than macroeconomic. Louzis et al. (2012) found significant positive relation between lagged real lending rate and non-performing loans. They concluded that banks refinance consumer loans during boom periods and also renegotiate debt term and pay off with the corporate world. Washington (2014) also found positive relationship between real lending rate and non-performing loans. They suggested that higher real interest rate increases non-performing loans because financial institutions engage in trading at floating rate which can very much be different from the initial rate if the rate fluctuates. Jesus & Gabriel (2006) also found significant positive link between non-performing loans and lagged real interest rate. Abid et al. (2014) found a positive significant relationship between non-performing loans and lagged real interest rate. Waqas et al. (2017) found positive significant relationship between non-performing loans and real interest rate. Although the effect of lending rate can have negative consequence on NPL, this paper hypothesizes to find a positive link between real lending rate and non-performing loans.

5.3.3.1.1 Sample size

Sample size of the banks for the determining factors of non-performing loans constitutes 16 private commercial banks out of 33 conventional private banks in Bangladesh. It was indicated earlier that banking industry of Bangladesh comprises 64 scheduled banks out of which 41 are local private commercial banks. Out of this 41 local private banks 8 are shariah based banks and the rest 33 are local conventional non-shariah based banks. The sample size in this part of the study uses 16 local conventional private conventional banks out of 33 local conventional private commercial banks.

5.3.3.1.2 Descriptive statistics

Table 20: Descriptive statistics on the variables related to the "determinants of non-performing loans"

Variable (2006-2017)	Variation	Mean	Std. Dev.	Min	Max	Observations
NPLR	Overall	4.14%	1.66%	0.82%	8.68%	N = 192
	Between		0.94%	2.84%	6.08%	n = 16
	Within		1.39%	1.04%	8.33%	T = 12
Real Lending rate	Overall	4.64%	1.67%	0.75%	10.44%	N = 192
	Between		0.76%	3.26%	6.46%	n = 16
	Within		1.50%	2.12%	9.36%	T = 12
Per capita GDP (Ln)	Overall	5.08%	0.08%	4.96%	5.21%	N = 192
	Between		-	5.08%	5.08%	n = 16
	Within		0.08%	4.96%	5.21%	T = 12
Loan growth rate	Overall	21.65%	12.33%	-12.99%	65.98%	N = 192
	Between		3.44%	17.22%	28.53%	n = 16
	Within		11.87%	-11.62%	59.10%	T = 12
LGR_YIAVG	Overall	0.00%	10.39%	-36.68%	42.29%	N = 192
	between		3.44%	-4.42%	6.88%	n = 16
	within		9.84%	-35.32%	35.41%	T = 12
Cost of fund	overall	8.53%	*2.01%*	4.08%	13.67%	N = 192
	between		*1.48%*	5.86%	10.75%	n = 16
	within		*1.41%*	4.68%	11.50%	T = 12
Real Cost of fund	overall	1.2%	1.9%	-3.8%	6.4%	N = 192
	between		1.5%	-1.4%	3.4%	n = 16
	within		1.2%	-2.6%	4.3%	T = 12
Average lending rate	overall	11.94%	2.05%	7.46%	17.24%	N = 192
	between		0.76%	10.57%	13.77%	n = 16
	within		1.91%	7.67%	16.56%	T = 12
Real average lending rate	overall	4.64%	1.67%	0.75%	10.44%	N = 192
	between		0.76%	3.26%	6.46%	n = 16
	within		1.50%	2.12%	9.36%	T = 12
Market power (Ln)	overall	0.54%	0.05%	0.36%	0.63%	N = 192
	between		0.03%	0.48%	0.59%	n = 16
	within		0.04%	0.41%	0.63%	T = 12
Total asset (Ln)	overall	9.36%	0.69%	7.65%	10.51%	N = 192
	between		0.26%	8.90%	9.74%	n = 16
	within		0.64%	7.93%	10.48%	T = 12

Source: author's own calculation from collected data.

The non-performing loans to total loans and advance ratio above has lower "between variations" than "within variation". This indicates that the non-performing loans of the industry sometimes move in the same direction. The within variation is higher indicating that the change of bad loans of these banks from year to year is not homogenous. The above table shows something interesting about the cost of fund. Interestingly, all the variables including the

average lending rate has less between variations than within deviation. But the cost of fund shows more variation between the banks than variation within individual banks for the time frame of 2006 to 2017. This indicates that for some reason the cost of fund or the funding cost of these banks varies greatly depending on banks not just only on macroeconomic factors. If macroeconomic factors were the only reason for the variation of cost of funds than the within variation would have been higher than the variation among banks. Higher deviations between banks indicate that bank-specific factors play a significant role in determining the cost of funding. One bank-specific factor that could explain this high variation among banks is the deposit mix of these banks. It is not the case that the products that they are offering to the depositors must be the same. They may have different schemes with different rates that contribute to these variations. If deposit mix is one of the bank-specific factors for the variation of cost of fund among these banks then the lending rate must also vary according to the deposit mix because banks set the lending rate based on the type of deposit they collect.

Another interesting result from the table above is the variation of size of these banks. The higher within variation suggests that these banks have grown at a greater rate over the year. But the lower between variations suggests that due to intense competition no particular bank has capitalized the market. Similar conclusion can be drawn from the statistics of the market power (individual bank's loans to the loan of the banking industry). Higher within variation than between suggests that banks were competing for market shares which was more than any particular bank retaining the same share of the market. Higher competition among all the banks particularly, the participation of all the banks equally can narrow down the effectiveness of any particular type of bank or group of banks. There are some policy implications here although simple but yet effective. Recommendations based on these findings can be found in the recommendation chapter.

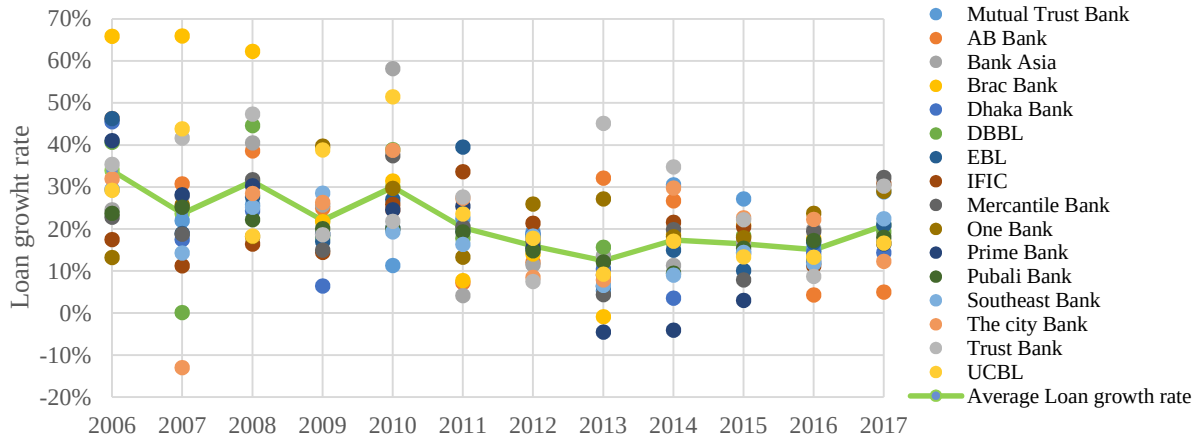


Figure 12: Loan growth rate of the selected 16 private commercial banks (2006-2017)

Source: Annual Reports of respective Banks

Figure 12 shows that loan growth in the banking sector is declining gradually. The variation among the loan growth rate is greater indicating that different banks work under different management policies. The variation was greater between 2006 and 2011 but banks seem to have been conservative in the lending policy after 2011. This explains the lower variability in the loan growth rate among banks between 2012 and 2017.

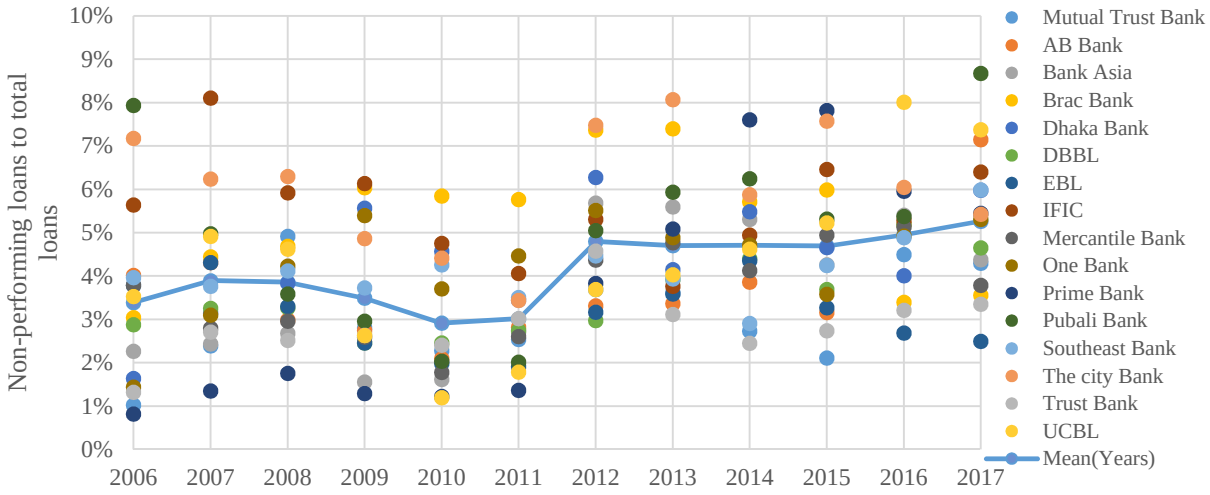


Figure 13: Non-performing loans to total loans of the selected 16 private commercial banks (2006-2017)

Source: Annual Reports of respective Banks

Figure 13 portrays the rising non-performing loans in the private banking sector. Overall there is a greater variability in the data for almost all the years. This indicates that banks have different non-performing loans to total loans for different bank characteristics. In 2011 the ratio for all the banks were in some form of alignment.

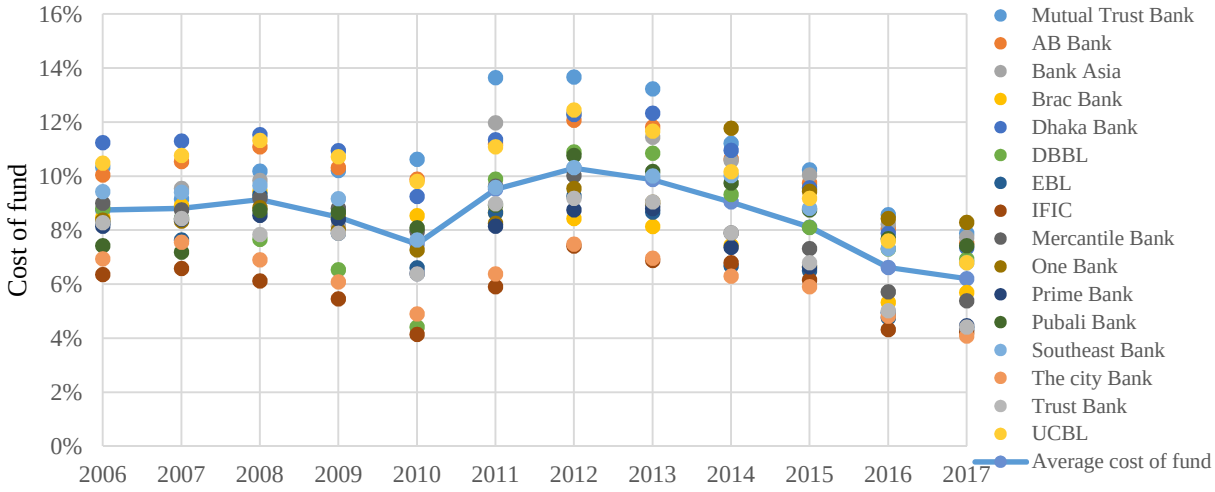
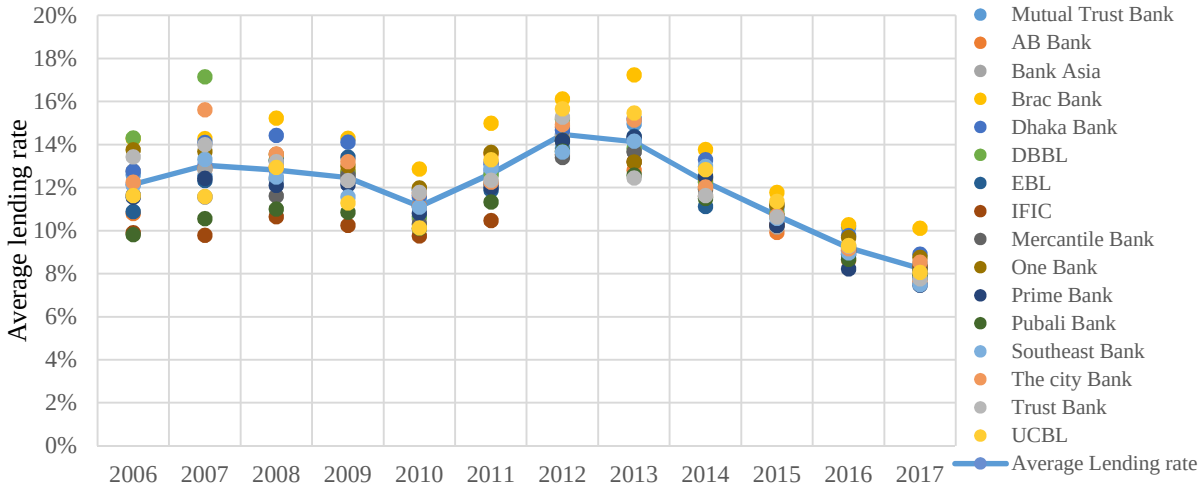


Figure 14: Cost of fund of the selected 16 private commercial banks (2006-2017)
Source: Annual Reports of respective Banks

If we notice at the 16 banks cost of fund and average lending rate in figure 14 and 15 we will see that both way fluctuate the same way so it can be inferred that there is a very good correlation between the cost of fund and average lending rate. But if we notice at each year's rates we see that the variation among the cost of funds among for each does not match the variation of lending rate. Lending rate for the respective bank's cost of fund is very much narrow. This is because banks are much more sensitive to a change in lending rate than to a change in the cost of fund. For higher competition and keeping customers at hand the lending rate has less variance.



[1] *the average lending rate has been calculated by dividing the interest income by the total loans.*

Figure 15: Average lending rate of the selected private commercial banks (2006-2017)
Source: Annual Reports of respective Banks

On the other hand there is greater variability in the cost of fund because maybe some other factors other than lending rate affects the cost of fund and gives the banks to vary their rate to a much greater length. This begs the question whether this greater variability can induce or indulge for problematic loans through some macroeconomic phenomena. Our interest lies in whether it is possible for the cost of fund to affect the lending rate to make loans problematic in the long-run. The policy implications are far greater because it gives government to check whether in the time of monetary transmission mechanism the banks are arbitrarily increasing the cost of funds.

Bangladesh Bank operates any sort of monetary policy implementation and monitors the interest rate at which all the schedules banks operate in the country. In many of the BRPD circulars they have stressed the need to maintain the interest spread and the deposit rate at a tolerant level in order to promote the development of the productive sectors of the economy. This indirectly and intuitively suggests that the controlling of cost of funds by the central bank of Bangladesh can affect the quality of loans which in turn can affect the non-performing loans of the banks. This process can also be viewed from the risk taking behavior of the banks because of the change in the monetary policy rate.

5.3.3.2 Variables used for the comparative analysis between the state-owned and private commercial banks

Table 21: Variables used in the "comparative analysis between the state-owned and private commercial banks"

Variables	*Measure*	*Definition*	*Expected sign*
$PTROA_{it}$	*PROFIT*	*Pre-tax Profit to Total asset*	*N/A*
$ATROA_{it}$		*After-tax Profit to Total asset*	-
EFF_{it}	*Efficiency*	*Operating expense to operating income*	-
$NPL\%_{it}$	*Credit quality*	*Non-performing loans to total loans & advances*	-
LWO_{it}	*Write-off*	*Total amount of loan write-off*	-
$LREC_{it}$	*Recovered loans*	*Amount of loan which was previously written off*	+

i. **Operating efficiency:** This ratio is the measure of how each unit of income is associated with each unit of operating cost. If this ratio increases, it implies that for each taka of operating income the operating cost of banking is going up. This reflects that banks are struggling for income because of higher cost. Many researchers have used this variable as the measure of identifying the efficiency level of the banks. For example, Abbasoğlu et al. (2007) and Alexiou & Sofoklis (2009) used operating expense to operating income as the measure of expense management and management efficiency and found negative relationship with ROA and ROE. Molyneux and Thornton (1992) used staff expense to total assets and found positive relationship with profitability. They concluded that increased profit was used for higher payroll and more productive human capital. Athanasoglou et al. (2006) and Curak et al. (2012) found a negative relationship between operating expense to total asset and the profitability of the banks. So we expect to have a negative relationship between operating efficiency and bank profitability.

ii. **Credit quality:** Credit risk rises when a borrower becomes incapable or does not pay back their borrowed amount. Normally it stanches from lending loans but it can also occur from other activities like trading, capital market and counter parties of banks borrowing from other banks (Alexiou & Sofoklis, 2009). Mansur et al. (1993), Sharma & Gounder (2012) used loan loss provision total net loans as a measure of the credit risk. This should provide almost the same measure except for the fact that when loan loss provision is used it generally accounts for management expectation of the loans. This ratio signifies how a bank is preparing for any coming loss by building up loan-loss reserves through annual charges against current income (Alexiou & Sofoklis, 2009). Miller and Noulas (1997) found negative relationship between credit risk and profitability. Athanasoglou et al. (2008) used loan loss provision to loan as the measure of credit risk and found negative relationship between ROA and ROE. So we expect a negative relationship between credit risk and bank performance.

iii. **Loan write-off:** Loan write-off is the amount of bad debts which the banks omit from the books and balance sheet because of the uncertainty involved in getting back the stipulated amount.

iv. **Loan recovered previous written-off:** This is the amount of money which has been recovered through management efforts when the loans were written off due to their inactiveness for a long period of time.

5.3.3.2.1 Sample size

This part of the analysis is interested in finding the important comparing factors between state-owned and private commercial banks of Bangladesh. For the comparative analysis, five state-owned commercial banks out of six and 16 conventional private commercial banks out of 33 have randomly selected.

5.3.3.2.2 Descriptive statistics

In this section, the study is interested in finding the association between bad loans and other loan related factors to study whether the same general relationship exists for the sample banks compared to the whole banking industry (Figure 7, 8, 9).

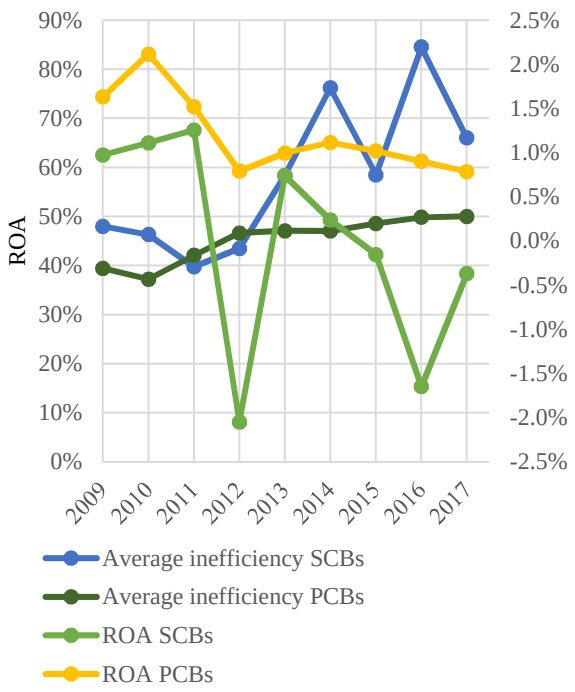


Figure 16: Return on asset (ROA) and efficiency of 16 local private commercial banks and 5 state-owned commercial banks

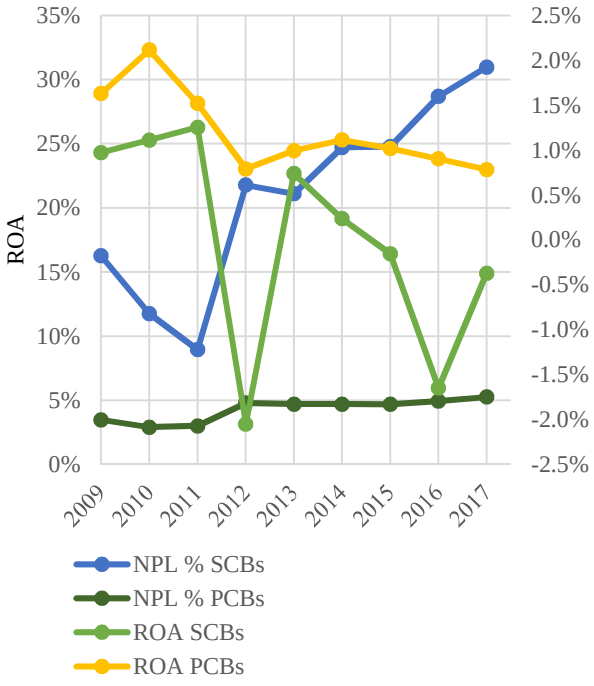


Figure 17: Yearly average return on asset (ROA) and NPL% of 16 local private commercial banks and 5 State-owned commercial banks

Source: Annual Reports of respective Banks

The above left graph depicts the relationship between the cost efficiency of the selected private and public commercial banks for the same year, 2009 to 2017. The result shows almost the same findings that were portrayed in the previous objective. The graph reveals that as the cost for per taka income increases for the 16 selected private commercial banks the profitability declined but the public banks showed positive association between cost efficiency and profitability in many cases.

The above right graph shows the relationship between the non-performing loans to total loans & advances and profitability for both banks groups. Here the inverse relationship is clearly found for both banking sectors. There exists a strong negative correlation between bad debts and profitability for the PCBs. On the other hand the association between NPL and profit for the state-owned banks is not as strong as the private banking sector. This indicates that the profitability of the public banks is severely affected by some other factors other than bad loans. Here both groups almost offer the same banking product which is interest based instruments. So the different sensitivity between profitability and bad loans reveals factors which are indifferent to different banking groups.

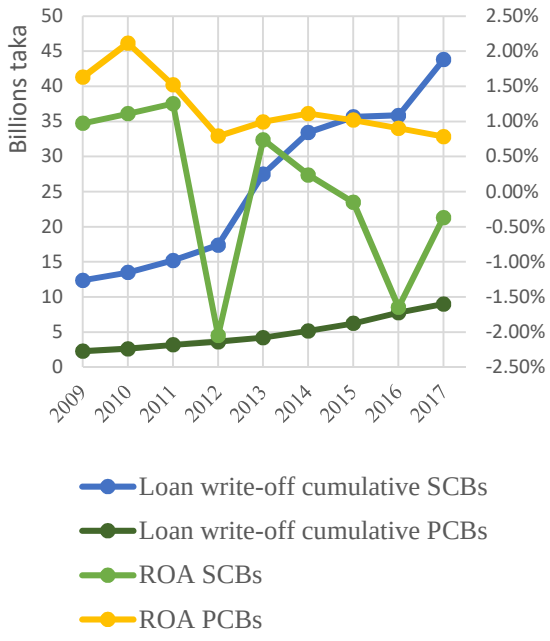


Figure 18: Yearly average Return on asset (ROA) and loan write-off of 16 local private commercial banks and 5 state-owned commercial banks

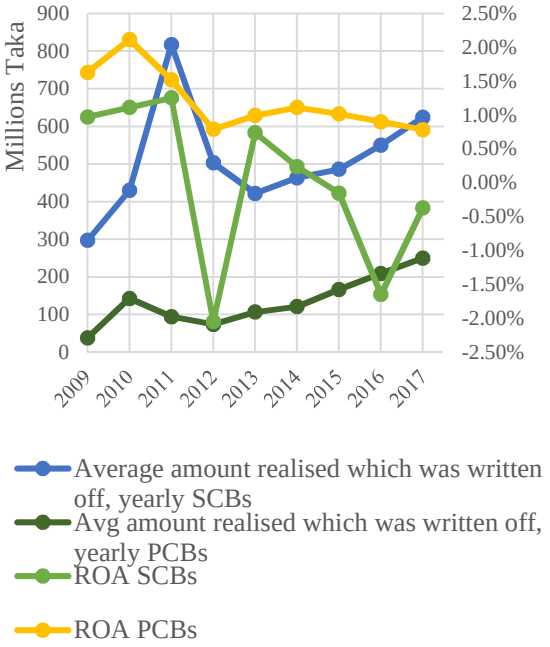


Figure 19: Yearly average return on asset (ROA) and loan recovery of 16 local private commercial banks and 5 state-owned commercial banks

Source: Annual Reports of respective Banks

The above left graph shows trend of loan write-off for two groups of banks namely public and private. Although both bank groups loan write-off is increasing by the year, the rate is clearly higher for the public banks compared to the private banks. This indicates that the bad loans of state-owned banks are of huge amount which was consistently being written-off from the books. The graph finds both positive and negative relationship between loan write-off and profitability for the state-owned commercial banks just like the findings of overall public banking sector. In contrast the negative link is visible for the private banks. The graph shows that there are times when the relationship is positive between loan write-off and profitability and there are events when the writing-off loans exacerbates the profit. This is a mixed relationship which clearly depicts the difference from the private commercial banks which clearly poses a negative association between these two variables. The negative association between the bad loans and profit for private banks indicates that when non-performing loans persist in the balance sheet for a long time bank does not earn any income from those assets.

The above right graph portrays the average condition of loan recovery and profitability of the selected 16 private and 5 state-owned commercial banks of Bangladesh. During the eight years' time, the recovery of the written-off loans for both public and private commercial banks increased at almost the same rate. For private banks the association between the written-off loan recovery and profitability is positive and shows a strong link. But for the public banks the

correlation between the yearly loan recovery and profit is not much visible. This indicates that the recovery of the loans for the public banks must be small relative to the respective bank size. Due to the large size of the public banks the recovered loans didn't add enough value to increase the profit of the public bank. On the other hand the amount of recovered previously written-off loans added value to the private banks for the higher ration of recovery relative to the bank size.

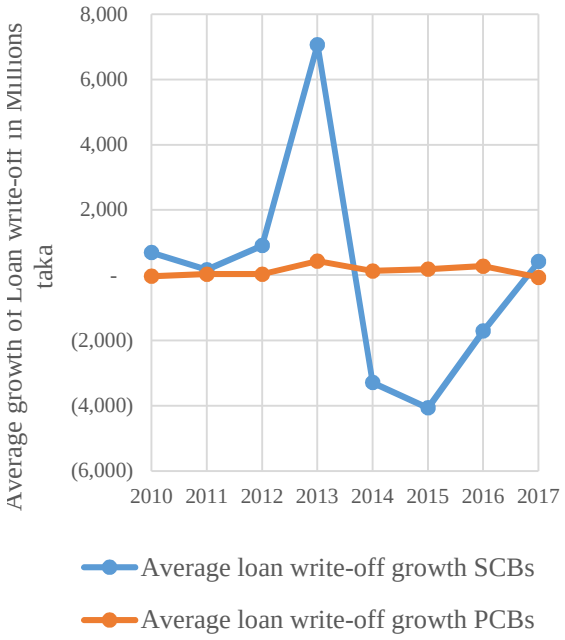


Figure 20: Average growth of loan write-off of 16 local private commercial banks and 5 state-owned commercial banks

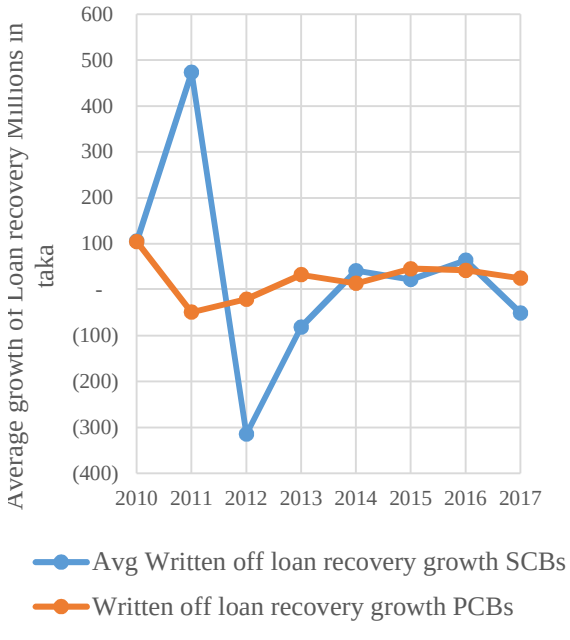


Figure 21: Average growth of loan recovery that was previously writtten-off of 16 local private commercial banks and 5 state-owned commercial banks

Source: Annual Reports of respective Banks

The above graphs show the yearly growth of loan write-off and loan recovery of the selected private and public banks for the year 2010 to 2017. The above left graph shows that for the last four years or so the rate of writing-off loans increased for the state-owned banks compared to the relatively stable rate of the private banks. The right graph shows that the recovery rate previously written off loans of the public banks is declining for the last couple of years.

5.4 Data Analysis

5.4.1 Qualitative analysis for the determinants of non-performing loans

5.4.1.1 Model specification

In this empirical model the dependent variable is the perception of the bankers and clients, which shall be regarded as the cause on non-performing loans (NPLs). Furthermore, the dependent variable indicates the severity of the rising non-performing loans in Bangladesh. The independent variables are energy crisis, budgetary expenditure, political instability, number of banks, ease of doing business, merging of the banks, exchange rate, unemployment rate, inflation rate, GDP growth, bank profitability, management efficiency, loan monitoring, IT & MIS, lending rate, cost of fund, banking corruption, loan evaluation, collateral and borrower's honesty. This study uses the following function for the qualitative analysis for the determinants of non-performing loans.

NPL = f (EC, BE, PI, BANK, EDB, MER, ER, UR, IR, GDP, PRO, ME, LM, IT, LR, COF, BCOR, LE, COL, BOHO)

5.4.1.2 Validity and reliability of survey data

The internal consistency and reliability of the collected primary data through emails, phone and face to face interview has been carried out through SPSS software. The validity test and the reliability statistics is given below. The reliability of the data has been tested by Cronbach's Alpha. Cronbach's Alpha represents the internal consistency of the data collected through questionnaire using scaling method. One of the most popular internal consistency tests was proposed by Cronbach (1951) which is known as the Cronbach alpha. This tool measures how well a group of variables evaluates a single idea (Cooper & Schindler, 2006). This tool does not represent any statistical test rather it is a coefficient of reliability or consistency (Bhattarai, 2016). Equation for the Cronback alpha is as follows-

$$\alpha = \frac{N.\bar{c}}{\bar{v} + (N-1).\bar{c}}$$

Here α represents the Cronbach's alpha, N is the number of items, $\bar{C}$ is the average inter-item covariance, and $\bar{V}$ is the average variance. Alpha score of 0.7 and above is considered acceptable in the general field of research but very close to 0.7 such as in our case of 0.69 is acceptable in some form of the research study.

Table 22: Case processing summary (Total**)**

Case processing summary regarding validity test			
		Number of observations	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0
a. List wise deletion based on all variables in the procedure.			

The reliability statistics of the Cronbach's alpha is sufficient enough to find a relationship between non-performing loans and other factors of non-performing loans.

Table 23: Reliability statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	Number of Items
.701	.686	25

5.4.2 Qualitative analysis for the comparative study between state-owned and private commercial banks

5.4.2.1 Model specification

Variables for comparing the state-owned and private commercial banks: NPL, PI, BBR, RES, FSA, CI, PR, LWO, LR, CI, WD, B&M, CORR, TECH, MANE, L/C, MON, CS

These variables create the basis for which these different bank groups can be compared because these variables are the more or less common factors of identification which resonates in the banking industry currently. These variables or factors can be used to create a model through which the effect of individual factors can be formulated. In this section of the research, the concern is centered on the perception of bankers and borrowers through which the level of importance of certain factors are put forward. These variables of interest can be used to create a model or at least a basis of a model that can be used to predict any future discrepancies between different bank groups.

5.4.2.2 Validity and reliability of survey data

Table 24: Case processing summary

Case processing summary			
		N	%
Cases	Valid	100	100.0
	Excluded[a]	0	.0
	Total	100	100.0
a. List wise deletion based on all variables in the procedure.			

Table 25: Reliability statistics

Cronbach's Alpha	Cronbach's Alpha based on standardized items	Number of items
0.801	-	18

The above table shows the reliability statistics of the survey data for the comparative analysis between the state-owned and private commercial banks. Here our cronback alpha value is above 0.7 for this questionnaire analysis.

5.4.3 Quantitative analysis for the determinants of non-performing loans

5.4.3.1 *Panel unit root test*

Table 26: Panel Unit root test for the analysis of "determinants of non-performing loans"

	Variables	Abbreviation	Im-Pesaran Shin		ADF (Fisher type)	
			Level	1st difference	Level	1st difference
1	NPL ratio	NPLR	None	Stationary	None	Stationary
2	Real lending rate	RLR	Stationary	Stationary	Stationary	Stationary
3	natural log of Per capita GDP	ln(PCG)	None	Stationary	None	Stationary
4	Loan growth rate	LGR	Stationary	Stationary	Stationary	Stationary
5	Loan growth rate – yearly industry average	LGR_YIAVG	Stationary	Stationary	Stationary	Stationary
6	Cost of fund	COF	None	Stationary	None	Stationary
7	Real Cost of fund	RCOF	None	Stationary	None	Stationary
8	Average lending rate	ALR	None	Stationary	None	Stationary
9	Real average lending rate	RALR	None	Stationary	None	Stationary
10	Market power	MP	None	Stationary	None	Stationary
11	Size	SIZE	Stationary	Stationary	Stationary	Stationary

Natural log of per capita GDP has been calculated by dividing the log of GDP by the log of population.

Im-Pesaran-shin

Ho: All panels contain unit roots

Ha: Some panels are stationary

Fisher Type (ADF)

Ho: All panels contain unit roots

Ha: At least one panel is stationary

The panel unit root test in table 26 shows that the variables used in the regression analysis is not stationary at level but becomes stationary after taking the first difference. Generally, unit root test is used to check whether the data recurs to its original trend. If the data follows a certain trend then it is possible to forecast the change but if the data abruptly changes its trends from time to time then the prediction becomes very difficult and even impossible. So if the data is not stationary at level then it is necessary to identify other characteristics of data like first or second difference or some other form of ratio. If the characteristics of data shows it's recur ability to its original trend then it can be safely used to predict the future otherwise spurious results may plague the regression. In this study the data shows stationary at first difference so it is appropriate to use the data for analysis to come to a predictable conclusion.

5.4.3.2 *Econometric model*

For capturing the dynamism and the recovery of the consistent estimates of the parameter, dynamism is crucial even when the lagged dependent variable is not of particular interest (Bond, 2002). Instrumental variable (IV) estimators, first proposed by Anderson and Hsiao (1981, 1982) used the difference equation to eliminate the individual fixed effect term μ_i. The equation is as follows-

$y_{it} = \alpha_o + \gamma y_{i,t-1} + X'\beta + \varepsilon_{i,t}$ *(1)*

$\varepsilon_{i,t}$ = *time fixed effects + individual fixed effects + error*

$\varepsilon_{i,t} = \lambda_t + \mu_i$ + *error*

$\varepsilon_{i,t} = \mu_i + v_{i,t}$ [Baltagi. B. H (2005)]

The y_{it} includes factors that affect all the individuals equally, factors that vary from individuals from time to time, factors which are inherent to the individual, factors which are inherent to time and the error term that can arise from omitted variables, measurement errors etc. We can consistently estimate the equation 1 using the Generalized methods of moments (GMM)

proposed by Arellano and Bond (1991). The GMM estimation of Arellano and Bond is based on the first difference transformation of equation 1. The transformation of the equation 1 also eliminates the unobserved heterogeneity μ_i by the first differencing of the

Equation 1 through subtracting equation 2 from equation 1. The transformed equation is thus the equation 4 below.

$y_{i,t-1} = \alpha_o + \gamma y_{i,t-2} + X`_{i,t-1}\beta + \mu_i + v_{i,t-1}$ *(2)*

$y_{it} - y_{i,t-1} = \gamma(y_{i,t-1} - y_{i,t-2}) + \beta(x_{i,t-1} - x_{i,t-2}) + (v_{i,t} - v_{i,t-1})$ *(3)*

$\Delta y_{it} = \gamma \Delta y_{i,t-1} + \beta \Delta x_{i,t-1} \Delta v_{i,t}$ *(4)*

One of the assumptions of OLS estimation for correctly estimating an equation is the endogeneity assumption which states that the explanatory variables must not be correlated with the error term. But in this case by nature this assumption is violated because the lagged dependent variable $y_{i,t-1}$ is correlated with the error component $\varepsilon_{i,t}$. This will cause the estimation of the slopes of the explanatory variables to be biased. So the within transformation by subtracting equation 2 from equation 3 is done to wipe out the individual heterogeneity but still the $y_{i,t-1}$ will be correlated with the remainder error v_{it} . This biasness for the correlation between the explanatory variable and the remainder error term will depend on the scale of T (Baltagi, 2005; Nickell, 1981). Some researchers argue that this bias of the within estimator is not large. For example Judson and Owen (1999) performed the Monte Carlo experiment for N=20 or 100 and T=5, 10, 20, 30 and found that the bias in the within estimator can be sizeable. The Monte Carlo result also showed that when T=30 the bias can be as 20% of the true value of the coefficient of interest.

The first differencing of the equation produces serial correlation between the lagged dependent variable and the error term. In this case instruments are needed and provided $\varepsilon_{i,t}$ serially uncorrelated, further lagged values of y_{it} can act as necessary instruments, (Islam, 2001). Dynamic panel data method proposed by Arellano and Bond uses instrumental variable and GMM estimation techniques. The first differenced GMM estimator is known to be affected by the cross section units or panels N, (Santos & Barrios, 2011).

$y_{i,t-2}$ is expected to be non-correlated with the $\Delta v_{i,t}$ so $y_{i,t-2}$ can be used as an instrument in the estimation of the equation 4, given that $v_{i,t}$ are not serially correlated. Thus the lags of two year or more satisfies the following moment condition $E[y_{it-s} \Delta v_{i,t}] = 0$ for T=3,….,T and s is greater than equal to 2 (Louzis et al. 2012).

After taking the first difference of all the variables we can put those variables in the formation of equation (1).Equation (1) takes the baseline model which is our model 1. In model 1 we have NPL ratio as the independent variable and for explanatory variables we have lagged NPL ratio, lagged loan growth rate of 1, 2,3 and 4, lagged cost of fund up to 3 year, size and market power.

Model 1

$$NPLR_{it} = \beta_0 NPLR_{i.t-1} + \beta_1 RLR_{t-3} + \beta_2 ln(PCG)_{t-1} + \beta_3 ln(PCG)_{t-2} + \beta_4 LGR_{i,t-1} + \beta_5 LGR_{i,t-2} + \beta_6 LGR_{i,t-3} + \beta_7 LGR_{i,t-4} + \beta_8 COF_{it-1} + \beta_9 COF_{it-2} + \beta_{10} COF_{it-3} \beta_{11} SIZE_{it} + \beta_{12} MP_{it} + \mu_i + \nu_{it}$$

Model 2

$$NPLR_{it} = \beta_0 NPLR_{i.t-1} + \beta_1 RLR_{t-3} + \beta_2 ln(PCG)_{t-1} + \beta_3 ln(PCG)_{t-2} + \beta_4 LGR_{i,t-1} + \beta_5 LGR_{i,t-2} + \beta_6 LGR_{i,t-3} + \beta_7 LGR_{i,t-4} + \beta_8 LR_{it-1} + \beta_9 LR_{it-2} \beta_{10} LR_{it-3} + \beta_{11} SIZE_{it} + \beta_{12} MP_{it} + \mu_i + \nu_{it}$$

Model 3

$$NPLR_{it} = \beta_0 NPLR_{i.t-1} + \beta_1 RLR_{t-3} + \beta_2 ln(PCG)_{t-1} + \beta_3 ln(PCG)_{t-2} + \beta_4 LGR\_YIAVG_{i,t-1} + \beta_5 LGR\_YIAVG_{i,t-2} + \beta_6 LGR\_YIAVG_{i,t-3} + \beta_7 LGR\_YIAVG_{i,t-4} + \beta_8 COF_{it-1} + \beta_9 COF_{it-2} + \beta_{10} COF_{it-3} \beta_{11} SIZE_{it} + \beta_{12} MP_{it} + \mu_i + \nu_{it}$$

Model 4

$$NPLR_{it} = \beta_0 NPLR_{i.t-1} + \beta_1 RLR_{t-3} + \beta_2 ln(PCG)_{t-1} + \beta_3 ln(PCG)_{t-2} + \beta_4 LGR\_YIAVG_{i,t-1} + \beta_5 LGR\_YIAVG_{i,t-2} + \beta_6 LGR\_YIAVG_{i,t-3} + \beta_7 LGR\_YIAVG_{i,t-4} + \beta_8 LR_{it-1} + \beta_9 LR_{it-2} + \beta_{10} LR_{it-3} \beta_{11} SIZE_{it} + \beta_{12} MP_{it} + \mu_i + \nu_{it}$$

Model 5

$$NPLR_{it} = \beta_0 NPLR_{i.t-1} + \beta_1 RLR_{t-3} + \beta_2 ln(PCG)_{t-1} + \beta_3 ln(PCG)_{t-2} + \beta_4 LGR_{i,t-1} + \beta_5 LGR_{i,t-2} + \beta_6 LGR_{i,t-3} + \beta_7 LGR_{i,t-4} + \beta_8 RCOF_{it-1} + \beta_9 RCOF_{it-2} \beta_{10} RCOF_{it-3} + \beta_{11} SIZE_{it} + \beta_{12} MP_{it} + \mu_i + \nu_{it}$$

Model 6

$$NPLR_{it} = \beta_0 NPLR_{i.t-1} + \beta_1 RLR_{t-3} + \beta_2 ln(PCG)_{t-1} + \beta_3 ln(PCG)_{t-2} + \beta_4 LGR_{i,t-1} + \beta_5 LGR_{i,t-2} + \beta_6 LGR_{i,t-3} + \beta_7 LGR_{i,t-4} + \beta_8 ARLRB_{it-1} + \beta_9 ARLRB_{it-2} \beta_{10} ARLRB_{it-3} + \beta_{11} SIZE_{it} + \beta_{12} MP_{it} + \mu_i + \nu_{it}$$

5.4.4 Quantitative analysis for the comparative study between state-owned and private commercial banks

5.4.4.1 *Panel unit root test*

Table 27: Panel unit root test for the analysis of "comparative analysis between the state-owned and private commercial banks"

Variables	Abbreviation	Im-Pesaran Shin		ADF (Fisher type)	
		Level	1st difference	Level	1st difference
Pre-tax return on asset	$PTROA_{it}$	Stationary	Stationary	Stationary	Stationary
After-tax return on asset	$ATROA_{it}$	Stationary	Stationary	Stationary	Stationary
Efficiency	EFF_{it}	None	Stationary	None	Stationary
Credit quality	$NPL\%_{it}$	None	Stationary	None	Stationary
Loan write-off	LWO_{it}	None	Stationary	None	Stationary
Loan recovery previously written off	$LREC_{it}$	None	Stationary	None	Stationary

5.4.4.2 *Econometric model*

To better understand the relationship between the profitability and the non-performing loans, efficiency, loan write-off and the determinants of non-performing loans written-off loan recovery secondary data has been collected from the annual reports of respective banks for the year 2009 to 2017. Dynamic panel data has been applied to formulate the significance level of the relationships. As this method uses the lagged dependent variable it uses dynamic approach that gives findings after adjusting for any effect of past depending variable with the current explanatory variables. Time dummy variables has been employed for controlling the unobserved aggregate macroeconomic effects like price interest rates etc. that can affect all the banks at the same time (Ozkan, A, 2001). The following model has been used in which the different variables are pertinent for understanding the effect of bad loans on profit as well as comparing the public banks' bad loans with the private banks'.

$$Profit_{i,t} = profit_{i,t-1} + Efficiency_{it} + Credit\ quality_{it} + Loan\ write\text{-}off_{it} + Loan\ recovery_{it} + \alpha_i + \alpha_t + \epsilon_{i,t}$$

Chapter Six: Findings

6.1 Research Question 1 Findings

6.1.1 Regression analysis

Table 28: GMM estimation result (Arellano Bond – dynamic panel data) one step results

Dependent variable **Total non-performing loans as percentage of total loans and advances**							
Explanatory variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**
NPL $_{i,t-1}$	.465319*** 0.000	.433975*** 0.000	.455333*** 0.000	.421060*** 0.000	.44227*** 0.000	.474563*** 0.000	.446284*** 0.000
Macroeconomic							
RLR $_{t-3}$	.193531** 0.025	.213942** 0.018	.152803* 0.064	.211550** 0.032	-.0564131 0.719	.2758823 0.238	-
PCGDP $_{t-1}$	.806437** 0.027	1.55625*** 0.003	.734654* 0.058	1.64580*** 0.002	.2716925 0.417	1.02209** 0.015	.861874** 0.030
PCGDP $_{t-2}$	-.950063*** 0.004	-1.67021*** 0.001	-.898244** 0.011	-1.74542*** 0.000	-.343913 0.238	-1.02854*** 0.005	-.839523** 0.010
Bank-specific							
LGR $_{i,t-1}$	.003169 0.807	-.01283 0.384			.0018237 0.888	-.001257 0.930	-.003933 0.781
LGR $_{i,t-2}$	.009564 0.375	.017386 0.159			.0107634 0.320	.018636 0.147	.013086 0.271
LGR $_{i,t-3}$	.01989** 0.027	.021864** 0.034			.0193631** 0.031	.015158 0.174	.021655** 0.026
LGR $_{i,t-4}$	.027876*** 0.001	.021667** 0.014			.029162*** 0.001	.023802*** 0.008	.024319*** 0.006
LGR $_{i,t-1}$ ***– YIALGR*** $_{t-1}$			.0001285 0.992	-.0123311 0.398			
LGR $_{i,t-2}$ ***– YIALGR*** $_{t-2}$			.0058631 0.586	.0186319 0.147			
LGR $_{i,t-3}$ ***– YIALGR*** $_{t-3}$			.0182928** 0.042	.0217004** 0.041			
LGR $_{i,t-4}$ ***– YIALGR*** $_{t-4}$			.023134*** 0.008	.0182873** 0.036			
Cost of fund $_{i,t-1}$	-0.144819 0.177		-.0516771 0.625				
Cost of fund $_{i,t-2}$	-.016853 0.897		-.0442968 0.738				
Cost of fund $_{i,t-3}$	.273433** 0.035		.3092068** 0.016				
RCOF $_{i,t-1}$					-.221486** 0.027		
RCOF $_{i,t-2}$					-.029661 0.823		
RCOF $_{i,t-3}$					.2713827** 0.049		
LR $_{i,t-1}$		-.297345** 0.019		-.234799* 0.051			
LR $_{i,t-2}$		.363528* 0.052		.420835** 0.030			
LR $_{i,t-3}$		.2163687 0.137		.238725 0.108			
ARLRB $_{i,t-1}$						-.074298 0.389	-.09958 0.231
ARLRB $_{i,t-2}$						.285559* 0.064	.1589165 0.146
ARLRB $_{i,t-3}$						.040306 0.819	.2216223** 0.012
Size $_{it}$	.068747*** 0.002	.0564332** 0.012	.072338*** 0.002	.0555719** 0.014	.060232*** 0.007	.030957 0.206	.031839 0.192
Market Power $_{it}$	-.614380*** 0.000	-.537859*** 0.000	-.631732*** 0.000	-.546802*** 0.000	-.53743*** 0.000	-.364976** 0.019	-.374906** 0.016
constant	*.37828* *0.430*	*.264155* *0.603*	*.461341* *0.331*	*.195018* *0.693*	*.0904132* *0.842*	*-.100424* *0.842*	*-.233562* *0.632*
Number of obs	112	112	112	112	112	112	112
Number of groups	16	16	16	16	16	16	16
Obs per group	7	7	7	7	7	7	7
Sargan test	0.1381	0.1154	0.1195	0.1124	0.1139	0.1221	0.0935
1st ord autocorrelation	0.0026	0.0034	0.0021	0.0036	0.0030	0.0026	0.0034

2nd ord autocorrelation	0.7343	0.8862	0.8048	0.8190	0.7008	0.7474	0.7543
Number of instruments	62	62	62	62	62	62	62

Arellano bond test for zero autocorrelation in first-differenced errors

H_0: No autocorrelation, Sargan test of over identifying restrictions,

H_0: over identifying restrictions are valid

Source: author's own calculation from collected data

For each model, the previous year's non-performing loan (NPL) is significantly related with the current year's NPL in a positive manner. In this research, the ratio of non-performing loans to total loans and advances have been used which is the ratio of the respective cumulative amounts. This relationship indicates that if NPL relative to total loans rises today, there is a significant probability that the ratio of NPL to total loans will rise the next year. This is maybe due to the fact that the previous loans with two or three years maturity period and some of the current year's loans are being constantly defaulted. Another possibility is that banks have a limit of loan disbursement which may be related to size and efficiency or the supply of good borrowers is not enough. So, only increasing the amount of loans may not be feasible for banks. So the NPL relative to total loans may rise out of bank's inability to procure more good clients (which could have decreased the NPL ratio). Another possibility may be that the cycle of good condition of loans or the cycle of bad condition of loans is higher than two or three years which makes it harder to turn the loan condition better. Once the NPL declines, the declining rate continues because perhaps the banks give out more long term loans which take some years to become default that makes the ratio lower for couple of years.

In model 1 to 4, the three year lagged real lending rate (RLR) of the economy poses a significant positive relationship with long term NPL. But in model 5-7 the RLR does not have a significant link with NPL in general. This indicates that in general when the interest rate rises the credit quality deteriorates in the long-run. This is consistent with our findings regarding the relationship between the bank-specific average lending rate and NPL. As lower inflation rate is positively correlated with lower GDP growth which increases the chance of loan default (Shu, 2002), higher RLR in times of low inflation can cause lower economic growth in the subsequent years which can trigger an increase in the bad loans in the following years gradually.

Regression analysis shows that a rise in per capita GDP (PCGDP) today does not immediately get absorbed in the economy rather it takes time to affect the quality of the loans. A growth in one year lagged PCGDP shows a positive relationship with NPL which indicates that in booming economic time banks lend excessively without much concern about the borrowers'

credit quality. Banks most likely expect that the booming growth of the economy may increase the likelihood of borrower's ability to make profit and provide the banks with interest in time. Banks with long term loans may experience an increase in borrower's inability to give interests to the banks which may increase NPL but the effect of economic growth is slowly absorbed in the business thus the effect of growth of PCGDP takes time to make investments fruitful. The effect of PCGDP is same across all the models thus suggesting this macroeconomic variable has important long term implications for the fluctuation of NPL.

Loan growth rate (LGR) has positive significant relationship with long term credit loss or non-performing loans (NPLs). Normally, if the bank accumulates new loans with different maturity, both the possibility of short term credit loss and long term credit loss rises. Economic growth in this regard comes into play in determining the impact over loan quality. The long term positive significance between excessive loan growth and the deterioration of credit quality can be explained by the borrowers' long term inability to pay regular interest. Economy may turn out to be booming when banks lend excessively but after couple of years when the economy deteriorates the borrowers are forced to become defaulted. The implication here is the bank's abrupt risk taking by increasing the loan-deposit ratio to make extra earnings in booming period. In Bangladesh, the effect of GDP growth takes time to impact private commercial banks. As mentioned earlier the effect of lagged GDP has different impact on the banks overall condition. But banks sometimes become reckless in loan disbursement not accounting for borrowers with bad credit assessment. This over expectation of banks can lead to non-performing loans considering the way GDP operates in Bangladesh. In the model 1 it is evident that the significance of excessive loan growth gradually increases with time that is if banks provide excessive loan today there is a greater chance for the loans to become bad after four years or three years rather than one or two years. In the model 2 higher loan disbursement over the market average loan growth can also cause non-performing loans in the future.

The empirical analysis also found non-performing loans to total loans to be negatively associated with the bank size. Bigger banks have higher non-performing loan amount relative to the smaller banks which may not be normal (considering the size of the banks) but the concern arises when the relative size of NPL to total loans is getting bigger. Smaller banks seem to be more efficient in handling non-performing loans than larger banks. In this regard, economies of scale comes into play according to some research. Larger banks may have reached a certain point from where higher loans make it difficult for banks to monitor and evaluate loans. Smaller banks are better at handling smaller resources but larger banks may

find it difficult to handle higher amount of loan growth. This can increase the non-performing loans of such banks. On the other hand, smaller banks are yet to reach the economies of scale for which they effectively manage their resources and are more cautious in giving out loans.

Market power (MP) has been found negatively affecting the rise of non-performing loans in all the economic condition but shows a little more significance in inflationary periods. During economic growth and higher investment returns, higher lending seems to lower the NPL ratio. This is because banks may not incur bad loans when they lend excessively for long term projects until the economy slows down a bit which explains the lagged significance of per capita GDP in this study.

6.2 Research Question 2 Findings

6.2.1 Long term impact of cost of fund

Cost of the fund of bank has the significant impact on non-performing loans in the long-run (Table 21: Model 3) rather than short run. For the higher cost of fund bank charge higher lending rate to borrowers. This is happening because, after the loan disbursement favor of any borrower, they make investments in their projects for higher profitability. Due to the higher lending rate of interest borrowers face cash flow problems and less profitability. Gradually create pressure to borrowers and loans become converted to bad loans. Same way non-performing loans also have similar impact on the cost of fund. Due to the higher non-performing loan amount, bank needs to book more deposit with the higher rate for covering NPL amount. In this situation significant deposit amount will be blocked as NPLs. In short run, banks and borrowers do not often realize the impact of the cost of fund and non-performing loans because both have not any immediate crash on them. From the results of the study, the positive relationship exists between bank cost of fund and non-performing loans in the long-run. The explanation below provides a two way causation of the cost of funds and non-performing loans.

6.2.2 Cost of funds affecting the non-performing loans

There is cycle of cost of fund and non-performing loans flowing through the banking system. Findings suggest that the rise of the cost of funds affect the non-performing loans through cyclical channels of lending rate, demand of deposits, quality of loans etc. Cost of fund can increase when there is liquidity crisis in the economy or when the rate of national savings certificate rate inclines that is when fund become scarce. This is when banks can raise the cost

of fund in order to attract more depositors so that the banks can provide loans and stay in the competition. But in the process this causes the banks to lose profit if they do not increase the lending rate. Banks usually want to increase spread and retain their profitability at a maximum level so they increase the lending rate for the higher cost of fund. In the process the borrowers take this hit of higher lending rate which affects their cash flow so they regularly keep overdue and these loans gradually becomes non-performing loans in the long-run. In this scenario if any individual bank increases their lending rate they can lose customers but if the whole banking sector increase the lending rate then the whole pressure is bared by the borrowers. In case of any individual banks that move up the lending rate loses good customers at the expense of lower category but high risk borrowers. These borrowers are always in need of funds but they usually have bad reputation and banks generally end up incurring non-performing loans by providing these borrowers loans for yielding higher spread.

In this scenario of higher cost of funds makes more depositors deposit their money in the bank and in the process the supply of deposits increase. This happens mostly in the short run because the higher rate attracts quickly more depositors as in Bangladesh the source of investments are quite narrow. In this high liquidity scenario more funds are available for the banks for loans but with higher lending rate. Borrowers usually take loans reluctantly and bear the burden of higher cost of funds. Many borrowers face difficulty in paying back the borrowed money and as mentioned earlier the gradual overdue turns into non-performing loans in the long-run. Now from the banks point of view the banks are constantly adjusting the lending rate to make their spread higher by ensuring credit growth with higher lending rate. Banks receive longer term deposits which have to be adjusted with the similar term loans. If banks constantly receive long term funding, they run the possibility of incurring long-run NPL. This whole process of the bank itself and the borrowers exhibit the condition of non-performing loans in the long-run.

6.2.3 Non-performing loans causing the cost of fund to rise

Cost of fund is able to induce higher non-performing loans but the opposite is also possible when non-performing loans are constantly added to the pile. Non-performing loans are money either of the depositors or investors who gave their money to the bank for increasing its value. If the non-performing loans are constantly rising without being adjusted at some point, the depositors will want to return their money and if the banks are unable to give them deposited money with interest, the banks run the possibility of going bankrupt. To prevent such situation, the banks are constantly on the lookout for more deposits to fill up the existing and new non-

performing loans. This strives for liquidity is not easy because of market competition as there are other banks that are also looking for funds. So, if any bank in undergoing higher growth of non-performing loans, they will generally have to offer higher cost of fund to attract more depositors with a hope to fill up the higher risk loan positions. Interestingly, in this situation when the bank is struggling to maintain growth of performing loans and general loan growth they must offer higher lending rate. In this situation banks find it difficult to disburse new loans because of running the risk of new bad loans with already piled up bad loans in the book. As a result, being unable to lend more money, the banks become less able to meet the demand of the depositors which causes liquidity crisis. The banks keep higher provisions for the depositors and their profits become affected as a result. In this situation, the recovery of the bad loans becomes imminent and as indicated earlier, lending rate remains still higher than usual.

One of the findings shows that it has been seen that higher lending rate causes a decline in the demand of the loans which makes the current non-performing loans smaller. This situation does not stay for long because banks ultimately increase the loan growth abruptly and lend to borrowers with lower level credit worthiness to maintain their earnings which causes the bad loans to increase in the long-run.

6.3 Research Question 3 Findings

The research question tried to investigate the impact of cost of fund and lending rate through face to face interview, phone and emails. 52% bankers agreed that increasing cost of fund can contribute to the rise in non-performing loans. Most of the banker remained neutral. The borrowers on the other hand agreed on a greater number which indicated that in many situation cost of fund induced a change in lending rate.

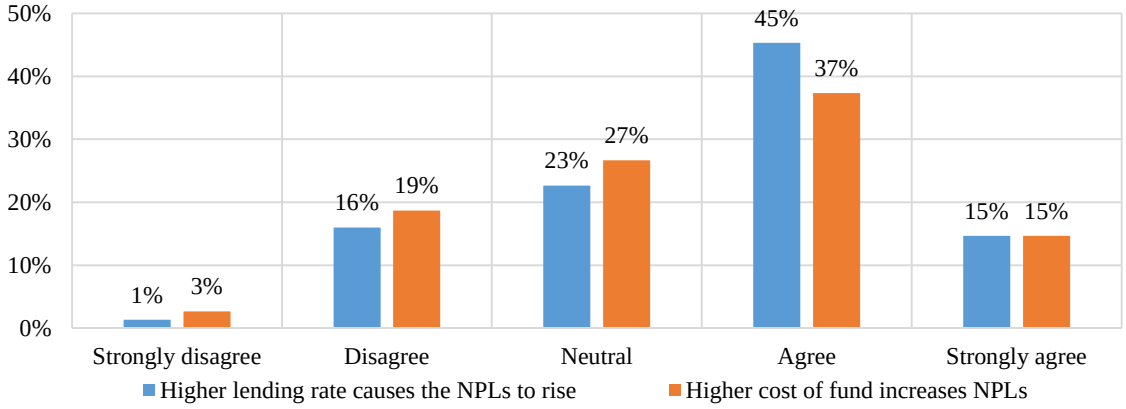


Figure 22: Bankers' perspectives on cost of fund and lending rate affecting NPLs

Source: Field Survey data 2018

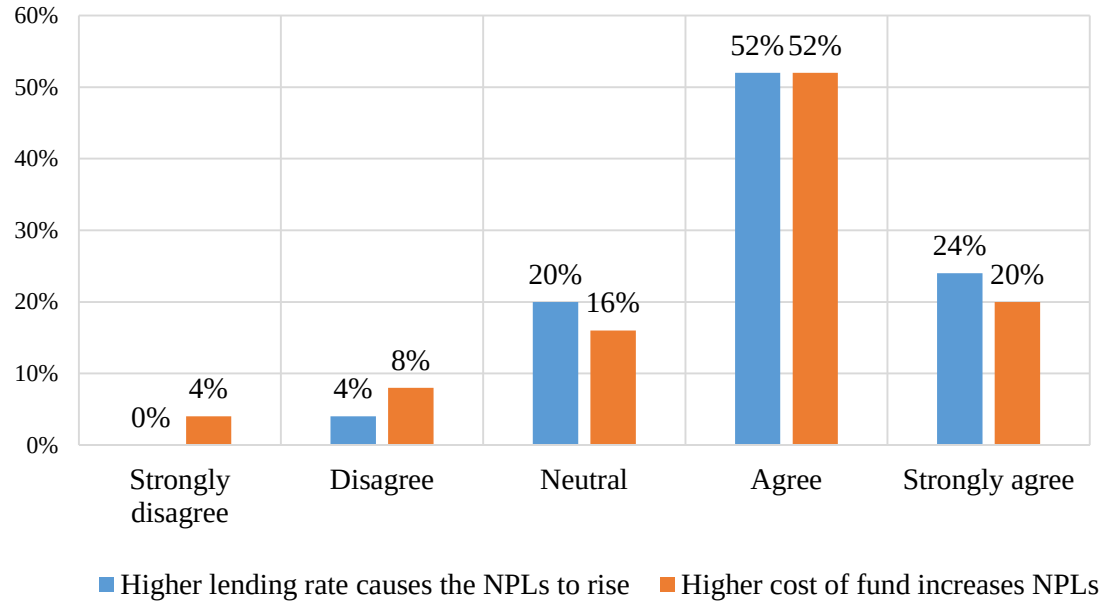


Figure 23: Borrowers' perspectives on cost of fund and lending rate affecting NPLs

Source: Field Survey data 2018

The findings of the survey reveals that banker have put more weight in the lending rate (Figure 22 & 23) compared to cost of fund although 52% of the bankers agreed or strongly agreed that cost of fund did affect the non-performing loans at some point in time. 60% of the bankers agreed that increasing lending rate actually caused the bad loans to incline. One fourth of the bankers remained neutral on the effect of lending rate and cost of fund on bad loans. Borrowers on the other hand were more concerned with lending rate (Figure 13) than the bankers. 76% of the borrowers agreed or strongly agreed that higher lending rate can increase non-performing loans.

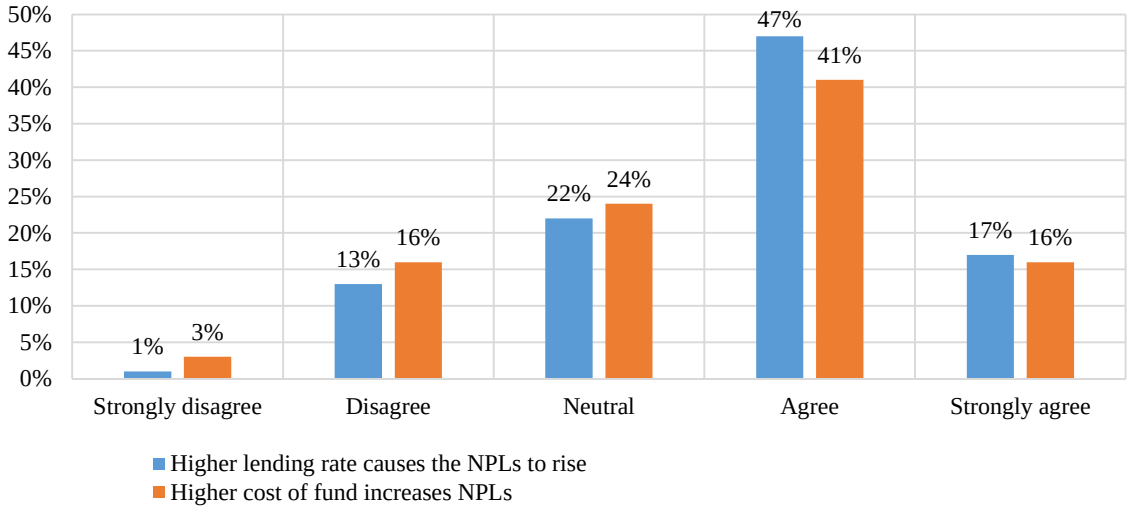


Figure 24: Overall perspectives of the effect of cost of fund and lending rate affecting NPLs

Source: Field Survey data 2018

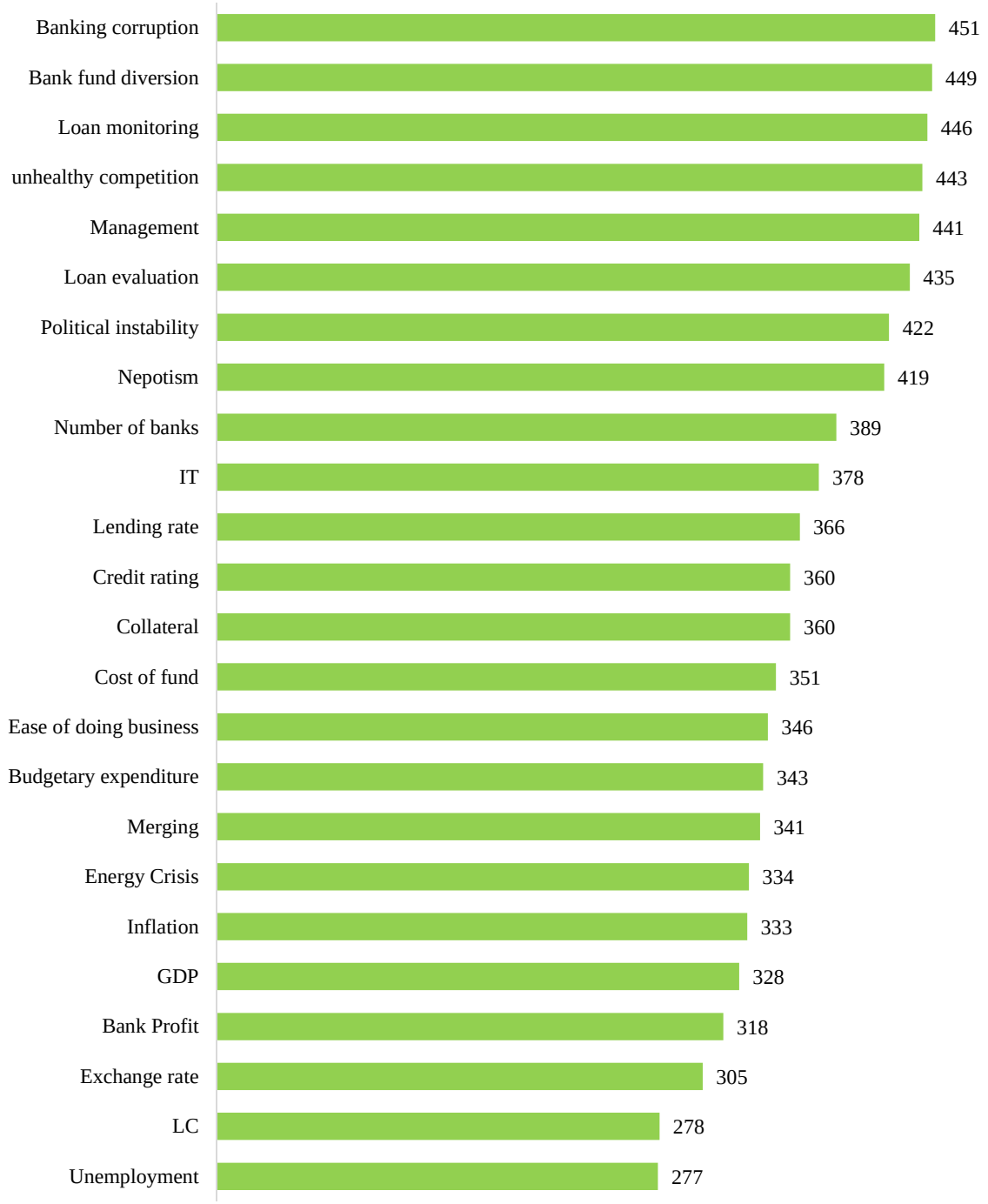


Figure 25: Least to highest causing factor of NPLs

Source: Field Survey data 2018

The overall scenario also indicates the severity and importance of these two variables (cost of fund and non-performing loans) on the condition of loan quality. In both cases over 50% of the bankers and borrowers expressed their concerns about the impact of cost of fund and the lending rate on non-performing loans.

The overall scenario points towards some of the important and most agreed determinants of non-performing loans from the overall perspective. Banking corruption, fund diversion by banks and less monitoring of loans seem to be the most important determinants of non-performing loans from the overall point-of-view. This is not surprising because of the scam and corruption of the state-owned banks and some other financial institutions which have almost crippled the whole banking process in the last 5 to 6 years. Furthermore, a combination of factors such as management inefficiency and unhealthy competition among the banks also largely contribute a lot to the rise in the bad loans. Based on some of the previous studies (Rifat, 2017; Rahman et al. 2016; Mondal, 2016) macroeconomic factors were the least affecting factors of bad loans which is in alignment with this study. Data from the survey (Figure 23) shows that the respondents also viewed the macroeconomic factors such as GDP growth, inflation, exchange rate, energy crisis and unemployment rate to be the least important factor in the context of Bangladesh. As the banking sector scam and inefficiency of the management has taken over the banks, the effect of economic growth, business scope has become insignificant to a greater extent. Another interesting finding of this survey is the ease at which the business is conducted has contributing power in explaining the rising non-performing loans. The following figures pose the significant factors that the respondents have strongly adhered to.

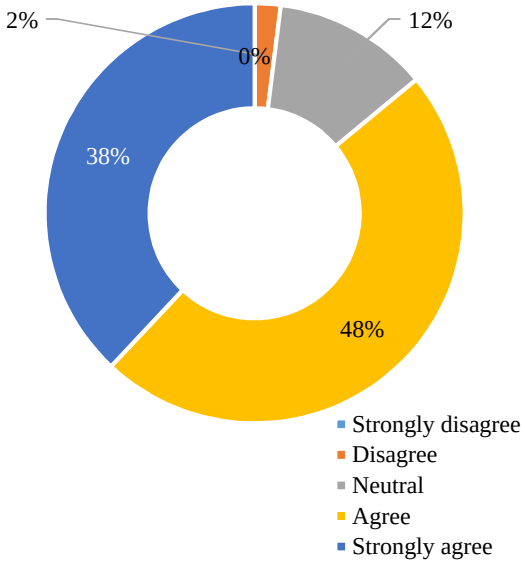


Figure 26: Higher political instability increases NPLs

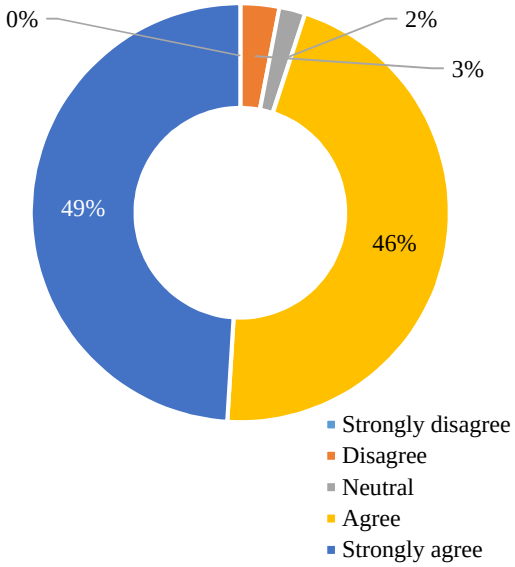


Figure 27: Lower management efficiency increase NPLs

Source: Field Survey data 2018

86% of the overall respondents have suggested that higher political instability hampers the business process and ultimately affects the loan repayment capability of the borrowers (Figure 26). Over 90% of the respondents have identified management problems to be a significant

factor in explaining the bad loans that prevail in the banking sector of Bangladesh (Figure 27). This result supports the high explaining power of banking corruption and bad loan evaluation explained through Figure 25.

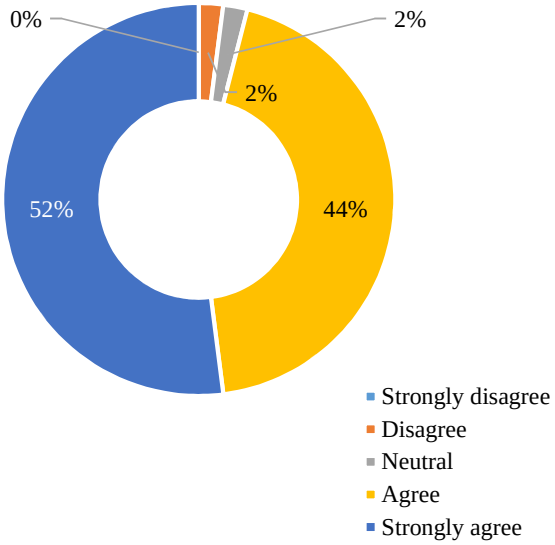


Figure 28: Better loan monitoring results lower NPLs

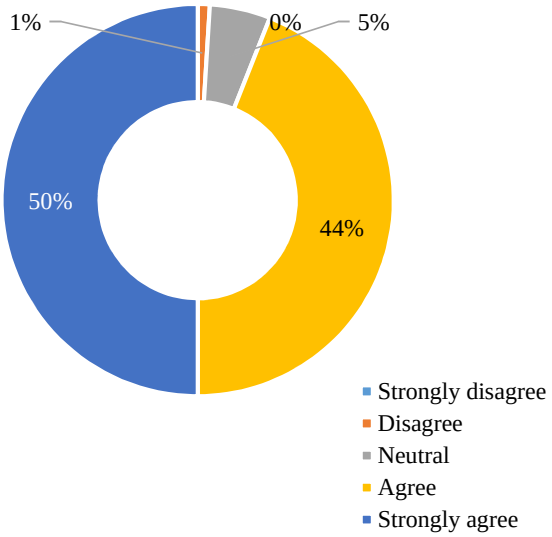


Figure 29: Unhealthy competition increase NPLs

Source: Field Survey data 2018

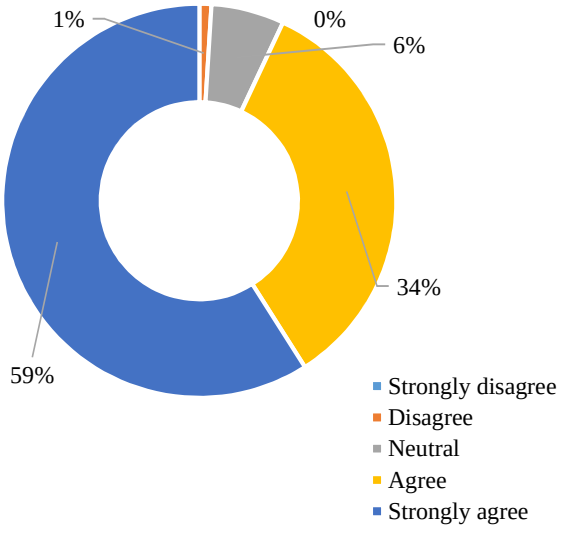


Figure 30: Higher banking corruption increases NPLs

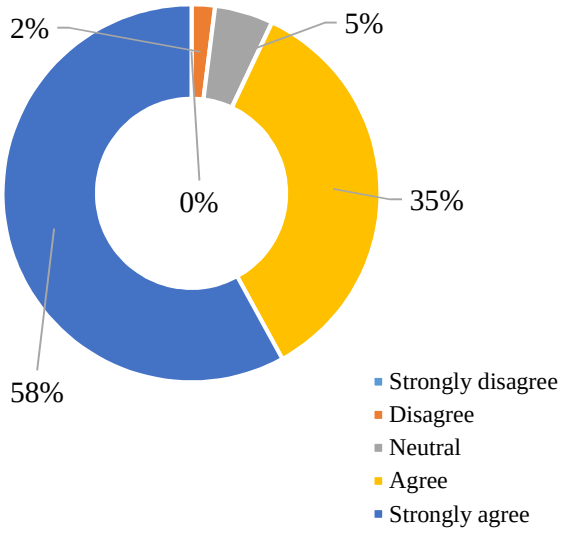


Figure 31: Lower fund diversion by borrowers reduce NPLs

Over 90% of the respondents have agreed that management inefficiency (like loan monitoring, unhealthy competition, fund diversion and corruption) have affected the bad loans of the banking sector than other systematic factors like the economic growth. Thus it can be concluded that in the presence of higher inefficiency and corruption, the effect of GDP and other positive indicators of Bangladesh has been shadowed for which the effect of economic prosperity does not immediately reflect the condition of loan quality as the previous section of this thesis suggested.

6.4 Research Question 4 Findings

6.4.1 Regression analysis: GMM estimation

Table 29: GMM regression analysis for the "comparative analysis between the state-owned and private commercial banks"

GMM estimation				
	Private commercial Banks		**State-owned commercial Banks**	
Dependent variable	**After tax ROA**	**Pre-tax ROA**	**After tax ROA**	**Pre-tax ROA**
Independent variables				
Return on Asset (ROA)$_{t-1}$	*.26176**** *0.002*	*.21324**** *0.007*	*-.01501* *0.935*	*-.007550* *0.965*
Inefficiency, INEFF$_{it}$	*-.02422**** *0.002*	*-.049893**** *0.000*	*.001295* *0.219*	*.001357* *0.201*
Credit quality, NPL%$_{it}$	*-.089938**** *0.006*	*-.144389**** *0.002*	*-.08876*** *0.010*	*-.09700**** *0.004*
Loan write-off (cumulative), LWO$_{it}$	*-.000353** *0.086*	*-.000803**** *0.009*	*.000295* *0.249*	*.000431* *0.100*
Loan recovery (yearly), LR$_{it}$	*.004511*** *0.023*	*.00970**** *0.000*	*.001807* *0.722*	*.003886* *0.481*
Time dummy	*Yes*	*Yes*	*Yes*	*Yes*
Constant	*.02881**** *0.000*	*.053313**** *0.000*	*.0039605* *0.806*	*.000123* *0.994*
Sargan test, Prob > chi2	*0.2743*	*0.4059*	*0.4494*	*0.4746*
1st order auto corr	*0.0045*	*0.0040*	*0.0959#*	*0.0712*
2nd order auto corr	*0.9074*	*0.6617*	*0.1827#*	*0.2158*
Instruments	*40*	*40*	*34*	*34*
Observations	*112*	*112*	*35*	*35*
Observation per group	*7*	*7*	*7*	*7*
Number of groups	*16*	*16*	*5*	*5*
GMM estimation				
Dependent variable	**Private commercial Banks**		**State-owned commercial Banks**	
	After tax ROA	**Pre-tax ROA**	**After tax ROA**	**Pre-tax ROA**
Independent variables				
Return on Asset (ROA)$_{t-1}$	*.262122**** *0.003*	*0.20710*** *0.011*	*-.016010* *0.943*	*.01377* *0.950*
Inefficiency, INEFF$_{it}$	*-.02684**** *0.000*	*-.05444**** *0.000*	*.001225* *0.275*	*.001248* *0.278*
Credit quality, NPL%$_{it}$	*-.09691**** *0.003*	*-.1477**** *0.001*	*-.10673**** *0.002*	*-.11821**** *0.001*
Loan write-off (Yearly), LWO$_{it}$	*-7.01e-13* *0.133*	*-1.55e-12*** *0.018*	*-8.06e-14* *0.893*	*-1.67e-14* *0.979*
Loan recovery (yearly), LR$_{it}$	*.004673*** *0.018*	*.00952**** *0.000*	*.002733* *0.611*	*.005009* *0.362*
Time dummy	*Yes*	*Yes*	*Yes*	*Yes*
Constant	*.02459**** *0.000*	*.04637**** *0.000*	*.028228**** *0.005*	*.03081* *0.003*
Sargan test, Prob > chi2	*0.3377*	*0.5261*	*0.5336*	*0.5425*
1st order auto corr	*0.0061*	*0.0066*	*-*	*-*
2nd order auto corr	*0.9531*	*0.6672*	*-*	*-*
Instruments	*40*	*40*	*34*	*34*
Observations	*112*	*112*	*35*	*35*
Observation per group	*7*	*7*	*7*	*7*
Number of groups	*16*	*16*	*5*	*5*

No time dummies

The above findings suggest that the outcomes are different for the state-owned and private commercial banks. In terms of inefficiency the results suggest that private commercial banks are very sensitive for the relative increase in operating cost compared to the state-owned

commercial banks. In case of private commercial banks, for each unit increase in the inefficiency, the pre and after-tax profit decreases with time. But for state-owned commercial banks the result indicates that the increase in the cost inefficiency does not significantly affect the after and pre-tax profit of the banks. The profitability of the state-owned banks is not significantly affected by the cost inefficiency because factors other than cost are so much dominant that cost in many years is not a significant factor in explaining the change in profit.

Non-performing loan is extremely significant in explaining the profitability change of both private and public banks. In Bangladesh the effect of bad debts is so much pervasive in any banking groups that any change in the ratio of bad loans to total loans & advances causes a change in the income of the banks. The findings suggest that both pre and after tax profit is affected by the bad debts for both these bank groups.

Loan write-off affects the different bank groups differently which has also been vindicated by the secondary analysis. The profit of private commercial banks is significantly affected by loan write-off in a negative manner. The negative relationship between the loan write-off and profit of the private banks indicate that the non-performing assets had increased in the book of the bank for which banks wanted to remove those non-performing assets to increase the return on asset. When bad loan increase the return on asset takes a hit because the loan are staying on the asset side of the balance sheet without contributing to the profit. To resolve this banks write-off loans which reduces the non-performing loan amount but the profit had already decreased for higher non-performing assets. For this at the year end when banks show higher write-off it indicates that the profit was declining for higher bad loans for which the lower profit and increased write-off occurred at the same year end.

The insignificant relationship between the loan write-off and profitability of the public banks indicate that the amount by which the loans are being written off that same amount of capital injection is possibly taking place. For this reason the high bad debts in public banks is being replaced by capital injection for which the write-offs may have been insignificant in changing the profits.

The pre-tax profitability is relatively significant for both bank groups. The after tax profitability is less significant for these banks. The public banks are being taxed in such a way that loan write-off does not affect the profitability that much or at least affects insignificantly. For the private commercial banks when the loans are being written-off the profit is being negatively

affected. This indicates that the higher the loan write-off for the private banks the lower the pre and after tax profit. Clearly, the public banks are being less affected by the loan write-off. Loan write-off rate of the SCBs in the last five years has been growing at a heavy pace compared to the private commercial banks. This has created the urgency to tackle the dropping profitability so it is possible that the loan write-off has been done without affecting the profit of the banks.

Another interesting finding shows that loan recovery is not significantly increasing the profit of the state-owned banks. From the figure 19, it is clear that the recovery rate of the state-owned commercial banks is not as noteworthy as the private commercial bank. Still the size of the banks plays an integral part in this matter. As the size of the state-owned banks is relatively larger than that of the many selected private commercial banks, it is possible that the recovery amount may be larger in state-owned banks but the amount is not that larger to minimize the profit. Small size of the private banks helps them to manage the write-off loans much more easily.

6.4.2 Perception of bankers and borrowers on the comparative distinction between state-owned & private commercial banks in Bangladesh (Field survey results)

The following findings of the comparative analysis are based on the field survey questionnaire made to the 100 bankers and borrowers. Their perception regarding the comparative basis of state-owned and private banks has been put forward in the following sections. From the figure below the severity of the non-performing loans has been mostly depicted in the public banks to private banks. In the similar fashion, the subsequent mentioned factors namely- profit, capital injection, use of technology, corruption, willful defaulters, cost inefficiency, branding, promotion, loan default against L/C acceptance (inland) and customer service were the main factors that the respondents felt to be the important basis for the comparison of pubic banks with the private.

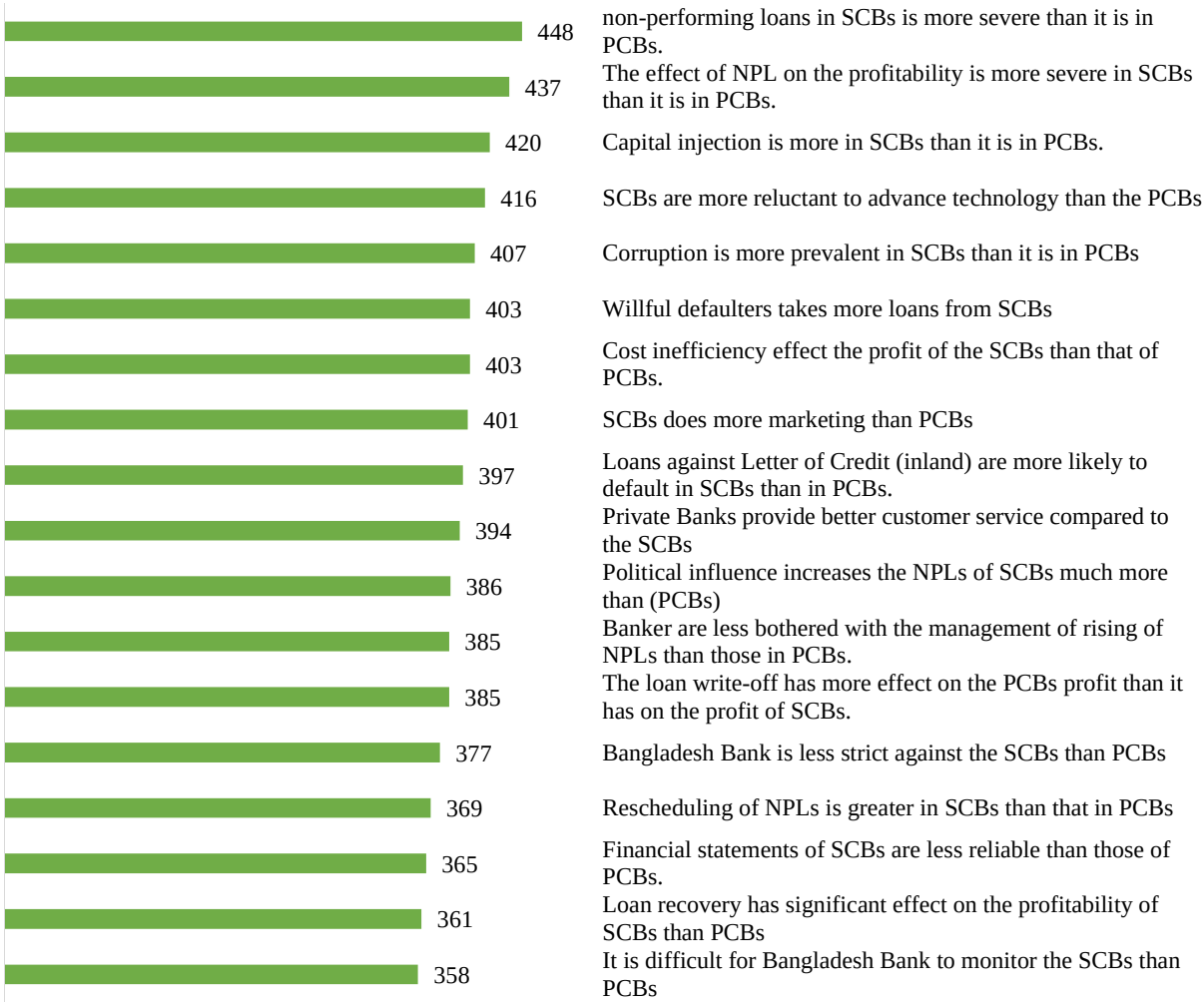


Figure 32: Least to highest comparing factors for non-performing loans in state-owned and private commercial banks

Source: Field Survey data 2018

After each respondents have expressed their opinions their likert scores was summed and all the agreement levels were averaged in order to gain the major comparing factors.

Table 30: Important factors that identifies the SCBs from PCBs

1	Non-performing loans
2	Effect of NPL on profit
3	Capital Injection
4	Use of technology
5	Corruption
6	Willful defaulters
7	Cost inefficiency
8	Marketing and branding
9	Loans default against L/C acceptance (inland)
10	Customer service

The maximum number of score is 500 out of which the closest variables or factors were taken into as comparison criteria. From the above horizontal bar graph it is evident that ten factors score were above or near 400 and close to the strongly agreed condition.

6.4.3 Agreement level (in %) of the respondents for different comparative criteria

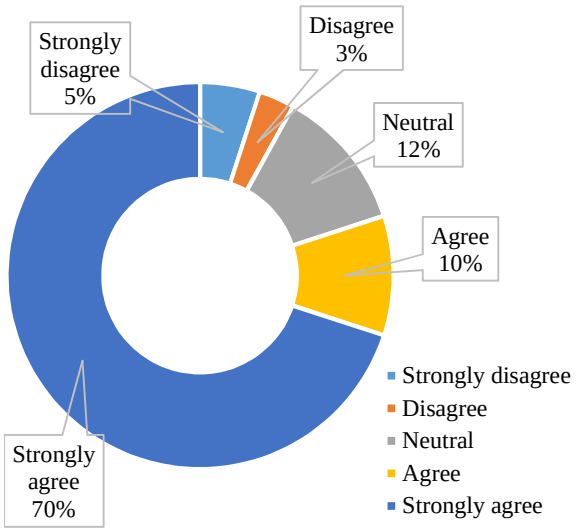


Figure 33: The effect of NPL on the profitability is more severe in SCBs than it is in PCBs.

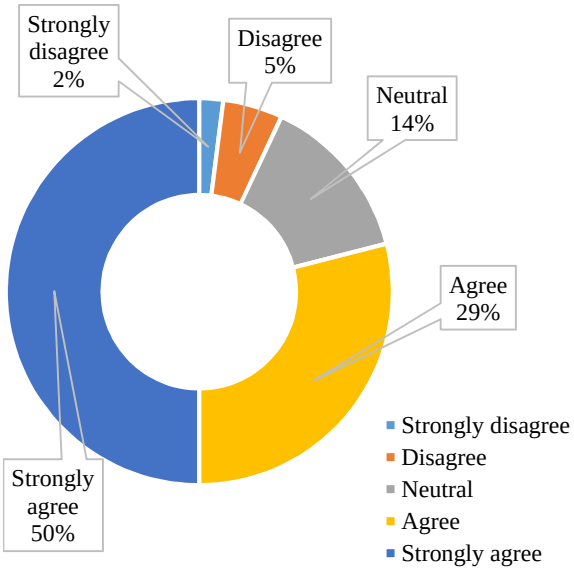


Figure 34: Capital injection is more in SCBs than it is in PCBs.

Source: Field Survey data 2018

Figure 33 shows that around 80% of the respondents agree or strongly agree about the severity of the non-performing loans of the public banks compared to the private banks. Most of the respondents have shown similar response because of the bad credit culture and the prevailing fund diversion incidents of the public banks in the last six to seven years. Figure 34 shows that in general the capital injection is much more in the public banks.

Figure 35 portrays the respondents' view on the use of advanced banking technology by the public banks relative to the private banks in Bangladesh. 58% of the respondents strongly suggested that public banks are way behind the private banks in making use of technological benefits to advance the customer benefits and raise the transaction security. Interestingly, in regards to the corruption in the public banks to private banks, only 45% strongly agreed and 38% agreed that public banks are indeed a place for such illegal incidents. 38% leaned towards the "agree" statement for the possible reason of other management issues that may be related to corruption but also can act independently to deteriorate the profit of the public banks (Figure 36).

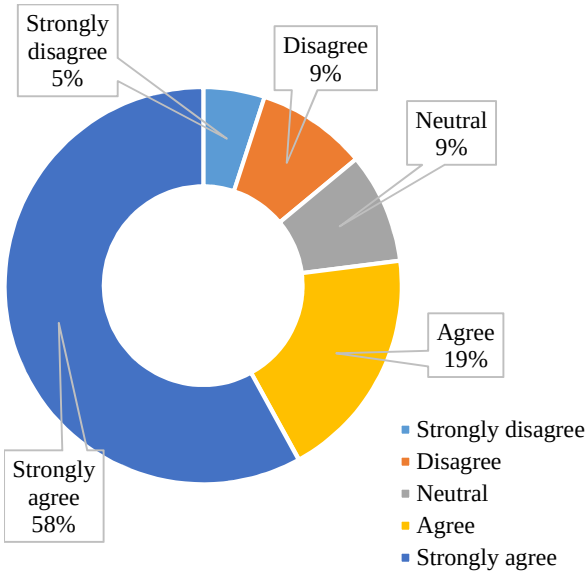


Figure 35: SCBs are more reluctant to advance technology than the PCBs

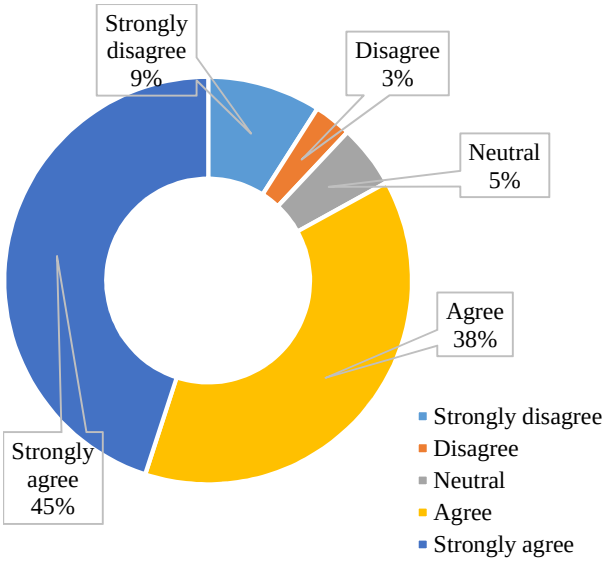


Figure 36: Corruption is more prevalent in SCBs than it is in PCBs

Source: Field Survey data 2018

In terms of branding and promotion of banking products, most of the respondents agreed that public banks are less bothered or less experienced in promoting their products in a competitive manner to the private banks. Figure 38 shows the participants' view on the position that willful defaulter somehow most of the time ends up in the public banks for acquiring loans. This is possibly the mindset of the borrowers to not repay the loan amount in time for the weak monitoring and credit policy.

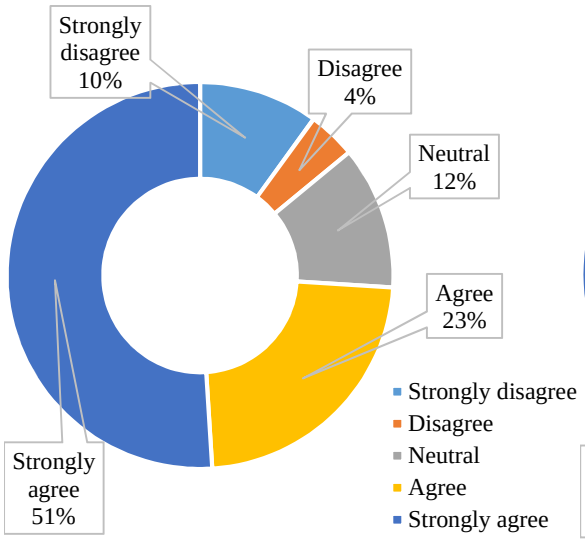


Figure 37: SCBs are more aggressive towards branding and marketing of their products than PCBs

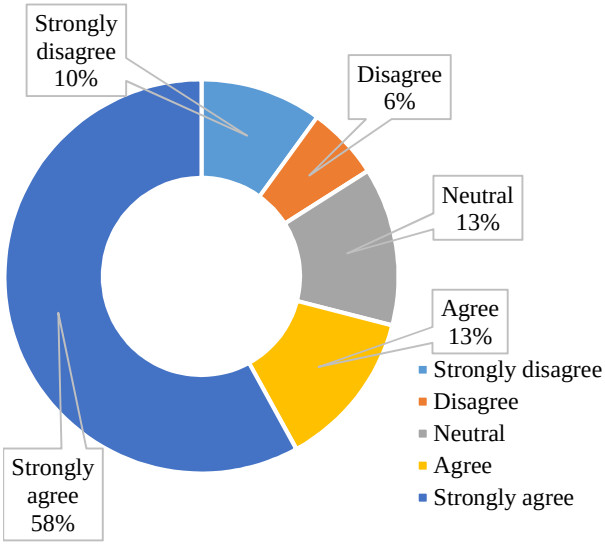


Figure 38: Willful defaulters are more interested in taking loans from public banks than from PCBs.

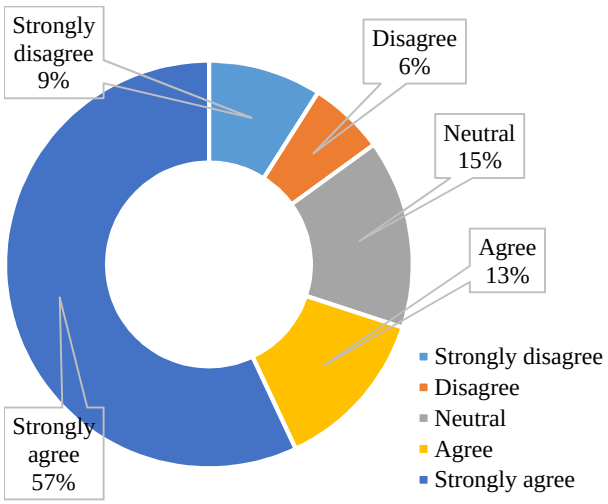


Figure 39: Cost inefficiency has significant effect on the profitability of the state-owned commercial banks than that of PCBs.

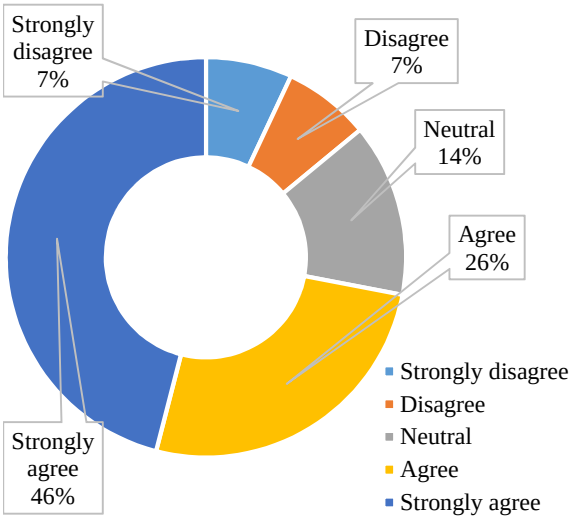


Figure 40: Loans against letter of credit acceptance (inland) are more likely to default in SCBs than in PCBs.

Source: Field Survey data 2018

Majority of the respondents agreed or strongly agreed about the cost inefficiency to be a significant factor to influence the profit of pubic banks compared to the private banks. Surprisingly, this perception is in direct contradiction with the findings of secondary analysis which showed the cost inefficiency to be a non-significant factor for the income of public banks (Figure 39). Figure 40 shows strong agreements among the respondents for the loan against L/C acceptance (inland) to be a significant factor in explaining the bad debts compared to the private banks.

Figure 41 & 42 in the next page depicts the respondents' views on the customer service and political influence in the public banks relative to the private banks in Bangladesh. 43% of the respondents strongly agreed that customer service is extremely poor in the public banks relative to the private banks in Bangladesh. 31% of the participants agreed that it is indeed the case that the customer service is poor in public banks relative to the private banks. There could be some reasons why some respondents chose only to agree in this question. This could be because of any particular quality services in the public banks that may have been better or even close to that of private banks.

48% of the respondents strongly agreed that political influence indeed has plagued the public banking industry relative to the private banks. 32% of the respondents remained neutral about this question which may imply about the viewers' perception to be the same about all the banks or they just don't want to answer.

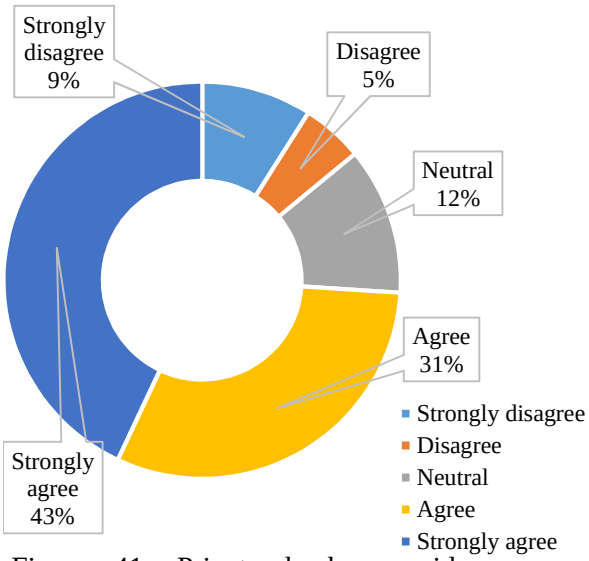


Figure 41: Private banks provide better customer service compared to the SCBs

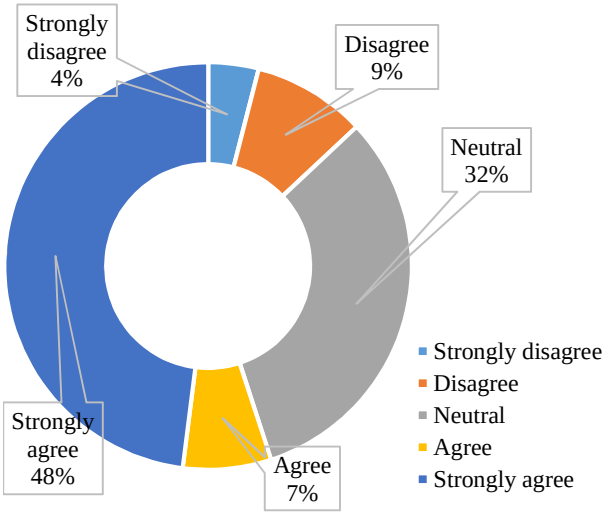


Figure 42: Political influence increases the NPLs of SCBs much more than it does in private commercial banks (PCBs)

Source: Field Survey data 2018

Chapter Seven: Conclusion

7.1 Research Question 1 Conclusion

Regarding the first research question of this study, the analysis reveals the determinants of non-performing loans and elaborates the long term effect of excessive credit lending and cost of fund on the credit quality of the private commercial banks of Bangladesh.

This study suggests that the previous loans with two or three year's maturity period and some of the current year's loans are being constantly defaulted. This study also suggests that banks have a limit of loan disbursement which may be related to size and efficiency of the respective banks. The scarcity of the good borrowers for utilization also came up in the analysis. Only increasing the amount of loans may not be feasible for banks. Because, the NPL relative to total loans may rise out of bank's inability to procure more good clients (which could have decreased the NPL ratio).

The cycle of good condition of loans or the cycle of bad condition of loans is higher than two or three years which makes it harder to turn the loan condition better in some cases. Once the NPL declines, the declining rate continues because perhaps the banks give out more long term loans which take some years to become default that makes the ratio lower for couple of years.

Generally, when the interest rate raises the credit quality deteriorates in the long-run. This is consistent with our findings regarding the relationship between the bank-specific average lending rate and NPL. As lower inflation rate is positively correlated with lower GDP growth which increases the chance of loan default (Shu, 2002), higher RLR in times of low inflation can cause lower economic growth in the subsequent years which can trigger an increase in the bad loans in the following years gradually.

This study found that a rise in per capita GDP (PCGDP) today does not immediately get absorbed in the economy rather it takes a long time to see any visible effect on the condition of loans. In booming economic time banks lend excessively without much concern about the borrowers' credit quality. Banks most likely expect that the booming growth of the economy may increase the likelihood of borrower's ability to make profit and provide the banks with interest in time. Banks with long term loans ma y experience an increase in borrower's inability to give interests to the banks which may increase NPL but the effect of economic growth is slowly absorbed in the business thus the effect of growth of PCGDP takes time to make investments fruitful.

Loan growth rate (LGR) has positive significant relationship with long term credit loss or non-performing loans (NPLs). Normally, if the bank accumulates new loans with different maturity, both the possibility of short term credit loss and long term credit loss rises. Economic growth in this regard comes into play in determining the impact over loan quality. The long term positive significance between excessive loan growth and the deterioration of credit quality can be explained by the borrowers' long term inability to pay regular interest. Economy may turn out to be booming when banks lend excessively but after couple of years when the economy deteriorates the borrowers are forced to become defaulted. The implication here is the bank's abrupt risk taking by increasing the loan-deposit ratio to make extra earnings in booming period.

In Bangladesh, the effect of GDP growth takes time to impact private commercial banks (as hinted earlier). Banks sometimes become reckless in loan disbursement not accounting for the borrower's credit quality. This over expectation of banks can lead to non-performing loans considering the way GDP operates in Bangladesh. In the model 1 it is evident that the significance of excessive loan growth gradually increases with time that is if banks provide excessive loan today there is a greater chance for the loans to become bad after four years or three years rather than one or two years. In the model 2 higher loan disbursement over the market average loan growth can also cause non-performing loans in the future.

Bigger banks have higher non-performing loan amount relative to the smaller banks which may be normal (considering the size of the banks), but the concern arises when the relative size of NPL to total loans is getting bigger. Smaller banks seem to be more efficient in handling non-performing loans than larger banks. In this regard, economies of scale come into play. Larger banks may have reached a certain point from where higher loans make it difficult for banks to monitor and evaluate loans. Smaller banks are better at handling smaller resources but larger banks may find it difficult to handle higher amount of loan growth. This can increase the non-performing loans of such banks. On the other hand, smaller banks are yet to reach the economies of scale for which they effectively manage their resources and are more cautious in giving out loans.

Market power (MP) has been found negatively affecting the rise of non-performing loans in all the economic condition but shows a little more significance in inflationary periods. During economic growth and higher investment returns, higher lending seems to lower the NPL ratio. This is because banks may not incur bad loans when they lend excessively for long term

projects until the economy slows down a bit which explains the lagged significance of per capita GDP in this study.

7.2 Research Question 2 Conclusion

This study portrays the bidirectional relationship between the cost of fund and non-performing loans. Firstly, considering the effect of cost of fund on non-performing loans the subsequent findings formulates the conclusion.

The research suggests that the relationship between the cost of fund and non-performing loans is constituted through a cyclical channel of lending rate, demand of deposits, quality of loans etc. Cost of fund can increase when there is liquidity crisis in the economy or when the rate of national savings certificate rate inclines that is when fund become scarce. But in the process this causes the banks to lose profit if they do not increase the lending rate. In the process the borrowers take this hit of higher lending rate which affects their cash flow so they regularly keep overdue and these loans gradually becomes non-performing loans in the long-run. Another scenario occurs when banks are getting long term deposits. When banks receive long term deposits, adjustments must be made with similar types of maturity of loans. If banks use short term deposits for the long term loans then the banks run the situation of liquidity crisis. This whole process of the bank itself and the borrowers exhibit the condition of non-performing loans in the long-run.

Secondly, the effect of higher non-performing loans on the cost of fund comes into play. When there is higher growth of non-performing loans, banks will generally have to offer higher cost of fund to attract more depositors with a hope to fill up the higher risk loan positions. Interestingly, in this situation when the bank is struggling to maintain growth of performing loans and general loan growth they must offer higher lending rate. In this situation banks find it difficult to disburse new loans because of running the risk of new bad loans with already piled up bad loans in the book. As a result, being unable to lend more money, the banks become less able to meet the demand of the depositors which causes liquidity crisis. The banks keep higher provisions for the depositors and their profits become affected as a result.

7.3 Research Question 3 Conclusion

This part of the study investigates the determinants of non-performing loans through questionnaire survey to the bankers and borrowers. Over 50% of the bankers and borrowers expressed their concerns about the impact of cost of fund and the lending rate on non-

performing loans. Banking corruption, fund diversion by banks and less monitoring of loans seem to be the most important determinants of non-performing loans from the overall point-of-view. This is not surprising because of the scam and corruption of the state-owned banks and some other financial institutions which have almost crippled the whole banking process in the last 5 to 6 years. Furthermore, a combination of factors such as management inefficiency and unhealthy competition among the banks also largely contribute a lot to the rise in the bad loans. Data from the survey (Figure 23) shows that the respondents also viewed the macroeconomic factors such as GDP growth, inflation, exchange rate, energy crisis and unemployment rate to be the least important factor in the context of Bangladesh.

7.4 Research Question 4 Conclusion

This study has conducted a comparative analysis between the state-owned and private commercial banks based on questionnaire survey and secondary data analysis.

Regression panel data analysis found the private commercial banks to be more sensitive to the change in the operating efficiency compared to the state-owned banks. There is no significant effect of the change in operating efficiency on the change in the profitability of the state-owned banks. Non-performing loan is extremely significant in explaining the profitability change of both private and public banks. Loan write-off affects the different bank groups (state-owned and private) differently which has also been vindicated by the secondary analysis. The profit of private commercial banks is significantly affected by loan write-off in a negative manner. On the other hand, loan write-off has insignificant effect on the profitability of the state-owned commercial banks. The study also found that loan recovery is not significantly increasing the profit of the state-owned banks.

The comparative analysis revealed the important indicators for which the state-owned banks are lagging behind the private banks. The severity of the non-performing loans has been mostly depicted in the public banks to private banks. Factors namely- profit, capital injection, use of technology, corruption, willful defaulters, cost inefficiency, branding, promotion, loan default against L/C acceptance (inland) and customer service were the main factors that the respondents felt to be the important basis for the comparison of pubic banks with the private.

Chapter Eight: Recommendation

8.1 Research Question 1 Recommendation

i. **Creating balance between loan growth and asset-liability:** Banks should maintain the loan growth based on the deposit-mix and asset-liability management. Furthermore increasing the loan growth without considering the loan recovery can have long-run implications on the performance of the loans. So banks should formulate procedures regarding the growth of loans based upon the proper forecasting of liability conditions with the probability of future loan recovery.

ii. **Analyzing the future economic growth:** In good economic times, banks have a tendency to make error about the borrowers' success rate which has ramifications regarding the quality of loans in the future. Even when the situation of higher risk may seem profitable banks must understand the market trend and give prudential analysis to measure the susceptibility of deterioration of loans.

iii. **Maintaining appropriate proportion between the bank sizes and lending:** Banks must analyze their capacity to cope with sudden economic shocks and downturn. Due to different size of banks the efficiency level of different banks differ. So banks must not offer loans without analyzing the impact it could have on the risk exposure of the banks particularly due to the size.

iv. **Reducing loan growth in times of inflation:** Banks should pay more attention to their loan growth or investment growth in times of inflation. Banking policy should be reassessed when inflation rate changes because of its impact it could have on the interest rate.

v. **Enhancing the capital market:** Capital market should be strengthened for making financing options more flexible and easier. If the capital market is made strong and competitive then this will take off the pressure from the banks for long term financing. Capital market can be made flexible for raising long-term funds for which investors should be encouraged. Capital market has the potential for long-term financing for infrastructure development of the economy. Investors should be encouraged to raise funds from the capital market for long-term investment. So capital market of our country should be made strong with proper rules & regulation. Government and BSEC should motivate companies to come to capital market and do business with

equity instead of funds borrowed from banks. As a result, the pressure from the banks will be reduced and borrower's profitability will increase due to equity investment.

vi. **Reducing loan growth with single borrower exposure:** Banks should not target single large corporate customers to provide loan facility when the need of extra credit limit is not necessary in reality. This can create the opportunity for borrowers to divert funds that causes these loans gradually to become non-performing. When non-performing loans to total loans are rising, banks should reduce single borrower exposure to reduce the risk of loans being defaulted. Banks should maintain diversified portfolios to reduce the risk exposure of their investments.

vii. **Reducing loan growth in proper circumstances:** When the recovery of loans becomes slow banks should be careful in giving out excessive loans. In this situation, liquidity crisis can take over because if the existing loans are not being recovered then adding extra loans will increase the risk of different categories of loans of being in a default position.

viii. **Cautious in bad loan takeover:** Due to unhealthy competition, banks should not take over bad loans from other banks with enhanced limit. It will give negative signal to the borrowers and they may start to misuse this option for higher opportunities. Banks should be careful in taking over clients with higher loan limit. In case of taking bad clients from different banks with higher credit limit, risk regarding the future non-performing loans also increases. Banks should stop taking over bad loans for higher loan growth from other banks.

8.2 Research Question 2 Recommendation

i. Based on the current condition of non-performing loans in the private commercial banks, this study suggest that banks should be prompt in recovering the funds blocked in the bad loan condition which will reduce the credit risk condition of the banks. Recovery of loans will also make the banks more liquid which will be helpful to meet the demand of the depositors.

ii. In recent years, the effect of the rate of the national savings certificate (NSC) on the interest rates of the banks has become more visible in the economy. This concern is justified because when the national savings certificate (NSC) rate soars, the depositors withdraw fund from the banks to invest at the higher rate of the NSC which creates a

liquidity crisis in the banks. This recommendation is specifically towards the government side because the negative difference between the bank deposit rate and national savings certificate rate runs the possibility of rising of lending rate which could trigger non-performing loans in the long-run.

iii. Banks should maintain minimum spread in order to keep the lending rate at minimum so there is enough scope for any good borrowers to utilize the funds to contribute to the economy.

iv. Bad loans that have been kept in the book for too long should be written off because the extra provisions can make the profit of the banks decline and can make them aggressive to go for bad borrowers with higher lending rate.

v. Money Loan Court should be made more efficient in dealing with the non-performing loans quickly rather than extending time. The extra time makes the banks keep provision which is taken from the profit of the banks. Like said earlier that higher provision can induce the bank to go for borrowers with poor credit ratings.

vi. From the empirical findings of this study, it is evident that bank should reduce the cost of fund and lending rates for bringing down the non-performing loans by creating market equilibrium situation between demand of loans and supply of deposit. In the market equilibrium situation, deposit rate will stay in a favorable position. Lesser rate of cost of the funds will reduce lending rate which will encourages borrowers to keep their loans performing.

vii. For reducing the cost of fund, banks should reduce operating expenses and cost of deposits. For minimizing non-performing loans banks should be aware about the borrower's business operations and regularly follow up their financials and other indicators in a realistic manner.

viii. A bank has to ensure that proper utilization of credit facility for which it is lent is actually carried down. Borrowers should only use the fund to finance the exact project which was originally in the agreement. In this regard banks should regularly monitor the activities of the borrowers to view the advancement of the projects.

ix. The bank should take the initiative to develop specific tools and techniques to differentiate the willful defaulters from the genuine ones. For this Bangladesh Bank should give out criteria to be used by every banks with which they can identify the willful defaulters.

x. Banks should also stop unhealthy competition among themselves. Bangladesh Bank should strengthen the supervisory & credit risk monitoring functions and apply strict guidelines regarding interest rate spread for private commercial banks.

xi. Banks should give incentives to borrowers with good credit-rating in the form of reduced interest rate to motivate the other borrowers for making timely payments. Banks should also give recognition to good borrowers by bringing them into public attention.

xii. In order to increase the liquidity of the banks, companies should be encouraged to execute all the transaction through banking channels and expand the agent banking facility to the remote corners of the country.

xiii. Collaboration among the ministry of Finance, Bangladesh banks, BSEC and other parties should be enhanced to reduce any trade and transaction barrier.

8.3 Research Question 3 Recommendation

i. This analysis recommends that government should start with simple existing problems rather than show off with sophisticated methods. Sophisticated approaches itself does not pose any problems but becomes ineffective when current problems sustains in the economy.

ii. This study recommends that government should maintain hierarchy of activities in resolving the bad loan culture of Bangladesh.

iii. Government should strive to remove corruption from the banking industry before opting for higher economic growth because in the presence of excessive corruption the achievement of the other sectors in terms of expansion in infrastructure can be overshadowed by the prevailing corrupt banking activities both in public and private banks.

iv. Government must ensure business friendly environment for all people in general regardless of political affiliation. Innovation can come from variety of sources of people who could be at a disadvantage position for opening up a business for high entry barriers. These barriers can be in the form of highly politicized economic system where achieving a goal requires some form of political liaisons. If entry barrier prevails in the economy of Bangladesh, highly innovative business people who think in terms of long-term solution will be highly demotivated. As a consequence short-

minded politically affiliated business people will sustain to maximize profit in the short-term without considering public convenience. Thus economy will be benefited in the short-term with the transient effect of high economic growth but will falter in the future due to not accommodating for highly innovative people who thinks for themselves as well as for the general public.

v. Once again the consistent prevalence of high corruption in Bangladesh does not make the economic condition to observe the effect of acute changes which has huge potential to change the course of the economy. There are important correlations between the NSC rate (as mentioned earlier) and the cost of fund which affects the lending rate of the banks. So any sort of inefficiency in the management policies as well as in the political system can make the effect of smaller impacts less visible which will creep up in the future to cause a havoc in the economic system. Government must immediately prioritize the economic and banking factors that has the potential to affect the economy both in the short and long-term. It is highly advisable that government should make economic models where qualitative factors along with quantitative factors are accommodated to make the effect of variables like cost of fund, political stability and others to forecast the approximate probability of the economic sensitivity. If certain effects are not accounted for then the government can have the wrong picture of the economy and only go in one direction without the consequence of making other factors stable.

8.4 Research Question 4 Recommendations

i. As the study pointed out towards the high non-performing loans of the public banks government should try to pinpoint the exact causes of the sharp rise in bad debts. Relative to the state-owned commercial banks the private banks have also experienced a decline in profitability in the recent years although not as much as the decline of the profitability of the state-owned banks. Proper authority should try to investigate the reason for the distinction to the exact level for bringing down the excessive non-performing loans in the public sector.

ii. From the analysis of primary data one of the important comparative factors between the public and private banks was the use of advanced technology. In general the government banks are lagged behind in the use of advanced banking technologies. Due to their conventional banking approach, state-owned banks are not maintaining

digitalized customer database system, better loan monitoring software modules and better customer information to make the appropriate decision regarding the loan selection and approval. State-owned banks of Bangladesh definitely should make comparative judgment between themselves and other bank group to reformulate their strategies regarding the old banking systems.

iii. Many respondents in this study have mentioned about the willful defaulters ubiquitous prevalence in the public banking sector. In general, willful defaulters are those who have the ability to pay but does not have the intention to repay the bank loans. Compared to the private banks the public banks are plagued with customers with bad loan history for which the image of the state-owned banks has not revitalized. Public banks should stop providing loan facility to the bad borrowers by properly analyzing the credibility of the clients in a consistent manner. Database for every willful defaulter should be maintained by every banks in the light of the any recent and potential scandals. Money loan court in this regard should be armed with necessary power to make appropriate judgments. To make the court more reliable and effective the Money Loan Court Act-2003 should be amended. Furthermore, the capacity of the money loan court in terms of manpower and bench should also be enhanced to reduce the lengthy process of the legal course. The pending cases of the money loan court should be resolved at the earliest possible time through the modification of their existing capacity. Many countries have adopted sophisticated approaches to discourage the action of willful defaulters. Similarly, different restrictions must be adopted in our country also to change the attitude of such people. Restrictions in air flight and passport facilities with other lavish expenditures should be discouraged as the punishment of such illegal actions. These course of actions taken against the corrupt personnel (willful defaulters) will create apprehension in the mind of any future willful defaulters.

iv. In the last six to seven years public banks have faced a number of incidents regarding fraudulence and corruption. Some defaulted-borrowers have diverted huge amount of money from banks for personal gains and profits without considering the impact it would have on the economy. Furthermore, capital-flights have taken place through many banks by over & under invoicing, false declaration on goods & services etc. Some banks in this case have played an associative role to act with the bad intention of the borrowers. Management of some banks has been

seriously influenced by the politicized system as well as by the internal corruption. Higher level management officials in many banks have been found in collusion with the willful defaulters and corrupted political persons to afflict their bad intentions over the banking industry. Board members of banks have been found in many instances to be politically motivated and driven to make excessive loan sanctioning decisions for the benefits of the willful defaulters. Board members of the state-owned commercial banks have been found to be more politicized than that of the private commercial banks. Board members of such banks are connected with unethical politicians for which the willful defaulters get the audacity to act against the interest of the economy. In this regard certain measures must be taken to depoliticize the board committee both in private and state-owned commercial banks. Members of the board must not be appointed through political collaboration rather through appropriate test, evaluation of their education, professional qualification and other matters. Board of directors must be appointed neutrally independent of political affiliation. In this regard, honest, wise and experienced bankers, financial planners, economists, university professor from relevant field should be elected for the positions of board of directors. Ministry of Finance must not exercise the power of appointing the board of directors or chairman of public banks rather a democratic participation from all the sides should be formulated to appoint the appropriate person with the above-mentioned criteria.

This study also recommends for setting up grading system for the MDs and CEOs of the SCBs, to evaluate their performance and introduce incentive system for proper accountability and efficiency of the board of directors.

v. Poor customer service has been a major criterion with which any general public can identify a bank to be a state-owned. Moreover, state-owned banks have always been behind in branding and marketing their mission, vision and financial products. Compared to the private banks, the condition in the public banks has become worrisome for the low customer satisfaction and less marketing effort due to the way of banking of the public banks. So state-owned banks must regain the confidence of borrowers and depositors through flexible, well-mannered and after banking service. As the depositors and borrowers are the focal point of the banking activities, state-owned commercial banks should leave-off their reactive attitude

towards the customers to pick up a more pro-active manner in building long-term relationship with the clients and stakeholders.

vi. State-owned commercial banks in particular should increase their experiences in the legal matters to overcome the ineffectiveness of the effort of loan recovery. Aside from the bank-specific effort to increase recovery, government should increase the bench and number of judges dealing with Money Loan Court Act-2003 and Bankruptcy Act-1997 for quickening the loan recovery by the bank management. In many cases it has been found that borrowers exercise the option to use the stay-order from the court to delay the payment of loans. This causes the recovery process of the banks to slow down. Government should increase their effort to come to a decision regarding the pending issue of these stay-orders against the loans. Concerned authorities should give out final judgment regarding these stay-orders to remove the hassle of recovery from the shoulders of the banks.

vii. As this study indicates towards a huge amount of capital injections in the state-owned commercial banks, similar concern against the trend of loan write-off has also been portrayed. As more and more loans are being written-off from the balance sheet of the state-owned banks, government is recapitalizing to prevent those banks from going bankrupt. In this scenario the politicized system comes into play. Most of the loans in the state-owned commercial banks are somehow related to political reference. The borrowers' stakes are held by the capitalization of those banks because if enough capital is not injected into the banks then the profits of those borrowers will be at stake. Government should discontinue the capital injection into the state-owned banks and take exemplary legal actions against the willful loan defaulters.

8.5 Other Recommendations

i. **Developing tools to identify the credit rating of the individual borrowers:** Bangladesh Bank should introduce individual credit rating before giving out any credit rating to individual borrowers. Although banks use CIB report to make judgment, individual credit report will reveal any collusion between any individual willful defaulters of the past. Individual credit rating can tagged with the national ID card of the individuals.

ii. **Interacting with the borrowers to solve problems:** It is not enough only to visit the client one or two times rather to solve any problems bank official must get out in the field to find out the exact problems that are causing the non-performance of the loans. Priority based meeting with the customer should be organized when banks feel the problem is getting out of hand. So face to face interaction with the borrowers is an essential step towards understanding any loan related problems to get to a fruitful solution for both parties.

iii. **Proper Documentation:** Before handing out any loans banks must go out of the ordinary procedures (if needed) to find out any documentation that will make the borrowers credibility more clear to the managements of the banks. All the documents required to prove a borrower's credulity must be examined thoroughly to make judgmental values.

iv. **Early alert system:** To track any problematic loans effectively and efficiently formulation of early alert system about the condition of loans must be taken into account. Early report about the bad condition of loans can be used to alert the branches to avoid non-performing loans.

v. **Early resolution of court cases:** Proper authority should make necessary steps to come to an early resolution for problematic loans.

vi. **Recovery of bad loans**: Based on the current condition of non-performing loans in the banks this study suggest that banks should be prompt in recovering the funds blocked in the bad loan condition which will reduce the credit risk condition. Recovery of loans will also make the banks more liquid which will be helpful to meet the demand of depositors. The legal team of the state-owned commercial banks should be more pro-active to recover the loans which have been in a non-performing state.

vii. **Appropriate rate of the savings certificate:** Recently, in many newspapers the effect of national savings certificate on the interest rate of the banks has been highlighted over and over again. This concern is justified because when the national savings certificate (NSC) rate soars the depositors withdraw fund from the banks and this created liquidity crisis in the economy. This recommendation is specifically toward the government side because the difference between the cost of funds and

national savings certificate rate runs the possibility of rising lending rate which could trigger non-performing loans in the long-run.

viii. **Minimizing the spread of the banks:** Banks should maintain minimum spread in order to keep the lending rate at minimum so there is enough scope for any good borrowers to utilize the funds to contribute to the economy.

ix. **Flexible monetary policy:** Bangladesh Bank should oversee that the monetary policy rate is properly adjusted in the market because many banks can exploit the higher lending rate or at least they could raise their lending rate for the overall cost of fund of the banking sector.

x. **Timely Loan write-off:** Bad loans that have been kept in the book for too long should be written off because the extra provisions can make the profit of the banks decline and can make them aggressive to go for bad borrowers with higher rate.

xi. **Efficiency of credit regulatory institutions:** The Money Loan Court should be made more efficient in dealing with the non-performing loans quickly. The extra time makes the banks keep provision which is taking share from the profit of the banks.

xii. **Reduction of cost of fund:** From our empirical findings, it is evident that bank should reduce the cost of fund and lending rates for bringing down the non-performing loans by creating market equilibrium situation between loan demand and supply of deposit. In the market equilibrium situation, deposit rate will stay in favorable position. Less cost of the fund will reduce lending rate which encourages borrowers to keep their loans regular and the bank can also drive for collect bad loans amount.

xiii. **Flexible interest rate:** For reducing the cost of fund, the bank should reduce operating expenses and cost of deposit subject to create available investment opportunity by the public and private sector in Bangladesh. For minimizing non-performing loans bank should aware about the borrower's business operations and regularly follow up their financial and other indicators in a realistic manner. A bank has to ensure that proper utilization of credit facility that means under the purpose for which it is lent. Raise an early alert on the appropriate time for taking safeguard of the bank.

xiv. **Strengthening monitoring:** The bank should take the initiative to develop specific tools and techniques to differentiate the willful defaulters from the genuine ones. The bank should also stop unhealthy competition among them. Bangladesh Bank should strengthen the supervisory & credit risk monitoring functions and apply strict guidelines regarding interest rate spread for private commercial banks.

xv. **Creating loan monitoring cell:** Each and every bank must implement proper loan monitoring cell for close inspection. In this regard intelligent monitoring cell should be implemented in every banks and the easy writ facility should be stopped for the bad borrowers.

xvi. **Proper investigation:** The first and foremost strategy a bank can deploy to make their loans fruitful is to make proper investigation about the client and the business or the projects. If banks make proper investigation before giving out loan to the borrowers even at the expense of large expense then the benefit will become visible in the long-run. On the other hand only by speculation or gaining information from the references cannot make all the loans viable. So finding out the correct information about the clients is a must in order to control the rise of non-performing loans.

xvii. **Introduction of Asset management companies:** Banks can sell their non-performing loans to the third parties such as to investors or to a special purpose securitization vehicle or to an asset management company (AMC). This way the third party can collect the money from the clients and it may turn out to be a positive scenario for the banks as well as for the third party.

xviii. **Strong credit policy regarding collateral free loan for the politically exposed:** Politically exposed people or those who have strong regional influence sometimes try to get collateral free loan by avoiding proposals. Banks should be strict in setting the standard for the credit assessment and collateral acceptance criteria.

xix. **Physical visits of the projects:** The banks should inspect or the client's project more frequently.

xx. **Valuation of collateral and valuation policy:** The banks should increase their valuation measure and their valuation policy regards to the collateral of the loans. Collateral must be properly valued in accordance with the laws of the country.

Necessary margin of security must be taken to reflect such factors as the disposal costs or potential price movements of the underlying assets.

xxi. **Political stability:** Political environment should be stable for the regular day to day business activities. Without proper stability the progress of the economy becomes hampered which lowers the profits of the companies and this reduces the chance of the companies to repay their loans to the banks.

Chapter Nine: Policy implications

According to this empirical analysis, the policy implication is strictly centered on the credit policy of banks at different time of economic growth. These actions and policies of banks regarding their loan appetite have the ability to affect the credit quality even in the longer time frame.

9.1 Research Question 1 Policy Implications

i. The finding of this analysis suggests that excessive credit lending today has implications in the long-run. When banks try to compete with other banks by raising the limit of the loans excessively, the risk associated with it gets absorbed not only in the short run but also in the long-run. To be more specific, if banks include loans with poor quality in their portfolio, the risk not only can come up in the shorter time frame but also in the longer course of time. Higher risk through higher loan-deposit ratio implies that banks must have some reasons to sanction loans by violating the prescribed loan deposit ratio by Bangladesh Bank. This empirical analysis hints towards the credit policy of banks which has the potential to increase the risk and thus deteriorate the condition of loans.

ii. The previously mentioned repercussion of arbitrary lending policy of banks brings about another finding of this paper. In Bangladesh, the effect of GDP is sluggish (details can be found in research question 1 interpretation) in terms of its effectiveness on the performance of banks as cited in many of the previous literatures. To be more specific, the effect of GDP growth does not immediately affect all the economic indicators. In times of good economic growth, banks have the tendency to give more loans particularly long-term loans to finance long-run project due to the expectation of long lasting economic growth. This is true in terms of both good borrowers and bad borrowers because in good economic time bad borrowers may have access to credit facility along with the good borrowers. When the economy experiences a relatively low growth, the good borrowers may withstand the low growth or even cope with sudden shocks but the bad borrowers may not face the challenges that eventually increase the non-performing loans in the long-run. In times when investment opportunity in industry and infrastructure is relatively scarce, offering excessive loan facility to the borrowers for long-term

must be analyzed thoroughly otherwise banks may run into critical situation when the performance of the loans will be extremely poor.

iii. Due to the impact of bank size, banks should reevaluate their lending policy and re-assess their ability and limit to disbursement loans every quarter based on their management capacity and capability. Every bank cannot just continually increase their loan growth rate without assessing the capacity of their ability to monitor and bear cost of evaluation. Government should continually assess the asset-liability management of banks to better understand the capacity at which each bank operates at different time frame.

iv. Banks should pay more attention to their loan growth or investment growth in times of inflation. Banking policy should be reassessed when inflation rate changes because of its impact it could have on the interest rate.

v. Market power lowers the NPL ratio of banks in the short run in every model but becomes more significant in inflationary time. Again lending policy seems to play a vital role in explaining the rise of non-performing loans in the longer time frame. Banking policy should include prudential regulation regarding excessive loans disbursement during boom period. Market power seems to be more significant in during economic growth which has extremely important policy repercussions.

9.2 Research Question 2 Policy Implications

i. National savings certificate (NSC) rate has important policy implications in determining the rate of cost of deposit of the banks. As the investment opportunity in Bangladesh is scarce in terms of financial instruments, people can deposit money in the banks, put money in the capital market, buy real estate properties or invest in the government financial instruments etc. In Bangladesh when the rate of national savings certificate inclines it affects the cost of funds of the banks. People try to invest more in NSCs in this scenario. This forces the banks to increase the rate of the deposit rate which ultimately affects the lending rate. Lending rate inclines in this case which puts pressure on the borrowers' ability to pay back the loans in time. Government should address the issue of this mismatch between the NSC rate and bank deposits rate to create a more balanced environment where banks don't fall into a liquidity crisis. If this issue is not resolved then banks run the risk of incurring non-performing loans for the higher lending rate.

ii. Currently, the gap between the cost of fund and the lending rates of different banks vary by size and functionality. In an economy where every information regarding the investments rates are properly distributed depositors will move only to those areas where the rate of return is higher. Borrowers will move only to those institutions where they will have to provide the lowest possible rate. For this information gap about the interest rates many inefficient banks gets funds in the form of deposits and others and give them as loans to stay in the market. Assuming every people knew what was going on in every parts of the economy banks could not have gained profit by charging rates other than the market equilibrium. If certain market cap for the spread of every banks were determined or imposed than the communication gap regarding the interest rates would have been neutralized. If Bangladesh Bank can create a similar interest spread cap for every banks (which every banks would have to abide by) then the banking industry will move to an equilibrium point where risk exposure regarding the cost to fund and lending rate would have been minimized.

iii. Higher cost of fund has interesting implication in terms of its effect on the lending rate. The process through which the effect of a change of cost of fund occurs to impact the non-performing loans is of particular interest. The existing literature of interest rate suggests that higher cost of fund influences the lending rate and higher lending rate can affect the credit quality in the long-run. In this regard this study also found that the effect of cost of fund can be longer than usual which according to the literature if influences the lending rate can also influence the lending rate in the long-run according to the findings of this paper. Banks should be alert on the sudden rise in cost of funds due to monetary policy and market competition.

9.3 Research Question 3 Policy Implications

The implication the questionnaire survey, regarding the determinants of non-performing loans in Bangladesh constitutes a vast array of possibilities. The findings from the field survey report reveal the general perception of the bankers and borrowers. These findings may explain the ineffectiveness of Bangladesh's economic growth that does not fully reflect the haphazard situation prevailing in the banking sector. In the Figure 14 the first six factors indicate the bank-specific variable that reveals the most important factors of rising bad loans in the banking sector of Bangladesh.

i. Interestingly, the effect of political instability has come after the banks' specific inefficiencies. This reveals that even in the presence of politically stable environment, the inefficiencies of banks have covered the effect of a stable political scenario on business environment which otherwise could affect the business in a less inefficient banking system. The inference of this understanding leads to the bad decision of government in fixing the bad loan culture of Bangladesh. When banking corruption is at its peak striving for higher economic growth without fixing the internal hazard will portray the wrong scenario of a country. The achievement of higher per capita income will be shadowed through the corruption of the banking system. In the context of Bangladesh, the political stability reflects the loan quality because of the nepotism and "political selection" culture. Most of the time, politically influenced person gets loan not because of their credit worthiness but because of their influence over the bank management which also can explain the factor of nepotism affecting the bad loans. When banks lend political influenced persons it can be considered as both nepotism and "political selection" which ultimately induces the possibility of delayed and irresponsible interest payments.

ii. Likewise, the impact of bad business condition is not as much problematic as the problems of bank management and political influence according to the one half of the respondents. This explains that there is a high business entry barrier in Bangladesh which explains that new business or even existing businesses falter quickly because of their inability to stay ahead in the competition.

iii. In terms of lending rate and cost of fund most of the respondents agreed that higher rate inclines the possibility of loan default because of "floating rate". 36% either disagreed or stayed neutral which indicates that they may feel that there are other problems which are much more severe than the higher interest rate. It may be so but the criticality of higher interest rate becomes crucial and noticeable in certain economic conditions which otherwise may be elusive because of high persistence of corruption in the banking sector.

iv. With the current amount of non-performing loans in the economy introduction of new banks can heighten the risk of non-performing loans. In the last five to six years deposit growth of the banking industry has been declining. According to Bangladesh Bank, in 2013 the deposit growth rate of the whole banking industry was 25.5% which declined to 4.6% in 2017. As major portion of the financing of

the banking industry come from the deposit money it could be detrimental to the banking sector to introduce new banks when there is not enough supply of deposits. In this scenario, more banks can increase the pressure on the banks which can trigger the banks to go for poor quality of borrowers. Furthermore, it is advisable that bigger efficient banks takeover weaker inefficient banks to minimize the cost and the effect of non-performing loans on the economy. If performing banks take over the weaker banks then efficiency level of the banks has the possibility to get better.

9.4 Research Question 4 Policy Implications

i. In this study, the analysis found that higher cost to income ratio (efficiency) does not significantly affect the profitability of the state-owned commercial banks. This has severe implications in the long-run because of the regular capital injection by the government. If this continues in the future, huge amount of money will be diverted in the non-productive sectors of the country. For a developing country like Bangladesh, this type of extravagant injection for the unproductive investments could hamper the long-term development of the country.

ii. This study proposes that willful defaulter gets the audacity to neglect the laws of borrowing through the liaison of corrupted bank officials and politicized economic system. If this continues then in the long-run, public welfare can be hindered and delayed. If proper identification of the willful defaulters to general defaulters is left unsolved then banks will always be in a risky situation of facing the non-performing loans in the future. Bangladesh Bank and other regulatory authorities should set up policies and criteria for identifying the willful defaulters. Based on the policies and criteria, banks should create separate databases of willful defaulters and send that information to Bangladesh Bank for further assessment. Bangladesh Bank and others regulatory authorities should create separate database from which all the banks can gain information about the credibility of the borrowers. If any borrower is identified as willful in nature, it should be mentioned in Credit Investigation Bureau (CIB) report. Furthermore, no additional credit facilities will be approved by the banks and financial institutions to the willful defaulters as appearing in the list provided by Bangladesh Bank. In the similar manner, family members of the

willful defaulter should also be prohibited from getting any loans from any financial institutions.

iii. Banking reform commission should be introduced to protect and promote the welfare of banks and other stakeholders. This commission should also strive to make the banking sector more transparent and responsible. Committee members of the reform commission should not be selected based on any political affiliation. Moreover, the members must have social acceptability and impartial position in the country. Adopting the banking reform commission can increase the credibility and ethical nature of the banking industry which has the potential to bring down non-performing loans.

iv. This research found insignificant relationship between loan recovery and profitability of the state-owned banks. This is due to the mismatch of loan write-off and loan recovery. As the loan write-off to loan recovery increases the effect of recovering loans become negligible. If this continues then the government will have to spend extra amount of resources from the tax payer's money and thus will slowdown economic growth. In this regard, the pending cases due to loan default should be resolved as quickly as possible to increase the recovery of bad loans of the banks.

v. Government should increase the bench and number of judges dealing with Money Loan Court Act-2003 and Bankruptcy Act-1997 for quickening the loan recovery by the bank management. Furthermore, Money Loan Court Act (2003) and Bankruptcy Act-1997 should be amended to impel the process of loan recovery. Special benches should be added to the court to resolve the long-term pending cases which will improve the recovery rate of the banks.

vi. State-owned commercial banks are constantly struggling with non-performing loans and increasing the risk of plundering the depositors money. This study suggests that government should take the policy for the interim period that state-owned banks should only collect deposits from the market to give out as loans only in the inter-bank market to reduce the risk of plundering public money. If this is properly implemented then the recapitalization that takes place each year won't be necessary and thus a huge amount of tax money will be saved.

Chapter Ten: Study for Further Research

i. Further research can be done in understanding any other macroeconomic and bank-specific factors that might be effective in a particular time frame.

ii. As this study found the significant effect of lagged per-capita GDP on the loan quality it is possible to find other important effect of GDP on different categories of loans.

iii. The effect of tax on the quality of loans should be rigorously investigated controlling for important macroeconomic factors.

iv. Studies are also needed on actual loan wise lending rates and net non-performing loans to identify the levels of provision among commercial banks.

v. In future, the relationship between the monetary policy transmission mechanism and the non-performing loans should be undertaken to better understand the effects of government and central bank's policy on the credit risk of the banking sector.

vi. Another study on cost of fund and non-performing loans can be conducted on a cross country basis to understand the effects of a country's cost of fund on the asset quality.

vii. Comparative analysis can be conducted between different bank groups like foreign bank, state-owned banks and foreign banks and local banks.

viii. Econometric analysis in determining the factors of non-performing loans of the Islamic banks in particular can be conducted.

ix. Econometric analysis through static model and dynamic model can be simultaneously conducted to find out any "model specific findings" which could be possibly missing if conducted with only one model. The distinction can be used to find out the exact model through which the banking sector in Bangladesh evolves.

x. Same analysis could be run with different models to understand the result or different results (if any) to better interpret the findings to come to a new way of understanding of the economic phenomenon.

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Appendix

Appendix I: Questionnaire on the bankers' and borrowers' perception on the rising non-performing loans (NPLs)

NAME:	OCCUPATION:
GENDER:	DESIGNATION:
SIGNATURE:	

1. *Please convey your valuable opinions only from the perspective of Bangladesh.*
2. *Please **tick the box** to provide a **cause of NPLs** rather than effect of NPL.*
3. *Please reply to all the statements.*
4. *Your identity will be kept anonymous if you don't want yourselves to be revealed.*

	Statements Causes of NPLs	Scales				
		Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
		1	**2**	**3**	**4**	**5**
1	The current condition of the rising non-performing loan to total loans (NPL ratio) is critical in Bangladesh.					
2	The current Aggregate Loan amount in the banking sector in Bangladesh is *not that much* which could affect the economy as a whole.					
3	High Energy crisis increase the NPLs.					
4	Timely Budgetary expenditure reduce NPLs					
5	Higher political instability increases NPLs					
6	Higher number of banks increase NPLs					
7	Declining "Ease of doing business" increase NPLs					
8	Merging of the banks can reduce NPLs					
9	Higher exchange rate increase NPLs					
10	Higher unemployment rate will cause higher NPLs					
11	Higher inflation rate will induce higher NPLs					
12	Rising GDP growth reduces NPLs					
13	Less profitable banks incur more NPLs					
14	Lower management efficiency increase NPLs					
15	Better loan monitoring results lower NPLs					
16	Banks with better IT and MIS incurs less NPLs					
17	Higher lending rate causes the NPLs to rise					
18	Higher cost of fund increases NPLs					
19	Unhealthy competition among banks increase NPLs					
20	Higher banking corruption increases NPLs					
21	Good loan evaluation lowers the chance of NPLs					
22	Nepotism causes NPLs					
23	Loans with inadequate collateral increases NPLs					
24	Loans against Letter of Credit (inland) increase NPLs					
25	Better credit rating of the clients reduce NPLs					
26	Lower fund diversion by borrowers reduce NPLs					

Appendix II: Questionnaire for the comparison between state-owned commercial banks (SCBs) and private commercial banks (PCBs)

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
		1	2	3	4	5
1	The rising of non-performing loans in SCBs is more severe than it is in PCBs.					
2	Political influence increases the NPLs of SCBs much more than it does in private commercial banks (PCBs)					
3	Bangladesh Bank is less strict against the SCBs than PCBs					
4	Rescheduling of NPLs is greater in SCBs than that in PCBs					
5	Financial statements of SCBs are less reliable than those of PCBs.					
6	Cost inefficiency has no significant effect on the profitability of the State-owned commercial banks than that of PCBs.					
7	The effect of NPL on the profitability is more severe in SCBs than it is in PCBs.					
8	The loan write-off has more effect on the PCBs profit than it has on the profit of SCBs.					
9	Loan recovery has significant effect on the profitability of SCBs than PCBs					
10	Capital injection is more in SCBs than it is in PCBs.					
11	Willful defaulters are more interested in taking loans from public banks than from PCBs.					
12	SCBs are more aggressive towards branding and marketing of their products than PCBs					
13	Corruption is more prevalent in SCBs than it is in PCBs					
14	SCBs are more reluctant to advance technology than the PCBs					
15	Banker are less bothered with the management of rising of NPLs than those in PCBs.					
16	Loans against Letter of Credit are more likely to default in SCBs than in PCBs.					
17	Bangladesh Bank is incapable of monitoring the SCBs due to the politicized government policy which is causing the rise of NPLs in the Public banks.					
18	Customer service is better in SCBs than it is in PCBs					

Appendix III: Banking sector year-wise gross NPL ratio and its composition

in %

Year	Gross NPL to Total Loans Outstanding	Sub-Standard Loans to Gross NPL	Doubtful Loans to Gross NPL	Bad Loans to Gross NPL
2007	13.2	9.8	7.5	82.7
2008	10.9	9.4	9.4	81.1
2009	9.2	12.2	8.4	79.4
2010	7.1	13.4	8.4	78.1
2011	6.2	14.8	11.5	73.8
2012	10	19.1	14.2	66.7
2013	8.9	11.2	10.1	78.7
2014	9.7	11	11.2	77.8
2015	8.8	8.9	6.5	84.6
2016	9.2	10.2	5.4	84.4
2017	9.3	7.5	5.5	87

Source: Bangladesh Bank financial stability report, 2017

Appendix IV: Banking sector NPL composition (CY17)

	Amount		**% of Gross NPL**	
Amount in Billion BDT	CY2016	CY2017	CY2016	CY2017
Sub-Standard	63.6	55.6	10.2	7.5
Doubtful	33.7	41.2	5.4	5.5
Bad & Loss	524.5	646.2	84.4	87
Total	621.7	743	100	100

Source: Bangladesh Bank financial stability report, 2017

Appendix V: Banking sector deposits breakdown excluding interbank deposit (CY-17)

	Amount in Billion BDT	
Items	Amount	% of total deposits
Current Deposits	2048.1	20.20%
Savings Deposits	2015.1	20.00%
Term Deposits	5174.2	51.10%
Other Deposits	881.9	8.70%
Total Deposits	10119.3	100%

Source: Bangladesh Bank financial stability report, 2017

Appendix VI: Banking sector selected ratios

Ratio in %	CY13	CY14	CY15	CY16	CY17
ROA	0.9	0.7	0.8	0.7	0.7
ROE	10.7	8.1	9.4	9.7	10.4
Net Interest Margin	2.1	1.8	1.7	1.9	2
Interest Income to Total assets	7.7	6.9	6.2	5.5	5.4
Net interest income to total assets	1.7	1.5	1.5	1.5	1.7
Non-interest income to Total assets	2.7	2.8	2.7	2.4	2.2
Non-interest expense to Gross operating income	47.1	46.5	48.6	53.3	52.4
CAR/CRAR	11.5	11.4	10.8	10.8	10.8
Gross NPL to Loans Outstanding	8.9	9.7	8.8	9.2	9.3
Gross NPL to Capital	59.8	67.7	60.8	74.2	81.6
Maintained Provision to Gross NPL	61.6	56.2	51.8	49.4	50.5

Source: Bangladesh Bank financial stability report, 2017

Appendix VII: Banking sector year-wise ADR

in %	
Year	**Advance to Deposit ratio (ADR ratio)**
2013	71.2
2014	71.0
2015	71.0
2016	71.9
2017	75.9

Source: Bangladesh Bank financial stability report, 2017

Appendix VIII: NPL ratio of different bank groups

	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
SCBs NPL %	25.4%	21.4%	15.7%	11.3%	23.9%	19.8%	21.5%	25.1%	26.8%
DFIs NPL %	25.5%	25.9%	24.2%	24.6%	26.8%	26.8%	23.2%	26.0%	23.8%
PCBs NPL %	4.4%	3.9%	3.2%	2.9%	4.6%	4.5%	4.9%	4.6%	5.8%
FCBs NPL %	1.9%	2.3%	3.0%	3.0%	3.5%	5.5%	7.8%	9.6%	7.9%
Total NPL %	9.2%	7.3%	6.1%	10.0%	8.9%	9.7%	8.8%	9.2%	10.1%

Source: Bangladesh Bank financial stability report, 2017

Appendix IX: ROA of different bank groups

	2009	2010	2011	2012	2013	2014	2015	2016	2017
SCBs NPL %	1.00%	1.10%	1.30%	-0.56%	0.59%	-0.55%	0.04%	-0.16%	-0.63%
DFIs NPL %	0.40%	0.20%	0.10%	0.06%	-0.40%	-0.68%	1.15%	-2.80%	-1.60%
PCBs NPL %	1.60%	2.10%	1.60%	0.92%	0.95%	0.99%	1.00%	1.03%	0.68%
FCBs NPL %	3.20%	2.90%	3.20%	3.27%	2.98%	3.38%	2.92%	2.56%	2.15%
Total NPL %	**1.40%**	**1.80%**	**1.50%**	**0.64%**	**0.90%**	**0.64%**	**0.77%**	**0.68%**	**0.34%**

Source: Bangladesh Bank financial stability report, 2017

Appendix X: ROE of different bank groups

	2009	2010	2011	2012	2013	2014	2015	2016	2017
SCBs NPL %	26.2%	18.4%	19.7%	-11.9%	10.9%	13.6%	-1.5%	-6.0%	-19.4%
DFIs NPL %	-171%	-3.2%	-0.9%	-1.1%	5.8%	6.0%	-5.8%	13.9%	-8.1%
PCBs NPL %	21.0%	20.9%	15.7%	10.2%	9.8%	10.3%	10.8%	11.1%	7.5%
FCBs NPL %	22.4%	17.0%	16.6%	17.3%	16.9%	17.7%	14.6%	13.1%	10.8%
Total NPL %	21.7%	21.0%	17.0%	8.2%	11.0%	8.1%	10.5%	9.4%	4.7%

Source: Bangladesh Bank financial stability report, 2017

Appendix XI: Cost to income ratio (efficiency) of different bank groups

	2009	2010	2011	2012	2013	2014	2015	2016	2017
SCBs NPL %	76%	81%	63%	73%	84%	84%	85%	90%	88%
DFIs NPL %	112%	88%	89%	91%	95%	100%	114%	138%	133%
PCBs NPL %	73%	68%	72%	76%	78%	76%	76%	74%	75%
FCBs NPL %	59%	65%	47%	50%	50%	47%	47%	46%	46%
Total NPL %	73%	71%	69%	74%	78%	76%	76%	77%	79%

Source: Bangladesh Bank financial stability report, 2017

Appendix XII: Writing-off bad debts in billion BDT of different bank groups

	2009	2010	2011	2012	2013	2014	2015	2016	2017
SCBs NPL %	64.5	70.5	82.4	72.9	107.2	154.8	210.3	220.4	222.2
DFIs NPL %	31.8	31.8	32	24.5	32.6	34.2	5.6	5.6	5.6
PCBs NPL %	54.7	69.6	77.1	64.9	109.7	127.7	155.5	189.4	211.5
FCBs NPL %	2	2.1	2.4	2.6	3.7	4.4	5.1	7.2	8.1
Total NPL %	153	174	193.9	164.9	253.3	321.1	376.5	423.2	447.3

Source: Bangladesh Bank financial stability report, 2017

Appendix XIII: Writing-off bad debts in billion BDT of different bank groups

	2009	2010	2011	2012	2013	2014	2015	2016	2017
SCBs NPL %	224.8	227.1	226.4	427.3	405.8	501.6	594.1	621.7	741.5
DFIs NPL %	134.8	149.2	148.2	242.4	252.4	289.6	308.9	362.1	436.4
PCBs NPL %	137.9	142.3	152.7	189.8	249.8	281.6	266.1	307.4	374.5
FCBs NPL %	3.1	-6.9	4.6	-52.6	-2.6	-7.9	-42.8	-54.7	-61.9
Total NPL %	102.3	95.4	103	78.3	99	97.2	86.1	84.9	85.8

Source: Bangladesh Bank financial stability report, 2017

Appendix XIV: Overall banking industry loans and deposits of different bank groups

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Deposits in Billion BDT	2793.9	3379.2	4115.9	4864.1	6105.3	6931.1	7939.8	8994.1	9404.3
Yearly Deposit addition in Billion BDT	477.9	585.3	736.7	748.2	1241.2	825.8	1008.7	1054.3	410.2
Advances in Billion BDT	2090.5	2574.4	3212.8	3859.3	4438.4	5076.3	5798.6	6686.6	7218.8
Yearly Advance addition in Billion BDT	275	483.9	638.4	646.5	579.1	637.9	722.3	888	532.2
Loan growth rate	15.1%	23.1%	24.8%	20.1%	15.0%	14.4%	14.2%	15.3%	8.0%

Source: Bangladesh Bank financial stability report, 2017