
DHAKABANK
LIMITED
EXCELLENCE IN BANKING

Effect of liquidity risk in the profitability of banks: Comparison between Dhaka Bank Ltd and the overall industry

Submitted by

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29 November, 2018

Mr. Shamim Ahmed

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Subject: Submission of report for completion of course

Dear Sir,

This is to inform you that I have completed the report on my current organization, Dhaka Bank Limited. The report focuses on the liquidity risk and its effect on profitability on Dhaka Bank Limited. The report has been prepared for the completion of the course.

In writing this case, I have followed your instructions for report writing so as to present my views and understanding in the easiest way. However, I will be glad to clarify any discrepancy that may arise.

Thank you.

Sincerely,

Zuhaier Shams

ID- 14304050

The Internship Report entitled **"Liquidity risk and its effect on the profitability on Dhaka Bank Limited"** has been submitted to BRAC Business School, for the purpose of completing the degree of Bachelor of Business Administration, by Md.Zuhaier Shams, ID- 14304050, concentration in Finance and Economics from BRAC University. The report has been accepted and will be presented to the Internship Defense Committee for evaluation.

I wish every success and prosperity of his career and life.

Shamim Ahmed
Internship Supervisor Faculty
Lecturer & Assistant Coordinator
BRAC Business School
BRAC University

Acknowledgement

At first, I would like to thank the Almighty for giving me this opportunity to work as an employee of one of the most renowned bank, Dhaka Bank Limited and work on their Central Processing Center (CPC) department.

I thank Mrs. Khandakar Nazmun Nahar, Senior Vice President, for giving me the opportunity to work in the Back to Back letter of credit division and also for giving me the privilege to explore the project in writing.

Last, but not the least, thank you to my family and friends, my colleagues at Dhaka Bank Limited for all their support. Without your encouragement, I would not have made it this far.

Executive summery

This report tried to find the relationship between liquidity risk and the profitability of the banks. It is found that liquidity risk affects the profitability of the banking industry but it does not affect the profitability of Dhaka Bank Ltd.

Banks have been facing increasingly more demand for loans from the private sector after having excess liquidity for quite a long time since December 2017. A few banks in the industry have exceeded the allowable advance to deposit ratio (ADR) of 85 percent which is a violation of one of the macro-prudential policies of Bangladesh Bank. For this reason, Bangladesh Bank has advised banks to reduce the LDR to 83.5 percent by December 2018. As a result, liquidity risk in the banking sector is increasing.

The report also contains an overview on Dhaka Bank Ltd as well as the Back to Back LC payment division of CPC trade department

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About the organization

Dhaka Bank Limited is one of the leading private commercial banks in Bangladesh. It was established in July 5, 1995. It is now an admired provider of financial services to the people and has positioned itself as a strong brand in the mind of customers.

Vision

Vision is the long term goal of an organization. It is the position where an organization wants to reach in future. The vision of Dhaka Bank is to assure a standard that makes every banking transaction a pleasurable experience for the customers.

Mission

Mission is the things that an organization wants to do to reach its long term goal. This bank wants to achieve its long term goal by establishing itself as the premier financial institution in the country providing high quality products and services. So, this bank tries to offer supreme service through accuracy, reliability, timely delivery, cutting edge technology and tailored solution for business needs, global reach in trade and commerce and high yield on investments.

Corporate values

Corporate values are the operating philosophies that guide an organization's internal conduct as well as its relationship with its stakeholders. This bank maintains 6 corporate values. They are-

1. Customer Focus
2. Integrity
3. Quality
4. Teamwork
5. Respect for the Individual
6. Responsible Citizenship

Strategic objectives

Dhaka Bank has 7 strategic objectives. They are-

a. Providing customers continually efficient, innovative and high quality products with excellent delivery system.
b. Generating profit with qualitative business as a sustainable ever-growing organization and enhance fair returns to our shareholders.
c. Contributing towards the progress of the nation as a corporate citizen.
d. Promoting the wellbeing of the employees through attractive compensation package, promoting staff morale through training, development and career planning.
e. Fulfilling of the responsibility to the government through paying entire range of taxes and duties and abiding by the other rules.
f. Feeling cautious about environment and climatic change and dutiful to make our homeland a green and clean soil.

Ethical principals

Dhaka Bank follows 8 ethical principles. They are-

a. Compliant to our country's laws and regulations.
b. Reject bribery and corruption.
c. Avoid compromised gifts and entertainment.
d. Respond when suspect any actual, planned or potential behavior that may breach any laws and regulations.
e. Compliant to Anti Money Laundering guidelines and other prudential regulations provided by our regulators.
f. Resolve customer complaints quickly and fairly.
g. Maintain confidentiality and fidelity of the customers.
h. Treat the employees with fairness and respect; work with highly motivated team spirit and fellowship bond

Business description

The principal activities of Dhaka Bank Ltd. are accepting deposits, disbursing loans, lease financing, trade financing etc. Key businesses of the bank are diversified into the following categories-

1. Corporate banking
2. SME
3. Retail banking

4. Islamic banking

Subsidiaries

Dhaka Bank has two subsidiaries. They are-

- Dhaka Bank Securities Limited
- Dhaka Bank Investment Limited

Dhaka Bank Securities Limited looks after capital market and brokerage service while Dhaka Bank Investment Limited looks after merchant banking operations.

Board of directors

Mr. Reshadur Rahman is the chairman of Dhaka Bank Ltd and Mrs. Rokshana Zaman is the vice chairman of Dhaka Bank Ltd. In addition to that, Mr. Syed Mahbubur Rahman plays role of Managing Director & CEO for Dhaka Bank Ltd.

Name of Directors	Position
Mr. Reshadur Rahman	Chairman
Mrs. Rokshana Zaman	Vice-Chairperson
Mr. Abdul Hai Sarker	Director
Mr. Altaf Hossain Sarker	Director
Mr. Md. Amirullah	Director
Mr. Abdullah Al Ahsan	Director
Mr. Khondoker Monir Uddin	Director
Mr. Tahidul Hossain Chowdhury	Director
Mr. Jashim Uddin	Director
Mr. Mohammed Hanif	Director
Mr. Khondoker Jamil Uddin	Director
Mr. M.N.H. Bulu	Director
Mr. Mirza Yasser Abbas	Director
Mr. Amanullah Sarker	Director
Mr. Syed Abu Naser Bukhtear Ahmed	Independent Director
Mr. M. A. Yussouf Khan	Independent Director
Mr. Syed Mahbubur Rahman	Managing Director & CEO

Table: Board of Directors

Distribution

In the year 2017, Dhaka Bank has 100 Branches, 3 SME Service Centers, 1 Business Kiosk, 2 Offshore Banking Units along with 56 ATMs and 20 ADMs.

	2013	2014	2015	2016	2017
Number of Branches	74	81	87	94	100
Number of ATMs	46	47	53	54	56
Number of ADMs	14	15	19	20	20

Table: Distribution

Financial performance

In year 2017, the profit after tax of Dhaka Bank increased from 1446 million taka to 1495 million taka. However, net interest margin decreased from 4.58% to 3.90%. Return on asset and return on equity also decreased from 0.77% and 10.15 % to 0.69% and 9.21 %.

	2013	2014	2015	2016	2017
Profit After Tax	1,927	2,029	1,437	1,466	1,495
Net Interest Margin	4.32	4.44	4.02	4.58	3.9
Return on Assets	1.39	1.34	0.86	0.77	0.69
Return on Equity	16.21	15.92	10.74	10.15	9.21
Cost to Income Ratio	42.38	44.47	47.77	38.17	44.49
Earnings Per Share (Taka)	3.56	3.57	2.3	2.13	2.07
Net Assets Value Per Share (Taka)	21.95	22.42	21.41	21.68	20.97
Cost of Fund	12.33	10.96	9.57	7.88	7.35

Table: Financial performance

Along with those, Earnings per share and Net Asset Value per share declined to 2.07 taka and 20.97 taka from 2.13 taka and 21.68 taka. Furthermore, Cost to income ratio inclined to 44.49% from 38.17%.But cost of fund decreased to 7.35 % from 7.88 % of the previous year.

Capital measures

In the year 2017, the core capital of Dhaka Bank Ltd. increased while the supplementary capital of Dhaka Bank Ltd. decreased from the previous year. Capital to risk weighted asset ratio of Dhaka Bank Ltd. also decreased from the previous year.

	2013	2014	2015	2016	2017
Risk Weighted Assets	117,693	137,842	147,343	159,790	182,954
Core Capital (Tier-I)	10,927	12,035	12,643	13,770	14,540
Supplementary Capital (Tier-II)	3,410	3,403	2,765	8,072	7,345
Total/Regulatory Capital	14,817	15,439	15,408	21,841	21,884
Capital to Risk weighted Assets Ratio (CRAR) – solo (regulatory capital/RWA)	12.18	11.2	10.46	13.67	11.96
Tier-I Capital Ratio	9.28	8.73	8.58	8.62	7.95
RWA to Total Assets	81%	87%	84%	79%	80%

Table: Capital measures

However, the amount of risk weighted assets of Dhaka Bank Ltd. increased from the previous year.

About the division

Central processing trade department of Dhaka Bank is divided into 8 divisions. They are the followings-

1. Letter of Credit
2. Acceptance
3. Scrutiny
4. Back to Back letter of credit payment
5. Cash letter of credit payment
6. Local export
7. Foreign export
8. Import (Return)

Back to Back letter of credit department deals with the payment of both local and foreign back to back of letter of credit. In local, this division of works for the payment of back to back letter of credit of 11 branches. Those branches are-

1. Local
2. Foreign exchange
3. Uttara
4. Dhanmondi
5. Karwan Bazar
6. Islamic banking

7. Narayangonj
8. Non Authorized Dealer
9. EPZ
10. Offshore banking
11. Gulshan
12. Gulshan-2

At first, a back to back letter of credit comes to the scrutiny department. Scrutiny division checks whether all the documents which are mentioned as required in the letter of credit are attached or not. If it is found that all the required documents are attached with the letter of credit, it will be considered as complying. But if it is found that any of the required documents are absent, it will be considered as discrepant.

Figure: Work flow process

After that, the letter of credit along with the required documents comes to the acceptance division. Acceptance division calculates the maturity of the payment and informs it to the beneficiary bank. Following that, it comes to the back to back letter of credit payment department. Back to back letter of credit payment department calculates the amount of payment. The amount of payment is calculated by the following way-

Payment = Bill amount-Discrepancy Charge-Foreign Demand Draft/Pay order commission-VAT on Foreign Demand Draft commission / Pay order commission

Discrepancy charge is a type of charge which is considered if any of the documents which are mentioned as required is not present. The amount of discrepancy charge is mentioned in the letter of credit.

Payment can be send to the beneficiary bank by using two ways. They are-

1. Foreign Demand Draft (FDD)
2. Pay order

Foreign Demand Draft (FDD) is an efficient mode of money transfer. It is a written order issued by a bank on behalf of applicant to pay the beneficiary. It is beneficial because it is secure and can only be credited to the specified beneficiary's bank account. When the payment is made in foreign currency such as US dollar, foreign demand draft is used as a mode of payment. On the contrary, pay order is a mode of payment issued by the bank on behalf of the applicant stating an order to pay a specified amount to the beneficiary. When the payment is made in local currency, pay order is used as a way of payment. When any of these used as mode of payment, beneficiary has to bear the cost of it. This cost is called FDD commission or pay order commission. The amount of FDD commission or pay order commission is mentioned in the letter of credit.

According to the central bank, VAT is also needed to pay by the beneficiary on the FDD commission or pay order commission. The amount of VAT is determined according to the circular of central bank. In case of Offshore banking unit, beneficiary need not pay the VAT on FDD commission or pay order commission.

In case of foreign back to back letter of credit, the letter of credit is send to the scrutiny division at first. Scrutiny division looks if all the required documents mentioned in the letter of credit are present or not. If all the required documents are present, it will be considered as compliant while if they are not present, it will be considered as discrepant. Following that, it will be send to acceptance division. Acceptance division calculates when the payment will be matured and informs it to the beneficiary bank. After that, it comes to the back to back letter of credit payment division. This division transfers the payment from its account in the foreign bank which is called "Nostro" account.

Introduction

Banks are the main element of the financial sector in any economy. They perform valuable activities on either side of the balance sheet. On the asset side, they provide loans to borrowers who are in need of liquidity and therefore increase the flow of credit in the economy, while on the liability side they supply liquidity to depositors on their demand (Diamond and Rajan, 2001). Banking sector dominates the financial sector of the country. Economic expansion of the country has been quite impressive from the perspective of GDP growth rate in the last couple of years. Banking sector has played a very important role in accelerating the economic progress of the country through mobilization of resource. This

sector ensures productive investment of capital by helping to develop new industries, easing the payments and settlement systems and assisting in the smooth transfer of goods and services. Through these activities banking sector increase the employment and therefore facilitate the economic growth of the country. But the role of the banking sector in accelerating the economic progress is dependent on the strength of the sector. A healthy and well-functioning banking system makes it easier to efficiently allocate the resources to individuals and organizations. So, the strength of the banking system is vital in ensuring the economic growth. Banking sector of Bangladesh has travelled through a journey consisted of many ups and downs. Different types of reforms measures have been taken at different times for improving the structural limitations of the sector. Those measures have objectives like increasing the strength of the capital base of the banks, simplifying guidelines for rescheduling of various types of loans, tightening provisions for non-performing loans, strengthening disclosure requirements and improving accounting system. These measures have developed the strength of the sector over the years. Recently, banking sector of Bangladesh is facing liquidity crisis. Banks have been facing increasingly more demand for loans from the private sector since December 2017 after having excess liquidity for quite a long period of time. A few banks have crossed the limit of advance to deposit ratio (ADR) of 85 percent in that scenario which is a violation of one of the macro-prudential policies of Bangladesh Bank. As a result, Bangladesh Bank has reduced the limit of advance to deposit ratio (ADR) to 83.5 percent by December 2018 (Banerjee, 2018). So it can be seen that, liquidity risk in the banking sector is on the rise. As the present liquidity crisis is a matter of concerns not only for the banks but also for the regulators, this paper tries to find whether liquidity risk affects the profitability of the banking industry and Dhaka Bank Ltd. Liquidity is the most important factor to be considered for the banks because it has relationship with the survival of them. Liquidity in banks refers to the ability to satisfy the demand of depositors while they withdraw their money, maturing loan request and liabilities without any difficulty. Adequate amount of liquidity for banks depends on efficiency in meeting both expected and unexpected cash flows as well as collateral needs without adversely affecting either daily operations or the financial condition. Having excess liquidity is bad for a bank while having inadequate amount of liquidity is more devastating, as it may lead to not only financial loss but also to bankruptcy. A bank which has good asset quality, strong earnings and sufficient capital can turn into an insolvent one if it is not maintaining adequate liquidity (Crowe, 2009) as it has to sell its assets much lower than their values in order to satisfy its current financial obligations (Waemustafa & Sukri, 2016).

Literature review

Bourke, P. (1989) aimed to find out the determinants of international bank profitability and particularly of reviewing the relevance of expense preference behavior theories in that context. Data were based on each year financial statements of 90 banks from 1972 to 1981 in twelve countries or territories such as Australia, California, Massachusetts, New York, Canada, Ireland, England and Wales, Belgium, Holland, Denmark, Norway and Spain. Banks included in the sample were every bank in these countries which fell within the top 500 banks in the world in June 1980, ranked by total assets. It was found from the study that liquidity was positively related to profitability.

Molyneux, P., & Thornton, J. (1992) tried to identify the determinants of bank performances across eighteen European countries between 1986 and 1989. A sample of European banks, 671 for 1986, 1,063 for 1987, 1,371 for 1988 and 1,108 for 1989 are taken across eighteen countries. In the case of liquidity ratios, he found a weak inverse relationship with profitability.

Kosmidou, K. (2008) tried to find out what were the determinants of performance of Greek banks throughout the amount of EU money integration (1990-2002) by using an unbalanced pooled time series dataset of 23 banks from the year 1990 to 2002. On the study, ratio of loans divided by customers plus short-term funding was considered as a measure of liquidity while return on average total assets of the banks was considered as measure profitability. It was found from the study that profitability had significant negative relationship with the liquidity.

Arif, A., & Anees, A. N. (2012) tried to examine liquidity risk in Pakistani banks and evaluate the effect on banks' profitability. Data had been collected for a set of 22 banks from the year 2004 to2009 and applied multiple regressions assess the impact of liquidity risk on the profitability of the banks. The findings of the study showed that liquidity risk affects bank profitability significantly, with liquidity gap and non-performing loan as the two factors exacerbating the liquidity risk.

Chen, Y., & Shen, C. (2018) tried to investigate the causes of liquidity risk and the relationship between bank liquidity risk and performance for 12 advanced economies over the period 1994-2006. In the causes of liquidity risk model, they divide the causes of liquidity risk into bank-specific, supervisory and macroeconomic factors and estimated the model

through fixed effects regression. In the bank liquidity risk and performance model, they considered liquidity risk as an endogenous determinant of bank performance, and applied panel data instrumental variables regression to estimate this model. They also considered other factors that can affect bank performance besides liquidity risk. They divided these factors into bank-specific factors, market structure factors, supervisory factors, and macroeconomic conditions. They found that liquidity risk is the endogenous determinant of bank performance. They also found that liquidity risk may lower bank profitability which they measured with ROAA and ROAE. Furthermore, they found that liquidity risk will increase bank's net interest margins.

Conceptual framework

For this study, profit before tax is taken as dependent variable while cash, deposit and non-performing loan are taken as independent variables.

The Balance Sheet of a Bank shows its assets, liabilities and equity at a given point in time. On the asset side of the balance sheet of a bank, the following assets are mentioned-

- Cash
- Balance with other banks and financial institutions
- Loans and advances
- Miscellaneous assets

On the opposite side or liability and equity side of the balance sheet, the following assets are mentioned-

- Borrowing from other banks and financial institutions
- Deposit
- Shareholders' equity

Cash is taken as an independent variable for the model because it the most liquid asset of a bank and banks keep cash and other types of liquid assets as a part of their overall strategy to manage liquidity risk (Cornett, McNutt, Strahan, & Tehranian, 2011). Cash can be classified into 2 categories. They are-

1. Cash in hand (local and foreign currency)

2. Balance with the central banks and it's agent banks

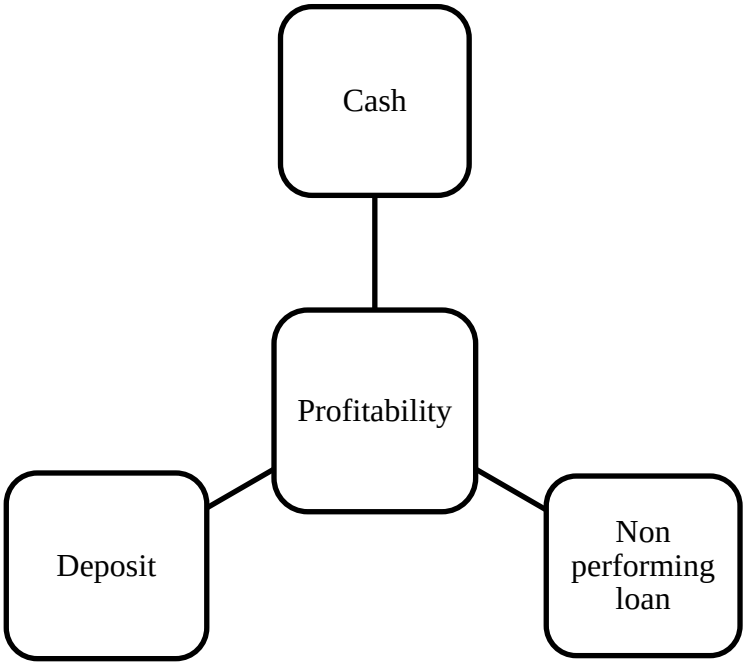

Figure: The model

In this study, all types of cash were considered for the further analysis. Deposit of a bank can be classified into 4 categories. They are-

1. Current account
2. Savings account
3. Fixed account
4. Others

Deposit is considered as an independent variable in the model because majority of the fund for a bank comes from the deposit and it is possible that depositors can withdraw their money from the banks at an inconvenient time which can result in sale of assets at very discounted price or the price lower than their intrinsic value (Diamond and Rajan, 2001). If the banks unable to satisfy the demand of depositors, it may result in bank run (Diamond and Rajan, 2005). In this study, all types of deposit are considered for the analysis. Non-performing loan increases the liquidity risk as it decreases the inward cash flows (Dermine, 1986). It can be explained in another way. When a loan becomes default, it will increase the liquidity gap. Increase in liquidity gap will result in increases in liquidity risk. For this reason, it is taken as

an independent variable for the model. Non-performing loan can be classified into 3 categories. They are-

1. Sub standard
2. Doubtful
3. Bad loss

Non-performing loans of all the categories are considered for the study. Finally, profit before tax is taken as measure of profitability in the model. It is taken instead of profit after tax because different banks have different tax systems (Arif, A., & Anees, A. N, 2018). Based on the empirical studies discussed above, the following hypothesis is considered-

H_0 Liquidity risk does not affect the profitability of the banks

H_1 Liquidity risk affects the profitability of the banks

Research Methodology

Banks in Bangladesh can be primarily classified into two categories. They are-

1. Scheduled bank
2. Nonscheduled bank

Scheduled banks are those which get license to operate under Bank Company Act, 1991 (Amended up to 2013). On the contrary, banks which are established for special and definite objectives and therefore operate under the acts that are prepared for meeting up those objectives are known as non-scheduled banks.

There are 58 scheduled banks and 5 non-scheduled banks are operating in Bangladesh. Scheduled banks can be classified into four types. They are-

1. State owned commercial banks
2. Specialized banks
3. Private commercial banks
4. Foreign commercial banks

Private commercial banks can also be classified into two types. They are-

1. Conventional private commercial banks

2. Islami sharia based private commercial banks

Among the scheduled banks in Bangladesh, thirty banks are listed in the stock exchange. For the purpose of this exploratory type of research, only scheduled commercial banks those are listed in the stock market were considered as the population because of availability of data. Islami shariah based private commercial banks those are listed in the stock market were not considered as population because Islamic banks have distinctive nature of mechanism which requires a special risk management process to be adopted in order to reduce risks as well as to become competitive in the financial industry (Waemustafa & Sukri, 2016) . By conducting simple random sampling process, eight banks were selected for analysis. Those five banks are-

1. BRAC bank
2. Dutch Bangla bank
3. Eastern Bank
4. Mercantile bank
5. Trust Bank
6. NCC Bank
7. Uttara Bank
8. City Bank

Observations on each of the bank are taken at annual intervals from the year 2013 to 2017. Data were collected from the annual reports of the bank which are published on the website of each bank. A software was used for analyzing the data for this study and the name of the software is “E views “. “ E views “is a type of software which can be used for general statistical analysis as well as economic analysis such cross sectional data, time series data, panel data etc.

In this study, descriptive statistical analysis was done at first. For descriptive statistical analysis, the following parameters were considered-

1. Mean
2. Median
3. Maximum
4. Minimum
5. Standard deviation

Following that, normality tests were done for the data. Methods that were used for testing the normality of the data are the following-

1. Skewness
2. Kurtosis
3. Jarque-Bera

Skewness is used for measuring the degree of asymmetry of a distribution. Skewness is considered positive when the right tail of the distribution is longer than the left. On the contrary, Skewness will be considered negative if the left tail of the distribution is longer than the right tail. But when skewness is equal to 0, it implies that the distribution is perfectly symmetrical. But it is quite unlikely in real world to find a distribution perfectly symmetrical. In this case, a rule suggested by Bulmer (1979) can be used for interpreting the level of skewness. When the level of skewness is less than −1 or greater than +1, the distribution is considered as highly skewed. Following that, if the level of skewness is in the range between −1 to −0.5 or between +0.5 and +1, the distribution is considered as moderately skewed. Finally, if skewness is between −0.5 and +0.5, the distribution is approximately symmetric. After that, kurtosis is used for measuring the thickness or heaviness of the tails of a distribution. A distribution is normal when the level of kurtosis is exactly equal to 3. This type of distribution is called mesokurtic. A distribution with kurtosis less than 3 is called platykurtic. On the contrary, a distribution with kurtosis greater than 3 is called leptokurtic. The null hypothesis for the Jarque Bera test is that the data is normally distributed while the alternate hypothesis is that the data is not distributed normally. If p value is greater than significant value, it cannot be rejected that the distribution is distributed normally. But if the p value is less than significant value, it will be rejected that the data is not distributed normally.

Finally, regression analysis was done to identify the effect of liquidity risk on the profitability of the banking sector of Bangladesh. For regression analysis, two types of model were used and those models were used for regression analysis of panel data. Those models are-

1. Fixed effect model
2. Random effect model

Fixed effect model explores the relationship between two or more variables within an entity such as person, organization, country etc. Each entity has its own individual characteristics that have the possibility to influence the independent variable. In fixed effect model, it is

assumed that individual characteristics of the entities can affect the independent variable and therefore the error term is correlated with the independent variable. This model removes the effect of time-invariant characteristics of an entity in order to examine the net effect of the independent variables on the dependent variable. Another important assumption of the fixed effect model is that time-invariant characteristics are unique to the individual entity and should not be correlated with the characteristics of other entities. Fixed effect model is given below-

$$Y_{it} = \alpha_i + \beta_1 X_{it} + u_{it}$$

In this equation,

- α_i (i=1….n) represents the intercept for each entity
- Y_{it} represents dependent variable where i = entity and t = time.
- X_{it} represents one independent variable
- β_1 represents the coefficient for that independent variable
- u_{it} represents the error term

Random effect model is also used for estimating the relationship between two or more variables within an entity. It is assumed in the random effects model is that though individual characteristics of the entities may influence the independent variable, varieties in the individual characteristics of the entities are random and therefore the error term is uncorrelated with the independent variables included in the model. This is the main difference between fixed effect model and random effect model. In random effects model, variables that do not vary with the time can be included while these variables are absorbed by the intercept in the fixed effects model. Random effect model is the following one-

$$Y_{it} = \alpha + \beta X_{it} + u_{it} + \varepsilon_{it}$$

In the model

- α_i (i=1….n) denotes the intercept for each entity
- Y_{it} denotes the dependent variable where i = entity and t = time.
- X_{it} denotes one independent variable
- β_1 denotes coefficient for that independent variable
- u_{it} denotes the error term

- ε_{it} denotes the entity error

It is needed to specify those individual characteristics that may or may not influence the independent variables in the random effect model. But omitted variable bias can occur in this case. Omitted variable bias occurs because of excluding a relevant variable from the model. Some variables may not be available and absence of those variables can result in omitted variable bias in the model.

It is needed to decide whether the result of fixed effect model or the result of random effect model should be considered. In this case, Hauseman was conducted to take the decision. The Hausman test is a test which can help to decide between fixed effects model and a random effects model in panel data analysis. In the Hauseman test, the null hypothesis is that the preferred model is random effects while the alternate hypothesis is that the preferred model is fixed effects. This test tries to identify whether there is a correlation between the unique errors and the explanatory variables in the model or not. If the p-value is smaller than significant value which is denoted with α, the null hypothesis will be rejected. On the contrary, if the p-value is greater than significant value, the null hypothesis will be accepted which means the result of random effect model should be considered (Statistics How To, 2018)

Data representation

INDUSTRY				
	CASH	**DEPOSIT**	**NON PERFORMING LOAN**	**PROFIT BEFORE TAX**
Mean	14,200,000,000	147,000,000,000	12,500,000,000	3,650,000,000
Median	12,600,000,000	143,000,000,000	6,220,000,000	3,480,000,000
Maximum	30,900,000,000	234,000,000,000	147,000,000,000	7,900,000,000
Minimum	5,400,000,000	98,200,000,000	10,615,356	1,020,000,000
Standard Deviation	5,950,000,000	33,200,000,000	29,000,000,000	1,450,000,000

DHAKA BANK LTD				
	CASH	**DEPOSIT**	**NON PERFORMING LOAN**	**PROFIT BEFORE TAX**
Mean	14,600,000,000	141,000,000,000	5,980,000,000	2,850,000,000
Median	15,000,000,000	139,000,000,000	5,490,000,000	2,840,000,000
Maximum	16,700,000,000	170,000,000,000	9,210,000,000	3,220,000,000
Minimum	11,900,000,000	116,000,000,000	4,140,000,000	2,380,000,000
Std. Dev.	1,900,000,000	22,300,000,000	1,900,000,000	320,000,000

Table: Descriptive statistics analysis

These tables show the descriptive statistical analysis of Dhaka Bank Ltd and the industry. The mean value of profit before tax is lower than the industry. Therefore it can be said that profitability of Dhaka Bank Ltd is in a poor position. The mean value of cash higher than the industry .It means that Dhaka Bank is holding more cash on average than the industry. The mean value of Deposit is lower than the industry which means that collection of deposits by Dhaka Bank Ltd is not in a favorable position. But the mean value of non-performing loan is lower than the industry which means that Dhaka Bank Ltd is efficiently managing the repayment of the loans. Profitability of Dhaka Bank Ltd varies less the industry from the mean value. Cash, Deposit and Non-Performing Loan of Dhaka Bank Ltd are also varying less than the industry from the mean value.

INDUSTRY				
Skewness	1.110696	0.675636	4.123278	0.892116
Kurtosis	3.686383	2.746569	18.29033	3.878269
Jarque-Bera	9.009512	3.150272	502.9999	6.591402
Probability	0.011056	0.206979	0.000000	0.037042

Table: Normality test

This table shows the result of normality test for the distribution of the industry. First measure of normality of the distribution was skewness. Level of skewness for deposit and profit before tax are between 0.5 and 1. So it can be said that distribution of these variables are moderately skewed. Level of skewness for cash and non-performing loan are greater than 1. As a result, the distributions of those variables are highly skewed. Therefore, it can be said that skewness of the distributions of the variables are not in a favorable range. Following measure of normality is kurtosis. All the variables except Deposit are leptokurtic as their values of kurtosis are greater than 3. The distribution of Deposit is platykurtic as the level kurtosis for the distribution of this variable is less than 3. Overall, the level of kurtosis is also not in a favorable range. In jarque bera test, the p values of Cash, Non-performing loan and Profit before tax are less than the significant value. So, it can be said that, the distribution of these variables are not distributed normally. But the p value of Deposit is higher than the significant value. So, the distribution this variable is normally distributed.

DHAKA BANK LTD				
Skewness	-0.415258	0.15848	1.097001	-0.373194
Kurtosis	1.874806	1.542171	2.865508	2.082349
Jarque-Bera	0.407462	0.463694	1.006611	0.291495
Probability	0.815682	0.793068	0.604529	0.864376

Table: Normality test

This table shows the normality test for the distribution of the variables of Dhaka Bank Ltd. It is found that the distributions of Deposit and Non-performing loan are positively skewed while the distributions of Cash and Profit before tax are negatively skewed. The distribution of deposit is approximately symmetric while the distribution of non-performing loan is highly skewed. The distributions of cash and profit before tax are also highly skewed. In terms of kurtosis analysis, the distributions of all the variables are platykurtic as the levels are less than 3. In jarque bera test, all the variables are found statistically significant. So, they are normally distributed.

In order to make the distributions of the variables of the industry normalize, all the variables are converted to log.

Variable	Coefficient	Standard Error	t-Statistic	Probability
C	-8.029896	6.42415	-1.249955	0.2213
LNCASH	-0.281221	0.173003	-1.625527	0.1149
LNDEPOSIT	1.456333	0.279307	5.214103	0.0000
LNNPL	-0.039829	0.035771	-1.113443	0.2747

Table: Regression analysis (Fixed effect model)

This table shows the result of regression analysis of the industry by using fixed effect model. It implies that keeping all other things constant, increasing in deposit by 1% will increase the profit before tax by 100.456333% and while increase in cash and non-performing loan by 1% will decrease the profitability by 28.1221% and 3.9829%. The value of p for the variable deposit is 0.0000 while the significant value is considered 0.05. So, it is seen that the p value is less than the significant value. For this reason, it is not statistically significant that keeping all other variables constant if the deposit is increased by 1%, the profitability will be increased by 100.456333%. In addition to that, the value of p for Cash is 0.1149 and the significant value is 0.05. So, it is found that the p value higher less than the significant value. As a result, it is statistically significant that keeping all other variables constant if the cash is increased by 1%; the profitability will be decreased by 28.1221 %. In case of non-performing

loan, the value of p is 0.2747 while the significant value is also considered 0.05. Therefore, it is found that the p value is higher than the significant value. Therefore, it is statistically significant that keeping all other variables constant if the cash is increased by 1%; the profitability will be decreased by 3.9829 %.

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.684688	Mean dependent var	21.94233
Adjusted R-squared	0.575960	S.D. dependent var	0.405025
S.E. of regression	0.263746	Akaike info criterion	0.400754
Sum squared resid	2.017293	Schwarz criterion	0.865196
Log likelihood	2.984919	Hannan-Quinn criter.	0.568682
F-statistic	6.297239	Durbin-Watson stat	2.285137
Prob(F-statistic)	0.000046		

Table: Regression analysis (Fixed effect model)

From the above mentioned table, it is found that 68.4688% of the change in the profitability is explained by cash, deposit and non-performing loan. The value of Durbin Watson statistics stayed between 1.5 and 2.5. But the probability of F statistics is less than the significant value. So it can be interpreted that, the variables jointly do not have any impact on profitability.

Variable	Coefficient	Standard Error	t-Statistic	Probability
C	-8.72449	5.917331	-1.474396	0.1491
LNCASH	-0.266633	0.158019	-1.687345	0.1002
LNDEPOSIT	1.45797	0.269673	5.406438	0.0000
LNNPL	-0.025835	0.032779	-0.788164	0.4358

Table: Regression analysis (Random effect model)

This table shows the result of regression analysis of the variables of the industry by using random effect model. It shows that increase in cash and liquidity gap by 1% will decrease the profitability by 26.6633% and 2.5835% considering all other variables is constant. On the contrary, increase in deposit by 1% will increase the profit before tax by 100.45797% taka when all the other variables are remaining constant. The value of p for the variable deposit is 0.00000 while the significant value is considered 0.05. So, it is seen that the p value is less than the significant value. So, it is not statistically significant that keeping all other variables constant if the deposit is increased by 1%, the profitability will be increased by 1.45797%.

Following that, the value of p is 0.1002 and the significant value is 0.05. So, it is found that the p value higher less than the significant value. As a result, it is statistically significant that keeping all other variables constant if the cash is increased by 1%, the profitability will be decreased by 0.266633%. In case of non-performing loan, the value of p is 0.4358 while the significant value is also considered 0.05. Therefore, it is found that the p value is higher than the significant value. Therefore, it is statistically significant that keeping all other variables constant if the cash is increased by 1%; the profitability will be decreased by 0.025835%.

Effects Specification				
			S.D.	Rho
Cross-section random			0.204048	0.3744
Idiosyncratic random			0.263746	0.6256

Weighted Statistics			
R-squared	0.474839	Mean dependent var	10.98119
Adjusted R-squared	0.431076	S.D. dependent var	0.342193
S.E. of regression	0.258106	Sum squared resid	2.398281
F-statistic	10.85014	Durbin-Watson stat	1.917489
Prob(F-statistic)	0.000032		

Unweighted Statistics			
R-squared	0.453407	Mean dependent var	21.94233
Sum squared resid	3.496975	Durbin-Watson stat	1.315044

Table: Regression analysis (Random effect model)

In the random effect model, 47% of change in the profitability is explained by cash, deposit and non-performing loans. In addition to that, the value of Durbin Watson statistics is also in the range of 1.5 to 2.5. In terms of F statistics, the variables are found jointly statistically insignificant.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Probability
Cross-section random	1.476974	3	0.6876

Table: Hauseman test

By the result of Hauseman test, it is found that the p value is higher than the significant value. So, it can be said that random effect model is perfect in this case and therefore the result of

the regression analysis of this model should be considered for decision making. Now, let's look at the hypothesis-

H_0 Liquidity risk does not affect the profitability of the banks

H_1 Liquidity risk affects the profitability of the banks

The value of p of F statistics is less that the significant value. For this reason, it is statistically significant that liquidity risk affects the profitability of the banks. Therefore, liquidity risk of the banks affects their profitability.

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	33.06372	20.35204	1.62459	0.3513
LNCASH	0.046274	0.790497	0.05854	0.9628
LNDEPOSIT	-0.719024	1.131642	-0.6354	0.6397
LNNPL	0.270114	0.579802	0.46587	0.7224

Table: Regression analysis (Dhaka Bank Ltd)

This table shows the result of regression analysis of Dhaka Bank Ltd. It shows that 1% increase in cash will increase the profitability by 4.6274% by keeping all other variables constant. Following that, 1% increase in non-performing loan will increase the profitability by 27.0114%. But 1 % increase in deposit will decrease the profitability by 71.9024%. The probability for the variable Cash is 0.9628 which is higher than the significant value. So, it is statistically significant that change in Cash by 1% will change in profitability by 4.6274%. In addition to that, the values of p for the variables Deposit and Non-performing loan are 0.6397 and 0.7224. As a result, both of them are higher than significant value. For this reason, it is statistically significant that increase in deposit by 1% will decrease the profitability by 71.9024% and increase in non-performing loan by 1% will increase the profitability by 27.0114%.

R-squared	0.320166	Mean dependent var	21.76379
Adjusted R-squared	-1.719335	S.D. dependent var	0.115652
S.E. of regression	0.190715	Akaike info criterion	-0.485506
Sum squared resid	0.036372	Schwarz criterion	-0.797956
Log likelihood	5.213766	Hannan-Quinn criter.	-1.32409
F-statistic	0.156983	Durbin-Watson stat	2.828963
Prob(F-statistic)	0.914119		

Table: Regression analysis (Dhaka Bank Ltd)

The table shows that 32.0166 % change in the profitability is explained by cash, deposit and non-performing loan. In addition to that, Durbin Watson statistics is not in the range of 1.5 to 2.5. In the end, the probability of F statistics is 0.914119 which is lower than the significant value. So, the variables do not jointly affect the profitability of Dhaka Bank Ltd. Let's look at the hypothesis again-

H_0 Liquidity risk does not affect the profitability of the banks

H_1 Liquidity risk affects the profitability of the banks

As the probability of F statistics is higher than the significant value, it can be said that it is not statistically significant that liquidity risk do not affect the probability of the banks. As a result, the null hypothesis cannot be rejected. Therefore, liquidity risk does not affect the profitability of Dhaka Bank Ltd.

Findings, Conclusions and Recommendations

The study shows that liquidity risk effects of the banks in the industry as it is found statistically significant. On the contrary, liquidity risk does not affect the profitability of Dhaka Bank Ltd as it is found statistically insignificant. Several reasons have identified in case of why Dhaka Bank Ltd. is unaffected by liquidity risk. The first reason of profitability of Dhaka Bank Ltd unaffected by liquidity risk is that Dhaka Bank Ltd holds more cash at an average than that of the industry. As a result, on average Dhaka Bank Ltd has more ability to respond during the withdrawn of deposit at inconvenient time. In addition to that, Dhaka Bank Limited has collected less deposit at an average than that of the industry. Increase in deposit will increase the interest expense while increase in interest income depends on the loan disbursing capability of the bank. Finally, the amount of default loan on an average is less than the average amount of non-performing loan in the industry. But this study has some limitations. Because of the limitation time, only three dependent variables are considered in model. In addition to that, only 8 banks are taken as sample in case of the industry. Furthermore, data of only five years are taken. If more independent variables are added along with larger number of samples and longer period of data, better results can be found in this area.

Appendix

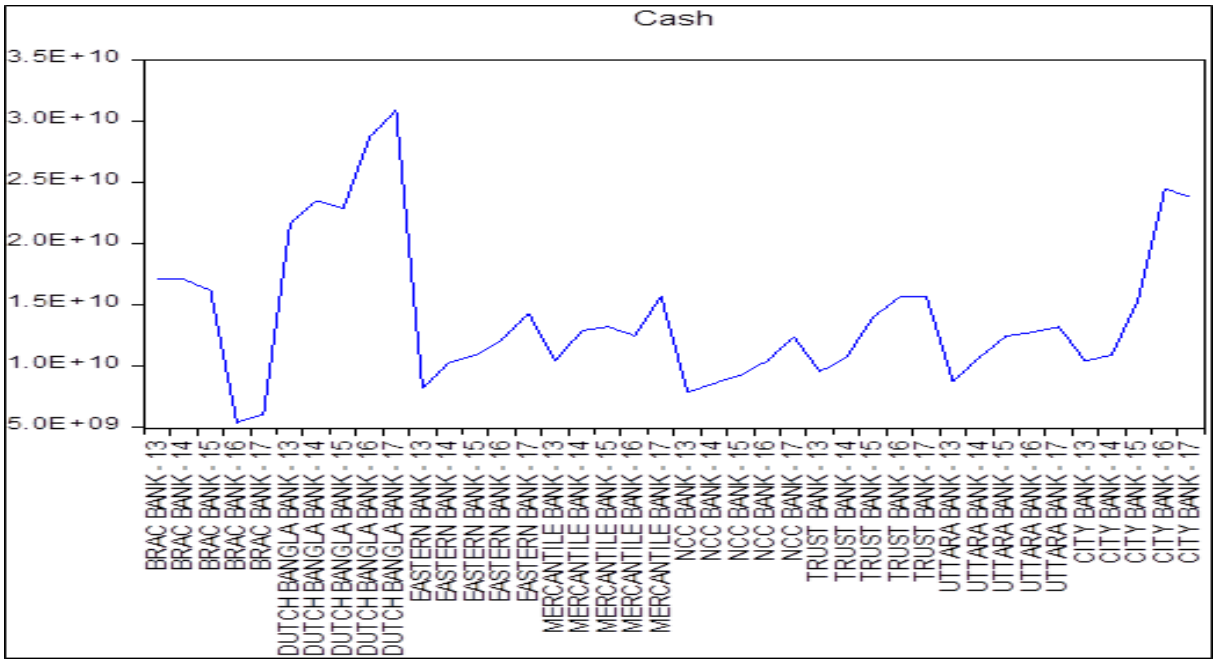

Figure-1

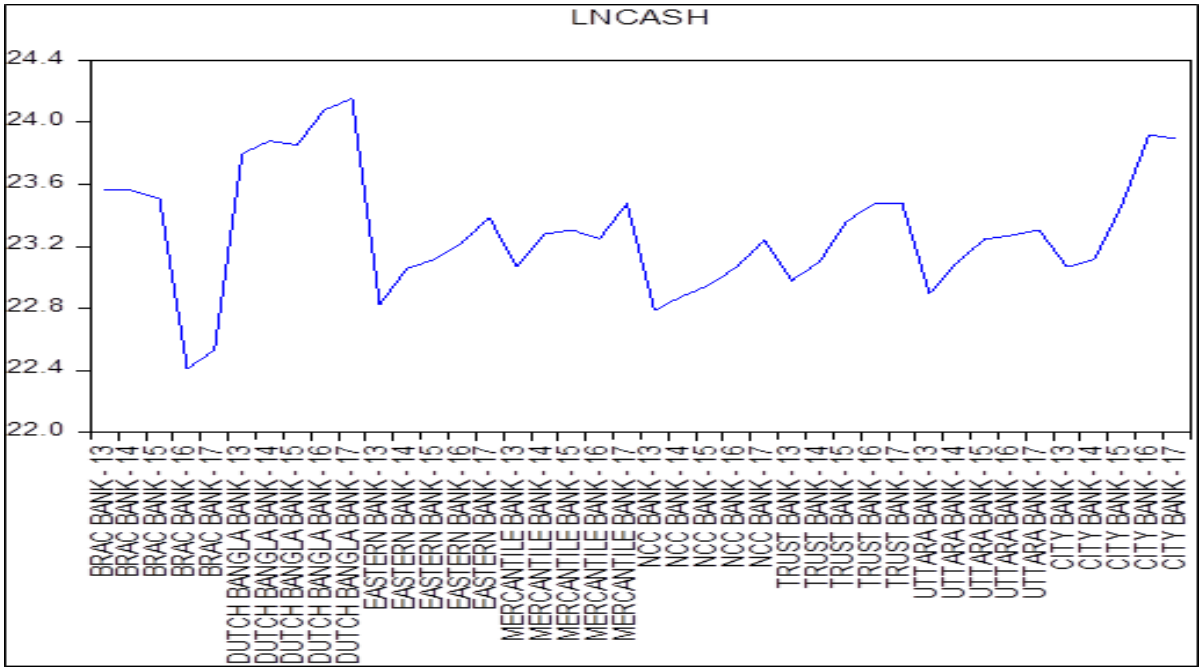

Figure-2

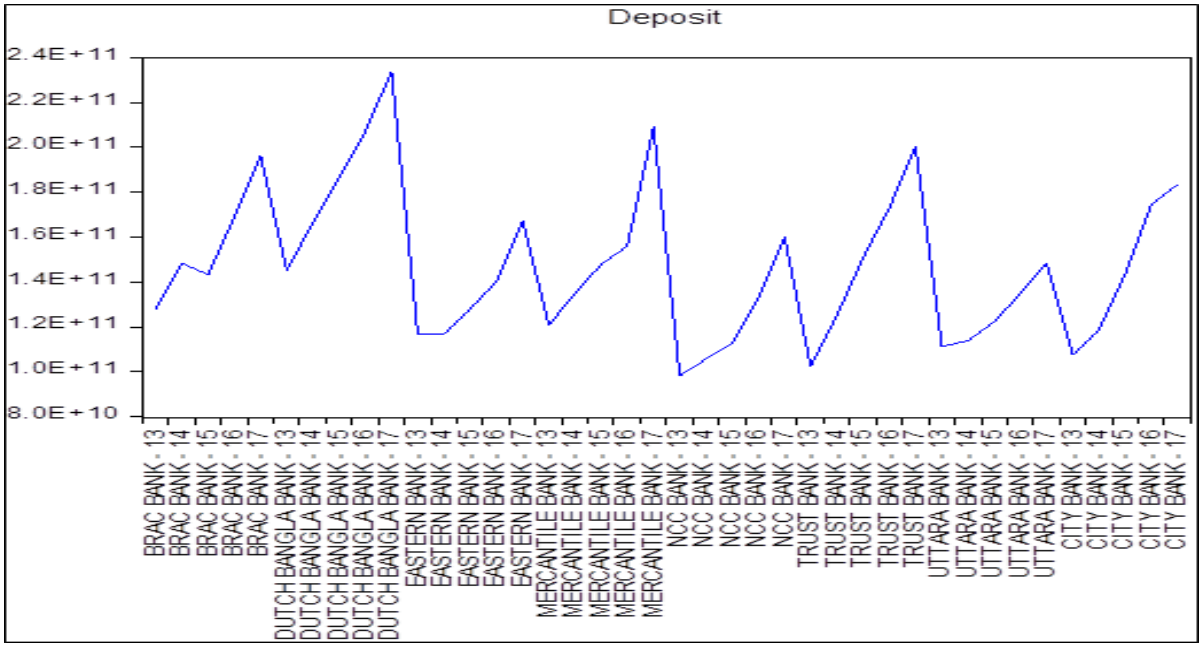

Figure-3

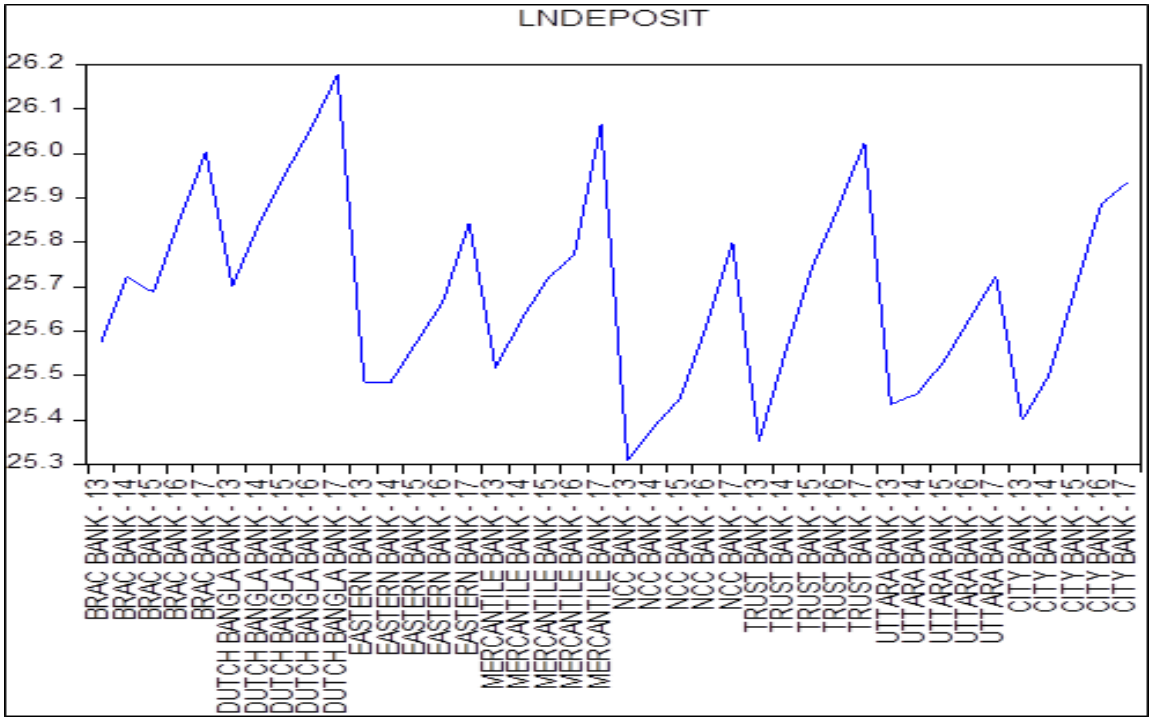

Figure-4

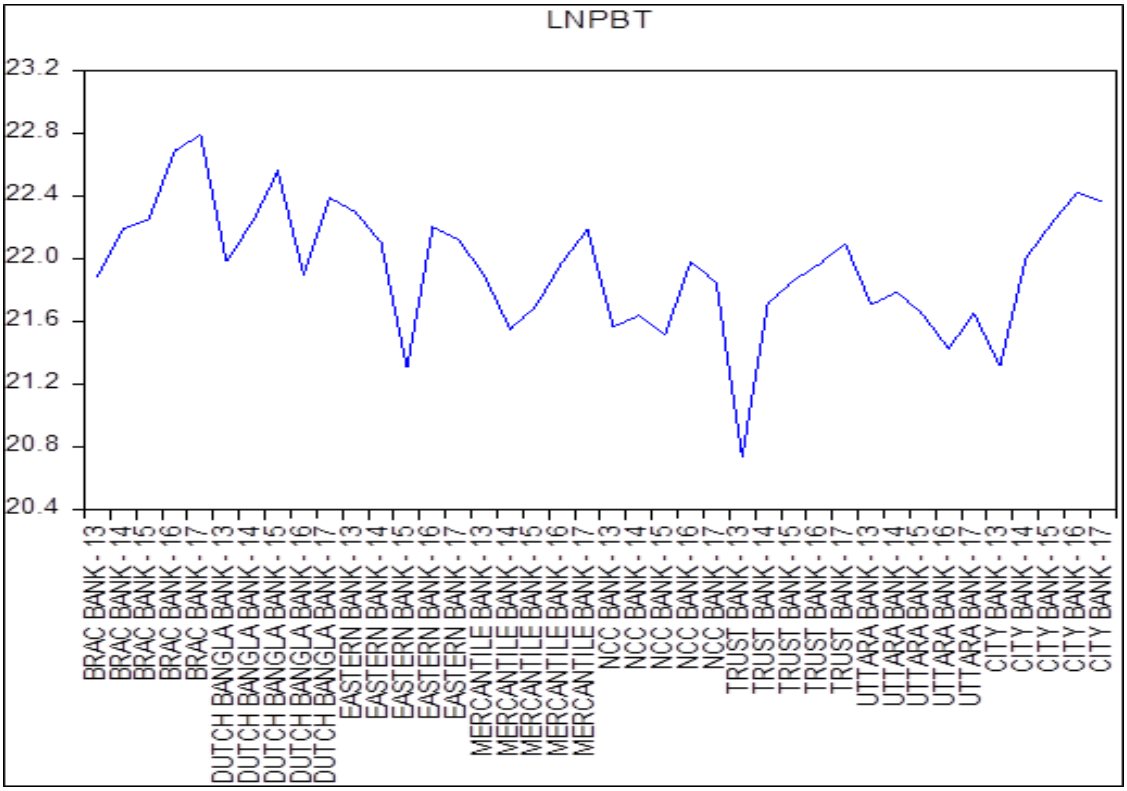

Figure-5

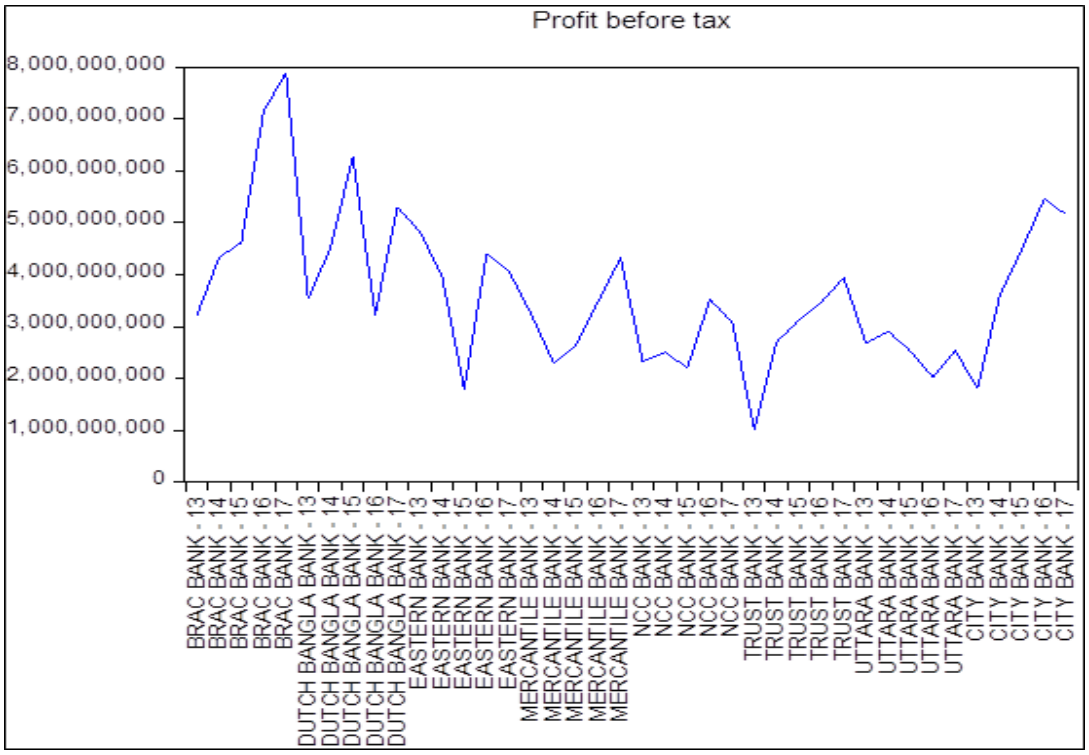

Figure-6

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