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An Empirical Analysis on Liquidity Management of Commercial Banks in Bangladesh: A Comparative Study Between State-Owned and Private Commercial Banks

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Abstract
This study attempts to analyze and compare the liquidity position of major ten private commercial banks and major five state own commercial banks in Bangladesh. In Bangladesh where the conventional banks require maintaining 18% of their deposits as Statutory Liquidity Requirement (SLR) there will be an impact on liquidity of such a ratio. As we know, the number of state-owned banks in Bangladesh is 6 where as the number for private commercial banks is 40 with more new banks to join the numbers. For this research, a random sample of 10 banks from Private commercial banks and 5 state-own banks are taken, the individual liquidity risk ratio, D/E ratio, I/A ratio, bank size, liquidity asset and ROE is tracked. The variables as a whole in F-test are found to be significant with a 5% AND 10% significance level. Individually all the variables in both sectors of banking are found to be significant except for Liquidity risk in state-owned banking.

Keywords: D/E ratio, I/A ratio, ROA, SCBs, PCBs

1. Introduction

Bank lending finances investments in relatively illiquid assets, but it funds its loans with mostly short term liabilities. Thus one of the main challenges to a bank is ensuring its own liquidity under all reasonable conditions. The degree of liquidity depends upon the relationship between a company's cash assets plus those assets which can be quickly turned into cash, and the liabilities awaiting payments could be met immediately. The liquidity and the Investments are two corners opposite to each other. If more earning is required more and more investment is to be made which may result into less degree of liquidity, which may result, on account of not fulfilling the commitments, into penalties/high rate of interests or other types of losses. According to the daily star news, 2018 there are many types of risks which are involving in all banks due to their financial crises. In daily business transactions, banks are facing some risk which caused by their activities. There will be no bank if there is no braveness to take risk. There are several risks that must be considered by banks, for example: market risk,

operational risk, legal risk, compliance risk, credit risk, and liquidity risk. One of that above risks one crucial risk is liquidity risk that comes from the mismatch timing between cash inflow and cash outflow. This lack outcome from cash that hope to be invested in credit loans or outcome from deficit cash that needed to meet their short-term obligations.

2. Literature Review

According to Ainley et al. (2007) In daily business transactions, there are many types of risks which are involving in all business institutions due to their financial crises. In daily business transactions, banks are facing some risk which caused by their activities. There will be no bank if there is no chance to take risk. This lack outcome from cash that hopefully to be invested in credit loans or outcome from deficit cash that needed to meet their short-term obligations in view of Murtunez and Repullo (2010) that Liquidity risk is the risk to earnings or capital from a banks inability to meet its obligations when they come due, without incurring unacceptable losses. Liquidity risk includes the inability to manage unplanned decreases or changes in funding sources.

There are several risks that must be considered by banks, for example: market risk, operational risk, legal risk, compliance risk, credit risk, and liquidity risk (Perotti et al 2011). One of that above risks one crucial risk is liquidity risk that comes from the mismatched timing between cash inflow and cash outflow. According to the Impact of Liquidity Risk on Banks (A Case Study of Punjab, Pakistan), observe that liquidity risks have played a role in bringing financial distress to Islamic banks and some of them were forced to close. Market liquidity risk is the risk in which financial institutions could incur, if there is no more market for the asset where it should be sale. Funding liquidity risk is a risk which has linked to a wrong management on funding position. There are the following the sources of liquidity risk, Incorrect judgment and complacency, Unanticipated change in cost of capital, Abnormal behavior of financial markets, Range of assumptions used, Risk activation by secondary sources, Break down of payments system, Macroeconomic imbalances, Contractual forms and Financial Infrastructure deficiency.

Liquidity is divided into two types by the author the one is the liquidity of assets which is defined as the inability to sell assets at current market prices and liquidity instability of liability which is defined as the inability to assess sufficient funds to meet payment obligations in a timely manner (Arab & Anas, 2008). A bank with a strong liquidity profile should generally be able to survive. Much of the funds of Islamic financial institutions come through PLS investment accounts without any fixed obligation attached to them. Rather the problem for Islamic financial institutions has been excess liquidity. Islamic banks need to be even more cautious about the maturity structure of their assets. In order to remain solvent, banks need to maintain assets of a short-term nature. The Establishment of specialized institutions for managing liquidity risks has helped to solve the liquidity problems. This paper argues for the need for Islamic banks to strengthen risk management practices. Without an efficient capital market to operate within, Islamic banking finance will not continue to grow meaningfully. The market requires liquidity and price transparency to enhance a secondary market. According to the wikipedia the banking sector in Bangladesh consists of several types of institutions. Bangladesh Bank is the central bank of Bangladesh and the chief regulatory authority in the banking sector. There is a total of 41 PCBs (Public Commercial Banks) in Bangladesh are in operation right now. They are majorly owned by private entities and classified into two types. From those 33 banks are conventional PCBs and 8 banks are Islamic PCBs. Bangladesh also has 6 state-owned commercial banks (SOCBs) and those are Sonali Bank Limited, Janata Bank Limited, Agrani Bank Limited, Rupali Bank Limited, BASIC Bank Limited and Bangladesh Development Bank Limited.

According to the Ibe, S.O. (2013) stated that liquidity management is indeed a crucial problem in the banking industry and recommended that banks should engage competent and qualified personnel in order to ensure that right decisions are adopted especially with the optimal level of liquidity and still maximize profit. In a study conducted by scholars, liquidity was represented by liquidity ratios, such as current ratio, quick ratio, etc. the main component of these ratios are current assets, current liabilities, etc (Khokhar,2015; Bolek, 2013). It was emphasized on cash as a major representative of liquidity status and as most liquidity assets to operate day to day business (Mahmud, 2014). There are numerous studies done in the past on liquidity, risk mitigation, and management.

3. Research Gaps

Previous researches that we have referred to is backdated, no latest research is available. That is why I want to conduct a research based on the data of recent 10 years. Also, the research that has been conducted previously are based on random selection of banks but here I will be taking major banks from the private and government sector of banking in Bangladesh. In this report also included recent incidents that banks face because of lack efficient bank liquidity management. Here I also made a comparison on liquidity management between two groups of banks. Those two group of banks are Commercial Private Banks of Bangladesh and Commercial State-Owned Banks of Bangladesh.

4. Objectives

The main objective or purpose of this report is evaluating and comprising the performance of some selected tools of Private Commercial Banks (PCBs) and State Own Commercial Banks (SOCBs) of Bangladesh. In below given the key objectives of this study:

- To study structural different between private and State-Owned Commercial banks of Bangladesh.
- To analyze whether there is any difference regarding the liquidity management of State Own and private banks on the basis of some selected tools
- To evaluate the liquidity related problems of the banks
- To understand the relation between profitability and liquidity management of banks

5. Methodology

The research methodology of the selected topic follows in these dimensions:

5.1 Population of the Study
The following two groups of Banks in Bangladesh:
- I.   Private Commercial Banks
- II.   State-Owned Commercial Banks

5.2 Sample periods
The study covered for Five years from the year 2009 to 2018.

5.3. Sources of Data
This study is based on secondary data. In below given the sources of those data and information:
- I.   Annual reports of State-owned Commercial Banks and Private Commercial Banks of Bangladesh.
- II.   Journals and Reports published by Bangladesh Bank
- III. Survey report analysis by Bangladesh Bank

5.4. Data Analysis Methods and Tool
As part of my research, I would like to first analyze the liquidity position of each bank and then take averages from each category to explain the differences. A regression model will be used to depict the liquidity risk variances with respect to certain independent variables. After that hypothesis testing will be conducted.

5.4.1 Variables
To analyze the financial performance of banking sector different are included in this study, they are following:
- Liquidity ratio
- Bank size
- Debt to equity ratio (D/E)
- Investment to asset ratio
- Return on equity (ROE)

- Liquid asset ratio (Total loans/ Total Deposits)

5.4.2 Regression Model

The regression model will be the following:

$Y= \beta_0+\beta_1 Ln\_X_1+\beta_2 X_2+\beta_3 X_3+\beta_4 X_4+\beta_5 X_5+e_t$

$Y=$ Liquidity risk

$X_1=$ Bank size

$X_2=$ Debt to equity ratio (D/E)

$X_3=$ Investment to asset ratio

$X_4=$ Return on equity (ROE)

$X_5=$ Liquid asset ratio (Total loans/ Total Deposits)

$e_t=$ Error term/Residual term

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the constant parameters (slope coefficients)

5.4.3 Hypothesis Test

Hypothesis testing will be based upon several null hypotheses. The followings will be the null hypotheses:

I.　　H_0 : There is no significant difference in Bank size of two banking groups

　　　H_1: There is significant difference in Bank size of two banking groups

II.　　H_0: There is no significant difference in Debt to equity ratio of two banking groups.

　　　H_1: There is significant difference in Debt to equity ratio of two banking groups.

III.　　H_0: There is no significant difference in Investment to asset of two banking groups.

　　　H_1: There is significant difference in Investment to asset of two banking groups.

IV.　　H_0: There is no significant difference in Return on equity of two banking groups.

　　　H_1: There is significant difference in Return on equity of two banking groups.

V.　　H_0: There is no significant difference in Liquid asset ratio of two banking groups.

　　　H_1: There is significant difference in Liquid asset ratio of two banking groups.

6. Data Analysis and Findings

6.1. Trend Analysis

Trend analysis is used in analysis to predict the future stock price movements based on previous trend data. Trend analysis is given trend of future movement based on past years data.

In below, I compared public banks and private banks based on their past year trend on those sector.

6.1.1. Liquidity Risk

Liquidity risk means cash crunch for short term period. That kind of ratio provides an opposite effect on company's profitability.

Formula of Liquidity Risk: Total Capital / Total Asset

By this ratio bank can find out their position on total capital biased on its total asset. Here net worth of bank is known as capital of bank. By deducting total liability from it total asset bank calculates it total capital. Bank only takes tier 1 asset as it total asset.

Figure 1: Trend Analysis on Liquidity Risk of Public Bank and Private Bank.

Liquidity Risk

	2014	2015	2016	2017	2018
Liquidity risk (Public Bank)	4,70%	4,39%	3,53%	3,81%	3,46%
Liquidity Risk (Private Bank)	9,10%	7,77%	6,98%	6,73%	6,72%
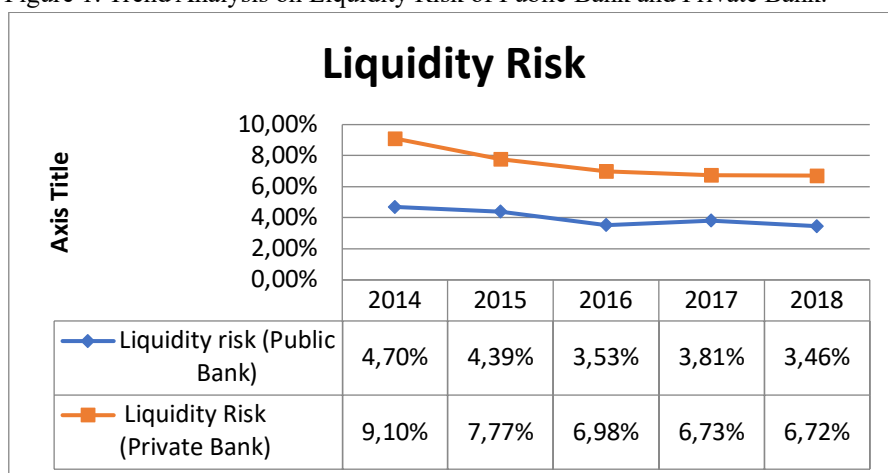
Source: Annual reports of Banks.

The liquidity risk of private banks of Bangladesh is seen to have a downward trend in the past 5 years. The highest is being in 2014 at 9.1% and reaching a constant at 2017 and 2018.

The liquidity risk of public banks of Bangladesh has an unstable trend, reaching lowest in 2016 and moving upward in 2017 and falling in 2018 again. In the case of comparison, Private Banks have more liquidity riskier than Public Banks. But private bank's liquidity risks are more downward than public banks. This is greater than public bank future trend. If we compare 2014 and 2018 liquidity risk of private banks and public banks, private banks reduce their liquidity risk more than public banks. Special in 2014 to 2015 us can notice more change in liquidity risk private banks. In the case public bank we can notice more change in 2025 to 2016 which is 4.39% to 3.53%.
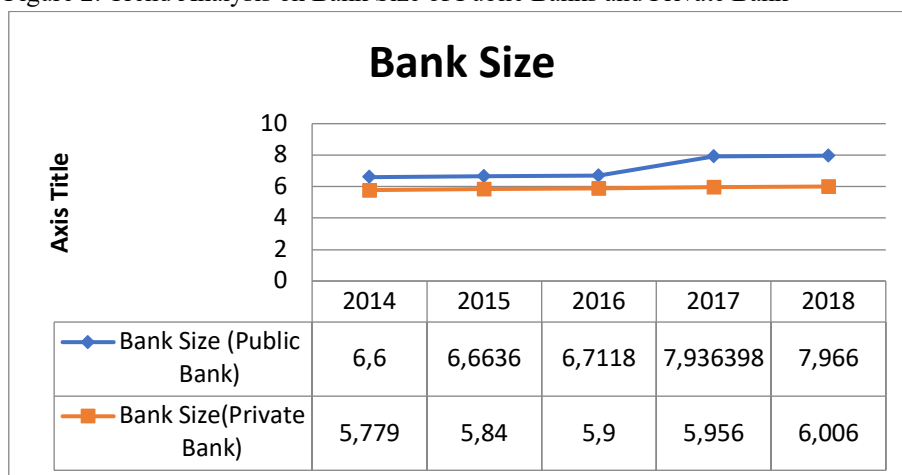
6.1.2. Bank Size
Generally bank size means owners capital. High bank size enables the bank to offer more financial service at low cost or with high-profit rate.

Formula of Bank Size: Log (Total Asset of Bank)

Degree of bank size helps to measure banks' mandatory liquidity needs. High degree of bank size requires fewer rates of liquidity and opposite situation for low degree of Bank Size.

Figure 2: Trend Analysis on Bank Size of Public Banks and Private Bank

Bank Size

	2014	2015	2016	2017	2018
Bank Size (Public Bank)	6,6	6,6636	6,7118	7,936398	7,966
Bank Size(Private Bank)	5,779	5,84	5,9	5,956	6,006

Source: Annual reports of Banks.

At first I discuss about public banks bank size. In 2018 public banks have high bank size which is 7.966. And 2014 they have less bank size which is 6.6. In the case of private banks, private banks bank sizes in 2018 have highest bank size as like public bank. Comparatively public banks size is larger than private banks. Private bank is more sustainable than public bank.
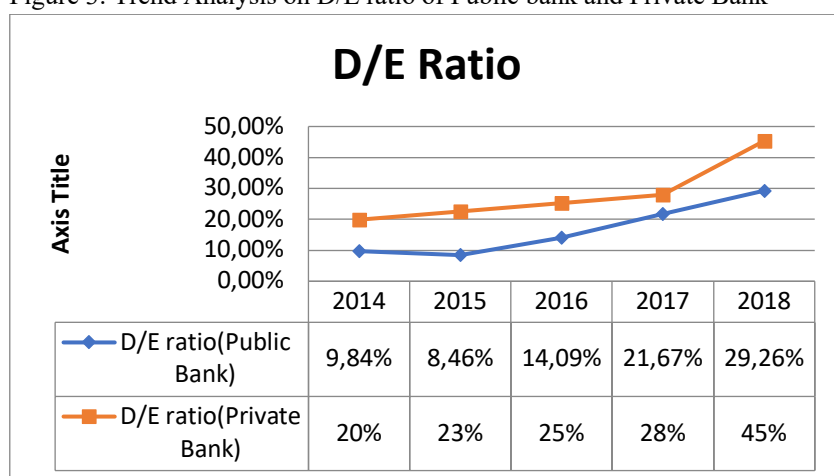
6.1.3. D/E Ratio

The debt-to-equity ratio indicates the relative proportion of shareholders' or owners' equity and debt used to finance a company's assets. It is also known gearing or leverage.

The formula of Debt to Equity ratio: Total Debt/ Total Equity.

High degree of debt to equity ratio indicates high negative impact on liquidity. Low degree of debt to equity ratio indicates opposite effect.

Figure 3: Trend Analysis on D/E ratio of Public bank and Private Bank

D/E Ratio

	2014	2015	2016	2017	2018
D/E ratio(Public Bank)	9,84%	8,46%	14,09%	21,67%	29,26%
D/E ratio(Private Bank)	20%	23%	25%	28%	45%

Source: Annual reports of Banks.

The debt to equity ratio of private banks on an average is rising, the highest being in 2018 at 29.26% and reaching the lowest in 2014 at 9.84%. This shows that the debt tendency of private banks in comparison to their equity portfolio is increasing day by day. The debt to equity ratio of public banks, however, is on a very upward trend. It can be said that the debt to ratio of public banks over the year is increasing at a stable rate. Comparatively private bank's debt to equity ratio is less than public bank. Which is seem good for private bank as high amount of debt is the sign of risky ness.
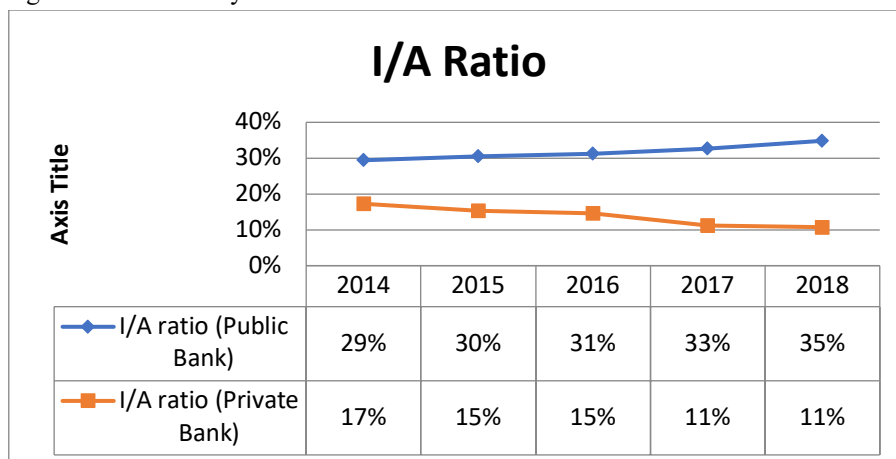
6.1.4. I/A Ratio
Investment to asset is known as return on investment ratio or return on return on asset ratio. Generally this ratio calculates gain on asset investment.

Formula of investment to asset ratio: Net Income/ Total asset or Total Investment.

Liquidity risk is related negatively with this ratio. High rate of this ratio means less risk on income.

Figure 4: Trend Analysis on I/A Ratio of Public Banks and Private Banks

I/A Ratio

	2014	2015	2016	2017	2018
I/A ratio (Public Bank)	29%	30%	31%	33%	35%
I/A ratio (Private Bank)	17%	15%	15%	11%	11%

Source: Annual reports of Banks.

The investment to asset ratio of private banks on an average is falling, the highest being in 2014 at 17.26% and reaching the lowest in 2018 at 10.73%. This shows that the investment tendency of private banks in comparison to their asset portfolio is decreasing. The Investment to Asset ratio of public banks however is on a very upward trend. It can be said that the investment ratio of public banks over the year is increasing at a stable rate. Comparatively, private bank's investment to asset ratio is less than public bank, that means invest income of private bank is less than public bank.

6.1.5. ROE

The return on equity means the profitability of a bank in relation to the equity which is also known as net assets or assets minus liabilities. By this ratio banks find out their performance. ROE is a calculation of how greatly a bank uses investments to generate earnings growth.

Formula of ROE: Net Income/ Total Equity

Theoretically degree of ROE is negatively related with liquidity risk of a Bank.

Figure 5: Trend Analysis on ROE of private and public banks.

ROE

	2014	2015	2016	2017	2018
ROE (Public Bank)	0%	-3%	-4%	-11%	-15%
ROE (Private Bank)	14%	13%	14%	12%	11%
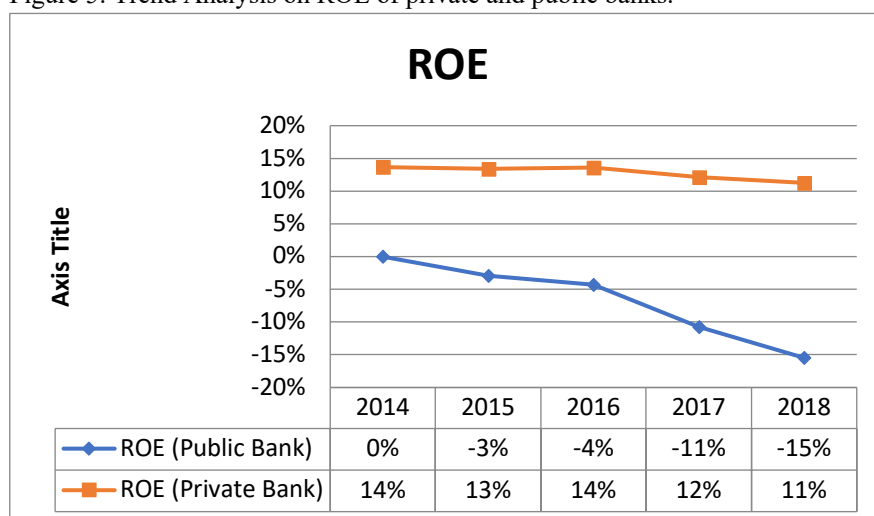
Source: Annual reports of Banks.

In the case of public bank ROE we can see that they have negative ROE that means public bank's return on equity is negative that means they are in the loss position in term of their ROE. In case of private bank in recent year

private bank loss their ROE. That's why their ROE becomes 11% to 12%. Comparatively, in the case of ROE, private bank is on the good position.
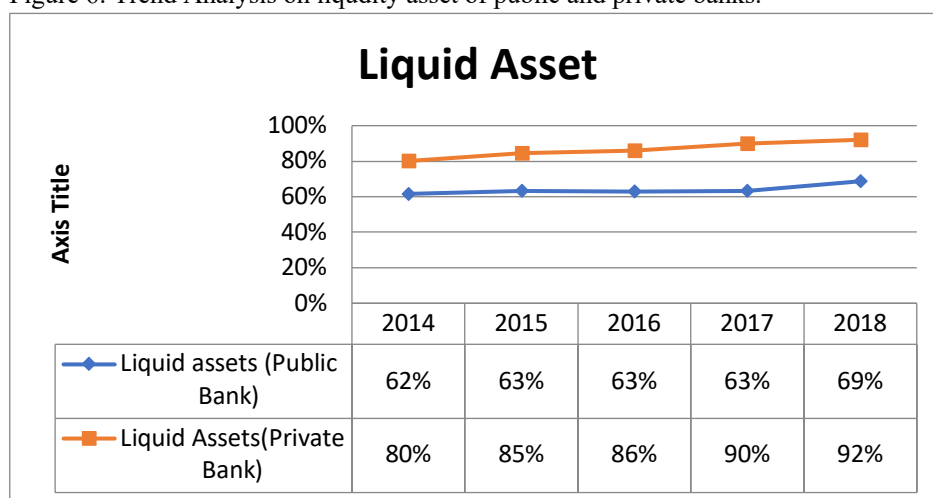
6.1.6. Liquid Asset

Liquid Asset ratio is a measure of bank's liquidity. It also measures how easily bank can service short-term liabilities if the need arises immediately.

Formula of Liquid Asset Ratio: Total Liquid Asset / Total Liquid Liability.

Theoretically, Liquid Asset ratio directly related with liquid risk of a bank negatively.

Figure 6: Trend Analysis on liqudity asset of public and private banks.

Liquid Asset

	2014	2015	2016	2017	2018
Liquid assets (Public Bank)	62%	63%	63%	63%	69%
Liquid Assets(Private Bank)	80%	85%	86%	90%	92%

Source: Annual reports of Banks.

The liquid asset ratio of private banks in on an increasing trend, private banks are focusing more on to keep liquid assets. The liquid asset ratio trend of public banks is on an increasing trend as well, however the growth is lower than compared to the private banks. Private banks have more liquidity asset than public banks.

6.2. Regression

Regression is an analysis used in statistical disciplines that attempts to determine the relationship between one dependent variable (for my analysis dependent variable which is liquidity risk) and a series of other independent variable (in my analysis independent variables are investment to equity ratio, return on equity and liquid asset ratio).

6.2.1. Regression Analysis Output- Private Commercial Banks

Table 7: Regression Analysis Output- Private Commercial Banks.

Regression Statistics	
Multiple R	0.99943
R Square	0.998861
Adjusted R Square	0.995443
Standard Error	0.000684
Observations	5

ANOVA

	df	SS	MS	F	Significance F
Regression	3	0.000411	0.000137	292.2785	0.042966
Residual	1	4.68E-07	4.68E-07		
Total	4	0.000411			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.414308	0.045016	9.203491	0.068901	-0.15768	0.986296
I/A ratio	0.144231	0.085626	1.684425	0.341072	-0.94376	1.232218
Liquid Assets	-0.29047	0.042612	-6.81647	0.092733	-0.83191	0.250975
ROE	-0.84403	0.086331	-9.77663	0.064891	-1.94098	0.252915

Source: Own Calculation

Regression Equation
$Y= 0.414+0.144X_1-0.290X_2-0.844X_3+e_t$

Interpretation:
The intercept of 0.414 means that if all other factors are held constant then the Liquidity risk for private banks will be 0.414, this does not have any practical explanation.

The coefficient of the variable I/A ratio is 0.144 means that if all other factors are held constant then 1 percentage increase in I/A ratio will increase Liquidity risk by 14.4%

The coefficient of the variable Liquid Assets is -0.290 means that if all other factors are held constant then 1 percentage increase in Liquid Assets will decrease Liquidity risk by 29%.

The coefficient of the variable ROE is -0.844 means that if all other factors are held constant then 1 percentage increase in ROE will decrease Liquidity risk by 84.4%

F- Test

The significance value of F test is 0.042966 which is below the significance level of 5% which shows that the variables taken in this analysis combined are significant. This means that I/A, ROE and liquid asset ratio combined affect the Liquidity Risk. The null hypothesis that I/A, ROE and Liquid asset ratio do not have an impact on ROA, therefore, can be rejected.

Multiple R

Multiple R measures the variation in the dependent variable with respect to the independent variables. Here the value of multiple r is 0.999 which is 99.9%, this shows that the 99.9% of the variation in Liquidity Risk is explained by the independent variables taken in this analysis namely I/A, ROE, Liquid asset ratio.

5.2.3. Regression Analysis Output- State Own Commercial Banks

Figure 8: . Regression Analysis Output- State Own Commercial Banks.

Regression Statistics	
Multiple R	0.999007
R Square	0.998015
Adjusted R Square	0.992058
Standard Error	0.000486
Observations	5

ANOVA

	df	SS	MS	F	Significance F
Regression	3	0.000119	3.95E-05	167.5522	0.056715
Residual	1	2.36E-07	2.36E-07		
Total	4	0.000119			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.376029	0.0269	13.97902	0.045464	0.034238	0.717819
I/A ratio	-1.81604	0.127465	-14.2474	0.04461	-3.43563	-0.19645
ROE	-0.40684	0.034928	-11.6478	0.054522	-0.85064	0.036966
Liquid assets	0.332284	0.027584	12.04622	0.052727	-0.01821	0.682773

Source: Own Calculation

Regression Equation
$Y= 0.376-1.816X_1-0.407X_2+0.332X_3+e_t$

Interpretation:

The intercept of 0.376 means that if all other factors are held constant then the Liquidity risk for private banks will be 0.376, this does not have any practical explanation.

The coefficient of the variable I/A ratio is 1.816 means that if all other factors are held constant then 1 percentage increase in I/A ratio will increase Liquidity risk by 185%.

The coefficient of the variable Liquid Assets is .33 means that if all other factors are held constant then 1 percentage increase in Liquid Assets will increase Liquidity risk by 33%.

The coefficient of the variable ROE is -0.407 means that if all other factors are held constant then 1 percentage increase in ROE will decrease Liquidity risk by 40.7%

F- Test

The significance value of F test 0.056715which is below the significance level of 10% which shows that the variables taken in this analysis combined are significant. This means that I/A, ROE and liquid asset ratio combined affect the Liquidity Risk. The null hypothesis that I/A, ROE and Liquid asset ratio do not have an impact on ROA, therefore, can be rejected.

Multiple R

Multiple R measures the variation in the dependent variable with respect to the independent variables. Here the value of multiple r is 0.999 which is 99.9%, this shows that the 99.9% of the variation in Liquidity Risk is explained by the independent variables taken in this analysis namely I/A, ROE, Liquid asset ratio.

6.2.3. Comparative Discussion Based on Regression Result

Table 9: Comparative Discussion Based on Regression Result

Categories'	Private Bank	Commercial	P value	State Own Commercial Bank	P value
Multiple R	0.99943			0.999007	
R Square	0.998861			0.998015	
Adjusted R Square	0.995443			0.992058	
Standard Error	0.000684			0.000486	
Observations	5			5	
Intercept	0.414308		0.068901	0.376029	0.045464
I/A ratio	0.144231		0.341072	-1.81604	0.04461
ROE	-0.29047		0.092733	-0.40684	0.054522
Liquid assets	-0.84403		0.064891	0.332284	0.052727

Source: Own Calculation

In the case of private bank and public bank, Multiple R measures the variation in the dependent variable with respect to the independent variables. Here the value of multiple r is 0.999 which is 99.9%, this shows that the 99.9% of the variation in Liquidity Risk is explained by the independent variables taken in this analysis namely I/A, ROE, Liquid asset ratio.

In the case of private bank the intercept of 0.414 means that if all other factors are held constant then the Liquidity risk for private banks will be 0.414, this does not have any practical explanation.

In the case of public bank the intercept of 0.376 means that if all other factors are held constant then the Liquidity risk for private banks will be 0.376, this does not have any practical explanation.

In the case of private bank the coefficient of the variable I/A ratio is 0.144 means that if all other factors are held constant then 1 percentage increase in I/A ratio will increase Liquidity risk by 14.4%.

In the case of public bank the coefficient of the variable I/A ratio is 1.816 means that if all other factors are held constant then 1 percentage increase in I/A ratio will increase Liquidity risk by 185%.

In the case of private bank the coefficient of the variable Liquid Assets is -0.290 means that if all other factors are held constant then 1 percentage increase in Liquid Assets will decrease Liquidity risk by 29%.

In the case of public bank the coefficient of the variable Liquid Assets is .33 means that if all other factors are held constant then 1 percentage increase in Liquid Assets will increase Liquidity risk by 33%.

In the case of private bank the coefficient of the variable ROE is -0.844 means that if all other factors are held constant then 1 percentage increase in ROE will decrease Liquidity risk by 84.4%

In the case of public bank the coefficient of the variable ROE is -0.407 means that if all other factors are held constant then 1 percentage increase in ROE will decrease Liquidity risk by 40.7%

6.3. Hypothesis Testing

Hypothesis testing is needed to infer the result of a hypothesis performed on sample data from a larger population. The test helps to the analyst whether or not her primary hypothesis is true.

6.3.1. Hypothesis Test for Private Banks

    i) H_0: Investment to asset has no influence on the liquidity risk
       H_1: Investment to asset has influence on the liquidity risk

In the case of private bank, the p-value of the variable I/A ratio is 0.341072 which is higher than 5% significance level, this variable is not significant, so the null hypothesis that I/A ratio has no influence on the liquidity risk is accepted

    ii) H_0: Return on equity has no influence on the liquidity risk
       H_1: Return on equity has influence on the liquidity risk

The p-value of the variable ROE is 0.092733 which is also below the 10% significance level, this variable is also significant, hence the null hypothesis that Return on equity has no influence on the liquidity risk is therefore rejected. But with 5% significant level this result would be accepted.

    iii) H_0: Liquid asset ratio has no influence on the liquidity risk
       H_1: Liquid asset ratio has influence on the liquidity risk

The p-value of the variable Liquid asset is 0.064891 which is also below the 10% significance level, this variable is also significant, hence the null hypothesis that Liquid asset has no influence on the liquidity risk is therefore rejected. But with 5% significant level this result would be accepted.

6.3.2. Hypothesis Test For Public Banks

    i) H_0: Investment to asset has no influence on the liquidity risk
       H_1: Investment to asset has influence on the liquidity risk

In the case of private bank, the p-value of the variable I/A ratio is 0.04461 which is also below the 5% significance level, this variable is also significant, hence the null hypothesis that I/A ratio has no influence on the liquidity risk is therefore rejected.

    ii) H_0: Return on equity has no influence on the liquidity risk
       H_1: Return on equity has influence on the liquidity risk

The p-value of the variable ROE is 00.054522 which is also equal to the 5% significance level, this variable is also significant, hence the null hypothesis that Return on equity has no influence on the liquidity risk is therefore rejected.

    iii) H_0: Liquid asset ratio has no influence on the liquidity risk
       H_1: Liquid asset ratio has influence on the liquidity risk

The p-value of the variable Liquid asset is 0.052727 which is also equal to the 5% significance level, this variable is also significant, hence the null hypothesis that Liquid asset has no influence on the liquidity risk is therefore rejected.

6.3.3. Comparison

Table 10: Regression Comparison among state owned public banks

	PCBs	P value	Test of Significance	SCBs	P Value	Test of Significance
Multiple R	99.98%			99.94%		
F- Value	292.2785			167.5522		
Significance F	0.042966		Significant	0.056715		Significant
Intercept	0.414308	0.068901		0.376029	0.045464	
I/A ratio	0.144231	0.341072	Insignificant	-1.81604	0.04461	Significant
ROE	-0.29047	0.092733	Significant For 10%	-0.40684	0.054522	Significant
Liquid assets	-0.84403	0.064891	Significant For 10%	0.332284	0.052727	Significant

Regression Equation for PCBs (Private Commercial Banks): *Y= 0.414+0.144X_1-0.290X_2-0.844X_3+e_t*
Regression Equation SCBs (State Owned Commercial Banks): *Y= 0.376-1.816X_1-0.407X_2+0.332X_3+e_t*

Table 11: Comparison Hypothesis Testing between PSBs and SCBs

	PCBs		SCBs	
Null Hypotheses\Significance level	5%	10%	5%	10%
i) H$_0$: Investment to asset has no influence on the liquidity risk	Accepted	Accepted	Rejected	Rejected
ii) H$_0$: Return on equity has no influence on the liquidity risk	Accepted	Rejected	Rejected	Rejected
iii) H$_0$: AD ratio has no impact on ROA	Accepted	Rejected	Rejected	Rejected

Source: Own Calculation

In the case of private bank, the p-value of the variable I/A ratio is 0.341072 which is higher than 5% significance level, this variable is not significant, so the null hypothesis that I/A ratio has no influence on the liquidity risk is accepted. In the case of public bank, the p-value of the variable I/A ratio is 0.04461 which is also below the 5% significance level, this variable is also significant, hence the null hypothesis that I/A ratio has no influence on the liquidity risk is therefore rejected.

In the case private bank the p-value of the variable ROE is 0.092733 which is also below the 10% significance level, this variable is also significant, hence the null hypothesis that Return on equity has no influence on the liquidity risk is therefore rejected. But with 5% significant level this result would be accepted. In the case of public bank the p-value of the variable ROE is 00.054522 which is also equal to the 5% significance level, this variable is also significant, hence the null hypothesis that Return on equity has no influence on the liquidity risk is therefore rejected.

In the case of private bank the p-value of the variable Liquid asset is 0.064891 which is also below the 10% significance level, this variable is also significant, hence the null hypothesis that Liquid asset has no influence on the liquidity risk is therefore rejected. But with 5% significant level this result would be accepted. In the case of

public bank he p-value of the variable Liquid asset is 0.052727 which is also equal to the 5% significance level, this variable is also significant, hence the null hypothesis that Liquid asset has no influence on the liquidity risk is therefore rejected.

7. Concluding Remarks

Private Banks have more liquidity riskier than Public Banks. But private bank's liquidity risks are more downward than public banks. Public banks size is larger than private banks. Private bank is more sustainable than public bank. Private bank's debt to equity ratio is less than public bank. Which is seem good for private bank as high amount of debt is the sign of riskiness. Private bank's investment to asset ratio is less than public bank, that means invest income of private bank is less than public bank. ROE of private bank is on the good position. Private Banks have more liquidity asset than public banks. So private should work with its liquidity risk reduction. And public bank should decrease their debt to equity ratio. However, banking is an industry that is everyday changing and to keep an updated idea of the industry more research must be done on a frequent basis and with updated data to have a real idea.

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