

EFFECT OF LIQUIDITY ON PROFITABILITY OF BANKS USING REVISITED PANEL DATA ANALYSIS: DOES OWNERSHIP STRUCTURE MATTER?



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ABSTRACT

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This study aims at examining the effect of liquidity management on the profitability of Bangladesh banks. To accomplish this objective, 32 banks of Bangladesh including second and third generation banks are taken as a sample. The secondary sources of data have been used for this study which are collected from the annual reports. Hausman specification test is run to identify the appropriate model which suggests that random effect model is suitable for this study. This study focuses on ROA, ROE and EPS as a denominator of profitability. Current ratio is found to have a positive impact on profitability of bank whereas capital adequacy ratio, interest rates are also found to be statistically significant for influencing the performance of the bank. Thus, this study suggests that proper management of liquidity will raise the profitability of the banks and the findings of this study will be helpful for the policy makers to solve the problems in respective field.

Contribution/ Originality: This study focuses on both private and state-owned bank with 11 years' time frame which is one of biggest contribution. Applying the Hausman specification test for model reliability is another area of contribution for this study. This study also adopts two macroeconomic variables.

1. INTRODUCTION

The banking sector is the most progressive and well-established industry in the economy of Bangladesh. To cope with the competitive banking world, banks try to enhance their performance to survive efficiently. Banking industry is also regarded as a most influential sector for the economic development of a country (De Bandt, Lecarpentier, & Pouvelle, 2021). In 1972, the newly formed Bangladesh government announced that the branch of the National Bank of Pakistan was the central bank for this country and changed its name to Bangladesh bank by the presidential order no 127 (Islam, Sarker, Rahman, Sultana, & Prodhan, 2017). All the domestic banks have been consolidated into six national commercial banks for the country. The government's target is to ensure funding for the public sectors particularly give credit to the agricultural and industrial sectors to rebuild this war-affected country (Siddiquee, Parvin, & Hossain, 2013). According to the Bangladesh bank's website, at present there are 65 scheduled banks operated in our country. Among them six are state-owned commercial banks, forty three private commercial banks, five specialized banks, and nine foreign commercial banks.

The banking system of a country is considered as the core of the economy. According to the Bangladesh Bureau of Statistics, monetary intermediation contributed 3.42% of Bangladesh GDP by banks in the Fiscal year 2020-2021. It helps to consolidate savings and thereby encourage the use of national resources (Yesmine & Bhuiyah, 2015). Commercial banks are a profitable organization and their main activity is to collect money as deposit from the surplus unit then lends to deficit unit (Siddiquee et al., 2013). As a developing economy of Bangladesh, private commercial banks also play a significant role to step up financial activities to provide consumer loan, create a source of employment, finance in trade and agriculture, as well as maintain the central bank's policy. They also help in capital accumulation, fund creation and distribution, execution of new technology, market development, foreign trade, and ensure best utilization of wealth (Rahman, Hamid, & Khan, 2015).

The Commercial banks have been playing an important role in the economic development of Bangladesh. They provide investible funds to both the public sector, and specially the private sector. Banks also play a central role in the transmission of monetary policy which is one of the government's most important tools for achieving economic growth without inflation. Profitability, liquidity and safety are the main objectives of a monetary policy. While making profits banks are also concerned about liquidity and safety (Rahman, Hoque, & Siddique, 2019).

Liquidity in banking refers to the efficiency of bank to meet its financial obligations when they incurred. The influencing factors of bank liquidity evaluate how liquid the bank is. A well-managed bank is able to satisfy the withdrawal needs of customers at all times. On the other hand, the goal of many firms is to remain stable and profitable to enhance shareholders' worth and survive. Thus, profit is regarded as significant prerequisite of banking sector in order to operate effectively in a period of growing competition of financial market and also for the safety of banks (El-Chaarani, 2019). To measure the financial condition of both commercial and profit-oriented organization, profitability and liquidity are considered as crucial indicators.

Financial institution especially banks are vulnerable to liquidity risk. Liquidity risk is also associated with banking activities. When the bank is unable to efficiently fulfill its financial obligations it is referred to as liquidity risk. Liquidity risk arises from funding long-term illiquid assets by short-term liquid liabilities. This mismatch between long-term assets and short-term liabilities generates liquidity risk. So, an effective and sound liquidity risk management is the necessity of bank to protect shareholders' and depositors who are the major public of bank (Chen, Chen, & Huang, 2021). Liquidity management involves the liquidity ratio, and the bank profitability ratio. It refers to short term assets such as cash, advances, investment, interbank balances, as well as short term liabilities such as loans, accounts payable, and loans. On the other hand profitability measures the economic success of the firm irrespective to cash flow in the firm (Lukorito, Muturi, Nyang'au, & Nyamasege, 2014). It is the indicator of banks performance. Liquidity is a measure of short-term assets and liabilities. Banks have to earn profit for its shareholders and at the same time satisfy the withdrawal needs of its customers. If the liquidity management is not strong enough then the banks can't achieve their goals as per their target (Rahman et al., 2019).

The rate at which it lends is called lending rate, and collects deposits is deposit rate. The differences between lending rate and deposit rate is known as interest rate spread (Rahman et al., 2019). This is how banks make profit. Banks generally lend at higher rate than their collection rate.

This paper offers several contributions to bank liquidity and profitability. The contribution of this paper is threefold. Primarily, it demonstrates the effects of liquidity management on the profitability in the second and third generation banks of Bangladesh. Liquidity management strategies mean the business has a plan for meeting its short-term and immediate cash obligations without experiencing significant losses (Alshatti, 2015). Secondly, this current study also focuses on liquidity ratio, and bank profitability ratio for estimating the effect of liquidity on profitability. Literature based on the relationship between liquidity and bank performance is ambiguous. Several studies reported that liquidity affects positively bank performance (Bourke, 1989; Kosmidou, Tanna, & Pasiouras, 2005). However, other studies defended the opposite thesis. They concluded that liquidity has a negative influence on bank performance under the misallocation of resources. Thirdly, to fill the time limitation, this study considers

11years data of second and third generation commercial banks of Bangladesh. Finally, this current study applies the Hausman Specification test for the model validity and reliability.

This paper informs the bankers and stakeholders that it is the necessity to analyze the impact of liquidity on profitability to improve the performance of banks on the first hand, and facilitate the liquidity management decision making process, on the second hand. The current study suggests the policymakers to motivate both bankers and stakeholders to manage liquidity efficiently as proper management of liquidity can lead to a feasible and fruitful decision. This study also encourages the financial decision makers to enhance the performance of banks based on liquidity condition while taking financial and managerial decision.

The remainder of this paper is organized as follows. Section 2 presents a review of literature. Section 3 describes the proposed methodology. Results and discussion are in section 4. Finally, section 5 concludes the paper with further road-maps.

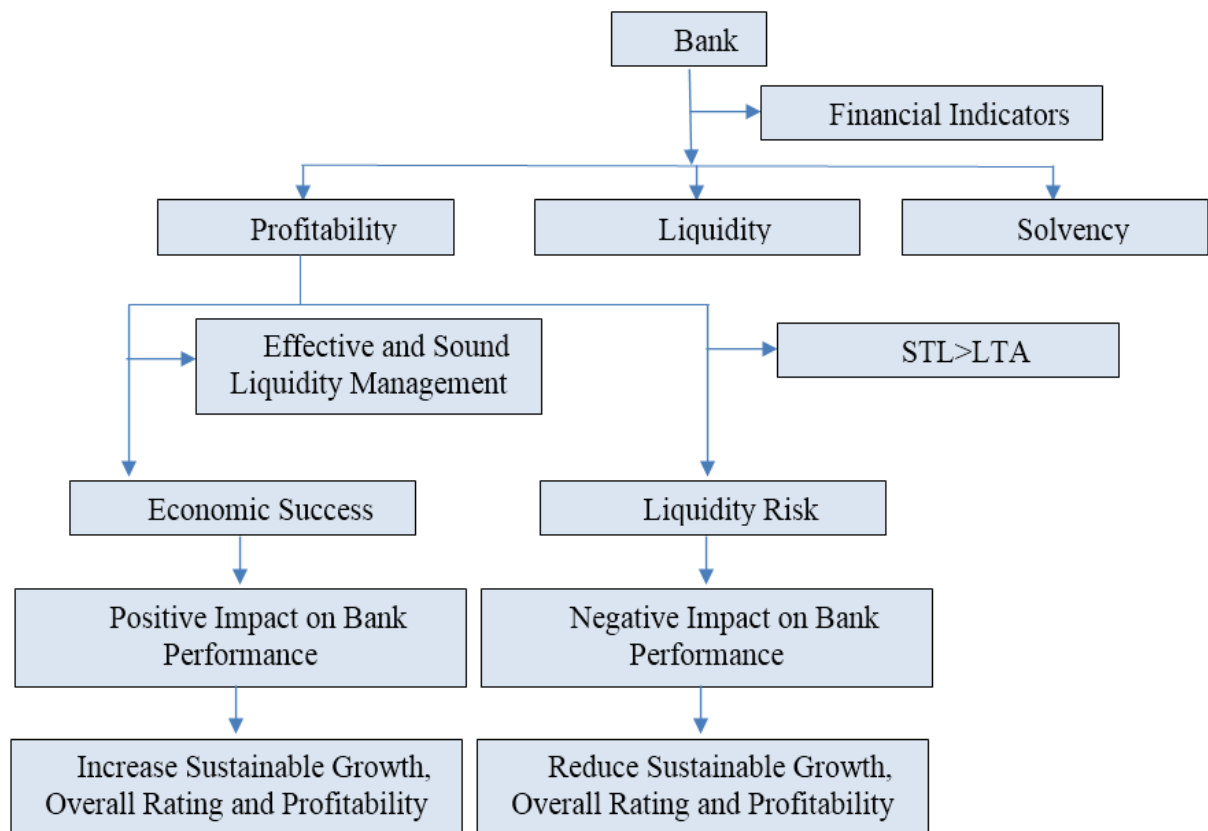


Figure 1. Overall summary of the study.

Figure 1 demonstrates the overall summary of the study by suitable connections with each factor.

2. LITERATURE REVIEW

2.1. General Consideration

Liquidity assists the banks to meet financial obligations of depositors easily and minimize the chance of being failed. Banks need to manage liquidity as effectively as possible to increase the profitability (Breitenlechner, Geiger, & Scharler, 2022). Bareikaitė and Martinkutė-Kaulienė (2014) inquire into the threats of liquidity. The study examined liquidity and its management processes in Lithuanian banking sector. They investigated Lithuanian banks position towards liquidity risk, analyze what kind of management tools banks used for ensuring favorable position towards liquidity and also explored the influence of liquidity on profitability in Lithuanian banking sector (Bareikaitė & Martinkutė-Kaulienė, 2014). This study narrated that banks should manage the liquidity properly

with confirmation of proper liquidity demand and supply. Similarly, Bareikaitė and Martinkutė-Kaulienė (2014) provided evidence on the relationship between liquidity and profitability of banks listed on the Ghana Stock Exchange. It was found that both the liquidity and the profitability of the listed banks were declining. The study also found that there was a very weak positive relationship between liquidity and profitability of the listed banks in Ghana (Lartey, Antwi, & Boadi, 2013). Ibrahim and Aqeel (2017) suggested an optimum utilization of available liquidity for the purpose of increasing bank's profitability and also gave recommendation to the banks for adopting a perfect framework of liquidity management for assuring sufficient liquidity (Ibrahim & Aqeel, 2017).

2.2. Positive Association

Paul, Bhowmik, and Famanna (2021) aims to examine the impact of liquidity on commercial bank's profitability for the year 2009- 2018 in Bangladesh. A sample of forty commercial banks was collected for their study and the data were collected from the annual reports of that selected banks. Their study considered the Return on Equity (ROE) as profitability measurement for the banks. The explanatory variables are as deposit to asset ratio, cash equivalent to deposit ratio, loan to deposit ratio, current ratio, and the liquidity assets ratio. By applying the multiple regression models their study found out that there is a positive and significant relationship between liquidity and profitability of commercial banks in Bangladesh (Paul et al., 2021). Charmler, Musah, Akomeah, and Gakpetor (2018) claimed that liquidity is positively associated with return on assets (ROA) as well as there is a weak positive relation between the ratios of liquid assets to total assets regarding return on equity (ROE). Also the study revealed a positive association between net interest margin, bank size, capital adequacy ratio, foreign ownership and bank profitability. To conduct the study, they used panel data of 21 Ghana's banks as a sample during the year 2007-2016 (Charmler et al., 2018). Nabeel and Hussain (2017) found that interest coverage ratio, capital adequacy ratio and quick ratio has a positive relationship with banks profitability whereas the cash ratio and current ratio has negative relationship with banks profitability. The study used secondary data of selected ten banks of Pakistan from 2006 to 2015 (Nabeel & Hussain, 2017). Lukorito et al. (2014) studied on the impact of liquidity on commercial banks profitability in Kenya. Their study collected data from the annual financial statements as the secondary source of 43 commercial banks for the time period of 2009 to 2013. Return on Asset (ROA) was used as the measure the profitability of banks. On the other hand, liquidity, liability, bank size, deposit, and banking risk were taken as the explanatory variables for their study. They applied a multi linear panel regression for their study. Empirical results showed that the liquidity has a significant and statistical impacts on the bank's profitability. Their study suggested that banks should maintain the adequate liquidity in the form of short term securities for generating more profit (Lukorito et al., 2014). Alshatti (2015) determined the effect of the liquidity management on profitability in the Jordanian commercial banks during the time period 2005–2012. Thirteen banks have been chosen to conduct the study. The liquidity indicators were investment ratio, Quick ratio, capital ratio, net credit facilities/ total assets and liquid assets ratio, while return on equity (ROE) and return on assets (ROA) were the proxies for profitability. The empirical results revealed that a positive effect of the increase in the quick ratio and the investment ratio of the available funds on the profitability, while there is a negative effect of the capital ratio and the liquid assets ratio on the profitability of the Jordanian commercial banks (Alshatti, 2015). To determine the impact of liquidity risks and non performing finance ratio on the profitability of Indonesian commercial sharia banks for 2014 to 2016, Purbaningsih and Fatimah (2014) applied a panel regression analysis. The empirical results provided evidence that liquidity has a positive impact (Purbaningsih & Fatimah, 2014). The study of Anbar and Alper (2011) investigated the macroeconomic and bank specific factors of Turkey's commercial bank profitability for the time period of 2002-2010. Return on assets, net interest margin, and return on equity were considered as the profitability indicator of banks whereas independent variables were asset size, asset quality, liquidity, capital adequacy, and deposit. Also, the macroeconomic indicators were annual growth rate, real interest rate, and annual inflation rate. Through the utilization of panel regression model their study showed evidence that the real interest

rate and bank size have a positive impact on banks profitability in Turkey (Anbar & Alper, 2011). Perera, Skully, and Bashir (2013) identified the factors of profitability of South Asian countries commercial banks. Their selected countries were India, Bangladesh, Sri Lanka, and Pakistan. They collected their banks specific data from the Bank scope database. A total 119 banks were selected from four countries. Among them 58 were Indian banks, 21 Pakistani banks, 29 Bangladeshi banks, and 11 Sri Lankan banks. By analyzing the Generalized Method of Moments, this study revealed that Banks size and Efficiency of banks production had positive relation to banks profitability (Perera et al., 2013).

2.3. Negative Association

Bencharles and Abubakar (2020) investigated the Nigerian banking industry to evaluate the impact of liquidity management on Islamic and conventional banks profitability for the period 2012-2019. Empirical result indicated that profitability and liquidity have an inverse relationship in both conventional and Islamic banks (Bencharles & Abubakar, 2020). Akter and Mahmud (2014) explored the connection between liquidity and profitability of Islamic banks, Government banks, private banks, and multinational banks in Bangladesh for the time period of 2006 to 2011. Current ratio was used to represent the liquidity of a bank, whereas ROA was used to measure profitability. Their study considered 12 banks as their sample. By conducting linear regression model the findings of their study indicated that there had no significant relationship between liquidity and profitability (Akter & Mahmud, 2014). Khalid, Hossain, and Rashed (2019) conducted a study to show the relationship between liquidity and financial performance of Commercial banks in developing country like Bangladesh. They utilized panel data procedure for a sample of Dhaka stock market enlisted all commercial banks (31) during the year of 2010-2017. The results stated that liquidity has no significant impact on financial performance of Bangladesh commercials banks (Khalid et al., 2019). Parvin, Chowdhury, Siddiqua, and Ferdous (2019) examined 7 commercial banks in Bangladesh to find out the impact of liquidity and bank size on profitability for the time period of 2011 to 2015. Data were collected from the annual reports. Their study utilized ratio analysis, descriptive, and correlation analysis. Results show that liquidity and bank size have no connection with bank's profitability (Parvin et al., 2019). By applying a simple linear regression model, Sufian and Habibullah (2009) wanted to investigate the profitability of 37 commercial banks in Bangladesh for the period 1997 to 2004. They were collected their data from the IMF financial statistics, and Bank scope database. They used ROAA, NIM and ROAE as proxy variables to measure the profitability. Findings of their study concluded that the bank specific characteristics such as credit risk, loan intensity have a significant and positive effect while the non-interest income and bank size have negative impacts on profitability. The macro economic variables have no significant impacts (Sufian & Habibullah, 2009).

Several works have been carried out on this area in Bangladesh but those studies only cover private banks which focused on short time frame. Our study will cover both private and state-owned banks with long time period by using some additional statistical tools. Here we utilize the Hausman Specification test for model reliability. This study also utilizes the macroeconomic variable such as GDP and Inflation rate. Hence, this study will help to find problems regarding liquidity management and possible solutions relating to liquidity and profitability of commercial banks in Bangladesh.

3. METHODOLOGY

This study has used quantitative analysis to analyze the impact of liquidity on profitability. Secondary data comes from the annual reports of listed commercial banks in Bangladesh for the year of 2010 to 2020. The annual data are compiled on the website of each specific bank. For observing the impact of liquidity on profitability of private and state-owned commercial banks of Bangladesh we will consider second generation and third generation banks. Where a total sample of 32 commercial banks is a representative sample of a total 62 banks in this country. This study also collects data from required secondary sources such as central bank of Bangladesh, statistical bulletin

for the years, journals, research papers, conference reports, online books, newspapers and internet materials as well as the existing literature on liquidity and profitability.

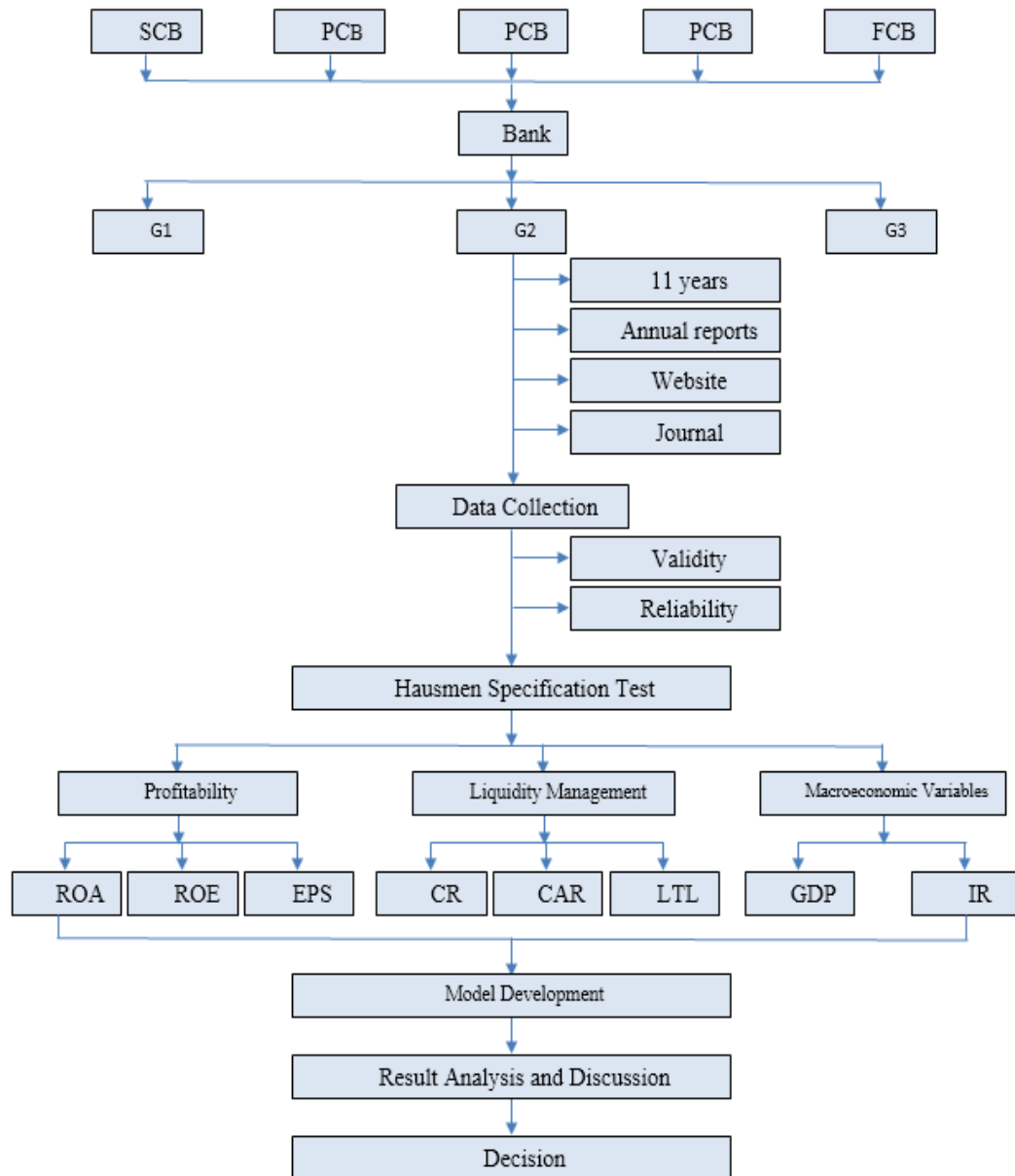


Figure 2. Block diagram of proposed methodology.

Figure 2 demonstrates the detail methodology of the study with precise steps and connections among the steps.

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Table 1 indicates how this study adopts total sample. Due to the availability of year wise annual reports of banks, this study considers 337 samples by covering the year 2010 to 2020.

Table 1. Sample size.

Particulars	Value
Number of annual reports available of Banks from 2010 to 2020 (32*11)	352
Less: Non availability of annual reports and data	15
Total banking firm year of observations	337

Note: Here * indicates the multiplication.

Table 2 specifies the variables selected for this study and its measurement. 1st column shows the three types of determinants of variable such as profitability, liquidity management, and macroeconomic variable. The components of profitability indicator are the ratio of return on assets, return on equity, and earning per share. Liquidity management depicts the current ratio, cash ratio, capital adequacy ratio, and interest coverage ratio. Finally the macroeconomic variables are the year wise GDP growth rate, and inflation rate. 3rd column displays how we calculate our desired ratios from the annual reports of banks.

Table 2. Variable list and their measurements.

Determinants	Variable	Measures	Notations
Profitability	Return on assets	Net profit/Average total assets	ROA
	Return on equity	Net profit/Average total equity	ROE
	Earnings per share	Profit attributable to equity holder/No. of share outstanding	EPS
Liquidity Management	Current Ratio	Current assets/Current liabilities	CR
	Cash Ratio	Cash/Current liabilities	CASR
	Capital Adequacy Ratio	Total eligible regulatory capita held/Total risk weighted assets	CADR
	Interest Coverage Ratio	Profit before interest and tax/Total interest expenses	ICR
Macroeconomic variables	Gross Domestic Product	Growth rate of Gross domestic product	GDP
	Inflation Rate	Consumer Price Index (CPI)	IR

Figure 3 illustrates the dependent and independent variables of this current study. In this figure we can see macroeconomic variables and bank specific variables consider as independent variable and bank performance indicators as dependent variable.

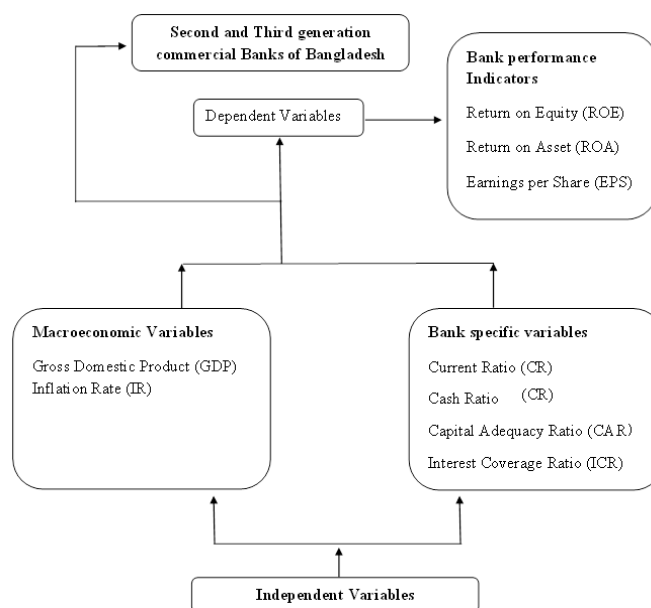


Figure 3. The diagram shows the relationship between the variables.

3.1. Models Specification

This study uses a random effects model for measuring the effect of liquidity on profitability which combines some ratios. The key dependent variables are Return on Asset (*ROA*), Return on Equity (*ROE*), and Earning per Share (*EPS*). The major independent variables are also Current Ratio (*CR*), Cash Ratio (*CASR*), Capital Adequacy Ratio (*CADR*), and Interest Coverage Ratio (*ICR*). Besides this, we also take into account two macroeconomic variable GDP growth and the inflation rate to this model which affect bank performance. The econometric models are given:

$$ROA = \alpha + \beta_1 CR_i + \beta_2 CASR_i + \beta_3 CADR_i + \beta_4 ICR_i + \beta_5 IR_i + \beta_6 GDP_i + \varepsilon_i \quad (1)$$

$$ROE = \alpha + \beta_1 CR_i + \beta_2 CASR_i + \beta_3 CADR_i + \beta_4 ICR_i + \beta_5 IR_i + \beta_6 GDP_i + \varepsilon_i \quad (2)$$

$$EPS = \alpha + \beta_1 CR_i + \beta_2 CASR_i + \beta_3 CADR_i + \beta_4 ICR_i + \beta_5 IR_i + \beta_6 GDP_i + \varepsilon_i \quad (3)$$

Above Equations 1-3 shows the relationship of three different dependent variables like ROA, ROE, and EPS with different independent variables such as CR, CASR, CADR, ICR, IR, and GDP.

Here,

ROA= Return on Asset.

ROE= Return on Equity.

EPS= Earnings per Share.

CR = Current Ratio.

CASR = Cash Ratio.

CADR = Capital Adequacy Ratio.

ICR= Interest Coverage Ratio.

IR = Inflation Rate measured by Consumer Price Index (CPI).

GDP = Gross Domestic Product (GDP) measured by Growth rate of Gross domestic product;

ε = Standard error.

α = Alpha, a constant.

β_1, \dots, β_6 are the unknown parameters to be estimated and i implies the numbers as 1,2,.....,n.

3.2. Hausman Specification Test for Panel Analysis

Hausman specification test for random effect or fixed effect model on panel data are undertaken for this study to find out whether the postulated model is fitted suitable or not. For analyzing the collected data STATA 12, other convenient software and inferential statistics are used as per the requirement of the study.

3.3. Hausman Specification Test

Hauseman specification test for random effect model on panel data is run to find out whether the postulated model is fitted suitable or not. Hausman test can be used if under the null hypothesis, one of the compared models gives consistent and efficient results and the other – consistent but inefficient and at the same time under the alternative hypothesis the first model has given inconsistent results and the second – consistent (Frondel & Vance, 2010).

The general form of Hausman test statistic is:

$$H = (\hat{\beta}' - \hat{\beta}'')' [Var(\hat{\beta}') - Var(\hat{\beta}'')]^{-1} (\hat{\beta}' - \hat{\beta}'')$$

Under null hypothesis, it is $\chi^2(k)$, distributed, where k is the number of parameters.

Therefore the choice of the random effect model examining houseman test is stated as

H₀: $Cov(\alpha_{it}, X_{it}) = 0$ (Exogeneity) i.e. The random effect model is consistent efficient.

H₁: $Cov(\alpha_{it}, X_{it}) \neq 0$ (Endogeneity) i.e. The random effect model is inconsistent inefficient that implies fixed effects model is appropriate (p-value < α).

If the result is in favor of the null hypothesis, then we use the random effect model and if the result is in favor of the hypothesis, then we use the fixed effect model. In this study, through hausman test, the result indicates that the null hypothesis is accepted and the random effect is applicable.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 3 shows the descriptive statistics of ROA, ROE, EPS, CR, CASR, CADR, ICR, IR and GDP. The mean value is shown in the first column. The second column displays the standard deviation of the observations. The third and fourth columns indicate the minimum and maximum values. The mean value of (log form) variables are 0.967 for ROA, 10.792 for ROE, 3.15 for EPS, 1.212 for CR, 0.149 for CASR, 0.116 for CADR, 1.33 for ICR, 6.68 for IR and 5.22 for GDP.

Table 3. Summary statistics.

Variable	Mean	Std. Dev.	Min	Max
ROA	0.967	1.088	-7.490	3.810
ROE	10.792	19.62	-259.94	175.26
EPS	3.150	18.307	-187.84	98.16
CR	1.212	0.337	0.730	3.180
CASR	0.149	0.196	0.002	0.999
CADR	0.116	0.124	-0.054	0.885
ICR	1.330	0.305	0.043	3.265
IR	6.686	1.620	5.510	11.400
GDP	5.221	1.358	1.354	7.045
Number of Observations	337			

4.2. Pairwise Correlation

Table 4 shows the pairwise correlation of ROA, ROE, EPS, CR, CASR, CADR, ICR, IR and GDP. ROE, EPS, CADR, ICR, and IR have strong positive relation with ROA, while CR and CASR have weak positive relation. But GDP is negatively related with ROA, ROE, EPS, CR, ICR, and IR. EPS is also positively related with ROE. We also find weak positive relation among CASHR, ROE, EPS, and CR. CADR has a negative relation with ROE, and CASHR. Here the macroeconomic variable IR has a positive relationship with all the variables.

Table 4. Pairwise correlation test.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) ROA	1.000								
(2) ROE	0.685	1.000							
(3) EPS	0.395	0.526	1.000						
(4) CR	0.061	0.036	0.202	1.000					
(5) CASH R	0.019	0.075	0.004	0.075	1.000				
(6) CADR	0.155	-0.057	0.029	0.164	-0.099	1.000			
(7) ICR	0.162	0.088	0.058	0.020	-0.046	0.045	1.000		
(8) IR	0.282	0.203	0.227	0.121	0.032	0.074	0.031	1.000	
(9) GDP	-0.148	-0.181	-0.214	-0.039	0.008	0.017	-0.029	-0.041	1.000

4.3. Result of Hausman Test

Table 5 summarizes the main findings of our study. The Hausman test of chi square value is 7.25 for model 1, 1.40 for model 2, and 0.78 for model 3 with p-value of greater than 5% for all models. Hence, the appropriate model is the random effect model.

Table 5. Summary statistics.

Test for Model Selection	Models	Chi-Square	Prob>chi2
Hausman Test	Model 1	7.25	0.298
	Model 2	1.40	0.965
	Model 3	0.78	0.992

4.3.1. Effect of Liquidity on Profitability of Banks

Table 6 shows the estimated result of random effect model. R square is the goodness of fit, measure for linear regression models. This statistic indicates the percentage of the variance in the dependent variable that the independent variables explain collectively. R-squared measures the strength of the relationship between model and the dependent variable on a convenient 0 – 100% scale. This is 0.182 for model 1, 0.49 for model 2 and 0.58 for model 3. In the Table 3, in model 1, the profitability of bank is significantly correlated with interest rate and gross domestic product but all the other factors have no statistical significant impact on the bank performance. In model 2, it is seen that interest coverage ratio and GDP have statistical significant negative effect on the profitability of bank whereas the interest rate has only statistically significant positive impact on the performance of bank and the others have no significant impact on the profitability of bank. In model 3, it is seen that capital adequacy ratio, interest rate and the GDP have statistically significant impact on the profitability of the banks and the others have no significant effect on the performance of the banks. Current ratio is taken as a proxy variable for liquidity of bank which is also found to be significantly positive effect on profitability of bank in model 1 and model 2 and for model 2 it is identified as negatively related with the bank performance.

Table 6. Result of the random effect models.

Variables	Model 1		Model 1		Model 3	
	Coefficients	t-value	Coefficients	t-value	Coefficients	t-value
CR	0.348*** (0.026)	12.97	-0.136* (0.076)	-1.78	0.256*** (0.067)	3.769
CASR	0.211 (0.284)	0.74	-2.733 (6.264)	-0.44	1.444 (5.847)	0.25
CADR	-0.237 (0.604)	-0.39	5.28 (13.318)	0.40	22.717* (12.432)	1.83
ICR	0.218 (0.184)	1.18	-7.035* (4.062)	-1.73	-4.333 (3.792)	-1.14
IR	0.215*** (0.031)	6.97	1.707** (0.68)	2.51	1.886*** (0.635)	2.97
GDP	-0.162*** (0.036)	-4.47	-2.522*** (0.799)	-3.16	-1.97*** (.746)	-2.64
Constant	-0.132 (0.397)	-0.33	22.605** (8.761)	2.58	0.192 (8.178)	0.02
Extra Statistics						
R-squared	0.182		0.49		0.58	
F-test	11.059		2.562		3.052	
Prob > F	0.000		0.000		0.000	
Number of obs.	337.000					

Note: *** p<.01, ** p<.05, * p<.1.

5. CONCLUSION

Liquidity risk plays a key role in banking system and its proper management facilitates better performance of banks which cannot be ignored at all. In this study, from observing 32 banks of Bangladesh and their annual reports, it is seen that the interest rate, GDP and capital adequacy ratio have statistically significant effect on the bank performance. A positive relation of liquidity with bank profitability is found in model 1 and model 2 and for model, 2 it is identified as negatively related with the bank performance. It provides an important policy implication to the policy makers that to raise bank performance or profitability; liquidity risk must be reduced as well as proper

management of interest rate and capital adequacy ratio are required especially in case of developing countries like Bangladesh. However this study is limited with only internal and visible conditions published by the annual report of banks due to time and financial limitation whereas further study can be extended by taking into account large area and time. In future, researchers can take other variables and characteristics that have influence on bank profitability. In this study, we focus on only the commercial banks in Bangladesh and only one country is selected for this study. Limiting these study will carry out a future study where we can incorporate others industries such as financial institutions and then make comparison the performance between the commercial banks, and financial institutions. Also, this study can be broadened by taking other countries' commercial banks as sample.

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Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study.

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