Analysis of Impact of Micro Economic Factors on Liquidity Position of Selected Private Sector Banks in India

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Abstract

This paper examines microeconomic factors that are specific to banks these factors help in finding the liquid assets of the banks. To discover the relationship, Multiple Linear regression on a sample of 10 private sector banks from 2008 to 2017 is performed. The paper concentrates on factors that are connected with micro-level functions of banks such as the profit earned, the size of the selected banks funding the cost of banks, deposits and capital adequacy. The analysis shows that all bank-specific micro-level factors expect profitability affect banks liquidity. Further cost of funds have a negative impact on liquidity; all other factors showed a favourable impact on banks liquidity, only profitability factor have an insignificant effect on the liquid asset position of selected banks. This paper highlights the liquidity position of Private Banks in India and gives a better understanding of liquidity analysis.

Keywords: Banks, Liquidity, Profitability, Deposits, Cost, Size, Capital, JEL Classification

Introduction

Banking services act as an important factor in growth of a economy, strong and stable banks leads to a stable economy. Performance analysis of banks is carried out on regular basis by many researchers it is important to know the performance of banking sector in any country as banking sector plays a very important role in funding for the development of a country as a whole (Muhammad Umar, 2017), Liquidity is created by the banking sector by holding fixed assets, bankers help in funding the long-term fixed assets with short-term current liabilities. As per "Reserve Bank of India (2012), liquidity is a bank's capacity to fund increase in assets and meet both expected and unexpected cash and collateral obligations as they become due". Bank liquidity is affected by many microeconomic factors that are internal and specific to the organizations (Anamika Singhn, 2016) "Micro factors include bank-specific determinants of liquidity whereas macro factors are external factors that influence bank liquidity but are not under the control of bank management." (Abdul Razak Abdul Hadi1, 2018) For every bank, its strength and resilience may come from within or outside the bank itself. (Munteanu, 2012) "Banks, as major players in the financial universe, need to adjust their aims for profitability in order to get protection against liquidity risk." It is important to study the deposits, interest earned, interest expended total funds received and the total loan given to understand the liquidity position of a bank. (Sun, 2016), The process of moving resources from excess economic units to units having investment opportunities, i.e., "the procedure of converting illiquid assets to liquid liabilities is known as liquidity formation by banks. This process is very important for the smooth functioning of the economy." (Fang Hu, 2013)Commercial banks work on three basic principles of Liquidity, profitability and safety, these principles create trust on the mind of the customers and improve banking operations. "Liquidity is the ability to meet short-term commitments; it is the ability to convert liquid assets into cash as quickly as possible." (P.V. Nketcha Nana, 2014) "The accumulation of large bank reserves displaces funding which could be used to increase the supply of credits to the private sector. It is thus important to find ways of getting a greater share of bank resources flowing to support private sector development." For banks, liquidity is an important aspect, as it is important to manage liquidity to meet the demand for loans in the market. As per the RBI liquidity management includes the following:

- Ability to manage the deposits and reduce liabilities by efficiently managing the loan portfolios and the liabilities
- Funding through deposits
- Liability side management
- Asset side management
- Managing off-balance sheet transactions

The present study is an effortto analyse micro internal factors of selected banks (Return on assets, bank size, Capital adequacy ratio, deposits and funding cost) affectingliquidityofIndian private commercial banks, as the paper uses only bank-specific factors it concentrates on internal sources influencing liquidity which are also known as controllable factors. The present paper focuses on the association of liquidity of banks with various bank-related micro level internal factors. The study will help the banks develop plans to maintain adequate liquidity in the future with minimum possible losses and maximum possible gains. The paper is divided into various parts which includes introduction as the first part, the second part discusses about the trends in liquidity position of Indian banks, followed by literature review which forms the third part of the paper, part four focuses on research methodology, followed by data analysis and discussion of results in part five and six. Part seven covers the conclusions and suggestions derived from the analysis.

The Banking Sector in India

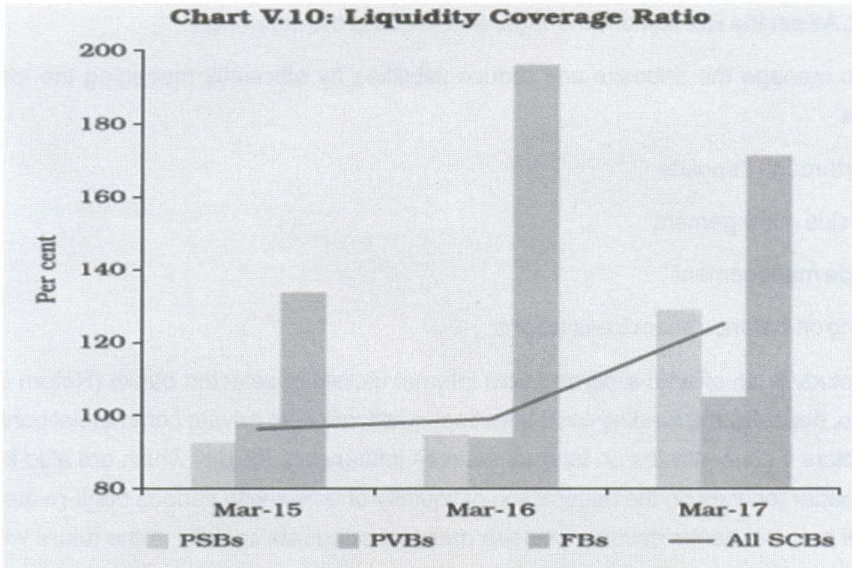
Banking in India is a result of slow and gradual development. The modern commercial banking originated in India during the latter part of 19th century mainly due to the growth of foreign trade and the convergence of organized commercial and industrial sector till the initiation of three presidency banks the European agency houses acted as bankers. For the past three decades, Indian banking has faced several challenges in the form of technology, product innovation in other countries, customer expectations and other external or internal factors. Indian banking system has been strong enough to handle the challenges and has specific outstanding achievements, one of its significant achievements is its extensive reach and ability to serve the ever-growing Indian population. Conservative banking has protected Indian banks from many crises in the past, but in the modern era Indian Banking has been flourishing and expanding all over which has led to the higher valuation of Indian banks as compared to some of the Asian countries.

Liquidity Coverage Ratio of Indian Banks

"The liquidity coverage ratio (LCR) is intended to build banks' short-term resilience to potential liquidity disruptions. LCR requires the banks to have adequate high-quality liquid assets (HQLAs) to withstand a 30-day liquidity shock – net cash outflows in a severe stress scenario. Implementation of the LCR was phased in by the Reserve Bank at 60 percent from January 1, 2015, to reach 100 percent on January 1, 2019" (RBI guidelines).

Liquidity coverage ratio has the upper hand in liquidity measurement and management as compared to statutory liquidity ratio as it covers both assets and liabilities while measuring liquidity. LCR does not allow banks to lend more than necessary this helps banks to maintain sufficient liquid assets for meeting the future requirements.

Figure 1. Liquidity Coverage Ratio (LCR)



Source : RBI (Trend and Progress of Banking in India)

The Figure 1, furnishes the liquidity of public sector banks are improving and increasing drastically form the year 2015 to 2017, the liquidity position of private sector banks is also improving but as compared to public sector banks they maintain less liquid assets.

Literature Review

Measuring and managing banks liquidity position is an essential aspect to be dealt with as liquidity affects the performance of the banks. According to (Muhammad Umar, 2017), the authors study the relationship between capital requirement and liquidity, they deal with three different hypothesis "Financial Fragility structure," "crowding out of deposits" and "risk absorption hypothesis" "the authors opine that there is a negative relationship between bank liquidity creation and capital". (Anamika Singhn, 2016), "observed that bank size as bank specific factor has an adverse relationship with bank liquidity while profitability, deposits and capital adequacy ratios have a favourable impact on the bank's liquidity. They also opine that the ownership sector of banks has a greater impact on bank liquidity at the time of financial crises".

Abdul Razak, Abdul Hadi, 2018 in their study is narrowed down towards some relatable concerns within the Basel risk management framework. "Liquidity ratio (LR), capital adequacy ratio (CAR), non-performing loans (NPL) and default risk premium (FQL) are used as a substitute for bank's soundness, while loan growth (FEXP) is a measure for bank's strength". They have tried to work on the impact of liquidity and Capital adequacy ratio on banks performance; they have analysed the relationship between loan growth and NPA. The research questions are answered by using pooled OLS model they conclude that banks profitability is significantly related to the bank's liquidity.

Munteanu, 2012, observed the relationship between bank liquidity and various internal and external factors linked to the bank's performance, the analysis was done by using linear multivariate regression model the analysis is done for the period of 9 years from 2002 to 2010 to cover the financial crises occurred during the year 2008. (Sun, 2016), "focus on three aspects of liquidity for banks, funding liquidity, liquidity creation, and stock liquidity. A multiple linear regression model is used to find the relationship between variables"The study concludes that bank size does not impact liquidity however macroeconomic factors affect liquidity, there can be many suggestions that can be given to policymakers and regulators on the basis of liquidity analysis of the bank natural log of certain variables is considered to normalize the data.

Fang Hu 2013, observed that it is important to study the relationship between banks liquidity and profitability, also analyse the bank's liquidity risk. "The paper considers six indicators to measure liquidity namely risk-free asset ratio, coverage ratio, changes in deposit ratio, borrowing to deposit ratio, liquidity ratio and deposit credit ratios."

Ahmed Arif, 2012, observed the relationship between bank earnings and various independent variables such as non-performing loans, deposits, cash reserves, and liquidity gap. Correlation and multiple regressions are applied to examine the model. "They conclude that the profitability of a bank is negatively affected due to the increase in liquidity gap and NPLs". The study was performed on commercial banks in Pakistan.

Diamond and Rajan 2001 and Falcomer, 2001, "Emphasise that a mismatch in depositors demand and production of resources forces a bank to generate the resources at a higher cost. Liquidity risk may cause a fire sale of the assets of the bank which may fall into an impairment of the bank's capital base". "They clarify that if too many economic projects are funded with loans, the bank cannot meet the demand of the depositors. Thus, these depositors will claim back their money if these assets deteriorate in value".

Ameni Ghenimi 2017, found that credit risk and liquidity risk do not have an economically meaningful reciprocal contemporaneous or time-lagged relationship. Besides, each risk category has a significant impact on banking stability. The financial crisis have shown that bank failures driven by credit risk in their portfolios, can cause a freeze of the market for liquidity. Central banks responsibility on banking system liquidity consists in accommodating short-term liquidity flow that influences the development of money market interest rates.

Conceptual Framework

Liquidity is an important aspect to study and analyse as it leads to banks stability, if the banks do not maintain sufficient liquidity they may not be able to meet the needs of their customers, and sudden withdrawals by depositors may put banks into trouble. Therefore we study bank-specific factors that impact bank liquidity by setting these hypotheses.

H1: Increase in deposits increases banks liquidity

As the deposits increase the liquidity of bank increases and it allows the banks to handle liabilities in a better way, and therefore we hypothesize that the increase in bank size increases bank liquidity

H1: Decrease in cost of funds leads to high liquidity

As the cost of borrowing from external sources decreases, banks can get funds at lower cost and maintain high liquidity to meet the obligations.

H1: Increase in capital leads to an increase in liquidity

As the banks increase their capitals, there are enough resources available to maintain liquidity.

H1: Profitability has a major effect on liquidity

To increase the profitability, the investments in short and long term assets should increase which in turn leads to less liquidity and more risky assets.

H1: Increase in bank size has a positive effect on liquid assets.

As the bank size increases or expansion process is worked on, the bank's capital raising capacity increases, in turn, the liquidity position increases

Data Methodology

The study tries to find the relationship between bank-specific factors and liquidity it also measures the impact of each factor the bank's liquidity by using multiple regression analysis

Data and Sample:

Liquidity analysis is done for ten private commercial banks of India banks from the criteria for selecting these banks are

1. Banks shares should be listed on the exchange during the study duration.
2. From total asset value the top 10 banks having the highest total asset value were selected from the private sector. Selected private banks are Federal Bank, The Jammu and Kashmir Bank, South Indian Bank, KarurVysya Bank, Karnataka Bank ICICI Bank, HDFC Bank, Axis Bank, Kotak Mahindra Bank, and Yes Bank.

Duration : the study is conducted based on the data collected for ten years from 2007-08 to 2016-17

Sources of data : secondary data like the financial statements of banks was collected through the annual reports of banks and Capital line software.

Variable Description

Dependent Variables:

1. Liquidity has been calculated as the ratio of liquid assets over total assets. Liquidity depends on many factors Therefore in this study it is considered as dependent variable. For banks maintaining proper liquid assets is a must so that they can meet the uncertain demand of the depositors instantly. Liquidity is also essential to meet the daily cash requirements in the course of routine operations.

Independent Variables:

1. **Bank size:** to measure the size of the banks the data of total assets is considered and a natural log of the value of total assets is taken to show less variations in the data.
2. **Profitability:** profit or return can be calculated by finding the ratio between the returns earned and the total investments made therefore to find the profitability return on assets ratio is considered in the study
3. **Funding cost:** is the cost that a firm pays for using funds from different sources in the business therefore cost of funds is considered as funding cost
4. **Deposit:** a ratio of deposits and total assets is calculated to be used as deposits
5. **Capital Adequacy Ratios (CAR):** the banks have to maintain certain liquidity to meet the statutory requirements, CAR Tier-I is taken as the proxy of the capital adequacy ratio in this study.

Table 1 furnishes the summary of variables and expected relationship with liquidity dependent variable.

Table 1. Summary of Variables and Expected Relationship with Liquidity Dependent Variable

Variable	Method of calculating	Effect on liquidity	Data sourcing
Dependent:			
Liquidity	Ratio between liquid assets and total assets		Capital line software
Independent			
Profitability	Return on Assets	Negative	Capital line software
Cost of funds	Total interest/ (deposits + borrowings)	Negative	Capital line software
Bank size	Natural log of total assets	Positive	Capital line software
Deposits	Total deposits/total assets	Positive	Capital line software
Capital adequacy ratio	CAR Tire-I	Positive	Capital line software

Source: Compiled from various sources

Methodology

Multiple regression analysis is used to study the impact of each bank-specific variable on the liquidity position of the selected banks, and correlation is used to study the relationship between each variable with liquidity, the correlation also helped in studying the multi-collinearity among the independent variables.

Model Specification

The following equation is formulated to measure the relationship between liquidity and factors specific to selected banks affecting liquidity.

Liquidity = $\alpha i + \beta 1ROAi + \beta 2COFi + \beta 3bank\ sizei + \beta 4Depositsi + \beta 5CARi\ \varepsilon i$

Where, $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$ and $\beta 5$, are the coefficients of determinant variables and ε is the error term.

The data contains ten banks and stretch over ten years (2008–2017). Log of the variables is taken to make the data concise as large data or sample could not give a pertinent out come. Then aturallog of total assets was considered to measure the bank size.

Data Analyses

Data analysis is separated into three parts descriptive statistics, correlation matrix, and multiple regression analysis and is furnished in Table 2.

Table 2. Descriptive Analysis

Descriptive Statistics

	Mean	Std. Deviation	N
Liquidity	7.0770	2.17048	100
Profitability ROA	1.2902	50973	100
bank size	11.4437	1.09186	100
CAR tire 1	5.3199	6.22824	100
deposits Deposits total assets	78.4614	9.69245	100
cost of funds	6.6604	1.67052	100

The Table 2, throws light on the mean value of the dependent and independent variables and the deviation from the mean is measured through the standard deviation value.

Table 3. Correlation Analysis

Correlations

		liquidity	profitability ROA	bank size	CAR tire 1	deposits Deposits/to	cost of funds
Pearson	Liquidity	1000	.082	.083	.444	.022	-.328
Correlation	profitability ROA	.082	1.000	.265	.061	-.434	-.250
	bank size	0.83	.265	1.000	-.318	-.550	-.503
	CAR tire 1	.444	.061	-.318	1.000	-.054	-.111
	deposits Deposits/total assets	.022	-.434	-.550	-.054	1.000	.391
	cost of funds	-.328	-.250	-.503	-.111	.391	1.000

The above Table 3, pertains to correlation analysis of liquidity as the dependent variable and other determinants as independent variables. The table shows the correlation between the selected variable. It also measures collinearity in the independent variables, if the collinearity is high such independent variables should be exempted from the analysis. The table shows that collinearity between all the variables is less than 0.7. The coefficient value is less than 0.7 for all variables, so we can say that these variables are free from the multicollinearity problem.

Table 4. Regression Analysis

Model	R	R square	Adjusted R square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.590[a]	.349	.314	1.79777	.349	10.061	5	94	.000

a. Predictors: (Constant), cost of funds, CAR tire 1, profitability ROA, deposits Deposits/total assets, bank size

b. Dependent Variable: liquidity

R-squared measures variance in independent and dependent variable when taken as a group. It does not measure how much a given individual predictor accounts for but only when we take them all as a group.The model summary table says overall the regression of the five predictors predicting liquidity of selected private commercial banks accounts for 34.9% of the variance in practice. This variance is only with the internal factors or firm-specific factors that change liquidity of the banks the remaining 65.1% variance may have been caused by external factors or economic indicators of the country which is not focussed on in this research. From the Table 4 the model is a good fit as the P value is less than 0.05 which means the internal factors have a significant impact on the bank's liquidity.

Table 5. ANOVA

ANOVA

Model		Sum of squares	df	Mean Square	F	Sign
1.	Regression	162.581	5	32.516	10.061	.000[b]
	Residual	303.805	94	3.232		
	Total	466.386	99			

a. Dependent Variable : liquidity

b. Predictors : (Constant), cost of funds, CAR tire 1, profitability ROA, deposits Deposits/total assets, bank are

The Table 5 provides a test of whether the r-squared is significantly higher than zero. In the table, the column labelled sig and at this P value which is less than point 0.05 that means the test is significant in other words R squared is significantly higher than zero that means that our predictors can account for a significant amount of variance in liquidity. The overall regression model analysis was statistically significant, the five predictors together as a group predicts bank liquidity significantly.

Table 6. Coefficients

Coefficents[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(constant)	-4.907	4.629		-1.060	.292
	profitability ROA	.239	.396	.056	.603	.548
	bank size	.600	.246	.302	2.444	.016
	CAR tire 1	.184	.034	.529	5.494	.000
	deposits Deposits/tota assets	.075	.025	.333	3.013	.003
	cost of funds	-.304	.133	-.234	-2.280	.025

ANOVA looked at the regression analysis overall or the predictors taken as a set; the coefficients table looks at each of the predictors individually so whether a given predictor was significant on its own. In the above table, we look at the P value for each predictor and see its significance on the liquidity that is the dependent variable. Profitability has a P value of 0.548 which is higher than 0.05. Therefore, it is not significant, bank size, Capital adequacy ratio (CAR), deposits ratio and cost of funds are significant to liquidity as their P value is less than 0.05.

If a test is significant, that means that the amount of unique variance a predictor accounts for is statistically significant. So in other words, Bank size, since it was significant, it accounts for a significant amount of unique variance in liquidity. Unique is that the amount of variance that Bank size accounts for, predicts, or explains in liquidity unique to itself, is significant. Unique to itself means that Bank size explains something in liquidity that CAR or other predictors did not explain. Since CAR, deposits and cost of funds are significant as furnished in Table 6, there is a significant amount of unique variance in liquidity alike to bank size.

The above analysis suggests that Profitability, bank size, capital adequacy ratio, and deposits effect positively towards the bank liquidity, cost of funds hurts the liquidity.

Suggestions and Conclusion

Liquidity allows the banks to run its operations smoothly a strong liquidity position makes the operations of the bank work. It is essential to analyse the liquidity risk and return to find the liquidity position. From the above analysis, we can observe that bank size, CAR, cost of funds and deposits have a significant impact on liquidity and the relationship between profitability and liquidity are not significant. The paper uses multiple linear regression models for the analysis as there are more than one independent variables. Top ten private sector commercial banks are taken into account for the study and the selected banks act as representative to all private commercial banks in India. The study has focused on micro factors of the bank which are controllable so banks can modify their strategies and make proper liquidity decisions by having control over the bank-specific variables.

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