

Impact of liquidity on banks' productivity: A study on selected commercial banks in Bangladesh

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Abstract

Financial institutions are the directories responsible for allocating liquidity to its most productive uses. A bank's liquid assets are significant not only for defending a bank against definite kinds of distresses but also increasing its productivity. This study analyzes the influence of liquidity on banks' productivity throughout the time period 2007-2016. The study is curbed to five Commercial Banks enlisted under Stock Exchanges in Bangladesh. Here the researcher has taken only the secondary data into account. The outcomes of the study substantiate the hypothesis that Liquidity and Productivity are both positively and significantly correlated. The liquidity management of bank is the administration of fund flowing into and out of the bank in a way that will maintain profitability, solvency, liquidity and productivity. The management of a commercial bank ought to be efficient in order to fulfill these objectives. To attain the aforementioned objectives, a feasible structure has been built up to direct banks' liquidity management in accordance with the attached guidelines, global standards and greatest practices.

Keywords Liquidity, Productivity, Commercial Banks, Bangladesh

Paper type Research paper

1. Introduction

Banks have a significant role in the mobilization and distribution of fund among business, socio-economic and industrial sector of a country. This makes bank fund management especially liquidity management very crucial. Liquidity management is the administration of funds flowing into and out of the bank in a way that will simultaneously maintain profitability, solvency, liquidity and productivity of a bank. With a view to achieving these conflicting objectives, the management of commercial banks requires to be efficient in setting up their distribution of funds. Organizations have to either allot funds to acquire fixed assets, e.g. land, plant and equipment, or hold liquid assets, e.g. cash, accounts



receivables, and inventory. The profit margin on fixed assets is generally uncertain and differs to a great extent in case of organizations with diverse points of productivity. On the contrary, liquid assets typically create regular, risk-free return. The proportion of capital expenditure and liquidity largely depends on the productivity of capital and the cost of funding. Hence, the choice of portfolio should be given due consideration when funding is very costly.

2. Literature review

According to GARP-Global Association of Risk Professionals (2013), liquidity is the ability to raise funds easily for investment. At present, maximum funds are “credit, not cash.” It is true that liquidity of bank refers to the amount of funds which is readily available for paying off bank’s commitments. GARP further stated that after maintaining desired reserve requirements, liquidity focuses on the capability of bank to pay cash, cheques and other withdrawal liabilities. As per Nwaezeaku (2006), liquidity is the extent of conversion of any asset into cash without incurring any loss. That is, liquidity is an important issue in bank fund management since there is a close relationship between liquidity and day-to-day operations of banking business (Bhunja, 2012). Central Bank of Nigeria (2012) stated that liquidity is the obligatory amount of fund imposed by monetary authority on banks. It is also stated that liquidity is the soul of a monetary system.

As per Ibe (2013), liquidity management involves the strategic circulation of liquidity compatible with a preferred amount of short-term fund without compromising the bank’s profit generating capacity. Regarding liquidity management, several theories have come into existence. Under Commercial Loan theory prior to 1930, banks were stimulated to extend simply temporary, self-liquidating loans. Roussakis (1997) propagated a very conservative outlook when he asserted that banks do not lend money for long term due to the long payback period. Hence this theory is only applicable for short periods. But this sort of theory had been criticized by Dodds (1982) and Nwankwo (1991). The Shiftability theory signified that any liquid asset might be utilized to meet up deposit withdrawals. Especially, a bank could gratify its liquidity demands if it held assets that could be traded in the secondary market before their maturity. Dodds (1982) suggested that assets must meet three conditions - “shiftability, marketability or transferability” in order to ensure convertibility of the assets. In the 1950s the concentration moved to the Anticipated Income theory which recommended that liquidity necessities and thus loan payments should be knotted to a debtor’s expected income. Nzotta (1997) identified two

fundamental factors-earning capability and creditworthiness of a borrower which can be regarded as the undertaking for assuring sufficient liquidity. According to Liability Management theory (1960s), banks may fulfill liquidity requirements by borrowing from the financial markets. Roussakis (1997) suggested that banks can simply borrow from the central bank or other commercial banks if they urgently require funds. Repullo (2003) held the view that liquidity management depends on hybrids of theories that are typically employed to obtain optimality.

Osborne, Fuertes, and Milne (2012) observed that higher liquidity is often costly to banks, implying that higher liquidity reduces profitability. In contrast, trade-off theory signifies that higher liquidity can minimize the costs of bankruptcy. As per Nwankwo (1991), sufficient liquidity may help a bank to face three kinds of risks- (i) funding risk (ii) credit risk (iii) failure to honor maturity obligations of customers. Sufficient liquidity facilitates bank to obtain new funds to honor the maturity obligations of loans. It is recommended to forgo obligatory sale of asset during adverse market situations. Moreover, adequate liquidity may be compared to an engine for profitable transactions particularly to meet short run commitments of the depositors. Nwankwo (1991) articulated that having adequate liquidity at normal market interest rate is crucial to meet all liabilities of a bank, whether it is large or small.

Moore (2010) affirmed that the interest rate acts as a "fine" for lack of liquidity. Ghosh (2010) and Tamirisa and Igan (2008) indicated that liquidity ratios are the determinants of bank's lending activities. Jiménez, Ongena, Peydro, and Saurina (2010) and Maechler, Mitra, and Worrell (2007) observed that banks' liquidity performance is influenced by business cycle. Rychtárik (2009) found that liquidity ratios play a role for the analysis of liquidity scenario. Andries (2009) and Praet and Herzberg (2008) asserted that liquidity position of the whole banking sector cannot be assessed by observing liquidity ratios of any particular bank. Bunda and Desquilbet (2008) observed that capital adequacy, inflation and supply of liquid assets are positively associated with liquidity in emerging market. Jahangir, Shill, and Haque (2007) argued that loan deposit ratio acts as an excellent indicator of banks' liquidity management. According to Aspachs, Nier, and Tieset (2005), banks can use three methods to indemnify against liquidity crises such as (i) seizing bumper of liquid assets (ii) relying on interbank market (iii) relying on central bank-a lender of last resort. As per Nwankwo (1991), higher the loan asset ratio, lesser the liquidity position of bank and vice versa.

The concept of productivity is associated with matters of competence such as cost competence, allocative competence, procedural competence and

scale competence. Progress in competence and productivity may be treated not only as one of the objectives of a firm but also as an indication about its financial and non-financial performance. Whether a firm is revenue-based or not, measures of productivity determine the competence of resources in the firm. Furthermore, productivity measures assist in setting goals during an organizational improvement procedure. Productivity may be calculated by utilizing either partial-factor productivity (output to a single input) or total factor productivity (output to the weighted average of input).

According to Rahman, Adhikary, and Yousuf (2014), loan to deposit ratio is one of the significant measures of productivity. They also observed that not only the external factors i.e. increase in Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) but also the internal factors i.e. inefficiency in liquidity management are equally accountable for decrease in the productivity and profitability of banks which is supported by Mishra (1992). As per Islam and Zaman (2013), banks' productivity is significantly influenced by the structure of deposit and loan. As per Ikhide (2008), banks can improve their competence through augmenting their rate of operations. Aikaeli (2008) observed that cost competence is one of the areas for betterment in the sectors of bank competence. Cost incompetence can be attributed to scarcity of fixed capital, insufficient return, less management competence which occurs when banks keep on accumulating surplus liquid assets. According to Hossain (2000), a higher ratio of fixed to total deposits has a notable effect on the productivity and profitability performance of both NCBs (Nationalized Commercial Banks) and PCBs (Private Commercial Banks). Ahmed and Uddin (1994) found that PCBs use most of their funds in loans and advances which is 70.65% of deposits on an average. They also emphasized that management should be cautious while taking loan decisions related to earning rate, security and liquidity of such loans, the failure of which can adversely affect profitability and solvency. Randhsawmi and Vasudevan (1987) highly prioritized the importance of banks' management for their success. The ability of banks to allocate available funds to different types of assets is critically important. Only a quality management system can ensure the best use of resources to earn profit. It has been identified that poor management clearly affects the profitability and productivity of a bank.

The bank fund management i.e. liquidity management has a remarkable role in maximizing the value of a bank. The inefficient management of liquidity will result in failure of returns in the short run which will eventually cause the bank to collapse in the long run. For banks, liquidity management involves effective utilization of fund that is indispensable for maintaining

profitability.

In the above sections, the researcher has conducted an extensive review of literature over banks' liquidity management in Bangladesh. It has been found that a good number of studies have been conducted over liquidity management, liquidity and profitability management of commercial banks both from national and international perspective. But these studies did not cover the concept that the researcher is going to bring in. Thus, the present study has been carried out to evaluate the impact of banks' liquidity on their productivity.

3. Objectives

The key objective of this research is to evaluate the impact of liquidity on banks' productivity in Bangladesh. The specific objectives of this research are:

- a. To analyze the features of liquidity and productivity of the sample banks;
- b. To analyze the correlation between liquidity and productivity of the sample banks;
- c. To appraise the impact of liquidity on productivity of the sample banks;

4. Methodology

4.1. Research Design

This is a quantitative as well as qualitative study. It is termed as quantitative since the study has performed a panel data analysis of the variables mentioned in the models. Also, the study has illustrated the balance between liquidity and productivity of banks which makes it a quantitative study. In short, the research intends to provide an appropriate liquidity management strategy for the banks.

4.2. Hypotheses

H_0 : Liquidity has no significant influence on banks' productivity

H_1 : Liquidity has significant influence on banks' productivity

4.3. Model specification

For regression analysis and estimation of the model, the hypothesis is expressed linearly as follows:

Model: Productivity in term of NAV = $A + \beta_1CRR + \beta_2SLR + \beta_3L/D + \beta_4L/A + \beta_5C/D$

Table 1: Elucidation of dependent and independent variables and their proxies

Variables	Ratio	Symbol	Equations
Bank Productivity	Net Asset Value per Share	NAV	$(\text{Total assets} - \text{Total liabilities}) / \text{Number of shares outstanding}$
Liquidity ratio	Cash Reserve Ratio	CRR	$\text{Balance with Bangladesh Bank} / \text{Total Time and Demand deposits}$
Solvency of the bank	Statutory Liquidity Ratio	SLR	$\text{Cash deposits in the form of cash, gold reserves, and government approved securities} / \text{Total Time and Demand deposits}$
Balance of deposit	Loan Deposit Ratio	L/D	$\text{Total Loans and Advances} / \text{Total Time and Demand deposits}$
Capacity Ratio	Loan Asset Ratio	L/A	$\text{Total Loans and Advances} / \text{Total assets}$
Balance of core funds	Cash Deposit Ratio	C/D	$\text{Cash in hand and Balances with BB} / \text{Total deposits}$

4.4. Choice of population, sample size and sampling method

The population comprises 29 commercial banks listed under Stock Exchanges in Bangladesh. But in view of the study, the researcher opted for 5 (five) banks randomly at 5 percent level of significance on the basis of standardized random sample formula developed by Yamane (1967). The chosen banks are given below:

- a. Arab Bangladesh Bank Limited
- b. City Bank Limited
- c. Dhaka Bank Limited
- d. Dutch Bangla Bank Limited
- e. Eastern Bank Limited

4.5. Data collection and analysis

This empirical study is mainly based on secondary data that have been collected from yearly published reports of sample banks. Panel data of the selected banks are analyzed using financial techniques (Liquidity Ratios), statistical techniques (mean, standard deviation, coefficient of variation, Karl Pearson's coefficient of correlation, simple linear regression and computer software (SPSS-20).

5. Findings and discussions

5.1. Examination of influence of liquidity on productivity of sample banks

In examining the impact of Liquidity on Productivity, Liquidity is measured in terms of Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), Loan Deposit Ratio (L/D), Loan Asset Ratio (L/A) and Cash Deposit Ratio (C/D); Productivity is identified in terms of NAV.

5.2 Analysis of features of liquidity and productivity of sample banks

This section has dealt with the analysis of characteristic features of Liquidity Ratios and NAV per share by employing descriptive statistics such as Average, Standard Deviation, Range, and Coefficient of Variation. These have been exhibited in Table 2 as follows:

Table 2: Features of liquidity and productivity of sample banks

Features	CRR (%)	SLR (%)	L/D (%)	L/A (%)	C/D (%)	NAV
Mean	6.17	16.78	85.59	66.26	9.16	32.07
Std. Deviation	.80	6.34	10.25	5.00	3.12	15.93
Range	3.44	24.86	42.31	22.42	14.01	80.77
C.V	.13	.38	.12	.08	.34	.50

Source: Annual Reports 2007-2016

Notes: a) Data have been compiled by the Researcher

b) Data used in measuring features have been exhibited in Annexure

c) Analytical Mode: SPSS 20

From Table 2, the study has found that the sample banks have maintained the highest average liquidity ratio i.e. 85.59% in terms of L/D which is substantiated by standard deviation of 10.25% and range of 42.31%; and the lowest average liquidity ratio i.e. 6.17% in terms CRR which is substantiated by standard deviation of 0.80% and range of 3.44% during study periods. Between these two liquidity ratios, L/D indicates minimum risk in terms of CV i.e. 0.12% in generating productivity. It has been observed that average rate of productivity in terms of NAV is 32.07%. The range of NAV has shown maximum fluctuation during the study periods. This situation is substantiated by standard deviation of 15.93%. It indicates that sample banks have not been generating significant productivity from their existing liquidity. It has also been observed that NAV has the highest CV which indicates that liquidity imposes the highest risk in creating productivity. This signifies that sample banks should give due consideration in this case while making liquidity management policies & implementing thereof.

5.3 Analysis of correlation between liquidity and productivity of sample banks

The research has evaluated the relationship between Liquidity and NAV by employing Karl Pearson's Coefficient of Correlation. The results have been extracted in Table 3 as follows:

Table 3: Zero order correlation matrix between liquidity and productivity of sample banks (panel data)

	CRR	SLR	L/D	L/A	C/D	NAV
CRR	1.000					
SLR	.070	1.000				
L/D	.035	-.020	1.000			
L/A	.003	-.227	.736**	1.000		
C/D	.521**	.200	-.392**	-.392**	1.000	
NAV	.382**	.280*	-.032	-.220	.351**	1.000

Source: Annual Reports 2007-2016

Notes: a) Data have been compiled by the Researcher

b) Data used in measuring features have been exhibited in Annexure

c) Analytical Mode: SPSS 20

d) *Correlation is significant at the 1% level

**Correlation is significant at the 5% level

From Table 3, it has been observed that as the correlation between the variables is below the maximum limit of 0.80, so the variables are beyond multicollinearity problem which is supported by Kennedy (2008) and Gujarati and Sangeetha (2007). It is evident from the analysis of Zero Order Correlation Matrix that Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), and Cash Deposit Ratio (C/D) are significantly correlated with the NAV at various levels of significance. It has been observed that CRR is positively correlated with NAV at 5% level of significance; SLR, positively correlated with NAV at 1% level of significance; and C/D, positively correlated with NAV at 5% level of significance. These positive correlations signify that maintaining higher liquidity is the source of increase in the NAV of sample banks.

5.4. Examination of liquidity's impact on productivity of sample banks

In this part, liquidity's impact on sample banks' productivity has been assessed using the simple Linear Regression Model in the following subsection:

Model: Productivity in term of NAV = $A + \beta_1\text{CRR} + \beta_2\text{SLR} + \beta_3\text{L/D} + \beta_4\text{L/A} + \beta_5\text{C/D}$

5.4.1. Assessment of effect of liquidity on productivity of sample banks

The researcher has collected secondary data from 5 banks for 10 years and used panel data for conducting Linear Regression to assess the influence of liquidity on the NAV of sample banks. The output of linear regression model has been revealed in Table 4 as follows:

Table 4: Effect of liquidity on productivity of sample banks

Model	B	Std. Error	t value	Sig.
Constant	15.285	35.237	.434	66.7%
CRR	572.374	316.680	1.807	7.8%
SLR	41.897	34.720	1.207	23.4%
L/D	37.570	31.559	1.190	24%
L/A	-97.150	64.493	-1.506	13.9%
C/D	72.720	90.785	.801	42.7%
F value	3.188			1.5%

R Square-26.6%

Adjusted R Square-18.3%

Source: Annual Reports 2007-2016**Notes:** a) Data have been compiled by the Researcher

b) Data used in measuring features have been exhibited in Annexure

c) Analytical Mode: SPSS-20

From Table 4, it has been found that the value of R Square of the model is 26.6% which signifies that the variables considered in the model account for 26.6% of the total variation in NAV. F-value of statistics is found significant. This implies that liquidity has influence on the NAV of sample banks. This has led researcher to accept the alternative hypothesis (H1): Liquidity is dependent on NAV on global test basis. The study has also tested following hypothesis (Ho): $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 = 0$.

In this regard, the study has found that only the coefficient of CRR is positive and significant at about 10% level but other variables such as SLR, L/D, L/A and C/D are found insignificant. This implies that all betas are not equal to zero. All the analyses demonstrate that liquidity can influence the productivity of sample banks. Therefore, liquidity management should take care of productivity while making liquidity management decision.

6. Summary of the findings

This research work has examined liquidity's impact on the productivity of sample banks by employing Coefficient of Correlation and Linear Regression analysis. It is evident from the analysis of Correlation Matrices for panel data that CRR and C/D ratios are found positively correlated with NAV at 5% level of significance; SLR, positively correlated with NAV at 1% level of significance whereas other variables such as L/D and L/A are found insignificant. These positive correlations signify that maintaining higher liquidity is the source of increase in the NAV of sample banks. It is observed

from the output of Regression Model that the coefficient of only CRR has significant positive effect at about 10% level on NAV of the sample banks. The value of R Square is 26.6% which implies that the explanatory variables considered in the model account for 26.6% of the total variation in NAV. In the Regression Model, F value of statistics is found significant and it indicates that liquidity has influence on productivity of sample banks.

Rahman, Adhikary, and Yousuf (2014) observed that not only the increase in external factors i.e. CRR and SLR but also the internal factors i.e. inefficiency in liquidity management are equally accountable for decrease in the productivity and profitability of the banks which is supported by Mishra (1992). As per Islam and Zaman (2013), banks' productivity is significantly influenced by the structure of deposit and loan. Hossain (2000) stated that a higher ratio of fixed to total deposits has a notable effect on the productivity and profitability performance of both NCBs and PCBs. Ahmed and Uddin (1994) found that management of PCBs should be cautious while taking loan decisions related to earning rate, security and liquidity of such loans, the failure of which can adversely affect profitability and solvency. Randhsawmi and Vasudevan (1987) found that poor liquidity management obviously affects bank's profitability and productivity.

7. Conclusion

Liquidity is vital for the sustainability of any bank, because illiquidity can have striking and hostile impacts even on solvent banks. For assessing liquidity demands, bank's administrations need to determine both the liquidity conditions of banks and the financing necessities that are required under emergency. Based on these circumstances, a feasible structure has been built up to direct liquidity management of banks in accordance with the attached guidelines, global standards and greatest practices. The guidelines will help shrink liquidity risk and specifically identify decision-making responsibilities for handling liquidity. These guiding principles are to be followed constantly and further evaluated frequently under varying conditions.

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