

Impact of Liquidity on Islamic Banks' Profitability: Evidence from Bangladesh

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Abstract: This study examines the impact of liquidity on Islamic banks' profitability during an 11 years period of 2001 to 2011. To explore and interpret the results the study has taken samples from five Islamic banks that have been in operation in Bangladesh on or before 2001 to till date. In order to construct the liquidity model it used four liquidity variables namely cash & due from banks to total assets (CDTA), cash & due from banks to total deposits (CDDEP), investment to total assets (INVSTA) and investment to total deposits (INVSDEP). According to adjusted R squares profitability variables return on assets (ROA), return on equity (ROE) and return on deposits (ROD) are respectively 17.1%, 4.5% and 24.6% dependent on independent variables. The statistical results suggest that CDTA is found insignificant with all profitability variables, whereas CDDEP is individually significant with all profitability variables except ROE. On the other hand INVSTA and INVSDEP are recognized significant with all three profitability variables. However, when ROE stands for an insignificant relationship with the overall liquidity model, ROA and ROD are identified significantly correlated with the similar model at 1% significant level. Unsurprisingly the findings do strengthen the specification that the impact of liquidity reflects adequate imposition on profitability that the Islamic banks in Bangladesh must abide by.

Keywords: dependency level; Islamic banking goals; liquidity ratios; profitability ratios; significance level

JEL Classification: G21

1 Introduction

Business in Islam has always been viewed as an opportunity for potentials as long as it stands on moral and ethical grounds and conforms to the Islamic code of conduct. The actual role of Islamic bank inherits in promoting and empowering the banking services and product based on Islamic principles. The main principles of Islamic banking comprise of prohibition of interest in all forms of transactions, and undertaking business and trade activities on the basis of fair and legitimate profit (Haron and Shanmugan, 1997). But according to Islamic principles, reward, i.e. profit without sharing the risks or hazards in the economic understandings is totally

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prohibited. Perhaps, the most significant risk of an Islamic bank is to build a sound liquidity management.

Islamic banking has gained much popularity in Bangladesh over the last few years. There is a high demand for interest-free banking services from a segment of people in Bangladesh who have a strong desire to abide by the rules and principles set by Shariah. Along with religious requirement, economic exigencies provide a new outlook to the role of banking in promoting investment / productive activities, influencing distribution of income and adding stability to the economy. The downturn in the United States in the late part of 2008 led to a dramatic downturn in businesses and financial institutions, not only in the United States but other countries as well (Lau, 2008). It affected the world stock markets and made large financial institutions to either go bankrupt or sell off their shares to the public (Anup, 2009). But surprisingly it could not affect the Islamic banking industry as much as expected. Most banks now keep protective reserves on top of planned reserves. Excess liquidity is reported in nearly all Islamic banks (Ali and Howlader, 2005). Due to unavailability of local capital market, Islamic banking sectors have been suffering from investing idle fund in liquid venture (Rashid and Nishat, 2009). Excess liquidity generated by Islamic banks cannot be easily shifted to conventional banks as the Islamic banks do not accept interest; while there is opportunity for exchange of excess funds among the Islamic banks on a Mudarabah / Musharakah basis. However, the scope of cooperation among this field can only be increased if their numbers are increased. So, what should be the crucial choice of an Islamic bank; whether to take fundamental choice of profit maximization or to concern more on assurance of liquidity in any banking business under Islamic principles? Possibly the answer could rise if we can have ideas on how liquidity position affects Islamic bank's profitability.

Analysis of financial statement has become very significant due to widespread interest of various parties in the financial result of a business unit. As a Muslim community, Bangladesh and its people are in greater interest for a Shariah approved banking system. The question from the people arise when there are any lacking in response to customers' demand (liquidity risk) as well as any deficiency in showing upward banks' value (profitability risk). Consequently this is a demand of time now to evaluate the impact of liquidity risk on profitability for overall Islamic banking industry in Bangladesh, as this paper attempts to find.

2 Literature Review

Banks today are under great pressure to perform- to meet the objectives of their stockholders, employees, depositors and borrowing customers, while somehow keeping government regulators satisfied that the bank's policies, loans and investments are sound (Rose, 2004-2005). At present a lot of countries around the

world having twofold banking system, as interest free banks are functioning parallel to conventional banks (Akhtar, Ali and Sadaqat, 2011).

In Islam, profit is simply a reward of taking risk. So, it should be a natural outcome of the fair play of the twin forces of demand and supply in the market (Latif, 1982). On the other hand liquidity implies availability of cash that how bank rapidly may convert its assets into cash to meet the need of short term. It is considered as life of the banks. Higher amount of the liquid assets reflect the greater liquidity of the firm (Akhter, Raza, Orangzab and Akram, 2011). The essence of liquidity management problem arises from the fact that there is a trade-off between liquidity and profitability and mismatch between demand and supply (Khan and Ahmed, 2001). While the bank has no control over the sources of fund (deposits), it can control the use of funds. To support their depositor's demand, banks need money, or in other sense the power to create money. That is why Akkas (1982) suggested that commercial banks should be compelled to keep reserves up to the full amount of their deposits, a reserve of 100 percent. Islamic principles are always in favor of non-inflationary economy. Therefore, bringing a kind of equilibrium between demand and supply for investible funds appears to be a major concern for financial intermediation (Siddiqui, 2010). But, it is to be noted that Islamic market mechanism does not support the concept of equilibrium price, rather, acts as the instrument to meet the effective demand of a consumer.¹

Not only does Islamic banks' profitability seem less volatile than that of conventional peers, but it is also higher on average, at least in the GCC region (Hassoune, 2002). Haron (2004) said that liquidity, funds invested in Islamic securities, total expenditures and the percentage of the profit-sharing ratio between the bank and the borrower of funds are highly correlated with the level of total income received by the Islamic banks. At the same time external factors such as interest rates, market share and size of the banks produce the similar kind of effects. He also added that other determinants such as funds deposited into current accounts, total capital and reserves, the percentage of profit sharing between bank and depositors, as well as money supply also play a major role in influencing the profitability of Islamic banks.

Return on assets is a good sign to determine bank's financial performance and supervisory efficiency. It shows how competent the administration is in allocating asset into net profit. The higher the ROA, the higher is the financial performance or profitability of the banks (Samad, 2004). Return on equity measures the rate of return on the bases of capital and equity capital (Akhter, Raza, Orangzab and Akram, 2011). This ratio shows how bank can create profit with shareholders' invested funds. Its increasing value indicates higher financial performance. Like

¹ The concept 'effective demand', refers to the collective demand in an economy, where there is neither surplus in production, nor the demand will go beyond out of market control.

ROA, ROE is also an indicator for managerial efficiency (Ika and Abdullah, 2011). Return on deposits shows percentage return on each currency of customer's deposit. In other words, it indicates the effectiveness of bank in converting deposit into net earnings (Rosly and Bakar, 2003). However, profitability is only part of bank performance story (Samad and Hasan, 1999).

Cash in a bank vault is the most liquid asset of a bank. Cash assets include vault cash held on bank premises, deposits the bank holds at the Central bank in its district, deposits held with other banks to compensate them for clearing checks and other interbank services, and cash items in the process of collection (Rose, 2004-2005). A higher cash-deposit ratio indicates that a bank is relatively more liquid than a bank which has lower cash-deposit ratio. Depositors' trust to bank is enhanced when a bank maintains a higher cash-deposit ratio. On the other hand an increase in loan-deposit ratio indicates that a bank is in more financial stress by making too much loan. Therefore, lower loan-deposit ratio is always favorable to higher loan-deposit ratio (Samad and Hasan, 1999). Loans-assets ratio measures the percentage of assets that are tied up in loans. The higher the ratio, the less liquid the bank will be (Samad, 2004).

While making significant progress in return on assets (ROA) and return on equity (ROE), the liquidity performance of Bank Islam Malaysia (BIMB, the single full-fledged Islamic bank in Malaysia) between 1984-89 and 1990-97 in various measures such as cash-deposit ratio, loan-deposit ratio and current ratio showed neither deterioration nor improvement (Samad and Hassan, 1999). Chowdhury and Ahmed (2009) investigated that total deposits of Islami Bank Bangladesh Ltd. was higher in comparison to some non-Islamic banks during 2002 to 2006. Saifullah (2010) argued that Islamic banks in Bangladesh are superior to Conventional banks after an overall assessment of financial performance including liquidity and profitability position.

When making comparisons across firms (or over time), it is useful to control for differences in their resource base (Foster, 2002). At the same time liquidity of those resources is of paramount significance for banks (Maheshwari and Maheshwari, 2002). Akhtar, Ali and Sadaqat (2011) found positive but insignificant relationship of size of the bank and net-working capital to net assets with liquidity risk in Islamic banks. In addition return on assets (ROE) in Islamic banks is found to be positive and significant with liquidity risk at 10% significant level. A study over determinants of Jordanian Islamic banks' profitability revealed that there are significant and positive relationship between Return on Assets and $\text{Provision for Credit Facilities} + \text{Interest in Suspense} / \text{Credit Facilities}$, $\text{Total Equity} / \text{Total Assets}$ and $\text{Total Income} / \text{Total Asset}$ of the Islamic banking, and there are significant and negative relationship between ROA and the Bank Size, $\text{Total Liabilities} / \text{Total Assets}$, Annual Growth Rate for Gross domestic product, Inflation Rate and Exchange Rate of the Islamic Banking. Also this study found

that there are significant and positive relationship between Return on Equity and Log TA, TL / TA, TI /TA and ERS of the Islamic banking, and there are significant and negative relationship between ROE and PRFCFI / CF, TE / TA, GDPGR and INF of the Islamic Banking (Khrawish, Siam and Khrawish, 2011).

Naceur and Goaied's (2010) investigation regarding the determinants of the Tunisian banks' performances during the period 1980–1995 showed that the principal determinants of a bank's performance are by order of importance: labor productivity, bank portfolio composition, capital productivity and bank capitalization. Athanasoglou, Delis and Staikouras (2008) examined the profitability behavior of bank-specific, industry-related and macroeconomic determinants, using an unbalanced panel dataset of South Eastern European (SEE) credit institutions over the period 1998-2002. The estimation results indicated that, with the exception of liquidity, all bank-specific determinants significantly affect bank profitability in the anticipated way. The paper concludes with some remarks on the practicality and implements ability of the findings.

Using bank level data for 80 countries in the 1988-1995 periods, a study suggested that interest margins differences and banks' profitability reflect a variety of determinants such as; bank characteristics, macroeconomic conditions, explicit and implicit bank taxation, deposit insurance regulation, overall financial structure, and several underlying legal and institutional indicators (Demirgüç-Kunt and Huizinga, 1998). Shahchera (2012) analyzed the impact of liquid asset holdings on bank profitability for a sample of Iranian banks. Applying the Generalized Method of Moment (GMM), this study analyzed the profitability of listed banks using unbalanced panel data over the period of 2002-2009. An important finding of this study is that the business cycle significantly affects bank profits. The coefficient of regulation is negative and significant. Therefore if regulators reduce the constraints imposed on banks, banks obtain profit.

Liquidity is of vital importance to the daily operations of a bank. Maintenance of a sound liquidity position of the bank is necessary to protect the bank against uncertainties of its business. Maintenance of liquidity bears both risk and return. A tradeoff between these two elements can minimize the conflict between liquidity versus profitability of a bank (Islam, 2008). As stated by Islam (2008) Koch (1992) believed that there is a short-run tradeoff between liquidity and profitability. The more liquid a bank is, the lower are its return on equity (ROE) and return on assets (ROA), all other things being equal. Therefore, statistical significance of liquidity on profitability can be a great factor for potential investors. In a nutshell the influence of Islamic banks' liquidity cannot be negligible when considering profit motive.

3 Methodology

3.1. Sample Design and Data Collection

In Bangladesh, currently seven Islamic banks are providing their services as “pure Islamic banks” and running their operations under the guidance of Islamic Shariah. Among them, five Islamic banks have been selected to investigate the impact of Islamic bank’s liquidity risk on profitability over the period of 11 years during 2001 to 2011.¹ Selected Islamic banks are-

1. Islami Bank Bangladesh Limited
2. Shahjalal Islami Bank Limited
3. Al-Arafah Islami Bank Limited
4. Export Import Bank of Bangladesh Limited
5. Social Islami Bank Limited

The data used in this study are compiled from income statements and balance sheets of selected banks from their each year annual report. The study model is tested on time series cross-sectional bank level data in the context of Bangladesh over the period 2001 to 2011. Thus, present study has been conducted taking into account a total samples of $N = [5 \times 11] 55$ under each variable.

3.2. Explanatory Variables

To analyze the liquidity impact on profitability using multiple regression analysis, variables were assigned into two sections-

Dependent Variables:

- 1) Return on Assets = Net Income after Taxes / Total Assets
- 2) Return on Equity = Net Income after Taxes / Total Equity Capital Account
- 3) Return on Deposits = Net Income after Taxes / Total Deposits

Independent Variables:

- 1) Cash & Due from Banks to Total Assets = Cash & Due from Banks / Total Assets
- 2) Cash & Due from Banks to Total Deposits = Cash & Due from Banks / Total Deposits
- 3) Investment (Loans & Advances) to Total Assets = Investment / Total Assets
- 4) Investment (Loans & Advances) to Total Deposits = Investment / Total Deposits

¹ Other two Islamic banks have been excluded from this study as their histories are not that long as the selected banks.

3.3. Research Model and Hypotheses

The current research is being conducted to evaluate the impact of liquidity on profitability by applying multiple linear regression model which had previously been developed and applied by Demirgüç-Kunt and Huizinga (1999), Haron (2004), Athanasoglou, Delis and Staikouras (2008), Toni (2008), Naceur and Goaid (2008), Saleem and Rehman (2011), Khrawish, Siam and Khrawish (2011), Shahchera (2012) and many more in essence of their contribution to banking, economics and finance. Utilizing the similar model these preceding studies focused on assessing diverse determinants of Islamic banks' profitability. Present study used the same model but for only to strengthening on liquidity variables in order to demonstrate their impact on profitability. Current research models are as follows-

$$(i) \text{ROA}_{i,t} = \alpha + \beta_1 \text{CDTA}_{i,t} + \beta_2 \text{CDDEP}_{i,t} + \beta_3 \text{INVSTA}_{i,t} + \beta_4 \text{INVSDEP}_{i,t} + \epsilon \quad [\text{Model 1}]$$

$$(ii) \text{ROE}_{i,t} = \alpha + \beta_1 \text{CDTA}_{i,t} + \beta_2 \text{CDDEP}_{i,t} + \beta_3 \text{INVSTA}_{i,t} + \beta_4 \text{INVSDEP}_{i,t} + \epsilon \quad [\text{Model 2}]$$

$$(iii) \text{ROD}_{i,t} = \alpha + \beta_1 \text{CDTA}_{i,t} + \beta_2 \text{CDDEP}_{i,t} + \beta_3 \text{INVSTA}_{i,t} + \beta_4 \text{INVSDEP}_{i,t} + \epsilon \quad [\text{Model 3}]$$

Where,

ROA = Return on assets

ROE = Return on equity

ROD = Return on deposits

CDTA = Cash & due from banks to total assets

CDDEP = Cash & due from banks to total deposits

INVSTA = Investment (loans & advances) to total assets

INVSDEP = Investment (loans & advances) to total deposits

α = constant term

β = slopes associated with the independent (liquidity) variables

i = banks

t = time

ϵ = error term

To do the analysis following two hypotheses were designed:

- 1) There is an insignificant relationship between liquidity and profitability, i.e. H_0 : $b_1 = b_2 = b_3 = b_4 = 0$ (null hypothesis)
- 2) There is a significant relationship between liquidity and profitability, i.e. H_a : $b_1 \neq b_2 \neq b_3 \neq b_4 \neq 0$ (alternative hypothesis)

4. Statistical Results and Analyses

The statistical analysis of secondary data has been divided into three dimensions, i.e. descriptive, correlation and regression. All the statistical tests have been performed through SPSS V15.0.

4.1. Descriptive Statistics

Table 1 shows descriptive statistics for dependent and independent variables. The analyzed statistics figures illustrate the mean, standard deviation, maximum and minimum values of Islamic banks. The statistics suggest irregular drawbacks in minimum value of ROA & ROD, even more in ROE, leading to a dramatic decrease in percentage return for overall Islamic banking industry.¹ The mean value of dependent variables imply that maximum portion of bank's income goes for shareholders, as here ROE indicates greater outcome in percentage return in comparisons to ROA or ROD. However, according to the statistics, the fraction of investment in total assets and total deposits exceeds cash & due from banks to a great extent if we take a look at their mean values.

Table 1. Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable				
ROA	-4.85	3.07	1.2060	1.05572
ROE	-176.07	38.81	15.8591	27.86636
ROD	-5.20	3.66	1.4722	1.22965
Independent Variable				
CDTA	9.94	82.12	21.4307	12.59587
CDDEP	11.62	95.43	25.3715	14.06618
INVSTA	13.33	82.51	70.2224	11.45243
INVSDEP	15.49	103.86	84.2804	15.55431

Source: Calculated value using Annual Reports of the banks issued by Dhaka Stock Exchange (2001-2011)

4.2. Correlation Matrix

The correlation coefficients are stated in Table 2. This gives information on the degree of correlation between all the dependent (profitability) and independent (liquidity) variables used in the analysis. The opportunity has been tested with the Pearson correlation coefficients test. The result indicates that the liquidity variables CDTA and CDDEP are negatively related with all selected profitability variables. On the other hand, the remaining two liquidity variables INVSTA and INVSDEP are positively related with all three profitability variables.

¹ The reason is due to an excessive foreign exchange dealing loss of Tk.884.22 million by Shahjalal Islami Bank Limited in the financial year 2004.

Table 2. Correlation Matrix of Profitability and Liquidity Variables

	ROA	ROE	ROD	CDTA	CDDEP	INVSTA	INVSDEP
ROA	1						
ROE	.905**	1					
ROD	.994**	.867**	1				
CDTA	-.232	-.062	-.260	1			
CDDEP	-.206	-.048	-.226	.993**	1		
INVSTA	.222	.037	.252	-.945**	-.936**	1	
INVSDEP	.326*	.115	.376**	-.896**	-.856**	.950**	1

Pearson Correlation Coefficient
 ** Correlation is significant at the 0.01 level (2-tailed)
 * Correlation is significant at the 0.05 level (2-tailed)

Source: Calculated value using Annual Reports of the banks issued by Dhaka Stock Exchange (2001-2011)

4.3. Regression Results

Tables 3, Table 4 & Table 5 report the results of regression analysis in which four independent variables are regressed by using the data of Islamic banks of Bangladesh from 2001 to 2011. The adjusted value of R squares indicate that ROA, ROE and ROD of Islamic banks of Bangladesh are respectively 17.1%, 4.5% and 24.6% dependent on independent variables, i.e. CDTA, CDDEP, INVSTA and INVSDEP. Therefore, as liquidity factors, these four variables are considered major issues to defining profitability of Islamic banks in Bangladesh over eleven years period.

Table 3. Regression Results of ROA (2001-2011)

Model 1	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	2.125	3.118			.681	.499
CDTA	.293	.186		3.502	1.576	.121
CDDEP	-.274	.161		-3.652	-1.699	.096*
INVSTA	-.194	.074		-2.110	-2.630	.011**
INVSDEP	.159	.054		2.343	2.948	.005***
R squared	.233	F statistics	3.792	Durbin-Watson		1.635
Adjusted R squared	.171	P-value	.009***			

*** Significant at the 1% level
 ** Significant at the 5% level
 *Significant at the 10% level

Source: Calculated value using Annual Reports of the banks issued by Dhaka Stock Exchange (2001-2011)

Table 3 shows that CDTA and INVSDEP are positively correlated with ROA. Alternatively CDDEP and INVSTA show negative relationship with ROA. With an exception to CDTA; rest independent variables CDDEP, INVSTA and INVSDEP are significantly correlated with ROA at 10%, 5% and 1% significant level in that order. Durbin-Watson test shows that the residuals are positively correlated. At overall 1% significant level as per p-value the liquidity model [Model 1] is

significantly correlated with ROA. So the null hypothesis (H_0) is rejected and alternative hypothesis (H_a) accepted here.

Table 4. Regression Results of ROE (2001-2011)

Model 2	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	77.929	88.349			.882	.382
CDTA	7.326	5.277	3.312		1.388	.171
CDDEP	-6.960	4.571	-3.513		-1.523	.134
INVSTA	-4.796	2.096	-1.971		-2.289	.026**
INVSDEP	3.492	1.528	1.949		2.285	.027**
R squared	.116	F statistics	1.637	Durbin-Watson	2.024	
Adjusted R squared	.045	P-value	.180			
*** Significant at the 1% level						
** Significant at the 5% level						
* Significant at the 10% level						

Source: Calculated value using Annual Reports of the banks issued by Dhaka Stock Exchange (2001-2011)

Table 4 represents that CDTA and INVSDEP are positively correlated with ROE. At the same time CDDEP and INVSTA create negative correlation with ROE. Here, only INVSTA and INVSDEP are found significant with ROE at 5% significant level. As Durbin-Watson statistic is approximately very close to 2, therefore the residuals are uncorrelated. However, according to p-value the overall liquidity model [Model 2] is not significantly related with ROE at any formulated level. Thus the null hypothesis (H_0) is accepted for the relationship of liquidity and profitability (ROE).

Table 5. Regression Results of ROD (2001-2011)

Model 3	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	2.433	3.464			.702	.486
CDTA	.340	.207		3.480	1.642	.107
CDDEP	-.317	.179		-3.631	-1.771	.083*
INVSTA	-.245	.082		-2.284	-2.985	.004***
INVSDEP	.202	.060		2.557	3.373	.001***
R squared	.302	F statistics	5.404	Durbin-Watson		1.599
Adjusted R squared	.246	P-value	.001***			
*** Significant at the 1% level ** Significant at the 5% level * Significant at the 10% level						

Source: Calculated value using Annual Reports of the banks issued by Dhaka Stock Exchange (2001-2011)

As demonstrated in Table 5 ROD has positive relation with CDTA and INVSDEP, and negative relation with CDDEP and INVSTA. Here, only insignificant variable is CDTA. CDDEP is significantly related with ROD at 10% level. At 1% significant level both liquidity variables INVSTA and INVSDEP are detected statistically significant with ROD. Durbin-Watson test indicates positive autocorrelation for the residuals. As per p-value the model [Model 3] is statistically significant with ROD at 1% significant level. As a result here the null hypothesis (H_0) is rejected and alternative hypothesis (H_a) accepted.

5. Conclusion

The current study marks the very first attempt to analyze liquidity impact on Islamic banks' profitability in Bangladesh during the period 2001 to 2011. Major parts of the study results reveal greater dependency of banks' profitability on liquidity. Specifically cash & due from banks to total assets is not significant with any profitability variables. Cash & due from banks to total deposits is found insignificant with ROE, but significant with ROA and ROD at 10% significant level. Other two independent variables investment to total assets and investment to total deposits are individually and significantly correlated with all selected profitability variables. Investment to total assets is significant with ROA and ROE at 5% significant level and with ROD at 1% significant level. On the other hand, investment to total deposits is significantly correlated with ROA and ROD at 1% significant level and with ROE at 5% significant level. The entire liquidity model is found statistically significant with ROA and ROD at 1% significant level. The reason to discover ROE less dependent and insignificant with the overall liquidity model is possibly due to that huge loss in foreign transaction by Shahjalal Islami Bank Limited in the financial year 2004. Now, according to the questions specified in introduction section, the crucial or fundamental choice of Islamic banks should

compile both the highlighted issues of this study, i.e. liquidity and profitability. When generating profit is considered to be the most fundamental concept of Islamic banking activities; the importance of liquidation is not insignificant. Without conforming proper liquidation (neither too high nor too low) Islamic banks cannot achieve their expected profit. However, adding further liquidity variable to the model may make it more or less significant with profitability. In addition, it should also be said that liquidity is not the single reason to defining Islamic banks' profitability. Therefore, in any affair, current study serves as initial movement, leaving spaces for future researches to enhance and enrich its outlook.

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