VOLUME 5, 2012

ISSN 2045-3345

ISSN 2045-3345

RESEARCH JOURNAL OF ECONOMICS, BUSINESS AND ICT

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LIQUIDITY RISK MANAGEMENT: A COMPARATIVE STUDY BETWEEN CONVENTIONAL AND ISLAMIC BANKS OF BANGLADESH

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ABSTRACT

Banks conventionally fulfill the supreme responsibility of being a financial intermediary between the deficit and surplus unit of the economy. Liquidity risk refers to the excessive transaction cost, excessive loss of value and excessive exertion of time that banks have to face at the time of allocating liquidity to the third party when stipulated. Because of the unique constitutional features and regulatory conformity with the Shariah principle - Islamic banks have to exert much more to manage liquidity. The core objective of this very research is to assess the extent of liquidity risk associated with financial institutions - especially banks and to evaluate the concurrent liquidity risk management (LRM) along with a comparative analysis between conventional and Islamic banks of Bangladesh. The researcher has tried to investigate the significance of firm's size, net working capital, return on equity, capital adequacy and return on assets on liquidity Risk Management in case of Conventional and Islamic banks of Bangladesh. Secondary data had been the major stimulus of the research covering five year - 2006-2010. For Islamic banks, a model estimation to predict the liquidity risk level was proven to be successful but the module failed to generate the desired result in case of the conventional banks. Moreover, net working capital in case of Conventional banks and size of the business in case of Islamic banks was found to be positive and significant at 5% significance level.

JEL CLASSIFICATION & KEYWORDS

■ G21 ■ Liquidity risk ■ Islamic banking ■ Conventional banking ■ Shariah

INTRODUCTION

Banking sector is the most dominant sector in the financial intermediation industry. Banks both conventional and Islamic provide the much needed fund to the deficit unit of the economy. Liquidity risk refers to the most familiar risk category for the conventional and Islamic banks. Liquidity risk generally incurs because of the asset and liability mismatch of financial institutions. The end result of such disparity means that either there will be excess cash needs to be invested or shortfall of cash which needs to be funded (Ismal, 2010). Moreover, liquidity risk also engulfs the complexity in acquiring cash at a reasonable transaction cost.

Generally for fulfilling reserve requirements and for safety purposes, banks have to hold a specific portion of liquid assets. Liquidity - to be specific refers to the ability of the financial intermediary in meeting up deposit withdrawals, honoring loan request at maturity (Ghannadian and Goswami, 2004). Along with holding cash in volts and account with the central bank, banks generally invest in relatively liquid assets to avoid further liquidity crisis.

During the preceding decades Islamic banking practices had grown at 10% to 15% rate on a worldwide basis. Moreover, now Islamic banking practice has made its presence in over 51 countries of the world challenging the conventional banking practices every now and then (Anas and Mounira, 2008). Currently, in a wide majority of the countries there is an existence of a twofold banking practice since interest-free Islamic banking are functioning along with an interest based conventional banking. United Arab Emirates should get the utmost credit of introducing such twofold banking practice. Dubai Islamic bank established in 1973 is the first modern Islamic commercial bank and following the doorsteps several Islamic banks started their operation all over the globe (Ismal, 2009).

Managing the much needed liquidity related affairs is an even more challenge for Islamic banks. With sudden liquidity shortfalls, Islamic banks cannot seek the help of call money market or other instruments because as per the Shariah law, Islamic banks cannot collect fund for interest (Sole, 2007). On the other hand, also because of the Shariah principle it is relatively difficult for the Islamic banks to invest the excess liquidity for a shorter period of time (Ahmad and Humayoun, 2010). Along with a larger quantity and broadened functionality, Islamic banks are expected to better manage their liquidity related affairs.

The banking industry in Bangladesh formally started its journey during the days of 1950's. Mostly nationalized by the very nature, the industry failed to bloom in the fullest swing mostly because of the adverse selection problem and following moral hazards. In 1993, Bangladesh government enacted Bank Company Act which allowed the central bank providing banking licenses to the aspiring entrepreneurs. During that decade and the following decades the industry really fulfilled majority of its potentials in terms broadening the product and service line, enhancing the clientele basis and around 96% of the financial intermediary business is now conducted by banking sector. The ongoing trend of the industry is worse liquidity crisis, crowding out effect because of government's excessive borrowing and too much reliance on the stock market as an alternative investment package.

The core focus of the study is to pinpoint the ongoing liquidity risk condition in case of Bangladeshi Islamic banks and how important numerical variables affect the liquidity risk level of Bangladeshi Islamic banks. The introductory portion is followed by a brief literature review and the methodology section pinpoints our methodological approach for this very study. Finally the data analysis segment is followed up by concluding remarks and recommendations.

LITERATURE REVIEW

As far as the theory of financial intermediation is concerned of the prime responsibility of a modern day financial institution is to provide liquidity and financial services (Akkizidis & Khandelwal, 2008). Liquidity risk is one sort of financial risk faced by a financial intermediary that may eventually create contagion effects like insolvency risk, bail out risk and more predominantly reputation risk. There are several external and internal environmental issues

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eventually lead a financial intermediary towards liquidity crisis. High off-balance sheet exposure, asset-liability duration mismatch, relatively lower allocation in the liquid government instruments are the major internal factors behind chronic liquidity crisis in case of financial institutions (Ayub, 2007). On the other hand, unplanned and sudden withdrawal of government deposit, slow economic performances, highly sensitive financial market - are the major external factors behind the liquidity crisis. Among all these aforementioned factors the asset-liability duration mismatch is considered to be the most dominant reasons behind the liquidity risk and the extent of liquidity risk is even triggered by several factors (Iqbal and Mirakhor, 2007). Generally the deposit products that the banks sell are liquid and short-term based; on the other hand, the loan products that the banks sell are illiquid and long-term based. Moreover, to be competitive in the business banks have to offer a high deposit rate and at the same time to keep up the margin the financial institutions must impose higher loan rate on the entrepreneurs (Akkizidis & Khandelwal, 2008). One of the major reasons behind forced-up liquidity crisis is the information asymmetries that exist between banks, depositors, borrowers and regulators. Finally business cycle fluctuations exert influence over the asset-liability mismatch.

In order to measure the liquidity risk for a financial intermediary financial ratios are primarily used. The first form of ratio is quite simple - the ratio between the liquid asset and the liquid liabilities. This very ratio is expected to be higher in countries where majority of the deposits are fixed-term by nature, there is limited government intervention, and financial institutions are majorly risk averse (Ayub, 2007). The second sort of ratio is the division between the demand deposit and the private sector loan commitment; the implied assumption behind such a ratio is demand deposit will create more liquidity crisis and private sector loan is highly illiquid. The third ratio is the non-performing loan ratio; a high NPL will exert huge impact over the treasury because of the higher asset-liability duration mismatch (Eedle, 2009). The last type of the ratio is the loan to deposit ratio and a high ratio is generally accompanied by a high liquidity reserve.

To manage the regular liquidity related issues it is generally recommended that financial institution will use financial slack - a pool of fund which can be withdrawn quickly to provide liquidity to the business (Tarawneh, 2006). Cash in bank, central bank certificates, other commercial bank deposit and cash in the process of collection - are the asset side items that can be used as a guide against liquidity risk at a daily basis. Academicians normally prescribe three mediums to resolve the regular demand for liquidity. The first option is a quite straight forward - to keep extra cash or more liquid assets (Eedle, 2009). The second options deals with diversifying the financing sources and finally financial institutions can go for short-term loan taken from the central banks. On the other hand, to fine tune the problem of unpredictable irregular demand for liquidity, banks can generally take several protective measures. A contingency funding plan (CFP) will resolve the liquidity shortfall problems at a reasonable cost in case of extreme emergencies (Fiedler, 2000). In case of the mixed approach banks will try to match the cash outflows with the contractual cash inflows and other format of cash inflow. PAA (Prudential allocation of asset) - this very strategy will certainly eradicate the refinancing risk and redemption risk (Fiedler, 2000). Finally, deposit insurance can act as a very effective mechanism to mitigate the liquidity risk even though it may invite some moral hazards as well.

Managing liquidity risk in a Shariah governed Islamic bank is certainly a far more challenging task than the case with a treasury manager working at a conventional bank. Challenges often arise from both asset and liability side. On the liability side, it is often very difficult to provide the depositors steady and positive returns on the Mudarabah time deposit account. That is why in order to stabilize the return Islamic banks are often encouraged to retain some of the profit into the profit equalization fund (Fiedler, 2000). The second challenge comes either from the ignorance or the unwillingness of the depositors to share any losses on their account. Another major challenge is the limited number of Islamic deposit products and the dominance of the short-term deposits (Tarawneh, 2006). On the asset side, the first source of challenge stems from the bank's inability to charge the entrepreneur in case of the entrepreneur's default in trade based contract. Long-term equity financing is certainly complicated and the business faces the risk of interruption. In the less developed Islamic financial markets it is really very difficult to manage portfolio of assets (Ismail, 2010).

For solving out the regular liquidity related problems the Islamic banks should hold liquidity reserves, regulate the redemption of time deposits, mitigate the extent of business losses and default in equity based financing, mitigate the extent of default in debt-based financing, go for internal liquidity arrangement with the parent company (Greuning and Iqbal, 2008). Even though, Islamic banks can hold liquidity reserves - these institutions do not expect any reward or remuneration from holding these reserves. By using constructive liquidation mechanism, time deposit's redemption can be managed (Iqbal and Mirakhor, 2007). To avoid the recurring incidence of losses and default in case of equity based financing, Islamic banks need to audit, monitor and evaluate the business performance. Very often by using the internal commitments, short-term liquidity problem can be resolved (Obaidullah, 2005). For solving predictable irregular demand for liquidity Islamic banks should sell the held short-term Islamic financial instruments, sell the long-term Islamic financial instruments and borrow from the Islamic money market (Greuning and Iqbal, 2008). Finally, to solve out the irregular and unpredictable liquidity crisis, Islamic banks should lend from the parent company or shareholders. Otherwise the firm can look forward to central bank emergency fund and government bailout package.

RESEARCH METHODOLOGY

To attain the abovementioned research objectives, this paper uses a sample of 10 banks, of which 6 are conventional banks and 4 are Islamic banks. The conventional banks are Prime Bank Ltd., Southeast Bank Ltd., Brac Bank Ltd., Merchantile Bank Ltd., United Commercial Bank Ltd., AB Bank Ltd. and the Islamic banks are Social Islami Bank Ltd., ICB Islamic Bank Ltd., Islami Bank Bangladseh Ltd., Shahjalal Islami Bank Ltd. The banks were selected on the basis of the availability of the data. Data was collected from the annual reports of these banks over the period 2006-2010. Financial data from these annual reports is used to calculate and to evaluate the liquidity risk and associated aspects in conventional and Islamic banks of Bangladesh. Liquidity risk is the dependent variable of this study whereas Size of the Bank (size), Net working Capital (NWC), Return on Equity (ROE), Capital Adequacy Ratio (CAR), and Return on Assets (ROA) are the independent variables. Explanation of dependent and independent variables along with their proxies are specified in Table 3.3.1. In addition, list of Islamic and conventional banks that are considered for this study is specified in 3.3.2.

Descriptive statistics, correlation co-efficient and regression analysis is applied to the study and compare the affect of independent variables on the dependent variable. Excel is used to prepare the data set and SPSS is used in investigating, measuring and comparing the liquidity risk for conventional and Islamic banks according to their diverse individuality.

RESEARCH ANALYSIS AND FINDINGS

The statistical analysis of secondary data has been divided into three dimensions, i.e. descriptive, correlated and regression. Table 4.1.1 and table 4.1.2 exhibit descriptive statistics of the explanatory variables for the Islamic and Conventional banks, respectively. The analyzed statistics figures show the mean, standard deviation, maximum and minimum values of conventional and Islamic banks. The correlation coefficients are stated in Table 4.2.1 and Table 4.2.2. This gives information on the degree of correlation between the explanatory variables. The opportunity has been tested with the Pearson correlation coefficients test. The matrix explains that in general the correlation between the explanatory variables is not well-built that multicollinearity problems are not severe. Kennedy (2008) identified that multicollinearity is a problem when the correlation is above 0.705.

Capital Adequacy Ratio (CAR) is found to be strongly positively correlated with Return on Assets (ROA) and moderately related with Net working Capital (NWC) in Islamic Banking and also found both are statistically significant at 1% level of significance are stated in Table 4.2.1. Whereas in conventional banks Networking Capital (NWC) is found negatively related with size of bank and Return on Assets (ROA), and found both are statistically significant at 5% level of significance, as suggested by Pearson correlation coefficients are stated in Table 4.2.2. Hence the critically developed models reflects on the outcome of size of the bank, net-working capital, return on equity, capital adequacy ratio and return on assets in both models, i.e. conventional banks (Model I), and Islamic banking (Model II).

Now, the researchers will like to present the regression results associated with the Islamic bank's liquidity risk model. The R-square is certainly significant (81%) - so around 81% of the changes in the dependent variable - liquidity risk can be explained by the regression. Multicollinearity did not pose any major risk since the VIF or tolerance level had always been below the threshold for all the predictor variables. The relatively higher F-value and associated lower p-value is an indication that the formed regression equation is able to predict the liquidity risk condition of the Islamic banks at a statistically significant level. Net working capital and return on equity influence the dependent variable in an inverse manner (liquidity risk of the Islamic banks increases if the values of these independent variable decreases and vice versa); on the other hand, size of the bank, capital adequacy ratio and return on assets influence the dependent variable in an positive manner (liquidity risk of the Islamic banks increases if the values of these independent variable increases and vice versa). On a relative scale, size of the firm is the most influencing predictor and return on equity is the least. Only size of the firm is the statistically significant predictor variable that cannot be left out from the multiple regression under any circumstances.

Now, the researchers will like to present the regression results associated with the conventional bank's liquidity risk model. The R-square is certainly insignificant (29%) - so around 29% of the changes in the dependent variable - liquidity risk can be explained by the regression. Multicollinearity did not pose any major risk since the VIF or tolerance level had always been below the threshold for all the predictor variables. The relatively lower F-value and associated higher p-value is an indication that the formed regression equation is not able to predict the liquidity risk condition of the Islamic banks at a statistically significant level. Size of the bank and return on equity influence the dependent variable in an inverse manner (liquidity risk of the Islamic banks increases if the values of these independent variable decreases and vice versa); on the other hand, net working capital, capital adequacy ratio and return on assets influence the dependent variable in an positive manner (liquidity risk of the Islamic banks increases if the values of these independent variable increases and vice versa). On a relative scale, net working capital of the firm is the most influencing predictor and capital adequacy ratio is the least. Only net working capital is the statistically significant predictor variable that cannot be left out from the multiple regression under any circumstances.

CONCLUSION

The core purpose of this very research was to develop a predictor model for estimating liquidity risk for Bangladeshi Islamic banks and Bangladeshi conventional banks. Regression coefficients did not always confine to their expected sign and the extent of the coefficients did vary between different banking systems. For Islamic banks, a model estimation to predict the liquidity risk level was proven to be successful but the module failed to generate the desired result in case of the conventional banks. Liquidity risk is an ever present hazard for both Islamic and conventional sort of banks irrespective of the difference between their business model. So, financial institutions need to be efficient enough to assess the extent of liquidity risk and take necessary preventive measures in order to remain safe from the regular and irregular liquidity crisis.

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Annex - Tables

Table 3.3.1 Variables and their proxies

Variables	Symbol	Proxies
Liquidity Risk	Y1	Cash to total asset level
Size of the Bank	X1	Logarithm of total asset
Net working Capital	X2	Current asset less current liabilities
Return on Equity	X3	Net income/ total equity
Capital Adequacy Ratio	X4	(Tier 1 capital + Tier 2 capital) / risk weighted asset
Return on Assets	X5	Net income / Total asset

Source: Own research

Table 3.3.2 Lists of banks included in the study

Conventional banks	Islamic banks
Southeast Bank Ltd.	Social Islami Bank Ltd.
BRAC Bank Ltd.	ICB Islamic Bank Ltd.
Mercantile Bank Ltd.	Islami Bank Bangladesh Ltd.
United Commercial Bank Ltd.	Shahjalal Islami Bank Bangladesh Ltd.
AB Bank Ltd.	
Prime Bank Ltd.	

Source: Own research

Table 4.1.1 Descriptive Statistics IslamicBank

Variables	Minimum	Maximum	Mean	Std. Deviation
Liquidity risk	0.00807	0.1582	0.07571	0.03743
Size of Bank	23.5844	26.5241	24.6074	1.01847
Net working Capital	-2.711	14.6839	5.22187	5.79055
Return on Equity	-0.0737	0.53462	0.20753	0.13935
Capital adequacy ratio	-0.4718	0.27511	-0.0031	0.24673
Return on Assets	-0.0442	0.06586	0.03594	0.02521

Source: Own research

Table 4.1.2 Descriptive Statistics (Conventional Banks)

Variables	Minimum	Maximum	Mean	Std. Deviation
Liquidity risk	0.04823	0.08272	0.06634	0.01139
Size of Bank	24.1249	25.7524	25.0348	0.43506
Net working Capital	1.33517	15.7891	10.4643	3.14227
Return on Equity	0.02593	0.42191	0.21052	0.07369
Capital adequacy ratio	0.06306	0.14712	0.10987	0.01794
Return on Assets	0.04964	0.08958	0.06351	0.01144

Source: Own research

Table 4.2.1 Pearson's Correlation Co-efficient (Islamic Banks)

	Size of Bank	Net working Capital	Return on Equity	Capital adequacy ratio	Return on Assets
Size of Bank	1	-0.09	-0.19	0.387	0.439
Net working Capital		1	-0.216	.681*	0.399
Return on Equity			1	-0.107	-0.207
Capital adequacy ratio				1	.796*
Return on Assets					1

*. Correlation is significant at the 0.01 level (2-tailed).
Source: Own research

Table 4.2.2 Pearson's Correlation Co-efficient (Conventional Banks)

	Size of Bank	Net working Capital	Return on Equity	Capital adequacy ratio	Return on Assets
Size of Bank	1	-.379**	0.152	0.02	0.261
Networking Capital		1	0.316	-0.315	-.420**
Return on Equity			1	-0.01	0.31
Capital adequacy ratio				1	0.358
Return on Assets					1

**. Correlation is significant at the 0.05 level (2-tailed).
Source: Own research

Table 4.3.1 Regression results for Liquidity risks (Islamic Banks)

R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	Sum of Squares of Residual	F-statistic	Sig. Prob.(F-statistic)			
0.807	0.699	0.020841	3.038	0.004	7.514	0.005			
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	-0.475	0.149		-3.187	0.011	-0.812	-0.138		
Size of Bank	0.023	0.006	0.674	3.811	0.004	0.009	0.036	0.687	1.455
Net working Capital	-0.002	0.002	-0.317	-1.457	0.179	-0.006	0.001	0.454	2.201
Return on Equity	-0.024	0.045	-0.093	-0.546	0.599	-0.126	0.077	0.733	1.364
Capital adequacy ratio	0.078	0.042	0.221	0.812	0.438	-0.061	0.129	0.291	3.436
Return on Assets	0.28	0.396	0.197	0.707	0.498	-0.616	1.175	0.276	3.622

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	0.02543	0.13003	0.08366	0.03414
Residual	-0.0345	0.0416	0	0.01671
Std. Predicted Value	-1.705	1.358	0	1
Std. Residual	-1.654	1.996	0	0.802

Source: Own research

Table 4.3.2 Regression results for Liquidity risks (Conventional Banks)

R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	Sum of Squares of Residual	F-statistic	Sig. Prob (F-statistic)			
0,288	0,14	0,01056	1,459	0,003	1,945	0,124			
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	0.123	0.135		0.909	0.372	-0.156	0.402		
Size of Bank	-0.003	0.005	-0.117	-0.592	0.559	-0.014	0.008	0.756	1.323
Net working Capital	0.002	0.001	0.545	2.203	0.037	0	0.004	0.484	2.064
Return on Equity	-0.07	0.034	-0.455	-2.056	0.051	-0.141	0	0.606	1.649
Capital adequacy ratio	0.097	0.121	-0.088	-0.465	0.646	-0.305	0.193	0.82	1.22
Return on Assets	0.322	0.227	0.323	1.416	0.17	-0.147	0.791	0.569	1.758

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation
Predicted Value	0.0554596	0.07684	0.06634	0.00611
Residual	-0.0170181	0.02333	0	0.00961
Std. Predicted Value	-1.779	1.718	0	1
Std. Residual	-1.612	2.209	0	0.91

Source: Own research