



Liquidity Risk Management and Financial Performance of Islamic Banks: Empirical Evidence from Global Islamic Banks

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Received 05 June 2017, Accepted 12 Sep. 2017, Published 01 Dec. 2017

Abstract. There are two parallel pillars in banking industry i.e. Islamic Banking and Conventional banking. Conventional banks are interest based while Islamic banks are interest free banking. Islamic banking is key area for all Muslims, and grasps their attention for deposit purposes now a days. This study aims to examine the impact of different liquidity ratios on Islamic bank's performance. The study selected 25 international Islamic banks for the period of 10 years; as from 2006 to 2015. Eight differently composed liquidity ratios from balances sheet's current items, were used in study; quick ratio (QR), cash and due from bank to asset ratio (CDA), current ratio (CR), liquid to asset ratio (LA), investment to asset ratio (IT), cash and due from banks to deposit ratio (CDD), investment to deposit ratio (IDR) and cash deposit ratio (CD) as independent variables. Whereas return on asset (ROA) and return on investment (ROI) used as dependent variable. The age (AG) and size (LTA) of bank are used as control variables. Different analysis technique used to analyze results. Two models were incorporated in study. Results shows LA, QR, CDA, IT and CDD contribute in explaining ROA and ROI. Whereas, the IDR, CD, AG, LTA impact the financial performance but not as strong as the above mentioned because they are not explain all the financial performance indicators. Overall it is concluded that financial performance is impacted by the independent variables of study. The financial performance of Islamic banks improved by maintain liquidity at good level, and holding liquidity further which can cause inverse impact on the financial performance of Islamic banks. The study incorporates some few control variables which has impact on relationship.

Keywords: Liquidity Risk Management, Financial performance, Return on asset, Return on equity, Islamic banks, Liquidity Ratios

JEL classification: G21, H12, E5, C58, G21, E52

1. Introduction

The banking industry consist of two eyes, one is Conventional banking system and second is Islamic banking system. In early time there were only conventional banks which perform operations based on interest, later on the Islamic banks were introduced as the result of conservatism trend, in which Islam followers show their need to follow banking practices in light of sharia laws and ensure the soundness of their Muslim economies as explained by Taylor (2003). Islamic financial transactions follows basic principles some of which are; first, financing purpose must not involve any activity which is prohibited by Islamic laws, second it must not include any type of riba, third economic activity must not involve any type of oppression (zulm), fourth the activity should not consist of speculation (gharar), fifth zakat payments must be done, and sixth products and services that oppose the laws of Islam must be avoided (for instance haram products) (Inyangala, 2014).

Islamic banks were less affected by the global financial crises due to their practicing nature in which all tractions are trade base and asset linked (Hidayat & Abdullah, 2012). Crises does not completely impact the Islamic banks is not a case, they were affected but not as bad as Conventional banks, and



one reason for being less affected is holding and maintaining level of liquidity more by Islamic banks in contrast to Conventional banks (Kassim, Majid & Yousaf, 2010). The importance of liquidity can be seen by comments of many researches in their study. Liquidity is the ability of Islamic bank to pay off or meet its short term immediate and unpredicted obligation. Liquidity is very important for any type of institutional survival, in case of Islamic banks liquidity also attracts the potential depositors and investors. The liquidity is like a life blood for every institution and specifically for Islamic banks too. (Siegel & Shim, 2000; Masood & Bellalah, 2013)

Basic Motivation to conduct this research is to check the liquidity risk of Islamic banks. Lack of liquidity cause bank to face liquidity risk, and this risk arise when the banks' ability is affected to match maturity of its assets and liabilities. This study fill up a gap that how to overcome liquidity risk in Islamic banks and this study also examine importance of liquid asset in area of Islamic banks. Aim of this study is to understand the liquidity risk, performance measure concept and also defining different variables of liquidity and then find relationship of these variables with performance in term of return on asset (ROA) and return on investment (ROI). This paper is divided into four headings. 2nd Heading section will give the literature review which explains Islamic banking system, its development and Performance and liquidity risk faced by bank. 3rd Heading demonstrates the research methodology of the paper. 4th heading section will give empirical findings and 5th heading section finally concludes with short recommendations as well.

2. Literature Review

2.1. Islamic Banking Development

The basic difference between both Islamic and Conventional banks is of "Riba". Riba is an Arabic word with the literal meaning of an "increase". Riba is prohibited in Islam as according to Taylor (2003), the Riba prohibition doesn't mean that money cannot be lend to any borrower, in fact it can be, but under the laws of sharia, this prohibition in Islam is to avoid any unearned profit or illegality of any form of profit or gain, unearned in sense that they result from risky transactions which cannot be calculated with contracting parties in advance. The Islamic bank work under the light of Islamic laws and incorporate interest free banking system, as it prevent its functions from Riba. Many countries around the globe incorporate twofold banking system which is that Conventional banks are in operation parallel to the Islamic banks (Akhtar, Ali, & Sadaqat, 2011).

2.2. Liquidity risk in Islamic banks

Liquidity is a description of any institution's ability to convert its assets into cash at short notice and without any loss in its asset value. The assets having high quality of liquidity are those assets that can be instantly transformed into cash (Committee on Banking Supervision, 2013). In bank liquidity ratio plays a very important role, because bank usually deals with demand deposits and time deposits, and both are the form of large funds borrowed from depositors (Anyanwu, 1993). Liquidity risk is very important to tackle in banks. Different ratios are there through which banks measure liquidity, it signifies a gift for financial institutions for maintaining a balance between both the inflow and outflow of institution over time.

Investment to asset ratio (IT): Tabash and Dhankar (2014), conducted study to examine the stability of Islamic banks. The study results show a lower ratio that indicates liquidity position of Islamic banks are at good level, as the lower investment to total asset ratio indicates the more the Islamic bank has liquidity. This same ratio along with some other was also used by Maqbool (2014), while investigating the Islamic bank of Pakistan. Study analyses the data by using simple regression equation and found investment to total asset positive significant with ROA, and concluded that low liquidity the bank has if the investment to total asset ratio is high.



Cash and due from banks to deposit ratio (CDD): The cash and due from bank to total deposit ratio was calculated as cash and due from bank divided by total deposits (Iqbal, 2001; Rasul, 2013; Fatema & Ibrahim, 2013). Cash and due from banks to total deposits ratio was used in many studies to measure the liquidity and mixed results was found. Rasul (2013), use cash and due from banks to total deposit ratio to reflect the liquidity of Islamic banks of Bangladesh, and found that cash and due from banks to total deposits has significant relationship with return on asset and return on deposits, whereas insignificant with return on equity at 10% level of significance.

Investment to deposit ratio (IDR): This ratio used in many studies for assessing the liquidity. Investment to deposit ratio is calculated as investments of bank divided by total deposits of the bank. The illiquidity and insolvency of bank is indicated by high investment to deposit ratio. Samad and Hassan (1999), in their study measure the liquidity ratio by cash deposit ratio in addition to some other proxies, they calculate the cash deposit ratio by dividing cash on deposit, banks by maintaining its cash deposit ratio higher increase the trust of depositors', as the most liquid asset is cash of any bank, so the cash deposit ratio indicate the liquidity of bank, the higher the ratio the more liquid the bank is as compare to the bank whose has low ratio.

Cash deposit ratio (CD): Samad and Hassan (1999), in their study use cash deposit ratio in addition to some other proxies, they calculate the cash deposit ratio by dividing cash on deposit, banks by maintaining its cash deposit ratio higher increase the trust of depositors', as the most liquid asset is cash of any bank, so the cash deposit ratio indicate the liquidity of bank, the higher the ratio the more liquid the bank is as compare to the bank whose has low ratio. Mansoor Khan, Ishaq Bhatti, and Siddiqui (2008), while examining the different mode of Islamic finance use cash deposit ratio along with some other and found significant impact. The results show performance of Pakistani banks is good in terms of ROA and ROE, and the banks also maintain the liquidity. In addition Loghod (2010), in his study also found this cash deposit ratio significant association with the enlargement of banks' profitability.

Current ratio (CR): The current ratio is used to determine liquidity of the company. Current ratio shows the ability of the company to meet its short-term debt obligations. Malik, Awais, and Khursheed (2016), in their study also calculate liquid ratio by taking addition of cash and investments and, then dividing it by current liabilities. The current ratio is used to measure the liquidity. As Samad and Hassan (1999), while conducting exploratory study for profitability of Malaysian Islamic banks shows ability of bank to pay and meet current liability demand of depositors. Similarly, Khan, Ali, and Khan (2015), also use same ratio to measure liquidity along with some more ratios. Results show that current ratio has significant relationship with profitability, and is improving for Pakistani Islamic banks whereas declining for Malaysian Islamic banks.

Liquid to asset ratio (LA): Mansoor Khan, Ishaq Bhatti, and Siddiqui (2008), while examining the Islamic modes of finance. Sample include two Islamic banks of Pakistan namely; Al Baraka and Meezan bank. Study include different ratios of capital adequacy, asset composition, and liquidity, earning and profitability ratios. Study incorporate liquid asset to total asset in order to measure liquidity along with liquid asset to total deposits and cash deposit ratio. Liquid asset to total asset has significant association with profitability, and also show that the liquid asset to total asset ratio is high for Al Baraka Islamic bank.

Quick ratio (QR): The quick ratio is a liquidity ratio, which is use to display the speed of institution for quickly transforming its assets into cash to repay short-term debt. According to Ishaq et al. (2016), quick ratio is a measure of the company's ability to meet its obligations in the short term. Quick assets are assets that can be converted easily into cash without significant depression of book value. It is a measure of financial strength or weakness of a company. Study used quick ratio in addition of some more proxies to measure the liquidity ratio of commercial banks of Pakistan.



Cash and due from bank to asset ratio (CDA): Cash and due from banks to total asset ratio is also a proxy used to measure the entities liquidity level, and is defined as the ratio of cash and cash dues from banks to net assets (Yu & Jiang 2010; Bokpin, 2013). Fatema and Ibrahim (2013), also measure the liquidity by cash and due from bank to total assets. They selected five Islamic banks of Bangladesh and collected data from 2005 to 2007, which was a five year data. The result displayed that cash and due from banks to total asset significantly associated with the profitability.

2.3. Performance Measures (ROA, ROI) of Islamic banks

The banks which are solid and profitable has ability to withstand negative shocks, and also to ensure the stability of financial system (Athanasoglou, Brissimis, & Delis, 2008). The study also suggests that profit is not only a tool to indicate performance of bank but also it help to determine planning and efforts done by management in order to increasers the bank's performance, and also to increase the chances of bank to be remain in the competitive markets. The performance ratios examine the ability of business to earn profit by turning its activities in to profitability (Alshatti, 2015).

Return on Investment (ROI): According to Bashir (2003), before tax profit ratio is defined as the net income accumulating to bank from non-interest activities (like, fees, service charges, foreign exchange, and direct investment) divided by total assets. Samad and Hassan (1999), define the profit expense ratio as the division of profit to total expense, the higher ratio the more cost effective bank is, and also generate great profits within the expense given.

Return on Asset (ROA): Previous studies use different indicators to measure the performance. Return on asset (ROA) is a financial ratio that is used to measure financial performance of the bank. It is defined as net income divided by total assets (Ariffin, 2012; Obudho, 2014; Daly & Frikha, 2015). This ratio depicts the proportion of bank's assets that contribute in achieved results.

2.4. Liquidity Risk management and impact on Performance

The liquidity of any organization (bank) is reflected by its amount of liquid assets, the higher liquid asset the more organization (bank) is in liquidate state (as having more liquid assets) (Akhtar, Ali, & Sadaqat, 2011). Whereas, the reward that appear in result of taking risk is called profit in Islam. Malik, Awais and Khursheed (2016) conducted a study and asserted that ROA and ROI are proxies of profitability (dependent variable), whereas, current, liquidity, and quick ratios are proxies used for liquidity, the findings show a significant relationship between measures of bank liquidity and ROA. However, the relationship between profitability and liquidity became statistically insignificant when ROE and ROI used as proxies of profitability. Arellano and Bond (1991), suggested that for managing liquidity the banks must assess and restructure their strategies, and it will improve both; the yields on shareholders equity and use of asset by bank. The results show the rejection of null hypothesis and show there is a significant positive relationship, and liquidity effect performance of commercial banks. Accordingly, study also finds that in Nigeria the significant determinants of banks performance are size of the board, bank liquidity, and debt structure. Based on the results, study suggested that to achieve superior bank performance banks must rise their liquidity, on other side, suggested that performance of the banks can also be increased by effectively manage debt structures of banks. Irfan and Zaman (2014), examine the efficiency of Islamic banks of Asian countries. The study findings show that Islamic banks are efficient, and banks can be placed according to their efficiency rank; Brunei stands at top then Pakistan, Iran and Bangladesh. Liquidity is important financial ratios to determine the efficiency of Islamic banking system.



2.5. Hypothesis Development:

- H1a:** There is positive relationship between current ratio and return on asset.
- H1b:** There is positive relationship between current ratio and return on investment.
- H2a:** There is positive relationship between liquid asset ratio and return on asset.
- H2b:** There is positive relationship between liquid asset ratio and return on investment.
- H3a:** There is positive relationship between quick ratio and return on asset.
- H3b:** There is positive relationship between quick ratio and return on investment.
- H4a:** There is a positive relationship between cash and due from banks to asset ratio and return on asset.
- H4b:** There is a positive relationship between cash and due from banks to asset ratio and return on investment.
- H5a:** There is a positive relationship between investment to asset ratio and return on asset.
- H5b:** There is a positive relationship between investment to asset ratio and return on investment.
- H6a:** There is a positive relationship between cash and due from bank to deposit ratio and return on asset.
- H6b:** There is a positive relationship between cash and due from bank to deposit ratio and return on investment.
- H7a:** There is a positive relationship between investment to deposit ratio and return on asset.
- H7b:** There is a positive relationship between investment to deposit ratio and return on investment.
- H8a:** There is a positive relationship between cash deposit ratio and return on asset.
- H8b:** There is a positive relationship between cash deposit ratio and return on investment.

3. Research Methodology

3.1. Statistical Tool:

The unit of analysis of this study is Islamic bank. Islamic banks are interest free banks and operate according to Islamic sharia laws. Panel data can better detect the measures effect of variables that cannot be simply detected by purely cross sectional data or time series data. So this study uses panel data. The present study use secondary data as it is already collected and prepared by the Islamic banks in form of their official financial reports. Secondary data is good for the handling of longitudinal studies (large time period). Because of these advantages the present study incorporates secondary data. The sampling technique used in this study is purposive sampling. Similarly according to Kothari (2004), purposive sampling is a technique to select the subjects for the study based on certain characteristics or criteria in order to fulfill study objective.

3.2. Data:

The data was extracted from balances sheet and income statement and their respective notes. Data was collected from the year 2004 to 2015, but as all banks were not in operation since 2004, so those banks were opt to be analyzed which were in operations since 2006. The 25 Islamic banks are selected for this study, and the year of study is from 2006 to 2015. The data was collected for 25 Islamic banks which are operating in different countries and fulfill the criteria selected for this study. Abu Dhabi Islamic bank, ABC Islamic bank (E.C), Al Baraka Islamic Bank B.S.C., Al Rajhi bank, Al Baraka Bank (South Africa), Bank Al-Jazair, Bahrain Islamic bank B.S.C., Bank Islam Malaysia Berhad, Boubyan



bank, Bank Muamalat, Dubai Islamic bank, European Islamic Investment bank, Faysal bank (Pakistan), Hong Leong Islamic Bank, Islamic bank of Britain, Islamic bank Bangladesh Limited, Jordan Islamic Bank for Finance and Investment, Kuwait Turk Participation bank, Kuwait finance house, Meezan bank, Qatar Islamic bank, RBH Islamic bank, Sharjah Islamic bank, Turkish Finance Participation Bank, and Tadhamon International Islamic Bank are the Islamic banks selected for present study.

4. Data Analysis

Test confirmed the existence of Heteroskedasticity, Autocorrelation and Endogeneity in data set. Therefore Generalize method of moment test is use to assess the relationship between liquidity variables and profitability measures (ROA, ROI).

Table 1: Test of heteroskedasticity, autocorrelation and endogeneity

	ROA	ROI
Wald test for groupwise heteroskedasticity		
chi2 (25)	2869.36	1.70E+05
Prob>chi2	0.0000	0.0000
Wooldridge test for autocorrelation in panel data		
F-stat	9.206	6.937
P-value	0.0057	0.0145
Hausman specification test for Endogeneity		
Chi-Sq	23.327	35.525
P-value	0.0096	0.0014

Source: Developed by Researchers

As the p-value is smaller than the prescribed value so it is stated that Heteroskedasticity is found in all two models. The results of Autocorrelation test shows that there is Autocorrelation exist in both two models as the null hypothesis is rejected in Model 1 and Model 2. Hausman specification test shows that IT and CDD are endogenous against ROA; LA, IT, CD and CDD are endogenous against ROI at 5% level of significance.

4.1. Model Specification:

Different authors and researchers suggest to use some instrumental model for estimation in case failure of OLS assumptions more specifically in existence of Endogeneity (Arellano and Bond, 1991); (Arellano and Bover, 1995). In Econometric models some independent variables and the lag term of dependent variables are used as instruments for Endogeneity problem. Fixed effect model is used for the data analysis.

Table 2: Descriptive summary of data

	Mean	Maximum	Minimum	.Std. Dev	Observations
ROA	0.82	5.88	-13.41	1.91	250.00
ROI	7.09	88.86	-103.48	19.22	250.00
CR	88.31	609.10	0.26	101.03	250.00
LA	17.31	64.66	0.03	11.27	250.00



QR	44.23	551.36	0.03	70.14	250.00
CDA	16.05	64.66	-0.09	11.40	250.00
IT	32.89	131.31	0.04	27.69	250.00
CDD	52.16	637.50	-0.05	91.26	250.00
IDR	86.91	791.99	0.00	120.59	250.00
CD	7.79	97.88	-0.05	13.62	250.00
AG	25.42	110.00	1.00	19.14	250.00
LTA	10.06	12.97	5.84	1.16	250.00

Source: Developed by Researchers

ROI use in present study to quantify financial performance of Islamic banks. The highest ROI is 88.86 of Al Baraka Bank (South Africa) among all Islamic banks in year 2015. ROA mean value is 0.82 which depicts ROA of all Islamic banks on average. The standard deviation of ROA is 1.91 which shows that the deviation in the financial performance is not very large across the countries among all Islamic banks, as all banks perform in light of Islamic sharia. The CR is lowest as 0.26 faced in year 2006 by ABC Islamic Bank (E.C). The CR minimum value is not negative which shows that in financial crises Islamic Banks did not suffer from no or negative liquidity position. No single LA ratio is with negative sign which show that in years of global financial crises the all Islamic banks maintain their LA ratio to some extent. The average value of QR is 44.23 overall. The trend of mean shows a positive sign trend with fluctuations. Overall average CDA is 16.05. The trend of CDA average shows a slight increasing trend in 2007 as compare to 2006 and again drop with little value in 2008. The trend of mean IT shows a positive values and increasing trend from 2006 to 2008. Positive CDD values mean that all Islamic banks maintain their liquidity position and to secure themselves from bankruptcy. The average value of IDR is 86.91 which is positive in nature by its sign, which depicts that all sampled Islamic bank consists of this ratio for their liquidity purposes. Overall mean of CD ratio is 7.79, and its trend shows decrease in average ratio from 2007 to 2008. The dispersion of AG is overall 19.14 standard deviation. The mean of LTA is 10.06 which is positive in nature because no bank can have negative total assets.

Correlation analysis: the range of coefficients of correlation lies between +1 to -1. The +1 indicate perfect positive correlation, which depicts that with increase of one variable the other variable will also increase or in other words both variables are directly proportional.

4.2. Fixed Effect Model:

Return on Asset Result: Null hypothesis of j-statistic is accepted on the basis of p-value and instruments are found to be valid. The model includes cross-section weights as GMM weights. The Durbin-Watson statistic as fall in range near to 2 which show there is no autocorrelation. The value of R-square is 69%, whereas the Adjusted R-square value indicates that combined liquidity variables explain 64% of financial performance in terms of ROA when other factors remains same.

Return on Investment Results: No autocorrelation is detected by the value of Durbin-Watson which lie in range near to 2. The R-Square of model is 61% and Adjusted R-Square shows that the liquidity explains financial performance as measured by ROI 53% when other factors remain same.

5. Conclusion

All Islamic banks follow the teaching of Islamic sharia in their operations and practices. The Interest free banks' earnings are not dependent on any kind of interest; instead they largely depend



on the liquidity for their survival and capital enlargements. This study aims to trace the importance of liquidity and also to check the impact of liquidity in the enlargement or shrinkage of financial performance of Islamic banks. The study defines different variables as liquidity measures, and uses current ratio, liquid ratio, quick ratio, cash and due from banks to asset ratio, Investment to asset ratio, cash and due from banks to deposit ratio and Investment to deposit ratio as independent variables to measure liquidity of Islamic banks. The dependent variables used by the study are return on asset (ROA), return on equity (ROE) and return on investment (ROI). The study also incorporates some firm-specific variables as control variables, which are: size of the Islamic bank (LTA) and the age which is numbers of years of Islamic bank (AG). The study uses a set of 25 international Islamic banks for investigating the relationship between liquidity and financial performance of Islamic banks over the period from 2006 to 2015. Overall, the study found that Islamic banks try to maintain a good level of liquidity in order to prevent them from bankruptcy and to perform smooth operations. This highlights two important issues: 'liquidity' and 'financial performance'. The study found that Islamic banks cannot achieve expected profit enlargements without confirmation of their proper liquidation (liquidity level not too high, nor too low). The study also found a very weak impact of control variables on the financial performance of selected sampled Islamic banks.

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