

Liquidity Management and The Islamic Bank Financing Constraints

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Abstract

The major source of income for a bank comes from the financing operations. Insufficient amount of fund resources a bank have, consequently, a negative relationship between liquid assets holding, reserve, capital requirement, and provision for bad and doubtful financing with financing operations is expected. Thus, the study aim to examine the degree of constraint the liquidity management has on the Islamic bank financing activities. To realise the objectives of the study, this study utilised the dynamic panel data, Generalized Method of Moments (GMM) estimator applied to Malaysia Islamic banks annual data for the period of 1998 to 2014. The finding shows a negative relationship between liquidity and financing, which means an insufficient fund, is a constraint to the Islamic bank's financing operations. Thus, the liquid assets holding and securities holdings have a negative impact on Islamic bank financing activities, hence, excessive holding of liquidity consequently will reduce bank's financing volumes.

Keywords: Risk, Liquidity, Financing, Islamic Bank.

1.0 Introduction

The fundamental objective of a firm is to maximise shareholders' wealth. Wealth maximisation requires the management to evaluate and balance the trade-off between opportunities for higher returns, the probability of not realising these expected returns and the possibility that the business might fail. For banking firms to achieve those fundamental objectives, it has a lot to do with the observance of the principles of profitability, liquidity, and safety in the banking business, with special centre of attention given to the principle of profitability.

The major source of income for a bank comes from the financing operations. However, banks' are financially constrained, an aggressive strategy will reduce the bank's provision for liquidity holdings, especially the cash reserve fund for bank safety. This will expose the bank to a higher

operational risk associated with the unexpected unavailability of funds or any unexpected rises in the borrowed fund cost. Nevertheless, an excessive holding of liquidity, especially the cash reserve will reduce excess fund for financing and investment operations. Hence, there will be a negative relationship between the liquidity holdings with financing operations. Therefore, the observance of liquidity holdings is important, as bank liquidity mainly to meet the cash demands by the depositors, any sudden increase in the loan demands and satiate other fund requests in their operations.

The Islamic bank as well encountered with a limited amount of fund resources. Thus, is there a negative relationship between liquidity holdings and bank's financing operations? Hence, this study emphasizes on the Islamic bank liquidity holdings and relates them to the financing operations.

2.0 Literature Review

After the United States 1990s credit crunch episodes, many countries experienced the unsteadiness of their banking sector associated to the financial mismanagement. The Subprime crises in 2007 and the Greece credit crisis were largely due to the failure of managing the risk management matters (Davis, 2009). The credit crises episode of 2007 and the Euro debt crisis of late 2009 have reminded banks on the importance of the liquidity risk management. In fact, it was after a series of financial crises occurrences then the authorities in various countries saw the need for a consistent standard to monitor and improve bank liquidity management. The effort was clearly visualised after the Basel III was reformed to strengthen the global banking sector capital and liquidity regulations.

Oldfield and Santamero (1997) point out that the liquidity risk arises from the maturity mismatches where liabilities have a shorter tenor than assets. An unexpected increase in borrowers' demand above the anticipated level will lead to shortages of cash or liquid marketable assets. Therefore, the capability to fund any increase in assets and meet the obligations as they come due or the liquidity management is vital to the survival and viability for every banking organisation. The liquidity risk of bank increases both in the case of cash surplus and cash deficit. Banks face liquidity risk when uncertainty over their solvency arises at the refinancing stage (Basel Committee on Banking Supervision, 2000). It means that when the cash resources exceed cash expenditure, it creates cash funds (without payoff) and when the cash expenditure exceeds the cash resources, it creates liquidity deficit. This can make a bank unable to reduce the debts or to collect funds to increase the assets.

The capital adequacy, effective liquidity planning, and strong risk management are crucial for bank safety and soundness (Bernanke, 2009). Managing the liquidity should be among the most important activities conducted by banks (Basel Committee on Banking Supervision, 2000). The effort was clearly visualised after the Basel III was reformed (2010) to strengthen the global banking sector capital and liquidity regulations. For the Islamic bank, the importance of the institutional risk management is clearly stated in the chapter of Yusuf (12:47-48; Quran).

Empirical work directly focusing on whether holdings of liquidity have any significant implication on banks' performance is considered new. In the past, empirical studies usually regard the liquidity risk as an exogenous variable (Molyneux and Thornton, 1992; Demirgüç-Kunt and Huizinga, 1999; Naceur and Kandil, 2009 and much more). The focus of the earlier literature on bank liquidity management was generally concentrated more on bank failures or bank run. Diamond and Dybvig (1983 and 2000) analysis of bank liquidity management show banks that deficiency in their liquidity management might face with bank failures or bank runs.

A model that can explain the implication of insufficient fund resources faced by the banking sector is Bliss and Kaufman (2002) 'unifying model'. This model emphasises that credit expansion and contractions are subject to two constraints, which are the capital requirement and reserved requirement. They argued that if any of the constraints are binding, the earning assets could not grow further. Capital may become banks' binding constraints during the period of recession and monetary expansion. Reserves, on the other hand, become banks' effective constraints during the periods of economic upturn and restrictive monetary regime.

The liquidity management is crucial, particularly under the high degree of financial market complexity, uncertain and erratic global business atmosphere. Comparing to the interest-based banking sector, liquidity risk management of the Islamic financial sector is more challenging for the reason that most of the existing instruments for liquidity risk management are not *Shariah* compliant. The Islamic banks should have an efficient and effective liquidity management policy in place that covers sound banking operations.

Liquidity risk is one of the major risks facing the Islamic bank and one of the major reasons for the impediment to the Islamic banking industry growth (Ray, 1995; Vogel and Hayes, 1998; and Standard & Poor's, 2008). The establishment of the Islamic Financial Services Board (IFSB) in 2002 is to develop a prudent and effective policy to supervise the operations and development of Islamic banks. In 2005, the IFSB has set up a prudential standard on Islamic bank liquidity management. The IFSB issued a standards document on risk management guidelines in the form of fifteen principles general requirement in risk management and six major risk areas. The risk areas are the credit risks, equity investment risk, market risk, liquidity risk, rate of return risk/displaced commercial risk, and operational risk including the *Shariah* non-compliance risk.

A prudent and effective risk management practice is necessary for the Islamic bank to be sustainable, healthy, and viable, especially in this complex, dynamic, and uncertain economic environment. Empirical work focused on the relationship of liquidity management and Islamic banks' constraints are yet to be examined. Most of the studies are still in the form of conceptual ideas and very little provides the empirical analysis (Khan and Ahmed, 2001; Sundarajan and Errico, 2002; Obaidullah 2002; Akkizidis and Khandelwal, 2008; and Ariffin et al., 2009). A survey conducted by Ariffin et al (2009) on 28 Islamic banks from 14 countries shows that most of the Islamic banks are exposed to the similar types of risk to those in the conventional bank but with different level of risks.

3.0 Methodology

3.1 Bank's Liquidity Holding

Banks' liquid assets are the holding of cash, interbank deposits, and the government issued and government guaranteed securities that can easily convert into cash. The reserve includes the retained earnings, profit equalisation reserves, and investment risk reserves. Based on the amount of non-performing financings, banks need to have a fraction of specific provisions for those non-performing financings. For the expected losses, banks prepared some fraction known as the general provision. Banks also instructed to uphold a certain minimum capital adequacy ratio or minimum capital to risk-weighted assets ratio based on their total risk exposure.

A bank has to consider the risk related to the investment or project financing and the risks associated with possible unforeseen events when establishing the liquidity holdings. To ensure the success of a project financing or an investment the liquid assets have to adequately implement any contingency plan meant to cover the risk. The safety and prudential requirements and monetary policy objectives largely determined the liquid assets, reserve and minimum capital adequacy. Thus, the above provisions will become the bank's financing constraint and have a negative impact by holding the bank excess fund for financing activities.

Constrained by the insufficient amount of fund resources that can be supplied into the loanable fund market, hence, hypothetically, the relationship between financing and liquidity holdings has a negative and a linear relationship. The negative relationship shows that an increase in the liquidity holding of a bank reduces the excess fund resources that can be delivered to the credit market. Equation (1) gives the total financing (F) function with parameter L as the amount of liquidity holding.

$$F = \alpha - \beta_1 L \quad (1)$$

3.2 Research Framework

This study employed 21 Islamic banks in Malaysia with time series data from the range of 1998 to 2014 annual reports. The macroeconomic data come from Bank Negara annual and monthly reports. With regard to bank financing, the banks considered in their balance sheets the full amount of any probable losses as the borrower defaults and they update the assessment of the probable losses according to new information in each period. Hence, suggesting that provisions are systematically related. Since problem financing is not immediately written-off, hence, they can remain on the balance sheet for a certain period. To address the issue, the statistical estimation procedure is applying a dynamic specification. Thus, this study utilises the Generalized Method of Moments (GMM) estimation model.

For robustness analysis, both of the first differences (Arellano and Bond, 1991) and orthogonal deviations (Arellano and Bover, 1995) are applied to the estimated model. This study applied the forward orthogonal deviation transformation in order to eliminate the firm-specific variable. The GMM estimator is consistent if there is no serial correlation in the error term of the equation. The analysis applies the Sargan test, a test of over-identifying restrictions, to

determine any correlation between the instruments and errors. The null hypothesis is that the instruments and the error terms are independent or the error terms are serially uncorrelated. The study also applied the kernel-based method with automatic bandwidth selection developed by Newey-West (1994) to obtain heteroskedastic and autocorrelation consistent (HAC) standard errors and covariance estimation.

3.3 Research Model

The analytical model for the statistical analysis is the bank lending supply model based on the credit channel view (Bernanke & Blinder, 1988). The variables can be categorised into three groups, namely the bank's specific variables, regulatory variables and prudential measures, and the macroeconomic variables. The study analyses four institutional financing constraints, which are the provisions for liquid assets, reserve, provisioning for financing losses, and capital requirement. The macroeconomic variables include the real gross domestic product (GDP), money supply M2 and inflation rate (CPI) growth. The macroeconomic variables indicate the business cycle movements as well as the uncertainty in the economic condition.

The study used the growth ratio on the bank's variable to avoid potential misspecification caused by the individual bank characteristics and to evade scaling difficulties for the sake of comparability across banks and years. The liquidity holdings are measured as the ratio of liquid assets, reserve, provisioning for financing losses, and capital requirement relative to the bank's total assets. The expected current year financing operations are reflected by a one-year growth performance of financial operations reported at year-end of the previous year. If banks adjust their financing operations slowly to recognise their previous year result, then it could be systematically related to each period. Therefore, the data analysis incorporates the lagged dependent variable as an explanatory variable to take into account a dynamic adjustment of the dependent variables.

The estimation is based on the direction of the association of the parameters to the financing. The strength of the association is given by the coefficient of determination (β) size. For the reason of limited resources, it is expected that the liquid asset growth; reserve growth; provisioning for financing losses; and capital requirement are negatively correlated to the bank financing growth. The proposed empirical model is as follows:

$$\begin{aligned} (F/TA)_{it} = & \alpha_0 + \beta_1 (LA/TA)_{it} + \beta_2 S/TA_{it} + \beta_3 (R/TA)_{it} + \beta_4 (PBD/TA)_{it} + \beta_5 (K/TA)_{it} + \beta_6 (D/TA)_{it} + \beta_7 (P/TA)_{it} \\ & (-) \quad (-) \quad (-) \quad (-) \quad (-) \quad (+) \quad (+) \\ & + \beta_7 GDP_t + \beta_8 M2_t + \beta_9 CPI_t + \varepsilon_{it} \\ & (-) \quad (-) \quad (-) \end{aligned} \quad (2)$$

$i = 1, \dots, n$ (number of sample bank); $t = 1, \dots, T$ (annual data);

With $(F/EA)_{it}$ is the total financing growth to total assets growth ratio for bank i at time t . $(LA/TA)_{it}$ is the liquid assets growth to total assets growth ratio for bank i at time t . $(S/TA)_{it}$ is the securities growth to total assets growth ratio for bank i at time t . $(R/TA)_{it}$ is the contingency

reserve growth to total assets growth ratio for bank i at time t . $(PBD/TA)_{it}$ is the provision for bad and doubtful financing growth to total assets growth ratio for bank i at time t . $(K/TA)_{it}$ is the capital growth to total assets growth ratio for bank i at time t . $(D/TA)_{it}$ is the deposits growth to total assets growth ratio for bank i at time t . $(P/TA)_{it}$ is the net profit growth to total assets growth ratio for bank i at time t . GDP_t is the real gross domestic product growth at time t . $M2_t$ is the money supply M2 growth at time t . CPI_t is the consumer price index growth at time t .

4.0 Data Analysis, Results and Discussions

Following the unit root test (Table 1), the analysis is regressed at level.

Table 1: Unit Root Test

Method Variables	Level							
	Levin, Lin and Chu		Im, Pesaran and		ADF - Fisher Chi-		PP - Fisher Chi-square	
	stat	Prob	stat	Prob	Stat	Prob	stat	Prob
Financing	-1.8542	0.0319	-6.0356	0.0000	87.1662	0.0000	178.947	0.0000
Liquid Asset	-2.5529	0.0053	-1.7526	0.0398	67.8928	0.0010	85.0443	0.0000
Securities	-7.0872	0.0000	-1.4767	0.0499	43.7001	0.0507	60.0414	0.0072
Reserve	-5.44653	0.0000	-2.0159	0.0219	54.8505	0.0229	111.922	0.0000
PBD	-1.8732	0.0305	-2.6495	0.0040	60.6425	0.0033	139.993	0.0000
Capital Based	-2.5529	0.0053	-3.8969	0.0000	67.8567	0.0010	121.933	0.0000
Deposit	-13.7471	0.0000	-7.5912	0.0000	91.9466	0.0000	139.871	0.0000
ROA	-443.342	0.0000	-51.9416	0.0000	98.9057	0.0000	150.362	0.0000
GDP	-11.7363	0.0000	-7.5576	0.0000	135.952	0.0000	205.732	0.0000
CPI	-7.2834	0.0000	-3.7226	0.0001	77.3983	0.0001	149.744	0.0000

The estimation results with a panel GMM using first differences and orthogonal deviations model appeared to be considerably consistent (Table 2). The analysis applies the J-statistic to determine any correlation between the instruments and errors. The estimated coefficient for the J-statistic is 35.7099 (p -value = 0.4823 > .05) for the first differences and 40.0022 (p -value = 0.2969 > .05) for the orthogonal deviations model. Thus, failed to reject the null hypothesis (Table 2, J-statistic). Hence, the conditions states that past growth of the variables are not correlated with the banks fixed effects or the current error term.

The coefficients on financing with liquid assets, securities, reserve, PBD, and capital requirement are negatively related (Table 2). However, only the liquid assets holding and securities holding are significant at the 1% level. This implies that there is a trade-off between liquidity holdings and financing operations. Consistent with the theory the negative relationship shows that an increase in the liquidity holdings reduces the excess fund for the credit market. The lagged dependent variable of the financing volume, liquid assets, and securities holding is following a dynamic adjustment of the dependent variable. It is systematically related to each period and significant at the 1% level.

The regulatory and prudential measures, namely the reserves, PBD, and capital requirement are negatively related to the financing volume. This is consistent with the theory of imposing the instruments to manage the credit creation operation and enhance banks' safety. The negative sign also implies that the item is a constraint to financing operations. However, based on the difference method, only the previous year capital requirement gives a significant relationship at the 1% level.

As the main sources of fund for the bank financing operations, the deposits are in line with the theory and the estimated coefficient is significant at the 1% level. The positive relationship shows an increase in the deposits, increases the fund resources that can be delivered into the financial market.

The insignificant relationship of the macroeconomics key indicators indicates that the financing decision is not influenced by the expansion and contraction of the economy. The Islamic financing operations are free from speculative activities during the ups and down of the economic conditions. Thus, the financing activities are determined by other factors and not directly influenced by changes in the key macroeconomics indicators.

Table 2: Islamic Bank Liquidity Holdings Implication on Financing Operations

Variable \ Panel GMM	First Differences	Orthogonal Deviations
	Coefficient	Coefficient
F(-1)	0.1108 (4.1303)*	0.1399 (2.4775)*
L	-0.9703 (-30.9559)*	-1.0104 (-68.0211)*
L(-1)	-0.1338 (-3.5870)*	-0.1314 (-2.1362)*
S	-0.9594 (-40.0056)*	-0.9700 (-43.7399)*
S(-1)	-0.1001 (-4.3039)*	-0.1486 (-2.7050)*
R	-0.1603 (-1.1013)	-0.1319 (-0.7638)
R(-1)	-0.0854 (-0.7391)	-0.2308 (-1.5250)
PBD	-0.1155 (-0.2778)	-0.1847 (-0.5063)
PBD(-1)	-0.1258 (-0.5466)	-0.0779 (-0.2781)
K	-0.0481 (-0.8941)	-0.0242 (-0.5049)
K(-1)	-0.0865 (-2.6615) *	-0.0567 (-0.9691)
DEP	0.0861 (8.1270)*	0.1130 (7.0946)*
DEP(-1)	0.0895 (8.7910)*	0.1164 (7.6854)*
P	0.0017 (0.1976)	0.0071 (1.5285)
P(-1)	0.0034 (0.3529)	0.0200 (1.7214)
GDP	-0.0002 (-0.3317)	-0.0008 (-1.5158)
GDP(-1)	-0.0002 (-0.4820)	-0.0006 (-1.8572)
M2	-0.0328 (-0.2830)	-0.0341 (-0.6194)
M2(-1)	-0.0558 (-0.8462)	-0.0385 (-0.3529)
CPI	-0.0026 (-1.5931)	-0.0024 (-1.4220)
CPI(-1)	-0.0007 (-0.3357)	0.0012 (0.6250)
Mean dependent	0.0100	-0.04692

S.E. of regression	0.0433	0.0388
J-statistic (<i>p-value</i>)	35.7099 (0.4823)	40.0022 (0.2969)
S.D. dependent var	0.1189	0.1775
Sum squared resid	0.3326	0.2661
*Significant at 1%;	Figures in parentheses are the t-statistic	

The finding verifies the research argument on the insufficient fund resources is a constraint to the Islamic banks financing operations. The negative relationship shows that an increase in the liquidity holding reduces the excess fund resources that can be delivered to the credit market.

5.0 Conclusions

The empirical result of this study proves that there is a trade-off between liquidity holdings and financing operations. The coefficients on financing with liquid assets and securities are negatively related. Consistent with the theory the negative relationship proves that an increase in the liquidity holdings of bank reduces the excess fund resources that can be delivered to the credit market. Eventually, while excessive liquidity holdings do offer safety to the bank, excessive holding on liquidity reduces excess fund for financing. Hence, bank portfolio management should consider and develop a strategy and liquidity plan that able to balance the risks. A banking firm must determine the appropriate level of asset versus liability management in view of liquidity risk.

Liquidity holdings are significant to the health, sustainability and a sound banking system. However, too much of provisions on the liquidity will reduce the excess reserve fund for financing activities of the bank. Thus, evaluation on the implication of liquidity risk management of the Islamic bank financing operations is vital since that financing is the main source of income to the bank. The bank is constrained by an insufficient amount of fund resources for financing operations. For that reason, there is a negative correlation between liquidity with financing.

The limitation of this paper is the small sample size and time spanned analysed in the study. Thus, the study only able to analyses the short run bank's operational activities. With a longer time span and larger sample sizes will provide a more concrete evidence and understanding of the liquidity management. Another shortcoming foresees in this study is to determine the precise and effective amount of liquidity holdings the bank's need to put into operation for safety reason under this volatile economic environment. The statistical provisioning and dynamic liquidity holdings model need to be developed to fit with the current economic environment complexity and unpredicted economic shocks. The study did not separate out between the various forms of liquid assets and contingency reserve proportions by the bank. The study also did not take into consideration of the effectiveness of the liquidity holdings in managing the liquidity risk. The study also did not analyse the behaviour of Islamic bank based on the assets and capital size. Furthermore, this study only applies to Malaysia Islamic Bank thus cannot be generalised to the Islamic banking system all over the world. Hence, further researches are needed.

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