How Islamic Banks of Malaysia Managing Liquidity? An Emphasis on Confronting Economic Cycles

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Abstract

Bank liquidity is a key element in managing the assets of a bank. Bank liquidity is an important element in managing the assets of a bank. The robust and sound liquidity management could raise funds to meet the demands of depositors and borrowers at any time with a satisfactory price. Without sufficient liquidity, the bank may face other risks, such as various forms of fiduciary risk, displaced commercial risk as well as other risks that affect the banks financial stability as a whole. Thus by using a dynamic panel data estimation for 17 Islamic banks, this study tried to see how Islamic banking of Malaysia manage their liquidity in response to changes on the basis of several factors other than providing a realistic number of policy implications.

Keywords: Liquidity, Islamic banking and economic cycle

Introduction

According to modern intermediate financial theory, banking institutions exist because of its role in real economy that is creating liquidity and transferring risks. Analysis on bank's role in creating liquidity and henceforth drive economic growth is a long tradition of theory and was introduced by Smith (1776). The theory was next reincarnated in a more modern form in which the liquidity creation process is cantered on the banking institutions. The reincarnation of the theory was so prominent in the formal analysis done by Bryant (1980) and Diamond and Dybvig (1983) which states that the process of liquidity creation by banks are based on the balance sheet of financing relatively illiquid assets with relatively liquid liabilities. In this matter, banks as financial intermediaries will receive fund deposits and then lend the funds to entrepreneurs for the purpose of making a profit to offset the liquidity of assets and liabilities. To meet the liquidity demands of depositors, the bank will usually be allocating a special fund for the purpose of meeting the internal liquidity (Diamond and Dybvig, 1983).

Holmstrom and Tirole (1998) and Kashyap et al. (2002) suggest banks to also create liquidity from the balance sheet through loan commitments and similar claims to withdraw funds (Berger, 2009). Liquidity is necessary for banking institutions to replace the expected and unexpected imbalances that occur in the balance sheet and to provide funds for the purpose of bank growth.

It usually reflects the ability of banks to adjust deposits and other liabilities and accommodating the increase of funds in the financing and investments portfolio. A bank is said to have a sufficient liquidity potential when it is able to obtain the necessary funds (through increased liability, securitization and sale of assets) promptly at a reasonable price. This is because the liquidity of a bank is a function of situation and market perception of existing risks for institutions offering credit facilities (Van Greuning et al, 2009).

Basel Committee on Banking Supervision in a consultation paper made in June 2008 put some clear definition of liquidity in the banking institutions, namely;

i. Liquidity is the ability of a bank to fund increases in assets and meet obligations as they come due, without incurring unacceptable losses.

ii. The fundamental role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk, both of an institution-specific nature and that which affects markets as a whole.

iii. Virtually every financial transaction or commitment has implications for a bank's liquidity. Effective liquidity risk management helps ensure a bank's ability to meet cash flow obligations, which are uncertain as they are affected by external events and other agents' behaviour. Liquidity risk management is of paramount importance because a liquidity shortfall at a single institution can have system-wide repercussions.

Liquidity in Islamic Banking

Islamic banking as institutions that carry out banking businesses are not exempted from the requirement of liquidity obligations to ensure seamless operations, maintaining stability and promoting growth. For those purposes, Islamic banking needs to perform its liquidity functions effectively, particularly because the industry has begun to be exposed and involved in complex businesses that require a stricter mechanism for the assessment and monitoring of management risk (Vicary, 2007; RifkiIsmal, 2008). This happens due to the change in economy, innovation in finance, transformation of the banking industry, the increase in competition and the regulations in the financial environment (ZamirIqbal and Abbas Mirakhor, 2007). However, according to RifkiIsmal (2008), before the process of assessment of risk and monitoring of management were to be implemented, Islamic banking needs to consider some unique features of Islamic banking in addition to the risk profile and a number of Shariah rules before developing its own method of liquidity risk management. This consideration is deemed to be necessary because of the natural feature of the Islamic banking itself that is the objective of the prohibition of usury (riba) in any form of transaction that has ultimately lead to some additional issues in an effort to meet the needs of Shariah-compliant liquidity. This condition contrasts with the complete conventional banking facilities with a well-developed interbank market which provides various financial instruments to meet short and medium term liquidity needs, which began from overnight funds to six, nine and twelve months' funds. Access to the interbank money market provides flexible consideration to the banks in adjusting short-term cash flows that they own (RifkiIsmal, 2008).

Liquidity risk occurs each time a customer makes an immediate cash demand on their financial claims. It usually occurs due to the difficulties experienced by the banks in obtaining cash at a reasonable cost of borrowing (liquidity risk) or sale of assets (asset liquidity risk). Ray (1995) considers that the lack of liquidity as the main problem faced by Islamic banks. Moreover, problems regarding liquidity are also a major obstacle to the growth of Islamic banking (Vogel and Hayes, 1998). In Islamic banking, liquidity risk can be divided into two types, namely the lack of liquidity in the market and lack of access to funds. For the first type, illiquid assets of Islamic banking make it difficult to meet its liabilities and financial obligations. While for the second type, it exists because of the Islamic banking institutions are not able to get loans or raise funds at a reasonable cost when necessary. Amr El Tiby (2010) states that liquidity risks facing Islamic banking are the most critical risk, and it happens because of these factors:

i. Limited Shariah-compliant interbank money market instruments. Shariah prohibition on interest-based loan and the absence of an adequate and active interbank market restricted the Islamic banking options in managing liquidity efficiently. In addition, shallow secondary market also contributed to the problem.

ii. Islamic financial instruments listed on the secondary market is also very limited and Shariah has set certain preconditions for transactions involving financial obligation, except for claims involving real assets.

Therefore, there is a need for institutions and authorities to develop asset-based securities to be traded, such as Sukuk (Rifki Ismal, 2008). Although these instruments are available, yet market participants were inadequate and limited compared to the conventional system.

iii. Although the conventional liquidity management instruments such as the interbank market, secondary market for debt instruments and the lender of last resort that is the central bank have been long established, but all instruments are based on interest rate (usury) that is strictly prohibited by Islam. At the same time, conventional banking are having the access to extensive short-term loans from overnight to twelve months or a year through a complete, advanced and efficient interbank market. This access is important for banks in meeting its institutional needs for short-term cash flow.

iv. Among the unique features of Islamic banking instruments is it is a major contributor to the increase of risk of liquidity for Islamic banking. For example, liquidity can contribute to the problem of cancellation risk in *murabahah* instruments or the inability to trade contracts and also bay 'salam contract that can only be traded at par value.

v. Exists disharmony between the central bank and Islamic banking due to central banks' refusal to provide funds on the basis of other than interest. Due to this, Islamic banking does not have final resort loan lending resources to meet the liquidity needs since they cannot make loans based on interest. Thus, Islamic banking has to provide self-insurance due to their inability to diversify bank operational risks. Abdul Rahman (1999) states Islamic banks have to perform retail banking operations (demand deposits) and imposing its own reserve requirement of around 100% (Janice et al., 2005).

vi. The limited number of Islamic financial instruments. Because of this, Islamic banks do not enjoy the choice of funds similar to that found in conventional banks, which can be adapted to the period of loan and deposit's maturity through money and capital market instruments. The absence of an adequate market for Islamic financial instruments is a quite complicated problem in the process of matching maturity period. As a result, Islamic banks were not seem to be capable of providing adequate returns to the depositors who generally expect a comparable rate of return with those offered by conventional banking (Janice et al., 2004).

Factors stated without a doubt exposed Islamic banking to liquidity risk and restricted the industry from investing in profitable and long-term assets. Several proactive measures have been implemented at the international level to respond to the liquidity issues that arise in Islamic banking. Firstly, the introduction of sukuk (Islamic bonds) which form the basis of the development of secondary market for Islamic banking. The next step is through the construction of an institutional framework to address any liquidity issue that arises. In this case, the establishment of the Liquidity Management Centre (LMC) and the International Islamic Financial Market (IIFM) can be viewed as steps towards a more effective liquidity management (Van Greuning and Iqbal, 2008).

Literature Review

Liquidity is most important features for any banks. By this means, bank can turn liabilities into assets. At the same time, bank's liquidity depends on the confidence in the bank's operations. Customers place their deposits in banks with the confidence that they can withdraw their money. Liquidity capability mirrors a banking institution's performance; a decline in an institution's liquidity may affect the nation's financial stability. Therefore, it is important for banks to hold sufficient liquidity potential that is capable of facing any contingency. Listed below were previous studies that have been done by other researchers relating to banking institutions' liquidity management;

A study by Samad and Hassan (2000) assessed the performance between time and interbank (Bank Islam Malaysia Berhad, BIMB) in terms of profitability, liquidity, risk, solvency and community involvement for the period 1984-1997. Financial ratios are applied in measuring the performance of Islamic banks, while the t-test and F-test are used in determining the significance of the factors involved in the study. The study made by the two researchers found out that BIMB records significant progress (statistically) in terms of return on assets (ROA) and return on equity (ROE) over the period of 1984-1997. However, if the banks are to be compared in terms of liquidity performance, Islamic banks are statistically more liquid than the group of eight conventional banks in the study, even in the measure of DER. BIMB's DER is valued at 0.021 compared to conventional banks' 0.012.

Next, in terms of measurement and insolvency risk between 1984-89 and 1990-97, BIMB's risks increased in a statistically significant manner, particularly in DER (debt-equity) and EM (equity multiplier).Takashi Hatakeda (2000) studied the behaviour of Japanese banks' loans under liquidity constraints from 1975 to 1995. In this study, he used ordinary least squares (OLS) estimation method on the banks' data samples as well as several other methods such as *Augmented Dickey Fuller test (ADF) unit roots* and co-integration relationships between variables. This study suggested a new model of bank lending behaviour in which there are three possible regimes under asymmetric information. This study managed to provide empirical evidence for the existence of the third regime, in which banks lend under their liquidity constraint. In this regime, both the land price index and bank capital have large and positive effects on bank loans. On the other hand, the call rate and economic activity (real GDP) have negative effects. In addition, the study also discovers how financial liberalization and regulation of bank capital also affect bank lending behaviour.

Obiyatullah (2004) analysed the rationality of a bank financed by deposits and equity in forming an optimum risk management strategy for a period of time. In the study, the researcher identified a few known conditions that are associated with risk management strategy such as complete hedging, maximal speculation, or irrelevance of the hedging decision are obtained. The initial debt ratio, the size of the liquidation costs, regulatory restrictions, the volatility of the risky asset and spread between riskless interest rate and deposit rate are shown to be the important parameters that drive the bank's hedging decisions. The researcher then extended this basic model to include counterparty risk constraints on the forward contract used for hedging.

Janice C. Y. How, Melina Abdul Karim and Peter Verhoeven (2004) made an evaluation whether Islamic finance can explain three major risks, namely credit risk, interest rate risk and liquidity risk in a country that practices a dual banking system such as Malaysia. The study uses data from 23 Malaysian commercial banks for a period of eight years from 1988 to 1996. From the multiple ordinary least square regression made, the study found out that commercial banks offering Islamic financing will experience significantly lower credit and liquidity risk, but face a significantly higher interest rates risk than conventional banks that do not offer Islamic financing services.

Eric Chan et al. (2007) discussed on corporate bonds and its relationship with bank liquidity. In the study, the researchers found that most of corporate bonds' function is based on the large developed market. By using previous dataset, they examine the movement of marketing activities in a small-scale bond market of Malaysia. The results showed that the liquidity rate in the Malaysian market is similar to the international market. Aside from that, rates of return showed an increase between 1998 and 2004, but showed little changes after this period. The researchers also stressed the importance of increased levels of liquidity and market developments on the economy.

Rifki Ismal (2008) in his research on Shariah issues that arise in the management of liquidity risk discovered that Islamic banking needs to develop its liquidity risk management environment as a practice of modern banking standards to ensure safe operations and maintaining business operations. Taking into account the characteristics and risk profiles of banks, he found out that the Shariah has provided a variety of methods and approaches for Islamic banking in managing liquidity risk, considering barriers and challenges to be faced. In practice, he also found that in reducing liquidity risk, Islamic banking needs to develop an organizational approach and liquidity instruments from the perspective of the Islamic financial market and a regulatory framework in meeting ordinary and extraordinary liquidity needs.

Anjum Siddiqui (2008) studied the range of financing modes and evaluated the risks and other characteristics of Islamic banks in Pakistan. The study applied a dataset consisting of deposit liabilities from 2003 to 2004. In addition, various performance indicators were also used to compare the Islamic banks with traditional banking that practice mark-up pricing mode.

Due to Islamic prohibitions against interest and in adhering to the allowed trade contracts, savings and investment contracts offered by Islamic banking has a different risk profile compared to conventional banking. This raises several regulatory issues on capital adequacy and liquidity requirements. Islamic banking also have a few constraints in selecting the risks and liquidity management instruments such as derivatives, options and bonds. Chung et al. (2009) uses alternative liquidity risk measurement as well as liquidity ratios to investigate sources of liquidity risk by using an unbalanced panel dataset of 12 commercial banks in the developed countries over the period of 1994-2006. The study adopted two stages least squares (2SLS) method to estimate bank's liquidity risks and the performance of the model. The study found that liquidity risk is a determinant of a bank's internal performance.

Other sources of liquidity risks include liquid asset's components, the dependency on external factors financing, supervision and regulations, and macroeconomic factors. The research also found that liquidity risk may reduce bank profits (return on average assets and return on equity) because the higher the cost of funds, the greater the increase in the bank's net interest margin.Gianfranco et al. (2009) analysed recent liquidity risk management techniques and internal monitoring methods. They then reviewed how both methods can be used to improve the sub-prime crisis that occurred late 2007. Recent risk liquidity models are used to assess whether they affect the funding and market risk in the current global scenario. The study further emphasizes the most significant method in facing liquidity risks. Eventually, when liquidity drought happens in the interbank market, Italian banks used a method of boosting interbank liquidity circulation when faced by the problem of insufficient liquidity at that time.

Model Specifications

The model developed in this study is from combination and modification made to previous models on Malaysia's Islamic banking liquidity that divides the liquidity management into internal and external factors. For example, Chung et al. (2009) also adopted the similar theory and econometric models. To examine the relationship between liquidity management, bank specifications, economic supervision and cycle, the estimation of a fixed-effects panel model has been developed as follows:

$$L_{it} = c_i \sum_{b=1}^{B} \lambda_b \prod_{it}^{b} + \sum_{s=1}^{s} \delta_s \prod_{jt}^{s} + \sum_{m=1}^{M} y_m \prod_{jt}^{m} + \varepsilon_{it}$$

Where L_{it} is the liquidity of bank i at time t, with $i = 1, ..., N$, $t = 1, ..., T$. In his study, the ratio of financial distance and the ratio of net loans to customers and short-term loans. $\prod_{it}^{b}, \prod_{jt}^{s}, \prod_{jt}^{m}$ are bank specifications and macroeconomic variables with $b = 1, ..., B$, $s = 1, ..., S$, $m = 1, ..., M$, respectively. j refers to the countries in which bank i operates, and c is a constant term; ε_{it} is an error. Here is the framework of the modified model;

$$LQ_{it} = \beta_1 + \beta_2 LQ_{it-1} + \beta_3 fin_{it} + \beta_4 ROA_{it} + \beta_5 size_{it} + \beta_6 size^2_{it} + \beta_7 car_{it} +$$

$$\phi_8 IB_t + \phi_9 M3_t + \lambda_{10} cpi_t + \lambda_{11} cpi_{i-1} + \lambda_{12} \Delta gdp_{it} + \varepsilon_{i,t}$$

$I = 1,2,…………N$ (number of banks) $\qquad\qquad$ $t = 1, 2.....T$ (time period)

Variables	Definition
LQ_{it}	*Total deposits over total assets*
fin_{it}	*Total financing over total assets*
ROA_{it}	*Pre-tax return overtotal assets*
$size_{it}$	*Total assets**
Car_{it}	*Capital requirements*
IB_t	*Short-term interest rate of three months Interbank Money Market*
$M3_t$	*Money supply**
cpi_t	*Inflation rate*
Δgdp_t	*Growth of Gross Domestic Product*
$\varepsilon_{i,t}$	*error term that is not serially correlated and uncorrelated with all variables at time t-1*

Note: Data of the variables was obtained from regulatory databases derived from the annual report of Malaysian Islamic Banking.

* value in the form of logs

Since variable intervals *LQ_{it-1}* acts as an independent variable, thus the model specification built becomes inconsistent. Therefore, this study has a tendency in using *Generalized Method of Moments* (*GMM*) methods of estimating on the dynamic panel data, as in *GMM differenced* estimation introduced by Arellano and Bond (1991) and further developed by Blundell and Bond (1998). The use of this estimation method has several benefits in addressing the possibility of *Country-Specific Fixed effects*. In addition, the estimation method is also suitable in dealing with *Omitted variable* bias caused by time differences between certain Islamic banks as well as external issues (*endogeneity*) and any measurement error in the estimation.

Variable Descriptions

i. Financing (*fin$_{it}$*) plays an important role in ensuring the strength and continuity of a bank. Increasing the amount of financing will contribute to a bank's profitability and efficiency. Each loan type has its own profile of risk and return. In general, if risks taken are higher, the higher the return received.

ii. Bank profit (*ROA$_{it}$*) is a measure of profits before tax divided by the total assets. This variable indicates bank's net profits to total assets.

iii. Total Bank Assets (*size$_{it}$*) is the summation of cash, deposits, investment transactions and bank borrowings. This variable was incorporated to detect the existence of economies of scale in the study. Size can change because of two factors, firstly: change in the control of capital regulation, e.g. an increase in central bank reserves. Since one of the subcomponents of (*size$_{it}$*) is cash deposits, thus a fall in bank interest rates will cause a shift of resources from banks to purchase other assets that can create better returns. Total bank assets (*size$^2_{it}$*) variable is used to detect non-linear relationship as recommended by Chung et al. (2009).

iv. Capital and Reserves (*Car$_{it}$*) is part of the liability in the balance sheet. This includes paid-up capital, reserve funds, retained earnings and other capital funds. Capital and Reserves consists of its own funds or a bank's core capital. As riskier investments are made, a bigger amount of capital will be needed.

v. (*IB$_t$*) variable is the money kept by banks in the form of short-term savings and this short-term rate will be used in determining the cost of borrowing.

vi. Real money supply (*M3$_t$*) is defined as the amount of cash plus current deposits, savings deposits, fixed deposits of commercial banks along with savings and fixed deposits of other banking institutions. Money supply growth showed the actual growth potential, especially the potential indicators of future economic growth.

vii. Inflation rate (*cpi$_t$*): This is a condition experienced by an economy that showed general price levels increase in a constant and unrestricted way. Says, a French economists, defines inflation as 'too much money chasing too few goods'. In the context of this study, inflation rate can have an impact on a bank's costs and production.

viii. Growth of Gross Domestic Product (*Δgdp$_t$*) is taken as a measure of macroeconomic development. In the context of this study, it is a key indicator of demand for banking services including loan extension and money supply. This variable serves as a guide to the economic cycle where the cost of banks holding liquidity is expected to relate with the economic cycle.

Research Sample

This study used a selected sample of 17 full-fledged Islamic banks defined as Islamic Bank by Central Bank of Malaysia for a period of 15 years from 1994 to 2009. Index data for macroeconomic variables such as inflation and Gross of Domestic Product (GDP) were retrieved from the websites of Global Market Data Index (GMID), *Statistical, Economic and Social Research and Training Centre for Islamic Countries* (Sesrticic, 2011) and Asian Development Bank (ADB).

Empirical Analysis

The discussion will be divided into two parts. The first part will illustrate the statistical analysis of variables, that is the statistical character of each variable used in the model can be determined. Mean, median, standard deviation, skewness, kurtosis, and value of Jarque-Bera will determine the statistical behaviour of variables. The second part is the results of GMM estimation from the model built.

Descriptive Analysis

Descriptive analysis was conducted to observe the statistical properties of the data used as variables, such as the mean, standard deviation and normality of the data. Mean refers to the average value of each variable in the study sample, while standard deviation shows the data dispersion or variation from the mean value. Table 1 illustrates the summary of basic descriptive statistics of the variables involved in the model developed, based on two main indicators, namely the indication of bank specification, monetary policy and economic cycles.

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According to Table 1,we can see that total assets variable recorded the highest average value in the data distribution with a mean value of 14.5401, while ROA_{it} variable shows the lowest average value of 0.0166. Throughout the study, Malaysian Islamic banking proves their capital requirements strength. This is shown by the average Car_{it} value of 10.4476, exceeds the rate of 8% set by the regulator. In terms of macroeconomics, growth of the Gross Domestic Product (Δgdp_t) averaged 5.564% and the inflation rate (cpi_t) during 1994 to 2009 was low at 2.077%.

TABLE 1 Descriptive Statistics of the Variables

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
LQ_{it}	3.4322	22.4736	12.0649	16.2635	193.60*
fin_{it}	13.5035	2.9507	-1.9735	8.8011	377.44*
ROA_{it}	0.0166	0.0136	-0.1227	11.3970	511.63*
IB_t	4.0617	1.9166	1.1957	2.9798	64.81*
car_{it}	10.4476	135.7593	13.5158	13.7845	258.50*
$size_{it}$	14.5401	2.1181	-0.3741	4.5875	24.76*
$size^2_{it}$	214.7643	62.2962	0.2332	5.7825	64.34*
cpi_t	2.7077	1.3733	0.4847	2.4176	14.49*
$M3_t$	13.1333	0.4106	-0.2040	2.2620	8.05**
Δgdp_t	5.5640	4.0566	-1.9128	6.8756	36.09*

*Significant at 1% , **5% and *** 10%

Next, standard deviation is used in determining the variation of the data. Liquidity variables have the highest standard deviation value of 22.4736. This shows that the Islamic banking involved in the research do not consistently store liquidity. Small data dispersion exists for the gain (ROA_{it}) variable. For the macroeconomic variables, the highest data dispersion is growth of Gross Domestic Product (Δgdp_t) variable with a value of 4.0566, while the lowest dispersion value is the money supply ($M3_t$) with a standard deviation of 0.4106.In measuring skewness, it is found that the bank specification variables, which consist of total financing (fin_{it}) and total assets ($size_{it}$), have a negative scattering data. In contrast, liquidity (LQ_{it}), short-term Islamic interbank interest rate of three-month (IB_t) and capital adequacy (car_{it}) were positively scattered. Next, macroeconomic variables such as growth of Gross Domestic Product (Δgdp_t) and money supply ($M3_t$) recorded negative scattering data, while the data on inflation (cpi_t) variable is positively scattered.

Next, kurtosis tests were carried out to observe the normality of the data distribution. Short-term interest rate of three months interbank money market (IB_t), inflation (cpi_t) and money supply ($M3_t$) kurtosis' values are approaching three, meeting the criteria for a normally distributed data.

Jarque-Bera test is then used to confirm the extent of the data normality distribution. From this test, results in Table 1 demonstrate that all variables are significant except for the variable of money market between Islamic banks that is not significant. This shows that all data are not normally distributed. Therefore, ordinary least square estimation is not compatible with the research data.

TABLE 2 Correlation Statistics of the Variables

	LIQ_{it}	$size_{it}$	fin_{it}	Δgdp_t	ROA_{it}	IB_t	car_{it}	$M3_t$	cpi_t	$size^2_{it}$
LIQ_{it}	1.0000									
$size_{it}$	-0.6889*	1.0000								
fin_{it}	-0.7506*	0.8859*	1.0000							
Δgdp_t	-0.0416	0.1139	0.1110	1.0000						
ROA_{it}	0.2599*	-0.1468*	-0.1869**	-0.2253*	1.0000					
IB_t	0.4490*	-0.4935*	-0.4071*	-0.3662*	0.1679*	1.0000				
car_{it}	0.1412**	-0.1609*	-0.2343*	0.0634	0.0206	0.0759*	1.0000			
$M3_t$	-0.3783*	0.6429*	0.5399*	0.0635	-0.1032	-0.5427*	0.0276*	1.0000		
cpi_t	0.1331*	-0.0921	-0.0920	-0.3396*	0.0200	0.5557*	0.0807	0.0010	1.0000	
$size^2_{it}$	-0.6168*	0.9924*	0.8579*	0.1077	-0.1267	-0.4603*	-0.1418*	0.6321*	-0.0779	1.0000

* Significant at 1% , **5% and *** 10%

Correlation Analysis

Correlation analysis is a simple method to detect the existence of collinearity in a multi-variable data based on the variables' correlation matrix. It can test and measure the degree of strength (absolute value) of the relationship between Y and X. Correlation analysis can also be used to determine the type of relationship or the direction of the figure, whether it is moving from left to right or vice versa. Thus, a relatively high correlation value between the two independent variables indicates the possibility of a multicollinearity happening. Table 2 shows the correlation matrix for the independent variables. Based on the correlation table, it seems that all independent variables have significant correlation with liquidity variables except the growth of Gross Domestic Product (Δgdp_t) variable. Variable ($size_{it}$) have significantly strong negative values indicating that the greater amount of assets the banks have, the lesser their amount of liquidity.

Total funding also shows a negative relationship with liquidity. This indicates that Islamic banking chooses whether or not to reduce their liquidity in providing financing that will generate income. Errors in this kind of decision making will bring losses to the banks. Macroeconomic variables, (Δgdp_t) and ($M3_t$) indicates a negative relationship with liquidity. However, the relations of (Δgdp_t) to liquidity is insignificant, whereas the inflation variable showed a positive relationship with liquidity.

Estimation Results

Table 3 : Estimation Result of Dynamic Model

Specification	Estimation Parameter	
	GMM-Difference	GMM-System
LQ_{it-1}	0.2265 (2.4108)**	0.3365 (4.3977)*
fin_{it}	-0.1378 (-7.3106)*	-0.2069 (-5.9177)*
ROA_{it}	15.5751 (1.1865)	27.3458 (2.0918)*
IB_t	0.1536 (1.6460)	0.2813 (2.6048)*
car_{it}	-0.2672 (-0.2360)	-3.8488 (-1.7496)*
$size_{it}$	-10.2460 (-3.1024)*	-5.6418 (-2.3876)*
$size^2{}_{it}$	0.3560 (2.8353)*	0.1853 (2.0274)**
cpi_t	-0.1234 (-1.3268)	-0.2391 (-1.8449)**
cpi_{t-1}	-0.1009 (-1.8767)**	-0.1472 (-1.5642)
$M3_t$	-1.1832 (-1.1704)	1.5384 (1.1531)
Δgdp_t	0.0425 (3.3074)*	0.0697 (2.8621)*
Sargan-Test	5.7243	8.4856
AR (1)	-0.23	-0.33
AR (2)	-0.63	-0.57

* Significant at 1% , **5% and *** 10%

Table 3 above shows that the Sargan test fails to reject the null hypothesis of the coefficient's validity used in both estimation techniques. The results showed interval variable for liquidity is significant in confirming the dynamic specification at the level of one percent. This shows that the previous liquidities affect the current liquidity of Islamic banking. This is apparent to banks that are actively concentrating in money market between banks using Islamic approaches that promise high returns in a short time from overnight to a year.

Total of financing (fin_{it}) variable is inversely proportional to liquidity. Increase in total funding will reduce Islamic banking liquidity, indicating the institution's negligence in maintaining their demand deposits, thus being a reason for subprime crisis because of the banks are lacking in liquidity compared to the total amount of financing given. This is identical with previous findings (Athanasoglou et al., 2006; Athanasoglou et al., 2008; and Kosmidou, 2008).

Total asset ($size_{it}$) is negatively related to liquidity. As the amount of assets becomes larger, the less liquid the assets will be. This is consistent with the theory of "*too big to fail.*" Islamic banking believed that they have an incentive to reduce risk-taking and holding more loans. However, every loan or financing granted should be evaluated to meet the conditions and standards set in order to prevent any potential financial problems that could result from the bank in experiencing losses.

Profits gained will lead Islamic banking to increase its level of liquidity. This is as shown by the significantly high coefficient of ROA_{it} variable and this condition provides an indication that Islamic banking profits are procyclical in nature, that is profits will allow the banks to offer better liquidity. Additional revenue from funding supported by a low default risk results in increased profits. This is equivalent to the findings of previous researchers in which ROA_{it} positively correlates with liquidity (Bourke (1989), Molyneux and Thornton (1992), Demirgüç-Kunt, Laeven and Levine (2003), Kosmidou et al., (2005)).

Further the above result shows how variables of Malaysian economic cycle affects the level of Islamic banking liquidity.The result shows that Inflation and past inflation variables cpi_t play an important role in the provision of liquidity by the Islamic banking. Its negative coefficient indicates that banks had to reduce liquidity due to the rise in cost incurred. Smith et al. (2003) said that inflation can have a direct effects (i.e. increased labour wage) and indirect effects (changes in interest rates and assets prices) on a bank's profits. This is because a high inflation rate will result in banks to not being able to control interest rates promptly, resulting in a significant increase in bank's costs compared to its profits.

Macroeconomic factors also significant coefficients on the liquidity of a bank. Both models show variable growth of Gross Domestic Product (Δgdp_t) are significant and directly proportional. This shows that Islamic banking provides liquidity that are procyclical in nature, that is encouraging economic growth gives good business prospects for banks and allowing banks to generate higher income. Additional revenues from funding supported by the low default risk will result in increased profits. Therefore, economic improvement could generate profits for banks. Thus, banks can provide better liquidity when the economy is growing.

Conclusion

In general, findings of the research prove that macroeconomic control variables clearly influence the behaviour of Islamic banking in managing liquidity. This empirical finding also provides evidence that Malaysian Islamic banking liquidity management is formed by the bank specification factors (affected by the level of bank management) and Malaysian economic cycle. Control variables do not directly produce the results to the management of Islamic banking, but it can provide vital information in predicting the economic cycle route for the management of Islamic banking. Therefore, this study presents some policy implications that are relevant to the conduct of Islamic banking in managing liquidity: Islamic banking needs to determine the purpose and goals of the loan application to be consistent with the "bank's financing policy" so as not to cause any problem in the future. This is important because without a correct and strong purpose, issued financing would be a risk of repayment ambiguities which will affect the liquidity of the Islamic banking.

Furthermore, Islamic banking should ensure adequate, stable and a competitive rate of return promised from time to time for the supply of bank deposits. Deposit is the main source for financing and advances to customers. Unstable deposits will affect the activities of Islamic financing of a bank. Gap period of short term deposits and long-term funding should also be reduced through appropriate measures.

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