

## **Exposure to Interbank Investment and Financing Risk by Islamic Banks: A Dynamic Panel Analysis of Malaysia**

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### **Abstract**

*The government of Malaysia has developed an Islamic Interbank Money Market (IIMM) since January 1994 with the objective to facilitate funding for the Islamic banking sector in the country. This platform also enables Islamic banks to obtain Shariah-compliant funds from other Islamic banks. This article examines the effects of interbank investment and financing risk on the financing decisions of Malaysia's Islamic bank between 1994-2015. The financing decisions are used as financing measures to determine the effect of investing in the interbank market and financing risk indicators on financing. Research methodology are the descriptive, correlation and dynamic panel analysis results are derived with the help of Limdep 9.0 software. The study found a negative relationship between the interbank investment variable with the financing decisions of Islamic banks. This reflects that an increase in interbank investment leads Islamic banks to reduce their level of financing. These findings prove the investment activities between Islamic banks had a "substitution effect" and decreased their capability of financing because of their tendency to maintain liquidity. Islamic banks are confident that they will generate higher profits in the coming financial year. The economic conditions of Malaysia do not influence Islamic banks' financing decisions, whereas Islamic banks in this study are more dependent on the balance sheet indicators.*

**Keywords:** Interbank investment, financing risk, financing decision, Islamic banks.

### **1.0 Introduction**

The money market is a segment of the financial market. It is a place where medium and short-term instruments are traded as opposed to the capital market which deals in long-term investments. Here financial assets and securities are highly liquid and have very short maturities. The money market deals with short-term instruments and its function is to bridge economic units temporarily to minimise the gap between their cash receipts and payment such as providing liquidity. Banking institutions can maintain a strategic distance from bank runs by utilising this market as a kind of coinsurance. Moreover, because of the possibility of losing financial assets, theoretically, banks are incentivised to monitor their peers borrowing in this market (Demetrio and Garcia, 2015). The importance of the money market is that it supports the implementation of monetary policy and stable borrowing conditions for the financial sector, other corporations and individuals (Asena, Giulia and Gabriel, 2015). Typically, securities traded in this market consist of negotiable certificates of deposits (CDs), banker's acceptances, treasury bills, commercial papers, municipal notes and others (Zubair, 2013).

The Islamic money market also has a similar function to the conventional money market. Besides serving as a channel for the exchange of financial assets for money, it also provides a short-term capital injection to deficit units where holders of temporary cash surpluses meet holders of temporary cash deficits (Bacha, 2008). Additionally, many investors use the Islamic money market as an interim investment that provides a higher return than holding cash or money in banks.

Referring to investment opportunities, the Islamic money market provides investment opportunities in various Islamic instruments which are Shariah-compliant. For example, Mudarabah Interbank Investment products (MII) enables Islamic banks with surplus funds to invest in banks facing a deficit using Shariah contracts like Mudarabah, Bay al-Dayn and Bay al-Inah. The profit-sharing ratio is negotiated between the parties, but the rate of return is based on gross profit before distribution for an investment of one year by the receiving bank. The period of investment is from overnight to 12 months. The minimum amount for the MII is decided by individual banks, and the rate of return is based on the rate of gross profit before distribution for investments of one year by the receiving bank, while the profit-sharing ratio is negotiable (Florian, Marie and Cornelia, 2015).

In the context of Malaysia, the government has developed an Islamic Interbank Money Market (IIMM) since January 1994 with the objective to facilitate funding for Islamic banks in the country. The initiative by the Malaysian government through Malaysia's central bank has helped the Islamic banking sector achieve outstanding growth performance (Central Bank of Malaysia, 2010-2015). Malaysia's Islamic banking sector also has the ability to access a money market with Shariah-compliant products. This effectively overcomes the major bottleneck to growth and the inability of Islamic banks to manage asset-liability mismatches (Bacha, 2008). After 14 years since its establishment, the Malaysian Islamic money market has experienced rapid growth, in tandem with the vibrant and progressive Islamic financial sector in the country. This is well-reflected by the large amount of funds channelled by the Islamic money market, which ranges from RM30 billion to RM40 billion monthly (Manap, 2008). Reflecting the commitment to turn the country into a global Islamic banking and finance hub, Bank Negara Malaysia (BNM) – continues to remain supportive of the development of the Islamic financial markets. In this regard, BNM continues to provide a conducive policy environment for the Islamic money market to develop, together with the conventional money market (Amin, Faisal and Zulkifli, 2017).

### **1.1 Issues and Problems**

Since the beginning of the financial crisis, the interbank market has been carefully scrutinised by commentators and policy-makers. Interbank markets play a crucial role in propagating the distress during the recent financial crisis. It is also considered crucial stress indicators during financial crises as they reveal not only the banks' concerns regarding the risk of financing of their counterparts but also their liquidity needs. Besides that, the monetary policy changes need to be monitored for their long-term effect especially involving financing capability. Unsecured financing creates additional risk between creditors and debtors (Leur, 2016). If a debtor defaults, the lender is subjected to increased risk and has to bear the losses.

The decision to invest in the interbank investment by the management of Islamic banks should take into account the "substitution effect". On the one hand, if there is a rise in interbank investment, it will reflect in the poor liquidity management of Islamic banks because banks also need to fulfil their financing facilities in various sectors. Financing capabilities among Islamic banks should be addressed by enhancing the debtors' solvency (Buigut, 2010). Table 1 aggregately shows the use of the Malaysia Islamic banks funds in various types of financing. During the five years from 2010 to 2015, the direction of financing flow of Malaysia Islamic banks increased from 7% to 26% each year with the latest financing in December 2015 reaching RM9192.75 million.

**Table 1: Financing by Type/Sector**

Type of Financing			2010	2011	2012	2013	2014	2015
			RM Million					
Overdraft			4446.72	4780.91	5373.58	6280.11	7334.10	9192.75
Term financing	Hire purchase	Total	44958.98	52468.83	57008.71	64287.02	69976.22	72343.30
		where: Passenger car	41569.31	45397.85	51313.47	57274.69	59544.97	67539.27
	Leasing		875.43	1247.72	1141.24	1252.80	1025.59	920.37
	Financing based on block		0.00	1.94	2.43	2.68	1.67	0.59
	Connector financing		397.59	216.84	255.08	99.40	80.85	171.52
	Syndicate financing		2061.07	2021.32	3521.83	3340.28	4104.77	8975.00
	Personal financing		15533.97	20289.95	25591.70	26423.54	27525.41	27295.80
	Home financing		29824.51	37348.95	48736.43	62839.71	78160.11	95958.70
	Others		43117.28	56371.38	64662.04	82774.33	102438.53	124325.41
	Due time which:	Until 1 year		3881.06	2393.25	3233.91	2664.52	7232.22
Exceeding 1 year			132887.77	167573.69	197685.56	238355.23	276080.94	323792.68
Financing Bill			7878.21	8987.62	10440.64	9606.64	9781.29	9914.24
Trustworthy receipt			664.29	647.44	655.98	609.82	535.16	711.60
Revolve credit			6230.40	8309.70	11557.41	16829.15	22363.06	23727.30
Financing in foreign currencies			3956.92	4984.23	4398.53	5947.53	9001.44	13149.32
Others			2136.27	2618.97	3278.27	3664.19	3799.91	4165.61
Total			162081.64	200295.80	236623.89	283957.18	336128.12	390851.49

Source: Central Bank of Malaysia (2010-2015)

In conclusion, based on the above issues and problems, this article seeks to examine the impact of Malaysian Islamic banks' involvement in interbank investment and financing risk on their financing decisions. Bank specifications, monetary policy and economic condition factors are the control variables for this study. The article is divided into seven parts. The first section describes the introduction, issues and problem related to interbank investment, financing risk and financing decisions of Islamic banks in Malaysia. The third section examines the previous research and articles related to this topic. The fourth section details the model and data specification adopted in this research. The fifth section is the finding of the research. Sections sixth and seventh look at the conclusion of the research and suggest the directions of the future research.

### 2.0 Literature Review

This section reviews research that analysed directly and indirectly interbank investment and money markets. The review covers both local and international research. As a general notion, banks with surplus money will invest in the interbank money market while the banks with deficits will borrow in the interbank market. Besides for balancing daily liquidity fluctuations banks participate in the interbank market because they have different marginal costs of obtaining funds from the central bank (Neyer and Wiemers, 2003). The interbank money market enables domestic credit institutions to make available to others (mainly banks) their excess bank balances or where necessary to borrow (or buy) such balances in order to add to their liquidity on the basis of narrow margins (Dali, 2006; Freixas and Jorge, 2008).

Islamic banks having short-term excess liquidity would not adopt such techniques of finance based on trading in cash balances for interest (Leire and Jon, 2017). However, this practice is clearly prohibited by the Shariah rules whereas profit-sharing is acceptable in Islam because it is trading in balances (cash money) with central banks.

Money from the Shariah point of view is not traded for money. In this situation, the entire money market instrument has to be backed by asset to comply with the Shariah (Ratidya and Salina, 2010). Therefore, the Islamic interbank investment uses the Mudarabah concept and the instrument is named Mudarabah Interbank Investment (MII).

According to Amin, Faisal and Zulkifli. (2017), MII refers to a mechanism whereby an Islamic bank with surplus funds can invest in a bank facing a deficit based on Mudarabah. The profit-sharing ratio is negotiated between the parties, but the rate of return is based on gross profit before distribution for an investment of one year by the receiving bank. Moreover, Saiti and Ali (2016) when discussed the Islamic interbank money market, its instruments and operations, they demonstrate that the existence of a viable Islamic interbank money market is crucial for the successful implementation of an Islamic financial system. They stressed, the availability of various Islamic interbank money market instruments allows Islamic banks to cover their exposure (in case of deficit) and make placement on short-term basis (in case of surplus). Besides, Lahsasna and Shayad (2015) studies about Islamic interbank money market on the Malaysian experience stated it is worth noting that Islamic banks also need to maintain a collection of high-quality liquid assets in order to be able to secure liquidity when facing short-term liquidity shortfalls and to decrease the effects of long-term market volatility.

Nonetheless, Bacha (2008) argues that even though an Islamic money market operates in an interest-free environment and trades Shariah-compliant instruments, many of the risks associated with conventional money markets, including interest rate risks are relevant. Also in practice, secondary trading is very thin due to the small number of players in Islamic money market operations (Ratidya and Salina, 2010).

The conclusion was made after he examined the operation of an Islamic interbank money market (IIMM) within a dual banking system using some of the key risks associated with money market functions. Besides, Kassim and Manap (2008) found that in a dual financial system, the differentials of interest rate between the Islamic and conventional money markets create an arbitrage opportunity for the conventional financial institutions, leaving the Islamic financial institution at a disadvantage since these institutions are limited to transacting only in the Islamic financial market. Even more than that, Ratidya and Salina (2010) said the displaced commercial risk may occur in the situation whereby interest rate on deposit is relatively attractive as compare to the profit rate given to Islamic bank depositor, one would likely see a significant deposit withdrawal from Islamic bank to conventional bank. In this regard, customers of Islamic banks very rational when selecting which Islamic bank offers higher returns and cheaper financing (Sugiyarti, Hilda and Rifki, 2017).

There are a large number of studies of interbank investment in the conventional financial system. For instance, Alexius, Birenstam and Eklund (2014) use a unique data set on traded volume between banks and the bank risk in studying the Swedish interbank market risk premiums. They find that the main determinants of the Swedish interbank premium are international variables, such as the US and EURO area risk premium. International exchange rate volatility and the EURO/USD deviations from CIP also matters while standard measures of domestic market liquidity and domestic credit risk have insignificant effects. Nonlinear smooth transition (STR) models show that the US financial variables are more important in times of a rising US risk premium.

Dinger and Hagen (2009) when they investigate whether banks that borrow from other banks have lower risk levels, confirm that long-term interbank exposures result in lower risk of the borrowing banks. They concentrate on a large sample of Central and Eastern European banks that allows us to explore the impact of interbank lending when exposures are long term and interbank borrowers are small banks.

In the term of liquidity, Craig, Fecht and Tümer-Alkan (2018) found that banks with a more diversified borrowing structure in the interbank market bid significantly less aggressively and pay a lower price for liquidity in the ECB's main refinancing operations. The conclusion derived when they assess how the concentration of credit relationships and the position of a bank in the network topology of the system influence the bank's ability to meet liquidity demand using quarterly data of bilateral interbank credit exposure among all Germany banks from 2000 to 2008 to measure interbank relationships and network characteristics. Eross, Urquhart, and Wolfe (2016) studies liquidity risk contagion within the interbank market by assessing the long-run relationship of short-term interest rate spreads from January 2002 to December 2015. They found that when the short-term interbank market is affected by a liquidity shock, the LIBOR–OIS spread is a leader in moving back to equilibrium, while the euro-dollar currency swap rate and the US-German bond spreads are followers. Therefore, liquidity shocks propagating within the interbank market can forecast benchmark interest movements, and ultimately this has significant implications for policy-makers and market players alike.

Allen, Carletti, and Gale (2009) develop a simple model of the interbank market where banks trade a long term, safe asset. When there is a lack of opportunities for banks to hedge idiosyncratic and aggregate liquidity shocks, the interbank market is characterized by excessive price volatility. In such a situation, a central bank can implement the constrained efficient allocation by using open market operations to fix the short-term interest rate.

It can be constrained efficient for banks to hoard liquidity and stop trading with each other if there is sufficient uncertainty about aggregate liquidity demand compared to idiosyncratic liquidity demand. Meanwhile, Freixas, Martin and Skeie (2011) suggested that the central bank should lower the interbank rate when confronted with a crisis that causes a disparity in the liquidity held among banks. Failure to cut interest rates during a crisis erodes financial stability by increasing the risk of bank runs. However, Corrado and Schuler (2017) conclude that stricter liquidity measures which limit inside money creation, dampen the severity of a breakdown in interbank lending. Targeting interbank financing directly through liquidity measures along with a moderate capital requirement generates lower welfare losses.

Moreover, Asena, Giulia and Gabriel (2015) explore the effect of bank lending relationships in the interbank market and show that stable relationships exist and that they played a significant role during the 2007-2008 financial crisis. They use data from the MID market that represents the only transparent electronic platform in Europe and USA, unaffected by search costs and other frictions. Trading with preferred counterparts is associated with more favourable rates for both lenders and borrowers and carries larger trading volumes. The results point to a peer monitoring role of relationship lending, which contributes, at a time of financial distress, to a smooth liquidity redistribution among banks. Relationship lending thus plays an important positive role for financial stability. Besides, Sarmiento and Cely (2017) find that financial institutions with an elevated frequency of signals tend to exhibit a net borrower liquidity position in the interbank market, hence suggesting they are facing recurrent liquidity needs.

Based on the above studies, we found that a specific study related to the interbank market, financing risk and financing decisions of banking institutions has yet to be conducted for Islamic banking.

### 3.0 Methodology

#### a. Model Specification

Our study follows the models by Hassan (1993), Hatakeda (2000), Cebenoyan and Strahan (2004), and Sarantis and Nicholas (2009) to examine the role of bank-specific variables, monetary policy and macroeconomic variables in financing growth in Malaysian Islamic banks. Formally, the model used may be presented as follows:

$$\Delta FD_{it} = \alpha + \sum_{k=1}^K \beta_k X_{kit} + \varepsilon_{it}$$

Where;

$\Delta FD_{it}$  = FD ratio, i.e. ratio of FD to gross advance for i-th bank at t time.

$\alpha$  = Constant

$i$  (index of banks) = 1, 2 [...] 17

$t$  (time interval) = 1, 2 [...] 13

$\beta$  = coefficients of determinants of FD ratio

$X_k$  = k-th regressor

$K$  = Number of regressor or independent variable

$\varepsilon_{it}$  =  $\mu_i + \lambda_i + u_{it}$

Where  $\mu_{it}$  is the fixed effect of time,  $u_i$  is fixed effect firm and  $\varepsilon_{it}$  is the errors term which are not serially correlate, or it correlates with all variable at time  $t-1$ . This study defines  $FD_{it}$  as the level of financing offered by Islamic banking that covers every economic sub-sector from the years 1994 to 2015. Due to the lag variable ( $FD_{it-1}$ ) is independent variables in this study, the above specifications of the model developed become inconsistent. Therefore, Arellano and Bover, 1995) and Blundell and Bond (1998) recommended the generalised method of moments (GMM) procedure, which associate the regression in differences with the regression in levels. Using the GMM estimator, the instruments for the level equation are the lagged differences of the corresponding variables, whereas the instruments for the difference equation are the lagged levels. According to Arellano and Bond (1991), the GMM method system is much more consistent and efficient in estimating the coefficients of the model and in solving the problems of endogeneity, heteroskedasticity, and autocorrelation. The dynamic panel technique is also helpful in amending the bias induced by omitted variables in cross-sectional estimates and the inconsistency caused by endogeneity.

#### b. Empirical Variables

The dependent variable used in this research is the Islamic banks financing. The explanatory variables are divided into bank-specific determinants, financing risk, monetary policy and macroeconomic determinants. The explanatory variables are selected as suggested in the literature. The descriptions of the variables, the data sources as well as the expected signs are presented in Table 2.

**Table 2: Definition of variables**

<b>TERM</b>	<b>Definitions</b>
FD	Financing Decision; This ratio shows the behaviour of banks in the pursuit of profit and risk-taking. This behaviour is consistent with the profit-sharing paradigm that allows Islamic banks offer long-term financing to the project risk profile and high returns.
ROA	Bank profit; Measurement of profit before tax divided by total assets in the bank. This variable indicates the number of bank profits to total assets.
FRISK	Financing risk; describe the results of risk-taking by banks in the appropriate timeliness. The dependence of these indicators suggests risk weights based on total assets for various type of financing and different asset categories.
CAP	Capitalisation; Capital and reserves, as a part of the liabilities in the balance sheet total. This includes paid-up capital, reserve funds, retained earnings and other capital funds. Capital and reserves comprise own funds or a bank's core capital. More investment risk was so much more is needed capital.
SIZE	Bank size; This ratio represents the ownership of assets by banks. High asset ownership enables banks to offer more financial services at low cost.
MS	Money supply; Growth in money supply indicators show real growth potential, especially for future growth.
MII	Mudarabah Interbank Investment (MII): A short-term intermediary to provide a ready source of short-term investment outlets based on Shariah principles. Through the platform, the Islamic banks and banks participating in the Islamic Banking Scheme (IBS) would be able to match the funding requirements effectively and efficiently.
MGS	Malaysian Government Securities: Islamic securities that shows the loan by the government from financial institutions and others. Effectively it is a loan taken by the government of the people themselves. These loans are usually required by the state to finance recurrent expenditure and development expenditure for public projects.
GDP	Growth Domestic Product; This is a key indicator of a country's macroeconomic management. Any changes in this indicator will change the loan/financing which in turn affects the adjusted capital ratio and bank risk observation for specific years.
PI	Consumer Price Index: The relationship between the consumer price index or inflation with bank performance depends on whether inflation is expected (anticipated) or unexpected (unanticipated). In the second case (i.e., inflation is not expected), the bank's actions in adjusting interest rates be the leading bank costs have increased more than the bank. This second type of inflation has a negative impact on bank profits, which in turn reduces the capital structure.

### ***c. Methodology***

To examine the behaviour of Islamic banks financing decisions, this article employs the Generalised Methods of Moments (GMM) estimators. Following the studies on the bank policies in providing loan/financing by Hassan (1993), Hatakeda (2000), Cebenoyan and Strahan (2004) and Sarantis and Nicholas (2009), the use of a dynamic model is important to capture the persistence of financing over time. GMM estimation has gained attention over the years and has provided significant theoretical and applied contributions to the econometrics literature. The GMM estimator also helps to tackle the issue of endogeneity, autocorrelation, heteroscedasticity, unobserved heterogeneity and the persistence of the dependent variables. Specifically, we apply the GMM System estimators of Arellano and Bover (1995) and Blundell and Bond (1998) to cope with potential endogeneity. In order to determine the consistency and validity of the GMM estimator, we perform two diagnostic tests. First, we apply the Sargan test for over-identifying restrictions to test the validity of the instruments. Second, we perform autocorrelations test in the error terms to determine the adequacy of the estimator.

d. Data

The sample consists of 17 Islamic banks in Malaysia over the 1994-2015 period. The analysis is based on key Islamic banking market that operates in a dual banking system. The issue of data availability remains a limitation as for the development of Islamic banking in Malaysia. The sample comprised an unbalanced panel of Islamic banks with a minimum of three years and a maximum of 21 years per bank for the 1994-2015 period. The number of Islamic banks is presented in Table 3.

**Table 3: Number of Banks by Country**

No.	Islamic banks	Ownership	Period
1	Bank Islam Malaysia Berhad	Local	1994-2015
2	Bank Muamalat Malaysia Berhad	Local	1994-2015
3	Maybank Islamic Berhad	Local	1994-2015
4	RHB Islamic Bank Berhad	Local	1994-2015
5	EONCAP Islamic Bank Berhad	Local	1994-2015
6	Hong Leong Islamic Bank Berhad	Local	1994-2015
7	CIMB Islamic Bank Berhad	Local	1994-2015
8	Amlslamic Bank Berhad	Local	1994-2015
9	Affin Islamic Bank Berhad	Local	1994-2015
10	Alliance Islamic Bank Berhad	Local	1994-2015
11	Public Islamic Bank Berhad	Local	1994-2015
12	Al Rajhi Banking and Investment Corporation (Malaysia) Berhad	Foreign	1994-2015
13	Asian Finance Bank Berhad	Foreign	1994-2015
14	HSBC Amanah Malaysia Berhad	Foreign	1994-2015
15	Kuwait Finance House (Malaysia) Berhad	Foreign	1994-2015
16	OCBC Al-Amin Bank Berhad	Foreign	1994-2015
17	Standard Chartered Saadiq Berhad	Foreign	1994-2015

Source: Central Bank of Malaysia (1994-2015)

The bank-level data are collected from the publications of the individual Islamic banks’ financial statements that contain comprehensive information on Islamic banks. The financial statements items and ratios are harmonised within a universal format for comparing the sample banks. The interbank investment and monetary policy data are obtained from the website of Islamic Interbank Money Market (Islamic Interbank Money Market, 1994-2015), while macroeconomic data are collected from the Asian Development Bank (Asian Development Bank, 1994-2015).

**4.0 Findings**

**a. Descriptive Analysis**

Table 4 presents the estimation results for the baseline specifications for system GMM. Specifically, the table shows the mean, standard deviation, skewness as well as kurtosis and Jarque-Bera for each variable.

**Table 4: Descriptive of Variables Statistics**

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
<b>FD<sub>t-1</sub></b>	13.50	2.95	-1.97	8.80	377.44*
<b>ROA</b>	0.01	0.01	-0.12	11.39	511.63*
<b>FRISK</b>	0.46	0.23	-0.10	2.37	3.33
<b>CAP</b>	41.50	364.83	9.81	101.21	76069.98*
<b>SIZE</b>	14.54	2.11	-0.37	4.58	24.76*
<b>MS</b>	13.13	0.41	-0.20	2.26	8.05*
<b>MII</b>	4.06	1.91	1.19	2.97	64.81
<b>MGS</b>	3.78	1.53	0.98	2.43	47.25*
<b>GDP</b>	2.83	0.40	0.14	1.95	13.34*
<b>PI</b>	2.70	1.37	0.48	2.41	14.49*

Note: \*\*\*, \*\* and \* represent coefficients that are statistically significant at the 1%, 5% and 10% level, respectively.

Source: Authors’ computations

To verify whether the sample data is normally distributed, the data will be tested using several techniques such as the skewness test, kurtosis, the Jarque-Bera as well as the value of mean and median. If a sample is normally distributed, then the value of skewness will be equal to zero, the value of kurtosis should be three and the value of mean should be the same as the value of its median while the value of Jarque-Bera should not be significant or with a high value of probability. A sample data that is normally distributed should be an efficient estimator, unbiased and consistent. The results for most variables are fairly stable.

Based on the findings on the descriptive as shown in Table 4, we found that the sample data is not normally distributed. The reason is that none of its characteristics are identical to the one recently discussed. The value of mean and median for all the variables are not the same while their skewness is not equal to zero. The values of kurtosis are not equal to three, and all the values of Jarque-Bera are significant at level 10%. Therefore, it can be concluded that based on the above, the Ordinary Least Squares estimation method is not a better estimation method to be used. Hence, the Generalised Least Square method is more appropriate and expected to yield a much better result.

### b. Analysis of Matrix Correlation

Before carrying out the regression analysis, the existence of an econometric problem of data set applied in the model is tested by using the correlation matrix. We have checked the independence of variables to ensure the absence of multicollinearity problems that may prejudice our results. The correlations among the variables described in the model can be found in Table 4. The results confirm that no collinearity problem occurs between the independent variables, as multicollinearity can be considered a problem when the correlation is above 0.80 (Kennedy, 1992). In this regard, the correlation between each of the variables is not elevated, and the highest degree of correlation found is very satisfactory. The matrix shows that multicollinearity problems do not exist, confirming that the model used is valid and reliable. The empirical analysis shows that all the independent variables have a statistically significant relationship with the financing measures included in the model. Overall, we observe that some relevant differences between the findings estimation of the time periods, with respect to both the significance and the size of the coefficients. The regression results on the relationship between Islamic banks financing and the explanatory variables are displayed in Table 5.

**Table 5: Matrix Correlation**

	<b>FD<sub>t-1</sub></b>	<b>ROA</b>	<b>FRISK</b>	<b>CAP</b>	<b>SIZE</b>	<b>MS</b>	<b>MII</b>	<b>MGS</b>	<b>GDP</b>	<b>PI</b>
<b>FD<sub>t-1</sub></b>	1.0000									
<b>ROA</b>	-0.1869	1.0000								
<b>FRISK</b>	0.4898	-0.0440	1.0000							
<b>CAP</b>	-0.5432	0.2131	-0.2320	1.0000						
<b>SIZE</b>	0.5481	-0.1016	0.1406	-0.1168	1.0000					
<b>MS</b>	0.5399	-0.1032	0.1414	-0.1070	0.9950	1.0000				
<b>MII</b>	-0.4071	0.1679	0.0957	0.1016	-0.5302	-0.5427	1.0000			
<b>MGS</b>	-0.0920	0.0200	0.0912	0.0896	0.0474	0.0010	0.5557	1.0000		
<b>GDP</b>	-0.4197	0.1655	0.0658	0.1062	-0.5536	-0.5719	0.9905	0.5689	1.0000	
<b>PI</b>	0.8859	-0.1468	0.2070	-0.2399	0.6500	0.6429	-0.4935	-0.0921	-0.5058	1

Note: \*\*\*, \*\* and \* represent coefficients that are statistically significant at the 1, 5 and 10% level, respectively.

### c. Model Estimation

Table 6 presents the estimation results for the baseline specifications for system GMM. Regression includes bank-specific, monetary policy and macroeconomic variables. The p-values are reported in parentheses in all regressions and \*\*\*, \*\*, \* indicates significance sign at 1%, 5% and 10% levels respectively.

**Table 6: Estimation Results Using System GMM**

Specification	Estimation Parameter	
	GMM-Difference	GMM-System
FD <sub>t-1</sub>	0.0871* (2.4755)	0.1046* (2.2779)
ROA	-1.1897 (-0.4768)	1.2797 (0.3381)
FRISK	3.0248* (11.6600)	2.2700* (2.9838)
CAP	-0.0019* (-15.9870)	-0.0020* (-15.6427)
SIZE	0.7042* (8.6663)	0.7783* (8.8067)
MS	1.0876 (0.7368)	0.4277 (0.7483)
MII	-0.5965* (-4.4083)	-0.3869* (-2.6096)
MGS	0.6559* (3.3014)	0.4755* (2.3540)
GDP	-0.5927 (-0.4413)	-0.0037 (-0.0061)
PI	-0.0065 (-0.2271)	-0.0229 (-1.0957)
Sargan Test	126.3045*	3.7883*
AR(1)	-0.42	-0.11
AR(2)	-0.89	-0.77

\*Significant at 1%

\*\*Significant at 5%

\*\*\*Significant at 10%

( ) t-value

Sargan Test is referring to exceed limitation recognition

**i. Bank Specifics**

The results for most variables are fairly stable across regressions. Specifically, the results passed the diagnostics tests, suggesting that the model is adequately specified. The Sargan test does not reject the over-identification of restrictions in all regressions implying that the instruments are valid. Furthermore, the lagged dependent variable is positive and significant at 1% level in regressions implying the persistence of the previous financing across time and justifying that dynamic GMM is an appropriate estimator.

Furthermore, the results indicated the higher level of previous financing is influenced by prudent “monetary policy” which leads to an excellent repayment track record of the customers. In addition, the past financing flow provided in many productive sectors is capable of generating high returns to the bank which in turn encourages Islamic banks to offer more financing for the next financial year.

The results suggest that financing risk, capital, and size factors contribute significantly to explaining the financing decisions of Islamic banks. More specifically, the capital structure has a negative effect on financing decision and significant at the 1% level. A 1% increase in capital leads to a 0.0020% decrease in Islamic banks’ financing. The findings are consistent with Liu, Beng and Hua, Min (2009) who found Islamic banks improved their provisions in formatting capital and this finding is linked the capital control of the bank (bank capital regulations) either a binding or do not affect the management of bank in offering financing. Regulation for banks that have surplus capital but is bound by the rules occasionally will not increase the offer of financing but also restrict the factors each financing offered resulted in an increase in risk-weighted assets ratio.

On the contrary, financing risk has a positive influence on the financing decisions of Islamic banks and is significant at the 1% level. An increase in financing risk by 1% would lead to an increase of 2.2700% in bank financing. This situation reflects the Islamic banks changed their financing portfolio by moving towards a riskier financing as a reaction to highly decreasing profit from low-risk financing. Islamic banking is involved in various forms of financing such as property, consumer financing, commercial financing, industrial, and others where all of which are involved in the profile and the level of risk, particularly credit risks, as well as other unique risks. Besides that, the effect of their active engagement in the securitisation activity leads the bank to invest in riskier financing for potentially high returns (Hazli and Ismail, 2008).

In this case, although IBS is a Shariah compliant bank, risk taking activities are not mistaken and not prohibited, and even promoted by Islam on the basis of "*al-gunm bi al-ghurm*" method that each profit needs to be in line with the risk level taken. However, risk taking activities need to be streamlined with robust and effective risk management tools.

Similarly, the study shows that size has a positive relationship on the financing decisions of Islamic banks by 0.7783%. This shows that the size factor is the primary determinant of whether Islamic banks should increase the financing portfolio or vice versa. These findings are consistent with Sarantis and Nicholas (2009) who found that bank size has the most significant role in differentiating the reactions of banking institutions towards changes in monetary policies by the regulator. Oliver, Yuan and Jeon (2010) also found smaller banks with low liquidity and capitalisation had limited ability to offer financing.

#### **ii. Monetary Policies Changes**

In this section, the study suggests that MII and MGS factors contribute significantly in explaining the financing decisions of Islamic banks. Interestingly, there is a difference between the two variables where MII showed a negative sign while MGS recorded a positive sign. More specifically, in regression, the MII has a negative effect on financing decisions and is significant at the 1% level. A 1% increase in MII leads Islamic banks to decrease financing volume by -0.3869%. The findings are consistent with previous studies by Othman, Ahmad and Kechot, (1992) and proved that the investment activities of Islamic banks (Islamic interbank investment) in Malaysia had a "substitution effect" and decreased their capability to give more financing because of their tendency to maintain liquidity.

On the other hand, MGS has a positive influence on the financing decisions of Islamic banks and is significant at the 1% level. An increase in MGS by 1% would lead to an increase of 0.4755% in Islamic banks' financing. This shows the retention level of high government securities held by Islamic banks will result in high-profit return as well. These returns are distributed in the capital formation by Islamic banks for the purpose of financing (ElGindi, Said and Salevurakis, 2009).

#### **iii. Economic Conditions**

In this section, the results suggest that GDP and PI variables are not statistically significant even though the result is in line with previous theories and studies. Both variables do not affect Islamic banks' financing as shown in regression of Table 5. GDP and PI variables have an insignificant influence on the financing decisions of Islamic banks. This finding is in line with proponents of Islamic banks in that Islamic mode of financing go toward the real sector and is less inflationary (Tamsir Cam, 2017). In this context, Hazli and Ismail (2008) found that Islamic banks depend more on the balance sheet indicators as a signal for economic condition compared with the general economic performance measurement.

### **5.0 Conclusion**

Based on the findings of this study, it appears that the actions of the management of Islamic banks invested their surplus funds into intermediary investment mechanisms affecting their financing decisions during the financial year. Although previous studies have proven bank involvement in interbank investments results in high returns, this study by using different samples found that investment in this form in the context of Islamic banking in Malaysia does not provide high returns. Islamic banks in this study had to face the problem of liquidity constraints. If they invest excessively in interbank investments, Islamic banks are forced to decide to limit their financing. This is because investment in these platforms provides a rapid return to Islamic banks compared to financing activities. However, this decision causes the fund that is invested in the financing sector to decrease. At the same time, this study has proven that risk-taking activities among Islamic banks through financing activities are very positive. This is evidenced by the bank's management actions to increase financing in various sectors when such financing is increasingly risky. Due to the increased risk of financing, Islamic banks are confident that they will generate higher profits in the coming financial year. The economic conditions of Malaysia do not influence Islamic banks' financing decisions, whereas Islamic banks in this study are more dependent on the balance sheet indicators. It is a signal of the economic condition as compared to general measurements for the performance of the economy.

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