

DYNAMIC CAUSAL RELATIONSHIP BETWEEN ISLAMIC BANKING AND ECONOMIC GROWTH: MALAYSIAN EVIDENCE

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Abstract – Islamic banking and finance have emerged as one component of a significant competitive and comprehensive market, where it is reliable with conventional financial development in term of economic contribution. As of today, Islamic banking accounts for a minimum of 11 percent growth in Malaysia economic development and indirectly contributes to the global agenda of developing sustainable growth. Thus, this paper aims to empirically assess the dynamic contribution of Islamic banking towards economic growth in Malaysia based on selected variables, namely, real gross domestic product (GDP), total deposit, total financing, total assets and non-performing loan. The quarterly time – series data from (2007: Q1 – 2014: Q1) are used to uncover short–run and long–run relationship between real GDP and Islamic banking key financial indicators. Using a battery of time series econometric techniques, we document that there is robust evidence suggesting favourable result where Islamic banking does contribute towards economic growth in the long-run where the total deposit, total financing and total assets of Islamic banking have a positive relationship where the non-performing loan is found to have a negative relationship. To test the causality relationship of variables in the short-run, the Wald – test Granger Causality has been carried out and it shows that there is evidence of a bi-directional causality relationship between economic growth and total deposit of Islamic banks. In addition, the bidirectional relationship also exists between non-performing loan and total deposit of Islamic banks. However, the majority of the variables are found to be having unidirectional causality relationship among the variables. Overall, our conclusion state that Islamic banking and finance still act as one of the dominant key contributors to Malaysian economic development and growth. The results obtained in this paper are much more robust to alternative econometric specifications.

Keywords: *Islamic Banking, Economic Growth, Long – run, Short – run, Malaysia*
JEL Classifications: *C1, C5, O1, Z10*

I. INTRODUCTION

The steady growth of Islamic banks has been a trademark of the Muslim world financial landscape in the present age. According to Governor of Bank Negara Malaysia, Dr Zeti Akhtar, Malaysia has proven that Islamic finance does not only contribute to financial stability, rather at the same time it promotes the number of economic sectors to participate in the financial system. This can be observed when Islamic finance is extremely favourable to small and medium-sized businesses (SMEs). By the incorporation of SMEs and other micro-credit agencies, this has led to an increase in the diversification of the financial system, which later improves its flexibility and stability. Moreover, possibilities to expand the international relations is realised.

Although with the slowed global economy and the siege of conventional banking in western countries, Islamic finance continues to flourish with robust growth. Gheeraert (2014) study reveals that Islamic asset size and growth from 2000 to 2005 annual average by countries as below (Figure 1);

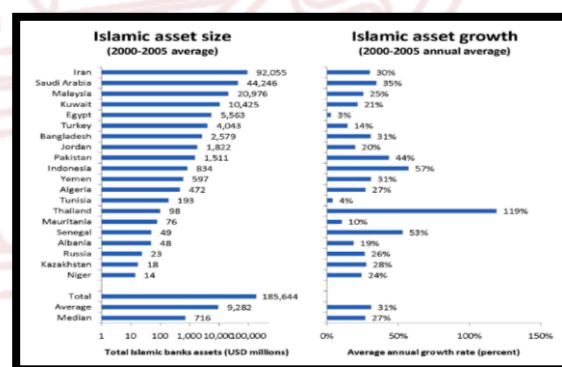


Figure 1. Islamic Finance Summary Statistics

Source: World Development Indicators (World Bank, 2009)

From the graph above, it indicates that the average growth for the Islamic asset lies around 19 to 26 percent for the listed countries above except

for Thailand (which experience almost 119 percent growth due to extraordinary demand for Islamic finance) for the period of 5 years. In comparison to the above, Table 1 below shows the Islamic finance Shariah-compliant assets, the share of banks and number of firms according to countries in 2010. While likening both data, it simply designates steady growth of the Islamic finance industry since 2005 and 2010 compared to the current market position.

Countries	Shariah-compliant assets	Share of Banks	Number of firms
Iran	388.0	383.5	27
Saudi Arabia	151.0	147.8	26
Malaysia	133.4	120.4	39
Kuwait	79.7	68.9	39
Bahrain	57.9	56.2	33
Indonesia	10.5	10.0	26
Jordan	5.9	5.7	10
Pakistan	5.7	5.6	23
Other countries	254.4	249.6	122
Total	1086.5	1047.7	345

Table 1. Islamic Finance by Country (US\$ Billion)

Source: The Banker (2010)

According to Rajabi & Muhammad (2014), the global market for Islamic financial services has tangibly grown by 15 to 20 percent (\$1460 billion) in 2012. Most of the asset comprises of commercial banks', while the rest are from investment banks'. Having considered this growth rate, it is forecasted by the end of 2014 that the market would elevate to \$2 trillion in assets.

The Alliance among financial institutions, growing competition and constant innovation in providing financial services, all contribute to rising attentiveness in a detailed evaluation of Islamic banks. In fact, the performance evaluation is essential for both managerial and regulatory purposes. While managers mainly concern on the outcome of previous management decisions, bank regulators are keen towards the well-being and soundness of banking structure to make sure the public confidence is preserved. In addition, bank performances are also monitored to identify problems, which if it is left unnoticed, could lead to severe financial issues in future. Similarly, depositors and investors keen to track the bank's performance in realising greater investment experience and their turnover.

Generally, well-developed domestic financial sectors system such as the one that is

available in developed countries can significantly contribute to raise savings and investment rate and henceforth reach the economic growth (Becsi and Wang, 1997). However, in defining specific variables which contributes to economic growth, this paper empirically assesses the dynamic contribution of Islamic banks towards economic growth in Malaysia based on selected variables namely real gross domestic product (GDP), total deposit, total financing, total assets and non-performing loan and their significant relationship in short and long term time frame. By studying the contribution of Islamic banks towards economic growth, this paper contributes to the ongoing discussion and existing literature on the performance of Islamic banking and their contribution towards successive domestic and foreign economic growth.

II. LITERATURE REVIEW

Economic development is usually seen as a process of creating prosperity for a country through the mobilisation of human, physical, capital, financial, and natural resources to generate marketable good and services (American Economic Development Council, 1984). Financial intermediation plays an important role in an economic activity, failing which such as banking crisis, can be very costly for society. In some cases, banking crisis also may exact a high cost estimated to be greater than ten percent of gross domestic product (GDP)¹. Extant literature proves that Islamic banking and finance institutions manage to escape without being severely hurt by the global financial crisis². To study among the reasons, contribute to this, Monzer Kahf (2005) discover that developmental characteristics of Islamic modes of financing can be categorised in few manners. Among them, Monzer Kahf (2005) discovered that the essential characteristics are their direct and undetachable link to the real economy or physical transactions as Islamic banking and finance practices promote the sharing mode and sale-based mode.

Kaleem (2000) in his study discover on general similar findings by other researchers³ that Islamic banking system is more stable compared to the conventional banking system. This is mainly because of the fact that Islamic banks operate in a free-interest environment (Bacha, 2004) and operates on a non-debt based framework, rather asset-based structure with a risk-sharing mechanism are practised (Maximilian J.B. Hall & Muljawan, 2000). The expert found that conventional banking

¹ See Goldstein and Turner (1996) for these banking crises discussion

² Studies by (Smolo and Mirakhor, 2010) and Ahmad (2010)

³ See (Kia and Darrat, 2003) and (Samad, 2004)

had been notorious due to its operation in highly leveraged, greed and poor enforcement of inadequate regulatory exercises. The practices and undertakings of Islamic banks reflect the atmosphere in which they are based. Strong retail operations are mainly practices in Iran and Saudi Arabia. On the other hand, for secular societies such in northern Africa, Islamic banks compete on the basis of the quality of the products rather than competing more on a religious base. In Kuwait, financing focused more on the petroleum sector and real estate investment while in the United Arab Emirates, the emphasis given is more on trade and finance (Zaher and Hassan, 2001). These simply indicate that for Islamic banking and finance industry to sustain continuous growth and compete in local as well as global markets, they have to design and innovate Shariah compliant instruments that can cope with the continuous innovations in the present financial markets.

With regard to Islamic banking contributions to the economic growth, the extant literature indicates that there are only a few studies carried out in this area. Among them, (Abduh & Chowdhury, 2012) and (Abduh & Omar, 2012) both verified on Islamic banking relationship and contribution towards the economic growth of Bangladesh and Indonesia was found to have a positive significant relationship both in short run and long run with the bi-directional relationship. Later, (Manap, Abduh, & Omar, 2012) further investigate the causal relationship between Islamic financial development and economic growth in the context of Malaysia by employing the Toda and Yamamoto Wald test. The results indicate that Islamic financing Granger causes economic growth but not vice versa which is consistent with Schumpeter's view of supply-leading hypothesis where it is believed that financial development promotes economic growth.

In addition, Al-Oqool, et. al. (2014) in their study of financial Islamic banking development and economic growth in Jordan results that bi-directional long run Granger exists between real GDP and total finance of Jordanian Islamic banks, which reflect the positive contribution of Jordanian Islamic banks to the economic development. However, their short run causality indicates no significant relationship between these two (financial Islamic banking development and economic growth).

Surprisingly, different finding opted by Furqani & Mulyany (2009) where their study found that only in short run, the fixed investment Granger cause Islamic bank. In the long run, it possesses bidirectional relationship between the Islamic bank and fixed investment which support the 'demand following' hypothesis of GDP and Islamic bank where an increase in GDP causes Islamic banking to

develop and not vice versa. On the other hand, even though using almost similar time span data, this finding was inverse to (Majid & Kassim, 2010) whereby it was concluded that the relationship is supporting the supply- leading interpretation.

Uniquely, (Johnson, 2013) study on the role of Islamic banking in economic growth revealed that on average, countries with Islamic banks possess much-advanced population growth rate, added Muslim shares of the population, a bottomless financial system, and greater GDP per capita than countries without Islamic banks. However, while using the exogenous instrument in 2SLS regression, results show that Islamic bank is not significantly correlated with economic growth. Moreover, while examining the role of banking during the process of economic development evolves over time, Demirguc et.al (2012) found the relationship between economic activity and bank development decreases with economic development, while the relationship between economic activity and securities market increases during growth.

Ensued from the present studies on Islamic financial framework, this paper meant to narrow the literature gap in the discussion of determining the relationship and contribution of Islamic banks towards economic growth, specifically in Malaysia. Furthermore, to achieve a more dynamic result compare to other studies, this paper employs a battery of time series econometric techniques to attain bottomless analysis.

III. METHODOLOGY

The empirical data and analyses in this paper cover an 8-year-period using quarterly time – series data (2007: Q1-2014:Q1) which should be adequate to test the short – run and long –run relationship between the independent and dependent variables. The data series required involves real gross domestic product (GDP), a total deposit of Islamic bank, total financing of an Islamic bank, total assets of an Islamic bank and nonperforming loan of an Islamic bank. The data are obtained from Bank Negara Quarterly Statistical Bulletin, IMF's International Financial Statistics database (IFS) and complemented by data from www.econstats.com for chosen years. First of all, we assume that real GDP is a function of its macroeconomic variables as expressed by equation below;

$$RGDP = f(TDIB, TFIB, TAIB, NPLIB)$$

Next, to examine this relationship the generic model applied takes the form as follows;

$$\text{LnRGDP}_t = \beta_0 + \beta_1 \text{LnTDIB}_t + \beta_2 \text{LnTFIB}_t + \beta_3 \text{LnTAIB}_t + \beta_4 \text{LnNPLIB}_t + \varepsilon_t \quad (1)$$

where:

LnRGDP	=	Natural Log of Real Gross Domestic Product
LnTDIB	=	Natural Log of Total Deposit of Islamic bank
LnTFIB	=	Natural Log of Total Financing of Islamic bank
LnTAIB	=	Natural Log of Total Assets of Islamic bank
LnNPLIB	=	Natural Log of Nonperforming Loan of Islamic bank
ε_t	=	Error Terms

Based on the Vector Auto Regression (VAR), the above – mentioned equation (1) has 5 variables and can be written as follows;

$$\begin{bmatrix} \text{LnRGDP}_t \\ \text{LnTDIB}_t \\ \text{LnTFIB}_t \\ \text{LnTAIB}_t \\ \text{LnNPLIB}_t \end{bmatrix} = \begin{bmatrix} A_1 \\ A_2 \\ A_3 \\ A_4 \\ A_5 \end{bmatrix} + R(L) \begin{bmatrix} \text{LnRGDP}_{t-1} \\ \text{LnTDIB}_{t-1} \\ \text{LnTFIB}_{t-1} \\ \text{LnTAIB}_{t-1} \\ \text{LnNPLIB}_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{t1} \\ \varepsilon_{t2} \\ \varepsilon_{t3} \\ \varepsilon_{t4} \\ \varepsilon_{t5} \end{bmatrix}$$

Where R is known as 5×5 matrix polynomial parameter estimators, (L) is lag length operators, A is an intercept vector and ε_t is Gaussian error vector with mean zero and Ω is a Varian matrix.

Firstly, we utilise the most common method used in the Unit Root Test namely; (i) Augmented Dickey-Fuller (ADF) and Phillips – Perron (PP) tests to determine the variables stationarity properties. In order to avoid spurious results, we have conducted the test for the stationarity. Time series is considered as stationary if a series is mean – reverting, that is, the series repeatedly returns back to its mean and does not have a tendency to drift (Asmy et al, 2010). Therefore, if the mean and variance of the series are constant over time, while the value of the covariance between two periods depends only on the gap between the periods and not on the actual time at which the covariance is considered, then the series is stationary. But if one of the above conditions is not fulfilled, then the series is non-stationary (Paramaiah and Akway, 2008). Second, we proceeded with cointegration tests suggested by Johansen (1988) and Johansen and Juselius (1990). This test provides information in regards to the variables associated in the long run, which particularly measure the Real GDP and other

explanatory variables are tied together in the long run. Thirdly, we further our analysis by using VECM where it is widely known as restricted Vector autoregression (VAR) and used for non-stationary variables known to be cointegrated. Generally speaking, VECM restricts the long – run behaviour of endogenous variables to converge to their cointegrating relationship whereas induce short – run adjustment dynamics take place. Moreover, by using VECM, it allows us to differentiate the short – run and long – run association of the variables given specified time period. The variables might have dispersed in the short – run from one another which may cause disequilibrium in the system. Therefore, the statistical significance in regards to the coefficient associated with ECT (-1) will give us an error correction that drives the variable back to the long – run relationship (Gujarati, 2009).

The next would be Granger causality test which aims to see how many directions the variables will have a relationship in the short run. The reason for checking the short – run relationship is to know whether the lags of one variable enter into the equation for another variable (Gujarati, 2009). Basically, there are two major steps involved in conducting Granger Causality tests namely; (i) data that are stationary needed and (ii) selection of lag length criteria. Therefore, for this study, we used Akaike Information Criterion (AIC) to determine lag length structure.

Lastly, the study proceeded with the Variance Decomposition (VDC) and Impulse Response Function (IRF). These two analyses portray the behaviour of a surprise to each variable on its own future dynamics and future dynamics of other explanatory variables in the system. The VDC is used to capture the percentage of unpredicted deviation in Real GDP accounted for by surprise in explanatory variables. On the other hand, IRF is used to identify the causal dynamic interaction among variables. To produce IRF graphical analysis, it is required to make sure the variables in the system are in order and that a moving average process represents the system.

IV. EMPIRICAL FINDINGS

A. Unit Root Test

In determining the variables stationarity, we applied the ADF and PP tests for unit root tests. The aim for running these tests is to check whether the null hypothesis has a unit root against the alternatives that it does not. Both of these tests are conducted with the trend and intercept Hassanudin et.al (2013). In addition, Akaike Information

Criterion (AIC) has been used to determine the optimal lags after testing for first and higher order serial correlation in the residuals. The investigation using the ADF and PP shows that there are no variables having unit root at level. However, unit root is obtained when the first difference condition of all variables are conducted using the same ADF and PP test by comparing the level using 1%, 5% and 10% alpha values (See Table 2).

Table 2. Unit Root Test

Variables	Level		First Difference	
	ADF	PP	ADF	PP
LNRG	-	-	-	-
DP	1.457 188	1.454 704	4.95039 1*	5.03950 6*
LNTA	-	-	-	-
	3.183 900	3.205 909	6.27095 9*	6.63029 5*
LNTF	-	-	-	-
IB	2.366 603	2.004 564	3.48727 6***	3.37115 5***
LNTD	-	-	-	-
IB	2.348 313	1.964 474	5.07676 0*	18.9732 4*
LNNP	-	-	-	-
L	2.092 265	1.216 636	1.05282 1*	5.24888 0*

Note: Values based on MacKinnon (1996) one-sided p-values. The value in parenthesis refers to t-statistic. *, **, *** indicates significance at 10%, 5% and 1%.

Source: Author's own

B. Cointegration Test

A set of variables will be cointegrated if a linear combination of the variables is stationary even though the variables are not stationary individually. If there is evidence of cointegration, then there will be long-run equilibrium among the variables (Hassanudin et.al 2013). In this study, by employing the Johansen and Juselius Cointegration Test, we compare the value of the Likelihood Trace Statistic (LTS) and Max – Eigen statistic (ME) with the 5% critical value and it was found that there exists only one cointegration in the long run (see Table 3). Therefore, there is a long-run unique cointegrating vector governing the long run relationship among the variables. It means that there is a one cointegrating long-run association among Real GDP, Islamic Bank Total Deposit, Islamic Bank Total Financing, Total Assets of an Islamic Bank and Non – performing loan of an Islamic bank.

Table 3. Johansen-Juselius Cointegration Tests

Hypothesized No. of CE(s)	Trace Statistic	Max-Eigen Statistic	Critical Values (5%)	
			Trace	Max-Eigen
$r = 0$	78.338 5**	37.357 7**	69.81 88	33.87 68
$r \leq 1$	40.980 7	20.414 2	47.85 61	20.41 42
$r \leq 2$	20.566 5	10.738 2	29.79 70	10.73 82
$r \leq 3$	9.8282 8	8.0819 8	15.49 47	8.081 98

Note: The test statistics are compared to the critical values from MacKinnon – Haug – Michellis (1999) with trend assumption; linear deterministic trend. *, **, *** denotes significant at 10%, 5% and 1% significance levels. Lag interval: 1 to 1 (Based on Optimal Lag Test)

Source: Author's own

C. Estimation of long – run equation using the Vector Error Correction Model (VECM)

In order to come out with the long-run equation, we have used the Vector Error Correction Model (VECM). This estimation method will provide information regarding the velocity of adjustment on the instability relationship from short-term to long term equilibrium. Variables that are not stationary at the level will be analysed by testing the unit root at the first difference level. This application of first difference data can eliminate the long-term information in the study. For this reason, VECM will be used in order to anticipate a loss of long-term information as long as the data are cointegrated. Table 4 shows the long-run equation derived from the VECM modelling depicts the long-term relationship among the variables with the number in parentheses being the t-ratios.

Table 4. Vector Error Correction Model (VECM)

Explanatory Variables	Dependent Variable	
	Coefficient	t-statistics
LNTDIB	-0.5228	2.5059**
LNTFIB	-0.1217	1.3337**

		-
LNTAIB	-1.2606	2.5390**
LNNPLIB	0.4720	6.0069**
C	-22.1657	
	$R^2 =$	
	0.9517	
	F – Statistic = 18.3256	
	(0.0000)	
	Jarque Bera = 3.4833	
	(0.1752)	
Diagnostic Test	DW = 1.5384	
	LM = 3.2350	
	(0.1984)	
	ARCH =	
	0.3574	
	(0.0054)	

Note: (t_table for alpha 5% = 1.67. DW represent Durbin-Watson Test, LM refers to the Lagrange Multiplier statistic for serial correlation form and ARCH represents the test for Autoregressive Conditional Heteroscedasticity. *, **, *** denotes significant at 10%, 5% and 1% significance levels

Source: Author's own

Thus, the final long-run VECM equation derived is as follows:

$$\text{LnRGDP}_{t-1} = -44.627 - 0.5228\text{LNTDIB}_{t-1} - 0.1217\text{LNTFIB}_{t-1} - 1.2606\text{LNTAIB}_{t-1} + 0.4720\text{LNNPLIB}_{t-1}$$

Or

$$\text{LnRGDP}_{t-1} = 44.627 + 0.5228\text{LNTDIB}_{t-1} + 0.1217\text{LNTFIB}_{t-1} + 1.2606\text{LNTAIB}_{t-1} - 0.4720\text{LNNPLIB}_{t-1}$$

t-stat	[2.5059]**	[-
1.3337]**	[-2.5390]**	[6.0069]**

The equation above indicates the respective signs of all variables in the long-run. The negative sign in total deposit and total financing shows that any increase in total deposit and total financing in Islamic banking will cause an increase in economic growth and it is statistically significant ($p=0.001$). This is very true and robust for Malaysia economic growth where financial sectors include both conventional and Islamic banking contribution towards economic growth is expected to grow significantly at 8.6 percent in 2010 to between 10 and 12 percent by 2020. The result shows that the role of financial sectors is very important in achieving good economic growth. In Malaysia, the deposit of Islamic banking as of 2012 was RM386.2 billion with the market share of 25.6 percent. On the other hand, total financing of this industry was at RM315.0 billion with the market share of 25.8

percent. In addition, the Islamic banking financing is expected to account for 40 percent of total financing in Malaysia by 2020 (BIMB report, 2012). The findings further stipulated that as Islamic banking grows, it will stimulate the economic growth of Malaysia as this industry continuously received a good support from Malaysian government which may significantly contribute to the higher economic growth especially in the real sector. For example, since 2006, the Malaysian government has implemented various strategic positioning and international integration global systems where it can let Malaysia become a strategic hub for Islamic finance which may further enhance Malaysia economic growth and development. This is consistent with Furqani and Mulyani (2009) where they have found that there is strong evidence of a bi-directional relationship between Islamic banking total deposit and total financing towards economic growth in Malaysia. This study was carried out using time – series such as cointegration and Granger causality test analysis between 1997: Q1 and 2005. In addition, our result is also consistent with Abduh and Chowdury (2012) where they have utilised quarterly time series data from 2004 till 2011 and employed various econometric techniques. The results show there is strong justification where Islamic bank financing and deposit have a positive relationship with Bangladesh economic growth in both long and short run.

As for total assets of Islamic banking in Malaysia, it shows that there positive and significant relationship ($p=0.000$) towards economic growth. To be simple, if the Islamic banking total asset increases, it will stimulate Malaysia economic growth. As reported by BIMB reports, 2012, it is very clear that Islamic banking total asset represents 23.8 percent of the total proportion of banking systems in Malaysia which is equivalent to RM494.6 billion. The annual growth rate of Islamic bank total asset in Malaysia was about 18.6 percent between 2008 and 2012. In contrast, conventional banking assets growth was about 9.3 percent during the same time period. In addition, the Islamic banking assets in Malaysia are more than USD132 billion as at end November 2013 without taking into account the Development Financial Institution (DFIs) and the worldwide with DFIs statistics, Malaysian Islamic banking total assets represent 13 percent share of global Islamic banking. This further shows that this industry popularly gaining acceptance from the public especially from the non-Muslim customer (MIFC, 2013). As the total asset size increases, it indicates that this industry is highly stable in term market capitalisation where it can build an inclusive financial system and replace the shadow economy and indirectly contributes to the economic growth. This finding supports Yusof and Bahlous (2013) findings where they have utilised the panel

cointegration analysis, they found that Islamic bank total assets contribute to economic growth both in the long run and the short run for both GCC countries and selected East Asia countries including Malaysia. In addition, they have also postulated that in the short run Islamic banking contributes more to economic growth in Malaysia and Indonesia compared to the GCC countries. The same was result found by Abduh and Omar (2012) for Indonesian market by adopting ARDL approach.

As for Islamic bank non-performing loan (NPL), an inverse relationship between NPL and economic growth ($p=0.001$) is recorded. Generally, NPL is one of the most important factors which cause reluctance for the banks to provide credit assistance to the borrower. The higher the NPL, it requires the bank to raise a provision for loan loss, and subsequently causes bank revenue to decrease because of cutting down the fund for new lending. As for Islamic bank, many empirical literature has proven that NPL for Islamic bank is much lower in compared with the conventional bank as Islamic bank practices are based on profit and loss sharing basis. Lower the level of NPL, lower would be the default risk in Islamic bank which can indirectly contribute to the higher economic growth. This negative relationship is also similar to past studies in regards Malaysian Islamic bank relationship with economic growth by Ryu et.al (2012), Rahim and Zakaria (2013) where they suggest that Islamic banking system in Malaysia are much more stable and sound in term of lower NPL level (low default risk) compared with conventional banking (high default risk due to higher NPL where it has contributed positively towards economic growth.

The diagnostic test has been conducted to test the robustness of the error correction model and the result shows there was no evidence to prove normality failure, serial correlation and Autoregressive Conditional Heteroscedasticity (ARCH) effect in the disturbance. Therefore, we conclude that the model is pertinent for this study.

D. Granger Causality Test

After estimating the long-run VECM model, then we proceed to the short-run Granger Causality test. With Cointegration, the dynamic causal interactions among the variables should be phrased in a vector error correction form. This allows us to assess both long-run and short-run causality, respectively, on the χ^2 -test of the lagged first differenced terms for each right-hand-side variable and the t-test of the error correction term. The results of the test are presented in Table 4 and the causal channels are summarised in Table 5.

Table 5. Granger Causality Results Based on VECM

		Independent Variables					EC T _{t-1} coef ficient (t- ratio)
Dependent	Variable	χ^2 -statistics of lagged 1 st differenced term [p-value]					
		ΔL NR GD P	ΔL NT DIB	ΔL NT FIB	ΔL NT AIB	ΔLN NPL IB	
ΔLR			0.24	1.58	2.94	6.94	-
GDP		--	75	35	79*	10**	0.93
			[0.6 188]	[0.2 082]	[0.0 860]	[0.0 084]	48* *
			*]]		(- 4.34 03)
ΔLN		2.98		11.2	2.51	12.4	0.31
TDI		82*	--	954	86	118*	99*
B		[0.0 839]		** [0.0 008]	[0.1 125]	** [0.1 125]	* (1.8 694)
ΔLN		0.10	0.84		0.12	1.63	0.24
TFI		63	90	--	65	02	06
B		[0.7 443]	[0.3 568]		[0.7 221]	[0.2 017]	(0.7 781)
ΔLN		0.79	0.33	2.47	--	0.76	0.91
TAI		81	62	02		61	91
B		[0.3 717]	[0.5 620]	[0.1 160]		[0.3 814]	(1.5 642)
ΔLN		1.00	4.54	3.60	0.41	--	0.67
NPL		92	94	38	74		44
IB		[0.3 151]	[0.0 329]	[0.0 576]**	[0.5 182]		(1.8 462)

Note: *, ** and *** denotes significant at 10%, 5% and 1% significance level, respectively. The figure in the parenthesis (...) denote as t-statistic and the figure in the square brackets [...] represent as p-value.

Source: Author's own

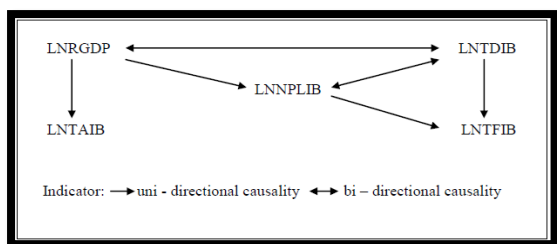


Figure 1. Causal Channel from Granger Causality Tests

Source: Author’s own

As shown in Table 5 and Figure 1, it is very clear that in the short – run there is bidirectional causality between LNRGDP and LNTDIB. On the other hand, the bidirectional relationship also exists between LNNPLIB and LNTDIB. Therefore, we can reject the null hypothesis and it is significant at 5 percent. In addition, the majority of the variables have unidirectional causality in the short – run where LNRGDP Granger cause LNNPLIB, LNRGDP Granger cause LNTAIB, LNNPLIB Granger cause LNTFIB and LNTDIB Granger cause LNTFIB. All these variables are statistically significant at 10 percent and 5 percent.

E. Variance Decomposition and Impulse Response Function

The result of VECM indicates the exogeneity or endogeneity of a variable in the system and the direction of Granger-causality within the sample period. However, it does not provide with the dynamic properties of the system. The analysis of the dynamic interactions among the variables in the post-sample period is conducted through Variance Decompositions (VDC) and Impulse Response Functions (IRF). Therefore, we proceed to check this via VDC and IRF.

The Variance Decomposition (VDC) will show the variation of percentage of forecast error of variable that explained by another variable in the short-run dynamic interaction. VDC and IRF were conducted based on VAR specification and we have chosen lag length 2 where it was full enough to measure error terms that are serially uncorrelated. The flow of variables direction is consistent with Abduh and Chowdury (2012) and Murumba (2012). Based on Table 6, the result shows the VDC at 12 – month and 24 – month time horizon. The result also indicates the existence of an interaction between the dependent variable with the explanatory variables. As we can notice from the Table 6, the variation of output forecast error variance in Real GDP contributed by its own variations where it is accounted for 21.13% for the 12 – month. The

innovation in explanatory variables such as TDIB, TFIB, TA and NPL were accounted for 5.25%, 66.52%, 0.74% and 6.34%. However, after 24 – months, RGDP reduces to 18.76% where it was due to its own variation. Followed by innovation in TDIB, TA where the fraction has increased slowly, namely, 7.16% and 1.37%. In addition, the variation in TFIB was huge where the fraction of TFIB has inclined to 60.84% after 24 –month time horizon. On the other hand, another major innovation was occurring in NPL where the fraction was predominantly increased to 11.86%.

Table 6. Result of Variance Decomposition Analysis

Variable	Period	Innovations in				
		LN RGDP	LN TDI B	LN TFI B	LN TAI B	LN NP LIB
LNR GDP	1	21.	5.2	66.	0.7	6.3
	2	135	507	525	445	441
	2	37	96	15	30	54
	4	18.763	7.1635	60.845	1.3719	11.86855
LNT DIB	1	2.8	34.	26.	4.0	32.
	2	626	371	035	418	688
	2	76	18	64	17	69
	4	3.1605	31.847	22.715	4.6213	37.654
LNT FIB	1	1.3	8.7	71.	2.1	15.
	2	749	480	970	814	725
	2	90	31	50	52	03
	4	1.9286	12.004	60.677	2.9130	22.476
LNT AIB	1	0.6	31.	38.	11.	17.
	2	590	756	317	812	454
	2	22	81	20	00	97
	4	1.3013	29.432	32.468	10.042	26.755
LNN PLIB	1	11.	20.	16.	11.	39.
	2	974	254	192	959	620
	2	20	23	45	05	07
	4	10.535	21.397	16.622	10.870	40.575
		01	22	39	33	06

Source: Author’s own

As shown in figure 2, we have identified several interesting relationships in the short -run and long - run. As seen from figure 2, the results of IRF is consistent with VDCs where RGDP response positively for a shock in TDIB and TFIB. Between 1- 3 months, TDIB increased gradually and become slow in the long-run (10 months). In addition, this result confirms the movement of TDIB is consistent with the Granger causality test. In the case of TFIB, it was positively slow during 1 – 3 months but increased gradually in the long-run.

Consistent with long - run equation, RGDP where respond positively stable towards shock in TA in the short-run and long-run. The same result was found for NPL where it is consistent with long – run equation where innovation in RGDP responds negatively during short-run and positively in the long- run.

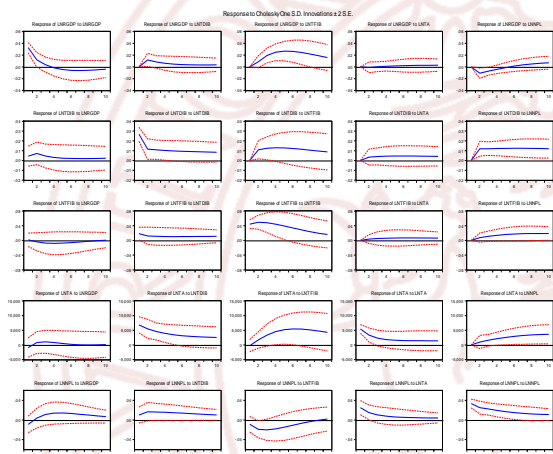


Figure 2. Result of Impulse Response Function (IRF)

Source: Author's own

IV. CONCLUSION AND POLICY RECOMMENDATIONS

This purpose of this study is to add value to the literature on the contribution of Islamic banking towards economic growth in Malaysia by looking at various diffusions of Islamic key performance indicators. Using cointegration methodology, the findings indicate that Islamic bank does contribute to the Malaysian economic growth in the long – run and short-run. This finding is supported by previous evidence where Islamic banking did contribute to the economic growth (Yusof and Bahlous, 2013; and Abduh and Chowdury, 2012). Hence, it is very clear that Islamic Banking and Finance (IBF) are experiencing marvellous growth around the world and also in Malaysia.

As identified by Ernst and Young (E&Y), World Islamic Banking Competitiveness Report (2012-2013) stated that Malaysia has emerged one of the six significantly important markets for IBF together with Saudi Arabia, Qatar, Bahrain, Indonesia, Turkey and the United Arab Emirates. Moreover, as reported by The Economist magazine, over a fifth of Malaysia's banking system was already Shariah – compliant and the ability to capture a larger slice of the global Sukuk or Islamic bond market in 2014. There are many factors contribute to such a remarkable achievement such as population where in Malaysia, over 60% of the population are Muslims, the role of government in promoting IBF, collaboration among banks, standard guidelines in regards rules and regulations pertaining to Shariah and many other factors.

In addition, as of November 2013, MIFC reported that the Islamic banking assets in Malaysia were already reached USD132 billion and it is also representing 13 percent of the global banking assets. Moreover, the role of Malaysian government has also stimulated further development of IBF and Prime Minister YAB Dato' Sri Mohd Najib Bin Tun Abdul Razak highlighted the benefits of the country's Islamic finance sector to the global financial community by touting Malaysia as the World's Islamic Finance Marketplace and Malaysia has also show intention to introduced Maqasid Al-Shariah Index which will take place very soon.

Therefore, it is very clear that the Islamic banking has been the lynchpin and key factor for Malaysia's successful transformation, especially in the banking industry. These are all credible and praiseworthy efforts but the Government must be wary that many issues which presently exist that obstruct the development of IBF in Malaysia need to be quickly addressed and dealt with so that there would be a greater contribution by Islamic banking towards Malaysian economic growth. Such issue would include the global regulatory reforms in terms of capital and liquidity, product innovation, macro-prudential measures, war for talents and global market condition.

However, there are a few limitations in this study where the numbers of variables are questionable. This is because there would more key performance indicators for Islamic that may have a significant impact that can be used in this study to obtain comprehensive results. In addition, the numbers of years covered in this study were less due to the limited data provided by Bank Negara Statistical reports.

Worth to mention, future researchers nevertheless still required in this broad area of IBF in Malaysia whereby other relevant variables and

more sophisticated statistical measures are applied. Apart from that, future research must concentrate on a comparable study among other countries to obtain a significant picture on how does Islamic bank would contribute to the economic growth. Moreover, future research should concentrate on pre and post crisis analysis in regards Islamic banking and economic growth.

REFERENCES

- Abduh, M., & Chowdhury, N. T. (2012). Does Islamic Banking Matter for Economic Growth in Bangladesh? *Journal of Islamic Economics, Banking and Finance*, 8 (3), 104-113.
- Abduh, M., & Omar, M. A. (2012). Islamic banking and economic growth: the Indonesian experience. *International Journal of Islamic and Middle Eastern Finance and Management*, 5(1), 35-47.
- Al-Oqool, M. A., Okab, R., & Bashayreh, M. (2014). Financial Islamic Banking Development and Economic Growth: A Case Study of Jordan. *International Journal of Economics and Finance; Vol. 6, No. 3*, 72-79.
- Bacha, O. I. (2004). Dual Banking Systems and Interest Rate Risk for Islamic Banks. *MPRA Paper 12763, University Library of Munich, Germany, revised Mar 2004*.
- Demirguc, K., Feyen, A., & Levine, E. R. (2012). The Evolving Importance of Banks and Securities Markets. *National Bureau of Economic Research Working Paper No. 18004*.
- Furqani, H., & Mulyany, R. (2009). Islamic Banking and Economic Growth: Empirical Evidence from Malaysia. *Journal of Economics Cooperation and Development*, 59-74.
- Gheeraert, L. (2014). Does Islamic finance spur banking sector development? *Journal of Economic Behavior & Organization*, 1-17.
- Hassan, M. K., & Bashir, A.-H. M. (2003). Determinants of Islamic Banking Profitability. *10th ERF Annual Conference, Morocco*, 16-18.
- Hassan, M. K., Sanchez, B., & Yu, J.-S. (2011). Financial Development and Economic Growth in the Organization of Islamic Conference Countries. *Journal of King Abdulaziz University: Islamic Economics, Vol. 24 No. 1*, 145-172.
- Hassanudin.M.T.T, Tan.S.E, & Vaidik.S. (2013). Export Led Growth Hypothesis: Econometric Evidence from Malaysia. *Journal of International Business and Economy. Vo.14 (2).*, 95-112.
- Hermes, N., & Lensink, R. (2003). Foreign Direct Investment, Financial Development and Economic Growth. *The Journal of Development Studies*, 142-163.
- Iqbal, Z. (1997). Islamic Financial Systems, Finance and Development. 42-45.
- Johnson, K. (2013). The Role of Islamic Banking in Economic Growth. *CMC Senior Theses. Paper 642*.
- Majid, S. A., & Kassim, S. (2010). Islamic finance and economic growth: The Malaysian experience. *Paper presented at Kuala Lumpur Islamic Finance Forum, Kuala Lumpur, 2-5 August 2010*.
- Manap, T. A., Abduh, M., & Omar, M. A. (2012). Islamic Banking-Growth Nexus: Evidence from Toda-Yamamoto and Bootstrap Granger Causality Test. *Journal of Islamic Finance, Vol. 1 No. 1*, 59-66.
- Maximilian J.B. Hall, H. A., & Muljawan, D. (2000). A Capital Adequacy Framework for Islamic Banks: The Need to Reconcile Depositors' Risk Aversion with Managers' Risk Taking. *Proceedings of the Fifth Harvard University Forum on Islamic Finance: Islamic Finance: Dynamics and Development*, 21-42.
- Rajabi, E., & Muhammad, J. (2014). The Stock Markets, Banks and Growth Nexus: Asian Islamic Countries. *Economic Notes Vol. 43, No. 2-2014: Review of Banking, Finance and Monetary Economics*, 137-165.
- Volker, N. (2006). Islamic Economic system – A Threat to Development? *MPRA Paper No. 6449*.

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