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

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**Abstract**

Islamic banking and finance has 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 minimum of 11 percent growth in Malaysia economic development and indirectly contributes to the global agenda of developing sustainable growth. Thus, this paper aim 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 total deposit, total financing and total assets of Islamic banking have positive relationship where non – performing loan is found to have 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 bidirectional causality relationship between economic growth and total deposit of Islamic banks. In addition, bidirectional relationship is also exists between non-performing loan and total deposit of Islamic banks. However, 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 contributor 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

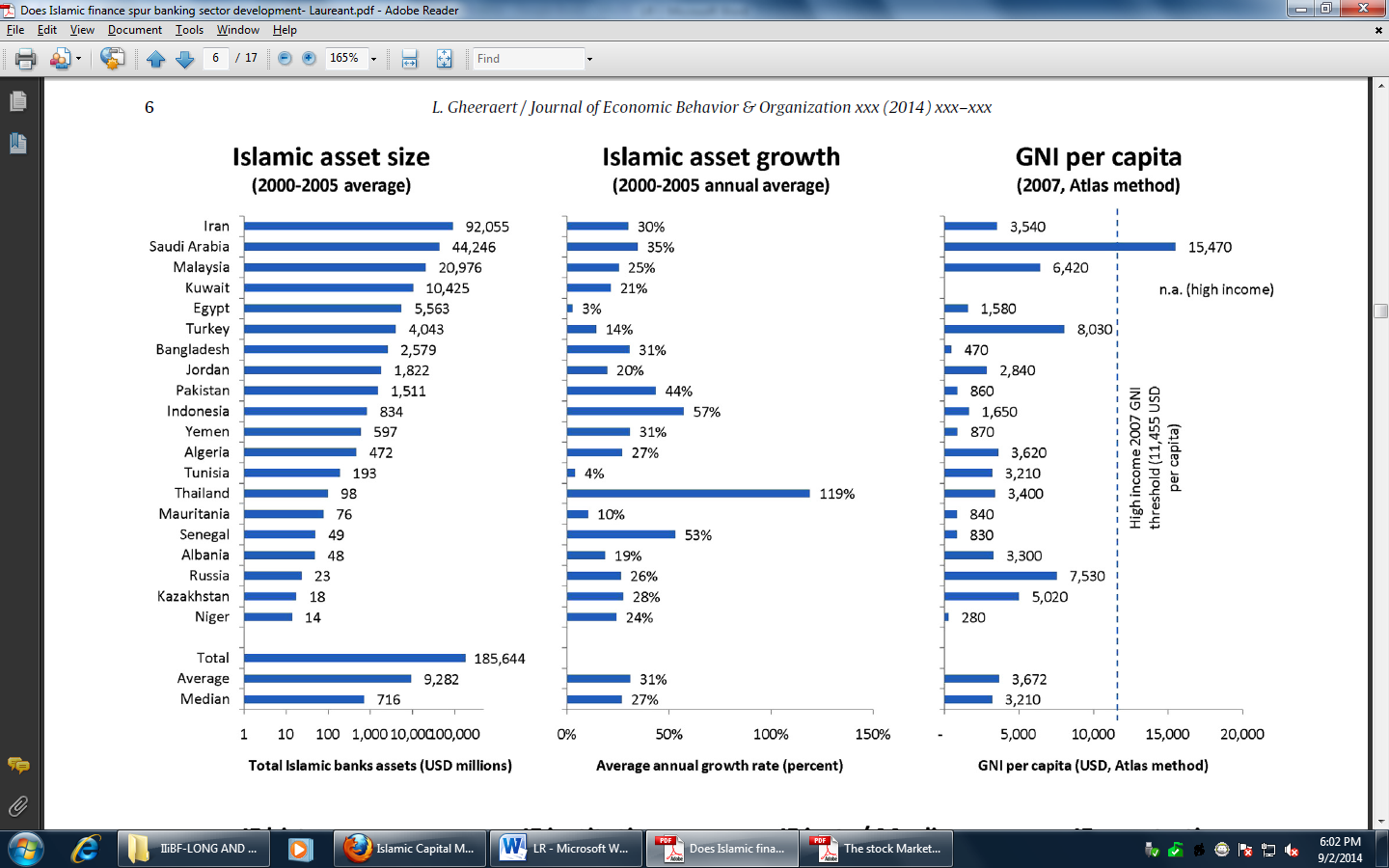
**JEL Classifications**: C1, C5, 01, Z10

**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 observes 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 realizes.

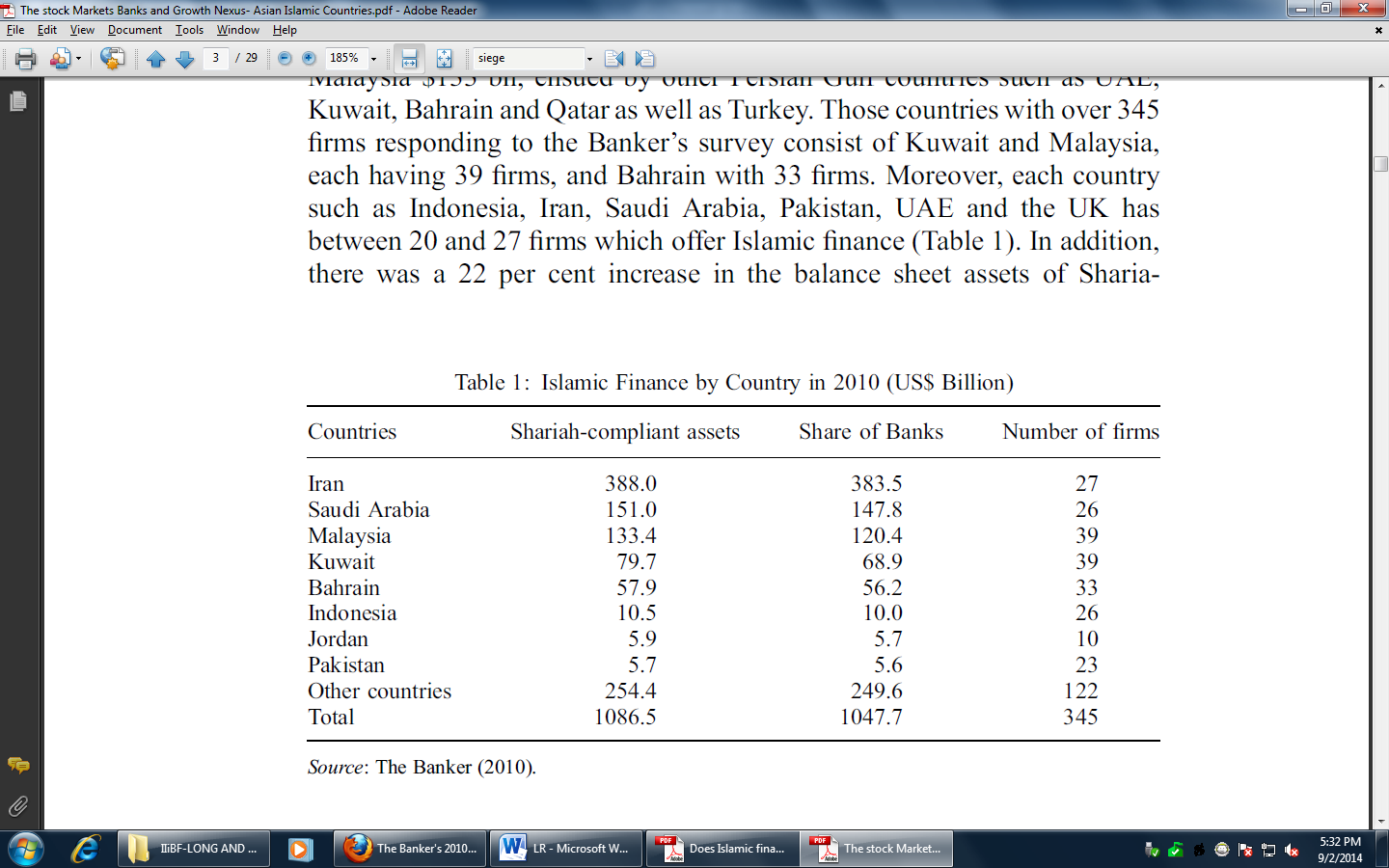
Although with the slowed global economy and the siege of conventional banking in western countries, Islamic finance continues to flourish with robust growth. Gheeraert (2014) study reveals that Islamic asset size and growth from 2000 to 2005 annual average by countries as below (Graph1);

**Graph 1: Islamic Finance Summary Statistics**



Source: World Development Indicators (World Bank, 2009)

From the graph above, it indicate 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 compare to the above, Table 1 below shows the Islamic finance Shariah-compliant assets, 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 compare to current market position.

Source: The Banker (2010)

According to Rajabi & Muhammad (2014), 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.

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 wellbeing and soundness of banking structure to make sure the public confidence are preserves. 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 banks performance in realizing greater investment experience and their turnover.

Generally, well-developed domestic financial sectors system such as the system own 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.

**LITERATURE REVIEW**

Economic development is usually seen as a process of creating prosperity for a country through the mobilization of human, physical, capital, financial, and natural resources to generate marketable good and services (American Economic Development Council, 1984). Financial intermediation plays and 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 exacted a high cost estimated to be greater than ten percent of gross domestic product (GDP)[[1]](#footnote-1). Extant literature proves that Islamic banking and finance institutions manage to escape without being severely hurt by global financial crisis[[2]](#footnote-2). To study among the reasons, contribute to this, Monzer Kahf (2005) discover that developmental characteristics of Islamic modes of financing can be categorized in few manners. Among them, Monzer Kahf (2005) discovered that the essential characteristics are their direct and un-detachable 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 researchers[[3]](#footnote-3) that Islamic banking system is more stable compared to conventional banking system. This is mainly because of the fact that Islamic banks operates 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 practiced (Maximilian J.B. Hall & Muljawan, 2000). Expert found that conventional banking 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 religious base. In Kuwait, financing focused more on the petroleum sector and real estate investment while in 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, extant literature indicate that there are only 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 positive significant relationship both in short run and long run with bi-directional relationship. Later, (Manap, Abduh, & Omar, 2012) further investigate the causal relationship between Islamic financial development and economic growth in context of Malaysia by employing the Toda and Yamamoto Wald test. The results indicate that Islamic financing granger cause economic growth but not vice versa which is consistent to Schumpeter’s view of supply-leading hypothesis where it is believe 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 exist between real GDP and total finance of Jordanian Islamic banks, which reflect positive contribution of Jordanian Islamic banks to the economic development. However, their short run causality indicates as no significant relationship between these two (financial Islamic banking development and economic growth).

Surprisingly, different finding investigated by (Furqani & Mulyany, 2009) where this study found that only in short run-the fixed investment granger cause Islamic bank. In the long run, it possess bidirectional relationship between 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 growing 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 are 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 battery of time series econometric techniques to attain bottomless analysis.

**METHODOLOGY**

The empirical data and analyses in this paper cover a 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), total deposit of Islamic bank, total financing of Islamic bank, total assets of Islamic bank and nonperforming loan of 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;



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

 (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

= Error Terms

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

 -

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

Firstly, we utilize the most commonly 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 provide information in regards to the variables association in the long run, particularly measures of 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 restrictedVector auto regression (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 to see in how many directions the variables will have 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 analysis will shows 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.

**EMPIRICAL FINDINGS**

**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 trend and intercept Hassanudin et.al (2013). In addition, Akaike Information Criterion (AIC) have been use to determine the optimal lags after testing for first and higher order serial correlation in the residuals. The investigation using the ADF and PP are 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 |
| LNRGDP | -1.457188 | -1.454704 | -4.950391\* | -5.039506\* |
| LNTA | -3.183900 | -3.205909 | -6.270959\* | -6.630295\* |
| LNTFIB | -2.366603 | -2.004564 | -3.487276\*\*\* | -3.371155\*\*\* |
| LNTDIB | -2.348313 | -1.964474 | -5.076760\* | -18.97324\* |
| LNNPL | -2.092265 | -1.216636 | -1.052821\* | -5.248880\* |

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%.

**Cointegration Test**

A set of variables will be cointegrated if a linear combination among 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 Islamic bank and Non – performing loan of Islamic bank.

**Table 3: Johansen-Juselius Cointegration Tests**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Hypothesized | Trace | Max-Eigen | Critical Values (5%) | |
| No. of CE(s) | Statistic | Statistic | Trace | Max-Eigen |
| r = 0 | 78.3385\*\* | 37.3577\*\* | 69.8188 | 33.8768 |
| r ≤ 1 | 40.9807 | 20.4142 | 47.8561 | 20.4142 |
| r ≤ 2 | 20.5665 | 10.7382 | 29.7970 | 10.7382 |
| r ≤ 3 | 9.82828 | 8.08198 | 15.4947 | 8.08198 |

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)

**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 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 | Dependent Variable | | | |
| Variables | 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 |  |  | |
|  | = 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 is represent Durbin Watson Test, LM is 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

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

LnRGDP *t-1* = - 44.627 – 0.5228LNTDIB *t-1* – 0.1217 LNTFIB *t-1* – 1.2606LNTAIB *t-1* + 0.4720LNNPLIB *t-1*

Or

LnRGDP *t-1* = 44.627 + 0.5228LNTDIB *t-1* + 0.1217 LNTFIB *t-1* + 1.2606LNTAIB *t-1* – 0.4720LNNPLIB *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 includes 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 real sector. For example, since 2006, Malaysian government has implemented various strategic positioning and international integration global systems where it can let the Malaysia to be a strategic hub for Islamic finance which may further enhance Malaysia economic growth and development. This is consistent with Furqani and Mulyany (2009) where they have found that there is strong evidence of bidirectional 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 utilized quarterly time series data from 2004 till 2011 and employed various econometric techniques. The results shows 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 represent 23.8 percent of 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 take 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 public especially from non-Muslim customer (MIFC, 2013). As the total asset size increases, it’s 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 utilized 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 speaking, NPL is one of the most important factors where causing reluctance for the banks to provide credit assistance to the borrower. The higher the NPL, it requires bank to raise 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 literatures have proven that NPL for Islamic bank are much lower in compared with conventional bank as Islamic bank practices is 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 with past studies in regards Malaysian Islamic bank relationship with economic growth by Ryu et.al (2012), Rahim and Zakaria (2013) where they suggests 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 have 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.

**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 -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 is summarised in Table 5.

**Table 5: Granger Causality Results Based on VECM**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Independent Variables | | | |  |  |
| Dependent | -statistics of lagged 1st differenced term  [p-value] | | | | | ECTt-1  coefficient |
| Variable | ΔLNRGDP | ΔLNTDIB | ΔLNTFIB | ΔLNTAIB | ΔLNNPLIB | (t-ratio) |
| ΔLRGDP | -- | 0.2475  [0.6188]\* | 1.5835  [0.2082] | 2.9479\*  [0.0860] | 6.9410\*\*  [0.0084] | -0.9348\*\*  (-4.3403) |
| ΔLNTDIB | 2.9882\*  [0.0839] | -- | 11.2954\*\*  [0.0008] | 2.5186  [0.1125] | 12.4118\*\*\*  [0.1125] | 0.3199\*\*  (1.8694) |
| ΔLNTFIB | 0.1063  [0.7443] | 0.8490  [0.3568] | -- | 0.1265  [0.7221] | 1.6302  [0.2017] | 0.2406  (0.7781) |
| ΔLNTAIB | 0.7981  [0.3717] | 0.3362  [0.5620] | 2.4702  [0.1160] | -- | 0.7661  [0.3814] | 0.9191  (1.5642) |
| ΔLNNPLIB | 1.0092  [0.3151] | 4.5494  [0.0329]\*\* | 3.6038  [0.0576]\* | 0.4174  [0.5182] | -- | 0.6744  (1.8462) |

**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 squared brackets […] represent as p-value.

**Figure 1: Causal Channel from Granger Causality Tests**

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As shown in the 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, bidirectional relationship is also exist between LNNPLIB and LNTDIB. Therefore, we can reject null hypothesis and it is significant at 5 percent. In addition, 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.

**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 shows the variation of percentage of forecast error of variable that explained by another variables 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 is also indicates the existence of interaction among 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 have increase 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**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variance Decomposition of** | **Period** | **Innovations in** | | | | |
| **LNRGDP** | **LNTDIB** | **LNTFIB** | **LNTAIB** | **LNNPLIB** |
| **LNRGDP** | |  | | --- | | 12 | | 24 | | |  | | --- | | 21.13537 | | 18.76352 | | |  | | --- | | 5.250796 | | 7.163523 | | |  | | --- | | 66.52515 | | 60.84513 | | |  | | --- | | 0.744530 | | 1.371919 | | |  | | --- | | 6.344154 | | 11.85591 | |  | |
| **LNTDIB** | |  | | --- | | 12 | | 24 | | |  | | --- | | 2.862676 | | 3.160593 | | |  | | --- | | 34.37118 | | 31.84781 | | |  | | --- | | 26.03564 | | 22.71569 | | |  | | --- | | 4.041817 | | 4.621363 | | |  | | --- | | 32.68869 | | 37.65454 | |  | |
| **LNTFIB** | |  | | --- | | 12 | | 24 | | |  | | --- | | 1.374990 | | 1.928610 | | |  | | --- | | 8.748031 | | 12.00442 | | |  | | --- | | 71.97050 | | 60.67757 | | |  | | --- | | 2.181452 | | 2.913074 | | |  | | --- | | 15.72503 | | 22.47633 | |  | |
| **LNTAIB** | |  | | --- | | 12 | | 24 | | |  | | --- | | 0.659022 | | 1.301334 | | |  | | --- | | 31.75681 | | 29.43245 | | |  | | --- | | 38.31720 | | 32.46804 | | |  | | --- | | 11.81200 | | 10.04296 | | |  | | --- | | 17.45497 | | 26.75521 | |  | |
| **LNNPLIB** | |  | | --- | | 12 | | 24 | | |  | | --- | | 11.97420 | | 10.53501 | | |  | | --- | | 20.25423 | | 21.39722 | | |  | | --- | | 16.19245 | | 16.62239 | | |  | | --- | | 11.95905 | | 10.87033 | | |  | | --- | | 39.62007 | | 40.57506 | |  | |

As shown in figure 2, we have identified several interesting relationship 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 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. 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)**



**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 indicates 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 Earnst 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 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 factor contribute to such a remarkable achievement such as population where in Malaysia, over 60% of the population are Muslims, 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 Market place 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 creditable and praise-worthy 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 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 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 researches 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 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.

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1. See Goldstein and Turner (1996) for these banking crises discussion [↑](#footnote-ref-1)
2. Studies by (Smolo and Mirakhor, 2010) and Ahmad (2010) [↑](#footnote-ref-2)
3. See (Kia and Darrat, 2003) and (Samad, 2004) [↑](#footnote-ref-3)