Determinants of Islamic Bank Financing in Malaysia: An Empirical Study using Linear and Nonlinear ARDL Model

(Penentu Pembiayaan Bank Islam di Malaysia: Kajian Empirikal Menggunakan Model ARDL Linear dan Bukan Linear)

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ABSTRACT

This paper examines the dynamic relationship between the Islamic bank financing and selected macroeconomic variables in Malaysia using monthly data covering the period of January 2007 to June 2016. Utilizing both linear and non-linear ARDL method, the results show that there is no long-run relationship among the variables. The results also show no indication of both long-run and short-run asymmetric effects from industrial production index and rate of financing towards Islamic bank financing. In addition, Granger-causality test also indicates no causality running from these factors to Islamic bank financing. Therefore, we conclude that to some extent the Islamic bank financing is stable and resilient. Muslims customers continue to support the Islamic banking and are not profit-motivated by the substitution effect as Malaysia has dual banking system. The banking system which is based on profit sharing is able to cushion the Islamic financial system from interest rate and economic fluctuation thus reducing the risk of financial volatility.

Keywords: Islamic bank financing; Nonlinear ARDL (NARDL); Asymmetric cointegration

ABSTRAK

Kertas ini mengkaji hubungan dinamik antara pembiayaan bank Islam dengan pemboleh ubah makroekonomi terpilih di Malaysia menggunakan data bulanan yang meliputi tempoh Januari 2007 hingga Jun 2016. Dengan menggunakan kaedah ARDL linear dan bukan linear, keputusan kajian menunjukkan bahawa tidak ada hubungan jangka panjang antara semua pemboleh ubah. Keputusan kajian juga menunjukkan bahawa tidak wujud kedua-dua kesan asimetri jangka panjang dan jangka pendek daripada indeks pengeluaran perindustrian dan kadar pembiayaan terhadap pembiayaan bank Islam. Di samping itu, ujian penyebab Granger juga menunjukkan kedua-dua pemboleh ubah makroekonomi tersebut tidak mempengaruhi pembiayaan bank Islam. Penemuan kajian ini menunjukkan dalam keadaan tertentu, pembiayaan bank Islam adalah stabil dan berdaya tahan. Pelanggan yang beragama Islam terus menyokong perbankan Islam dan tidak bermotifkan keuntungan walaupun Malaysia mempunyai sistem dwi perbankan. Sistem perbankan yang berasaskan perkongsian keuntungan mampu menstabilkan sistem kewangan Islam daripada turun naik kadar faedah dan ekonomi sehingga mengurangkan risiko kemeruapan kewangan.

Kata kunci: Pembiayaan bank Islam; ARDL bukan linear; kointegrasi asimetri

INTRODUCTION

Islamic finance industry has shown rapid growth at 10-15% annual rates across all segments of the Islamic financial service industry. It has developed across the globe in the past decade. Islamic finance has expanded not only in Asia and Gulf region but also to Africa and Europe. According to the Malaysia International Islamic Financial Centre (MIFC), the total assets of the Islamic finance industry are forecasted to exceed USD2.4 trillion in 2015 and continue to grow to surpass USD 4 trillion by 2020. Islamic banking (81% of total Islamic financial assets) and *sukuk* (14% of total Islamic financial assets) segments continue to dominate the industry.

In Malaysia, the practice of the dual banking system allows the Islamic banks to operate alongside with the conventional banks. As a result, the Islamic banks face competition with the conventional banks in generating the deposit as well as the sources of financing. For example, in terms of financing, the share of Islamic bank as a percentage of the total loan disbursed in the banking market has increased significantly from only 5% in year

2000, to 10% (2005), 18% (2010), and 27% (2015). In contrast, the share of financing from the conventional bank has dropped from 95% in year 2000 to 90% (2005), 81% (2010), and 73% (2015). The massive drop in the share of the conventional loans show that the customers have an alternative sources of financing in which they do not only depend on the commercial banks for their financing. Therefore, study relating to the factors that influence the Islamic bank financing is inportant for bankers and also policy makers in further understanding about the behavior of borrower, who might be concerned to the macroeconomic environment in deciding their borrowing.

Table 1 shows the total assets, financing and deposit of the Islamic banking system in Malaysia from 2007 to 2015. From the table, these three variables have increased tremendously from 2007 to 2015. For example, the Islamic banking total assets have increased from RM152.93 billion in 2007 to RM535.35 billion in 2015, an increase of 250% or at 28% per annum. Interestingly, the

Islamic bank financing has recorded the highest growth at 335% or at 37% per annum, while the total deposit has increased at 230% or at 26% per annum from RM122 billion in 2007 to RM402.7 billion in 2015.

Figure 1 illustrates the movement of Islamic bank financing (IBF) and rate of financing (RoF) over the period of 2007 to 2016. It is clearly seen that the Islamic bank financing has been growing steadily over the period. However, the movement of RoF is up and down during the same period. For example, in January 2009, rate of financing reached the highest at 7.05% before there was a dramatic decline to reach at the lowest rate at 4.96% in April 2014. In addition, it seems that there is no clear relationship between these two variables. This is because although the RoF went up or down, the Islamic bank financing has continued to increase over the study period. Therefore, it is essential to study the asymmetric effects via creating a positive partial sum (an increase) and negative partial sum (a decrease) rate of Islamic financing. This is crucial for the Islamic bankers in understanding the behavior of the borrowers whether they are concerned or not to the rate of financing changes.

The purpose of this paper is to examine the role of macroeconomic variables namely Industrial Production Index (IPI) and the rate of financing (RoF) upon the Islamic bank financing. The contributions of this paper have two aspects. First, we extend the existing literature by employing both linear and non-linear ARDL model as proposed by Shin et al. (2011) in examining the determinants of Islamic bank financing in Malaysia. This method uses positive and negative partial sums decompositions which enable for detection of asymmetric effects both in the short- and long-run. This framework is most appropriate since it permits potential short-run and long-run asymmetries in the Islamic bank financing and macroeconomic variables relations. In particular, in
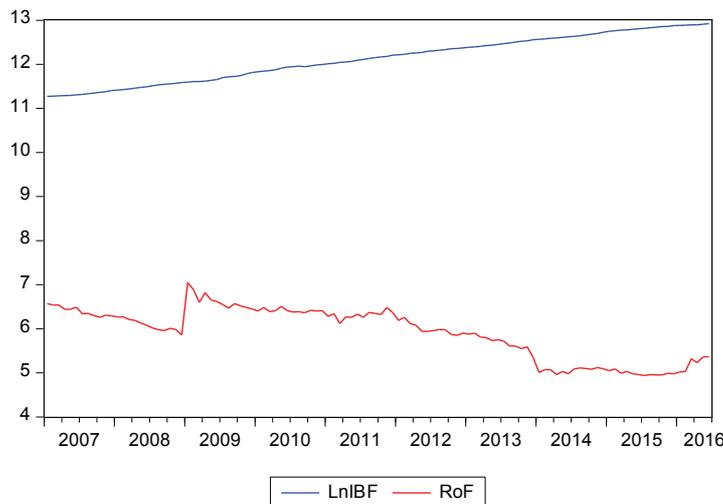
TABLE 1. Malaysian Islamic Banking System Total Assets, Financing and Deposit (RM million)

	Total Asset	Total Financing	Total Deposit
2007	152,931.4	89,867.7	121,998.0
2008	188,099.4	107,721.8	154,701.9
2009	228,550.4	134,973.5	188,839.4
2010	262,382.5	162,081.6	216,952.5
2011	328,649.3	200,295.8	266,387.1
2012	375,954.0	236,623.9	306,233.0
2013	426,641.5	283,957.2	348,946.5
2014	477,055.7	336,128.1	400,680.0
2015	535,349.7	390,851.5	402,660.7

Source: Monthly Statistical Bulletin of Bank Negara Malaysia (Various Issues)

FIGURE 1. Islamic Bank Financing (in natural logarithm) and Rate of Financing (%) between 2007-2016
Source: Monthly Statistical Bulletin of Bank Negara Malaysia (Various Issues)

the presence of nonlinearities, the response of the Islamic bank financing to positive shocks in the economic growth might be different from the response to negative shocks. The Industrial Production Index and rate of financing are possible factors for causing asymmetric impacts on the Islamic bank financing due to the fact that both are sluggish variables, and therefore the response of the borrowers is expected to be different decending on the business cycle condition. For example, during a good economic condition, the borrowers in general have a good credit profile, and therefore bank will expand their credit. However, during a bad economic condition, bank will downsize their loan due to the higher credit risk. Thus, given this reason we believed that the impact of economic growth (proxy by industrial production index) on Islamic bank financing is asymmetric. Similarly, rate of financing (RoF) is also expected to have asymmetric effect on bank financing due to the fact that it reflects the cost of financing. For example, higher RoF indicates too costly in making the financing, and therefore the borrowers will slow down their loan application. For the case of Malaysia, previous studies have assumed that the impact of interest rates on bank financing to be symmetric (linear). For examples, Karim et al. (2011) used bank level data set, Ibrahim (2005) employed sectoral data, and Karim et al. (2006) made use of sectoral bank lending. Thus, based on our knowledge, this study is something new and can enrich the existing literature on the subject matter and for the Malaysian Islamic bank financing in particular.

The rest of the paper is structured as follows: the next section presents the literature review, followed by empirical model and data employed, while the fourth section provides the empirical results. Finally, the last section presents conclusions and implications.

THEORY AND LITERATURE REVIEW

The determinants of bank loan supply (bank financing) can be traced back using a simple model of a profit-maximizing bank as developed by Stein (1998) and Ehrmann et al. (2003). This model has used the bank balance sheet identity in constructing the determinants of the bank loan supply[1]. According to the model, the main factors that affect the individual bank loan supply (financing) are aggregate output, inflation, interest rates, and bank-specific characteristics such as bank size, liquidity, and capitalization. However, in our present study, the main focus is to examine the role of domestic income (proxied by Industrial Production Index) and rate of financing on Islamic bank financing. Therefore, the selection of the two explanatory variables is consistent with the previous theory which indicates that both macroeconomic variables namely national income and interest rates are important factors in influencing the bank loan supply (financing).

The previous empirical studies relating to the determinants of bank loan are well-documented in the literature, particularly for the conventional banking. Generally the main factors that affect the bank loan supply are macroeconomic and microeconomic factors. Example of macroeconomic factors are monetary policy (money supply and interest rates), economic growth, inflation rate, exchange rate, and stock market index. For example, studies by Pruteanu-Podpiera (2007) in Czech banks found that there is a strong positive effect of GDP growth on the growth rate of loans, but the impact of interest rates and inflation on loans are not statistically significant. Another study by Du (2011) found that the current economic growth rate and accelerated industrialization are significant factors in stimulating the bank loan in China. In African countries, Mbutor (2010) concludes that exchange rate volatility and equity price fluctuation affect the behavior of the banks in Nigeria. Kim and Mareno (1994) found that bank lending behavior in Japan is significantly influenced by the changes in stock prices. In Malaysia, using VAR technique, Ibrahim (2006) argued that bank loan activities in Malaysia are significantly influenced by real economic activity and stock prices. Abdul Karim et al. (2007) noted that bank lending is negatively influenced by interest rates, and also found that monetary policy tightening in Malaysia reduces bank lending to all sectors, but some sectors such as manufacturing, agriculture, and mining are more affected.

At microeconomic level, most of the empirical studies have examined the effects of bank specific variables on banks' loan supply. Most of the microeconomics variables that have been considered are bank size, bank capitalization, collateral security, capital ratio, provision for losses, liquidity and asset quality. For example, Chernykh dan Theodossiou (2011) found that in Russia, bank lending is positively affected by bank's size, bank's capitalization, and the volume of provision for losses make by the bank. In addition, Karim et al. (2011) show that bank liquidity and bank capitalization are statistically significant in influencing the banks loan supply in Malaysia. Cowling and Weshead (1996) examine 272 small firms in UK and note that bank lending by local branches and regional are influenced by collateral by bank, after controlling for size of the firm requesting the loan.

Both macroeconomic and microeconomic variables, in some cases have been used in estimating the bank loan supply, in particular for the conventional banking. For example, Gambacorta and Mistrulli (2004) argued that bank capital influences the way bank lending react to GDP and monetary policy shocks. In contrast, Gunji and Yuan (2006) show that profitability of banks lessens the impact of monetary policy on bank lending. Another study by Mian (2006) revealed that greater cultural and geographical distance of foreign bank's headquarters adversely affect lending of foreign banks.

However, there are limited numbers of studies that have investigated the behavior of Islamic bank financing. Most of the issues relating to the Islamic banks are determinants of Islamic bank profitability and whether Islamic banks are stable or not in response to the economic environment. Generally, there have been mixed findings documented on the issue of Islamic financial system stability. This topic has been attracting scholars and practitioners in many Islamic forums and conferences worldwide. Islamic financial system is argued to be more stable against the financial crisis than conventional financial system (Hasan & Dridi 2010; Abduh et al. 2011). However, Kassim and Majid (2010) and Kaleem and Isa (2006) found that both Islamic and conventional banks systems are vulnerable to financial shocks. Moreover, Abedifar et al. (2013) found that there is no significant difference in the stability of Islamic banks and conventional banks using a sample of 553 banks from 24 countries between 1999 and 2009. In addition, Čihák and Hesse (2010) found that small Islamic banks are stronger than small commercial banks based on their financial stability and large commercial banks are seen to be financially robust than large Islamic banks. On the other hand, Shahid and Abbas (2012) provide evidence that big Islamic banks are stronger than large conventional banks. In terms of Islamic bank financing, there are relatively limited number of studies documented as most of previous studies focus on the Islamic banking profitability, efficiency and liquidity. Another study by Adebola et al. (2011) shows that the conventional interest rate significantly affects Islamic bank financing in Malaysia, which indicated that Islamic banks financing is complimentary rather than substitute to conventional bank financing.

Given this backdrop, this present study investigates the role of economic activity (proxied by industrial production index) and the rate of financing on Islamic bank financing. As argued before, the effects of IPI and RoF on Islamic bank financing are asymmetric, therefore we use non-linear ARDL for further investigation on the issues.

EMPIRICAL MODEL AND DATA

The data used in this study are monthly, covering the period from January 2007 to June 2016, and are collected from the Monthly Statistical Bulletin of Bank Negara Malaysia. The variables used are Islamic bank financing (IBF), rate of financing (RoF) and Industrial Production Index (IPI) as a proxy for GDP. With the exception of rate of financing, all variables are expressed in logarithmic form. In this study, we apply both linear (Pesaran et al. 2001) and non-linear ARDL (NARDL) cointegration (Shin et al. 2011) methodology. The general form of linear unrestricted error-correction model in the ARDL is given below:

$$\Delta y_t = \alpha + \varphi y_{t-1} + \delta x_{t-1} + \sum_{k=1}^{p-1} \lambda_k \Delta y_{t-k} + \sum_{k=1}^{q-1} \beta_k \Delta x_{t-k} + \varepsilon_t \quad (1)$$

where Δ is the first different operator, y_t is the dependent variable, α refers to an intercept, x_t is a $n \times 1$ vector of regressors, φ and δ denotes the long run coefficients, λ and β are the short-run coefficients, p and q are the lag orders of the variables and ε is the error term. The null hypothesis of no cointegration is $[\varphi = \delta = 0]$ against the alternative of cointegration is $[\varphi \neq \delta \neq 0]$. If the computed F-statistic is above the upper bound critical value as proposed by Pesaran et al. (2001), the null hypothesis is rejected (exist cointegration). On the other hand, if the test statistic is below the lower bound, thus the null hypothesis is not rejected (no cointegration). However, if the test statistic is within the lower and upper bounds, there exists an inconclusive result. This linear ARDL only captures the symmetric effects of exogenous variables on the dependent variables. Katrakilidis and Trachanas (2012) argued that ignoring the intrinsic nonlinearities may lead to misleading inference.

Thus, following Shin et al. (2011), NARDL is also employed. NARDL utilizes both positive and negative partial sum decompositions, allowing for the detection of asymmetric effects both in the long- and the short-run (Katrakilidis and Trachanas, 2012). According to Granger and Yoon (2002), two time series have hidden cointegration if their positive and negative components are cointegrated with each other. Nusair (2016) indicates that the NARDL model has greater flexibility as it yields valid results regardless of whether the variables are I(0), I(1) or both.

The NARDL model is built as follows:

$$y_t = \varphi^+ x_t^+ + \varphi^- x_t^- + \varepsilon_t \quad (2)$$

where φ^+ and φ^- are the asymmetric long-run parameters and x_t is the vector of exogenous variables of:

$$x_t = x_0 + x_j^+ + x_j^- \quad (3)$$

where x^+ and x^- are partial sum process of positive and negatives changes in x_t and are decomposed as follows:

$$x_j^+ = \sum_{k=1}^{j} \Delta x_k^+ = \sum_{k=1}^{j} \max(\Delta x_k, 0) \quad (4)$$

$$x_j^- = \sum_{k=1}^{j} \Delta x_k^- = \sum_{k=1}^{j} \min(\Delta x_k, 0) \quad (5)$$

Combining Equation (1) and Equation (2), the nonlinear model of ARDL in unrestricted asymmetric error correction model is as follows:

$$\begin{aligned}
\Delta \ln IBF_t = {} & \alpha + \delta_1 \ln IBF_{t-1} + \phi_1^+ \ln IPI_{t-1}^+ + \phi_1^+ \ln IPI_{t-1}^- \\
& + \phi_2^+ RF_{t-1}^+ + \phi_2^+ RF_{t-1}^- \\
& + \delta_3 RF_{t-1} + \sum_{i=1}^{p-1} \phi_i \Delta \ln IBF_{t-1} \\
& + \sum_{i=0}^{q} \mu_{1,i}^+ \Delta \ln IPI_{t-i}^+ + \sum_{i=0}^{q} \mu_{1,i_i}^- \Delta \ln IPI_{t-i}^- \\
& + \sum_{i=0}^{q} \varphi_{1,i}^+ \Delta RF_{t-i}^+ + \sum_{i=0}^{q} \mu_{1,i}^- \Delta RF_{t-i}^- \\
& + \varepsilon_t \quad (6)
\end{aligned}$$

where ln IPI_t^+, ln IPI_t^-, RF_t^+, RF_t^- are partial sums of positive and negatives changes in lnIPI and RoF respectively. Testing for cointegration is carried out using the same step of ARDL that coefficients of the lagged level variables are jointly equal to zero. Testing for the long-run symmetry is carried out by restricting $\phi^+ = \phi^-$ while testing for the short-run asymmetry is carried out by restricting (i). $\mu_i^+ = \mu_i^-$ (ii). $\varphi_i^+ = \varphi_i^-$ using Wald test.

EMPIRICAL RESULTS

DESCRIPTIVE STATISTICS AND CORRELATION

Table 2 provides the descriptive statistics (the variables in first differencing) which consists of mean, maximum, minimum, standard deviations, skewness, kurtosis and Jarque-Bera. The results show that only Islamic bank financing recorded positive average monthly changes at 0.0145% per month. Both industrial production index and rate of Islamic bank financing have negative average monthly changes at –0.0006% and –0.0106% respectively. In terms of standard deviation, the rate of Islamic bank financing has shown greater volatility reflected by its standard deviation at 0.1451% followed by Islamic bank financing and industrial production index.

TABLE 2. Descriptive Statistics

	ΔIBF	ΔIPI	ΔRoF
Mean	0.014592	–0.000605	–0.010619
Median	0.013698	0.001961	–0.020000
Maximum	0.040565	0.141713	1.190000
Minimum	–0.009165	–0.232670	–0.340000
Std. Dev.	0.007508	0.052771	0.145149
Skewness	0.781060	–0.435706	4.935288
Kurtosis	5.313054	5.715072	42.99384
Jarque-Bera	36.67997	38.28335	7989.738
Probability	0.000000	0.000000	0.000000

In order to highlight the short-run relations among the variables, the standard correlation coefficients are presented in Table 3. Among the variables, Islamic bank financing and industrial production index recorded the highest correlation with positive value. Interestingly, the Islamic bank financing and rate of Islamic bank financing has negative value of correlation at –0.19.

TABLE 3. Correlation Coefficients

	ΔIBF	ΔIPI	ΔRoF
ΔIBF	1		
ΔIPI	0.26	1	
ΔRoF	–0.187	–0.108	1

ARDL COINTEGRATION TEST

One of the requirements in the ARDL procedure is that there must be no $I(2)$ variables involved. Therefore, to test the integration properties of the variables, we employ both the ADF and PP unit root tests. Table 4 shows the results of these tests. In the tests, both constant and trend terms are included. The results of both ADF and PP unit root tests suggest that all variables are integrated of order 1.

TABLE 4. ADF and PP Unit Root Tests

	ADF		PP	
Variable	Level	First Difference	Level	First Difference
IBF	–0.09	–8.69 ***	–0.53	–8.79 ***
IPI	–2.42	–15.45***	–2.33	–17.01***
RoF	–2.47	–13.01***	–2.27	–13.06***

Note: *** Significant at 1%

Table 5 provides both linear and non-linear ARDL test. The results provide evidence of no long-run relationship among the Islamic bank financing, industrial production index and rate of Islamic bank financing in both models.

TABLE 5. ARDL Cointegration Results

Dependent Variable: ΔlnIBF	F-Statistics	95% lower bound	95% upper bound	Conclusion
Linear ARDL	3.78	3.79	4.85	No cointegration
NARDL	1.35	2.86	4.01	No cointegration

Notes: The relevant critical value bounds are obtained from Pesaran et al. (2001).

In order to select the final NARDL specification, we followed the general-to-specific approach by dropping all insignificant regressors. Table 6 shows the dynamic asymmetric estimation of Islamic bank financing.

TABLE 6. Dynamic Asymmetric Estimation of Islamic Bank Financing

Dependent Variables:	ΔlnIBF		
Variable	Coefficient	Standard Error	T-Ratio (Prob)
Constant	2.26	0.5059	4.46 (0.00)
lnIBF(–1)	–0.2003	0.0452	–4.42 (0.00)
lnIPI$^+$(–1)	0.0001	0.0002	–0.34 (0.73)
lnIPI$^-$(–1)	–0.0006	0.0002	–3.71 (0.00)
RoF$^+$(–1)	0.0002	0.0002	1.12 (0.26)
RoF$^-$(–1)	0.0005	0.0002	3.06 (0.03)

cont.

TABLE 6. (*continue*)

ΔIBF(-6)	0.2216	0.0961	2.30 (0.02)
Δ lnIPI$^+$	0.0727	0.0201	3.51 (0.00)
Δ lnIPI$^-$ (-6)	-0.0407	0.0124	-3.27 (0.00)
R^2	0.27		
Normality	5.29 (0.07)		
Serial Correlation	2.30 (0.32)		
Heteroscedasticity	10.83 (0.21)		
Ramsey Test	9.34 (0.00)		
Wald Short-run, lnIPI	0.92 (0.53)		
Wald Short-run, lnRoF	0.69 (0.77)		

ASYMMETRIC EFFECTS

Since both linear and non-linear ARDL failed to reject the null hypothesis of no cointegration, thus we find evidence that there is no long-run relationship between the variables of interest. In addition, there are no long-run asymmetric effects. Therefore, we proceed with the analysis of the short-run asymmetric effects instead of long-run asymmetric. The results show that both positive and negative of IPI and RoF are not significant thus absence of short-run asymmetric effects. Therefore, up and down of the economic activities and changes of interest rate do not influence the demand of Islamic bank financing. This further provides evidence of the stability of Islamic bank. To some extent, our results are consistent with those of Kaleem (2000) and Abduh et al. (2011). They found that Islamic financial system is more stable against the financial crisis due to profit and loss sharing nature. Kaleem (2000) also show that the Islamic banking system is resilient. However, Kassim and Majid (2010) and Karim et al. (2012) provide evidence that both Islamic bank financing and Islamic stock market are vulnerable to financial crisis.

GRANGER CAUSALITY TEST

We proceed to vector autoregressive model (VAR) Granger causality test to examine the causal relationship between

the variables as proposed by Engle and Granger (1987). The results are reported in the Table 7. The lag length of the respective VAR model is based on the AIC. The results show that both positive and negative changes of IPI and RoF do not influence the IBF. This further support the notion that Islamic bank financing is stable. The results are not in line with Rosly (1999), Abdul Kadir and Leong (2009) and Karim et al. (2012). For example, Abdul Kadir and Leong (2009) indicate that Islamic bank financing is influenced by the interest rates changes thus they conclude that Islamic banks in the dual system are exposed to interest rate risks.

SUMMARY AND CONCLUSIONS

This paper examines the dynamics between the Islamic bank financing and selected macroeconomic variables in Malaysia using monthly data covering the period of January 2007 to June 2016. Both linear and non-linear ARDL modals show no long-run relationship among the variables. The results also indicate that there is no presence of both long-run and short-run asymmetric effects from industrial production index and rate of financing towards Islamic bank financing. In addition, Granger-causality test has also provided the same results of no causality running from these factors to Islamic bank financing.

Therefore, we conclude that the Islamic bank financing is stable and resilient. Muslims customers continue to support the Islamic banks and are not profit-motivated by the substitution effect as Malaysia has dual banking system. The banking system which based on profit sharing is able to cushion the Islamic financial system from interest rate fluctuation thus reducing the risk of financial volatility (Karim et al. 2012). Smolo and Mirakhor (2010) argued that although the crisis had low impact on Islamic financial institutions, the major drawbacks of the capitalists' financial system were related to the development of the Islamic financial institutions. Weaknesses in risk management practices in some Islamic banks led to a larger decline in profitability in 2009 as compared to conventional banks (Hasan and Dridi, 2010).

TABLE 7. Granger Causality of Variables

Hypothesis	Chi-Square	P=value	Concluding Remarks
Δ ln IPI^+ =/=> Δ ln IBF	4.40	0.11	Δ ln IPI^+ =/=> Δ ln IBF
Δ ln IBF =/=> Δ ln IPI^+	9.17	0.01	Δ ln IBF =/=> Δ ln IPI^+
Δ ln IPI^- =/=> Δ ln IBF	0.06	0.97	Δ ln IPI^- =/=> Δ ln IBF
Δ ln IBF =/=> Δ ln IPI^-	4.52	0.10	Δ ln IBF =/=> Δ ln IPI^-
Δ RF^+ =/=> Δ ln IBF	0.84	0.66	Δ RF^+ =/=> Δ ln IBF
Δ ln IBF =/=> Δ RF^+	0.25	0.88	Δ ln IBF =/=> Δ RF^+
Δ RF^- =/=> Δ ln IBF	10.96	0.00	Δ RF^- =/=> Δ ln IBF
Δ ln IBF =/=> Δ RF^-	4.72	0.09	Δ ln IBF =/=> Δ RF^-

Notes: =/=> Not Granger-caused; ==> Granger-caused

The results of this study have important implications to industry players, investors and policy makers. Islamic banks must give more concerted effort for prudent risk management and incorporate relevant risk mitigation techniques. Islamic banks must be innovative and creative in creating and offering new products to customers instead of relying on BBA financing and AITAB financing in their balance sheet.

This study has limitations as it only focuses on the Islamic bank financing, industrial production index and Islamic rate of financing in Malaysia. However, this study could be further improved by considensing conventional bank financing and other macroeconomic variables.

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NOTES

[1]   Detailed derivation of the determinants of the bank loan supply can be found in Karim et al. (2011).

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