

THE IMPACT OF MACROECONOMIC VARIABLES ON ISLAMIC BANKS FINANCING IN MALAYSIA.

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Abstract

The study investigates the impact of conventional bank interest rate on the volume of financing of Islamic banks in Malaysia for the period spanning 2006:12 to 2011:3. Omitted variable bias is provided for, by including several control variables such as production index, real effective exchange rate, price index and stock market index as additional explanatory variables. The relationship among the variables is examined with the ARDL approach to cointegration. Findings suggest the existence of one long run relationship among the variables. Furthermore, the study shows that interest rate significantly affects Islamic banks financing Malaysia. This is taken to mean that Islamic banks financing is complementary rather than substitute to conventional banks financing. Hence, it is recommended that Islamic banks in Malaysia should accommodate more profit and loss products in order to be more interest-free.

Keywords: Islamic banks financing, ARDL, Granger causality test.

1. Introduction

In response to the global trend of 1970s, in which many Middle Eastern countries initiated Islamic banking system, Malaysia started Islamic banking in 1983, with the establishment of Bank Islam Berhad (BIMB). Unlike, countries such as Sudan, Iran and Pakistan (which allow only Islamic banking); Malaysia operates a dual banking system. Islamic banks are allowed to operate alongside conventional banks in dual banking system. Therefore, Islamic banks in Malaysia face competition from conventional banks in generating deposits from depositors as well as in the area of financing.

Several Islamic banks products were developed, in order to curtail competition with conventional banks and endear Islamic banks financing to investors. Prominent among these products is Bai' Bithaman Ajil (BBA) that allows Islamic banks to sell goods on a deferred payment basis at a price, which includes a profit margin, agreed to by both parties. Repayment to Islamic bank by the customer to the bank is in instalments. As profit rate was predominantly fixed, BBA has been criticised on the basis that it does not follow profit and loss paradigm (Chong & Liu, 2009) and that BBA financing is not much different from conventional bank loans (Abdul Kader & Leong, 2009). Based on the fixed profit rate of BBA, Rosly (1999) hypothesised that during period of interest rates increase, investors increase their demand for Islamic financing against conventional loans and vice versa. This is because BBA becomes a cheaper option for investors in period of rising loan. Empirically testing the Rosly (1999) hypothesis, Abdul Kader & Leong (2009) show positive impact of conventional interest rate changes on volume of Islamic banks financing.

However, in order to deepen Islamic banks financing portfolio in Malaysia, variable rate specie of BBA was introduced in the year 2003. In particular, this innovation was to reduce Islamic financial institutions over-reliance on fixed-rate financing; to mitigate liquidity risk due to market volatility; as well as to lessen the challenge of mismatch risk by enabling Islamic financial institutions to vary the profit rate for financing in order to raise the deposit rates (BNM Annual Report, 2003). Ijarah, contract in which a lessor leases out an asset to his client at an agreed rental fee and pre-determined lease period upon the contract, is the second largest Islamic banking products in Malaysia. In the year 2010, Ijarah

and BBA constitute about 63.5% of the total Islamic bank financing. Ijarah is now offered in both floating rate, which is benchmarked on base financing rate, and a hybrid of fixed and floating rate, in addition to the traditional fixed rate. Furthermore, a profit rate swap mechanism, which allows the swapping of a fixed rate commitment of a financing contract to the variable rate commitment of another contract, was introduced.

Based on these recent developments, there is the likelihood that conventional interest rate may actually affect the volume of Islamic banks financing through profit rate of Islamic banks, which is becoming more variable. In this new scenario, conventional interest rates increases will gear up profit rates of Islamic banks and decrease the volume of Islamic banks financing and vice versa. This is plausible as conventional and Islamic banks are not the only financial institutions in Malaysia. Thus, investors may resort to stock markets or Development Financial Institutions (DFIs) in seeking for funds. Following the preceding argument, it is hypothesised in this study that conventional interest changes should have negative impact on volume of Islamic banks financing, which is contrary to the views of Rosly (1999), and Abdul Kader & Leong (2009).

Therefore, the study assesses the relationship between conventional interest rates and the volume of Islamic banks financing in Malaysia. As the use of bivariate analysis is prone to danger of omitted variable bias (Akinlo, 2009), the study includes proxy of economic activity, real effective exchange rate, price index and stock market index as additional explanatory variables. In particular, proxy of economic activity is justified as the Asian financial crisis of 1997s, which caused economic downturn was clearly associated with plummet in volume of Islamic banks financing in the first half of 1998 (BNM Annual Report, 1998). The remainder of the paper is organised as follows: section 2 provides a review of related studies, while Section 3 contains recent trend of Islamic banks financing in Malaysia. Section 4 introduces the methodology and data and section 5 provides the findings of the study. Section 6 concludes the paper.

2. Review of Related Studies

Investigating the factors that determine banks lending has occupied the attention of financial researchers in various countries, around the globe. Literatures concentrating on the determinants of conventional banks lending are more noticeable compared with those on determinants of Islamic banks financing. Essentially, this may be attributed to the short history of Islamic banking in the contemporary financial system. Hence, in this section the study starts with the review of literatures on the determinants in conventional banks lending before proceeding to the determinants of Islamic banks lending.

Generally, literatures consider the determinants of conventional bank lending based on macroeconomic and microeconomic factors. Microeconomic factors refer to the variables peculiar to the banking industry such as bank size, bank capitalisation, collateral security, capital ratios and provision for losses. Others microeconomic factors include liquidity and asset quality. On the other hand, macroeconomic factors refer to country-wide variables, which include monetary variables- money supply and interest rates, economic growth, inflation rate, exchange rate, and stock market index, among other variables.

Studies on microeconomic determinants of bank lending includes Chernykh & Theodossiou (2011) who utilises ratio of bank long-term business loans to total assets to measure bank lending in Russia. The study demonstrates that bank lending is positively affected by bank's size, bank's capitalisation and the volume of provisions for losses made by banks, but fails to find evidence for bank's type of ownership. In a study on Malaysia for 1993 to 2008, Abdul Karim, Azman-Saini & Abdul Karim (2011) show that bank liquidity, bank capitalization determines banks' loan supply. Moreover, Cowling & Westhead (1996) examine 272 small firms in UK and note that bank lending by local branches and regional offices are, in part, influenced by collateral by banks, after controlling for size of the firm requesting the loan.

Numerous works have been done on macroeconomic determinants of bank lending. Among these studies is Pruteanu-Podpiera (2007) that considers the impact of monetary policy, gross domestic product (GDP) growth rate and inflation on growth rate of total loans in Czech banks for 1996:1Q to 2001:4Q period. The study uses Czech policy rate as measure of monetary policy. The outcomes suggest strong positive effect of GDP growth on the growth rate of loans, but impact of interest rates on growth rate of total loans. Inflation is shown to have an insignificant impact on growth rate of loan in Czech Republic.

In another study on macroeconomic determinants of bank lending, Du (2011) investigates the relationship between the problem of long-term loan and macroeconomic variables in China for 1994 to 2005 period. The study argues that current economic growth rate and accelerated industrialization

stimulate the demand for medium- and long-term loans. Inflation is shown to have a threshold effect with lower level of inflation having positive impact on medium- and long-term loans, while high level of inflation having negative impact on medium and long-term loans.

There are also studies on the determinants of bank lending on African countries. For example, [Mbutor \(2010\)](#) assesses the relationship between lending behaviour of banks, exchange rate volatility and stock price fluctuations. Evidence suggests that exchange rate volatility and equity price fluctuations affect the behaviour of banks in Nigeria but that the effects were insignificant. However, [Kim & Moreno \(1994\)](#) evaluate stock prices and bank lending behaviour in Japan and observe that changes in stock prices positively affect volume of lending in Japan, particularly, in the post-liberalised loan market period.

[Mansor \(2006\)](#) employs Vector Autoregressive (VAR) technique to investigate the relationship between bank lending and some macroeconomic variables- such as real output, stock prices and exchange rate- in Malaysia for quarterly data spanning 1978.Q1 to 1998.Q2. The findings indicate that bank loans react positively to increase in stock prices but there seems to be no influence of bank loans on stock prices. The study demonstrates that bank loans is positively influenced by real output but no influence of bank loans on real economic activity was found. [Mansor \(2006\)](#) further observes that exchange rate fluctuations have no impact on bank lending and suggest that exchange rate seems to affect bank lending activities through its effects on real output and stock prices. In another study on Malaysia, [Abd Karim et al. \(2011\)](#) note that bank lending is negatively influenced by interest rates in Malaysia, while controlling for other macroeconomic variables such as GDP and Inflation. Furthermore, [Abd Karim, Mohd Harif & Adziz \(2007\)](#) using a VAR model, demonstrates that monetary policy tightening in Malaysia reduces bank lending to all the sectors, but some sectors such as manufacturing, agricultural, and mining sectors are more affected.

In some cases, macroeconomic and microeconomic factors reinforce each other in influencing the volume of conventional bank lending. This is shown by [Gambacorta & Mistrulli \(2004\)](#) who note that bank capital influences the way bank lending react to GDP shocks and monetary policy shocks. Moreover, [Gunji & Yuan \(2010\)](#) shows that profitability of banks lessens the impact of monetary policy on bank lending. Beyond microeconomic and macroeconomic factors, study on subjective factors such as [Mian \(2006\)](#) has been done in the past. Using a panel of 80,000 loans over 7 years, [Mian \(2006\)](#) show that greater cultural and geographical distance of foreign bank's headquarters adversely affect lending of foreign banks.

From the above, it is pertinent to note that numerous studies have focussed on determinants of conventional bank lending, without considering determinants of Islamic banks financing, even in Malaysia, which is the hub of Islamic finance in South East Asian. Hence, [Abdul Kader & Leong \(2009\)](#) consider the impact of interest rate changes on the demand for Islamic financing in Malaysia. With a monthly data spanning 1999 to 2007, the study adopts time series econometric techniques such as unit root test, cointegration, VAR, Granger Causality and Impulse Response Function (IRF). Overall, the findings indicate that interest rates are positively associated with Islamic financing but negatively associated with conventional loan. However, as shown by literatures on conventional banks financing, there are macroeconomic variables beyond interest rates that influence the changes in bank lending. Hence, in this study we include these variables- output, price index, exchange rate, stock market prices. Before proceeding to the data and methodology of the study, where these variables are further expatiated, we review the development of Islamic banks financing in Malaysia in the following section.

3. Islamic Banks Financing in Malaysia

From its humble beginning in 1983, Islamic banking in Malaysia has risen to become a major player in Islamic banking on the world stage. Malaysia has the privilege of being the third largest country, in terms of Islamic banking market. More related to our study, it is the second largest country in terms of Islamic finance provider ([Azmi, 2010](#)). Funds mobilised by Islamic banks in Malaysia through various forms of deposits are employed basically for financing activities, while the residuals are (through Islamic Interbank Money Market funds) lodged in other banking institutions and invested in Islamic securities.

Economic conditions play a major role in determining the size of Islamic financing in Malaysia. This was particularly true as the volume of Islamic banks financing was significantly affected by the financial turmoil caused by Asian financial crises of 1997. The crisis decimated demand and export of East Asia countries and Malaysia real output resultantly fell by 6.7% in 1998. Consequently, financing-deposit ratio declined from 104.1% as at end-1997 to 64.9% as at end-1998. The total Islamic banks financing declined by 1.4% or RM149 million in the first half of 1998 ([BNM Annual Report, 1998](#)).

The effect of Asian financial crises was however, short lived as Islamic banks financing increased by 3.2% or RM342 million in the second half of 1998, thus translating into a growth of total financing by 1.8% to RM10.9 billion for the year 1998 (BNM Annual Report, 1998).

The economy of Malaysia improved rapidly in the year 1999. For instance, Malaysia economy recovered from a negative growth of 7.5% in 1998 to positive growth of 5.4%, a figure which beat projected figure of 4.3%. The economic comeback in Malaysia in addition to the policy that allowed Islamic banking institutions to incorporate the Ibra' (rebate) clause in the financing agreement had instantaneous positive impacts on Islamic banking system, especially in the area of Islamic banks financing. The total bank financing extended by Islamic banking sector expanded by RM3.1 billion or 28% in 1999; and RM7.2 billion or 52.2% in the year 2000. Moreover, financing deposits ratio of the Islamic banking system grew from 55.3% at to end-1999 to 58.2% at end-2000 (BNM Annual Report, 1999; 2000).

In March 2001, financial authorities in Malaysia initiated 10-year financial sector master plan in which Islamic banking was projected to play a significant role in financial sector development in Malaysia. In the plan, Islamic banking institutions and Takaful operators were expected to increase their competitiveness and market share in Malaysia's financial system in a bid to turn Malaysia into a regional Islamic financial centre. Particularly, Islamic banking system was expected to account for 20% of Malaysia banking system, which is expressed in terms of Islamic banks share in total deposit, total financing and total asset of the banking system. To achieve these objectives, concerted efforts were placed on institutional capacity enhancement; financial infrastructure development; and regulatory framework development (BNM Annual Report, 2001).

Statistics suggest that market share specifically in terms of Islamic financing has improved since the inception of the master plan. In the year 2001, total financing extended by the Islamic banking sector expanded by RM7.3 billion or 35% of financing in the total banking system. Correspondingly, the financing-deposits ratio increased from 58.2% at end-2000 to 59.9% at end-2001. Islamic banking sector in Malaysia further expanded by RM8.5 billion or 30.2% total banking system in the year 2002 (BNM Annual Report, 2001;2002). Islamic banks financing was RM78.71 billion or 13.21% of the total financing in the banking system in the year 2006; RM112.16 billion or 17.21% of the total financing in the banking system at end of 2007, and further to RM164.90 or 18.46% of the total financing in the banking system at end of 2010 (BNM, 2011).

Evidently from the foregoing, Islamic banks financing grew overtime in relative and absolute terms, despite some temporary setback. Dissecting the constituents of Islamic banks financing in Malaysia, it is observed that non-profit and loss products, such as Murabahah, Ijarah and Bai Bithaman ajil (BBA) account for the biggest share of Islamic banks financing. For example, BBA was the largest mode of Islamic banks financing in the year 1999, accounting for 58.7% of total Islamic bank financing. The share of BBA in 2002 was 49.1% with Ijarah constituting 26.3% of total Islamic banks financing (BNM Annual Report, 2002). Since 2004, the proportion of BBA cum Ijarah in the total Islamic banks financing in Malaysia never fell below 63%, while Musharakah (a profit and loss product alongside Mudharabah) reached peak at 2.5% in 2010, this lends credence to the dominance of non-profit and loss modes of Islamic financing. The composition of Islamic banks financing is shown in Table 1.

4. Model, Data and Methodology

4.1 Model and Data

To investigate the determinants of Islamic banks financing in Malaysia, the following model is analyzed:

$$FIN_t = \beta_1 + \beta_2 INT_t + \beta_3 IND_t + \beta_4 REER_t + \beta_5 PPI_t + \beta_6 KSLE_t + \varepsilon_t \quad (1)$$

Where FIN is Islamic banks financing, INT is interest rate; IND is production index; $REER$ is real effective exchange rate; PPI is producer price index and $KSLE$ is stock market index. The data are sourced from the *International Financial Statistics* (CD-ROM version) of the International Monetary Fund, with the exception of FIN , which is sourced from Bank Negara Website (BNM, 2011) as total financing by Islamic banks (inclusive of Islamic banking schemes and full-fledged Islamic banks) divided by financing in total banking system. INT is sourced as average lending rate; IND is sourced as industrial production; $REER$ is sourced as real effective exchange rate based on consumer price; PPI is sourced as producer price index; and $KSLE$ is sourced as share prices; in IFS. Due to data constraint, the study considers monthly series for the period spanning 2006:12 to 2011:3. All data are transformed to natural logarithms prior to analysis.

4.2 Bound Test for Cointegration

This paper utilises the recently developed autoregressive distributed lag model (ARDL) approach introduced by Pesaran & Shin (1999), and Pesaran Shin & Smith (2001) to investigate the determinants of Islamic banks financing in Pakistan. ARDL confer several benefits. One of the main advantages of ARDL is that it can be applied irrespective of whether underlying regressors are entirely I(0), entirely I(1) or mutually co-integrated (Pesaran & Shin, 1999). Another advantage of bounds testing approach to co-integration is that it performs better than other cointegration tests small samples. Thirdly, ARDL removes problems associated with omitted variables and autocorrelations; provides unbiased and efficient estimates (Narayan 2004). ARDL entails the establishment of long run relationship between variables using ordinary test squares (OLS) technique on an unrestricted error correction model as specified beneath:

$$\begin{aligned} \Delta FIN = & \alpha_0 + \sum_{j=1}^n \alpha_j \ln \Delta FIN_{t-j} + \sum_{j=0}^n \beta_j \ln \Delta INT_{t-j} + \sum_{j=0}^n \gamma_j \ln \Delta IND_{t-j} + \sum_{j=0}^n \mu_j \ln \Delta REER_{t-j} \\ & + \sum_{j=0}^n \pi_j \ln \Delta PPI_{t-j} + \sum_{j=0}^n \sigma_j \ln \Delta KLSE_{t-j} + \tau_1 \ln \Delta FIN_{t-j} + \tau_2 \ln \Delta INT_{t-j} \\ & + \tau_3 \ln \Delta IND_{t-j} + \tau_4 \ln \Delta REER_{t-j} + \tau_5 \ln \Delta PPI_{t-j} + \tau_6 \ln \Delta PPI_{t-j} + \varepsilon_t \end{aligned} \quad (2)$$

Wherein (2), Δ is first difference operator; while ε is the white noise error term. The presence of cointegration can be examined by restricting all estimated coefficients of lagged levels variables equal to zero. In other words, the null hypothesis $\tau_1 = \tau_2 = \tau_3 = \tau_4 = \tau_5 = \tau_6 = 0$ is investigated against the alternative hypothesis $\tau_1 \neq \tau_2 \neq \tau_3 \neq \tau_4 \neq \tau_5 \neq \tau_6 \neq 0$ by means of non-standard F-statistics distribution. Acceptance or rejection of null hypothesis depends on the size of F-statistics relative to the critical values. If the computed F-statistics is higher than the upper bound critical value, the null hypothesis is rejected, suggesting cointegration. If the computed calculated F-statistics is smaller than the lower bound critical value, the null hypothesis cannot be rejected, signifying non-existence of cointegration. The result is inconclusive, if the computed F-statistics lies within the bound critical values.

In addition to checking the existence of cointegration, the study performs the Granger causality test in a vector error correction model (VECM) framework to examine the causality between Islamic banks financing and its determinants in Malaysia. In VECM framework, changes in lagged of dependent and independent variables serve as the explanatory variables and this can be stated as:

$$\Delta Z_t = \Pi Z_{t-1} + \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \dots + \Gamma_p \Delta Z_{t-p} + e_t \quad (3)$$

where $\Delta Z_t = [\Delta FIN, \Delta INT, \Delta IND, \Delta REER, \Delta PPI, \Delta KLSE]$

$$\Pi = - \left(1_m - \sum_{i=1}^p A_i \right)$$

and

$$\Gamma = - \left(1_m - \sum_{i=1}^p A_i \right)$$

In (3), Γ captures short run dynamics of the changes in Z_t . The (6×6) matrix of $\Pi = (\alpha\beta')$ contains both speed of adjustment to equilibrium (α) and the long run information (β) such that $\beta' \Delta Z_{t-p}$ captures the $(n - 1)$ cointegrating vector on the multivariate model. Generally, test statistic is calculated by considering the sum of the squared F-statistics of Γ_i (for short run) and t-statistic of Π (for long run). The Granger causality is conducted by calculating the F-statistics (Wald test) based on the null hypothesis that the set of coefficients (Γ_i) on the lagged values of explanatory are not statistically different from zero. If the null hypothesis is rejected, then it implies the existence of short run causality. Secondly, if Π is significant based on the t-statistics, it implies the existence of long run relationship among the variables.

5. Result and Analysis

In theory, the bound test for cointegration does not require testing series stationarity. However, it becomes invalid once any of the variables is $I(2)$ or beyond. Moreover, decision at the point of acceptance or rejection depends on knowing whether the variables are $I(0)$ or $I(1)$. It is for these reasons that the study starts the empirical analysis with tests to determine the integration properties of the variables. We apply Augmented Dickey Fuller test (ADF) test, which is augmented with Elliott, Rothenberg & Stock (DF-GLS) to determine the integration properties of the variables. DF-GLS is a two-step process, in which the series is de-trended via a generalized least squares (GLS) regression in the first step before a normal Dickey-Fuller test is applied on the series in the second step. In Table 3, the two tests are reported. The ADF tests suggest that the null hypothesis of no unit root cannot be rejected for any of the series in levels at the 10% level. However, at first difference, the null of nonstationarity can be rejected for all series at most, at 10% level. The DF-GLS yield identical findings. Overall, the series exhibit stationarity at first difference.

Having ascertained that the variables are $I(1)$ in the previous section, in Table 4, the study presents the findings of the bound test with the small sample size critical values of Narayan (2005). With the bound test, we observe that cointegration is only present when FIN is the dependent variable. This is because F-statistics (3.359) is higher than the upper bound critical value (3.264) at the 10% critical value. However, the bounds test indicates that when INT, IND, REER, PI or KLSE are the dependent variables, the F-statistics (1.647, 1.456, 1.752, 1.259 and 2.421 respectively) are lower than the lower bound critical value at the 10% level. Hence, there is no cointegration when these variables are dependent variables, implying single long-run relationship.

The establishment of a cointegrating relationship in the last section connotes Granger causality in at least one direction, but it does not specify the flow of causality between the variables. Hence, in Panel A of Table 5, the study presents results of short-run and long-run Granger causality tests within the framework of VECM. The t-statistics on the coefficients of the lagged ECT examines the long-run causality, while the F-statistics on the lagged explanatory variables examines the short-run causality. Starting with the short run causality, the findings suggest that IND PPI and KLSE Granger cause FIN in the short run. Of all these variables, IND turns out with a bidirectional relationship with FIN in the short run at 1% level, with the others showing unidirectional causality towards FIN in the short run. Both INT and REER have no causal relationship with FIN in the short run. In the long run, evidence suggests unidirectional causality flowing from all the variables to FIN at 1%, lending credence to the fact that all the explanatory variables appear to be truly exogenous in the model. However, causality test does not tell whether the changes in each variable will positively or negatively affect the changes in FIN, especially in the long run.

Hence, in Panel B of Table 5, the study presents the long run estimates, which are normalised on FIN. The study shows that the impact of INT is negative on FIN. This implies that Islamic banks financing is complementary rather than substitute to conventional banks lending in contrast to the findings of Abdul Kader & Leong (2009). This is because an increase in conventional banks financing rate will decrease conventional banks ability to finance as the cost of borrowing in the conventional banks is now on the rise. Expectedly, this should have diverted attention to Islamic banking system, if the rates in the Islamic banks do not respond to the changes in the conventional banking system. However, as the results show, an increase in conventional banks interest rate will generate a copycat behaviour in the Islamic banking system (since Islamic banking now has float rate instruments) with the consequence of raising its financing rate and therefore lead to decrease in Islamic banks financing as well.

Beyond INT, the findings suggest PPI and KLSE are positively related to FIN. The positive sign of PPI is not surprising as rational producer will like to produce more upon any price increases, thereby venturing into more investment and ultimately more financing. IND and REER are insignificant in the long run. The findings of the short run estimates reported in Panel C of Table 5 offer nearly identical results, with the exception of PPI, which is negative and insignificant in the long run.

The study applies a number of diagnostic tests to the ARDL estimates, as shown in Table 6. The tests indicate no presence of serial correlation in the error terms of the ARDL estimators. Besides, functional form test shows the model is well specified and heteroscedasticity tests demonstrate independence of the errors from the regressors (homoscedasticity). The ARDL estimates are further shown to be stable as Fig. 1 shows that Cumulative Sum of Recursive Residuals test statistics does not exceed the bounds of the 5% level of significance.

6. Conclusion

The financial authorities in Malaysia introduced variable rate specie of BBA in the year 2003, in order to decrease Islamic financial institutions over-reliance on fixed-rate financing as well as to lessen the challenge of mismatch risk by enabling Islamic financial institutions to vary the profit rate for financing. In this study, it is argued that the changes in 2003 also affect the direction of the impact of conventional interest rates on the volume of financing of Islamic banks in Malaysia. Under the fixed-rate financing episode, Rosly (1999) and Abdul Kader & Leong (2009) has argued that the impact of conventional interest rate on volume of Islamic bank financing is positive. In this study, we investigate the impact of conventional interest rates on the volume of financing of Islamic banks in Malaysia for the period spanning 2006:12 to 2011:3. As literatures have argued for more control variables and in particular, (Akinlo, 2008) cautions against the usage of bivariate analysis because it is prone to omitted variable bias, the study includes other variables, such as production index, real effective exchange rate, price index and stock market index as additional explanatory variables. The study adopts ARDL approach to cointegration introduced by Pesaran & Shin (1999), and Pesaran et al. (2001) to investigate the long run relationship.

The findings suggest the existence of one long run relationship among the variables. Furthermore, the study shows that the impact of interest rate is negative on financing of Islamic banks in Malaysia in contrast to the findings of Abdul Kader & Leong (2009). In particular, the study shows that a rise in conventional banks financing rate will decrease both conventional banks lending and Islamic banks financing in Malaysia. Besides, the findings also demonstrate that producer price index and stock market index are positively related to Islamic banks financing in Malaysia. Industrial production and real effective exchange rate are insignificant in the long run. This is an indication that Islamic banks financing is complementary rather than substitute to conventional banks financing. Hence, it is recommended that Islamic banks in Malaysia should accommodate more profit and loss products in order to be really interest-free. The main limitation of this study is the sample size, which can be corrected with the availability of longer time series data.

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Table 1
 Composition of Islamic banks financing in Malaysia (in percentage)

Islamic financing by type							
Date	BBA	Ijarah	Murabahah	Musharakah	Mudharabah	Istisna ⁱⁱⁱ	Others
2002	49.1	26.3	7.3	0.7	-	1.3	15.3
2003	47.7	29	6.2	0.5	-	0.6	16.0
2004	49.9	24	7.0	0.5 ^a	-	1.2	17.4
2005	40.7	31.6	6.9	0.3 ^a	-	0.9	19.6
2006	40.7	30.3	7.2	0.2	0.2	0.7	20.7
2007	37.0	31.6	11.4	0.4	0.2	0.9	18.4
2008	33.0	33.1	15.2	1.1	0.2	1.3	16.1
2009	32.1	32.2	17.2	1.8	0.3	1.1	15.2
2010	33.7	29.8	14.6	2.5	0.2	1.0	18.2

Source: BNM Annual Report, various issues

^aThe figures include Mudharabah

ⁱ Ijarah is a contract in which a lessor leases out an asset to his client at an agreed rental fee and pre-determined lease period upon the contract. This figure include Ijarah Thumma Al-Bai, which implies an Ijarah contract in which the lessee reserves the right of purchase.

ⁱⁱ This is a contract between two parties to finance a business venture and participate in its management. The profit from the venture is distributed based on a pre-agreed ratio, while in the event of a business loss, the loss is shared on the basis of equity participation borne solely by the investor.

ⁱⁱⁱ This is a contract for future delivery in which the payment arrangement is allowed to vary usually done based on the progress of the job (assets).

Table 2
 Data

Variable	Source	Code
FIN	BNM	N/A
INT	IFS	54860P..ZF..
IND	IFS	54866...ZF...
REER	IFS	548..RECZF...
PPI	IFS	54863...ZF...
KSLE	IFS	54862...ZF...

N/A: Not Applicable

Table 3
 ADF and DF-GLS tests for unit roots

Variables	ls		differences	
	ADF	DF-GLS	ADF	DF-GLS
FIN	-2.571	-2.195	-3.752**	-3.449**
INT	-1.519	-1.719	-3.508**	-3.465**
IND	-1.780	-1.829	-4.168***	-3.118*
REER	-1.826	-1.860	-3.708**	-2.929*

PPI	-1.051	-1.008	-3.959**	-4.037***
KLSE	-0.877	-0.960	-5.018***	-4.790***

The specification of tests includes intercept and trend, and the lag selection are premised on Akaike Information Criterion. Critical values for ADF are generated from Mackinnon (1996), while critical values for DF-GLS are generated from Elliott-Rothenberg-Stock (1996). The null hypothesis is no stationarity. *, **, *** Imply stationarity at 10%, 5%, and 1% level of significance, respectively.

Table 4
 Cointegration test with bound test

Critical Values	F-Statistics					
	10%I(0)	10%I(1)	5%I(0)	5%(1)	1%(0)	1%(1)
	2.259	3.264	2.670	3.781	3.543	4.981
Dependent Variable						
FIN			3.359*			
INT			1.647			
IND			1.456			
REER			1.752			
PPI			1.259			
KLSE			2.421			

The critical values are for the model with restricted intercept and no trend in Narayan (2005). The null is no cointegration. * Implies 10% level of significance.

Table 5
 Granger causality results

Panel A							
Dependent	Granger causality						ECT(-1)
	Δ FIN	Δ INT	Δ IND	Δ REE	Δ PPI	Δ KLSE	
Δ FIN	-	4.287	9.953***	0.551	9.064**	8.754**	-
Δ INT	0.821	-	2.678	0.313	1.927	2.169	-
Δ IND	14.7986**	2.685	-	0.034	10.910*	16.050*	-
Δ REER	2.361	4.495	16.341**	-	2.939	1.084	-
Δ PPI	3.193	1.435	0.345	1.216	-	1.051	-
Δ KLSE	0.496	0.530	1.842	1.307	1.211	-	-
Panel B							
Long run estimates							
FIN		INT	IND	REER	PPI	KLSE	
		-	0.332	0.230	0.748**	0.281**	
Panel C							
Short run estimates							
Δ FIN		Δ INT	Δ IND	Δ REE	Δ PPI	Δ KLSE	
		-	0.312	0.217	-0.950	0.264**	

The variables are expressed in natural logarithmic form. The t-statistic is reported for the ECT, while the chi-square statistics are reported for the variables, *, **, *** Imply 10%, 5%, and 1% level of significance respectively.

Table 6
Diagnostics tests

Test Statistics	LM test
Serial Correlation	CHSQ(1) = 1.588 [0.159]
Functional Form	CHSQ(1) = 2.036 [0.162]
Heteroscedasticity	CHSQ(1) = 1.113 [0.297]

These statistics are distributed as Chi-squared variates. The probability values are reported in the parenthesis.

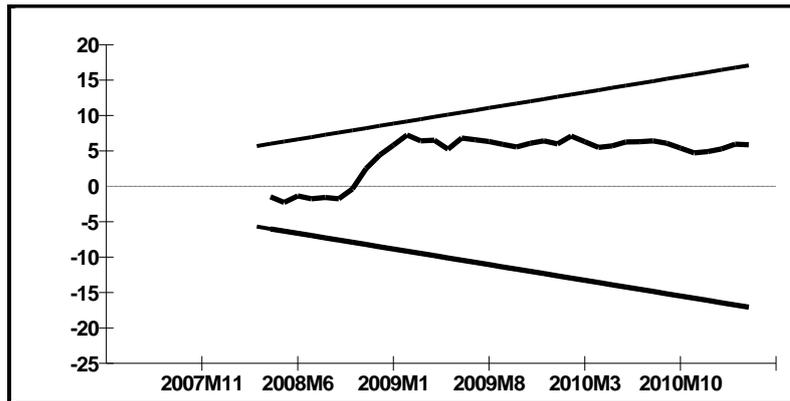


Figure. 1 CUSUM

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