Does conventional interest rate influence islamic deposit rate of return or the other way around ? evidence from Malaysia

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Does conventional interest rate influence islamic deposit rate of return or the other way around ? evidence from Malaysia

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Abstract

In theory, the Islamic deposit rate of return should be free from the influence of conventional rate of interest. But it is alleged that the Islamic deposit rate of return is not independent of the conventional rate of interest. The focus of this paper is to investigate whether the Islamic deposit rate of return is indeed free or not from the influence of the conventional rate of interest. Malaysia is taken as a case study. The standard time series techniques are employed for the investigation. The findings tend to indicate that the conventional rate of interest does indeed affect both the conventional deposit rate of return and the Islamic deposit rate of return at least in the context of Malaysia. The findings have strong policy implications.

Keywords: Islamic deposit rate of return, conventional deposit rate of return, interest rate, Malaysia

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1.0 Introduction

In Malaysia, according to Banking and Financial Institutions Act (1989) deposits only can be collected by deposit-taking institutions such as commercial banks, merchant banks, finance companies and other financial institutions; which are granted special licenses by Bank Negara Malaysia to accept deposits from their customers (surplus unit). By depositing money, customers expect these institutions safeguard their deposits, utilise them and generate reasonable rate of returns.

In mainstream theory, the rates of interests have always been considered as the fundamental of conventional banking activities including deposit products. Commercial banks are free to determine the rates payable on deposits accepted based on their funding requirements and normally different types of deposits carry different rates of interest to the depositor where deposits with longer maturity (12 months) carry higher rate compared to deposits with less maturity (1 month). According to Keynes (1936) deposit is a function of the interest rates, where the payment of interest is a reward for a depositor, therefore the higher the rate of interest, the more money will be saved, since at higher interest rates people will be more willing to forego present consumption. The only way for a bank to attract a customer to save more is by offering a higher rate of interest. This assumption also has been practiced in banking institutions all over the world.

Islamic banks perform the similar function such as conventional bank; they are reliant on depositor's money as their source of funds. But unlike conventional bank, Islamic bank is different because interest is prohibited in Islam; they are not allowed to offer a fixed rate of return (interest) on deposits. Therefore Islamic banks especially in Malaysia offer two types of deposit products; *Mudharabah* (profit sharing) and non *Mudharabah* (non profit sharing; *Wadiah* or *Qard*). Depositors will receive their return in the form of dividend or *Hibah*; which are not fixed amount but given based on bank performance (for *Mudharabah* depositors) or bank's discretion (for non *Mudharabah* depositors).

In Islamic banks, rates of return of deposits accounts are only known by depositors at the end of the deposit or maturity period, whereas, rates of interest for conventional deposits are known in advance. Under normal conditions, increase in profit takes place after a rise in the interest rate of

conventional bank especially in dual banking system such as in Malaysia. The question here, are the returns on deposits in Islamic banks independent of interest rates? Because there is a tendency among depositors to switch their deposits from Islamic banks to conventional banks if the return on deposits in conventional is higher than Islamic banks. Given this stipulation, there is a possibility that any movement of interest rate will have a significant impact on Islamic bank customers. Given the importance of this subject and lack of documented findings in the current Islamic banking literature, this study proposes to highlight the relationship between Islamic deposits rate of return and conventional deposits rate of return. In addition to that this paper will also examine whether base lending rate also affects the performance of Islamic deposits.

To the best of the author knowledge, this paper differs from the previous studies in terms of the econometric techniques used especially the Long Run Structural Modelling, Error Correction Model and Variance Decomposition. The remainder of this paper is organized as follows. Section 2 reviews the relevant literature, while Section 3 discusses the data and methodology. Section 4 presents the empirical results and discusses the findings and, finally, Section 5 concludes and explains the policy implication.

2.0 Literature Review

Most previous researches concentrated on the conventional banks' deposits. It is also found that the theoretical answers in Islamic banking regarding deposits are still inconclusive and there is a need for an empirical answer to the issue raised. Among the researchers who have studied the deposits products are Haron & Ahmad (2000) Loayza & Shankar (2000), Ozlan et. al (2003), Kia & Darrat (2003) and Rosly (1999).

Some researchers opine that interest rates will have no influence in Islamic bank deposits. For example, studies done by Haron & Ahmad (2000) found that the interest rates have negative correlation with Islamic banks' deposits. In addition to that they also found that Islamic bank customers are guided more by the profit motive. The profit rate of Islamic deposits have a positive correlation with the level of deposits which indicating that the higher return leads to higher level of deposits.

Loayza and Shankar (2000) discovered that real interest rate, per capita income and the share of agriculture in GDP had a positive relationship with savings, whereas inverse relationship were found for financial development, inflation and the dependency ratio. Meanwhile Ozlan et. al (2003) found that with the exception of government savings; income level, financial depth and inflation all had a positive impact on savings. Kia and Darrat (2003) found that the demand for profit-sharing deposits possesses the most stable and policy invariant function than the conventional deposits. It is further suggested that the profit-sharing deposits could represent a credible instrument for monetary policy-making.

Rosly (1999) found that Islamic banks in Malaysia are at disadvantage compared to the conventional banks when there is an increase in market interest rates. While the conventional banks could reap higher profit due to the increase in interest rates, Islamic banks face negative funds gap since interest-free financing is based on fixed rate, while liabilities (deposits) are benchmarked against the prevailing interest rates.

3.0 Data and Methodology

This paper uses time series monthly data on rate of returns for Islamic deposits (DR_i), conventional deposits (DR_c) and also Base Lending Rate (BLR). For the purpose of study, this paper employs Islamic saving accounts rate as a proxy of Islamic deposit rate and conventional saving accounts rate as a proxy of conventional deposit rate. The monthly data covers the time period starting from 2003 month 1(104 observations) and it was collected from Bank Negara Malaysia website.

Economic literature proposes different econometric procedures to empirically analyse the long run relationship and dynamic interaction between two or more time series variables. This paper proposes an alternative econometric procedure that can be used for determining the Islamic and conventional deposit returns linkages. This involves time series econometrics which engaged cointegration tests and causality tests. Before implementing the cointegration and causality tests, this paper performs the Augmented Dickey-Fuller (1979) stationarity test. This is to ensure that none of the variables is non-stationary in order to avoid spurious results in the test.

4.0 Empirical Findings

Stationarity Test

In order to obtain valid results in time series technique, the variables in this study should be stationary. All the variables in this study are tested for stationarity using Augmented Dickey Fuller (ADF) test. The results in Table 1 show that the null hypothesis of non stationarity cannot be rejected for all variables in level form and it is rejected at the first-differenced form for all variables. All variables are non-stationary in their original level but stationary in their first difference level. Hence it may be concluded that each data series is stationary and integrated of order 1 or I(1).

Table 1: Unit Root Test

	Level		First Difference	
	Test Statistic	Critical Value	Test Statistic	Critical Value
BLR	-1.5910	-3.4557	-3.9513*	-2.8912
DR_i	-3.3403	-3.4557	-10.5985*	-2.8912
DR_c	-1.6301	-3.4557	-4.2807*	-2.8912

* significant at 1% level

Determination of Order of the VAR Model

Before running the cointegration test, it is necessary to identify the optimal lag length for the model. In determining the order of the vector auto regression (VAR), this paper will choose the highest value of AIC and SBC. Table 2 shows that AIC gives order of 3 while SBC gives order of 1; where 392.5564 (3) and 373.3423 (1) give the highest values in each column. Underestimating the lag orders is generally more serious problem than overestimating them due to the effects of serial correlation, this paper proceeds with the VAR (3) as suggested by AIC.

Table 2: Order of VAR

	AIC	SBC
4	387.2101	337.0032
3	**392.5564**	353.9357
2	388.8751	361.8406
1	388.7906	**373.3423**
0	358.9526	355.0905

Johansen-Juselius (JJ) Cointegration Test

This paper proceeds with JJ cointegration test to estimate the number of cointegrating vectors and derive a likelihood ratio test for the null hypothesis that there is a given number of these relationships. This test is very important because it will check whether all variables are

theoretically related. If they are related or cointegrated, it indicates that there is a co-movement among these variables in the long term.

Table 3 depicts the results of JJ test; which covers the max-eigen test and trace test. Both tests show that the null hypothesis of r=0 (there is no cointegration) can be rejected because their estimated values are greater than the critical values at the 95% level of confidence. Therefore there is one cointegrating vector (r=1) between the variables. One cointegrating vector means that there is one group which are cointegrated each other and move together in long term. The result has an important policy implication where when they are cointegrated; any increase in interest rate may induce the Islamic banks to increase their saving account return in order to avoid customer from switching their deposits to the conventional banks. Unfortunately, JJ test did not specify the direction of this the relationship or whether the coefficient of variable in the equation is in line with our theoretical expectation, therefore, we have to proceed to the next step; Long Run Structural Modelling (LRSM) to address this problem.

Table 3 :Johansen-Juselius Cointegration Test Results

	Max- Eigenvalue Statistics	Trace Statistics
r=0	38.3426 (31.7900)	78.2707 (63.0000)
r=1	20.1472 (25.4200)	39.9282 (42.3400)
r=2	12.0153 (19.2200)	19.7810 (25.7700)

Long Run Structural Modelling (LRSM)

It is useful to compare cointegration findings with theoretical expectations and LRSM tests this by imposing both exact identifying and over identifying restrictions. Because the purpose of this paper is to test the effect of variables on Islamic deposit rate of return, therefore DR_i will be tested in exact-identfying restriction as A1=1 in Microfit. Table 4 highlights the results on LRSM.

Table 4: Long Run Structural Modelling

	Exact Identification	Over Identification
DR_i	1.0000 (none)	1.000 (none)
DR_c	-1.9798 (0.5845)	-3.0440 (1.9950)
BLR	0.2793 (0.1087)	1.000 (none)
Log Likelihood	431.7773	430.8792
Chi Square	-	1.7963 (0.180)

It shows that both DR_c and BLR are significant at 1% level of confidence. This paper then verifies the significance of these variables in over-identifying restriction. The chi-square test has a p-value of 0.180 which portraits the non rejection of null hypothesis (the restriction is correct). Therefore

for the rest of this study this paper proceeds with the exact identifying restriction and thus the cointegration equation is as follows.

$$DR\_i \quad \underset{(0.5845)}{-1.9798DR\_c} \quad \underset{(0.1087)}{+0.2793BLR} \quad \rightarrow I(0)$$

Vector Error Correction Modelling (VECM)

Previous test in LRSM did not explain about the causality and direction of cointegrated variables of DR_i, DR_c and BLR. VECM allows us to identify which variable is endogenous (dependent) and which is exogenous (independent). The result of VECM is tabulated in Table 5. It shows that error correction term for DR_i and BLR are significant and it shows that DR_i and BLR are endogenous. This is in line with our expectation that the rate of return in Islamic deposits is influenced and affected by other variables. It also implies that this variable bears the impact of short run adjustment to bring about the long run equilibrium among the cointegrated variables. The result also indicates that the error correction term for DR_i bears the negative signs and statistically significant at 1% with the convergence of 28.9% towards equilibrium. The coefficient of error correction term for BLR is statistically significant and is convergent toward equilibrium at the speed of 18.7%. In addition, DR_c becomes the only exogenous variable in this study due to its insignificant result in error correction term.

Table 5: Error Correction Model

Dependent Variables[a]	**DR_i**	**DR_c**	**BLR**
dDR_i(-1)	-0.4583 (0.1077)	0.0151 (0.0270)	-0.0596 (0.0773)
dDR_c (-1)	-1.1661 (0.6287)	-0.0120 (0.1577)	1.1401 (0.4514)
dBLR (-1)	0.4861 (0.2128)	0.1578 (0.0534)	-0.0968 (0.1528)
ECM (-1)	-0.2898* (0.0936)	0.0102 (0.0235)	0.1871* (0.0672)
Diagnostic Tests[b]			
Chi-sq SC	(0.830)	(0.938)	(0.894)
Chi-sq FF	(0.000)	(0.636)	(0.458)
Chi-sq N	(0.000)	(0.000)	(0.000)
Chi-sq Het	(0.213)	(0.029)	(0.001)

a: standard errors are given in parenthesis. * significance at 1%
b: p-values are given in parentheses

Table 5 also reports results on diagnostic test for autocorrelation, functional form, normality and heteroscedasticity. For the first model (DR_i) it indicates the rejection of null hypothesis in functional form and normality test which indicates the presence of problems in both. Meanwhile

for the second and third models (DR_c and BLR), the results show the presence of normality and heteroscedasticity problems.

Variance Decompositions (VDC)

For the next step, the orthogonalized and generalized VDC analyses are employed. Due to limitations in the orthogonalized analysis; it assumes when a particular variable is shocked, other variables are switched off and it does not produce unique solution, this paper reports on generalized VDC as shown in Table 6. According to the relative rank in exogeneity, BLR (50.53%) is the most exogenous followed by DR_c (46.30%) and DR_i (37.71%). As the most exogenous variable, the high proportion of its shock is explained by its own innovation. It shows that in the month 12, the total variance in BLR is primarily due to the variation of its own innovation (50.53%) followed by DR_c (25.95%) and DR_i (23.52%).

Even though, the result contradicts the VECM findings which determined BLR as an endogenous variable (not exogenous), but this VDC supports the objective of this paper; to study the effects of conventional deposits rate and BLR on Islamic deposits. This is due to the result of in Table 6 which assumes DR_i as the most endogenous variable; where it depends on the deviations of other variables where the total variance in DR_i is explained by innovation in other variables 62.29% (DR_c 32.90% and BLR 29.39%).

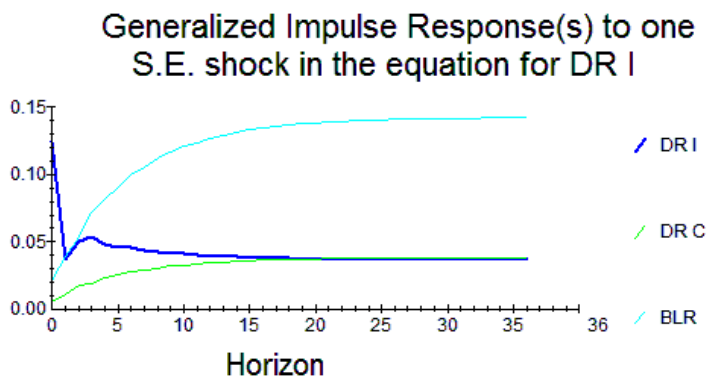
Table 6: Generalized Variance Decompositions

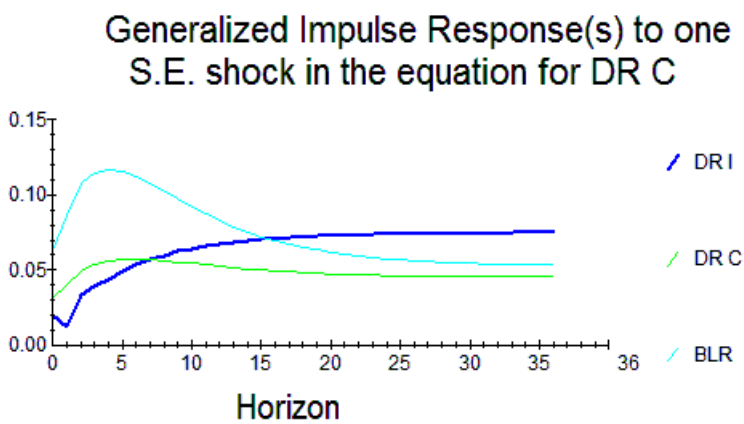
		Percentage of Forecast Variance Explained by Innovations in		
		DR_i	DR_c	BLR
Month	Relative Variance in dDR_i			
1		87.69%	3.01%	9.30%
6		56.82%	20.64%	22.54%
12		**37.71%**	32.90%	29.39%
	Relative Variance in dDR_c			
1		3.41%	57.14%	39.45%
6		7.87%	50.42%	41.71%
12		11.60%	**46.30%**	42.10%
	Relative Variance in dBLR			
1		6.18%	35.35%	58.46%
6		14.76%	32.22%	53.03%

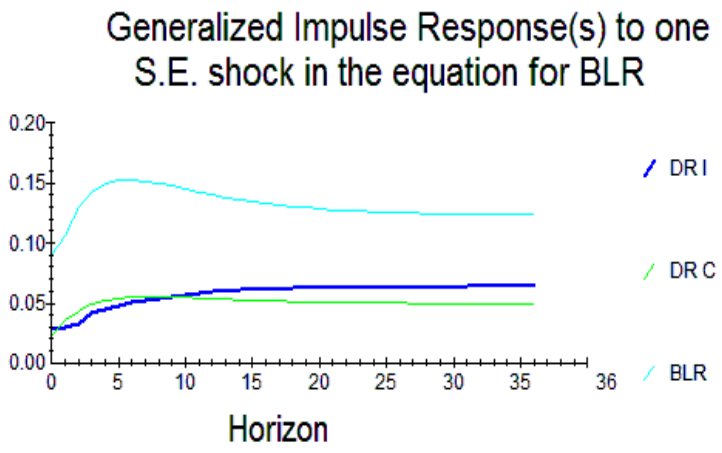
12		23.52%	25.95%	**50.53%**

Impulse Response Functions (IRF)

To further demonstrate the response of all variables to a shock, this paper conducts the impulse response analysis. The result from VDC can be correspondingly represented by graphs in this analysis. IRF is essentially maps out the dynamic response path of a variable due to a one-period standard deviation shock to another variable. Figure 1 illustrates the response of each sample where the x axis gives the duration of the shock whilst the y-axis gives the intensity of the impulse in the dependent variable away from its base line level. The graphs show that DR_c and BLR are negatively correlated with DR_i in month 1 and thereafter it increased and it takes 18 month to DR_i to go back to equilibrium. The results also show that DR_c is stable compare to the other two variables and this reflects the nature of exogenous variable which influence other variable

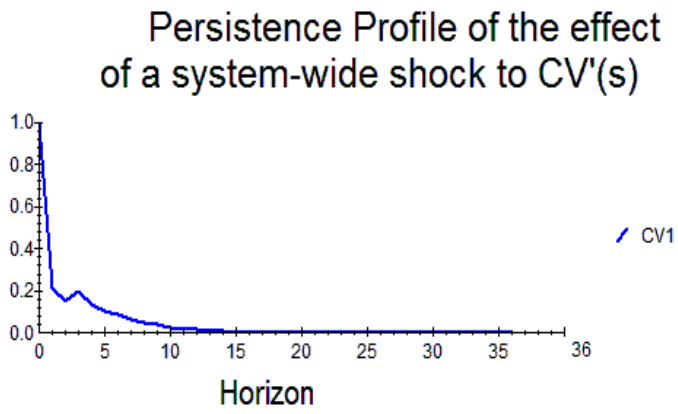






Persistence Profile

Figure 2 shows the persistence profile result which illustrates the effect of a system-wide shock on long run relations. It indicates that if the whole cointegrating relationship is shocked, it will take about 14 months for them to return to equilibrium..



5.0 Conclusion and Policy Implications

This paper supports the long run relationship (i.e., cointegration) between Islamic deposits rate of return, conventional deposits rate of return and interest rate. Furthermore this paper found evidence in both ECM and VDC that Islamic deposits rate of return is an endogenous variable and it is influenced by both conventional deposits rate of return and base lending rate. As a result, the management of Islamic banks basically monitor the movement in interest rates in managing their rate of return especially in deposit products. It is also evident that the interest rates have an

influence on the operations of Islamic banks. This result is similar to Haron & Ahmad (2000) where they found negative and significant correlation between interest rate and Islamic deposits. An increase in the interest rate will increase the saving deposits at conventional bank and decrease the saving deposits of Islamic banks, which indicates the normal behaviour of customers in both systems, thus supporting the substitution effect in the conventional system.

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