



Islamic Banks' Return on Depositors and Conventional Banks' Deposit Interest: Is there Causality? Evidence of Causality from Bangladesh

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ABSTRACT

The critiques of the Islamic bank allege that the depositors' return and the return on loans of the Islamic bank is nothing but the interest rate of the conventional banks and they simply follow the conventional banks interest rate. This paper empirically investigates the causal relation and the causal direction between the conventional banks' interest rate and the Islamic banks' return applying vector error correction model. The results of the VER Granger Causality/Block Exogeneity Wald Tests show unidirectional causal relation and the direction of causality ran from the Islamic banks' rate of return to the conventional banks' interest rates.

Keywords: Conventional Bank Interest Rate, Islamic Bank Deposit and Loan Rate, Granger Causality, Bangladesh

JEL Classifications: G21, F31

1. INTRODUCTION

Conventional banks and the Islamic Banks operate side by side but their modes of operation are different. Interest is the life and blood of the conventional banks. The interest rate of the conventional bank is fixed whether they are paying interest to depositors or receiving interest from the borrowers. Irrespective of the outcome of investment, the borrower of the venture investment has to pay the fixed interest. The mode of contract of the conventional bank is the avoidance of risk sharing in investment. Similarly, the fixed interest payment to depositors irrespective of banks' outcome of investment suggests the lack of risk sharing by the depositors.

The profit and loss sharing (PLS) is the most distinguishing feature of the Islamic banks. Unlike the conventional banks' fixed interest income, the Islamic banks' return on financing is not fixed. Islamic banks and the investors share the risk of investment. If there are profit from the investment, both bank and the investor distribute it based on prior agreement. If the investment incurs losses, both bank and the investors share the losses based on prior agreement. Similarly, in mobilizing deposits, Islamic banks

offer financial incentives but the financial incentive of the Islamic bank is not the fixed. The depositors of the Islamic banks do not get fixed return for their deposits. It is the pre-agreed rate of returns, if there are profits generated through the investment of deposits. In Islamic banks, current account deposits are based on two principles: Al Amanah and Al Wadiah. In Amanah deposits, interest-free deposits are held by the banks in trust (Amanah). Under Amanah arrangement, the Islamic bank treats the funds as a trust and cannot use these funds for its operations; it does not guarantee the refund of the deposit in case of any damage or loss to the Amanah resulting from circumstances beyond its control. The Wadiah deposits are the safe-keeping (Wadiah) deposits. In Wadiah, the bank is considered as a keeper and trustee of funds and has the depositors' permission to use the funds for its operations in a Shari'ah compliant manner. Deposits under Wadiah take the form of loans from depositors to Islamic banks and the bank guarantees refund of the entire amount of the deposit. While these deposits can be withdrawn at any time, the depositors have no right to any return/profit on such deposits. However, depositors, at the bank's discretion, may be rewarded with a profits.

1.1. Mudarabah Saving Deposit

Savings deposit accounts of the Islamic banks operate in a different way. The depositors allow the banks to use their money invested in profitable business ventures which are legal and Shari'ah compliant. Generally, deposits in savings accounts are accepted by Islamic banks on the basis of Mudarabah where the depositor is rabb-ul-mal (investor) and the bank is the Mudarib (fund manager). The profit will be shared as per a pre-determined ratio upon, while loss will be borne by the rabb-ul-mal. Profit distribution amongst the depositors and the shareholders will be made according to the prearranged contract made at the beginning of each month to their investments. Savings deposits are generally paced in a joint investment pool with other deposits mobilised by the Islamic banks.

1.2. Mudarabah Investment Deposits

Deposits are accepted for a fixed period of time or term and are governed by the Mudarabah contract with the bank. It is similar to fixed deposits of the conventional banks. When deposits are agreed for the fixed term no withdrawal is normally allowed until the end of the deposit term. However, some banks are allowing early withdrawals in an agreed notice period. Term deposits are arrangement where depositors seek some return on their investments; they are taken on a Mudarabah basis. These deposits are allocated to a number of investment pools and the Islamic banks invest the pooled amount in Shari'ah-compliant businesses. The profits from the assets are shared between the depositors and the bank according to a pre-determined ratio agreed upon at the beginning of contract. The profit sharing weightages are assigned based on the various tenures and the amount invested under the arrangement. And as required under Mudarabah, depositors have to be informed in advance of the formula used for sharing the net earnings of the investment pool with the bank. In case of the unlikely event of loss, the depositors have to bear the loss on a pro-rata basis while bank goes un-rewarded for all its efforts. If a bank contributes its equity capital in a pool at the time of setting up an investment pool, the relationship will be a combination of Musharakah and Mudarabah, and the bank would be entitled to a proportionate profit on its own investment in relation to the total Mudarabah investment pool. Islamic banks can also open may announce Murabaha and leasing funds in which the risk-averse investors may purchase units and be treated as rabbul-mal and get the quasi fixed-return from profits or rentals earned by the respective funds from the trading and leasing activities¹.

In summary, there is no fixed rate of return to any types of deposit accounts of the Islamic banks. As the depositors undertake risk of their deposits under the Mudarabah saving deposits and the Mudarabah investment deposits, they earn money on their deposits as per prearranged contract. The key feature of this liability contract is that Islamic banks neither guarantee the safety of depositors' capital nor any fixed return on deposits. In this sense, Islamic banks', Mudarabah investment deposits are more risky than those of conventional banks' fixed deposits and as such deserve more earnings.

¹ www.financislam.com/depositw.html.

The critiques of the Islamic bank allege that the returns on the deposits and the loans of the Islamic banks are simply the change of name. The name of interest is replaced by profit or rate of return. Since there is no regulatory authority for controlling and supervising the rate of return of the Islamic bank, the rate of return of the Islamic banks simply follows the conventional banks market interest rates. The allegation is based on the lack of well-regulated functioning financial system determining interest rate which is found in the conventional system.

Although it is alleged that the Islamic banks rates of return simply follow the conventional banks' interest rate, there was no empirical evidence to substantiate the claim. The exploration and the direction of causality between the conventional banks' deposit interest rate and the Islamic banks' rate of return to depositors is an important contribution of this paper in the banking literature.

This paper is organized as: Section II describes the unique characteristics of Islamic bank products. Section III provides the case for studying the Bahrain' banking Section IV outlines a short survey of literature. Section V provides the descriptions of data, methodology, and model. Empirical results and conclusions were presented in Section V.

2. ISLAMIC BANK PRODUCTS AND CHARACTERISTICS

First, all activities including the banking business are guided by the divine book of Islam, called the Quran, and the Shariah, the Sunnah of Prophet Mohammad (SAS). Islam prohibits its followers to get involved in certain harmful activities such as the production and consumption of alcohol, gambling, prostitution, and pork. As these activities are prohibited in Islam, Islamic banks are not allowed to engage in financing these activities. Islamic banks do not finance these activities.

Second, the most unique feature of Islamic banking is the avoidance of riba (usury) in all financial transactions. The term "riba" is currently interpreted as interest rate. The Quran, the Divine book of Islam, strongly prohibits riba. The Quran says... "Whereas Allah permitted trading and forbidden riba" (Quran: 2. p. 275). However, neither the Quran nor the prophet of Islamic did define what riba is². The present scholars of Shariah agreed that the predetermined fixed rate of return is not permitted in Islamic banking business transactions.

The prohibition of interest in banking business gives rise to the development of innovative mode of financial products by the Islamic banks. The products, on the asset side of the balance sheet of the Islamic bank, are: (i) Musharakah (ii) Mudarabah (iii) Murabahah (iv) Bai Baithaman Ajil' (v) bai al-salam (vi) Ijarah (vii) Istisna.

² [Umar b. al-Khattab said, "There are three things: If God's Messenger had explained them clearly, it would have been dearer to me than the world and what it contains: (These are) *kalalah*, *riba*, and *khilafah*." (Sunan Ibn Majah, Book of Inheritance, Vol. 4, #2727;

There are two types of the financing contracts. They are equity type and debt type contracts. Musharakah' (partnership) and 'Mudarabah' (trust financing) are equity type contracts (Hamwi and Aylward (1999).

Musharakha: Is a partnership and joint venture contract between the Islamic bank and the investor where both parties provide capital and manage funds and projects. Profits or losses accruing from the venture are distributed based on the proportion of capital and pre-determined agreement. The key features of this contract are: (i) PLS. Both parties share profits or loss. Unlike conventional bank equity contracts where banks do not bear the risk of financing investments, Islamic banks share the risk of investment.

(ii) Unlike conventional banks' equity contracts where banks enjoy the fixed rate of return from investments, even when there are losses for the project, there is no predetermined rate of returns on investments for Islamic banks. Thus, PLS, avoiding of fixed interest, is a key feature of Islamic financing. Justice requires that both share the risk of business.

Mudarabah: Is a trust financing contract between Islamic banks and investors where Islamic banks provide all funds for a project and investors provide physical labor, intellectual, and management skills. Profits from the projects are distributed based on a pre-agreed (ratio) arrangement. However, in cases of losses, banks, the provider of fund (called rab al maal), will bear the losses of fund and investor will bear the loss of his labor. The key feature of this contract is that there is no predetermined fixed rate of returns for bank; and both parties share the risk of investment.

The key features of the Musharakha and Muderaba contract are: (i) PLS. Both parties share profits or losses. Unlike conventional bank equity contracts where banks do not bear the risk of financing investments, Islamic banks share the risk of investment. (ii) Unlike conventional banks' equity contracts where banks enjoy the fixed rate of return from investments, even when there are losses for the project, there is no predetermined rate of returns on investments for Islamic banks. Thus, PLS, avoiding of fixed interest, is a key feature of Islamic financing. Justice requires that both share the risk of business.

Murabaha financing is a debt type contract. Murabaha mode of financing is based on a 'mark-up' arrangement in which goods or assets are purchased by the bank on behalf of a client, and are sold to the client at a price equal to the cost of the item(s) plus a profit margin. Under the Murabaha financing contract, a client wishing to buy goods or assets approaches an Islamic bank to buy them on their behalf. The Islamic bank then buys the product at the current market price and adds a profit margin to it, and then re-sells the product to the client. The key feature is that there is no fixed interest involved, although the critiques of Islamic banks do not admit it. They call it a "back door for interest-based financing" (Chong and Liu, 2009).

Bai Baithaman Ajil' is a variant of the Murabah (cost plus) financing contract. The difference is that the delivery of goods is immediate but the payment of goods is deferred. The payment

may be made at installment. However, the price of the product is agreed to by both parties at the time of the sale but should not include charges for the deferred payment.

Bai al-salaam is a forward sale contract where an entrepreneur sells some specific goods to the Islamic bank at a price agreed upon and paid at the time of contract but the delivery of goods is deferred for the future.

Al-Ijera is a lease financing contract and is similar to a conventional bank lease contract. Under this contract, the Islamic bank purchases an asset for a customer and then leases it out to him for a fixed period at a fixed rental charge agreed upon at the time of purchase. A key difference with conventional bank leases is that the lessor i.e., Islamic bank retains the risk of property ownership. Note that Shariah permits fixed rental charges for the use of asset/property services.

Istisna is a financing contract under which a manufacturer or a producer produces specific goods for future delivery at a predetermined price.

The key feature of Bai Baithaman Ajil', bai al-salam, Ijarah, and Istisna³ is that financing is fully securitized and asset based. Unlike conventional banks, Islamic banks own the ownership of the goods until full payment is made.

The products, on the liability side of the balance sheet of the Islamic bank, are: (i) Current Account called Al Amana/wadiah deposits (ii) Saving Deposits called Mudarabah saving deposits (iii) Muderabah investment deposits.

2.1. Current Account Deposits

It is similar to demand deposits of the conventional banks. In Islamic banks, Current account deposits are based on two principles: Al Amanah and Al Wadiah. In Amanah deposits, interest-free deposits are held by the banks in trust (Amanah). Under Amanah arrangement, the Islamic bank treats the funds as a trust and cannot use these funds for its operations; it does not guarantee the refund of the deposit in case of any damage or loss to the Amanah resulting from circumstances beyond its control. The Wadiah deposits are the safe-keeping (Wadiah) deposits. In Wadiah, the bank is considered as a keeper and trustee of funds and has the depositors' permission to use the funds for its operations in a Shari'ah compliant manner. Deposits under Wadiah take the form of loans from depositors to Islamic banks and the bank guarantees refund of the entire amount of the deposit. While these deposits can be withdrawn at any time, the depositors have no right to any return/profit on such deposits. However, depositors, at the bank's discretion, may be rewarded with a profits.

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3 See Samad et al. (2005) and (Chong and Liu, 2009) for definition and features.

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4 www.financislam.com/depositw.html.

3. REASONS FOR STUDYING BANGLADESH

Bangladesh is one of largest Muslim countries in the South East Asia. Its population, about 150 million, is mostly Muslims. Its large Muslim population inspired the development of the Islamic as early as 1983.

Bangladesh's financial sector is consisting of a wide range of conventional and Islamic financial institutions and markets. There are thirty eight domestic conventional banks, nine foreign banks, twenty nine financial institutions operating in Bangladesh⁵. Of the thirty eight domestic banks, seven banks are Islamic banks. Islami Bank Bangladesh Ltd., is the third largest private bank in Bangladesh. The financial sector is relatively large and provides a contribution to GDP.

Second, there is tremendous growth of banks and financial institutions in Bangladesh. When Bangladesh was born in 1971, there was no private bank. The five banks that Bangladesh inherited from Pakistan at the time of liberation were Sonali Bank, Rupali Bank, Janata Bank, Agrani Bank, and Pubali bank. These banks were nationalized by the-then government of Bangladesh and became the public sector banks. When the privatization policy was introduced in 1982, there was just one private domestic bank (Pubali Bank) in Bangladesh. Currently, there are forty-one private banks excluding four government owned banks.

4. SURVEY OF LITERATURE

The extent of past scholarly research on Islamic banking includes Khan (1986), Mannan (1968), Iqbal and Mirakhor (1999), and Ahmad (1984). These authors discuss the theoretical development of institutional issues and concepts, including Arabic concepts, and principles that are subject to interpretation.

Khan (1986) provided an important theoretical model of Islamic banking and compared the model with conventional banking. He argued that Islamic banks "treat deposits as shares and accordingly does not guarantee their nominal value" (p. 19). Since profit and loss is equity, account depositors would be treated like shareholders of a bank and, therefore, "no official reserve requirement would be necessary for these investment deposits" (p. 20-21). Chapra (1992) and Siddiqi (1983) argued for Islamic banking as the primary alternative of interest based conventional banking. They also argued that Islamic banks were efficient to generate economic growth without getting involved interest.

Khan (1986) provided a good description of the development of Islamic banks in Egypt, Kuwait, UAE, and Pakistan. Kazarian (1993) compared two Egyptian Islamic banks with Egypt conventional banks taking ratio of long term financing and found that the two Islamic banks occupied a third position in Egypt during

5 Bank and financial institutions, Ministry of Finance, Government of Bangladesh 2010-2011.

1979-1990. Aggarwal and Yousef (2000) examined Islamic banks mode of operations and found that the PLS mode of Islamic banks was minimum and the agency problem of Islamic banks was more severe. Samad et al. (2005) studied the Bahrain and Malaysia Islamic banking finances and found that the Mudarabah and Musharak, the distinct mode of Islamic banks that distinguished Islamic banks from the conventional banks are less than 4 percent of total financings. Debt type financing such as Murabah and Ijarah appeared to be most popular and dominant of all other modes of financing.

Samad (1999 and 2004) compared the performance of Islamic banks and conventional commercial banks of Malaysia and Bahrain with respect to (a) profitability (b) liquidity (c) capital management. Eleven financial ratios were compared for the period 1991-2001 and found that there is no difference in profitability and liquidity performance between Islamic and conventional banks. Fayed (2013) compared the profitability, liquidity, credit risk, and solvency performance of three Egyptian Islamic banks with six conventional banks during 2008-2010 and found superiority of conventional banks' performance over Islamic banks. Chong and Liu (2009) examined Malaysian Islamic banks and found that the PLS mode of finance was minimum. The growth of Islamic banking was largely driven by the Islamic resurgence rather than by advantage of the PLS mode of production.

Cevik and Charap (2011) examine the empirical behavior of conventional bank deposit rates and the rate of return of Islamic banks in Malaysia and Turkey and found that there was a long run co-integration between the series.

Samad (2013) investigated whether the global financial crisis (GFC) has had its impact on the efficiency of Islamic banks estimated by using the time varying Stochastic Frontier function on the Islamic banks of 16 countries. The efficiencies of Islamic banks were estimated using Cobb-Douglas production function and found that the GFC had had no impact on banks' efficiency. Mean efficiencies between the pre GFC and the post global crisis were estimated 39 and 38% respectively and the difference was not statistically significant.

The survey of literature shows no empirical study on the rate of return of the Islamic banks' deposits and the deposit interest rate of the conventional banks.

5. DATA AND METHODOLOGY

5.1. Data

Annual data, 2005-2015, for the conventional banks' interest rate on deposit and the Islamic banks' return to depositors were obtained from, the central bank of Bangladesh. Since the number of year is eleven and the data are annual, pooled data are used to increase the number of observations.

The descriptive statistics of two variables, Islamic banks' rate of return to depositors (ISBKDR), and the conventional banks'

Table 1: Descriptive statistics of conventional bank deposit interest (CONBKX-6M) and Islamic bank rate of return to depositors (ISBKY-6M)

Variable	CONBKDEPOSTI	ISBKDEPOSIR
Mean	8.283279	8.374750
Median	7.655000	8.840000
Maximum	395.0000	12.76000
Minimum	0.070000	0.080000
Standard deviation	20.24634	2.426699
Skewness	18.80437	-1.710184
Kurtosis	359.7346	7.172466
Jarque-Bera	1994447.0	101.8794
Probability	0.000000	0.000000
Sum	3081.380	703.4790
Sum Sq. Dev.	152078.2	488.7759
Observations	372	84

deposit interest rates (CONBKDI), are provided in Table 1.

5.2. Methodology

5.2.1. Vector auto regressive model (VAR)

When the distinction between endogenous and exogenous variables is not clear, VAR is an appropriate model (Astrrius and Stephen, 2007). Since it was unknown whether, the Islamic banks' rates of return to depositors (ISBKDR) or conventional banks' deposit interest rates (CONBKDI) was endogenous or exogenous, the paper applied the VAR model. In the VAR model, all variables are treated as endogenous. The best thing in the VAR is that the econometrician does not have to worry which variables are endogenous or exogenous. Second, VAR is easy to estimate and the forecasts of VAR are in most cases far better than those obtained from the complex simultaneous model (Mahmoud, 1984).

Vector error correction model (VECM) is applied to find the causality and the direction of the causality between them. In terms of two variables, ISBKDR and CONBKDI, VECM can be written and estimated from the model:

$$\Delta ISBKDR_t = \beta_1 \sum_{i=1}^n \Delta CONBKDI_{t-i} - i + \alpha_1 \sum_{i=1}^n \Delta ISBKDR_{t-i} + \phi \theta t - 1 + \epsilon_t \tag{1}$$

$$\Delta CONBKDI_t = \beta_2 \sum_{i=1}^n \Delta ISBKDR_{t-i} + \alpha_2 \sum_{i=1}^n \Delta CONBKDI_{t-i} + \Psi \theta t - 1 + \epsilon_t \tag{2}$$

Where $\vartheta_{t-1} = (ISBKDR_{t-1} - \alpha_0 - \beta CONBKDI_{t-1})$ is called the residual cointegration equation or error correction term (ECT), ϵ_t is white noise error term.

The sign of the ECT, ϑ_{t-1} for both equations, (1) and (2) is expected to be negative.

5.2.1.1. Short run impact

In (3), β_i is the short run impact multiplier that measures the immediate impact of changes in conventional banks' deposit interest, (CONBKX-6) on the changes on Islamic banks' rate of return to depositors (ISBKY-6), It, thus, provides the short effect.

5.2.1.2. Long term relation and Granger causality test

In the long run equilibrium, the ECT is zero. If CONBKDI and ISBKDR deviate from the long run equilibrium, the ECT will be nonzero and each variable adjusts to partially restore the equilibrium relation. The coefficient, Φ , of the ECT measures the speed of adjustment of the i th endogenous variable towards the equilibrium.

Since ΔY_t in (3) does not, for sure, provide about long term relation/behavior, the incorporation of $t-1$, the ECT resolves this problem and, thus, provides the existence of long term relation. The coefficient (Φ) of the ECT, θ_{t-1} on the other hand, is the short term adjustment effect. It provides the speed/rate of adjustment when rates are out of equilibrium. The sign of Φ is expected to be negative in the mean reverting case. Based on Henry (1995), the mean adjustment lag is calculate by the following equation:

$$MAL = (1-\beta)/\Phi \tag{3}$$

The equation (3) provides two sources of causation, first, $\Delta CONBKX-6t$ and second, the cointegrating equation, θ_{t-1} . In the conventional Granger causality test, null hypothesis: $\Delta CONBKX-6t$ does not Granger $\Delta ISBKDR_{t-i}$ is rejected if $\beta \neq 0$ (i.e., β is not significantly zero). With the incorporation of cointegrating equation, θ_{t-1} , additional source of causation is established. The null hypothesis: $\Delta CONBKDR_{t-i}$ does not Granger $\Delta ISBKDR_{t-i}$ is rejected not only if β , the lagged values of Y are not jointly significant i.e. $\beta=0$ but also if the coefficient of the ECT, Φ is significant, according to Miller and Russek (1990) and Granger (1988). In other words, the ECT opens up an additional channel for Granger causality. The Granger causality is established either through the significance of (i) Φ , the ECT by t -test; or (ii) joint test applied to the significance of the sum of lagged of each explanatory variables $\sum_{i=1}^n \Delta X_{t-i}$ and $\alpha_1 \sum_{i=1}^n \Delta Y_{t-i}$ by a joint F or Wald χ^2 test.

The causality in the long term exists only when Φ , the coefficient of ECT is statistically significant and different from zero ($\Phi \neq 0$).

The application of the VEC requires that the variables X and Y must integrated of order $I(1)$ i.e., $X \sim (1)$ and $Y \sim (1)$. They are nonstationary at level but stationary at first difference. This requirements sets the stage for unit test and cointegration test.

5.2.2. Unit root tests

Since the publication of Nelson and Plosser (1982), it is widely recognized that most time series macroeconomic variables contain unit root i.e., variable $X_t \sim I(1)$. So, this paper, first, examines the existence of unit root in Y indices and X indices by using

the augmented Dickey-Fuller (ADF) and Philip-Paron tests (Paron1989). In the following equation, the null hypothesis, $\alpha=0$ is tested against the alternative hypothesis, $\alpha<0$:

$$\Delta y_t = \alpha_0 + \beta t + \gamma y_{t-1} + \sum_i^k \lambda_i \Delta y_{t-1} + \epsilon_t \tag{4}$$

Schwarz Bayesian Criterion will be used to determine the lag length or K . The results of ADF and PP test are presented in Table 2.

The results of both ADF and PP test demonstrated that both series are stationary at the level as well as at the first difference.

5.2.3. Cointegration

Having established that the variables are non-stationary i.e. $I(1)$, the presence of cointegration among these variables in level form is required for the model. Consequently, the co-integration properties of the variables are examined. That is, it is necessary to determine whether there is at least one linear combination of these variables that is $I(0)$. To investigate multivariate cointegration, this paper applies Johansen (1991 and 1995) VAR based trace and maximum eigenvalue tests. Johansen (1991 and 1995a) cointegration is a VAR test and written in general form as:

$$\Delta Y_t = \pi Y_t - 1 + \sum_{i=1}^{p-1} \tau_i \Delta Y_{t-i} + \beta X_t + \epsilon_t \tag{5}$$

Where $\Pi = \sum_{i=1}^p \beta_i - 1$ and $\tau = - \sum_{j=i+1}^p \beta_j$

Based on Granger's theorem, if the coefficient matrix Π has reduced rank $r < k$, then there exists $k \times r$ matrices α and β each rank r such that $\alpha\beta = \Pi$ and α is $I(0)$. r is the number of cointegrating relations (the cointegrating rank) and each column of β is the cointegrating vector. The null hypothesis is that number of cointegration:

$H_0: r=0$

$H_a: r=1.$

The result of the Johansen cointegration between the Islamic banks' rate of return to depositors (ISBKY-6M) and the conventional banks' deposit interest rate (CONBKX-6M) is presented in Table 3.

Table 3 reports the result of the trace test and the Max-Eigen-Value test. As the trace statistics and the Max-Eigen statistics are 14.01 and 14.01 respectively and they are greater than their critical value 12.32 and 11.22 respectively, both tests reject the null hypothesis

Table 2: ADF and Phillips-Parron unit root tests

Variables	ADF test (intercept) Null hypothesis: Variable has unit root lag length: (Automatic-based on SIC, Maxlag=9)		PP (Phillips-Parron) test null hypothesis: Variable has a unit root	
	Level (t-statistics)	1 st difference (t-statistics)	Level (t-statistics)	1 st difference (t-statistics)
CONBKDI	-19.37*	-13.38*	-19.35*	31.98*
ISBKDR	-3.95*	-6.97*	-4.92*	-17.21*

*: Significant at 1% level, **: Significant at 5% level, ***: Significant at 10% level. ADF: Augmented Dickey-Fuller

Table 3: Johansen cointegration tests result

Trend assumption: No deterministic trend
 Series: CONBKDEPOSTI ISBKDEPOSIR
 Lags interval (in first differences): 1-4
 Unrestricted cointegration rank test (Trace)

Hypothesized No. of CE (s)	Eigenvalue	Trace statistic	0.05 critical value	P**
None*	0.176847	14.01653	12.32090	0.0258
At most 1	6.10E-05	0.004391	4.129906	0.9562

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
 Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE (s)	Eigenvalue	Max-EIGEN statistic	0.05 critical value	P**
None*	0.176847	14.01214	11.22480	0.0158
At most 1	6.10E-05	0.004391	4.129906	0.9562

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

*Denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) P values

of no cointegration i.e., $r = 0$. The rejection of null hypothesis of no cointegration among the variables suggests the presence of one cointegrating equation.

6. EMPIRICAL RESULTS

6.1. VEC Result

The results of the VEC model is presented in Table 4.

The result of the VEC estimates, in Table 4, demonstrates that the sign of the ECT (θ_{t-1}) is negative and consistent as per the expectation of the error correction model. The coefficient of the ECT (θ_{t-1}) is -0.58 and it indicates that the speed of adjustment was 58% if the conventional banks' deposit interest rate was deviated from the long term equilibrium.

Third, the significance of the ECT (θ_{t-1}) establishes long term Granger causal relation between the two series. The VAR Granger causality/Block Exogeneity Wald test was performed in determining the causal direction.

6.2. VAR Granger Causality/Block Exogeneity Wald Tests Result

When the conventional banks' deposit interest rate is a dependent variable, the χ^2 test statistics is significant. The χ^2 test statistics 3.89 and the low probability associated with the χ^2 test statistics, in Table 5, shows the Islamic banks' rate of return to depositors (ISBKDR) had significant impact on the conventional banks' deposit interest rate (CONBKDI) and, thus, the direction of Granger causality run from the Islamic banks' rate of return to depositors (ISBKDR) to the conventional banks' deposit interest rates.

On the other hand, when the Islamic banks' rate of return to depositors is a dependent variable, the χ^2 test statistics is insignificant. The high probability (0.16) of χ^2 test statistics suggests that the conventional banks' deposit interest rates had no impact on the rate of return to the depositors of Islamic bank (ISBKDR) and, thus, did not Granger cause the Islamic banks' rate of return to depositors of Bangladesh.

The summery of the VER Granger causality/Block Exogeneity Wald test was that the was unidirectional Granger causality running

Table 4: *VEC results

Error correction	D (CONBKDEPOSTI)	D (ISBKDEPOSIR)
CointEq1	-0.581120 (0.14407) [-4.03368]	-0.084396 (0.11857) [-0.71179]

*1: Standard errors in () and t-statistics in [], *: Significant at 1% level. VEC: Vector error correction

Table 5: Result of VER Granger causality/Block Exogeneity Wald test

Dependent variable: D (CONBKDEPOSTI)			
Excluded	Chi-square	df	P
D (ISBKDEPOSIR)	3.889948	1	0.0486
All	3.889948	1	0.0486
Dependent variable: D (ISBKDEPOSIR)			
Excluded	Chi-square	df	P
D (CONBKDEPOSTI)	1.886042	1	0.1696
All	1.886042	1	0.1696

from the Islamic banks' rate of return to depositors to conventional banks' deposit interest rate.

The finding of this paper does not confirm the findings Chong and Liu's (2009) in which they stated that the Islamic banks' rate of return simply follows the interest rate of the convention banks.

7. CONCLUSIONS

This paper examined the conventional banks' annual deposit interest rate and the Islamic banks' rate of return to the depositors of Bangladesh in determining whether there was a causal relation between them and the direction of causal relation during 2005-2015 with pooled data.

The paper applied ADF test and Phillips-Perron test for determining the stationarity of the series. The results of the test found that all series were stationary at both level and the first difference and thus reject the null hypothesis of non-stationarity.

The paper tested whether the two series, the deposit interest rate of the conventional bank and the rate of return to the depositors of the Islamic bank, were cointegrated by applying the Johansen

cointegration test. The result of the Johansen cointegration test established cointegration between the two series which established the stage for the VEC.

The result of the VEC model found that the Islamic banks' rate of return to depositors (ISBKDR) had significant impact on the conventional banks' deposit interest rate.

The significance of the ECT ($\hat{\theta}_{t-1}$) establishes long term Granger causal relation between the two series. The coefficient of the ECT ($\hat{\theta}_{t-1}$) is -0.58 indicates that the speed of adjustment was 58% if the conventional banks' deposit interest rate was deviated from the long term equilibrium.

The VAR Granger causality/Block Exogeneity Wald test was performed in determining the causal direction. The probability of the of χ^2 test statistics demonstrated unidirectional causality running from the Islamic banks' rate of return to depositors to the conventional banks' deposit interest rate.

The result of this paper does not confirmed the findings of Chong and Liu (2009) for Malaysia.

The absence of more data series prevented this paper to provide the robust conclusions.

As paper relied on just one series i.e., annual rate, the result of the paper cannot considered robust. The incorporation and the examination of more data series such as the monthly deposit interest rate, quarterly deposit interest rate, and the half-yearly deposit interest rate of the conventional bank as well as the rate of return to the Islamic banks' depositors were essential for robust conclusions. However, the absence of such data set prevented this paper in providing such conclusions.

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