Are Profit Sharing Rates of *Mudharabah* Account Linked to Interest Rates? An Investigation on Islamic Banks in GCC Countries

(Adakah Kadar Perkongsian Keuntungan daripada Akaun Mudharabah Berkait dengan Kadar Faedah? Kajian ke atas Bank Islam di Negara GCC)

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ABSTRACT

In principle, Islamic banking prohibits interest and advocates profit and loss sharing in its operations. Critics argue that in practice, Islamic banking is not totally interest free; but it focuses more on non-profit and loss sharing mechanisms instead. This study attempts to investigate the issue that the practices of Islamic banks are not totally free from interest and is arguably not totally in consonance with tenets of Sharia. It explores the relationship between the Profit rate offered by Islamic banks in GCC countries and the conventional interest rates. A long run analysis of the relationship between Profit Loss Sharing (PLS) rates and Conventional bank Interest rate (CBIR) for 18 Islamic Banks from the GCC countries conclude that there is no long run co-integration between CBIR and PLS rates. These results also seem to prevail even in the short run. The Variance Decompositions (VDC) analysis shows that except for Saudi Banks, there seems to be no significant link between the CBIR and the PLS. However for the case of Saudi banks, the link between PLS rate and interest rate is not strong enough to claim that Islamic Banking in practice is not interest free. Indeed, both the profit rates and the CBIR are linked to the real economy; and thus, this is reflected by the real rate of return in the economy. Therefore, we reject the claim that Islamic banks' operations are not riba free.

Keywords: Deposits; interest rates; Islamic banking; profit loss sharing rates

ABSTRAK

Perbankan Islam pada dasarnya melarang riba dan menyokong kepada perkongsian untung dan rugi di dalam operasinya. Pengkritik berpendapat bahawa amalan perbankan Islam tidak sepenuhnya bebas dari unsur faedah tetapi sebaliknya lebih mengutamakan kepada mekanisma untung dan rugi. Kajian ini bertujuan untuk mengkaji isu yang menunjukkan bahawa amalan perbankan Islam tidak benar-benar bebas dari unsur faedah dan juga tidak selaras dengan prinsip-prinsip Sharia. Hubungan di antara kadar keuntungan yang ditawarkan oleh bank Islam di negara-negara GCC dan kadar faedah konvensional dikaji. Satu analisis jangka panjang menentukan hubungan di antara perkongsian untung dan rugi dan kadar faedah konvensional untuk 18 buah bank Islam dari negara-negara GCC menunjukkan bahawa tiada integrasi jangka panjang di antara perkongsian untung rugi dan kadar faedah konvensional. Keputusan ini juga di lihat diguna pakai walaupun dalam jangka pendek. Analisis "Variance Decompositions" (VDC) menunjukkan bahawa tiada hubungan yang signifikan diantara kadar faedah konvensional dan perkongsian untung rugi kecuali bank-bank di Arab Saudi. Walaubagaimanapun, bagi bank-bank ini, hubungan di antara kadar perkongsian untung rugi dan faedah tidak cukup kuat untuk menyatakan bahawa amalan perbankan Islam adalah berasaskan faedah. Malah kedua-dua kadar keuntungan dan faedah konvensional boleh dikaitkan dengan ekonomi sebenar dimana ia adalah kadar pulangan yang sebenar kepada ekonomi dan kadar untung rugi tidak perlu bergantung kepada kadar faedah konvensional. Oleh itu kami menolak dakwaan bahawa operasi bank-bank Islam adalah berasaskan riba.

Kata kunci: Deposit; kadar faedah; perbankan Islam; kadar perkongsian untung rugi

INTRODUCTION

The prominence of Islamic banking in the international financial landscape over the last few decades has proven its feasibility and acceptance among industry players. Being away from the Islamic label and recently dubbed as "Participation banks" in World Islamic banking Competitive report (WIBC- 2014-15), the Islamic banks'

visibility and proliferation remained strong despite a few economic turbulences. WIBC (2014-2015) further highlighted that Bahrain and QISMUT (Qatar, Indonesia, Saudi Arabia, Malaysia, UAE and Turkey) countries are expected to remain the key drivers in the development of Islamic finance globally. QISMUT accounts 80% of International Participation banking assets and amassed USD650b, with five-year CAGR is expected to grow at 19%. In fact, the market share of participation banking assets in Saudi Arabia, Kuwait, Qatar, Malaysia, the UAE and Bahrain ranges between 20 to 49 percent. These countries are mainly the GCC countries (Saudi Arabia, Kuwait, Qatar, UAE and Bahrain). In addition, there are 21 participation banks around the world with more than USD 1b in equity and at least one with equity of more than USD10b.

Islamic Banking has been developing for the past four to five decades in all the GCC countries with the exception of Oman (Wilson, 2009: 1). The launch of the first Islamic Bank, Dubai Islamic Bank, in 1975 by private funds, the influx of "petrodollars" and the establishment of supporting institutions, such as Islamic Development Bank in Saudi Arabia, have encouraged and created conducive environment for other players in the GCC to enter the market. (Askari, Iqbal & Mirakhor 2010).

WIBC (2014-2015) report also highlighted that International participation of Islamic banking in GCC countries ranked first (33%), followed by ASEAN (14%), Southeast Asia (12%) and Turkey and Rest of the World accounts for only 5%. In terms of the growth rates of assets, WIBC (2014-2015) reported that Qatar leads the GCC countries (26%), followed by Saudi (17%), UAE and Kuwait (both at 11% each) and Bahrain (2%).

During the financial crisis of 2008, Islamic Banks in GCC are found to earn comparable return and at the same time, fared much better than Conventional Banks. This enviable stability performance of IBs has been attributed to their financing activities being more tied to real economic activities than their conventional counterparts (Syed Ali 2011).

Islamic banking, also commonly dubbed as "interest-free" banking, promotes fair, equitable financial transactions that generally fulfil the overall objectives of *shariah* to achieve economic equity, growth and stability (Ahmed, 2011). Proponents of Islamic Finance propagate that a financial system based on profit and loss sharing (PLS) is fair and equitable as both parties in any financial transaction would share the risk as well as the benefit. Thus, profit-and-loss sharing (PLS) becomes one of the most fundamental features of Islamic Financial system (Vogel & Hayes 1998).

Despite the global visibility and prominence, Islamic Banking (IB) is not operating without scrutiny by academics, industry players as well as regulators around the globe. Among the criticisms is the issue of dependence on conventional interest rates as a benchmark and non-profit loss sharing (PLS) mechanisms by Islamic banks.

Critics argue that in practice, IBs' modes of finance seem to be dominated by pseudo *Sharia* compliant, short-term debt, such as those products based on *Murabaha* and *Ijarah* contracts (Iqbal, Ahmad & Khan, 1998). Also, the *Mudaraba* based investment accounts representing the funds raised by the bank as *Sharia* compliant deposits would be remunerated based on a reference to a pre-specified interest rate like LIBOR instead of a percentage of the actual realized profits. Wide usage of pseudo-Islamic financial products and services raises serious questions about the motives and the future of Islamic finance (Ahmed 2011).

With GCC countries remain as catalyst for future sustainability of Islamic banking around the globe, it is also imperative that we address these scrutiny and criticisms by answering the following questions:

1. To what extent Profit sharing Investment accounts rates mimic Conventional Bank (CB) deposit rates in selected Islamic banks of each of GCC member countries?
2. What is the nature of causality between the PLS rates and IR in granger sense?

The rest of this paper is organized as follows. Section 2 presents a literature review. Section 3 and 4 present data and methodology. Section 5 discusses the empirical results. Finally, Section 6 concludes.

THEORETICAL UNDERPINNINGS AND LITERATURE REVIEW

Theoretically, Islamic Banks accept deposits on the liability side and invest them in *Sharia* compliant projects in the asset side, based on PLS mode of *Mudaraba* and *Musharaka* contracts (Lewis & Al-Gaoud 2001). In addition to avoid fixed-return interest payment, IB is to treat investment accounts as shares, and therefore does not guarantee their nominal value (Khan 1986). In other words, the bank operates a two-tier *Mudaraba* system in which it acts both as the *Mudarib/*fund-manager (agent) in the liability side and *Rab-al-mal*/capital-owner in the asset side (principal) (Lewis & Al-Gaoud 2001). Both the bank and the depositors share the risk of the contractual arrangements both as *Mudarib* and *Rab-al-mal*, *ex-ante* IB fixes the ratio of profit-sharing arrangement only (Ergeç & Arslan 2013). Efficiency, equity and stability of the banking system stemming from the practices of this two-tier silent partnership *Mudaraba* model are viewed as the advantages of IB over conventional banking (Iqbal et al. 1998).

As a matter of fact in this type of two-tier banking system, both assets and liabilities would be naturally equally impacted by shocks resulting from economic or financial crisis. Indeed in an equity-based system, shocks to asset positions would immediately be absorbed by changes in the values of shares held by the public in the

bank. Therefore, the real values of assets and liabilities of banks in such a system would be equal at all points in time. This in fact, is a remarkable advantage of an interest-free Islamic banking system over a conventional banking system. This is because in a conventional banking system, interest rate risk can lead to the deterioration of the asset side of the balance sheet, resulting in deficiency to pay for the liability side. Khan (1986) explained that PLS banking is deemed to be better suited in adjusting to shocks resulted from banking crises. Therefore, ideally, the financial position of IBs should not be affected by the fluctuations in the interest rates.

An Islamic bank depositor should be viewed as an investor who hires an agent to invest his savings on his behalf. The bank is the investment agent. In addition, Islamic banks are expected to finance economically productive, socially beneficial and *Sharia* based and compliant projects. In doing so, the bank needs to be profitable and the investor has to earn a return in order to keep his money invested and to limit the potential for being expropriated by the bank in the form of agency costs. Nevertheless, critics argue that in reality Islamic banks have only replicated all the practices of conventional banks (CB). In form, the balance sheet of an IB may differ from that of a CB, in substance however, there is no significant difference. IBs' mode of finance is dominated by *Murabaha/*cost-plus-mark-up and *ijarah/*operational-leasing contracts which are used to replicate goals of interest based conventional banking products (Iqbal et al. 1998). Ahmed (2011) postulated that because of moral hazard, mark-up financing of IBs becomes the dominant mode of financing (Iqbal & Llvellyin 2007).

By employing granger causality for Malaysian monthly data running from April 1995 to April 2004, Chong and Liu (2009) concluded that Islamic investments rates are highly correlated with the conventional deposit rates on a maturity matched basis. The overall results of the study further suggested that the Islamic deposits, in practice, are not very different from conventional deposits. In essence, it is found that the Islamic investment rates for both Islamic banks are closely pegged to the conventional deposit rates. Chong and Liu (2009) finally concluded that although investment accounts are structured based on a "profit-sharing" basis, in practice, they found that both the Mudaraba deposits are not "interest-free"; and their investment rates are closely linked to conventional interest rates.

Meanwhile, benchmarking against the fourfold taxonomy of El-Hawary, Grais and Iqbal (2004), Khan (2010) provided the evidence that large Islamic banks such as Al-Rajhi, Kuwait Finance House, Dubai Islamic Bank and Bank Islam Malaysia Berhad provide around 25% for PLS financing while the majority of financings are based on non-PLS financing. Khan (2010) argued that Islamic banking, IBF as it is currently practiced, simply replaces conventional banking terminology with terms from Classical Arabic and offers near-identical services to its clients but at a higher cost.

Expounding on the notion that Islamic mark-up finance products imitate the content of the interest based financial products on the asset side and the return profile of interest based savings account rates on the liability side, Cevik and Charap (2011) provided evidence that PLS accounts' returns exhibit long run cointegration with CB deposit rates for Islamic Banks in Turkey and Malaysia. In addition, even their time varying volatilities are correlated and statistically significant. Finally, the pairwise and multivariate causality tests revealed that CB deposit rates Granger cause returns on PLS accounts. Similar conclusion has been derived from the case of Turkish IBs by Ergeç and Arslan (2013). They found that IB loans and deposits are influenced by the fluctuations in the interest rates. The reason why IBs' financial position is affected by changes in interest rates is explained by the fact that IB earnings come from debt-like credit arrangements that are linked to prevailing conventional interest rates and the fact that PLS modes account a minor portion of their assets. Accordingly, the payments by Islamic banks to PLS account holders converge towards and move in tandem with conventional banks' deposit rates (Cevik & Charap 2011). This therefore, suggests that although theoretically, IB is supposed to be much like investment banks, not only on the asset side but also on the liability side, it is found to be mimicking CB by emulating rates on PLS accounts to that of interest based deposit rates.

Another reason for the co-integrating relationship between IB profit rates and CB deposit rates is attributed to IB depositors' behaviour. Not all depositors of IB are Muslims or committed to the cause of IB. Therefore, profit motive or moving their funds to IB has been a significant factor. Should the IBs do not pay competitive rates to those of CBs, then they face the risk of withdrawal. As a result, many a time, IBs have to forego their own profit in order to pay the depositors competitive rates, resulting in displaced commercial risk (Greuning & Iqbal 2008). Although, IBs have developed profit equalization reserve (PER) to mitigate displaced commercial risk, co-integrating relationship still persists because IB depositors have not fully accepted the PLS as a concept; and thus continue to pose withdrawal risk in the case of slight deviation from the prevalent market rate.

However, one could argue that setting up pre-specified profit rates does not necessarily mean that the profit rate is benchmarked with the conventional bank deposit rate. Also discovering a co-integrating relationship does not necessarily mean that Islamic banks are using commercial banks deposit rates as a cost for their deposits. It is our opinion that there are many reasons of why the profit rates of PLS would be correlated to interest rates. As interest rates fluctuate mainly based on forecasts of future economic activity, it is therefore expected to find a relationship between the return on investment made by the IB on the asset side and the profit

rates paid on investment accounts to fund providers on the liability side. If the bank sets the profit rates in accordance to what they expect as a profit on economically sound projects funded by the bank which is also linked to the real rates of interest; why would it be illegitimate for an Islamic Bank to set the profit rates on the investment accounts based on the real rate of interest as well? The real rate of interest is impacted by factors such as industrial production, unemployment, opportunity cost of capital, etc. which represent factors linked to the real economy. It is our opinion that even if one finds a co-integrating relationship between Profit rates on Investment accounts and Commercial banks deposit rates, it might only means that both are linked to one common factor measuring the economic activity.

Given the remarkable growth of Islamic banking in GCC countries, this present study attempts to fill in the gap by examining the behaviour of PLS account returns of 18 Islamic banks and assess, i.e. whether they are statistically linked to conventional bank deposit rates as argued in the case of Malaysia and Turkey (Chong & Liu 2009; Cevik & Charap 2011; Ergeç & Arslan 2013).

DATA AND METHODOLOGY

DATA

Annual financial data of eighteen Islamic commercial/ retail banks (IBs) in GCC, excluding Oman, were obtained for 1998 to 2010 period using IRTI Information System database. The selection of 18 Islamic banks is based on the availability of data covered in the period of analysis. This is also based on the prominence of these banks in each of the GCC countries as documented in WIBC (2013) Report.

The list of the IBs is presented below in Table 1.

Due to unavailability of data for Oman, we excluded Oman from our present analysis. The 12-month IB profit rates (IB1Y) on PLS investment accounts were calculated by dividing "Profits paid to investment accounts" over "*Mudaraba* investment and savings accounts". As a yardstick to measure conventional bank 12-month rates on savings accounts (CB1Y), we obtained monthly CB deposit rates from the Central Banks' websites of the respective nations. Finally, in order to establish direction of causality in VAR environment, consumer price index (CPI) was included as a control variable and the data of individual GCC states were obtained from IMF and World Bank databases. Table 2 contains the list of variables.

METHODOLOGY

In this section, we seek to unravel the relationship among profit loss sharing rate (PLS), conventional bank interest rates (CBIR) and consumer price index (CPI) for the selected Islamic banks in each of the GCC Countries as listed in Table 1.

TABLE 1 List of sample banks by country

Country	Sample Banks	Country	Sample Banks
Bahrain	ABC Islamic Bank Al- Baraka Group Shamil/ Ithmar Bank Al Salam Bank Bahrain Islamic Bank Gulf Finance House	UAE	Abu Dhabi Islamic Bank Emirates Islamic Bank Dubai Islamic Bank Sharjah Islamic Bank
Saudi Arabia	Al- Rajhi Bank Bank Al bilad Bank Aljazira	Kuwait	Kuwait Finance House Boubyan Bank
		Qatar	Qatar Islamic Bank Qatar International Islamic Bank Masraf Al Rayyan

TABLE 2 Definitions of variables

IB Profit Rates		CB Deposit Rates		CPI	
SAIB1Y	Saudi Arabia IB rates	SIBOR	Saudi Inter Bank rates	CPI_SA	Saudi Arabia CPI
KWIB1Y	Kuwait IB rates	KWCB1Y	Kuwait CB rates	CPI_KW	Kuwait CPI
QTIB1Y	Qatar IB rates	QTCB1Y	Qatar CB rates	CPI_QT	Qatar CPI
BHIB1Y	Bahrain IB rates	BHCB1Y	Bahrain CB rates	CPI_BH	Bahrain CPI
EAIB1Y	UAE IB rates	EACB1Y	Eibor Rates	CPI_EA	UAE CPI

Heterogeneous Panel Unit Root Testing   Given the presence of heterogeneity in all the Islamic banks in each GCC country, we employed the heterogeneous panel co-integration test of Pedroni (1999, 2004) to examine the cross-section interdependence with different individual effects.

The more recent literature provides evidence for panel unit root testing since this type of testing has a higher power as opposed to unit root testing based on individual series. Among the studies that documented such evidence are Levin, Lin and Chu (2002), Im, Pesaran and Shin (2003), Maddala and Wu (1999), Choi (2001) and Hardi (2000).

Based on the existing literature, the most popular panel unit root tests are developed by Levin et al. (2002) and Im et al. (2003) and are both based on ADF. While Levin et al. (2002) assumes homogeneity of the dynamics of the autoregressive coefficients of all members in the panel series, the Im et al. (2003) on the other hand, assumes heterogeneity in these dynamics.

Based on Im et al. (2003) and Iriani (2006), we started our analysis by specifying a separate ADF regression for the cross section as follows:

$$\Delta y_{it} = \alpha y_{it-1} + \Sigma_{j=1}^{p_i} \beta_{ij} \Delta y_{i-j} + X'_{it}\delta + \varepsilon_{it} \qquad (1)$$

Where

y_{it} is the series for panel member country i over period t ($i = 1, 2.....N; t = 1, 2....T$).
P_i = is the number of lags in the ADF regressions
ε_{it} = error terms which are assumed to independently related and normally distributed random variables for i and t with zero means and finite heterogeneous variances σ_i^2 and $X'_{it}\delta = (\Delta yit-1, ..., \Delta yi,t-Pi)$

The null hypothesis implies that all individual series are not stationary, where $\beta_i = 0$ for all individual series i. The alternative hypothesis implies that some or all individual series i are stationary. In this paper, Levin et al. (2003) unit root test is employed to test for stationarity for all panel data used in this study.

Heterogeneous Panel Co-integration   Panel co-integration test is an application of Engle and Granger's (1987) co-integration analysis to panel data. According to Engle and Granger (1987) and Engle (1982), when series become stationary after being differenced once or d times (integrated of order 1 or integrated of order d) the residuals, which is the proxy for the linear combination, may be stationary without differencing or integrated of order less than d. In the literature, these series are regarded as "co-integrated". However, these tests cannot deal with the case where more than one co-integrating relationship exists. Johansen's (1988) vector autoregressive approach uses a system approach that allows for determination of up to r linearly co-integrating vectors ($r \leq g - 1$), where g is the number of the selected variables tested. Johansen (1988) is known to treat homogeneity across members;

and thus, is not found to be appropriate in heterogeneity setting such as the panel data.

Pedroni (2004) documented a technique that overcomes the problem of panel data with small samples while allowing heterogeneity for intercepts and slopes of the co-integrating equation. Pedroni (2000) developed a method that comprises seven test statistics for cointegration of panel series. The statistics are divided into within-dimension as well as between-dimension.

The within dimension panel tests are:
1. Panel v statistics
2. Panel Phillips Peron panel type ρ statistics
3. Panel Phillips Peron panel type τ–statistics
4. Panel augmented Dickey Fuller type τ–statistics

The between dimension group tests are:
1. Group Phillips Peron panel type ρ statistics
2. Group Phillips Peron panel type τ–statistics
3. Group Augmented Dickey Fuller type τ–statistics

In this present study we adopted Pedroni's (2004) seven statistics which are based on the estimated residuals from the panel co-integration representation as follows:

$$PLSR_{it-} \alpha_{0t} \mid \alpha_{1t} CBIR_{it} \mid \alpha_{2t} CP_{it} \mid \mid \varepsilon_{it} \qquad (2)$$

where
i = refers to a given Islamic bank of a GCC country
$t = 1......T$ refers to the time period
$PLSR_{it}$ = Refers to the Profit loss sharing rate
$CBIR_{it}$ = Refers to Conventional bank interest rate
CP_{it} = Refers to CPI for each GCC country

With $\varepsilon_{it} = \eta_i \varepsilon_{i,(t-1)} + \mu_{it}$ are the estimated residuals from the panel regression.

Based on Equation 2, we posit that there should be no relationship between PLS rate and CBIR since Islamic banks do not normally charge or pay interest on investment deposits; therefore there should be no significant relationship with the CBIR.

The control variable, CPI, is a measure of the inflation rate and is expected to have a positive and significant impact on CBIR and PLS rates. Accordingly, since PLS rates are regarded as returns generated by an investment in the real economy, the relationship between PLS and CPI is expected to be positive in the case where investors are compensated for inflation.

The null hypothesis is to test whether μ_{it} is unity. Based on Pedroni (2004), if the test statistic exceeds the critical values, the null hypothesis of no co-integration is rejected; and thus, suggesting a long run relationship between PLSR and conventional bank interest rates in a given GCC country.

Variance Decompositions   We extended the analysis by looking into the short run dynamics among all the 18 Islamic banks in GCC countries. The Variance

Decompositions (VDCs) were adopted to examine the multivariate causality among the variables and to capture the relative strength of the causality among the variables beyond the sample period. The VDC is an out-of-sample causality tests which provides an indication of the dynamic properties of the system by partitioning the variance of forecast error of a certain variable into proportions attributable to innovations (or shocks) in each variable in the system including its own. VDC, therefore, provides a literal breakdown of the change in the value of the variable in a given period arising from changes in the same variable in addition to others in previous periods. According to Sims (1986), a variable optimally forecast from its own lagged values will have all its forecast error variances accounted for by its own disturbances.

The problem of inadequate depiction of the responses of a variable to shocks in another variable occurs when isolated shocks to each variable cannot be determined because of contemporaneous correlation. To solve this identification problem, Sims' (1980) strategy of orthogonalizing the shocks using Cholesky decomposition is normally employed. Orthogonalizing the VAR's shocks is critical in order that the shocks tracked by IRFs are not correlated. This happens when a shock in one variable works through the contemporaneous correlation with shocks in other variables. The problem of inadequate depiction of the responses of a variable to shocks in another variable occurs when isolated shocks to each variable cannot be determined because of contemporaneous correlation.

The ordering adopted for this study is based on the notion that PLS rate is closely linked to CBIR; and

therefore, we adopted the orderings of, PLS, CBIR, CPI and CBIR, PLS, CPI. These chosen orderings also reflect the typical assumption that changes in conventional interest rates are transmitted to the PLS rate and CPI with a lag.

Granger-causality In order to examine the pair-wise causality between two time series variables, the Granger Causality Test (Granger 1969) was employed. It determines whether the lags of a variable, x_{it} contributes to better forecasting of the variable y_{it} when the lagged values of x_{it} are incorporated into the regression of y_{it} together with its own lagged values as presented in the following models:

$$\Delta y_{i,t} = \alpha_{i,t} + \sum_{k=1}^{ly_i}\varphi_{1,i,k}\Delta y_{i,t-1} + \sum_{k=1}^{lx_i}\beta_{1,i,k}\Delta x_{i,t-1} + \varepsilon_{1,i,t} \quad (3)$$

$$\Delta x_{i,t} = \alpha_{i,t} + \sum_{k=1}^{ly_i}\varphi_{2,i,k}\Delta y_{i,t-1} + \sum_{k=1}^{lx_i}\beta_{2,i,k}\Delta x_{i,t-1} + \varepsilon_{1,i,t} \quad (4)$$

Where Δ is the difference operator, α, β, and φ are parameters to be estimated, i refers to the Islamic banks in each GCC country index $i = 1, …, N$ for all k and t refers to the time period $t = 1, …, N$, l to the lag length and $\varepsilon_{1,i,t}$ refers to the error term.

In order to determine the causal nexus between two variables PLS and interest rates, the above bivariate VAR models are used to assess whether Granger causality runs from x to y. The null hypothesis (H$_0$) can therefore be expressed as the following:

$$H_0: \beta_{1,i,k} = 0, \ k = 1, 2, ..., N$$

If H$_0$ is rejected, it means that at least one of the $\beta_{1,i,k}$ is not equal zero and thus suggests that lagged values of x has a predictive power in explaining the current values

TABLE 3 Unit root tests for the variables in levels and differences based on Levin et al. (2002)

	Level		First Difference	
	With Ind. E (I)	With Ind & trend (IT)	With Ind. E (I)	With Ind & trend (IT)
PLS SAUDI	-1.08757	-0.84053	-1.18834*	-1.43783*
CBIR SAUDI	-1.43783*	-1.98366**	-1.50557*	-1.13120*
CPI_SAUDI	-0.032571	0.794081	-5.926837***	-5.630826***
PLS KW	-2.15646	-1.00440	-0.90574	-2.00157**
CBIR KW	-4.06905***	-2.95353***	-2.88035***	-3.38481***
CPI_KW	-1.290201	-0.279036	-5.459561***	-5.458948***
PLS QTR	-0.60816	0.15328	-0.30326	0.31572
CBIR QTR	4.68898	Na	na	na
CPI_QTR	-0.982777	-0.781082	-5.407633***	-5.432688***
PLS BHR	-2.44442***	-2.60587***	-6.57868***	-7.40406***
CBIR BHR	-5.65957***	-3.21249***	-7.75157***	-7.13772***
CPI_BH	-2.064204	-0.274302	-4.189744***	-3.996721***
PLS UAE	-1.981648	-0.966077	-3.547157***	-3.507493***
CBIR UAE	-1.586463	-1.155202	-3.171849**	-3.121809***
CPI_EA	-1.141804	-0.563273	-4.950383***	-4.973025***

of *y*. This therefore suggests that *x* Granger causes *y* and vice-versa.

In our present study, if the interest rate (x) is found to granger cause PLS (y), we can infer that that there is a uni-directional causality running from interest rate to PLS rate. Accordingly, if PLS is found to granger-cause interest rate, it suggests a unidirectional relationship running from PLS to interest rate. However, if both PLS rate and interest rate are found to granger cause each other, we can therefore conclude that there is a bi directional relationship between the two variables.

ANALYSIS AND RESULTS

PANEL UNIT ROOT TESTING

In order to employ the methodology of Pedroni (2004), we started by testing for stationarity properties of our panel data. Here, we employed both the Levin et al. (2002) to determine the existence of unit root in our panel data series.

Based on the results in Table 5.1, we found that except for Islamic banks in Qatar, the selected variables for Islamic banks in Saudi, Kuwait, Bahrain and UAE are stationary at first difference. Therefore, this serves as a preliminary for us to test for the co-integrating relationships.

PANEL CO-INTEGRATION BASED ON PEDRONI (2004)

Next, we conducted the panel co-integration test for the data series of the selected Islamic banks in each of the GCC countries. Here, we test for the long run co-integration among PLS rate, CBIR and CPI as the control variable. Based on Pedroni (2004), the null hypothesis of no co-integration against the alternative hypothesis of co-integration was tested using the seven statistics.

As evident in Table 4, generally, the results of the co-integration tests indicate no co-integrating relationship among PLSR, CBIR and CPI for the selected Islamic banks in each of the GCC countries. These results, therefore,

suggest that there is no significant long run co-movement between profit rates (PLS) and conventional interest rates in all the selected Islamic banks of GCC countries. The results are not consistent with the findings on Turkey and Malaysia, which are interpreted as evidence of long run relationship between PLS, and conventional deposit rates (Cevik & Charap 2011; Chong & Liu 2009). We, therefore, reject the criticism that the operations of Islamic banks are mimicking the conventional interest rates as this cannot be generalized to all Islamic banks and in particular to Islamic banks of GCC countries.

We then proceeded to test for the short run dynamics among the PLS rate, CBIR and CPI by employing the variance decomposition and granger causality tests for individual country analysis. Our results focus more on the 3-year horizons.

VARIANCE DECOMPOSITIONS

Our results in Table 5 show that in the short run, for Saudi, up to 40% of the forecast variance of the PLS is due to shocks in conventional bank interest rate (CBIR). This result suggests that there is impact of interest rates on PLS but this impact is not strong enough to claim a complete e reliance of PLS rate on the conventional interest rates. Both the CBIR and PLS are impacted by real economic factors so there should be a link between the two variables.

The absence of a direct and perfect link of the PLS rates of Islamic banks with CBIR in the 2 to 3 year horizon is also obvious for the rest of the GCC countries under investigation. As a matter of fact, for UAE Islamic banks only 20% of the forecast variance of PLS rate is due to shocks in conventional bank interest rates and it is even less for Kuwait, Qatar, and Bahrain. Our analysis shows that there is no link between the CPI and the PLS rates. Therefore, fluctuations in PLS rates are mainly due to the fluctuations in the real rate of interest. This result is interesting as it proves that the PLS rates are impacted by real economic factors such as industrial production, unemployment, opportunity cost of capital, etc. which are incorporated in the real rate of interest.

TABLE 4 Panel Co-integration for GCC countries

	SAUDI	KUWAIT	QATAR	BAHRAIN	UAE
Panel v-Statistic	-1.209192	-0.751324	-1.594791	-0.076217	0.094274
Panel rho-Statistic	0.741763	1.115331	0.267676	0.580571	1.766762
Panel PP-Statistic	-4.885143***	1.250375	-6.198903***	-2.885052	0.638585
Panel ADF-Statistic	-1.802297	0.034025	-1.464471	0.453999	0.710173
Group rho-Statistic	1.140458	1.507875	1.040588	2.037880**	2.306808
Group PP-Statistic	-5.146297***	1.694856	-3.824668***	-0.420424	-5.917725***
Group ADF-Statistic	-1.708898	0.338616	-1.041303	-0.562403	1.407381

*, **, *** denote statistical significance at 10, 5 and 1 percent levels, respectively.

TABLE 5. Variance decompositions of PLS & CBIR

Country	VDCs of PLS rates			VDCs of CBIR		
SAUDI	DPLSR	DCIBR	DCPI	DPLSR	DCBIR	DCPI
	100.0000	0.000000	0.000000	22.08685	77.91315	0.000000
	57.34190	39.57769	3.080412	42.47416	51.56461	5.961230
	52.46954	43.53405	3.996406	19.14728	75.21285	5.639866
KUWAIT	DPLSR	DCBIR	DCPI	DPLSR	DCBIR	DCPI
	100.0000	0.000000	0.000000	1.038813	98.96119	0.000000
	99.28328	0.550632	0.166091	0.531675	99.45008	0.018244
	99.24636	0.553305	0.200333	0.678781	99.20284	0.118379
BAHRAIN	DPLSR	DCBIR	DCPI	DPLSR	DCBIR	DCPI
	100.0000	0.000000	0.000000	4.254569	95.74543	0.000000
	98.16347	0.323612	1.512920	6.651415	93.24878	0.099809
	94.20004	3.794184	2.005780	21.93673	70.30495	7.758319
QATAR	DPLSR	DCBIR	DCPI	DPLSR	DCBIR	DCPI
	100.0000	0.000000	0.000000	23.36696	76.63304	0.000000
	98.42186	1.521360	0.056777	20.68750	78.87130	0.441195
	96.40381	3.542600	0.053594	20.40588	79.40219	0.191932
UAE	DPLSR	DCBIR	DCPI	DPLSR	DCBIR	DCPI
	100.0000	0.000000	0.000000	28.54408	71.45592	0.000000
	85.79517	13.34215	0.862679	20.99839	67.58328	11.41832
	77.03754	20.04909	2.913364	21.65734	66.97291	11.36974

It seems clear from our results that banks in the GCC were not using the commercial bank deposit rates as a benchmark in setting up the profit rates on their investment accounts. Overall, based on Table 5.3 (a), PLS attributes around a maximum of 29% of shocks to CBIR.

To further investigate the pair wise correlation between PLS and IR, we adopted the Granger causality test for the short run analysis on the first differenced data. Based on the results of the granger causality test as evident in Table 5.4, we found that except for Saudi, the PLS rates are not significantly affected by CBIR.

This result further corroborates our hypothesis earlier that Islamic Banks in the GCC countries are not necessarily using the conventional interest rates on deposits as a benchmark to fix their profit rates on *Mudaraba* investment accounts. For Saudi, despite the fact that our results showed a statistically significant short run dynamics between PLS rate and CBIR, we cannot conclude on a systematic reliance on interest rates. As a matter of fact, both the profit rates and the CBIR can be linked to the real economy without CBIR causing the PLS profit rates.

Unlike Malaysia, where the Central bank and the *Shariah* Supervisory Council play an important role in the governance, each Islamic bank in GCC has its own *shariah* board. This allows the banks to have their own policies in terms of the pricing of their products. Since benchmarking is permissible, the extent of pricing the product to the interest rate differs among banks and

countries in GCC. Although different benchmarking behaviour exists among GCC countries, this does confirm that none of the banks in GCC is relying heavily on interest rates to price the *Mudaraba* PLS accounts.

For instance, our control variable being the CPI measuring inflation rates, should have no impact on PLS rates but can be a significant determinant of interest rates if the PLS rates are determined by real economic factors. In theory, any nominal rate of return should be equal to the real rate of return plus the expected inflation rate; therefore, in our case as the CPI measures expected inflation, it could affect both CBIR and PLS as both are measures of nominal rates. However, as we found that CPI does not impact PLS rates, any observed link between the interest rate and the PLS rates would be due to the link between the real rate of interest and the PLS rates. Our results showed a significant relationship between CPI and CBIR for all countries as expected. However, based on Table 5.4, we found that for all GCC countries there is no significant relationship between PLS and CPI in the short run. This is actually an interesting result as it shows that the variability of the CPI does not affect the PLS, and vice versa. We can, therefore, conclude that only the portion of the nominal interest rates that is the real rate of interest impacts to a certain extent Saudi banks' PLS rates; which is in coherence with the fact that PLS accounts generate returns that are linked to real economic factors. The results of the granger causality test corroborate the main finding of this paper that profit rates are not linked

TABLE 6 Granger causality - Short Run analysis

Country	Granger cause	F- Statistics	Decision
SAUDI	DCBIR=>D PLS	3.73722**	Uni- directional relationship from CBIR to PLS
	DPLS=>DCBIR	1.44789	
	DCPI=>DPLS	0.68098	
	DPLS=>DCPI	2.46200	
KUWAIT	DCBIR=>DPLS	1.05273	No directional relationship between PLS and CBIR
	DPLS=>CBIR	0.50121	
	DCPI=>DPLS	0.11491	
	DPLS=>DCPI	1.19732	
BAHRAIN	DCBIR=>DPLS	2.40946	No directional relationship between PLS and CBIR
	DPLS=>DCBIR	1.19416	
	DCPI=>DPLS	0.80231	
	DPLS=>DCPI	1.71977	
QATAR	DCBIR=>DPLS	0.24327	No directional relationship between PLS and CBIR
	DPLS=>DCBIR	0.92490	
	DCPI=>DPLS	1.25786	
	DPLS=>DCPI	0.78356	
UAE	DCBIR=>DPLS	1.80553	No directional relationship between PLS and CBIR
	DPLS=>DCBIR	1.65281	
	DCPI=>DPLS	0.47697	
	DPLS=>DCPI	2.68133	

to Commercial banks' deposit rates but have some co-movement with the performance of the real economy.

CONCLUSION AND RECOMMENDATION

This paper investigates the claim that Islamic Banks are benchmarking the profit and loss rates of the investment accounts on conventional banks' deposit rates. A long run analysis of the relationship between PLS rates and CBIR for 18 Islamic banks from the GCC countries concluded that there is no long run co-integration between CBIR and PLS rates. These results seemed to prevail even in the short run. The VDC analysis showed that, only for Saudi banks there seems to be a link between the CBIR and the PLS; but this link is not strong enough to claim that Islamic Banking in practice is not interest free. The Granger causality test concluded that there is no causal link for all banks except for Saudi banks. It is our opinion that there are many reasons of why the profit rates of PLS would exhibit correlation with interest rates. In fact, the profit rates generated by Islamic banks from the investment made in the asset side of *Musharakah* accounts or paid to depositors on the *Mudaraba* investment accounts in the liability side are expected to have some relationships with the opportunity cost of capital or the real rate of return in the economy which is one main determinant of the interest rate in the economy. Therefore, we should not be surprised to find a link, though not perfect, between PLS accounts and interest rates in the economy.

The nominal interest rate fluctuates for two main reasons: fluctuation of the real rate of interest and fluctuation of the expected inflation rate. Therefore, if the bank sets the profit rates in accordance with what they expect as a profit on economically sound projects funded by the bank which is also linked to the real rates of interest, we should expect to see correlation between these PLS rates and CBIR rates without incriminating Islamic banks. This correlation, however, is not significant to make PLS rates to be dependent on interest rates.

The results of this present study do not support the existing studies by Cevik and Charap (2011) and Chong and Liu (2009) for Malaysia and Turkey which suggest the correlation between profit rates of PLS and CB interest rates. All these previous studies overlooked the fact that PLS accounts as well as commercial banks deposit rates are determined by some common real economic factors. Therefore, the criticism made to the practice of Islamic banking is, in our opinion, not founded.

Our study provides the evidence that PLS accounts of Islamic banks in GCC cannot be considered as significantly linked to the Commercial Bank Deposit Rates. Therefore, we reject the claim that Islamic banks' operations are not Riba free. This paper provides a counter argument as it proclaims that the operations of Islamic banks in the GCC countries are consistent with the *maqasid al-shariah.* In addition, we can also infer that Islamic banking in GCC countries is more stable as it is less susceptible to fluctuations in interest rates in both long run and short run.

Future studies could use direct survey of Islamic bank managers to understand how the PLS is used in practice and which benchmark they are actually referring to, if there is any.

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