The Study of Co-integration and Causal Link between Islamic Bank Financing and Economic Growth

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Abstract

This research is an effort to evaluate the link between Islamic bank financing and economic growth by considering the case of Malaysia and Pakistan. The study utilizes data on quarterly basis for the period of 2006 to 2014 and primarily adopts Engle Granger approach of co-integration, Auto Regressive Distributive Lag (ARDL), Error Correction Model (ECM) and Granger Causality tests for finding nexus between Islamic banking financing and economic growth. The results demonstrate a meaningful 'supply leading' relationship in long term as well as in short term in case of Malaysia as Islamic bank financing lead the GDP and TRADE. In the context of Pakistan, the relation was found to be insignificant between the Islamic bank financing and economic growth. Because of limited data and recent introduction of Islamic banks, there is paucity of literature on the topic, specifically in Pakistan, where there is dire need of economic development. Therefore, this study is an attempt to fill the gap in literature and the intended incremental contribution of the existing study for the Islamic banking practitioners are very clear based on the results presented.

Keywords: Islamic banking, Economic Growth, Engle Granger, Granger Causality

Introduction

At the Global Forum on Islamic Finance (GFIF) arranged by the COMSATS Institute of Information Technology, Mr. Kazi

Abdul Muktadir, Deputy Governor of the State Bank of Pakistan stated that the rapid growth of Islamic finance is reflective of its increasing acceptability and same will continue in the upcoming years as it has the capacity to fill in the gaps where conventional finance has fallen short off (IBB, 2013). This stimulated development, since 1970s, has remarked banking and financial system of the economy in two major forms. The first is an attempt to establish Islamic financial institutions side by side with traditional banking. The second is to restructure the whole financial system of the economy in accordance with Islamic concepts (Khan and Mirakhor, 1990). Large number of studies, at one extreme, reinforce the positive role of Islamic finance in the stimulation of general welfare of the society (Usmani, 2002; Saleem, 2008). While on the other hand, some authors believe that due to certain imposed restrictions and Islamic values on finance and economics, Islamic banking hampers the economic development which ultimately leads to the detrimental economic outcomes (Volker, 2006; Kuran, 1995, 2004; Cobham, 1992).

The disputed views and conflicting results about the effects of Islamic banking are still at variance and unsettled. However, for policy makers it is important to understand and look forward whether the existence of Islamic banks for the economic development will be worth seeking or not (Gheeraert, 2014). This study, therefore, endeavors to test empirically the impact of Islamic banking on the economic growth by examining its contribution in the context of Pakistan and Malaysia.

It is also widely believed by the Western scholars and economists that relative benefits of the conventional banking system are less than the problems it creates (Keynes, 1936; Ohlin, Robertson, & Hawtrey, 1937; Fisher, 1945; Simons, 1948; Weber, 1958; Perlman, 1976; Collard, 1978; De Meza and Webb, 1990; Wilson, 1997). Unlike the conventional banks, Islamic banks deal in the asset backed transactions due to which it can be assumed that Islamic financial transactions enhances the productive activities of the country that leads to the economic growth. Moreover, taking advantage of individual's fear of risk and loss associated with startup of new businesses conventional banks provide temptation of earning interest without making efforts and sharing risk which discourages entrepreneurs and in turn leads to fall in economic production. Despite of its growing share in Islamic countries, there is no clear evidence whether Islamic banking development leads to economic growth or economic

growth causes development of the Islamic banking institutions or there is recursive relationship between the two.

Justice Mufti Muhammad Taqi Usmani, renowned authority on issues related to Islamic finance, responded in one of the press conferences in Malaysia to pungent question of whether Islamic bank financing contributed to the development of economy or not in these words, *"They have contributed a lot and they have contributed nothing"*. This answer has triggered research question for this study and strives to find "*whether the relationship between the Islamic bank financing and economic growth is Schumpeter's 'supply-leading' or Robinson's 'demand-following' or it appears to be two-way relationship?"*

The main objective of the study is to scrutinize the effectiveness of religious-based paradigm and how it influences the economic growth of the country by examining the relation of IBF with GDP, TRADE and GFCF. This important paradigm is an implicit, although potent, drive of various economies, which is mostly ignored while discussing the general framework of the economies. Therefore, the current study aims to narrow down the gap in the literature with respect to Islamic banking contribution to the economic development of Pakistan and Malaysia. The study may have practical implications for the policy makers to know the significant influence of the Islamic banking on the economic growth by using data of Malaysia and Pakistan.

The study comprises of five parts. The first part consists of introduction followed by the brief literature review. Third part of the study presents the detailed methodology and also describes the methods, the sample selection, the data collection techniques and an overview of the statistical tests used in the study. Last part of the study, outlines the main findings of the study and draws conclusions on the basis of the results presented.

Literature Review

The role of business and productivity in economic development has been axiomatic. Ibne Khaldun noticed that well-being of civilization and business development is contingent on productivity and people's efforts in their own interest and profit. When people are involved in doing businesses for making livelihood stop all profitable activity, the business of civilization plunges and everything degenerates [Ibn Khaldun (744-820 Hijrah 1332-1406 AD) (Islamic Economics).

Cameron (1972) posited from the history that the development of a country is a function of four variables, i.e. resources, population, technology and social institutions. Referring to the Capital as being a good measure of resources, banks have been the foremost and chief creditor for businesses. Current debates on development economics indicates how financial development and economic growth link is important to study. Based on the literature findings, the link can be observed more precisely by examining three types of causal relationships; 1) supply-leading; 2) demand-following and 3) bi-directional causal relationships.

In supply-leading relationship, the financial institutions precede the economic growth. As per Patrick (1966), growth enhancement can be made through financial institution which bring efficiency in capital allocation. However, according to demand following approach the developments of financial sector stems from the real economic growth. This entails widening markets and increasing product differentiation both requiring high levels of efficiency in risk diversifications and transaction cost (Hermes and Lensink, 1996).

Owing to financial development significance, a large number of studies has been carried on the same topic, including, McKinnon (1973), Shaw (1973), King and Levine (1993) Demetriades and Hussein (1996), Levine et al., (2000), Beck et al., (2000) Beck and Levine (2004), Shen and Lee (2006).

Out of the extensive research carried out in this field, there is still paucity of literature within the Islamic financial framework (Abduh and Omar, 2012). With regard to the role of Islamic financial development in economic growth, studies conducted by Furqani and Mulyany (2009); Majid and Kassim (2010) and Abduh and Omar (2012) are among the few. Although, findings of all of them are different in terms of varying relationships, if analyzed of same quarterly period of year. Results of the study by Furqani and Mulyany (2009), implies that economic growth causes the development of Islamic financial institutions, thus, supporting the "demand-following" theory and is inconsistent with the results of the study performed by Majid and Kassim (2010) supporting the supply-leading theory. The results of the study performed by Abduh and Omar (2012), although, demonstrate a significant relationship in both short-term and long-term, but it is neither Schumpeter's supply-leading nor Robinson's demand-following. It appears to be bi-directional relationship. The objective of this

study is, therefore, to test the same relationship in the context of Pakistan which has not been examined previously. At the same time, the study also examines the same relation for the Malaysia which was although tested previously by Furqani and Mulyany (2009) but with different time span.

Research Methodology

Data and Variables

In this study we used time series quarterly data for the period from 2006 to 2014, obtained from different sources. Islamic bank financing (IBF) was used as a proxy for the financial sector. As real trade activities arises of asset back financing/investment leading to the circulation of wealth among many hands thereby IBF can be used as an appropriate proxy for finding the role of Islamic banking in the economic growth. The data for IBF was retrieved from the Monthly Statistical Bulletins published by the Bank Negara-Central bank of Malaysia and Islamic Banking Bulletin available on the website of the State bank of Pakistan. The data of IBF was converted into quarterly data by taking average in case of Malaysia while in case of Pakistan it is quarterly published so there was no need to take average. To represent international trade (*TRADE*) as an economic indicator, the imports and exports of were summed together. The gross fixed capital formation (*GFCF*) and gross domestic product (*GDP*) were also used as a proxy for the real economic sector. The variables representing the real economic sector, both in case of Malaysia and Pakistan, were retrieved from the website of World Bank. To meet the assumption of normality the data were also transformed by taking natural log.

Statistical tests

In order to check the dynamic interaction between the Islamic bank financing and the economic development of Malaysia and Pakistan, the study has adopted the Engle Granger approach of co-integration in case of Pakistan where all the variables were integrated of order I(1) and ARDL in case of Malaysia where there were mix of I(0) and I(1), based on the Augmented Dickey Fuller (1988) test results *(see table-1)*. Engle Granger is a two-step process. In first step we run an OLS model and check for the R-square and Durbin Watson values. If the R-square values are greater than the Durbin Watson statistics then the results are spurious in nature. From this first step we retrieve the values of the residual series. Now in the second step we apply Unit root test on

the residual term, obtained from the OLS, to find whether it is stationary or non-stationary which in turn indicates that whether long-run relationship exist or not? If the results are found to be stationary then we cannot accept the null hypothesis of no co-integration, thereby, indicating the long run relationship.

Table 1
Unit Root Test Results

	Augmented Dickey Fuller Test					
	Malaysia			Pakistan		
Variable(s)	Level	Difference	Diagnosis	Level	Difference	Diagnosis
*(ln)*GDP	-0.904829	-4.241863***	I(1)	-1.0327	-4.44898**	I(1)
*(ln)*GFCF	-1.185276	-2..799333*	I(1)	-1.8398	-3.07259**	I(1)
*(ln)*IBF	-5.761***	----	I(0)	-2.2547	-5.25245**	I(1)
*(ln)*Trade	-0.074709	-3.948676***	I(1)	1.96096	-3.91732**	I(1)

Note: *, **, *** significant at 10%, 5%, 1%, levels, respectively.

Further, to find the direction of relationship between IBF and economic growth, Pair Wise Granger Causality test was used. Granger (1988) argued that if cointegration exists between the variables, there is causality running between these variables in at least one direction. Before using Granger causality test appropriate lags were also selected based on the AIC and SIC values, through VAR model.

RESULTS FOR PAKISTAN
Engle Granger Test Results for Pakistan
      The Engle Granger test of co-integration indicates that there is no significant association between the economic development and Islamic banking expansion in case of Pakistan. The reason for such results may be due to the particular modes of financing and investments in which the Islamic banking is currently involved. According to Hanif (2014), the two main modes of Islamic financing and investment comprise of Sharia Based *(i.e., Musharaka and Mudaraba)* and Sharia Compliance *(i.e., Murabaha, Bai Muajjal and Istasna)*. It is the Sharia Based mode of financing which is widely encouraged by Islam rather than, although allowed, Sharia compliance modes of financing and investment. The real economic contribution of the Sharia Based modes of Financing is more as compared to the Sharia compliance modes of financing if properly introduced. Financing under Sharia

Based modes of transactions is challenging for Islamic Financial Institutions. Under this scheme, it is essential to prove the viability of the business project before undertaking any deal as the risk of loss is involved. Due to this risk factor, Islamic banking institutions prefer to deal in *Murabaha*, *Bai Muajjal* and *Istasna* rather than *Musharaka* and *Mudaraba* which create a real difference in the economic development. The insignificant association between the Islamic banking financing and economic development may be due to this underlying reason of less involvement in Sharia based modes of financing.

PAKISTAN

Table 2
Engle Granger Test Results for Pakistan

Variables	OLS				ADF for residual	
	Coefficient	Prob.	R^2	DW stat	Prob.	Findings
*(ln)*IBF←*(ln)*GDP	2.620585	0.0000	0.916587	0.306822	0.4592	No cointegration
*(ln)*GDP←*(ln)*IBF	0.349764	0.0000	0.916587	0.300932	0.4568	No cointegration
*(ln)*IBF←*(ln)*GFCF	4.464264	0.0000	0.510849	0.147587	0.6411	No cointegration
*(ln)*GFCF←*(ln)*IBF	0.114431	0.0000	0.510849	0.245393	0.1143	No cointegration
*(ln)*IBF←*(ln)*TRADE	2.628302	0.0000	0.855665	0.242036	0.5030	No cointegration
*(ln)*TRADE←*(ln)*IBF	0.325558	0.0000	0.855665	0.252900	0.6897	No cointegration

*Note: * significance at 10% level, ** significance at 5% level, *** significance at 1% level*

RESULTS FOR MALAYSIA

Before, applying ARDL test appropriate lag were selected by following the AIC lag selection criterion. In relation of IBF with GDP lag-2 were found to be appropriate, in case of Gross Fixed Capital Formation (GFCF) and IBF lag-1 was found appropriate and relation of TRADE with IBF lag-2 was found to be the best choice.

MALAYSIA

Table 3
Lag Selection (-Malaysia)

LAGS	LAG-1		LAG-2		LAG-3		LAG-4	
Criteria	AIC	SC	AIC	SC	AIC	SC	AIC	SC
*(ln)*GDP & *(ln)*IBF	-4.872	-4.648	-4.910	-4.593	-4.792	-4.380	-4.867	-4.358
*(ln)*TRADE & *(ln)*IBF	-4.755	-4.531	-4.795	-4.478	-4.677	-4.265	-4.667	-4.158

| *(ln)*GFCF & *(ln)*IBF | -4.393 | -4.169 | -4.314 | -3.996 | -4.202 | -3.790 | -4.306 | -3.797 |

AIC= Akaike info criterion and SC= Schwarz criterion

Relationship between IBF and Economic Growth (Malaysia)

For finding the long-run relationship of IBF with GDP, TRADE and GFCF the ARDL were used. The result of the Wald test indicated significant relation in all the three cases. In Wald test we compare the F-Statistic value with the Pesaran critical value at 5%, 10% and 1% level *(see table 4)*. The lower bond value is 3.79 and the upper bond value is 4.85 which indicates that there is a long run relation of IBF with GDP, TRADE and GFCF and hence supports the '*supply-leading*' hypothesis. As normally suggested, after finding for the long run relationship, we have also checked for the short-run dynamics between the variables by using Error correction model (ECM). In case of relation of IBF with GDP and TRADE, the error correction term (ECT) is found to be negative as well as significant which represents the speed of adjustment from the short-run towards the long-run equilibrium and therefore validates, both, the long run co-integration relationship between the variables. However, the relation of IBF with GFCF was found to be insignificant but the coefficient value was negative. The results are inconsistent with the study of Furqani and Mulyany (2009) in the context of Malaysia for the period from 1997:Q1 to 2005:Q4.

Table 4
Long-run and Short-run Relationships

	Wald Test		ECM		Stability Diagnostics		Serial Correlation
Variables	F-statistic	Probability	Coefficient	Prob.	Long Run	Short Run	Findings
*(ln)*GDP ←*(ln)*IBF	2.106310	0.1217	-0.097856	0.05*	Stable	Stable	No
*(ln)*TRADE←*(ln)*IBF	2.737087	0.0648	-0.109158	0.03**	Stable	Stable	No
*(ln)*GFCF←*(ln)*IBF	0.918189	0.3992	-0.045847	0.19	Stable	Stable	No

*Note: * significance at 10% level, ** significance at 5% level, *** significance at 1% level*

The general model for ECM can be written as:

$$\Delta A_{it} = \sum_{j=1}^{p} \delta_j \Delta A_{it-i} + \sum_{j=1}^{p} \beta j \Delta B_{it-j} + \delta 1\, \gamma_{it-1} + \Delta \varepsilon_{it}$$

$$\Delta B_{it} = \sum_{j=1}^{p} \delta_j \Delta B_{it-i} + \sum_{j=1}^{p} \pi j \Delta A_{it-j} + \delta \gamma_{it-1} + \Delta \varepsilon_{it}$$

Granger Causality Test for Malaysia

GDP and IBF: The results of granger causality test show that we cannot reject the supply leading relation between GDP and IBF. Islamic bank financing lead GDP in case of Malaysia. On other hand we can see that gross domestic product of Malaysia does not granger causes Islamic bank financing. So there is unidirectional relationship between GDP and IBF and supporting the view of *supply leading* hypothesis in Malaysia.

TRADE and IBF: The result of the relationship between TRADE and IBF illustrates that Islamic financial system of Malaysia lead imports and exports across the country and this further strengthens the result of 'supply-leading' relation between the variables.

GFCF and IBF: The result of the Granger Causality tests depicts that we cannot reject null hypothesis that is IBF does not lead GFCF in Malaysia and vice versa.

Table 5
Granger Causality Tests Results (Malaysia)

Sample: 2006Q1 2014Q4				
Pair	Null Hypothesis:	Obs	F-Statistic	Prob.
*(ln)*GDP/*(ln)*IBF	IBF does not Granger Cause GDP	34	7.93027	0.0018***
	GDP does not Granger Cause IBF		1.20902	0.3131
*(ln)*TRADE/*(ln)*IBF	IBF does not Granger Cause TRADE	34	9.70636	0.0006***
	TRADE does not Granger Cause IBF		0.53602	0.5908
*(ln)*GFCF/*(ln)*IBF	IBF does not Granger Cause GFCF	34	0.12064	0.7306
	GFCF does not Granger Cause IBF		2.68915	0.1108

*Note: * significance at 10% level, ** significance at 5% level, *** significance at 1% level*

Conclusion

Islamic banking seems no more an alien concept in the conventional banking world. The limited amount of empirical research in finding the role of Islamic banking in the economic

development has left many policy-related questions unanswered. One reason for the scarcity of studies on the subject has been the lack of suitable information. However, with the availability of some patchy but useful data at hand it is now possible to arrive at some interesting conclusions in a systematic fashion.

The results of the current study indicates that Islamic banking has visible economic contribution in case of Malaysia. The results of the ARDL and ECM tests indicated the existence of, both, long-run relationship and short term relationship between Islamic bank financing and economic growth. The Pair Wise Granger Causality test also confirmed that the direction of causality was running from the IBF to economic growth, hence supporting the *'supply-leading'* relationship. However, in case of Pakistan the results were found to be insignificant. The possible reasons for the insignificant co-integration results in case of Pakistan may be due to its recent introduction in Pakistan that is 2002. Secondly, the market share of both Islamic banking net financing and investment is about 7.5% in the overall banking industry (IBB, 2015) which is too less as compared to its conventional counterparts. Along with this the insignificant contribution of Islamic banks may be due to its extensive involvement in the Sharia compliance modes of financing rather than Sharia Based modes of financing which will induce the real economic growth, in true sense, if properly introduced (Hanif, 2014). In Shariah Based modes of financing, although, *Mudaraba* and *Musharaka* are widely utilized on liability side, but for its real impact on the economy, it is important to use it as an investment tool as well (Shahid, 2007).

The Malaysian practices of Islamic banking are more standardized due to their earlier history. Beside this the political and governmental support for Islamic finance industry is also high in Malaysia as compared to Pakistan and has witnessed the emergence of several Islamic financial institution operating under the umbrella of one Shariah governance framework over the passage of time. In case of Malaysia Islamic banks and conventional banks are operating under the separate regulatory authorities while in case of Pakistan the central regulatory authority for both types of banks is State Bank of Pakistan. Some of the research studies have also reported the rapid growth figures of Islamic banking sector in case of Pakistan therefore part of the difficulty in delineating the exact relationship between the economic growth and financial development may also be due to

the exclusion of many variables that directly or indirectly effects the relationship and are important to be controlled and thus can be considered as a gap for the future research.

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