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Are Shari'ah Compliant Banks Good For Economy? Granger Causality Approach

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Abstract:

This paper aims at examining the cause and effect relationship between banks' efficiency performance and countries' economic growth. Data Envelopment Analysis (DEA) is used to estimate the banks' efficiency scores. The sample banks consists of 44 Islamic banks and 44 matched sample of conventional banks from 20 countries from Asia, Africa, the Middle East, Gulf region, and Europe. This paper utilizes the Granger-causality test to achieve the study objectives over the sample period from 2005 to 2016.

Findings show that Islamic banks albeit on average inefficient are more technically efficient than conventional banks and seemed to be relatively immune to the effects of the global crisis of 2008. Islamic banks show also a lower volatility on their performance over time and operate most of the time very close to the efficient frontier of DEA. Banks inefficiencies were driven by banks' poor management practices for choosing the optimal mix of inputs and outputs. Inappropriate Scale of operations contributes also to the overall inefficiency.

In terms of the analysis of Granger causality relationship between banks' efficiency performance and economic growth, results reveal that Granger causes run both directions between banks' performance and growth on economic GDP for Islamic banks in the short and long run for the entire period. While, a strong evidence of only a short-run relationship without causation effect is found between conventional banks' performance and economic growth.

Findings suggest that investors, financial institutions, and countries alike should encourage the Islamic business model and activities as they could help in financing businesses to induce economy and link financial expansion to the growth of the economy.

Keywords: Islamic banks, Conventional Banks, Economic Growth, DEA, Granger-causality test

JEL classification: G21, G01, G29, G39, C23, E44, G21

1. Introduction

A tremendous number of studies have examined the relationship between the financial sector and the economic growth. Three views had accordingly been proposed. The finance-led growth hypothesis suggests a favorable effect of banking sectors on economic growth due to their impacts on the growth rate of investment, savings, and capital accumulation (Schumpeter, 1912); McKinnon (1973); Levine (1997); Levine (2005); Destefanis et al. (2014); Belke et al. (2016); and Diallo (2018)).

By contrast, the efficiency channel hypothesis assumes the development of the economy sector might accelerate the development in the financial industry (Robinson, 1952). This is because a high economic growth may increase the demand for financial instruments thus the overall financial markets are effectively response to these demands (Adeyeye et al, 2015; Elhachemi & Othman, 2015).

A third school of thought proposed by Patrick (1966) suggests the stage of development hypothesis assuming a causal or bi-directional association between financial development and economic growth (Sbia et al, 2017). This hypothesis combined both the supply-leading and demand-following hypotheses. According to this hypothesis, the supply-leading hypothesis holds in an economy in the early stage of development, and as the economy grows, it fades away and the demand-following hypothesis prevails. However, Lucas (1988), and Dornbusch and Reynoso (1989) argued that the role of financial institutions in economic growth is overemphasized.

While there is a large number of existing literature investigating the performance of conventional banking systems over recent years, the empirical evidence examining the cause and effect relationship between Islamic banking sector performance and countries economy is still at its infancy.

Over the past years, Islamic banks' financial transactions made up only a small part of the total traditional banking industry (Ernst & Young, 2016). Currently, Islamic banking is growing tremendously to serve the international financial markets. According to Thomson Reuters (2017), the Islamic finance global total assets value has reached US\$2.432 trillion in 2017 and are projected grow to reach US\$3.5 trillion in 2021. Islamic banking is the biggest contributor to the total value of Islamic finance assets. In 2017, Islamic banking's share of Islamic finance assets was about US\$1.854 trillion. It is expected that Islamic banking sector will grow to reach US\$2,825 trillion in 2021. Therefore, the relationship between Islamic finance performance and economic growth is considered an important issue that needs more investigation. Accordingly, this study focuses primarily on measuring the relationship between banks performance and countries' economic growth.

The concept of Islamic finance was discussed in very rare works and extremely from a religion point of view (such as Jobst 2007; Errico and Sundararajan 2002; and Samad and Hassan (1999). Only few previous empirical studies touching on Islamic banking financing schemes and their impact on the economic growth. Moreover, a limitation of existing studies is that they generally used the common financial ratios as a proxy of performance. It is thus uncertain as to whether the previous studies' results about the effect of financial performance on growth are also valid when applying nonparametric measures to examine banks "efficiency" performance for financial systems where Islamic banks play an important role.

Moreover, the global credit crunch of 2008 has spark a series of failures of many conventional banks. Islamic banking appeared to be to some extent impervious to the global economic meltdown (Abduh & Chowdhury, 2012; Alamer et al., 2015). By contrast, some studies showed that there is no difference between Islamic and conventional banks in the degree of resilience to the global crisis (Kassim, 2016). The mixed conclusions of previous empirical studies therefore remain inconclusive and needs further investigation.

This study contributes to the literature by answering the following questions; 1) Does Islamic banks' efficiency performance high enough to stimulate economic growth differently as compared to conventional banks? 2) Does economic growth affect banks' efficiency performance? 3) Is there a bi-directional influence between banks' efficiency performance and economic growth? 4) Can Islamic banks be the optimal substitute for conventional banks to stimulate the economic growth in and outside Muslim majority countries, particularly when a financial crisis hit the real economy?

The results arise from this study might offer significant implications for Muslim and no Muslim portfolio managers who want to reflect their religious values in their investment. This is because results give some indications for potential diversification opportunities arising from Islamic banking investments, which become more significant during global financial crisis. Information about the impact of Islamic finance on economic growth affects the priority that policymakers attach to reforming financial sector strategies and policies.

The remainder of this paper is organized as follows. Section 2 provides a literature review with reference to the relationship between Islamic banking development and economic growth. The data and the underlying methodology are given in Section 3, while Section 4 reports and discusses the empirical findings. Section 5 then concludes the paper.

2. Literature review

Interest-free economics is primarily tries to establishing free markets and equitable access and distribution to capital (Askari et al, 2015). It aims also to promote initiative production. The absence of interest is a crucial feature of the Islamic finance, thus may be considered an optimal way to promote economy. Most of the existing research papers that measured the relationship between Islam, as a religion, and economic growth came up with mixed results. Bryan (1978) argued that capitalist and conservative Islamic religion cause economic decline in Muslim states. Pryor (1985) claimed that the Islamic system lead to lower savings and thus did not support economic growth. Others such as Guiso et al., (2003) claimed that Muslim investors are "anti-market"; therefore, their transactions will negatively associate with attitudes toward economic growth.

Apparently, the results above are arguable and inconclusive. As a matter of fact, Islam grants and support freedom of Islamically acceptable enterprises, approves a free play of market forces and encourages trade that can flourish the economy (Kamarulzaman&&Madun, 2013). Furthermore, to help the poor and to reduce income disparity among the people, Islam is the only religion that has its own Zakat system that automatically reduce the income gap between the rich and the poor. In addition, Islam prohibited interest rate, as it suppress the borrower (Usmani, 1998). Thus, Islam as a religion is assumed to bring prosperity to the people and to have positive effects on the economy (Barro and Mcclery, 2003). In spite of the favorable views on the effect of Islam and Islamic financial operations on economic growth, these views unfortunately have not received a serious empirical analysis for a long time. It is, however, only recently those researchers have started to empirically examine the Islamic finance-economic growth relationship.

There were some empirical attempts to analysis some of the most common financial ratios and banks characteristics of Islamic finance such as liquidity, leverage, credit risk, and profitability such as; Metwally (1997), Samad and Hassan (1999), Bashir (2001), Rosly and Bakar (2003), Samad (2004), Kader and Asarpota (2007), and Moin (2013). Previous works are considered also limited on their scope as they focused on Muslim majority countries such as Jobst (2007), Errico and Sundararajan (2002), and Samad and Hassan (1999)). Some other papers examined the efficiency performance of Islamic banks without concentrating on banks effects in economic growth such as Limam, (2001), Majid et al., (2003), Yudistira (2004); Hassan (2005), Mokhtar et al., (2006), Johnes et al., (2007), Kamaruddin et al., (2008), Abdul-

Majid et al., (2010), Kablan and Yousfi (2011), Qureshi and Shaikh (2012), Ajlouni and Omari (2013), Irfan et al., (2014), Yilmaz et al., (2015), and Bukhari et al., (2015).

Several economists (e.g. Abduh & Chowdhury, 2012; Alamer et al., 2015) argued that the Islamic financial system significantly contributes to the health of the economy. They also revealed that Islamic financial system is better compared to the conventional system particularly during the global financial crisis. Furqani and Mulyany (2009) employed the Cointegration test and Vector Error Model (VECM) to investigate the interactions between total Islamic bank financing and economic rates of growth in Malaysia over the period of (1997–2005). Findings showed that it appears to be a bi-directional causality between both variables in the long run. Barjas et al., (2010) contributed to the previous literature by adding that the effect of financial industry performance on GDP differs between countries over the period from 1975 to 2005. They utilized the general regression model and GMM dynamic methodology in their analysis and found a smaller effect in oil producing countries as compared to the non-oil countries.

Goaied and Sassi (2011) applied the GMM estimation for dynamic panel model to test the nexus of the Islamic banks performance and economic growth in 16 MENA Muslim majority countries for the period from 1962 to 2006. Results revealed an insignificant relationship between banking sector development and economic growth. Abduh and Chowdhury (2012) made use of the co-integration and Granger's causality methods over the period from 2004 until 2011 to investigate the long run and dynamic relationship between Islamic banking performance and economic growth in Bangladesh. They found that Islamic banks financing has a significant positive effect on economic growth. Abduh and Omar (2012) employed co integration and error correction models to examine the overtime association between Islamic banks performance and Indonesian per capita GDP. Findings demonstrate a significant association between Islamic finance development and economic growth. Farahani and Hossein (2012) investigated the Islamic banks-economic growth nexus of Indonesia and Iran over the period of 2000 to 2010. They found a bi-directional relation between both variables.

Hassanudin et al., (2013) examined the proposed linkage between financial development and economic growth in Bahrain. They applied both the Co-integration test and VECM. Findings show a strong bi-directional causality between Islamic banks and GDP, while uni-directional causality was found to running from economic growth to conventional finance. Similarly, Farahani and Dastan (2013) utilized Granger causality test to examine the effect of Islamic banks financing on economic growth in Malaysia, Indonesia, Bahrain, UAE, KSA, Egypt, Kuwait, Qatar and Yemen over the period of 2000–2010. The findings show that Islamic financing is significantly positively correlated with economic growth in short /long run for the selected countries. Tabash and Dhankar (2014), evaluated the relationship between Islamic financial development and economic growth in Qatar over the sample period from 1990 to 2008. The results indicated that the long-term development of Islamic financing is positively associated with economic growth in the short term. The Granger causality tests showed the existence of a bidirectional relationship between Islamic financial development and economic growth.

Hakim and Akther (2016) investigates the impact of the Islamic banks financing to the private sectors on Malaysian economic growth for the period 2006-2014. The paper supported the Growth-Islamic finance led hypothesis (i.e., positive effect of Islamic banks performance on economic growth).

Most recently, Ali and Azmi (2017) examined the impact of the Islamic banking development on economic growth. The sample consists of 21 OIC member countries and includes both Islamic and traditional banks for the time period from 2007 to 2013. Findings reveal that Islamic banking is found to a significant impact on economic growth. Eventually, Tabash and Anagreh (2017) used co-integration along with error correction models to test the role of Islamic banking in enhancing the economic growth in United Arab Emirates (UAE). The results showed that the causal relationship between Islamic banks' investments and economic growth of UAE supports the 'finance-lead growth hypothesis.

3. Data and Empirical Methodology

3.1. Data

This study is considered unique in measuring both the comparative banks' performance and the relationship between banks performance and economic growth for the specific time period from 2005 to 2016. This time interval marked by relatively large economic changes, particularly the financial crisis of 2008. Longer time period of analysis gives further reliable results. This study is also exclusive in considering a large number of banks from Muslim majority countries and European countries. The study is based mainly on panel data from the Banks cope data base for 88 Islamic banks and conventional banks from 20 countries namely; UAE, Qatar, Bahrain ,K.S.A, Egypt, Malaysia, Thailand, Turkey, Singapore, Jordan, Palestine, Bangladesh, Pakistan, Sudan, Yemen, Syria, Gambia, Iran, U.K, and Bosnia)to analyze the link between efficiency performance of Islamic financial sector and countries economic growth¹.In those cases, where the necessary banking data were not available on Bank Scope, the researcher refers directly to banks' annual reports and financial statements. Furthermore, in order to collect the percentage changes in the countries' GDP the researcher uses the World Bank Database.

3.2. Empirical Methodology

The primary goal of this study is to measure the efficiency performance of Islamic versus conventional banks to use results as an input to examine the relationship between banks efficiency performance and economic growth. To estimate banks' performance, researchers can apply different methods. Analysis of banks financial statements (ratio analysis) is the most common and popular performance analysis method in banks. Financial ratios have some limitations. Listed banks for example are aware that investors look very seriously at certain numbers in a bank's financial statements banks thus

manipulate the numbers to make metrics look perfect. Moreover, ratio analysis indicates an excessive use of "monetary ratios" which can have disadvantages. Furthermore, the number of financial indicators is big and the therefore make interpretation of results more difficult. Unlike existing studies, the researcher prefers measuring financial performance of banks using common financial ratios as only a first step and in a second step; the researcher utilizes the non-parametric approach of DEA to examine the banks efficiency performance because ratio performance measures are limited in considering different financial aspects of banks.

3.2.1. DEA Approach

To achieve the goal of this study the researcher first uses the complex econometric non-parametric model of the Data Envelopment Analysis (DEA) to measure banks' efficiency performance (Berger & Humphrey, 1997). DEA shows how a bank technically operates in a relative base to other best practice banks operating in the same tested sample. Based on DEA estimates a bank is considered efficient if no other bank produces the same amount or more outputs given a certain level of inputs, or uses less inputs given the output level of production. DEA is preferred as it helps to determine the causes of inefficiency, which are not apparent from financial analysis (Cooper et al., 2007). This study adopts the output-oriented intermediation approach of DEA under the Variable>Returns-to-Scale (VRS) assumption in order to measure the efficiency performance of Islamic versus conventional banks over the period from 2005 to 2016.

Following the majority of existing literature, the analysis of this study consists of 3-inputs and 2-outputs. The researcher uses "Xi1= total deposits and short term funding", "Xi2= personal or administrative expenses", and "Xj3= other operating expenses" as inputs. While the researcher uses both "Yi1=total loans" and "Yi2=net income" as outputs. As it is prohibited in Islamic finance to deal with interest, the researcher uses income distributed to the depositors instead of interest rates used in conventional banks (Yudistira, 2004; Yang, 2006; Alkheil et al., 2012, Chen et al, 2018).

To illustrate the applications of DEA, the researcher follows (Coelli, 1996) to estimate efficiency scores utilizing the following empirical fractional model:

$$\theta_{it} = \sum_{i=1}^m v_{i1} Y_{i1} + v_{i2} Y_{i2} / \sum_{j=1}^n w_{j1} X_{j1} + w_{j2} X_{j2} + w_{j3} X_{j3}, \text{ for } i = 1, \dots, m \text{ and } j = 1, \dots, n, \quad (1)$$

For a particular Islamic and conventional bank, the efficiency performance (θ_{it}) is the sum of the ratio of the banks outputs to the sum of the ratio of the banks inputs. Where w_{j1} is the weight of the quantity of the first input produced (i.e. total deposits and short term funding, X_{j1}) for each bank (b). w_{j2} represents the weight of the quantity produced from the second input, the other operating expenses (X_{j2}) for each bank (b). While w_{j3} is the weight of the quantity produced from (X_{j3}), the third input namely the personal expenses for each bank (b). In the second part of the equation, v_{i1} represents the weight of the quantity produced from the output (Y_{i1}), the banks total loans. Whereas v_{i2} is the weight of the quantity produced from the second output (Y_{i2}), namely banks net income. θ_{it} is maximized to guarantee non-negative weights as follow:

$$\theta_{it} = \sum_{i=1}^m v_{i1} Y_{i1} + v_{i2} Y_{i2} / \sum_{j=1}^n w_{j1} X_{j1} + w_{j2} X_{j2} + w_{j3} X_{j3}, \dots, \leq 1, \quad (2)$$

for $r = 1, \dots, N$ and u_i and $v_j \geq 0$.

The first empirical equation ensures that banks' efficiency scores are at most one while the second empirical equation guarantees that inputs and outputs have positive weights.

3.2.2. Granger Causality Test

3.2.2.1. Unit Root Test

Regression approach cannot be trusted when employed on non-stationary variables (Brooks, 2014). Stationary means that the data is stable even with some ups and downs in some periods. If the effect of this kind of volatility is temporary, the value of a variable in subsequent period will return to its long-run equilibrium. If this variable return to its long-run equilibrium, this means that the data set is stationary. However, if after volatility, the subsequent variable does not go back to its long-run equilibrium, this means that the effect of the shock is absorbed (Schumacker & Lomax, 2017). This is one rationale for checking data stationary and using Granger Causality. Moreover, regression analysis can run in only one way. Causation on the other hand, can run both ways, from x to y and from y to x, or it could be bidirectional. However, conventional regression methods are unable to discover the direction of causation between x and y and can be misleading in some cases. Granger causation is the most reliable in the study of the causation or the cause-effect relationship between two variables, especially when it is difficult in achieving the third condition of causation (holding the effects of other related variables unchanged) (Dorestani, & Aliabadi, 2017). This is one rationale for checking data stationarity and utilizing both regression analysis and Granger causality test. The researcher expects either to come up with the same or contradicting results from applying both tests.

¹list of banks and data are available upon request

This study includes balanced panel dataset because the researcher intends to collect all data for all variables and banks over the sample period from 2005 to 2016. Therefore, the researcher employs the widely applied test in the empirical studies, the Augmented Dickey-Fuller (ADF) as a unit root test. The null hypothesis (H_0) is that "the time series is a non-stationary (Unit root) time series". If the researcher rejects H_0 , then the time series is non-integrated (stationary) process of order zero $I(0)$. By contrast, if the researcher fail to reject H_0 , and the first difference of the time series is stationary, then the series is integrated of order $I(1)$. If the time series is found integrated of order $I(1)$, this indicates the presence of a long-run equilibrium relationship between banks' efficiency performance and economic growth (GDP). VAR models can only be used for stationary variables. Co integration will not make any sense here. If data are not stationary, then the researcher should check if data are co integrated with the Johansen tests. If they are co integrated, a vector error correction model (VECM), which combines levels and differences, can be estimated instead of VAR. If they are not co integrated, the researcher should fit a Vector auto regression (VAR) on the first difference of the variable. If you find evidence of co integration among non-stationary series, by estimating Vector Error Correction (VEC) model, the researcher can study both short-run and long-run. Having known the co integrating relationships among the two sets of variables, a panel Granger causality test is to be applied.

3.2.2.2. Model Specification

The existing literature provides conflicting results of the direction of causality between banks performance and the growth rates in economy. For this reason, the purpose of this study is thus to empirically investigate the direction of causality between the two variables in the context of Islamic finance against conventional finance on one hand, and during the full period and the pre-post financial crisis of 2008 on the other hand.

The researcher analyses the relationship between banks efficiency performance and countries economic growth indicating that the performance of the banks is the dependent variable of our Tobit regression model in an attempt to estimate the model below. This will basically support or reject the proposed relationship between the two variables. If the relationship is statistically significant and economic growth (GDP) is found to be a pure determinant of banks performance, the researcher thus needs to test whether banks financial performance Granger cause GDP. To do so, this study applies the causality test developed by Granger (1969) who stated that a variable (in this case financial performance) is said to Granger cause another variable (GDP) if past and present values of bank's performance help to predict GDP.

$$\theta_{it} = \sum_{j=1}^p \alpha_j \theta_{t-j} + \sum_{j=1}^p \beta_j \text{GDP}_{t-j} + u_t \quad (3)$$

$$\text{GDP}_t = \sum_{j=1}^p \eta_j \theta_{t-j} + \sum_{j=1}^p \gamma_j \text{GDP}_{t-j} + V_t \quad (4)$$

The null hypotheses to be tested are: $H1a: \eta_j=0, j=1, \dots, p$, this hypothesis means that efficiency performance of banks do not Granger cause GDP. $H2a: \beta_j=0, j=1, \dots, p$, this hypothesis states that GDP does not Granger cause good performance.

If the researcher rejects the first hypothesis, then she/he can conclude that the banks financial performance is Granger causes GDP. While if the researcher rejects the second hypothesis then the causality runs from GDP to financial performance. The two variables are independent of each other if none of the hypothesis is rejected. Eventually, if the two hypotheses are rejected then the researcher assumes that there is bi-directional causality between the two variables (McCarville & Nnadozie, 1995).

Moreover, to examine the effect of the most recent financial crisis of 2008 on both banks performance and economic growth, the researcher will regress the financial efficiency performance of banks upon the independent factors two times. In the first time the researcher regresses the relationship between variables for the full sample period of 2005-2016, while in the second time the researcher regresses variables for three separate time windows (pre-crisis, 2005-2007), (during crisis, 2008-2010) and (post-crisis, 2011-2016).

4. Empirical Results

This section comprises the presentation and interpretation of the findings resulting from this study. The analysis and interpretation of data is carried out in two stages. The first stage deals with the results obtained from the analysis of the efficiency performance of both Islamic and conventional banks using the DEA approach. In the second stage of analysis, the researcher discusses the results obtained from the investigation of the Granger Causal relationship banks efficiency performance and GDP for the sample countries, which assess whether there is any potential predictability power of one indicator for the other.

4.1. Banks Efficiency Scores over the Period 2005 -2016

The basic DEA model assumes a constant return to scale (CRS) and it is known as the CCR (Charnes, Cooper and Rhodes) model. This model is used to measure overall technical efficiency. The assumption of a CRS can be used only if the banks operate under their "optimal" size. The CCR model assumes that there is perfect competition which is unreal in the

real life. Imperfect competition and financial constraints can cause banks not to operate at their optimal size (Casu and Girardone, 2009). Accordingly, a DEA model that allows for calculations with a variable return to scale (VRS) has been developed to overcome this problem. This model is called the BCC model (Banker, Charnes, Cooper) and it is used to measure so called pure technical efficiency. So the researcher argue that VRS scores are “more” realistic, because VRS takes into account the existence of imperfect competition (Chen, et al. 2009; Stefko et al., 2018). Accordingly, to proceed with analysis, the researcher uses VRS scores as an input of Granger Causality Test.

Table 1 illustrates the VRS efficiency performance scores obtained from DEA for both Islamic and counterpart's conventional banks from Muslim majority countries and Europe. Findings reveal that the average VRS scores for all Islamic banks over the period from 2005 to 2016 is approximately 96.7%. This indicates that Islamic banks have on average albeit technically inefficient better performance counterparties conventional banks, which recorded, on average only 95.1%. Findings suggest that Islamic banks' management is relatively more efficient than conventional banks management in converting total deposits and short term funding, personal or administrative expenses, and other operating expenses into high net income and quality loans. Islamic banks show also a lower volatility on their performance over time and operate most of the time very close to the efficient frontier of DEA.

DEA results suggest thus far that Islamic banks should have a positive and higher impact on countries' economy as they showed better performance. Thus, governments and policy makers need to be able to measure the ability to predict the future performance of banks' and economy using prior values of the two variables. However, the argument of the feedback effect of banks' efficiency performance and economic growth is still inclusive and arbitrary and needs further empirical analysis. To examine the proposed bidirectional influences of Islamic versus conventional banks between economic growth proxied by annual percentage growth of GDP and bank' performance proxied by efficiency performance, this study utilizes the Granger causality test.

Country	IS.*	VRSTE	CO.	VRSTE	Country	IS.*	VRSTE	CO.	VRSTE
UAE	1	0.931	1	0.952					
	2	0.943	2	0.952	Gambia	25	1.000	25	1.000
	3	0.961	3	0.952	Pakistan	26	0.987	26	1.000
	4	0.967	4	0.952		27	0.938	27	1.000
Qatar	5	0.976	5	0.896		28	0.952	28	1.000
	6	0.983	6	0.871	Bangladesh	29	0.938	29	1.000
Bahrain	7	1.000	7	1.000	Malaysia	30	0.940	30	1.000
	8	0.979	8	0.938		31	0.941	31	1.000
K.S.A	9	0.987	9	0.924		32	0.951	32	1.000
	10	0.993	10	0.947		33	0.955	33	1.000
	11	0.998	11	0.862		34	0.960	34	1.000
Jordan	12	1.000	12	0.864		35	0.964	35	1.000
	13	0.962	13	0.857	Thailand	36	0.983	36	1.000
	14	0.976	14	0.852	Singapore	37	0.871	37	1.000
Palestine	15	0.984	15	0.860	Turkey	38	0.967	38	1.000
Syria	16	0.985	16	0.862		39	0.940	39	1.000
	17	0.983	17	1.000		40	0.937	40	1.000
Yemen	18	0.981	18	1.000		41	0.938	41	0.800
Egypt	19	0.982	19	0.938	U.K.	42	0.937	42	0.800
Sudan	20	0.983	20	0.944	Bosnia	43	0.938	43	1.000
	21	0.989	21	0.950	Iran	44	0.938	44	1.000
	22	0.997	22	0.964					
	23	1.000	23	0.948					
	24	1.000	24	0.969					

Table 1: Average Banks' Efficiency Scores for the Period 2005-2016

Average Conventional 95.1%, Average Islamic 96.7%

*List of Banks Is Available upon Request. Is Represents Islamic Banks; Co. Represents Conventional Banks

Note: The Size Scale of Operations for Islamic Banks and Conventional Banks Based on the Constant Return to Scale is 91.7% and 95.6%, respectively and Show a Decreasing Return to Scale (Drs). This Indicates That Both Banks Suffer Also from the Inappropriate Size of Banking Operations, Therefore, Banks' Inefficiency Can Be Increased by Shrinking Down Banking Operations

4.2. The Cause and Effect Relationship between Banks' Performance and Economic Growth: Granger Causality

The purpose of the section is to analyse if there exists long and short run significant bidirectional relationship between Islamic and conventional banks on the one hand and countries' economic growth on the other hand. The

variables that were used are efficiency performance of the banks and the annual growth rates of countries' GDP. The time variable that was used was an interval between the years 2005 and 2016 while the panel variable was the bank found in different countries. The test to determine if the time series is stationary was performed by the Augmented Dickey Fuller (ADF) unit root test. If the time series is stationary, it means there is a long run bidirectional (equilibrium) association between the efficiency performance of the banks and the economic GDP of the country. As such, there will be no further co-integration needed.

On the other hand, if the time series is non-stationary, the researcher will be required to test if the data is co-integrated with Johansen tests. If the data is co-integrated, a Vector Error Correction Model (VECM) can be used. Otherwise, the researcher should fit a Vector Auto Regression (VAR) on the first difference of the variables. The VECM model can help the researcher to study and establish both short run and long run relationship of the variables. Thereafter, a panel Granger causality test is performed.

4.2.1. Test for Stationary: Entire Period Analysis of Augmented Dickey Fuller Test

This section intends to discuss the cause and effect relationship between Islamic and conventional banks' performance and economic growth over the sample period from 2005 to 2016. The first hypothesis tested was;

- H_1 : There is a significant short and long-term causal relationship between Islamic banks' performance and countries' economic growth

The test was performed using the Augmented Dickey Fuller test through the Fisher test in testing the stationarity of the time series. The unit root test is essential so as to detect the order of integration of the time series, to confirm if it is stationary, and ensure there are no spurious regressions (Temiz and Gökmen, 2014). For the entire period, the results that show short and long-term influence between Islamic banks' performance and countries' economic growth are indicated in Table 2. The results show that the p-value is 0.00 which is less than an alpha of 0.05. Therefore, the researcher rejects the null hypothesis and accepts the alternative hypothesis that states at least one of the panels is stationary. This means that the first difference of the time series for some panels is stationary and it is integrated of order 1. Thus, the condition of cointegration is confirmed (Temiz and Gökmen, 2014). Therefore, the researcher is in position to sort out meaningful long-run and short-run effects in the study model. The results confirm H_1 ; therefore, the researcher can conclude that there is presence of significant short run and long run linear relationship between Islamic bank performance and economic growth. Tang and Tan (2015) indicated that the presence of co-integration leads to detection of short run and long run bi-directional relationship of macroeconomic variables; in this case, the banks efficiency performance and economic GDP. The result aligns with the findings by Rabaa and Younes (2016) and Furqani and Mulyany (2009) that there is positive and significant relationship between banks performance and economic growth. However, the results contradict the findings by Hachicha and Ben Amar (2015) who established that the impact of different financial indicators of Islamic banks on the economic growth of a country is more significant in the short run compared to the long run.

Islamic Bank Bidirectional Influence			
		Statistic	p-value
Inverse chi-squared (88)	P	211.1184	0
Ho: All panels contain unit roots	Number of panels = 44		
Ha: At least one panel is stationary	Number of periods = 12		

Table 2: Stationarity Results of Augmented Dickey Fuller Test: Islamic Banks' and Economic Growth

The cause and effect relationship between conventional banks' performance and economic growth is also important to be tested. Therefore, the second hypothesis tested was;

- H_2 : There is a significant short and long-term causal relationship between conventional banks' performance and countries' economic growth.

The results are demonstrated in Table 4.30. The results show that the p-value is 1 which is greater than an alpha of 0.05. Therefore, the researcher accepts the null hypothesis that states all panels contain unit roots. This means that the time series is not stationary. In the presence of stationarity, there is existence of co-integration. Otherwise, there will be no co-integration of the time series meaning the existence of only short run bi-directional relationship (Tang and Tan, 2015). This indicates that there is only short run relationship between conventional banks' performance and GDP. Therefore, the researcher is in position to sort out only short-run effects in the study model. As causation is only for short run thus this leads the researcher to partially reject H_2 . These findings agree with the results by Hachicha and Ben Amar (2015) that the impact of different financial indicators of banks on the economic growth of a country is more significant in the short run compared to the long run. Shihab et al. (2014) indicated that only when the time series is stationary that there exists a casual bidirectional influence of the banks' efficiency performance and economic GDP.

		Statistic	p-value
Inverse chi-squared (88)	P	0	1
Ho: All panels contain unit roots	Number of panels = 44		
Ha: At least one panel is stationary	Number of periods = 12		

Table 3: Stationary Results of Augmented Dickey Fuller Test: Conventional Banks' and Economic Growth

4.2.2. Co Integration Analysis for Non-Stationary Series

The findings thus far before correction showed that the time series is not stationary for conventional banks indicating only short run association between conventional banks' performance and GDP (Tang and Tan, 2015). Therefore, the researcher needs to test for co integration with Johansen tests. If the data is co-integrated, a Vector Error Correction Model (VECM) can be used (Temiz and Gökmen, 2014). The table below shows the results of the cointegration tests by the Johansen tests. The null hypothesis states that there is no cointegration while the alternative hypothesis states there is cointegration. The results illustrated in Table 4 show there is no cointegration of the time series because the trace statistics of the null hypothesis with the rank 0 and 1 are less than the 5% critical value excluding rank 2. Therefore, the researcher concludes that there is no cointegration for rank 0 and 1 but it is present in rank 2 indicating a partial cointegration. The eigen value results, if maximum, show there is more than one cointegrating equation in the variables at 5% level. In this case, the eigen values are minimum; therefore, there is one co integrating equation. The Vector Error Correction (VECM) will be suitable to adjust short run transformations in the variables being tested.

		Trace	5%
		critical	
Rank	Eigen value	statistic	value
0	0.00	5.6596	15.41
1	0.4022	0.00	3.76
2	0.00	0.00	0.00

Table 4: Results of Co Integration Analysis for Non-Stationary Series

4.2.3. The Vector Error Correction Model (VECM)

The Vector Error Correction (VECM) model is applied to make the time series stationary for conventional banks. Table 5 below shows the association that exists between the variables efficiency performance and economic GDP. The variables have adjusted to the error correction model. The test is used to show if the variables are correlated and linked together. From the p-values in the table, the researcher can conclude that efficiency performance of conventional banks and economic GDP are now cointegrated. This because the p-value of efficiency performance effect on economic GDP is 0.09 which is greater than alpha of 0.05. Thus, this leads to rejection of the null hypothesis that indicates no cointegration of the variables. Also, the p-value of economic GDP is 0.14 which is greater than an alpha of 0.05 leading to a conclusion that there is cointegration between economic GDP and conventional banks' efficiency performance. Therefore, the researcher can conclude that the adjustments of output to correct a disequilibrium showed cointegration relationship between economic GDP and the efficiency performance of the conventional banks.

	Coefficients	S. E.	Z	P>z	[95% CI]
Banks' performance						
Lag 1.	0.000	0.000	0.010	0.009	0.000	0.000
constant	0.001	0.002	0.640	0.522	-0.002	0.004
GDP growth annual						
Lag 1.	0.000	0.000	-2.460	0.014	0.000	0.000
constant	2.877	1.690	1.700	0.089	-0.435	6.189

Table 5: Vector Error Correction Model for Unit Root Series
SE= Standard Error P = Probability>Z CI= Confidence Interval

4.2.4. Granger Causality Analysis: The Bi Directional Impact Analysis for the Entire Period

Based on the results above, the researcher found that the panels for Islamic banks are stationary and integrated of order 1 indicating a presence of short and long relationship between Islamic banks' performance and economic growth. Moreover, panels for conventional banks were found non-stationary thus, they were corrected by VECM. After correction, they are now cointegrated. Temiz and Gökmen, 2014) indicated that the VECM model can help the researcher to study and establish both short run and long run relationship of the variables. Having known that banks' performance and GDP are integrated, the research intends to examine the third hypothesis that states;

- H_3 : There is a bidirectional relationship between banks performance and economic growth which differs in Islamic banks significantly from conventional banks

The results are indicated in the tables below. Table 6 shows the causality relationship between Islamic banks performance and economic growth while Table 7 shows the causality relationship between conventional banks performance and economic growth. The results in Table 6 indicate the p-value is 0.0099 which is less than an alpha of 0.05. This leads to the rejection of the null hypothesis and the conclusion that there is a bidirectional relationship between the Islamic banks performance and economic GDP growth for the entire period. This indicates that Islamic banks performance granger cause GDP growth and vice versa. The results in Table 7 show that the p-value of the granger test is 0.642 which is greater than an alpha of 0.05. This leads to the conclusion that efficiency performance of conventional banks Granger does not cause growth on economic GDP and vice versa in the long run. Overall, the researcher can conclude that there is bi-directional influence between efficiency performance and economic growth in Islamic banks but there is no bi-directional relationship for conventional banks for the entire period. The findings lead to the partial rejection of H_3 . The results also show that there is a significant difference between Islamic and conventional banks with regard to the relationship between performance and GDP growth. These findings are supported by Meslier et al. (2017) who indicated that conventional banks are sensitive and significantly influenced by competitive Islamic banks.

Equation	Excluded	F	Df	df_r	Prob>F
Efficiency performance	GDP growth	0.00918	2	7	0.09909

*Table 6: Islamic Granger Causality Wald Tests: Bidirectional Relationship for the Entire Period
Df= Degrees of Freedom*

Equation	Excluded	F	Df	df_r	Prob>F
Efficiency performance	GDP growth	0.47252	2	7	0.642

*Table 7: Conventional Granger Causality Wald Tests: Bidirectional Relationship for the Entire Period
Df= Degrees of Freedom*

The researcher was enthusiastic to examine the causality between bank performance and economic growth GDP during pre, crisis, and post crisis. This was meant to shed light on whether was a difference in the effect of bank performance on economic growth and vice versa in the three sub periods. However, the short period of the sub-periods was an obstacle. The panel granger causality test entails the testing of the causality from x to y for cross-sectional variables or units. Nevertheless, the approach leads to the problem of the fixed-effect estimator being inconsistent and biased for dynamic panel data when testing cross-sectional variables that have been observed over relative short time periods (Lin & Ali, 2009). To address the problem, Hansen and Rand (2006), Hurlin (2004), and Hurlin and Venet (2001) proposed that a homogenous non-causality (HNC) null hypothesis should be tested against the heterogeneous non-causality hypothesis (HENC). However, HENC only allows some of the units but not all the individuals to granger cause from x to y (Lin & Ali, 2009). The approach was not possible in the attempt to examine whether Islamic and conventional banks performance granger cause GDP growth and vice versa.

5. Conclusions

This paper aims at examining the cause and effect relationship between banks performance and countries' economic growth proxied by GDP. Banks performance is proxied by efficiency metrics. Data Envelopment Analysis (DEA) is used to estimate the banks' relative efficiency scores. The sample banks consists of 44 Islamic banks and 44 matched sample of conventional banks from 20 countries from Asia, Africa, the Middle East, Gulf region, and Europe. This paper utilizes the Granger-causality test to achieve the study objectives over the sample period from 2005 to 2016.

Findings show that Islamic banks are on average ethnically more efficient than conventional banks in employing deposits, administrative expenses, and other operating expenses to generate higher quantity of loans and net income. As compared to conventional banks, Islamic banks albeit on average inefficient over the sample period seemed to be relatively immune to the effects of the global crisis of 2008. Islamic banks inefficiency is found to be largely scale in nature and partially due to poor management practices. By contrast, conventional banks' inefficiency is mainly due to poor management. Therefore, banks need to improve management and shirking down operations to enhance banks' efficiency.

Based on the results obtained from applied granger causality test, the researcher concluded that there is presence of significant short run and long run bidirectional relationship between Islamic bank' performance and economic growth for the entire period. On the other hand, there is a significant short run relationship between conventional banks' performance and economic growth only after correction with VECM for conventional banks. In addition, the researcher concluded that the bi-directional influence in Islamic banks differs significantly from conventional banks.

5.1. Future Research Directions

There is a wide scope for improvement and further research in the area of comparative finance. Instead of emphasizing on Islamic and conventional banking sector the coverage of this study can be extended to include more cross sectors, especially Islamic bonds (sukuk) and Islamic insurance (Takaful). This researcher can examine bonds issuance

effect on banks' performance and how it affects their rating which could in turn positively influence the economy. Moreover, it is possible to measure takaul companies' efficiency performance and compare it with conventional insurance and then examine their effect on economic growth. This will give a better picture of the sensitivity (exposure) of Islamic and conventional financial operations to macroeconomic fluctuations to find out which one of them is more resilient and better.

6. References

- i. Abduh, M., & Chowdhury, N.T. (2012). Does Islamic banking matter for economic growth in Bangladesh? *Journal of Islamic Economics, Banking and Finance*, 8(3), 104-113.
- ii. Abduh, M., & Omar, M. (2012). Islamic banking and economic growth: the Indonesian experience. *International Journal of Islamic and Middle Eastern Finance and Management*, 5(1), 35-47.
- iii. Abdul-Majid M., Saal DS. & Battisti G. (2010). Efficiency in Islamic and Conventional banking: an international comparison. *Journal of Productivity Analysis*, 34(1), 25-43.
- iv. Abu-Alkheil, A. M., Burghof, H.-p. & Khan, W. A. (2012). Islamic Commercial Banking in Europe: A Cross-Country and Inter-Bank Analysis of Efficiency Performance. *International Business & Economics Research Journal*, 11(6), 647-676.
- v. Adeyeye, P. O., Fapetu, O., Aluko, O. A. Migiro, S.O. (2015). Does Supply-leading Hypothesis Hold in a Developing Economy? *A Nigerian Focus, Procedia Economics and Finance*, 30, 30-37
- vi. Ajlouni, M. M., & Omari, H. O. (2013). Performance Efficiency of The Jordanian Islamic Banks Using Data Envelopment Analysis and Financial Ratios Analysis. *European Scientific Journal*, 1, 271-281.
- vii. Al Karaki, M. S. (2015). The Impact of Bank Lending on Economic Growth: Empirical Analysis from Palestine. Master thesis. Hebron University. <https://www.mobt3ath.com/uplode/book/book-18056.pdf>
- viii. Alamer, A.R.A., Salamon, H.B., Qureshi, M.I., & Rasli, A.M. (2015). CSR's measuring corporate social responsibility practice in Islamic banking. A review. *International Journal of Economics and Financial Issues*, 5(1S), 198-206.
- ix. Ali M., Azmi W. (2017). Impact of Islamic Banking on Economic Growth and Volatility: Evidence from the OIC Member Countries. In: Alam N., Rizvi S. (eds) *Islamic Banking*. Palgrave CIBFR Studies in Islamic Finance. Palgrave Macmillan, Cham
- x. Askari H. Iqbal Z., & Mirakhor A. (2015). *New Issues in Islamic Finance and Economics: Progress and Challenges*. Wiley Finance-Islamic Finance.
- xi. Bader, M.K., Mohamad, S., Ariff, M., & Hassan, T. (2008). Cost, Revenue and Profit Efficiency of Islamic versus conventional banks: International evidence using DEA. *Islamic Economic Studies*, 15(2), 24-76.
- xii. Barajas, A., Chami, R. and Yousefi, S.R. (2010), "The finance-growth nexus re-examine: are there cross - region differences?", IMF working paper, Austin, TX.
- xiii. Barro, Robert J., & Rachel M. McCleary. (2003). Religion and Economic growth among countries. *American Sociology Review*, 68(5), 706-781.
- xiv. Bassegy, G. A. and Moses, C. A. (2015). Bank profitability and liquidity management: a case study of selected Nigerian Deposit Money Banks. *International Journal of Economics, Commerce and Management*, 3, 4, 1-24
- xv. Belke, A., Ulrich H., & Ralph S. (2016). Regional Bank Efficiency and Its Effect on Regional Growth in 'Normal' and 'Bad' Times. *Economic Modelling*, 58, 413-26.
- xvi. Berger, A.N., & D.B. Humphrey. (1997). Efficiency of Financial Institutions: International Survey and Directions for Future Research. *European Journal of Operational Research*, 175-212
- xvii. Brooks, C. (2014). *Introductory Econometrics for Finance*. 3rd Edition. Cambridge University press.
- xviii. Bryan, S.T. (1978). Orientalism, Islam and Capitalism. *Social Compass*, 25 (3-4), 371-394. <http://dx.doi/10.1177/003776867802500305>
- xix. Bucevska, V. & Misheva, B. H. (2017). The Determinants of Profitability in the Banking Industry: Empirical Research on Selected Balkan Countries, *Eastern European Economics*, 55:2, 146-167, DOI: 10.1080/00128775.2016.1260473
- xx. Bukhari M. S. S., & Harrathi N. (2015). Bank Efficiency Analysis: Islamic Banks versus Conventional Banks in the Gulf Cooperation Council Countries 2006 - 2012. *International Journal of Financial Research*, 6(4), 143-150.
- xxi. Casu, B., Girardone, C. (2009). Testing the Relationship between Competition and Efficiency in Banking: A Panel Data Analysis, *Economics Letters*, 105, 134-137.
- xxii. Chen Y, Cook WD, Li N, Zhu J. (2009). Additive efficiency decomposition in two-stage DEA. *Eur J Oper Res*, 196: 1170-1176.
- xxiii. Chen, Y., Cook, W.D., Li, N., Zhu, J., 2009. Additive efficiency decomposition in two-stage DEA. *European Journal of Operational Research* 196, 1170-1176.
- xxiv. Chen, Y., Gregoriou, G. N., and Roudah, F. D. (2018). Efficiency persistence of bank and Thrift CEOs using data envelopment analysis. Chapter 1 in Paradi, J., Tam, F. K. & Sherman, H. D. (2018). *Data Envelopment Analysis in the Financial services industry: A Guide for Practitioners and Analysts Working in Operations Research Using DEA*. eBook, Springer International Publishing
- xxv. Claessens, S. & Horen, N. V., 2015. The Impact of the Global Financial Crisis on Banking Globalization. *IMF Economic review*, pp. 868 - 918.
- xxvi. Cooper, W.W., Seiford, L.M., & Tone, K. (2007). *Data Envelopment Analysis: A Comprehensive Text with Models, Applications, References and DEA-Solver Software*. Second Edition, Springer, New York.

- xxvii. Coricelli, F., Driffield, N., Pal, S. & Roland, I., 2012. When does leverage hurt productivity growth? A firm level analysis. *Journal of International Money and Finance*, pp. 1674 - 1694.
- xxviii. Destefanis, S., Christian B., & Lubrano G. L. (2014). Financial Development and Local Growth: Evidence from Highly Disaggregated Italian Data. *Applied Financial Economics*, 24, 1605-15.
- xxix. Diallo, B. (2018). Bank efficiency and industry growth during financial crises. *Economic Modelling*, 68, 11-22.
- xxx. Dorestani, A., & Aliabadi, S. (2017). Correlation, association, causation, and granger causation in accounting research. *Academy of Accounting & Financial Studies Journal*, 21(3), 1-13.
- xxxi. Dornbusch, R., Reynoso, A. (1989), Financial Factors in Economic Development. *American Economic Review*, 79, 2, pp. 204-209
- xxxii. Elhachemi, H. G., & Othman, M. A. (2015). Does the modern application of the islamic financial system is the ne New Recommended Architecture to Promote Growth and Prevent the Outbreak and Spread of Future Crises?. *International Journal of Scientific Research and Innovative Technology*, 2 (6).
- xxxiii. Elsiefy, E., 2013. Comparative Analysis of Qatari Islamic Banks Performance versus c conventional Banks Before, during and After the Financial crisis.. *International Journal of Business and Commerce*, pp. 11 - 41.
- xxxiv. Ernst& Young (2016). The World Islamic Banking Competitiveness Report 2014-2015. Available online at: <http://www.ey.com/em/en/industries/financial-services/banking---capital-markets/ey-world-islamic-banking-competitiveness-report-2014-15>. Accessed on 17.04.2018
- xxxv. Errico, L. & Sundararajan, V. (2002). Islamic Financial Institutions and Products in the Global Financial System: Key Issues in Risk Management and Challenges Ahead. *IMF Working Papers*, 1-27. Available at SSRN: <https://ssrn.com/abstract=1930788>
- xxxvi. Farahani, G. Y., and Hossein, S. S. M. (2012). Analysis of Islamic Bank's Financing and Economic Growth: A case study of Iran and Indonesia. *Journal of Economic Cooperation and Development*, 33, 4 (2012), 1-24
- xxxvii. Farahani, Y.G., & Dastan, M. (2013). Analysis of Islamic banks' financing and economic growth: Apanel cointegration approach. *International Journal of Islamic and Middle Eastern Finance and Management*, 6(2), 156-172.
- xxxviii. Furqani, H., & Mulyany, R. (2009). Islamic banking and economic growth: Empirical evidence from Malaysia. *Journal of Economic Cooperation and Development*, 30(2), 59-74.
- xxxix. Goaid, M. & Sassi, S. (2011). Financial Development, Islamic Banking and Economic Growth: Evidence from MENA Region. *International Journal of Business and Management Science*, pp. 105 - 128.
- xl. Goaid, M. Sassi, S. (2010). Financial development and economic growth in the MENA Region: What about Islamic banking development? *First MENA Meeting, Sousse 5-6 May, Tunisia*
- xli. Goaid, M., & Sassi S. (2011). Financial development and economic growth in the MENA Region: What about Islamic banking development. *Int. J. Bus. Manage. Sci.*, 4, 1-23.
- xlii. Guiso, L., Sapienza, P., & Zingales, L. (2003). People's opium? Religion and economic attitudes. *Journal of Monetary Economics* 50(1), 225-282
- xliii. Gutu, L. M. (2015). Microeconomic Factors Affecting Banks' Financial Performance: The Case Of Romania. *SEA - Practical Application of Science, Fundația Română pentru Inteligența Afacerii, Editorial Department*, 7, 39-44.
- xliv. Hachicha, N., & Ben Amar, A. (2015). Does Islamic bank financing contribute to economic growth? The Malaysian case. *International Journal of Islamic and Middle Eastern Finance and Management*, 8(3), 349-368.
- xlv. Hakim B., & Md Akther U. (2016). Does Islamic bank financing lead to economic growth: An empirical analysis for Malaysia. *MPRA Paper No. 69075*. Available at: <https://mpra.ub.uni-muenchen.de/69075/>
- xlvi. Hanif, M., Tariq, M., Tahir, A. & Momeneen, W., 2012. Comparative performance study of conventional and Islamic banks in pakistan. *International research journal of finance and economics*, pp. 62 - 72.
- xlvii. Hassan, K. (2005). The Cost, Profit and X-Efficiency of Islamic Banks. Presented at ERF's (Economic Research forum) 12th Annual Conference, Cairo, Egypt. Available at: http://www.erf.org.eg/CMS/uploads/pdf/1184492515_Kabir_Hassan.pdf
- xlviii. Hassanudin, T., Yousof, H., Hanafi, H., & Ebrahim. (2013). Do islamic banks contribute to the economic growth than conventional banks? The empirical investigations of bahrain dual banking. *International Journal of Science Commerce and Humanities*, 1(3), 86-116.
- xlix. Irfan, M., Majeed, Y., & Zaman, K. (2014). The Performance and Efficiency of Islamic Banking in South Asian Countries. *Economia Seria Management*, 17(2), 223-237.
- l. Jobst, A. (2007). The economics of Islamic finance and securitization. *Journal of Structured Finance*, 13(1), 6-27.
- li. Johnes, J., Abdu Izzeldin, M., & Pappas, V. (2007). Efficiency in Islamic and conventional banks: A comparison based on financial ratios and data envelopment analysis. *WP from Lancaster University Management School*. Available at: <http://www.lums.lancs.ac.uk/files/Efficiency.pdf>.
- lii. Johnes, J., Izzeldin, M. & Pappas, V. (2014). A Comparison of performance of Islamic and conventional banks 2004-2009. *Journal of Economic Behavior & Organization*, pp. 93-107.
- liii. Kablan, S., & Yousfi, O. (2011). Efficiency of Islamic and conventional banks in countries with Islamic banking. *MPRA Paper 32849, University Library of Munich, Germany*.
- liv. Kader, J.M., & Asarpota A.K. (2007). Comparative Financial Performance of Islamic vis a vis Conventional Banks in the UAE. Paper presented at 2006-2007 Annual Student Research Symposium & First Chancellor's Undergraduate Research Award at UAE University

- lv. Kamaruddin, B.H., Safa, M.S., & Mohd, R. (2008). Assessing production efficiency of Islamic banks and conventional bank Islamic windows in Malaysia. *International Journal of Business and Management Research*, 1 (1), 31-48.
- lvi. Kamarulzaman, Y., & Madun A. (2013). Marketing Islamic banking products: Malaysian perspective. *Business Strategy Series*, 14(2/3):60, 1-66
- lvii. Khan, I., Khan, M. & Tahir, M. (2017). Performance comparison of Islamic and conventional banks: empirical evidence from Pakistan. *International Journal of Islamic and Middle Eastern Finance and Management*, pp. 419 - 433.
- lviii. Levine R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(3), 688-726.
- lix. Levine, R. (2005). Finance and Growth: Theory and Evidence. In P. Aghion and S. Durlauf, ed., *Handbook of Economic Growth*. The Netherlands: Elsevier.
- lx. Limam, I. (2001). Measuring Technical Efficiency of Kuwait Banks. API-Working Paper Series 0101, Arab Planning Institute -Kuwait, Information Center. Available at: <http://www.arab-api.org/wps/wps0101.htm>
- lxi. Lucas, R. E. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics*, 22, 3-42.
- lxii. Majid, M. A, Nor, N. G. M., & Said, F. F. (2003). Efficiency of Banks in Malaysia. In proceedings of the fifth International Conference on Islamic Economics and Finance, 2, 405-6, Bahrain
- lxiii. Masiukiewiczpiotr, P., 2017. Expansion of Islamic Finance in Europe. *Journal of Intercultural management*, pp. 31 - 51.
- lxiv. McCarville, M., & Nnadozie, E. (1995). Causality test of export-led growth: The case of Mexico. *Atlantic Economic Journal*, 23(2), 140-145.
- lxv. McKinnon, R. I. (1973). *Money and Capital in Economic Development*, Washington, DC: Brookings Institution.
- lxvi. Meslier, C., Risfandy, T., & Tarazi, A. (2017). Dual market competition and deposit rate setting in Islamic and conventional banks. *Economic Modelling*, 63, 318-333.
- lxvii. Meslier, C., Risfandy, T., & Tarazi, A. (2017). Dual market competition and deposit rate setting in Islamic and conventional banks. *Economic Modelling*, 63, 318-333.
- lxviii. Metwally, M. (1997). Differences between the financial characteristics of interest-free banks and conventional banks. *European Business Review*, 97(2), 92-98.
- lxix. Miah, M. D. & Uddin, H. (2017). Efficiency and stability: A comparative study between islamic and conventional banks in GCC countries. *Future Business Journal*, pp. 172 - 185.
- lxx. Milenkovic, N., Vukmirovic, J., Bulajic, M. & Radojicic, Z. (2014). A multivariate approach in measuring socio-economic development of MENA countries. *Economic Modelling*, pp. 604-608.
- lxxi. Moin, M. S. (2013). Financial Performance of Islamic and Conventional Banking in Pakistan: A Comparative Study. *International Journal of Innovative and Applied Sciences*, 1(1), 1-22.
- lxxii. Mokhtar, A.H. S., Abdullah, N., & Alhabshi, S.M. (2006). Efficiency of Islamic Banking in Malaysia: A Stochastic Frontier Approach. *Journal of Economic Corporation*, 22 (2), 37-30.
- lxxiii. Özataç, N. & Rifai, O. E. (2015). Financial Performance of Islamic Banks vs. Conventional Banks: The case of UAE. *International Journal of Economics and Finance*.
- lxxiv. Patrick, H. T. (1966). Financial development and economic growth in underdeveloped countries. *Economic Development and Cultural Change*, 14(2), 174-189.
- lxxv. Petkovski, M. & Kjosevski, J. (2014). Does banking sector development promote economic growth? An empirical analysis for selected countries in Central and South Eastern Europe. *Economic Research – Ekonomska Istraživanja*, pp. 55-66.
- lxxvi. Pradhan, R. P., Arvin, M. B., Hall, J. H., & Bahmani, S. (2014). Causal nexus between economic growth, banking sector development, stock market development, and other macroeconomic variables: The case of ASEAN countries. *Review of Financial Economics*, 23(4), 155-173.
- lxxvii. Pradiknas, T. Y. & Fathurohman, T. (2015). Efficiency of Islamic banking compared to conventional banking: Evidence from Indonesia banking sector. *Journal of business and management*, pp. 540 - 551.
- lxxviii. Pryor, F. L. (1985). The Islamic Economic System: A Review Article. *Journal of Comparative Economics*, 9(2).
- lxxix. Qureshi, Mr. A., & Shaikh, M. (2012). Efficiency of Islamic and conventional banks in Pakistan: a nonparametric approach. *International Journal of Business and Management*, 7 (7), 40-50.
- lxxx. Robinson, J. (1952). The Generalization of the General Theory. In *The Rate of Interest and Other Essays*, London: Macmillan, pp. 69-142
- lxxxi. Rosly, S.A., & Abu Bakar, M.A. (2003). Performance of Islamic and Mainstream Banks in Malaysia. *International Journal of Social Economics*, 30 (12), 1249-1265.
- lxxxii. Ryu, P., Piao, Z. & Nami, D. (2012). A Comparative study between the Islamic and conventional banking systems and its implications.. *Scholarly J. Bus. Admin*, pp. 48-54.
- lxxxiii. Samad, A. (2004). Performance of Interest-Free Islamic Banks vis-a-vis Interest-Based Conventional Banks of Bahrain. *IIUM Journal of Economics and Management*, 12 (2), 1-15.
- lxxxiv. Samad, A., & Hassan M (1999). The performance of Malaysian Islamic bank during 1984-1997: an exploratory study. *International Journal of Islamic Financial Services*, 1(3), 1-14.
- lxxxv. Samargandi, N., Fidrmuc, J. & Ghosh, S. (2015). Is the Relationship between Financial Development and Economic Growth Monotonic for Middle Income Countries?. *World Development*, pp. 66-81.

- lxxxvi. Sbia, R. Shahbaz, M. &Ozturk, I. (2017). Economic growth, financial development, urbanisation and electricity consumption nexus in UAE. *Economic Research-Ekonomska Istraživanja*, 30, (1).
- lxxxvii. Schumacker, R., & Lomax, R. (2017). *A Beginner's Guide to Structural Equation Modelling*. 3rd edition, Routledge, New York, NY.
- lxxxviii. Schumpeter, J. A. (1912). *The Theory of Economic Development*. Leipzig: Dunker & Humblot, translated by R. Opie. Cambridge, MA: Harvard University Press, 1934.
- lxxxix. Shihab, R. A., Soufan, T., & Abdul-Khaliq, S. (2014). The causal relationship between exports and economic growth in Jordan. *Global Journal of Management and Business Research*.
- xc. Stefko R, Gavurova B, Kocisova K (2018). Healthcare efficiency assessment using DEA analysis in the Slovak Republic. *Health Econ Rev.*, 9;8(1):6. doi: 10.1186/s13561-018-0191-9.
- xc. Tabash M. I., and Dhankar, R. S. (2014). Islamic banking and economic growth: An empirical evidence from Qatar. *Journal of Applied Economics and Business*, 2(1), 51-67
- xcii. Tabash M., &Anagreh, S. (2017). Do Islamic banks contribute to growth of the economy? Evidence from United Arab Emirates (UAE). *Business Perspectives*, 12(1), 113-118.
- xciii. Tan, Y. & Floros, C. (2012). Bank profitability and inflation: the case of China. *Journal of Economic Studies*, pp. 675 - 696.
- xciv. Tang, C. F., & Tan, E. C. (2015). Does tourism effectively stimulate Malaysia's economic growth?. *Tourism Management*, 46, 158-163.
- xcv. Temiz, D., &Gökmen, A. (2014). FDI inflow as an international business operation by MNCs and economic growth: An empirical study on Turkey. *International Business Review*, 23(1), 145-154.
- xcvi. Thomson Reuters (2017). *State of the Global Islamic Economy Report 2016/17-Dubai*. Available online at:<https://ceif.iba.edu.pk/pdf/ThomsonReuters-stateoftheGlobalIslamicEconomyReport201617.pdf>. (Accessed on 17.04.2018)
- xcvii. Usmani M. M. T. (1998). *An Introduction to Islamic Finance*. Karachi: Idaru- tul Ma'arif
- xcviii. Violeta C.& Gordana S. (2017). Efficiency of bank branches: empirical evidence from a two-phase research approach, *Economic Research-Ekonomska Istraživanja*, 30 (1), 318-333
- xcix. Wahab, M., Mufti, O., & Murad, M. S. (2016). The study of co-integration and causal link between islamic bank financing and economic growth. *Abasyn University Journal of Social Sciences*, 9, 134-146.
- c. Yang, Z. (2006). A two-stage DEA model to evaluate the overall performance of Canadian life and health insurance companies. *Mathematical and Computer Modelling*, 43(7-8), 910-919
- ci. Yilmaz, M. K., Sensoy, A., Ozturk, K., & Hacıhasanoglu, H. (2015). Cross-sectoral interactions in Islamic equity markets. *Pacific Basin Finance Journal*, 32, 1-20
- cii. Yudistira D. (2004). Efficiency in Islamic Banking: An Empirical Analysis of Eighteen Banks. *Islamic Economic Studies*, 12(1), 1 - 19
- ciii. Zehri, F. & Mbarek, N. B. (2016). Banks Performance in KSA during Financial Distress: A Comparative Study Islamic and Conventional Banks. *Arabian Journal of Business*