OPEN ACCESS
Saudi Journal of Economics and Finance
Abbreviated Key Title: Saudi J Econ Fin
ISSN 2523-9414 (Print) |ISSN 2523-6563 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: http://saudijournals.com

Original Research Article

Nexus Islamic Banking and Economic Growth in Bahrain

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DOI: 10.36348/sjef.2021.v05i05.001 | **Received:** 17.03.2021 | **Accepted:** 26.04.2021 | **Published:** 12.05.2021

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Abstract

Islamic banking has developed as an important tool for the progress of the economy in many countries because it based on investment and financing projects globally, reported by World Bank's 2015 report. In many parts of the world, Islamic economics has the prospective to contribute and to face the encounters of termination of poverty and rising development. This study undertaken in Bahrain in order for investigate the nexus of Islamic banking and economic growth. Bahrain become one among the most developed Islamic banking activities and other Islamic instruments like Takaful, capital market and so on. This paper based on two correlated specific objectives that were survey the long-term relationship and causal linkage between economic growth and Islamic banking in the Bahrain. Although Bahrain have many Islamic banks operated but for the purpose of the study and research problem with availability of data only one bank was selected which called Al Salam Bank. This bank have good experience, existed for long time and have already announce as one of the as the best and better performance Islamic bank in Bahrain. The study based on quantitative approach and data was secondary and collected from al salam annually financial statements and world bank data set for the period from 2000 to 2020 which was time series. Study variables were Islamic bank's assets, Great fixed capital formation, GDP per capital and foreign direct investment. Methodology which applied were the unit root problem was tested, then testing the co-integration with long run structural model, then the VECM, then Variance decomposition then Impulse Response Function and finishing persistence profile. Findings shown that Islamic banking in Bahrain have positive long run with positive short run relationship with economic growth. Also result shown that Islamic bank asset take the leading variable on the affect the GDP in Bahrain which supported by VECM. These outcomes give implication that the growth and development of Islamic banks in Bahrain have advantageous on the economy and households income of Bahrain. So it is better for police markers in Bahrain to increase more for taking considerable efforts for Islamic banks operation in order to provide much positive relation with their economy and to be a source for improvement of other sectors of economy in Bahrain.

Keywords: Islamic banking, Economic growth, Bahrain.

1. INTRODUCTION

The association between financial growth and economic growth is a highly discussed topic in today's world. The association between these two sectors received much debate in the literature. Increases number of financial facilities offered by financial intermediaries and banks also stock-market financial transfers, have contributed to financial prosperity. In the field of development economics, economic growth has also been a significant topic. The financial sector especial banks have been played crucial roles on the growth of economy of the countries and Role and help if it is capable of steering financial services to the markets and profitable industries most in demand. Further financial resources can be allocated for beneficial use as the financial system is more mature, and more physical capital can be generated that can contribute positively to economic development.

Islamic finance requires the structuring of financial tools and financial trades in order to comply with conventional Muslim prohibitions against interest payments and gambling activities. It is an area of increasing significance in Muslims nations and for the vast Muslim residents in the countries.

Islamic banking has emerged as an important tool for financing projects globally, according to the World Bank's 2015 report. Most financial institutions and centers have a strong understanding of the fact that Islamic finance has already passed within global financial system. In many parts of the world, Islamic finance has the potential to contribute and to face the

challenges of ending poverty and raising development. The financial system and the banking sector play an important role in all countries' economic activities. The flow of funds between lenders, investors and borrowers generates the output cycle and the growth of society (Tabash 2017). In current times, Islamic banks have been one of the rapidly growing markets. Over years, the Islamic finance sector has expanded steadily, rising annually at 15-20 percent. Today, Islamic finance assets for all different sectors of the industry are close to US$2 trillion (World Bank report, 2015). Tabash and Dhankar, 2014) report in their analysis that, because of their distinctive characteristics, Islamic banks play a positive role in enhancing economic growth in developing countries.

Several studies have been performed previously, but the revealed findings were sadly different where three causal relationships were established between economic growth and financial development. Demand, which means that financial growth is a product of the development of the real economy, is another (Herms and Lensink, 1996). Finally, a bidirectional relationship is a relationship. Many financial analysts have said that the financial sector's performance is related to economic growth in any region (Tabash 2017).

Although several studies have been carried out in the past to examine the correlation between finance and economic growth, there are very few detailed empirical studies on the relationship between Islamic finance and economic growth. This research therefore seeks to investigate the empirical relationship between the development of the Islamic banking system and economic growth by selected some Islamic banks which could enable to know their roles on the growth of economy in their country. The findings of the study and its suggestions will be useful for policy makers, students and financial specialists to appreciate the merits of Islamic banking in improving any country's economic growth and to progress complete policies to use.

The structure of this article is organized by providing introduction of the study, history and developments of Islamic banking in UAE, the main and specific purpose of the study, the literature review conducted according to objectives of empirical review; another Section explained the research methodology. Then followed by exploration and argument of the findings finally, elaborate the conclusions study.

Overview of Islamic Banking in Bahrain

Bahrain is a small nation on an island in the Persian Gulf. It is home to many large financial institutions specifically in its capital city Manama. Bahrain comprises of nearly 70% Muslim population which influences the country’s banking system. The country not only encompasses several dedicated Islamic banks but has some conventional banks also offering special Islamic windows.

Islamic Banks of Bahrain were recognized as the kingdom's first Islamic lender in 1979, and it was combined by more sharia-compliant institutes over the following decade as Bahrain's reputation as the financial center of the GCC grew. Bahrain has been placed as a front-runner in the worldwide IFS industry by the existence of AAOFI in Manama, in its standards, regulators around the world function as a guide. In subsequent years, a number of other organizations offering assistance or criteria for the local and foreign IFS sectors have joined it in Bahrain including Financial Institutions General Council and Islamic Banks, the International Rating Agency of Islam and the International Islamic Financial Market (IIFM).

About 23 Islamic banks were authorized to work in Bahrain as of July 2015, all but two of which were locally incorporated. Islamic banks have licenses in two groups, as is the case with their traditional counterparts: six retail institutions serve the local market, selling sharia-compliant goods both to nationals and expatriates, Although 18 Islamic wholesale banks are given restricted access to the local economy, they serve primarily as offshore investment bodies.A retail license and a wholesale license are kept by one institution, the Al Baraka Group. Among them, Islamic lenders in Bahrain sell a range of sharia-compliant goods and services.

According to CBB, from 2000 to 2015, the growth of the Islamic banking segment grew very rapidly, for example, the Islamic bank on market share increased from 1.8 percent of Islamic bank total asset to 13.5 percent. Islamic bankS has been developed as a result of this major expansionLocal players in the retail sector compete for business with the Islamic arms of regional banking companies, such as Al Baraka. In Bahrain there are mixed institutional from regional level, local level as well as international level. It also categorized into retail sectors and wholesale sectors. According to reports about 30% of the market share capture on the sharia-compliant banking system also six Islamic banks were licensed in retail and about 11 licensed on wholesale. Until now about US dollar 26.8 billion of the total assets in 2018.

In Bahrain there are so many Islamic banks established and operated. Based on several statistical reports the common Islamic banks which were mentions namely are ABC Islamic Bank, Arcapita Bank, Capital Management House, Global Banking Corporation, Al Baraka Islamic Bank, Shamil Bank of Bahrain, Venture Capital Bank, Al Salam Bank-Bahrain, General Council for Islamic Banks & Financial, Citi Islamic Investment Bank, Bahrain Islamic Bank, Unicorn Investment Bank, International Investment Bank, International Islamic Financial

Market, Kuwait Finance House, Liquidity Management Centre, Investment Dar Bank, Sakana Holistic Housing Solutions, Seera Investment Bank and Capivest. Most of these banks are located from Manama city which is the capital and largest city in Bahrain.

Al Salam Bank-Bahrain

For the second year in a row, the prestigious US finance journal Global Finance has listed Al Salam Bank-Bahrain (Al Salam Bank) as the best Islamic bank in Bahrain. The magazine pointed to the Bank's wide variation of cutting-edge items, solid balance sheet and rising asset base when awarding the title. In 2019, Al Salam Bank reported a stellar year: Total assets increased by 19% to $5.4 billion (BD 2 billion), fueled by increased funding; while net profit increased by 14%. With a capital ratio of over 20 percent, the bank has a solid balance sheet. A broad variety of creative Islamic financial products and services are provided by Al Salam Bank, such as iBank and online banking applications.

Objectives of Study

The main objective for the study is to analyze the relationship between Islamic banking systems on the economic growth in Bahrain.

Specific Objectives

i. Examine the long-run relationship between Islamic banking and economic development in the Bahrain.
ii. Examine the causal linkage between Islamic banking and economic development in Bahrain.

Research Questions

At the end of this study the following research questions should be answers and could guide to researcher on conducted this study.

I. Does Islamic banking have a long run relationship and statistical significance with economic growth in Bahrain?
II. Does economic development lead to Islamic banking growth in Bahrain and vice versa?

2. LITERATURE REVIEW

There were several studies which have already conducted from different scholars and different areas around the world which related to economic growth and Islamic banking development. So this section would show some of that studies in order to exposes what they investigate, which methods applied, which output (findings observed) and so on. So below were some of those studies.

Tabash and Dhankar(2014), conducted a study in Middle East to examine the flow of Islamic finance and economic growth. They investigate an empirically the relationship between the economic growth development of Islamic finance. The sample of the study was three states from Middle East that were United Arab Emirates, Bahrain, and Qatar. The data was annualy bases on time series approach of Islamic banks financing and economic growth from secondary data was taken. The estimation done through the unit root test, co-integration test and Granger causality tests was done. Results revealed that Islamic banks and economic growth statistical positive significance relationship with economic growth. The results from Granger causality show there a causal relationship between economic growth and Islamic banking finance that relationship was bi-directional relation. In UAE result indicate unidirectional relation between dependent and independent variables. The studyconclude that Islamic banking finance improvement have greater contribution and important to economic growth of selected Middle East states.

Abduh and Chowdhury (2012), By using quarterly data of time series from 2004 to 2011 they examine the long run relationship and dynamic relationship between economic growth and Islamic banking in Bangladesh. The study includes variables such as total deposit, economic growth and total financing from Islamic banking. They applied co-integration as well as Granger's causality method to measure the relationship of the selected variables. The result found to be there was positive and significance of Islamic banks and economic growth in short run and long run of the dependent and independent variables. They recommended that the growth of Islamic banking as a policeis to consider for growth of Bangladesh economy.

Bendriouch et al. (2020). They examine on how Islamic Banks Contribute to Economic Growth in the GCC countries. The study investigate the relationship between economic growth in GCC countries and Islamic banks' performance. The paper profitability was measured, other variables were capital adequacy, liquidity, size, credit risk, and expense management. It consist the Islamic banks that working in UAE, Oman, Kuwait, Bahrain, Saudi Arabia and Qatar. It time of data range from 2010 to 2017. The result revealed Islamic banks have positive relation with economic growth. Other findings shown significant contribution to Islamic financial institutions' activities induce economic growth.

Yazdan & Masood. (2013). intended to use empirical indication to analyze the role of funding by Islamic banks in selected countries' economic efficiency Malaysia, Yemen Indonesia, UAE, Egypt, Kuwait, Saudi Arabia ,Qatar and Bahrain, This paper uses the panel cointegration method model system using quarterly data from (2000 -2010). The findings usually suggest that the funding of Islamic banks is optimistic in the long run and is strongly associated with economic growth and the accumulation of capital in these countries. Findings of the causality result show a positive relevant association between economic growth

and short-term and long-term funding by Islamic banks. The Bound Testing Method for Cointegration, Error Correction Models (ECMs), Auto Regressive Distributed Lag (ARDL) and Vector Autoregressive Model (VAR) have been implemented in this area and the coefficients obtained from these models cannot be assumed to be a general finding applicable to other countries.

Tabash (2019), investigate the performance of banking sectors and economic growth in UAE. This paper assessed the performance of economic growth and Islamic banks performance by using Return on Equity (ROE), Net Revenue Margin (NRM) and Return on Assets (ROA), which used to examine Islamic banks performance and for economic growth the study applied Growth Domestic Product (GDP). The study select the sample of all full-fledged banks operate UAE. Also it cover the period from 2000 to 2014. Multicollinearity test combined with Pooled Ordinary Least Square (POLS) were used to test the formulated hypotheses. The findings found that there is a positive relationship between economic growth and performance of Islamic banks. The study recommends that the government of UAE should set proper policies which will led the more development of UAE Islamic banking sector.

Duygu Zirek, et al. (2016), they investigate nexus of Islamic Banking and Economic Growth, They investigate the influence of Islamic banking variables on economic growth in a panel setting for 14 states of the Organization of Islamic Countries from 1999-2011. By using the Panel VAR process, they examine the short-run effects as well as long-run effects. They think that Islamic finance and economic development have a strong and important relationship. With regard to many macroeconomic control variables, such as unemployment, capital stock, inflation, and government spending, this relationship is robust. They illustrate that an increase in the proportion of Islamic savings, assets and loans in total banking instruments results in an increase in economic growth. The results show that economic growth is reacting positively to the shocks of Islamic instruments, namely Islamic deposits, investment, and scale, in the long run.

Lebdaoui, Hind, & Wild, Joerg. (2016). Islamic banking presence and economic growth in Southeast Asia. Islamic banks' presence is calculated by the ratio between Islamic and traditional banking assets, as well as the ratio between Islamic and conventional banking deposits. This analysis begins by evaluating the existence of cointegration using the specifications of Pedroni and Westerlund; short- and long-run dynamics are further analyzed with the autoregressive distributed lag model (ARDL)-based panel estimators: mean group (MG), pooled mean group (PMG) and dynamic fixed effect (DFE). Quarterly data which cover the period concerning 2000Q1 and 2012Q4. Findings A long-term relationship between economic growth and the Islamic banking presence in the chosen area is obvious, but not in the short term. In addition, the Muslim population share in a given country has a positive and statistically important role to play in fueling the contribution of the financial sector's Islamic banking share to economic growth. The outcomes of the study indicate that Sharia-compliant banks have be successful in organizing supplementary financial sector capital that could advance the stability of the banking organization and increase the effectiveness of the banking sector as a whole.

Muhamad Abduh, Mohd Azmi Omar (2012), It explores the short-run and long-run ties between the development of Islamic banking and Indonesian economic growth. They use quarterly data (2003:1-2010:2) for this objective, using the bound testing approach of cointegration and error correction models, created within the framework of autoregressive distributed lag (ARDL). Their results demonstrate a significant relationship between Islamic financial development and economic growth in the short and long term. The relationship, though, is neither the supply-leading Schumpeter nor the demand-following Robinson. The relationship appears to be bi-directional.

Zarrouk, 2014, Between the development of Islamic finance and economic growth, positive results are shown. Research conducted in the United Arab Emirates between 1990 and 2012 showed that financial development increased from year to year during the research period, which resulted in the country's rate of economic growth. Islamic financial development can be the main driver of economic growth, even if there are uncertain state revenues for the country. Increased economic growth in the UAE cannot be distinguished from reforms in the development of Islamic finance. Starting with deregulation, liberalization and increasing opening up of the financial sector, the Islamic financial sector system is being renewed. Its economic growth can be boosted by the development of Islamic finance pursued and planned in the UAE.

Farahani & Sadr (2012). The aim of their paper was to examine the short-run and long-run relationships between the development of Islamic banking and economic growth in the case of Iran and Indonesia, in this regard we use quarterly data (2000:1-2010:4), this paper uses the cointegration and error correction models bound testing approach, developed within the framework of autoregressive distributed lag (ARDL). This paper also discusses some of the problems and challenges that Islamic banking has faced in Iran. It also seeks to examine Islamic financing modes and the commitment of commercial banks to enforce the Islamic banking law. The results show an important link between Islamic financial development and economic growth in the short- and long-term periods.

3. RESEARCH METHODOLOGY

The study examines the relationship between Islamic banking and economic growth in Bahrain. It choosed only one Islamic bank which called Al salam Islamic bank as a sample for this study. In order to examine the objectives so dependent variable was GDP per capital which measure the economic growth of Bahrain while the independents variables were asset of selected Islamic bank represented by IBA, foreign direct investment (FDI), and Gross Fixed Capital Formation. These independents variables are most common used in several studies which have already conducted carried out. Most of studies which measure the Islamic banking growth and economic growth used the variables which almost related. Foristance the previous study which applied the similar variables includes Tabash and Dhankar (2014) and Tabash and Dhankar(2017).

Moreover the study was based on approach of quantitative and select the data from secondary sources especial annually financial reports of Al salam Islamic bank which show every year the value of total asset. In terms of data of GDP per capital, FDI and GFCF were taken from world bank database. The study collects data which range from 2000 to 2019 in annualy bases. The microfit 5.5 was the software used for processing and analyzing the data. This program is very suitable because it based on time series data and consist many estimation techniques which could enable to meet the objectives of the study.

Variable Description

GDP per capital for this study selected as independent variable and it represent the income of the household in a specific nation at a specific time. Gross Domestic Product (GDP) per capital is expected to have a positive relation with the other factors especial the Islamic bank development. GDP per capital is a famous statistic to signify within a certain time range the income level of a specific nation. The research on the growth relationship of Islamic banks used GDP as the dependent variable represent economic growth. Gross fixed capital formation (GFCF), FDI and islamic bank assets stand as independent factors. It should be noted that the funding variable used in this model is a proportion of the overall economic financing given by Islamic banks.

Table-4.1: Variables, their definition, data sources and expected sign

Dependent Variable	Independent Variable	Measure	Data sources	Expected sign
GDP per Capital	Islamic Bank Assets	Annual Total assets in BD	Website of A salam Bank	+ve
GDP per Capital	Foreign Direct Investment	Annual inflows FDI in US Dollars	World Bank database	+ve
GDP per Capital	Gross Fixed Capital Formation	Annual average of Real Exchange	World Bank database	-ve or +ve

Source: Author's create (2021)

Estimation Model

To determine the presence of long run relationship between Islamic banking and economic growth the following multivariate regression model have been drawn.

$Y_t = \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\mu_t$…… (1)

$$GDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 IBA_t + \beta_3 GFCF_t + \varepsilon_t \text{ ……...….(2)}$$

Whereby,

β_0: The intercept for equation

β_1: The parameter estimate.

GDP: Annual Gross Domestic Product per capital to Bahrain in US Dollars

FDI: Annual inflows of foreign direct investment to Tanzania in US Dollars

GFCF: Annual gross fixed capital formation of Bahrain in US Dollars.

IBA: Annual total assets of Al salam Islamic bank in Bahraini dinar

μ_t: Represents an error term

Then all selected variables were transform into logarithim in the multiple linear regression which formulated, the new equation become as shown below

$$\log GDP_t = \beta_0 + \beta_1 \log FDI_t + \beta_2 \log IBA_t + \beta_3 \log GFCF_t + \varepsilon_t$$

……(3)

Estimation techniques

The techniques for estimation of all variables based on time series approach. This was used because all variables include dependent and independent variables their nature were in value form. The time series of the data were range from 2000 to 2020 so this situation enforce to test for stationary, con integration test for all variables, once after noticed variables were con integrated then the vector error correction model was used and granger causality as well. The VECM/VAR method consist almost eight (8) stages which must to start with testing unit root problem, then testing the co-integration with long run structural model, then the vector error Correction Model, then Variance decomposition then Impulse Response Function (IRF) , and finishing persistence profile.

Unit Root Test

Before to estimate anything in time series approach it is better to know that variables are stationary of non-stationary in the model. Also if non stationary to know how many differences derived until to be stationary. This step is very important. There are many tests for determining the variables series whether stationary or non-stationary. But this study only two approach applied that are Augmented Dickey-Fuller (ADF) and Phillips Perron test. Both tests their null hypothesis is non-stationary in testing. The result would be either reject or fail to reject the null hypothesis according to critical value and t-statistic whether greater than or less then.

In addition to that Phillips Perron and ADF test, involves the testing on the level form and in the difference forms of all observation. General there are three models which could test the stationarity of the variables based on ADF and PP. That models are no trend and no constant, constant but no trend and third model is constant and with trend.

Determination of the order of the VAR

It is compulsory then to determine in the time series order of VAR in the co-integration and should be selected. The Akaike Information Criterion (AIC) was used to select the number of lags to be used in co-integration test, although Schwarz Bayesian Criterion (SBC) could be used but for simplicity of the study AIC was preferable.

Co-integration testing and long run structure model testing

The presence of the long-term relationship between the variables were determined by the Johansen cointegration test (developed by Johansen (1988) because did not t take the structural breaks into consideration. This stage was applied after makesure all variables were statsionary of every time series , then we figure out the data to examine the number of Order of the VAR (Vector Auto Regression) which enable to know the number of lags to be used in the equation. This step help to solve the problem of AC.For simplicity, this step investigates whether the stochastic trends in the examined variables, which is supposed to contain unit roots, have a long term relationship.

This paper the co-integration test, was determined by using the Johansen (1988). The study applied this test because it enable to accommodate more than one co-integrating relationship. Johansen's co-integration test has three tables which are Maximal Eigenvalue, Trace Test and Model Selection Criteria. Then the study determine the restriction based on the theoretical review and expectation. That restriction can determine by exact identification or over identification restrictions or both. Long Run Structural Modelling (LRSM) presented to measure the theoretically meaning of co-integrating relations by imposing on those long-run relations and testing both identifying and over-identifying restrictions. For testing each restriction the results should check the LR statistic in each case whether the null of restriction/s should be rejected or accepted.

Vector Error Correction Model (VECM)

Due to the above step could show confirm that long run relationship between the variables indicated? VECM used to examine the endogenous and exogenous of the variables. This approach could to examining the relationship between variables and evaluating the course of causality of granger in the short and long run is this process. VECM used when have already proven that there were co integration relationships.

Variance decomposition

VDCs could give the specifics information which explained about the ranking endogeneity and exogeneity of the variables. The contribution of each form of shock would be calculated by VDC to the forecast error variance of variable including its own. It enable to know the leading and follower variable. The variable that describes its own shock quite than others is called a leading variable and a lagging variable is reflected the variable that explains less of its own shock.

Impulse response functions (IRFs)

This shows the influence of one factor shock on another, their degree of reaction, and how long it will take to normalize. It predict that the response of weak variables would be important if the leading variable is stunned. Moreover it contain the similar information which exposed from VDCs, Whereas the IRFs displayed their findings in graphical form for the variable's dynamic response direction to a normal cycle deviation in additional factors.

Persistence profile

The last stage was estimate period of the variables take to return to equilibrium in order to recover from the wide shock. It illustrations how long it would take for the entire system to stabilize if all the factors are shocked by some external factors, It will include information on the speed at which variations from the long-run relationships in the model are excluded because of system-wide shocks.

4. DISCUSSION OF RESULTS

Unit roots results

As earlier introduce that we start to estimate the unit roots of all the variables in order to find out whether there problem of unit root or no. So basing on the study objectives and nature of the nature of this study enable applied the ADF and PP tests. These test measure the stationary in the level form and at the first deference. On the basis of PP test of all variables become non stationary at level but after run the first difference we found stationary I(1). In the side of ADF

which relay on the highest of AIC criteria. As PP test all variables become non stationary at order (0) it means in the level form. But after run the first difference the result appear that some variables found stationary but unfortunately other variable remain non stationary especially bank asset (IBA). The data of the variables to be stationary is very important things because it enables to know the data have not the problem of spurious. When we say stationary of the data it implies the series of the data have constant mean, constant auto covariance and constant variance. But if mean, variance and auto covariance of a time series are not the similar at any point the data can have problem of unit root.

Table 4.1 and 4.2 show the results for unit root test PP test and ADF test respectively. The findings rejected. Whereas, the null hypothesis of unit root can be rejected after taking the first difference. Therefore, the findings clearly suggest that all the variables are stationary at first difference I (1). And the case of ADF also it could not reject the null hypothesis in the at level form and in the first difference all variables especial GDP per capital, FDI and GFCF were rejected but IBA continue to remain non stationary.

Basing on the results which found on the both methods we decided to relay on the result of PP tests. This result direct to follow 8 steps of VECM or VAR. Because the condition state that if all variables become non stationary at level but after take first different become stationary, you required to apply the VAR or VECM.

Table-4.1: Unit root results by using Phillips Perron Test

Phillips-Perron Unit Root test							
LEVEL FORM				First Deference			
intercept and a linear trend				no intercept and no trend			
Variables	Test Statistics	CV	Remark	variables	Test Statistics	CV	Remark
LGFCF	-1.3898	-3.604	Non stationary	DGFCF	-3.6659	-1.8014	Stationary
LGDP	-0.67608	-3.604	Non stationary	DGDP	-3.2456	-1.8014	Stationary
LFDI	-2.3213	-3.604	Non stationary	DFDI	-4.5878	-1.8014	Stationary
LIBA	-0.087175	-3.604	Non stationary	DIBA	-3.9402	-1.8014	Stationary

Source: Author's results (2021)

Table 4.2: Unit root results by using ADF Test

Result of the Dickey-Fuller regressions									
LEVEL FORM					FIRST DEFERENCE				
intercept and a linear trend					no intercept and no linear trend				
Variables	Test Statistic	CV	AIC	Remark	Variables	Test Statistic	CV	AIC	Remark
LGFCF	-3.693	-3.918	7.5781	non stationary	DGFCF	-2.3631	-2.0092	3.0258	Stationary
LGDP	-2.5296	-3.9796	16.813	non stationary	DGDP	-2.9215	-2.0092	13.0868	Stationary
LFDI	-2.9865	-3.918	-24.249	non stationary	DFDI	-2.4	-1.875	-25.421	Stationary
LIBA	0.068244	-4.079	-19.091	non stationary	DIBA	-0.55206	-3.0291	-18.52	non stationary

Source: Author's processing result (2021)

Cointegration Test

After base on the result of PP test, we were required to identifying the number of lags (VAR order). The findings formed by looking the highest values of SBC and AIC then to look the equivalent lag order. The result show at lag two. So after know the number of lag order it required to test the co-integration of the variables. Because the co-integration could show the variables are theoretically related in the long run .The findings are presented below by the table 4.3. We test buy using Johansen's co-integration test which we look the table one which show Maximal Eigenvalue and table two show Trace Test. The result shown that the variables are co-integrated at 1 in the both tables. Whereby from r=0 and r=1 T-Statistic greater then Critical Value, we reject the null hypothesis which say no co-integration and accept the alternative hypothesis which show there is co-integration. Due to these outcomes we move to the next level.

4.3: Johansen Test for Co integration

Co-integration LR Test Based on Maximal Eigenvalue				
LFDI LGDP LGFCF LIBA Trend				
Null	**Alternative**	**Statistic**	**95% Critical Value**	**90% Critical Value**
r = 0	r = 1	46.4342	31.79	29.13
r<= 1	r = 2	32.0222	25.42	23.1
r<= 2	r = 3	15.9132	19.22	17.18
r<= 3	r = 4	4.3154	12.39	10.55
**********				
Co-integration LR Test Based on Trace of the Stochastic Matrix				
**********				
LFDI LGDP LGFCF LIBA Trend				
Null	**Alternative**	**Statistic**	**95% Critical Value**	**90% Critical Value**
r = 0	r>= 1	98.6849	63	59.16
r<= 1	r>= 2	52.2508	42.34	39.34
r<= 2	r>= 3	20.2286	25.77	23.08
r<= 3	r = 4	4.3154	12.39	10.55
**********				

Analysis of long Run Structural Equation Modeling stage

In the sense that we can compare the theoretical expectations with the statistics produced, LRSM is a significant analytical stage. This means by forcing the identification and over-identification of the parameters, LRSM allows the estimation of the long rum model based on theory. Because the objective of the study to examine the relationship between Islamic banking and economic growth in Bahrain. The independents variables should to appear either significance or insignificance by taking the coefficient dividing by standard error gives to get t-statistic. The table below reveal that all variables were significance because the T- Statistics were greater than 2 . The description of the exact identification findings as shown in Table 4.4. Based on the findings the restriction which putted in the dependent variable was correct. This means that variables which are (IBA, GFCF and FDI) have significant relation on dependent variable that GDP.

$$GDP_t = 0.019 - 0.039FDI_t - 0.169IBA_t - 0.393GFCF_t + \varepsilon_t$$

Table-4.4: Results of exact identification

An exact identification Result			
Vector 1	**T-Ratio**	**T-Statistic**	**Remark**
LFDI	-0.039029	3.553	Significant
	(-0.010984)		
LGDP	1.0000		
	(*NONE*)		
LGFCF	-0.3934	9.269	Significant
	(-0.042444)		
LIBA	-0.16994	4.625	Significant
	(-0.036744)		
Trend	0.019031		
	(-0.0087524)		

Analysis of vector error correction model

VECM could enable to show an exogenous and an endogenous variable. Because Co-integration cannot show that causality of Granger path as to the vector is leading and follower of the variables. We applied the VECM technique which shown in the Table 4.5 for summary and the individual result of every variables presented in the followed tables.

After looking the finding of significance of the error-correction coefficients ecm1(-1), it found that the Gross fixed capital formation (GFCF) was endogenous variable while the foreign Direct Investment (FDI), Islamic bank asset (IBA) and GDP per capital were exogenous variables. That result indicate that the foreign Direct Investment (FDI), Islamic bank asset (IBA) and GDP per capital variables

responds to the Gross fixed capital formation (GFCF. The error correction model enabled to examine the diagnostics of the equations for testing normality, autocorrelation, heteroscedasticity and functional form. The result shows the equations are well specified because the p-value of all diagnostic tables was greater than 5%.

Table-4.5: Show results of vector error correction

ECM for variable LGDP estimated by OLS based on cointegrating VAR(2)			
Dependent variable is dLGDP			
Regressor	**Coefficient**	**Standard Error**	**T-Ratio[Prob]**
Intercept	1.0459	0.83159	1.2577[.232]
dLFDI1	0.031809	0.022772	1.3968[.188]
dLGDP1	-0.45106	0.50394	-.89507[.388]
dLGFCF1	0.053894	0.1667	.32330[.752]
dLIBA1	0.0935	0.08072	1.1583[.269]
ecm1(-1)	0.5595	0.46225	1.2104[.249]

Diagnostic Tests		
Test Statistics	**LM Version**	**F Version**
A:Serial Correlation CHSQ(1) = .19274[.661]	F(1,11) = .11906[.737]	
B:Functional Form CHSQ(1) = .059539[.807]	F(1,11) = .036506[.852]	
C:Normality CHSQ(2) = 1.6963[.428]	Not applicable	
D:Heteroscedasticity CHSQ(1) = 3.7011[.054]	F(1,16) = 4.1414[.059]	

Variable	ecm1(-1) (prob)	Interpretation
dLFDI	[.415]	Variable is exogenous
dLIBA	[.209]	Variable is exogenous
dLGFCF	[.000]	Variable is endogenous
dLGDP	[.249]	Variable is exogenous

ECM for LFDI				
Dependent variable is dLFDI				
Regressor	**Coefficient**	**Standard error**	**T-Ratio**	**[Prob]**
Intercept	11.7633	13.7865	0.85325	[.410]
dLFDI1	0.09427	0.37753	0.2497	[.807]
dLGDP1	-3.8656	8.3545	-0.4627	[.652]
dLGFCF1	0.7793	2.7636	0.28198	[.783]
dLIBA1	0.090284	1.3382	0.067466	[.947]
ecm1(-1)	6.4768	7.6634	0.84515	[.415]

ECM for LGFCF				
Dependent variable is dLGFCF				
Regressor	**Coefficient**	**Standard ERROR**	**T-Ratio**	**[Prob]**
Intercept	5.8009	1.0708	5.4172	[.000]
dLFDI1	0.096758	0.029324	3.2997	[.006]
dLGDP1	-2.5218	0.64891	-3.8862	[.002]
dLGFCF1	0.35335	0.21466	1.6461	[.126]
dLIBA1	0.51094	0.10394	4.9156	[.000]
ecm1(-1)	3.1633	0.59524	5.3143	[.000]

ECM for LIBA				
Dependent variable is dLIBA				
Regressor	Coefficient	Standard Error	T-Ratio	[Prob]
Intercept	10.5443	8.0103	1.3164	[.213]
dLFDI1	0.029672	0.21935	0.13527	[.895]
dLGDP1	-3.1305	4.8541	-0.6449	[.531]
dLGFCF1	1.341	1.6057	0.83511	[.420]
dLIBA1	1.0395	0.77754	1.3369	[.206]
ecm1(-1)	5.9125	4.4526	1.3279	[.209]

Variance Decomposition of LIBA and LGDP

In respect of asset of Islamic bank (IBA), the result obtained indicates in table 4.6. It exhibits that 100 percent of asset of Islamic bank variance could be interpreted by current asset of Islamic bank in the first period, and the percentages are still significant over the forecasted period. Furthermore, we realize that FDI and GDP per capital have low contribution on Islamic bank growth rather than GFCF. However, gross fixed capital formation variance is decrease from 27 percent in the first period reaching to 20.8 percent in the tenth year; while GPD has achieved only 0.8 percent as a higher ratio at the fourth year of period and FDI 5 percent at fifth year as higher ratio. According to these findings the contribution of GFCF is higher when the Islamic banking has shock compare to GDP and FDI.

Table 4.6 elaborate the variance decomposition of the GDP, like as Islamic bank asset 100 percent could be indicated in the current GDP in the first period. Also the percentages are continues to be significance in the whole 10 years. The result show that GFCF have greater contribution to GDP and FDI, whereby the highest value of GFCF 67 percent in the third year and in the FDI the highest value 54 percent in the first year. But the asset of Islamic bank contribute 20 percent as highest value in the third year. This means that the shock of GDP is largely related to its own shock and slightly to FDI and GFCF. The study show that, the shocks of GDP are fluctuating from the first period until the end of forecasting. The role of GFCF is a significant in comparison to FDI and Islamic bank asset.

Table 4.6. Variance Decomposition of LIBA and LGDP

Generalized Forecast Error Variance Decomposition for variable LIBA				
Horizon	LFDI	LGDP	LGFCF	LIBA
0	0.047975	1.18E-05	0.25304	1
1	0.023129	0.0013399	0.27353	0.97129
2	0.025967	0.009788	0.2432	0.88794
3	0.026501	0.062972	0.25061	0.81603
4	0.05923	0.083075	0.22298	0.80872
5	0.055115	0.06152	0.22614	0.85788
6	0.048496	0.053755	0.22574	0.85289
7	0.046682	0.064567	0.21763	0.81819
8	0.053287	0.085615	0.21337	0.79722
9	0.061559	0.081093	0.20314	0.81421
10	0.054985	0.070805	0.20843	0.83269

Generalized Forecast Error Variance Decomposition for variable LGDP				
Horizon	LFDI	LGDP	LGFCF	LIBA
0	0.47655	1	0.56988	1.18E-05
1	0.54889	0.98193	0.48627	0.0072048
2	0.35371	0.82641	0.61656	0.16366
3	0.33208	0.77879	0.67034	0.20922
4	0.40113	0.79949	0.6541	0.17284
5	0.43687	0.81205	0.62469	0.15752
6	0.42394	0.8211	0.63195	0.15107
7	0.38738	0.79762	0.6538	0.17884
8	0.39737	0.79977	0.66279	0.17438
9	0.42419	0.80898	0.64961	0.1608
10	0.43179	0.81895	0.64425	0.1517

Table 4.7 shows that Islamic bank asset take the leading variable on the affect the GDP in Bahrain which supported by VECM. We found that Islamic bank asset explained on 85.7 percent of its own shock. While the GDP is the second leading variable in the vector error correction model, whereby the GDP was an exogenous variable. The third leading variable was foreign direct investment which appear with 71 percent but unfortunately the weakest variable was gross fixed capital formation.

Table-4.7: Show Orthogonalized forecast error variance decomposition

	Horizon	LFDI	LGDP	LGFCF	LIBA	SUM	self depender	rank
LFDI	5	0.71157	0.38784	0.34305	0.16063	1.60309	44%	2
LGDP	5	0.43687	0.81205	0.62469	0.15752	2.03113	40%	3
LGFCF	5	0.05482	0.16237	0.55107	0.78458	1.55284	35%	4
LIBA	5	0.05512	0.06152	0.22614	0.85788	1.20066	71%	1

Relative exogeneity and endogeneity according to above table of Orthogonalized forecast error variance decomposition

LIBA	LGDP	LFDI	LGFCF
Islamic bank asset	GDP per capital	Foreign Direct Investment	Gross fixed capital formation

RESULTS OF IMPULSE RESPONSE FUNCTION

It show the effect of shock of one factor on others and their point (grade) of response as well as period which would return to the normal condition. We presume that if prominent factor is shocked, the reaction of weak factor will be significant.

The results of impulse response function are same with the result of variance decomposition. But in addition to that the IRF the outcomes are presented in graphical structure. The below figure show that if the Islamic bank as leading variable get a shock the weak variables would respond in positive and negative forms indicating its exogeneity. The response of the Islamic bank's shock to other factors differs based on the type of the variable. Forexample LFDI would react negatively to shocks in Islamic bank which implies the negative relationship between FDI and LIBA. But GDP and GFCF would react positively with the shock of Islamic bank but in the low level.

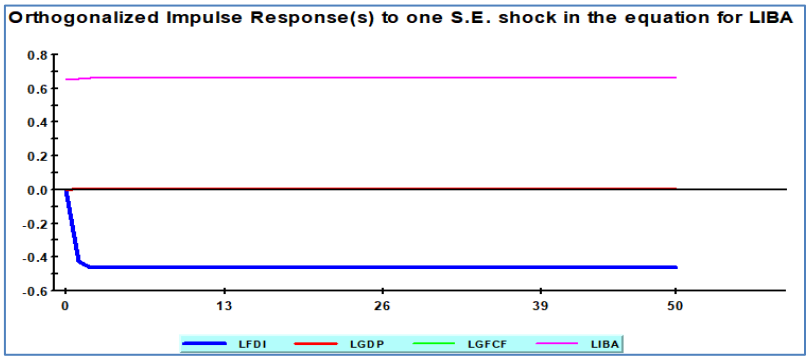

Fig-4.1

Persistence profile

PP test used to show the time period where the all variables in the co- integration equation to return in the equilibrium after the global shock take place. The below figure effect of system extensive shock and it is graphically present that it proceeds around 2 or 3 years or 2 or 3 period to return on equilibrium.

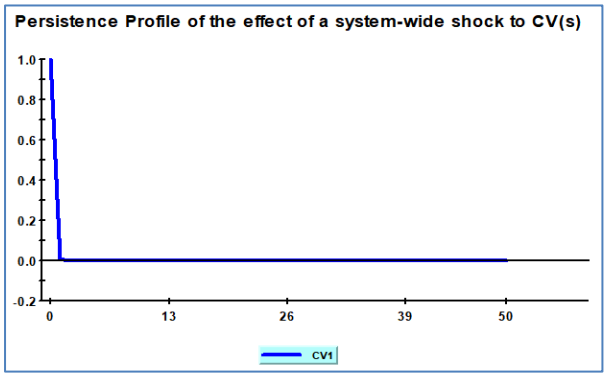

Fig-4.2

5. CONCLUSION AND POLICY IMPLICATIONS

The research was investigated the relationship between Islamic banking and economic growth in Bahrain by examine the long run relationship between them. Because the study based on al salam bank by taking the total asset of every year from 2000 to 2020. We investigate the relationship by using econometric methodology. We start with testing the stationary of the data by using ADF test and PP test in order to test unit root. Since the We found all variables were non stationary at level I(0) but later handling the first difference I(1) all factors converted into stationary especial exposed on the PP test then the VAR order was found to be 1. Because all variables were stationary and VAR order obtained o be 1, therefore, the co-integration was tested by using Johansen's. The result revealed that the variables were co-integration at 1.The implication of this result shown there existence long-run stable relationship between economic growth and Islamic banks in Bahrain. Which means the funding and economic development of Islamic banks are going together in the long run.

These results are consistent with many previous studies which show that Islamic banks have been contributed on economic growth. The growth and development of Bahrain's Islamic banks have advantageous on the economy and households income. It is better for police markers in Bahrain to take much consideration of the Islamic banks operation in order to provide the positive relation with their economy and to be sources for improvement of other sectors of economy in Bahrain.

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