The Impact of Oil Price Volatility, Gross Domestic Product, Foreign Direct Investment on Islamic Banking Investments: An Empirical Evidence of The United Arab Emirates

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ABSTRACT

The current paper examines the impact of oil price (OP) fluctuations on Islamic banking investments growth in the UAE. Besides, OP, the study also uses other variables like Gross Domestic Product and Foreign Direct Investment to identify the determinants of the Islamic banking investments growth in the emerging economy, UAE. The study is based on econometric analysis with the help of annual time series data from 1990 to 2015 for the study variables. Stationary tests, cointegration methods, vector error correction model, and Granger causality tests are used in the analysis. The major findings of the study revealed that OPs have long-term and short-term relationships on the Islamic banking investments in the UAE. Our results explore the importance of OP stabilization in enhancing growth and progress in the UAE economy. The Government of UAE should reform policies and procedures to minimize the effect of such volatility in OPs which in turn leads to positive impacts on the UAE economy as well.

Keywords: Oil Price, Volatility, Foreign Direct Investment, GDP, Islamic investments, Growth, UAE
JEL Classifications: F21, F41, O16

1. INTRODUCTION

From 1970 to the year 2000, there are no substantial changes in oil prices (OPs) and remained around U.S $ 20 per barrel. Starting from the year 2004, the OP have grown at an accelerated rate. It is increased from U.S $ 31 per barrel to U.S $ 140 at the time of the global debt crisis, 2008. After that, the crude OP has stayed within the range of U.S $ 100-110 till 2014. In 2015, OPs have dropped to < U.S $ 60 per barrel as shown in Figure 1. Moreover, nowadays, there is a high uncertainty expected about crude OP due to supply/demand of Asian markets like India and China, besides the restrictions on production levels of each country as assigned by the Organization of the Petroleum Exporting Countries (OPEC), and the political issues in the Middle East which deeply affect the OPs at a global level.

The volatility of OP affects every sector in the developed and developing economies. Many previous studies investigated the influence of the OPs changes on stock markets returns and other macrocosmic factors gave deeper insights on whether and to which degree that the OPs changes affect the other variables. For example, Aloui and Jammazi (2008) in their study found that fluctuations in OPs caused major impacts on the stock market returns of 6 countries of the advanced economies. In the same year, another report by Park and Ratti, (2008) found that OP fluctuations have deeply affected the real stock returns of the United States and other 13 countries of Europe. Many studies have been testing the associations between OPs and other micro and macroeconomic variables. They confirmed that OP fluctuations did large impacts in economic activity in the world economies (see Gronwald, 2008; Cologni and Manera, 2008; or Kilian, 2008). However, less attention has been made on studying the link between OP fluctuations and Islamic banking investments growth particularly in the emerging economy like the UAE.

Furthermore, most of the existing studies have studied the effect of OPs on stock markets in developed/developing economies, while studying the impact of OP on other sectors like Islamic banking investments have remained relatively unexplored. Islamic banking is a financial system based on ethical principles sourced

from Islamic law, the fundamental religious concept of Islam. The Islamic banking sector confirms its power during the Global Financial Crisis that hits the world in late 2007. The concept behind the interest-free banking systems as called by other countries is the cooperation and partnership between both parties, seller/buyer in any business transactions. Islamic banking assets are growing year after year at an exponential pace. According to Earnest and Young report (2015) and the Malaysia Islamic Financial Centre, the total size of Islamic banking is forecasted to hit U.S $ 3.4 trillion by end of 2018 as shown in Figure 2. Islamic finance is a growing industry, not only in Islamic countries but also in Europe and the United States region. In Islamic countries like Saudi Arabia, Iran, Malaysia, Turkey, the Islamic finance industry is increasing with the passage of time.

Islamic banking assets account for more than 80% of the total Islamic finance assets as shown in Figure 3. It means that any progress in the Islamic banking sector will benefit the whole industry. As a result, Islamic banking investments are a very important sector which took more attention of policymakers and finance scholars around the globe.

Recent research studies confirmed that Islamic banking investments are helpful to the growth of the economy in many countries in the world and particularly in the UAE. Moreover, Islamic banks are stable under different shocks and crises (Tabash, 2018; Tabash and Anagreh, 2017, Yahya et al., 2017). Islamic banks are considered

a motivating sector to bring foreign direct investment (FDI), and increasing gross fixed capital formation into the UAE economy (Furqani and Mulyany, 2009; Majid and Kassim, 2010; Tabash and Dhankar, 2014).

There are good news and insights in the UAE when we are speaking about the development of the Islamic banking sector in the last decade. Although Islamic finance in itself is an old concept, its appearance has come to the surface in the recent years, due to its stability under various crises and shocks particularly in the last 2008 financial crisis. This is basically due to the increased awareness provided by the government of the UAE (Emirates Diary, 2015). Islamic banks investments are increased in the UAE as shown in Figure 4. It is grown from < U.S $ 0.5 million in 1990 to more than U.S $ 45 million in 2015. It is a good measure about the growth of the Islamic banking sector in the UAE over the years.

Moreover, this positive increase in Islamic banking assets pushes governments around the world to follow Islamic banking system and try to study the various factors and economic policies that could push this sector forward. Currently, there are 8 fully-fledged Islamic banks working in the UAE under the Islamic law (Emirates Diary, 2015).

The current study is very vital since it is measuring the three most important economic pillars OP, FDI, and GDP on the progress of Islamic investments (IIs). All the studied variables are considered vital for any country, particularly for emerging economy like the UAE. The objectives of the study are:
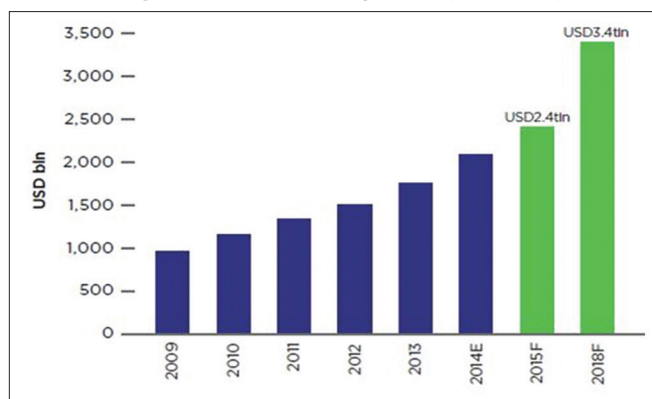• To understand the effect of OP fluctuations, FDI inflow, and GDP on the growth of IIs.
• To test the long-term and short-term link between the variables.

Figure 1: Oil price volatility (1990-2015)
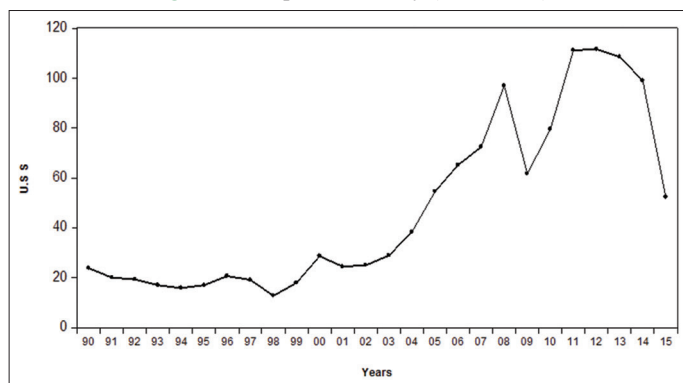
Source: Energy sector statistics, USA

Figure 2: Islamic banking Assets (2009-2018)

Source: KFH Research Database

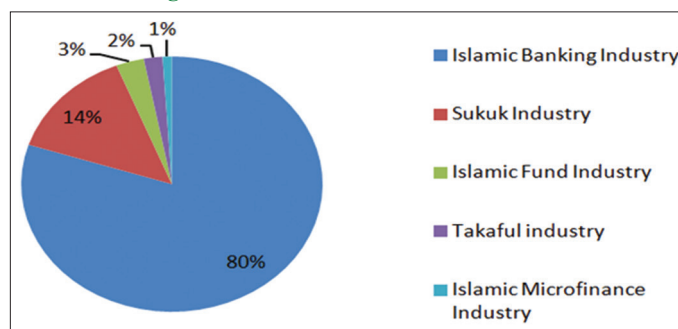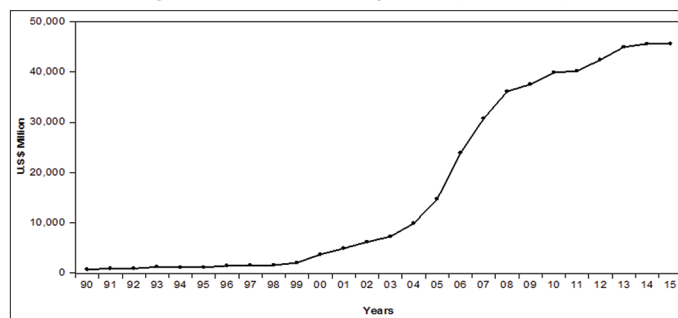**Figure 3:** Share of Islamic Finance Market

Figure 4: Islamic banking assets (1990-2015)

Source: Author's own elaboration

- To check the causality between OP, GDP, FDI and Islamic banking investments.
- To know the determinants of IIs growth in the UAE.

Answering the above mentioned questions could help the policymakers and Islamic finance scholars to develop policies, directions, and insights accordingly.

2. LITERATURE REVIEW

A lot of research work has been done in the context of the link between the role of Islamic banking investments and the development of the economy. But, there are no studies that document the link between the impacts of the OP volatility in Islamic banking investments growth. Therefore, the current study tries to bridge the gap in the literature by studying the OP volatility, addition to FDI and GDP on the growth of Islamic banking investments in the UAE.

2.1. OP Changes and Islamic Banking Investments
Most of the studies that examine the OP changes are concentrating on the link between the OP changes and returns of stocks and other macroeconomic variables of different countries.

Hussin et al. (2013) in their studies showed that oil and gold prices have a great impact on Islamic stocks return in the Malaysian economy. They used multiple econometric techniques to test the link between the OP changes and the return of stock market in the Malaysian economy. Their results revealed that there is no long-term link between OPs and stock return market in Malaysia. Besides that, the results of causality showed that there is a bi-directional association between OPs and stock return market. Besides that, Said (2015) examined the impact of the OPs on the performance scores of Islamic banks over the financial crisis period 2008-2009. His results indicated the absence of a direct association between the OP fluctuations and the profitability of Islamic banks in the Middle East and North Africa.

Later on, Abdullah et al. (2016), in their study tried to test OP, gold price, and corn price for improving portfolio diversification advantages. They used different econometric methods to achieve the objectives of their study. They found that the Singapore Islamic index is doing well compared to other Islamic indices and the commodities. Their results recommended the investors to be care of that the Philippine Islamic stock index has less correlation with the crude oil changes in the short-term.

Furthermore, Fayyad and Daly (2011) tested the causality association (short and long) between the return of stock market and the volatility of OPs in the Gulf Cooperative Council (GCC). Their results indicated that no major influence found between (OP, gold price) and stock market return. But in the second period, a significant connection was found to exist among stock market return and OP in GCC countries except for UAE and Bahrain.

Broadstock and Filis (2014) found that OP changes play a substantial role in stock market returns. In the same year, Khan and Masih (2014) concluded that the link between commodity price, OP, and Islamic stock markets are highly volatile and unstable. This volatility, especially during the global debt crisis has a crucial role. Akhtar et al. (2015) explored that Islamic stocks got benefits during the global debt crisis due to its sound principles. Moreover, some recent studies such as Nagayev et al. (2016) have concluded that crude oil had a robust negative association with Islamic equity over the 2001–2003 periods. Jammazi and Aloui (2010) examined the influence of OP on the stock market and found that the stock market variables reacted in a negative way for the moderated economy (France) and temporarily for expansion economy like (UK). Besides that, Park and Ratti (2008) investigated the influence of OP volatility on real stock returns in the United States and 13 countries of Europe. Their results indicated that the impact of OP volatility may be positive or negative depending on the country if it is importing or exporting country. For example, Norway as an oil exporter showed a significant positive response of real stock returns to increasing OPs. Based on the literature reviews, there are no studies documented the impact of the OP changes in the Islamic banking investments. The current study gives an answer to the following question.

RQ1: Do OP Fluctuations affect the Islamic banking Investments of the UAE?

2.2 FDI and Islamic Banking Investments
Tajgardoon et al. (2012) have studied the causality link between FDI and Islamic banking for nine countries of Organization Islamic Conferences (OIC) over the period 1995-2010. They used econometric techniques. Their results showed that there is no long-term link between FDI and Islamic banking in their study sample. Moreover, their results showed that there is a two-way link between FDI and Islamic banking in their study sample.

Al Nasser et al. (2010) investigated the causality between FDI and financial environments of some countries of Latin American. Their results revealed that one-way association is found in the development of the banking sector to FDI. Some studies have revealed that political factors could affect the link between FDI and banking sector (Kholdy and Sohrabian, 2008; Dutta and Roy, 2011).

Kalayci and Tekin (2016) in their studies examined the relationship between FDI and Islamic banking sector in the case of Turkey. They used econometric techniques to achieve the purpose of the study. Their results indicated that there is a long-run association between FDI and Islamic banks in Turkey. The results of causality showed that there are two-way association between FDI and Islamic banking. Recently, Tabash and Anagreh (2017) examined the link between FDI and Islamic banks' in the UAE. Their study used time series techniques to test the linkage between the variables. Their results revealed that Islamic banks have brought FDI into the UAE. The study also showed that there is a two-way link between Islamic banking and FDI. In another study of Qatar in 2014, the results show that Islamic banks' financing has contributed to bringing FDI to Qatar. The results of causality test indicated that a causal relationship happens only in one direction for the study variables. Based on the above mentioned literature, the study gives an answer to the second question.

RQ2: Does FDI have a crucial impact on Islamic banking investments in the UAE?

2.3. Gross Domestic Product (GDP) and Islamic banking Investments

In 2012, Abduh and Azmi have studied the link between Islamic banking and economic in Indonesia. They used time series analysis and econometric techniques like ARDL for cointegration. Their results revealed that the link between Islamic banking and economic growth of Indonesia is a two-sided relationship. After that, Yusof and Bahlous (2013) have examined the development of the Islamic banking sector and GDP in Malaysia. Their results revealed that Islamic banking is a good option for utilizing resources and enhancing GDP. Al-Oqool et al. (2014) in their study have revealed that there is bidirectional causality between Islamic banking as represented by Jordanian Islamic banks and economic growth of Jordan. Furqani and Mulyany (2009) examined the link between the total Islamic banking and real GDP per capita and other variables in Malaysia. Their results revealed that fixed capital formation causes Islamic banks to grow in the short term. It also shows there is a bidirectional link between Islamic banking and investment in the long term in Malaysia. Besides, Tabash and Dhankar (2014) explored empirically the contribution of the Islamic banking sector to the economic growth of certain countries in the Middle East, namely Qatar, Bahrain, and United Arab Emirates (UAE). They used different variables to test the connections between GDP and Islamic banking in the countries under the study. Their results concluded that in the long-term Islamic banks' financing is positively and significantly correlated with economic growth in the select countries.

RQ3: Does GDP have an impact on Islamic banking investments in the UAE?

3. METHODOLOGY

3.1. Data Collection

A time series data were fetched from different sources over the period 1990-2015. Four variables namely, OP, FDI, GDP and IIs are utilized in the study. The data for FDI and GDP were collected from the World Databank, World Development Indicators while the OP data were collected from U.S Energy Information Administration, petroleum and other liquid data section. The data for IIs were collected from financial statements of full Fledged Islamic banks in the UAE. Eviews 7 program is used for econometric analysis. The first step of the analysis is to address the connection between the study variables, and whether the series is stationary or not. If the data are stationary, other tests will be done accordingly like cointegration, Granger causality, and vector error correction model (VECM), (Engle and Granger, 1987; Johansen and Juselius, 1990. Diagnostic tests are also done to get the validity of the results.

3.2. The study Model

$$IIS_{it}=\beta_0+\beta_1 OP_1+\beta_2 FDI_2+\beta_3 GDP_3+\varepsilon \qquad (1)$$

Where,
IIS_{it} is the dependent variable which represents the proxy of Islamic banking investments in the UAE.

β= Constant,
OP_1= Independent variable which presents the OP changes in the UAE.
FDI_2 = Independent variable which presents the FDI inflow in the UAE.
GDP_3= Independent variable which presents the GDP flow growth in the UAE.
e= Error term.

4. RESULTS AND DISCUSSION

4.1. Descriptive Analysis

Table 1 reveals that the average OP per barrel over 26 years is U.S $ 47.76. It also shows that the maximum price per barrel is U.S $ 111.63 while the minimum price is U.S $ 12.76 over the same period. This indicates a high fluctuation in OPs over the period 1990-2015. Besides that, the median 28.75 is less than the mean 47.76 which means the data is skewed to the right in a positive way. For GDP, it is reaching U.S $ 403137.1 million from U.S $ 50701.44 million of the UAE. The same picture is applied to FDI. It touches U.S $14186.52 million in 2015 from its negative value U.S $ 985.34 million in 1990. The Islamic banking investments are increasing through the years. It reaches U.S $45639.00 million from the minimum U.S $ 740 million in 1990.

4.2. Stationary Test

The results of Table 2 show the level 1 and first difference values of the study variables. Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) tests are used (Dickey and Fuller, 1981; Philips, 1987). The results show that all variables are stationary after the first difference. For OP, the P-value (0.0131) is < α (0.05) in the ADF test and 0.0159 is <0.05 for the PP test. For GDP and FDI, the values show that the values are 0.0029 and 0.0009 respectively and are <10% level of significance (ADF test). For Islamic banking investments, the P-value is 0.0152 and < α (0.05) in the ADF test. For all variables, the first difference values are <0.05 level of significance which lead us to reject the null hypotheses and indicate that all variables are stationary at the same order. After that, the co-integration analysis is applied.

4.3. Co-integration Test Results

Tables 3 and 4 together documented the output of Johansson test for the long- run association between OP, GDP, FDI, and IIs. Both tests (trace and maximum Eigen) showed that the variables are integrating at α 5% level of significance. The P-value in Table 3 is 0.0014 which is <α 0.05 level of significance which leads us to reject the null hypothesis and to accept the alternative hypothesis. This means that there is at least one vector cointegration relationship between the variables. The same result is drawn from the Max-Eigenvalue statistic. Table 4 shows that the P-value is 0.0013 and < α 0.05 level of significance which indicates the null hypotheses of no cointegration between variables should be rejected. Moreover, the existence of co-integration confirms the existence of Granger causality at least in one direction (Granger, 1988). This result is confirmed by other studies like (Furqani and Mulyany, 2009; Tabash 2018; Tabash and Anagreh, 2017). The next section is to check about the causality between the variables.

Table 1: Summary Statistics

Statistics	OP (US. $)	GDP (U.S $ Million)	FDI (U.S $ Million)	IIs (U.S $ Million)
Mean	47.76	178078.9	4493.74	17185.23
Median	28.75	114341.9	2199.54	6743.00
Maximum	111.63	403137.1	14186.52	45639.00
Minimum	12.76	50701.44	-985.34	740.00
Observations	26	26	26	26

Table 2: Unit root test

Variable with Intercept	ADF Test		Phillip-person test	
	Level 1	**First difference**	**Level 1**	**First difference**
OP	−1.2366	−3.6181**	−1.2366	−3.5319**
	0.6419	0.0131	0.6419	0.0159
GDP	−0.006625	−4.2818***	0.0390	−4.2339***
	0.9493	0.0029	0.9538	0.0032
FDI	−1.5437	−4.7582***	−1.5283	−4.9462***
	0.4955	0.0009	0.5031	0.0006
Islamic banking Investments	−0.9780	−3.5938**	−0.9231	−4.2625**
	0.7442	0.0152	0.8625	0.0032

Sig. at: *10, **5 and ***1% level

Table 3: Johansen's test (trace statistic)

Hypothesized No. of cointegration equations	Eigenvalue	Trace Statistic	P
None *	0.800223	61.89891	0.0014**
At most 1	0.433186	23.24563	0.2342
At most 2	0.322483	9.620235	0.3111
At most 3	0.011456	0.276524	0.5990

Table 4: Johansen's test (Max-Eigenvalue statistic)

Hypothesized No. of cointegration equations	Eigenvalue	Trace Statistic	P
None *	0.800223	38.65328	0.0013**
At most 1	0.433186	13.62540	0.3965
At most 2	0.322483	9.343711	0.2587
At most 3	0.011456	0.276524	0.5990

Table 5: Pair wise granger causality tests

Null hypothesis	F statistics	Probability
OP does not granger cause IIS	1.49751	0.2597
IIS does not granger cause OP	17.3043	0.00004**
GDP does not granger cause IIS	1.23532	0.3437
IIS does not granger cause GDP	4.49616	0.0169**
FDI does not granger cause IIS	0.92693	0.4781
IIS does not granger cause FDI	0.42326	0.7892

,* Significant at 5, 10% level of significance

4.4. Causality Test Results

Table 5 reveals Granger causality tests results. For OP and Islamic banking investments, the first row of the table shows that the P-value is 0.2597 and it is more than α 0.05 level of significance which indicates that OP does not granger causes IIs growth. Besides, in the second row, the P-value is 0.00004 and it is < α 0.05 level of significance which means Islamic banking investments Granger causes the OP in the UAE. For GDP, the P-value is 0.3437 and it is more than α 0.05 level of significance which means GDP does not Granger cause IIS growth. At the same time, IIS does Granger causes GDP since P-value (0.0169) is less than the level of significance (0.05). This result is consistent with (Tabash and

Dhankar, 2014; Al Nasser and Soydemir, 2010). Regarding FDI, the P-values are 0.01781 and 0.07892 respectively for both null hypotheses which are more than α 0.05 level of significance which means to accept the null hypotheses.

4.5. VECM

In the current study, we approve that there is a long-run cointegration vector among the selected variables. VECM informs us to have insights about the short and long-run associations between variables. VECM model results are reported in Table 6. The coefficient (C1) equals (−0.199481) which is negative and significant (P-value, 0.0067< 0.05 level of significance). This leads us to say there is a long run-causality from OP, GDP, and FDI towards Islamic banking investments growth in the UAE. After that, we test the short-run causality between OP, GDP, and FDI towards Islamic banking investments. Wald test is used to check the null hypotheses testing of c(4)=c(5) = 0, C(6)=C(7)=0, C(8)=c(9)=0. The results of the Wald test were shown in Table 7. The R –square is 0.847492 which is a good sign of the model. F statistic 14.58383 is also significant. Durbin Watson is close to 2 which reflected that there is no multicollinearity in the model.

It is clear from the Table 7 that OP (value 0.000 is < α 0.05 level of significance) which means we should reject the null hypothesis and accept the alternative one, i.e., there is a short run causality running from OP towards Islamic banking investment growth in the UAE. The same picture is drawn for GDP which means there is a short run causality running from GDP towards Islamic investment growth in the UAE. However, for FDI, the P-value is 0.1249 and it is more than the 0.05 level of significance which means that there is no short-term causality from FDI towards Islamic investment growth in the UAE.

4.6. Diagnostic Tests

It is clear from Table 8 that the P for all tests is more than α 0.05 level of significance which indicate the acceptance of null hypotheses of normality (Jarque– Bera test), no serial correlations

Table 6: Vector error correction model results

Variables' coefficients	Coefficient	Std. Error	t-Statistic	P
C (1)	−0.199481	0.062015	−3.216659	0.0067**
C (2)	0.617749	0.188151	3.283252	0.0059**
C (3)	−0.057629	0.181547	−0.317431	0.7560
C (4)	−0.209360	0.043020	−4.866619	0.0003*
C (5)	−0.099894	0.058548	−1.706198	0.1117
C (6)	−0.209426	0.174656	−1.199075	0.2519
C (7)	0.125565	0.117483	1.068796	0.3046
C (8)	281.2814	69.87058	4.025749	0.0014**
C (9)	196.1239	89.85199	2.182744	0.0480*
C (10)	3884.769	1018.207	3.815302	0.0021**
R-squared	0.909881			
Adjusted R-squared	0.847492			
F-statistic	14.58383			
Durbin-Watson stat	1.991932			

Optimal Lag Length is determined by the Schwarz Information Criterion (SC). ** denotes the significance at five percent level

Table 7: Wald statistics

Test Statistic	OP	GDP	FDI
Chi-square, Probability value	0.000	0.000	0.1249

Table 8: Diagnostic tests results

Test type	P value
Breusch-Godfrey test serial correlation	0.7061
white heteroscedasticity test	0.5470
(Jarque –Bera test), Normality	0.6521

(Breusch-Godfrey test) and absence of heteroscedasticity(white heteroscedasticity test). It shows that the model passed all diagnostic tests successfully.

5. CONCLUSION

This study examined the impact of OP, GDP, and FDI on Islamic banking investments growth in the emerging economy, UAE. The study used time series analysis for examining the connections between variables. Stationary tests, cointegration analysis, Granger causality test and VECM methods are utilized for the analysis. The results revealed that there is a significant and long-term association between the studied variables in the UAE. Besides, the results conclude that there is long-term and short-term causality between the OP and Islamic banking investments. This means that the changes in OP will affect the Islamic banking investments growth in the UAE.

From the Granger causality test, the Islamic banking investments cause some changes in the OP, which means the relationship is unidirectional. The results also show the GDP has a long-term and short-term association with the Islamic banking investments in the UAE while FDI has no causality with Islamic banking investments. The results are very important for Government of the UAE to monitor the OPs and put corrective measures regarding Oil production levels as advised by OPEC.

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