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Research Article

Relationship between Oil Prices and Economic Growth in GCC Countries

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Abstract

This study explores the relations between the Oil Prices (OP) and the Gross Domestic Product (GDP) per capita in the Gulf Cooperation Council (GCC) countries[1] using the asymmetric causality test for the period of 1996-2018. The results of the standard bootstrap causality test reveal bidirectional causality between the OP and the GDP per capita in Qatar and Saudi Arabia. The results of the asymmetric causality tests are different for some countries, which demonstrate the unidirectional causality running from OP^+ to GDP^+ in Oman and Saudi Arabia. Whereas the bidirectional causality exists between the GDP^- and OP^- in Kuwait and Oman and unidirectional causality exists between the OP^- and the GDP^- per capita in Bahrain, Qatar, and UAE. The results support the Real Business Cycle Theory (RBC Theory), which states that external positive or negative shocks have significant impact on the GDP per capita through consumption and investment channels. The GCC countries should channelize the huge revenues towards other private sectors, which will create more prospects for the GDP and will provide substitution in case of arising any crisis. In addition, the GCC countries must diversify their economic activities since the OP are quite volatile and uncertain and the revenues of these countries are dependent on the OP to a large extent. Sustainable development can be achieved through a balanced path between government expenditures and future savings.

Keywords: Gross Domestic Product, GDP, Asymmetric Causality Test, Bootstrap Causality Test, Real Business Cycle Theory, Sustainable Development

JEL Codes: O40, B41, Q40

1. Introduction

Is the oil reserve a blessing or a curse for a country? The discussion related to the oil prices (hereinafter OP) and the economic performance has achieved immense importance especially after the 1973 oil price shocks. It is a crucial element in the modern economy and its variations influence every section of the economy (Qianqian 2011). Over the years numerous oil shocks and its contributing role in the Gross Domestic Product (GDP) has enhanced the importance of relationship between oil and economic activity (Hamdi & Sbia, 2103). The unique nature of the oil in the group commodities contribute to the various economies of the world. It is

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important for both the oil exporting and importing countries and it can have positive and negative impacts for them. In case of oil-exporting countries, the rise in OP will cause to increase the income, which in turn leads consumption, investment and productivity (Apergis, Aslan, Aye, & Gupta, 2015; Su, Khan, Tao, & Nicoleta-Claudia, 2019). The variation in the OP can have an impact on the current account, government expenditure, which in turn influence the domestic price moments and ultimately transferred to the economic growth (Berument, Ceylan, & Dogan, 2010).

The changes in the OP make a remarkable impact on the economic growth through the real sector which effect the goods and services through raw material and other factors of production such as land, labour and capital (Okoro, 2014). An increase in the OP influences the economic growth of the importing countries by increasing the production cost and then result in the output prices. Similarly, it may cause to reduce the consumption by lowering the disposable income (Berument *et al.*, 2010). The increase in the cost of production due to increase in the OP makes the inflation rise, which will reduce the consumer spending and then result in the low production and low employment (Brown & Yucel, 2002). For the oil-exporting countries, rise of the OP boosts the country's currency and national earning through export earnings (Korhonen & Juurikkala, 2009). This transfer of wealth will result in generating a higher purchasing power in the oil-exporting countries. The sudden upward and downward changes in the OP result in the demand and supply phenomenon and accentuate the uncertainty. Moreover, the uncertainty outlook of the future might also accelerate reduction in the consumption and the investment.

A remarkable economic growth is observed in the Gulf Cooperation Council (GCC) member countries over the last two decades. The GCC countries possess one-third total crude oil reserve, and they are some of the largest oil-exporting countries. The total Gross Domestic Product (GDP) of the GCC countries was 1.635 billion US dollars in 2014. The GDP of Saudi Arabia represents 46% of all GCC countries' GDP, followed by the UAE with around 25% (GCC Statistical Centre, 2014). In addition, almost 40% of the world reserve belongs to the GCC countries (Abdalla & Abdelbaki, 2014). The oil exports of GCC countries account for 70% of total exports, and this is their main source of revenue. Such larger reserve of oil gives these countries relative superiority and makes possible to achieve this current level of economic development for them.

In view of the large contribution of the oil revenues in the economic development of the GCC countries, it is not difficult to infer that this makes these countries more sensitive towards the OP changes (Khan, Su, Tao, & Yang, 2019). Over the years, the relationship between the OP and the GDP indicates that both are complementary to each other. The change in the OP due to the economic, political, and financial situation have the same impact on the GDP in the GCC countries. A reduction in the OP is observed during 1998-1999, which has slowed down the economic growth, and as a result, OPEC imposed restriction on the production. During the period of 2001-2002 the OP declined because of the September 11 terrorist attacks, which have a negative impact on the economic activities in the GCC countries. Then, between 2003 and 2008, an average GDP growth was 7.1% due to the rising of the OP (Vohra, 2017). This higher OP has made the GCC countries a hub for economic development and the key stakeholder in the energy market (Al-Khouri & Dhade, 2014).

The economic expansion of the emerging economies and the uncertainty about the possible shortage of oil supply increased the OP, which ultimately boosted the economic growth of the

GCC countries. During this period, the GDP of Bahrain and Oman increased by 8.3% and 8.2% respectively and the GDP of Saudi Arabia and Kuwait increased 6.3% and 6%, respectively. The other countries of the GCC also followed the same pattern of the higher economic growth resulted in the OP changes. These countries used this revenue to subsidise the industries, fuel, and infrastructure to further foster economic growth.

This pace of economic growth declined due to the global financial crisis in 2008, which caused the OP to decline. All the GCC countries experienced a sharp decline in the GDP mainly caused by low demand oil, which turned the surplus budget into deficits. The government revenues diminished, which resulted in the withdrawal of the subsidies. Some of these GCC countries like Saudi Arabia and Qatar dedicated a huge amount of fund to diversify industries and protect the economy from the fluctuation of the OP. During the period of 2014-2016, one of the largest shocks was observed due to US shale oil production, a geopolitical condition in the middle east, OPEC policies and the failing economic growth. The lack of diversification in these countries resulted in the depleting oil revenues compelling them a cut in the government expenditures that curtailed the pace of economic development.

In overall, economic growth of the GCC decreased and specifically, Kuwait and Bahrain experienced the lowest growth. In early 2016, the OP reduction has challenged the GCC countries and then the countries withdraw the subsidies on electricity consumption. The cost of electricity in business, commercial, government offices and household increased. The fiscal budget went into deficit, and this was managed by wealth fund to meet the government expenditure. Saudi Arabia introduced numerous austerity measure to counter this situation including increase in the utility prices and retail fuel prices, reduction in the industrial subsidies and privatising government entities. The other countries like UAE, Bahrain and Qatar followed Saudi Arabia austerity measure to mitigate the situation. Especially, some of these countries like Saudi Arabia, Oman and Qatar experienced the huge budget deficit. This OP plunge has a long-lasting impact on the oil exporter countries like the GCC countries.

The remaining of the paper is organised in different sections. The Section 2 provides a brief review of the literature on the relation of the OP and the GDP of different countries. Section 3 explains and discusses the theoretical model and methodology. Section 4 labels the data and results. And lastly Section 5 consists of the conclusions.

2. Literature Review

Berument *et al.* (2010) explore the relation between the OP and GDP and concludes that an increase in the OP has a positive impact on the GDP. However, Farhani (2012) shows weak cointegration between the OP and the GDP in the US. Elmezouar, Mazri, Benzaire, & Boudi (2014) show the positive impact of increase in the OP on the economic growth in Algeria. Rahma, Perera, & Tan (2016) find that reduction in the OP has a considerable impact on the GDP. Gokmenoglu, Azin, & Taspinar (2015) analyse the causality between the OP and some macroeconomic variables such as inflation, GDP, and industrial production. It is found that there is a long-term relationship between OP and industrial production for the period from 1961 to 2012 in Turkey. Akram & Mumtaz (2016) show that change in the OP has a sizeable impact on the GDP in Norway. Aimer (2016) concludes the positive impact of the OP on the GDP in Libya. Dikkaya & Doyar (2017) investigate the causality between the OP and the GDP, the study concludes that there is a causality running from the OP to the GDP.

Adeniyi, Oyinlola, & Omisakin (2014) analyse the nexus between the OP shock on the GDP in Nigeria and results conclude no causal link between OP and GDP in Nigeria. However, Ogboru, Rizvi, & Disi (2017) find the positive impact of the OP on the economic growth in Nigeria. Gadea, Gomez-Loscos, & Montanes (2016) examine the relationship between the OP and the US economy. The study concludes that there is a meaningful relationship and negative impact is greater at the time of higher oil prices. Apergis *et al.* (2015) evaluate the causality link between the OP and the GDP. The results show that positive OP reduces the GDP, while negative OP increases the GDP. Kurihara (2015) examines the OP impact on the GDP in the US, the EU and Japan. The findings of his study suggests that the OP has a positive influence on the GDP. The studies conducted in different countries generally show that there is a significant relationship between the OP and economic growth. The direction of this effect can vary depending on the oil trade situation of the countries.

The previous literature consists of studies associated to the relationship between the OP and the GDP in GCC countries. Nusair (2016) analyses the impact of the OP on the GDP in the GCC countries. The study concludes that the positive change in the OP has a greater impact on GDP than negative change in the OP. Ftiti, Guesmi, Teulon, & Chouachi (2016) evaluates the interdependence between economic activity and the OP. The findings suggest that at time of financial crisis and fluctuation in the business cycle, economic growth is affected more. Vohra (2017) examines the relations between the OP and the GDP in GCC countries and shows that the OP is the main driving factor in the GDP for those countries. Albaity & Mustafa (2018) investigate the relationship between the OP and macroeconomy in the GCC countries. The findings suggest that GDP has been affected by the OP in the long run.

The scrutiny of prior literature shows that they use the conventional methods of causality and autoregressive distributed lag vector autoregression (VAR). These techniques lack asymmetry characteristics in causality testing. Such approaches restrict the studies to differentiate the positive or negative shock as well as the magnitude of the shocks. They are not allowing to detect the asymmetric information (Akerlof, 1970; Spence, 1978). In case of the non-normally distributed and time-varying data, the results lead to the incorrect size. The standard causality test does not detect the information about positive or negative shocks in the prediction. The conventional techniques ignore cross-sectional spill over effects. However, in this study, it is used the asymmetric causality test to investigate the relations. The method has many advantages compared to the traditional time series methods. First, the degree of freedom increased due to aggregation of both time series and cross-sectional characteristics of data. Second, the asymmetric causality gives more efficiency due to considering the cross-sectional spill over effects that are neglected in pure time-series data analysis. Third, it allows examining the positive and negative shock as well as the magnitude of the shocks. Therefore, the power of the current study is that it uses asymmetric causality to explain the relations between the OP and the GDP per capita in the GCC countries.

3. Real Business Cycle Theory and Methodology

Stadler (1994) proposed Real Business Cycle Theory (RBC Theory) which states that the business cycle fluctuation to a large extent depends on the shocks, which influence the market. The external shocks arise due to the economic crisis and instability. This external shock can be positive or negative which has different impacts on both oil-exporting and oil-importing countries. The efficiency of the labour and capital also changes in the response of the occurrence to external shocks. In case of the oil-importing countries, an increase in the OP

influences the decision of firms, which also influence consumption and production reduction and ultimately it impacts the output in a negative way (Kydland & Prescott, 1982). The higher cost of production may reduce the rate of return on investment, which will result in the reduction of investment. Similarly, the changes in the OP will influence the product price due to increased production cost (Rafiq, Salim, & Apergis, 2009). This transmission mechanism is described in the following schematic:

$$OP \uparrow \Rightarrow FP \uparrow \Rightarrow IN \downarrow \Rightarrow CO \downarrow \Rightarrow OT \downarrow$$

Where *FP* represents the factors of production, IN indicates the investments, CO denotes the consumption and OT is output.

In the case of the oil-exporting countries, the impact is opposite, the positive shock will cause to increase the rising the factors of productions and consumption which in turn cause to boost the economic growth. The rise of OP will improve trade balance which leads to increase the revenues (Korhonen & Ledyaeva, 2010). This transmission mechanism is described in the following schematic:

$$OP^{+} \uparrow \Rightarrow FP \uparrow \Rightarrow IN \uparrow \Rightarrow CO \uparrow \Rightarrow OT \uparrow$$

However, if the OP declines due to a crisis in the market, it will cause to reduce the factors of production and as a result less oil will be available for the investment and consumption which ultimately causes in slowing down of the economic growth. The decrease in OP will cause the low demand, which will have to reduce the export and revenues which also turn into slowing down the economic growth. The transmission mechanism can be shown in the following schematic way:

$$OP^{-} \uparrow \Rightarrow FP \downarrow \Rightarrow IN \downarrow \Rightarrow CO \downarrow \Rightarrow OT \downarrow$$

The theory has concluded that OP shocks will affect economic growth. The positive and negative shocks will have opposite impact on the oil-importing countries and the exporting countries subject to the magnitude and duration of the shock. In this study, it is investigated the relationship between the OP and the GDP per capita in the GCC countries which are oil-exporting countries. In this study, the asymmetric causality test predicted by Hatemi-J (2012) is used to test causality between OP and GDP per capita in GCC countries. The distinctive characteristic of this test is that it distinguishes between the positive effects of the negative impacts. The dynamic relationship between the OP and the GDP are diverse because of the various regime. This is to be expected, as investors react more to negative shocks than to positive ones, even when the shocks are absolutely the same size. This can conclude from the discussion that having conducted the standard causality test to detect the asymmetric relationship between the OP and the GDP, the per capita will be ignored and not be able to consider the possible asymmetric characteristics. This test separates the impact of both negative and positive shocks.

To evaluate the asymmetric causality between the variables, we define the GDP_t per capita and OP_t in the random walk process:

$$OP_{1t} = OP_{1t-1} + \varepsilon_{1t} = OP_{2o} + \sum_{i=0}^{t} \varepsilon_{i1} \quad (1) \text{ and}$$

$$GDP_{2t} = GDP_{2t-1} + \varepsilon_{2t} = GDP_{20} + \sum_{i=1}^{t} \varepsilon_{2t} \quad (2)$$

Where t =1,2 ……. T, the initial values are $0P_{20}$ and GDP_{20}, ε_{1i} and ε_{2i} which represents white noise residuals. The positive and negative shocks can be defined as $\varepsilon^{+}_{1i} = \max(\varepsilon_{1i}, 0)$, $\varepsilon^{+}_{2i} = \max(\varepsilon_{2i}, 0)$, $\varepsilon^{-}_{1i} = \min(\varepsilon_{1i}, 0)$, $\varepsilon^{-}_{2i} = \min(\varepsilon_{2i}, 0)$. Thus, residual is equivalent to the sum of positive and negative shock as $\varepsilon_{1i} = \varepsilon^{+}_{1i} + \varepsilon^{-}_{1i}$ $\varepsilon_{2i} = \varepsilon^{+}_{2i} + \varepsilon^{-}_{2i}$. The OP_{1t} and GDP_{2t} can be estimated as follows:

$$OP_{1t} = OP_{1t-1} + \varepsilon_{it} = OP_{10} + \sum_{i=0}^{t} \varepsilon^{+}_{i1} + \sum_{i=1}^{t} \varepsilon^{-}_{1i} \quad (3)$$

$$GDP_{2t} = GDP_{2t-1} + \varepsilon_{2t} = GDP_{20} + \sum_{i=1}^{t} \varepsilon^{+}_{2i} + \sum_{i=1}^{t} \varepsilon^{-}_{2i} \quad (4)$$

Next, we can define the positive and negative shocks of every variable in the cumulative formula as:

$$OP_{1t}^{+} = \sum_{t=1}^{+} \varepsilon^{+}_{1i} \quad OP_{1t}^{-} = \sum_{t=1}^{+} \varepsilon^{-}_{1i} \; GDP_{2i}^{-} = \sum_{t=1}^{-} \varepsilon_{2i}^{-}$$

These positive and negative components are employed to examine the asymmetric causality relationship between the variables. In case of the positive components of the OP and the GDP per capita, our data can be shown as:

$$y_t^{+} = (OP_1^{+}, GDP_2^{+})$$

and in the negative components of OP and GDP then the equation becomes as:

$y_t^{-} = (OP_1^{-}, GDP_2^{-})$.

The test can be employed by using the following vector autoregressive model of the order *q* VAR(*q*):

$$y_t^{+} = \upsilon + A_1 y^{+}_{t-1} + \ldots\ldots + A_q y^{+}_{t-p} + e_t^{+} \quad (5)$$

The 2×1 vectors of variables υ s 2×1 vectors of intercepts and e_t^{+} is a vector of the residuals. The matrix A_r is a matrix of the parameter for lag order r (r=1……. q).

Hatemi-J (2012) use the Toda-Yamamoto technique (1995) to evaluate the asymmetric causality. It comprises of three phases, first, determination of the maximum order of the

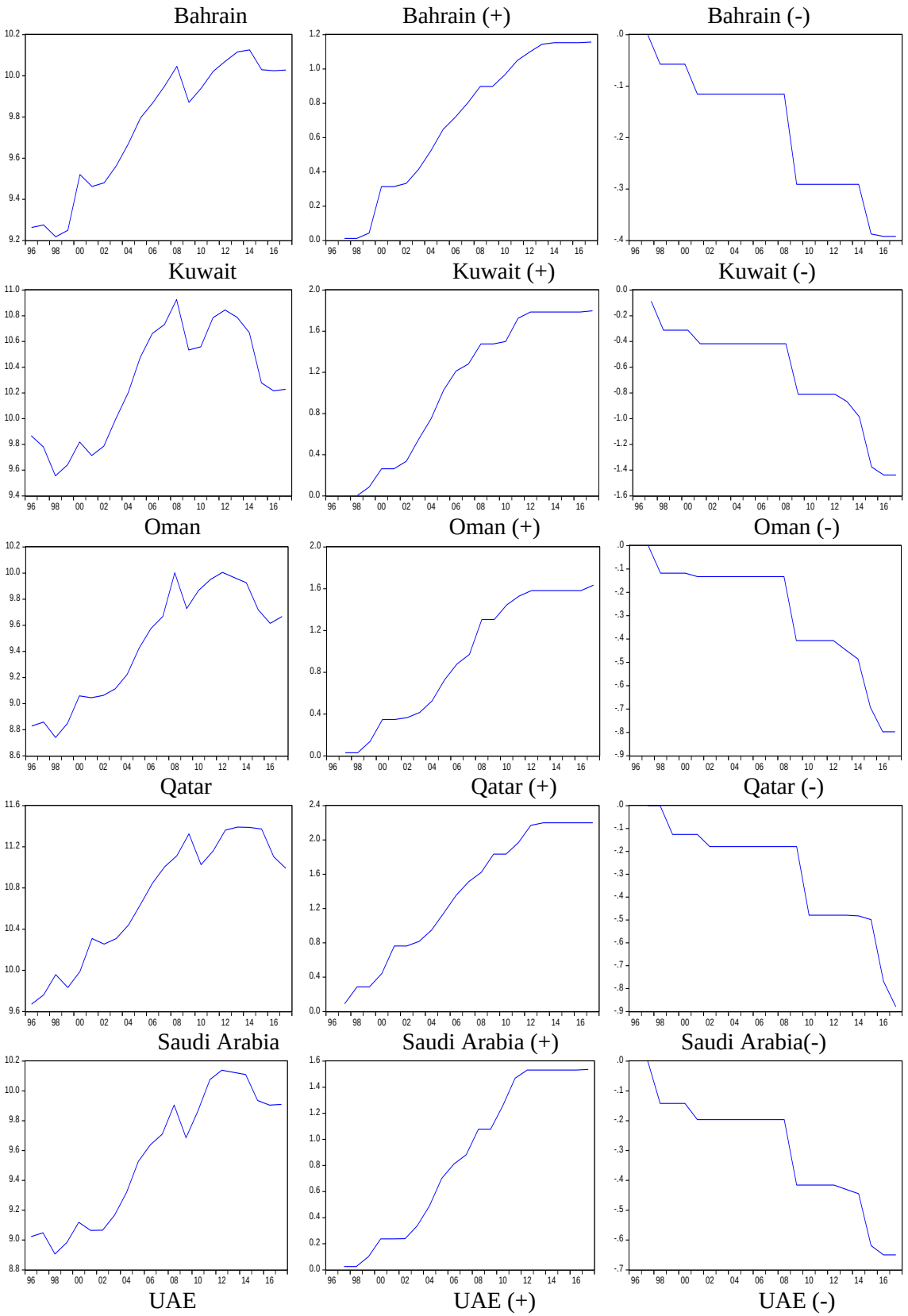
integration of variables ($d_{\max}$) through unit root tests. Second, the optimal lag length of the VAR system (*r)* is assessed via model information criterions. After that the VAR system with $(r+d_{\max})$ th order is estimated. The third phase consists to test the presence of the causality relationship between the variables by using the standard Wald test with an asymptotic $\chi 2$ distribution. The model information is considered in the lag length is a selection (Hatemi-J, 2003). The Wald test is applied to examine the causality among the variables in the autoregressive parameters, include asymmetric $\chi 2$ distribution in which the number of degrees of freedom is equal to the number of restrictions. The critical values are calculated using the bootstrap simulation method and is used with 10,000 repetitions.

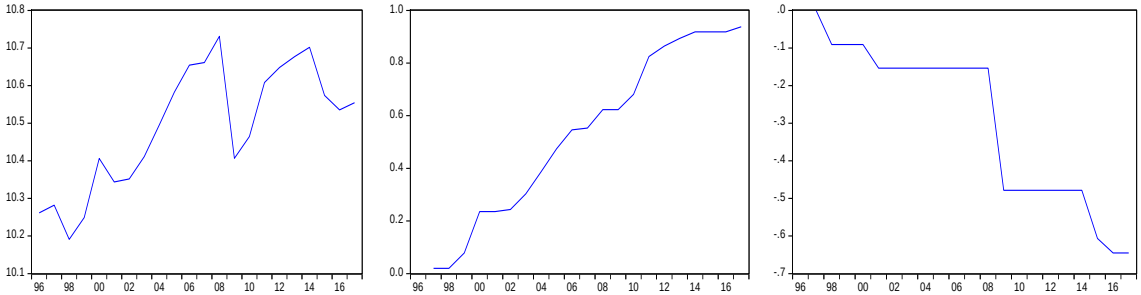
4. Data and Empirical Analysis

In this study, the asymmetric causality is examined between the OP and the GDP per capita in the six GCC member countries namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE for the period of 1996-2018. The data is obtained from the World Bank Developmental Economic Indicators (hereinafter WDI). The GDP is presented per capita, and the logarithmic form of the data is used in the empirical analysis. These countries share common economic and social characteristics, with same religion and exporter of the oil and gas. Similarly, heavy dependency on foreign labour, stable exchange, low inflation, and interest rate are similar in nature in the countries (Sturm & Siegfried, 2005). The period of study experienced the global financial crisis in 2008 and the Eurozone debt crisis. The data shows several ups and downs over the study period. It is seen that the first OP reduction during the period of 1997-1998, due to the Asian crisis, slowed down the demand and made reduction in the supply by OPEC, also resulted in the OP reduction by 60%. Similarly, GDP per capita of the GCC countries have shown slowing down pattern. However, the countries of emerging economies such as China, India and Brazil have caused an increase in the demand, which resulted in rising of the OP. This rising trend was further expedited by the instability in the region after September 11 attacks and the OP experienced a considerable rise. The next increasing trend was observed during the 2003-2008, an indication of the strong economic growth which caused the higher demand for oil.

The economic growth during the period of 2003-2008 was 8% and the OP was the main driver of this growth. In 2007, the GDP consisted of 40% of the oil revenues. However, the OP declined to 5 years low level in December 2008 due to the global financial crisis in 2008. During the period of 2008-2009, the GDP of all the GCC countries declined 2.2% because of global financial crisis in 2008. This decreasing trend in the OP and GDP per capita was followed by the recovery phase. During the period of 2011-2013, the OP increased again around 100 dollars. The GDP declined because of falling OP in 2014-2016. A negative shock was seen in 2016 when the OP dropped to a 13 year low level hitting 27 USD per barrel, which put downward pressure on the economic growth of the GCC countries. At the same time, the GDP per capita declined for the GCC countries. In view of the several crises, tremendous economic growth and significant role in the OP required examining the causal association between the OP and the GDP per capital in GCC countries. These countries are important actors in the energy market to influence the OP worldwide. The member of the OPEC and low production cost give the dominant position to control a large part of the global supply, which in turn affects the OP. It plays an important contribution to the socio-economic development of the GCC countries and future prediction.

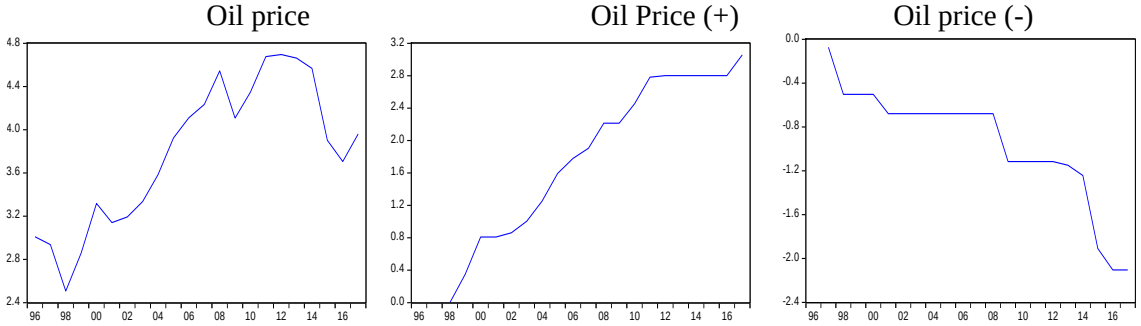
Figure-1: Patterns of the GDP per capita in the GCC countries.





Note: (+) indicates positive cumulative sums and (−) indicates negative cumulative sums. X and Y axes represent the year and GDP per capita respectively.

Figure-2: The trend of the OP in the GCC countries.



In the first step, it is tested the stationary of the underlying data series by using the Augmented Dickey-Fuller test (1981) and Phillips-Perron test (PP test) (Phillips & Perron, 1988). Table-1 illustrated the results about the GDP and the OP unit root test, which suggest that both the GDP per capita and the OP are stationary at the first difference at 1% significance level. It is evident from the literature that linear root test has lack of power in the presence of structural break. Over the years, the GCC countries have experienced different economic and financial crisis which caused the structural break in the series.

Table-1: Unit Root test

Countries	Level		First differences	
	ADF	PP	ADF	PP
Bahrain	0.596	0.553	0.002***	0.002***
Kuwait	0.667	0.628	0.027***	0.072***
Oman	0.580	0.580	0.002***	0.002***
Qatar	0.575	0.575	0.007***	0.007***
Saudi Arabia	0.748	0.748	0.006***	0.007***
UAE	0.362	0.425	0.001***	0.000***
OP	0.597	0.602	0.009***	0.010***

Note: The optimal number of lags s selected according to the Schwarz BIC.
***Shows that the series in question is stationary at the 1% significance level.

To overcome this problem, it is turned to evaluate the stationarity considering the structural break by using the Zivot-Andrew's test. The outcomes are demonstrated in Table-2. According to the results, the null hypothesis of a unit root cannot be rejected in levels. The outcomes are in line with ADF and PP tests results. It implies that the GDP per capita and the OP are stationary at first difference signifying the maximum of integration of variables $d_{\max}$.

Table-2: Zivot-Andrews Structural Break Test Results

Countries GDP	Test statistics		Break period	
	Model A	Model B	Model A	Model B
Bahrain	-2.707	-3.518	2005	2014
Kuwait	-2.683	-3.185	2014	2013
Oman	-2.785	-3.847	2014	2013
Qatar	-1.664	-3.108	2006	2014
Saudi Arab	-2.351	-3.228	2014	2014
UAE	-3.266	-3.309	2009	2007
OP	-3.123	-4.061	2014	2014

Note: -4.58, -4.80 and -5.43 are critical values for Model A at 10, 5 and 1% significance levels, respectively. -4.820, -5.08 and -5.57 are critical values for Model B at 10, 5 and 1% significance levels, respectively.

The results of the asymmetric causality test are reported in Table-3. In Bahrain, the null hypothesis that GDP^- does not Granger cause OP^- is rejected at 5% significant level. It means that slowing down of the GDP will cause to reduce the OP. Bahrain was one of the first countries among the GCC countries, which initiated several reforms to diversify its economy. The main purpose of all these reforms was to reduce the dependence of the economy on the oil revenue, financing through non-oil sources (Hamdi & Sbia, 2013). The GDP and the OP have a significant relationship which is evident from slowing down of the GDP due to a reduction in the OP. In 2009, the revenues from the OP reduced due to low demand which had a negative impact on the economic growth.

In case of Kuwait, the GDP^- and the OP^- Granger cause each other as the null hypothesis are rejected at 5% and 1% significance level respectively, which suggests the bidirectional causality in Kuwait. The result means that the decreasing OP causes the GDP and vice versa. The results are in line with the work of the Hamdi & Sbia (2013), which states that oil revenue is the main source of economic development, and any positive or negative shock will cause the GDP. The OP had an important contributing role in the GDP of Kuwait and observed many changes due to the fluctuation in the OP over the years. During the period of 2003-2008, the increasing OP to 100 USD per barrel, which led the GDP to reach 91,763 million USD in 2008. The GDP^- and the OP^- move in tandem in 1997-1998, the GDP contracted 15% mainly caused by the cut down of the OP which resulted in the decline of government revenue and increased deficit. It is also evident during the financial crisis in 2008, when the OP declined because of the low demand, which has negatively affected economic growth. In 2009, Kuwait suffered due to the recession, but contained the surplus budget by reserving 10% of the oil revenue to cope such instability. However, the negative shock of the OP during the period of 2015-2016 has a substantial effect on the GDP per capita in Kuwait and experienced the largest decrease in the GDP per capita. The drastic shocks resulted in the reduction of government spending which in turn lowered the subsidies (Young, 2016).

In the case of Oman, the OP^+ has a significant effect on the GDP^+ per capita, implies that when the OP increases the GDP per capita will also increase. The obvious reason of this is that 80% revenue of Oman comes from the oil exports, which is the main driver of economic development. The remarkable rise in the OP during the period of 2002-2007 enabled Oman to increase the size of the government and public spending, which fuelled the economic activity. Similarly, the GDP^- and the OP^- has bi-directional causality, suggests that reduction in the OP will decrease the GDP per capita and vice versa. The negative shock occurred in 2009, when the global financial crisis in 2008, resulted in the reduction of oil demand. During the same

period, the GDP per capita experienced a declining trend. Similarly, the negative shock of the OP was observed during 2014-2015, that has consequences for economic growth.

In the standard causality test for Qatar, the causal bidirectional relation is detected at 5% and 1% significance level. The findings of the work of Albaity & Mustafa (2018), states that economic activity has a significant impact on the OP. Qatar holds more than 6% of the world oil reserves, which has a significant contribution to the economic growth. It is evident that during the period of 2000-2007, Qatar achieved highest economic growth attributed by the OP (Vohra, 2017). On the other hand, the GDP per capita has also contributed to the OP, as the higher growth during this prosperity has uplifted the living standard which in turn increased the consumption. While the asymmetric causality test results reveal that the GDP^- causing the OP^- at 5% significance level. It suggests that both the variable have the same direction, decreasing GDP per capita will cause the OP to decrease and vice versa. It means that downward trend in the GDP per capita will lead a downward tendency in the OP. During 2002-2008, the increasing OP resulted in the abundance of the revenues, which were directed to economic development and welfare of the people. The GDP per capita raised from 3.9% in 2000 to 18% in 2007. The negative shock of the OP during 2008-2009 has slowed down the economic growth in Qatar.

The results for the Saudi Arabia show that the standard causality finds the bidirectional causality between the per capita GDP and the OP, which indicates the importance of oil revenue in the economic development. The work is in line with the Alkhathlan (2013), explore the substantial role in the GDP per capita. Over the period around 80% revenue source is the oil exports. However, the GDP^+ Grange cause of the OP^+ each other denotes the bidirectional causality, consistent with Algaeed (2017) which states that the positive oil shock will increase the economic growth in Saudi Arabia. It is one of the largest oil exporting countries in the world and had 87% of the total revenue in 2014. During the oil boom period of 2002-2008, the increasing OP accelerated the economic growth, and the substantial revenue was diverted to various projects. The commencement of such project helped in the stabilisation of the economy and private sectors. At the same time, public spending is substantial, and the private sectors are deeply dependent on oil production. In the UAE, the GDP^- Granger cause the OP^- as the null hypothesis is rejected at 5% significance level. It implies that decreasing the GDP will cause a reduction in the OP.

The study may help in the policy formulation as these countries rely heavily on the OP which is uncertain and unstable. Any shocks occurred may have severe consequences and most of these countries faced the budget deficit, which could be averted through investing in education and employment opportunities. The GCC countries should channel the huge revenues towards other private sectors which will create more prospects for the GDP and will provide substitution in case of arising any crisis. The GCC countries should diversify their economic activities since the OP revenues are volatile and uncertain. They should promote the non-oil sectors and involve the private sectors which can be helpful to reduce its dependency on the OP. The GDP and the OP are complementary to each other, the higher OP will provide more for government spending, consumers will spend more. Though these GCC countries possess huge revenues, which is a source of lavish government expenditures and missing the sustainable growth which can surrender to any external shocks. Thus, to get sustainable development, which is immune to the external shock, these countries should have a balanced path between the government spending on the social and infrastructure and saving for the future.

Table 3: Asymmetric Causality Test

Causality Direction	Test value	Lag value	CV 1%	CV 5%	CV 10%
Bahrain					
GDP →OP	0.005	1	10.164	5.278	3.608
OP →GDP	0.083	1	12.368	7.122	5.003
GDP^{+} →OP^{+}	2.155	1	19.443	11.709	8.958
OP^{+} →GDP^{+}	0.262	1	12.366	6.967	5.033
GDP^{-} → OP^{-}	12.980**	1	15.022	7.671	4.965
OP^{-} → GDP^{-}	2.997	1	10.293	9.240	6.598
Kuwait					
GDP →OP	0.241	1	9.731	5.343	3.729
OP →GDP	0.710	1	18.933	11.663	8.782
GDP^{+} →OP^{+}	1.923	2	16.587	11.012	8.742
OP^{+} →GDP^{+}	7.721	2	6.670	3.998	2.910
GDP^{-} → OP^{-}	5.876 **	1	9.224	5.118	3.588
OP^{-} → GDP^{-}	2.776 *	1	7.823	4.123	2.615
Oman					
GDP →OP	0.668	1	10.357	5.344	3.629
OP →GDP	0.049	1	9.656	5.395	3.715
GDP^{+} →OP^{+}	6.082	1	7.801	4.180	2.862
OP^{+} →GDP^{+}	7.519***	1	6.666	3.993	2.906
GDP^{-} → OP^{-}	6.515**	1	8.952	5.033	3.571
OP^{-} → GDP^{-}	3.215*	1	8.452	4.492	3.065
Qatar					
GDP →OP	22.390 ***	2	12.213	7.583	5.618
OP →GDP	6.993 *	2	15.447	8.687	6.395
GDP^{+} →OP^{+}	1.023	1	22.214	5.847	3.032
OP^{+} →GDP^{+}	2.577	1	50.014	6.222	3.287
GDP^{-} → OP^{-}	12.993**	2	22.403	11.304	7.630
OP^{-} → GDP^{-}	0.587	2	13.759	8.178	5.829
Saudi Arabia					
GDP →OP	5.798**	1	7.898	4.150	2.860
OP →GDP	7.356***	1	6.700	4.011	2.920
GDP^{+} →OP^{+}	7.606**	1	8.773	4.998	3.533
OP^{+} →GDP^{+}	3.799*	1	8.556	4.463	3.101
GDP^{-} → OP^{-}	0.746	1	13.059	7.401	5.302
OP^{-} → GDP^{-}	0.138	1	10.613	5.913	3.999
UAE					
GDP →OP	1.479	1	19.641	12.001	9.039
OP →GDP	0.874	1	10.000	4.911	3.273
GDP^{+} →OP^{+}	1.788	1	18.109	11.057	8.224
OP^{+} →GDP^{+}	0.138	1	12.458	7.093	5.139
GDP^{-} → OP^{-}	12.976**	1	14.960	7.665	4.881
OP^{-} → GDP^{-}	2.959	1	10.266	4.988	3.433

Note: '+' and '−' show upside and downside causality relations, respectively.
*, ** and *** indicate the existence of causal link at the 1%, 5% and 10% level, respectively.

5. Conclusion

This study attempts to evaluate the asymmetric causality between the OP and the GDP per capita in the GCC member countries during the period of 1996-2018. Both the standard bootstrap test and the asymmetric causality test indicate the evidence of the relationship between two variables for the GCC countries in the analysed period. The results of the standard causality test indicate that there is a bidirectional causal link running from the GDP per capita to the OP in Qatar and Saudi Arabia. However, the conventional causality test does not give results for the asymmetric relations. According to the asymmetric causality tests, there is an asymmetric relation which is running from the OP^+ to the GDP^+ for Oman and Saudi Arabia. In addition, there is a causality running from the GDP^- to the OP^- for Bahrain, Kuwait, Oman, Qatar and the UAE, and lastly there is a causality running from the OP^- to the GDP^- for Kuwait and Oman.

The results are consistent with the RBC Theory, which states that fluctuation is caused by the crisis. The results support the RBC Theory, where external positive or negative shocks have a significant impact on the GDP per capita through consumption and investment channel. The negative consequences of abrupt shocks can be minimised by investing in the private sectors, which will create employment opportunities. The GCC countries should channel the huge revenues towards other private sectors which will create more prospects for GDP and will provide substitution in case of arising any crisis. In addition, the countries are required to diversify their economic activities since the OP revenues are very volatile and uncertain in the history and the revenue of the countries are dependent on the OP to a large extent. The sustainable development can be achieved through balance path between the government expenditures and future savings.

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Notes:

[1] The countries of Gulf Cooperation Council (GCC) include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates.