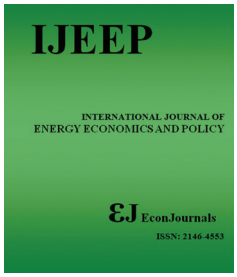

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The Impact of Fluctuating Oil Revenues on Economic Growth: New Evidence from Saudi Arabia

Sultan Yahya Abbas Natto*

Department of Economic, College of Islamic Economy and Finance, UMM Al Qura University, Saudi Arabia.
*Email: s44170538@st.uqu.edu.sa

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ABSTRACT

The fluctuations that occur in oil revenues are among the main reasons that lead to disruptions in economies that depend on them. Hence, this study aims to find out the impact of fluctuation in oil revenues on the economic growth for the Kingdom of Saudi Arabia during the period from 2000 to 2020. The study showed that the relationship between the fluctuations of oil revenues and economic growth may be either a positive relationship, and this relationship is confirmed in oil-exporting countries, which is the most common relationship, or a negative relationship, and this relationship is confirmed in oil-importing countries, which is the exceptional case. In order to find out the direction of this relationship in the Kingdom, the study used the application of the Autoregressive Distributed Lag Model (ARDL) model. The study concluded that the fluctuations of oil revenues has significant positive effects on the economic growth of the Kingdom of Saudi Arabia in the short and long terms. Therefore, the study recommends the need for the Kingdom to exploit these revenues in areas that achieve a return for it at the present time and in the future, in a manner that guarantees the diversification of the economy and its non-disruption when any disturbances occur in these revenues, as well as keeping part of these revenues in its sovereign fund to guarantee the rights of future generations.

Keywords: Oil Revenues, Economic Growth, Saudi Arabia
JEL Classifications: E39, O4, C5, H6

1. INTRODUCTION

Oil represents the largest source of energy that is used in the world, and therefore it is considered the most important type of natural resource that a country may enjoy (Mostafa, 2022; Mostafa, 2021; Mohamed Ahmed and Mater, 2021; Mostafa, 2022). Therefore, any change in its prices exerts effects on the total variables of the state, including economic growth. These effects are not only related to the countries that produce it, but also to the countries that request it. Many studies have shown (Huang et al., 2005; Ali et al., 2023; Alhendawya et al., 2023) that the change in oil prices affects the economic growth of the countries that produce it - the exporting countries-and the countries that demand it - the importing countries.

In general, since the study is related to the oil-exporting countries, we will limit ourselves to studies that clarify the relationship between oil revenues and the economic growth of those countries. Studies that dealt with the relationship between them have reached two contradictory opinions. The first opinion: A study (Ayadi, 2005; Mehrara, 2008; 2009; Akpan, 2009; Berument and Ceylan, 2010; Bouchaour and Al-Zeaud, 2012) showed that the relationship between oil revenues and economic growth is a direct relationship. The owners of this opinion explained it as follows: First: Increasing oil revenues enables the state to take care of social capital, which provides the appropriate environment to attract national and foreign private capital. Second: Increasing oil revenues enables the state to increase public investment for the state as a whole. There is no doubt that increasing this investment, whether it is directed to the infrastructure, or to productive projects, or even aims to establish giant development projects, ultimately contributes to increasing the economic growth of the country as a whole, in addition to that increasing public investment creates

real job opportunities for individuals in the country and those Then it contributes to increasing individual incomes, thus stimulating demand and also providing the appropriate environment for increasing economic growth. Third: The state's achievement of a surplus in cash reserves as a result of oil revenues may encourage the state to increase economic cooperation with other countries, which may lead to an increase in intra-investment and increase the state's economic growth. Fourth: The state's achievement of oil revenues leads to an increase in public spending in various aspects, including transformational expenditures, and since it is known that increasing these expenditures contributes to increasing the incomes of individuals, it will also contribute to increasing the economic growth of the state. The second opinion: a study (Farzanegan and Markwardt, 2009) showed the relationship between oil revenues and economic growth is an inverse relationship. This is due to the following: (1) an increase in oil revenues leads to the emergence of what is known as the Dutch disease syndrome. (2) An increase in oil revenues in light of the weakness of the national product leads to an increase in the inflation rate, which negatively affects economic growth.

As for the Arab oil-producing countries in particular, the oil sector constitutes the backbone of most of their economies and the main engine of their development process. Oil, through its revenues, affects the economies of those countries through several channels, including public spending and public investment as one of its aspects etc.

Despite the rent revenues achieved by many Arab countries from the oil sector, which may justify them not diversifying their sources of income due to the sufficiency of these revenues to cover all their needs, there are many justifications that have prompted some of these countries to diversify their sources of income as follows; first: Oil is a commodity subject to depletion, so what will be the situation of these countries when they run out? Second: The recent financial crises revealed the seriousness of the state's dependence mainly on exporting oil and using its revenues to buy its needs from abroad. Third: The severe fluctuations witnessed by the oil price and the consequent fluctuations in its revenues, and this undoubtedly may have great effects on macroeconomic variables, including economic growth. Therefore, many oil-producing Arab countries have sought to diversify their sources of income in order to avoid all the risks that may arise from the fluctuation of oil prices on their economy, and among these countries is the Kingdom of Saudi Arabia.

From here, this study aims to search for the impact that may be caused by the fluctuation of oil revenues on the economic growth in the Kingdom, and to achieve this purpose, study has been divided into four sections as follows: Section (I): Introduction and literature review. Section (II) Data and Methodology. Section (III): Empirical result and discussion. Section (IV) conclusion.

2. LITERATURE REVIEW

Many studies have looked for the effects that oil shocks may have on macroeconomic variables, including economic growth. By examining the asymmetric response of aggregate and sector-level growth to positive and negative oil rent shocks, (Badeeb et al., 2021) provide new insights into the oil curse theory. We discover that economic growth reacts asymmetrically to positive and negative oil rent shocks over the long run for the instance of Malaysia using a Nonlinear Autoregressive Distributed Lag (NARDL) method. The nature of the response to oil rent shocks differs greatly across economic sectors, while this asymmetry is also supported by analyzes at the sector level. According to our findings, Malaysia is affected by the oil curse, which spreads through the industrial sector via a Dutch Disease process. Emami and Adibpour (2012) study the consequences of asymmetric shocks to oil revenue on the growth of the Iranian economy while taking a number of important macroeconomic variables into account. They find that output and oil shocks move together in the same direction. According to Hamdi and Siba (2013), Bahrain's government spending and economic growth are examined in terms of the short- and long-term effects of oil revenue shocks. They show that differences in oil revenue have an effect on both output growth and government spending over the short and long terms. Dizagi (2014) analyzes the Iranian economy to assess how important macroeconomic indicators react to fluctuations in oil revenue. The evidence that has been gathered indicates that oil revenue plays an essential role in determining government spending as well as other macroeconomic variables such as economic growth.

Also, a study (Eltony and Al-Awadi, 2001) showed that the change in oil prices is the main key determining the behavior of the macro variables in the State of Kuwait. It also showed that government spending in countries that depend on oil revenues is sensitive to changes that may occur in oil prices. As for the study (Ayadi, 2005), it investigated the relationship between oil prices and economic development in Nigeria. It concluded that the fluctuations that may occur in oil prices have an indirect impact on the economy through industrial production. Similarly, the study (Olomola and Adejumo, 2006) looked for the effects of oil shocks on price rates, inflation, the real exchange rate and money supply in Nigeria. This study concluded that oil shocks have a significant impact on the money supply in the long run and then on inflation, while their impact is not significant on the rest of the variables. Moreover, the study (Akpan, 2009) concluded that government spending is the most affected variable by oil shocks. This result was confirmed by other studies such as (Ayadi, 2005; Olomola and Adejumo, 2006). As a result, these studies described the Nigerian economy as one of the economies that suffer from Dutch disease syndrome. The study (Mehrara, 2008) sought to discover the asymmetric relationship between oil revenues and the economic growth rate of thirteen oil-producing countries. The study found that the relationship between oil revenues and GDP is non-linear. The study also showed that the decline in oil prices exerts negative effects to a greater extent than the effects that may be caused by the increase in oil prices on economic growth.

In addition to the previous studies, the study (Farzanegan and Markwardt, 2009), which searched for the relationship between oil shocks and the macro-variables of the Iranian economy, should be added. The study concluded that whether the oil shocks were positive or negative, they lead to an increase in the inflation rate. The study also found that the increase in oil prices positively affects

the growth rate of industrial output. The study also confirmed the validity of Dutch disease syndrome. Also, a study (Berument and Ceylan, 2010) evaluated the impact of oil shocks on the economic growth of a number of Middle Eastern countries. The study found the following: First: the increase in oil prices exerts positive effects on the national product in each of Algeria, Iran, Iraq, Kuwait, Libya, Oman, Qatar, Syria and the United Arab Emirates. While the increase in oil prices does not have a significant impact on the national product in Bahrain, Djibouti, Egypt, Israel, Jordan, Morocco and Tunisia. Also, a study (Farzanegan, 2011) analyzed the effects of oil shocks on some expenditures of the Iranian government for the period from 1959 to 2007, and the results were that Iranian military and security expenditures are the expenditures most affected by the shocks that occur in oil revenues, while social expenditures have been proven not to be affected by the fluctuations in occur in oil revenues. In addition to the above, a study (Bouchaour and Al-Zeaud, 2012) looked for the impact of the volatility that occurs in oil revenues on the Algerian macro-economy for the period 1980-2011. It concluded that oil prices have a slight effect on most of the macro variables in the short term, with the exception of inflation and the exchange rate. In the long term, it has been proven that the change in oil prices directly affects real GDP and inflation, and inversely affects unemployment and the exchange rate.

2.1. In General, Studies that Dealt with the effects of oil Shocks on Macro Variables Resulted in two Points of View

2.1.1. The first opinion

Those who hold this opinion believe that the fluctuations in oil revenues, in what is known as positive shocks or negative shocks, may negatively affect the overall variables, especially on economic growth. This happens as a result of several channels, including the following; the first channel: Dutch disease, the second channel: the disruptions that may be exposed to the economy. Channel 3: Misallocation of resources.

As for the Dutch disease syndrome[1], we mean by it any unexpected external increase in the revenues that the country may obtain from foreign exchange from natural resources resulting from an increase in production or an increase in prices or both as a result of a rise in the price of some export commodities such as oil, for example, or the discovery of a new economic resource that can be For export or a sudden technological progress in one of the sectors may in turn lead to a rise in the real exchange rate and then may negatively affect employment and output of other sectors that have no origin in natural resources, especially the industrial sector. That is, the Dutch disease syndrome may not necessarily lead to real, balanced development insofar as it may lead to negative effects on the structure of the economy (Mien and Goujon, 2021; Ma and Wang, 2023). This happens as a result of several reasons: First: The rise in the exchange rate may lead to a rise in production costs for other non-oil sectors as a result of the rise in the prices of intermediate or even primary production inputs, and then the sectors' realization of losses may push them to reduce production and employment (Kalcheva and Oomes, 2007). Second: The rise in the exchange rate may lead to a rise in production costs for other non-oil sectors as a result of the rise in the prices of intermediate or even primary production requirements, and this may lead to a rise in prices and then the occurrence of inflation, and this may affect social stability within the country and then negatively affect it. On the economy Third: The rise in the exchange rate negatively affects the export industries, as it limits their ability to compete in the international market, which may lead to not benefiting from the advantages that they may achieve from increasing production as a result of exports, in addition to not seeking to increase the quality of their products, which represents a loss of revenue that they may achieve. The state was likely to lead to an increase in national income. Fourth: A theory known as the theory of slow industrialization appeared (Corden and Neary, 1982) that explained the Dutch disease syndrome, but the researcher did not address it due to the many criticisms leveled at it. Fifth: Oil exports lead to an increase in the state's foreign currency revenues, which leads to a rise in the exchange rate of the local currency, which leads to the dominance of natural resource exports, including oil, over the export sector, as well as an increase in the contribution of this sector to the gross domestic product. And then the economy becomes dependent on a single commodity that exposes it to many risks that negatively affect the economy. At the same time, the ability of the oil sector to generate revenue becomes the determinant of labor and capital, which negatively affects all other sectors of the economy, whether export-oriented or not (Same, 2008).

With regard to the second channel, we find that fluctuations in oil revenues may negatively affect the overall variables as a result of several reasons. First: The sharp and large fluctuations that may occur in prices during relatively short periods of time. There is no doubt that these fluctuations may make the governments of the oil-rich countries face great difficulties in adopting appropriate financial policies. Second: The abnormal rise in prices and the state's realization of unexpected revenues may push the state to encourage consumption, instead of directing these unexpected increases to investment, meaning that it may encourage government extravagance. Third: The rent that is achieved from the rise that may occur in the revenues that the state produces from the oil sector may encourage and support corruption. Fourth: The fluctuation in oil revenues makes the economy dependent on the outside world, setting policies according to it and not according to economic conditions, and then the national economy becomes dependent on the outside world to which it exports oil and uses the revenues it generates to buy what it needs from abroad. That is, re-export the surplus abroad again.

Moreover, oil revenues may create or exacerbate conflicts, both between and within states. Among the most important cases indicative of this are the following; Southern Sudan, where the presence of oil renews tension between the Khartoum government and the southern separatists. The oil-rich Cabinda region of

1 Dutch disease syndrome may appear in different countries other than oil countries; The discovery of gas in the Netherlands during the sixties led to a rise in the real exchange rate, which reflected negatively on the competitiveness of the products of Dutch industries, and then on the production capacity of the economy as a whole. Also, the technological progress that occurred in the industrial sector in Japan during the sixties had a negative impact on other sectors, especially agriculture. Likewise, the recovery of the value of the Swiss currency in the sixties negatively affected the Swiss export industries (Mien & Goujon, 2021).

Angola, where the separatist movement has flourished in the region since the discovery of oil and in Nigeria, where oil is concentrated in the Niger Delta was a contributing factor to the Nigerian Civil War 1966-1970, and since that time a cause of continuous unrest. There is no doubt that this negatively affects the macroeconomic variables (Di John, 2007).

In addition, many studies have shown a link between oil revenues and higher fiscal spending. Spending during a period of boom in natural resource prices, thanks to access to cheap credit from international capital, leads to the accumulation of high levels of debt, resulting in high interest rate margins during periods of low natural resource prices. Evidence for this is the accumulation of debt that occurred in the seventies when these countries used commodities as collateral to bear the excessive debt when oil prices were high. And with the collapse of oil prices in the eighties, these countries lost the ability to service their debts. A study conducted in 2005 by the Institute for Public Policy Reform analyzed data from 101 countries for the period from 1991 to 2002, where there was a statistical relationship between increased oil production and exports, and debt year in the producing country. As happened in Venezuela during the oil boom in the 1970s, when President Carlos Andres Perez increased public spending dramatically, which led the country into debt and intractable management problems with fluctuations in the prices of oil and other commodities (Badeeb et al., 2017).

With regard to the third channel, we find that the study (Ghecham, 2021) has shown that increasing oil revenues may lead to a misallocation of resources as a result of increasing investments destined for the oil sector at the expense of other more important areas of the economy such as human capital, such as investment in education, health, infrastructure and productive sectors.

2.1.2. The second opinion

According to its Supporters (Ferderer, 1996; Hooker, 1999; Anyars and Adabor, 2023). Fluctuations in oil revenues have a positive impact on macro variables, particularly economic growth. These studies have shown that the abundance of natural resources such as oil positively affects the macroeconomic variables, especially the economic growth of the producing countries for the following reasons: First: The huge revenues that the state achieves from the oil sector enable it to expand significantly in investment and spending without resorting to imposing taxes or resorting to borrowing. And if the state makes good use of these revenues, this will constitute a strong impetus for its development process. There is no doubt that this is of particular importance to countries seeking progress that often suffer from scarcity in capital, which constitutes a major obstacle to growth and development. Second: The foreign exchange resources that the state earns from exporting oil. In addition to helping the state to import raw materials, intermediate goods, and capital goods needed for production in the oil sectors, it also helps the state to form huge reserves of foreign exchange. Some may see that these reserves constitute one of the indicators that can be used to attract foreign investment (Frankel, 2012). Moreover, these reserves may enable the state to intervene in a timely manner in order to overcome internal and external shocks and appropriate intervention in the foreign exchange market. Third: In addition, oil may contribute to achieving development in rich economies through the establishment of industries based on them, as gas and oil in the mselves are raw materials for many industries and intermediate inputs in the refining, petrochemical, electricity and energy-intensive industries (Al-Moneef, 2006).

Fourth: Oil-based industries, such as petrochemical industries, for example, are used as important intermediate inputs for many transformational industries, which encourages the establishment of these industries and then increases exports from them and increases employment and incomes. In addition, the availability of oil leads to the availability of the necessary energy for the industry, such as electricity and basic utilities at reasonable prices. It has significance for both the service sector and the manufacturing industry as a whole. Fifth: In addition to the above, oil may enhance growth and development in rich economies through the contributions that oil makes to the market in general. These contributions are related to the demand that may be achieved by the oil sector for various inputs of local goods and services. In general, as a result of oil production, refining and distribution, there is a link linking the oil sector and its related services. These services are not only job opportunities, but also a source of profits. Sixth: Oil's contributions to the market and foreign direct investment arising from it undoubtedly have an important impact on the economy. There is no doubt that oil works to attract foreign investment, both direct and indirect. Most of the direct foreign investment destined for oil-exporting countries is concentrated in the oil sector. Economic studies have dealt with the various channels through which foreign investment affects the growth and development of the countries receiving it. There is no doubt that foreign direct investment is of importance to developing countries. This importance lies not only in increasing capital assets, but also in raising the productivity of the labor factor and increasing the level of income in these host countries. Therefore, it can be said that foreign direct investment contributes to the creation of job opportunities in the countries receiving it and to the increase in the revenues it achieves from taxes (Alvarez-Ramirez et al., 2008).

As for the researcher, he believes that oil revenues have a positive impact on economic variables, especially for developing oil-exporting countries, and specifically for Arab exporting countries, if they are well exploited, for the following reasons: First: Developing countries, including Arab countries, suffer from a scarcity of capital, especially foreign capital. There is no doubt that oil revenues provide it, and then these countries can use it to purchase goods and services necessary for the development process, and then have a positive impact on the economy. Second: Although there are few studies with a point of view related to the availability of natural resources supporting economic growth, these studies not only showed that the abundance of resources positively affects economic growth, but also showed that dependence on natural resources does not have any negative impact on economic growth. Third: Many developing countries, including the Arab countries, have a lot of idle and untapped resources. Therefore, if oil revenues were directed towards investment, this would lead to positive effects on the national economy. Fourth: Many developing countries, including Arab countries, suffer from a deterioration in the infrastructure that may be attractive to private investment.

Therefore, if oil revenues are directed towards improving and providing infrastructure, this is likely to lead to providing an attractive environment for private investment, and then increase it and improve the economy. Fifth: Oil revenues reduce the dependence of developing countries, including Arab countries, on loans and taxes, and then at least these countries avoid the negative effects that may arise from both of them together or from both of them separately.

3. DATA AND METHEDOLOGY

3.1. Data

This analysis uses annual statistics for real output, measured by the sum of real non-oil private (NOP) production (gross value added) activities and government oil revenue, for which data are available from 2000 to 2020, in order to achieve its main purpose. Since the General Authority for Statistics (GASTAT) includes a significant portion of NOP activity in its Government Institutional Sector total, it is important to emphasize that this real output measure is higher than the Kingdom's Non-Oil Private Institutional Sector data that is frequently used in research papers. Data on the non-oil private activities and government oil revenue are obtained from GASTAT and the Ministry of Finance.

3.2. Methodology

Purpose of the study is to determine the impact of energy subsidies reform on economic growth in Egypt. In order to do this, we will spilt the impact OF Energy subsidies into direct and indirect effect.

3.2.1. Unit root test

The application of ARDL model requires determining the degree of integration of the variables under study, which is determined through the time-series stationary tests using the Augmented Dickey-Fuller test (ADF) or the Phillip-Peron test.

The application of the "ARDL" model is requiring that the time series of the variables under study should not be stationary at second order, so as not to be misleading results. It is also not required that time series be integral of the same degree or stationary at the same degree (I0, I1, 00).

The application of ARDL model requires the determination of the degree of integration of the variables under study, determined through time-series stationarity tests using the Augmented Dickey-Fuller (ADF) test or the Phillip-Peron test.[2]

In general, unit root tests aim to examine the time-series properties of variables and ensure their stationarity. As the estimation through time series of non-stationarity variables gives misleading results, it is called "spurious regression."

Therefore, before embarking on studying any economic phenomenon, it is necessary to ensure the time series' stationarity.

A stationarity time series is one whose levels change with time without the mean in it constantly changing towards increasing or decreasing.

The time series is stationarity if it has the following characteristics:

- Its expectation (it's mean) is constant over time and independent of it
- Its variance is constant over time and independent of it.

The covariance between any two values of the time series (Yt،Yt+k) is related only to the time gap between them (k) and not to the actual value of the time at which the covariance is calculated. The variable's values don't depend on its value in the previous period, and that time doesn't explain an important aspect of the changes occurring in those variables.

The Augmented Dicky-Fuller test (ADF) begins with equation No. (3), where the only difference between the independent variables and the dependent variable is time lag (K) to get rid of the autocorrelation of the residual.

$$\Delta y_t = \alpha + \delta t + \rho y_{t-1} + \sum_{i=1}^{k} \gamma_i \Delta y_{t-1} + e_t \quad (3)$$

Where 1> ρ>-1. Et: Refer to the random error, and the stationarity condition is | ρ | <1. This test's idea is to make a regression of (y_t) on its time lag value (y_{t-1}) so if the value of estimated ρ equal to the one. In another meaning, if $\rho = 1$, that means (y_t) is non-stationary; it is called the unit root.

This test is based on the following assumptions:

Null hypothesis: 1 = ρ

Alternative hypothesis: ρ < 1

We obtained the general form of the "Diky-Fuller" test through Equation No. (4)

$$y_t = \rho y_{t-1} + u_t \quad (4)$$

Then we subtract (y_{t-1}) from both sides of the equation to get the following formula:

$$y_t - y_{t-1} = (\rho - 1)\, y_{t-1} + e_t$$

$$\Delta y_t = (\rho - 1)\, y_{t-1} + e_t$$

$$\Delta y_t = \theta y_{t-1} + e_t$$

Where (ρ-1=), while denotes the first difference of the time series (y_t), determine if there is a unit root, estimate that new equation, and test the null hypothesis $\theta = 0$, which means that ρ = 1 meaning there is one root. Whereas if θ = 0, the series follows a random path of the dependent variable.

The Augmented Dicky-Fuller test (ADF) tests the null hypothesis of a unit root, and hence the non-stationarity time series, against the alternative hypothesis that the time series is stationarity.

2 To test the time series's stationarity for the study variables, we rely on what is known as tests Unit Root. There are many such tests, the most important of which are: Phillips and Perron (PP), 1988 & Kwiatkowski, Phillips, Schmidt, and Shin (KPSS), 1992 & Augmented Dickey-Fuller (ADF), 1979.

The null hypothesis is accepted or rejected through a statistical comparison of the estimated (t) for a parameter (θ) with the Dicky Fuller table's critical values or the developed Mackinnon tables. Suppose the absolute value of calculated (t) exceeds the tabulated value. In that case, the null hypothesis is rejected, meaning that the time series is stationarity at its original level (the time series integral of degree zero). But suppose the absolute value of the calculated (t) is less than the tabulated value. In that case, the null hypothesis is accepted, that the time series is non-stationarity, "there is a unit root," and then must test the first difference of the time series, and if non-stationarity The test is repeated for higher-difference... and so on. Where must note that if there is a variable such as y_t stationarity in its original state before any modifications are made to it, it is integral of degree zero (0), and if this variable is non-stationary in its original state, it becomes stable after taking the first difference $\Delta y_t = y_t - y_{t-1}$ then The series is said to be stationary of degree (1). In general, if the series becomes stationary after obtaining many differences equal to d, then this series is stationary of degree (d).

The Philip and perron test (PP) is based on the same regression equations of The Augmented Dicky-Fuller test (ADF), except that it differs from it in how to handle the chain link of higher ranks. So the Philip Perron test has more accuracy than the Augmented Dicky-Fuller Test (ADF)," especially when the sample is small in size. Therefore, in the event of a conflict between the two tests' results, it is preferable to rely on the "Philip person" test.

The unit root test was applied and the results shown at (Tables 1 and 2), the results indicated that all-time series for variables are stationary at first difference (I_1).

3.2.2.ARDL model

Throughout the implementation of this methodology, we can determine whether there is a long term relation between the energy subsidies reform (X or OIL revenue) and the economic growth (Y OR EG) in Saudi Arabia Kingdom. In addition, we can also provide an evaluation for this relation in case of its existence, as well as estimating (ECM) the error correction vectors in the short term in order to conclude the equilibrium relation in the long term. In order to estimate this relation, we will use the Unrestricted Equilibrium Correction Model (UECM) as follows:

$$\Delta Y_t = a_0 + \sum_{i=1}^{m} \gamma_{t-i} \Delta Y_{t-i} + \sum_{i=1}^{n} \beta_{t-i} \Delta X_{t-i} + \lambda_1 Y_{t-i} + \lambda_2 X_{t-i} + \cup_t$$

Δ	First difference coefficient of the time series of the variable.
$\cup_t$	Random error.
$(,\lambda_1\ \lambda_2)$	Parameters of long-term relation.
(β_{t-i},γ_1)	Parameters of short-term relation.
(t-i)	Optimum length of lags for the first different of the variables in the unrestricted equilibrium correction model (UECM), as we select the lag which lowers the value of AIC and SC, according to the Akaike information criterion (AIC) and the Schwarz Criterion (SC).
X	Oil revenues (OR).
Y	The dependent variable or the economic growth (EG).

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Short-Run Impacts

Based on the data shown in (Table 3), we find out that the energy subsidies reform in Egypt has short-term negative impacts on the economic growth. These negative impacts occur due to the existent of a positive and significant relation between the energy subsidy and the economic growth; thus, whenever the energy subsidy is reduced, the economic growth will decrease, and vice versa. There is no doubt that this finding has its justification in the Egyptian economy. That is to say, the Egyptian economy is mainly based on consumption; hence, reducing the energy subsidy along with the limited incomes of individuals may negatively affect the overall demand, which will in turn affect the economic growth negatively.

4.2. The Bound Test and the Long-Run Impacts

The Bound Test is used to identify the existence of the co integration relation (i.e. the long-term relations) in a model. In addition, the significance of this test is identified through the calculated value

Table 1: Unit root test for level (I_0)

Group unit root test: Summary				
Series: EG, OR				
Date: 27/04/23 Time: 14:10				
Sample: 20				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0				
Newey-West automatic bandwidth selection and Bartlett kernel				
Balanced observations for each test				
Obs	**Sections**	**Prob.****	**Statistic**	**Method**
Null: Unit root (assumes common unit root process)				
14	2	0.1736	-1.2789	Levin, Lin & Chu t*
Null: Unit root (assumes individual unit root process)				
14	2	0.421	-0.5767	Im, Pesaran and Shin W-stat
14	2	0.2546	5.68795	ADF – Fisher Chi-square
14	2	0.1679	7.64759	PP – Fisher Chi-square

**Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Table 2: Unit root test for first ifference (I_1)

Group unit root test: Summary				
Series: EG, OR				
Date: 27/04/23 Time: 14:20				
Sample: 20 9				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0				
Newey-West automatic bandwidth selection and Bartlett kernel				
Balanced observations for each test				
Obs	**Sections**	**Prob.****	**Statistic**	**Method**
Null: Unit root (assumes common unit root process)				
12	2	0.0000	-3.86752	Levin, Lin & Chu t*
Null: Unit root (assumes individual unit root process)				
12	2	0.0127	-2.86542	Im, Pesaran and Shin W-stat
12	2	0.0213	11.1890	ADF – Fisher Chi-square
12	2	0.0009	17.8684	PP – Fisher Chi-square

**Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Table 3: Short run impacts of oil revenue

Dependent Variable: EG				
Method: ARDL				
Date: 27/04/23 Time: 16:02				
Sample (adjusted): 20				
Included observations: 2 after adjustments				
Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (1 lag, automatic): LOG_ENGSYN				
Fixed regressors:				
Number of models evalulated: 2				
Selected Model: ARDL (1, 0)				
Prob.*	**t-Statistic**	**Std. Error**	**Coefficient**	**Variable**
0.2471	0.375249	0.386453	0.151234	EG(-1)
0.0566	2.156431	0.256784	0.591126	OR
0.657896	Mean dependent var		-0.291265	R-squared
0.155086	S.D. dependent var		-0.496578	Adjusted R-squared
0.081577	Akaike info criterion		0.255671	S.E. of regression
0.072134	Schwarz criterion		0.236445	Sum squared resid
-0.098654	Hannan-Quinn criter.		1.778640	Log likelihood
			2.42355	Durbin-Watson stat
selection.				
ARDL Long Run Form and Bounds Test				
Dependent Variable: OR				
Selected Model: ARDL (1, 0)				
Case 1: No Constant and No Trend				
Date: 27/04/23 Time: 16:04				
Sample: 20				
Included observations: 2				
Conditional Error Correction Regression				
Prob.	**t-Statistic**	**Std. Error**	**Coefficient**	**Variable**
0.0679	-2.254798	0.353679	-0.876243	EC(-1)*
0.0566	2.337891	0.266478	0.511267	OR**

** Variable interpreted as Z=Z(-1) + D (Z).
*P-values and any subsequent tests do not account for model

Table 4:The Bound Test and the Long-Run Impacts

Levels Equation				
Case 1: No Constant and No Trend				
Prob.	**t-Statistic**	**Std. Error**	**Coefficient**	**Variable**
0.0016	2.658557	0.131524	0.67654	OR
		EC=EG_G - (0.67654*OR)		
Null Hypothesis: No levels relationship				
I (1)	**I (0)**	**Signif.**	**Value**	**F-Bounds Test**
	Asymptotic: n=1000			Test Statistic
3.28	2.44	10%	3.468257	
4.11	3.15	5%	1	F-statistic
4.92	3.88	2.5%		K
6.02	4.81	1%		
	Finite Sample: n=35		9	
-1	-1	10%		Actual Sample Size
-1	-1	5%		
-1	-1	1%		
	Finite Sample: n=30			
-1	-1	10%		
-1	-1	5%		
-1	-1	1%		
Null Hypothesis: No levels relationship				
I (1)	**I (0)**	**Signif.**	**Value**	**t-Bounds Test**
-2.28	-1.62	10%	-2.659245	Test Statistic
-2.6	-1.95	5%		t-statistic
-2.9	-2.24	2.5%		
-3.22	-2.58	1%		

of its (F-statistic) (Nkoro & Uko, 2016); as it is compared to the tabular critical values presented by (Pesaran et al., 2001).

Based on the Bound Test (Table 4), there is a cointegration relation between the oil revenue and the economic growth in Saudi Arabia; thus, the value of (F-statistic) equals (3.46), which is more than the lower bound and the higher bound of the tabular critical values presented by (Pesaran et al., 2001), which equals (3.28) at the significance level of (10%). Hence, (H0) is assumed (i.e. there is no cointegration), and (H1) is accepted (i.e. there is a cointegration relation); that is to say, there is co integration and a long-term relation between energy subsidy and economic growth.

Furthermore, the table also shows that there is a long-term equilibrium relation between OIL revenue and the economic growth in Saudi Arabia kingdom. This relation is a positive and significant relationship in both the short and long terms. This shows that economic growth in the Kingdom of Saudi Arabia depends on oil revenues, and this is due to the fact that the Kingdom is one of the main oil exporting countries. This positive relationship is due to the following reasons: first: increasing oil revenues enables the Kingdom to pay attention to social capital, which provides the appropriate environment to attract national, Arab and foreign private capital, which is what has already happened and what the state has adopted in Vision 2020. Second, increasing oil revenues enables the Kingdom to increase public investment for the country as a whole. There is no doubt that increasing this investment, whether it is directed towards infrastructure, or towards productive projects, or even aims at establishing giant development projects, ultimately contributes to increasing the economic growth of the Kingdom as a whole, in addition to that increasing public investment creates real job opportunities for individuals in the Kingdom and from Then it contributes to increasing individual incomes, thus stimulating demand and providing the appropriate environment for increasing economic growth. Third: The Kingdom's achievement of a surplus in cash reserves as a result of oil revenues may encourage the state to increase economic cooperation with other countries, which may lead to an increase in inter-investment and an increase in the economic growth of the Kingdom.

5. CONCLUSION

During the first and second decades of the third millennium, oil revenues witnessed sharp and sudden fluctuations, mainly due to fluctuations in oil prices. There is no doubt that these fluctuations have fluctuating repercussions on the state's public revenues,

which in turn is reflected in public spending and then on the rest of the macroeconomic variables. Including economic growth.

The fluctuations that occur in oil revenues are among the main reasons that lead to disruptions in economies that depend on them. This is due to the following; first: The oil sector in these countries contributes a large percentage to the gross domestic product, and therefore its volatility may affect the gross domestic product. Second: Oil constitutes a large percentage of the exports of these countries, and therefore any disturbances in the global oil markets may affect the outcome of these exports and then the economies of those countries.

For a long time, most of the studies that dealt with oil revenues, if not all, focused on studying the impact of changes in oil prices and then its revenues on the overall variables of the developed oil-importing countries. However, recently some studies have sought to search for the effect of fluctuations in oil revenues on macroeconomic variables in each of the developing countries that import and export oil.

Studies that dealt with the relationship between fluctuations in oil revenues and economic growth were divided into two points of view. The first view believes that there is a direct relationship between the fluctuation in oil revenues and economic growth, and this relationship is confirmed in the oil-exporting countries, and it is the most common relationship. Regarding the second opinion, he believes that the relationship between fluctuation in oil revenues and economic growth is negative, and this relationship is confirmed in oil-importing countries, which is the exception.

From here, this study seeks to identify the effects that may arise from the fluctuation in oil revenues on economic growth in the Kingdom of Saudi Arabia. This study concluded that the fluctuation in Oil revenues have significant positive effects on economic growth in the Kingdom of Saudi Arabia in the short and long terms, which means that economic growth in the Kingdom depends mainly on oil revenues because it is one of the major oil-exporting countries, and then growth increases with increasing revenues and decreases with decreases.

And given that the repercussions that may be witnessed by the economy that depends on the revenues achieved from oil are very dangerous for the economies that depend on those revenues mainly. Therefore, the study recommends the need to exploit the revenues achieved by the Kingdom from oil to increase public investment and diversify its sources of national income and national income. In addition, the Kingdom should exploit these revenues in areas that will have a return at the present time and in the future, in a way that ensures the diversification of the economy and that it will not be disturbed when any disturbances occur in these revenues, as well as keeping part of these revenues in the Kingdom's sovereign fund to guarantee the rights of future generations.

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