Oil and Non-oil Export and its Impact on Economic Performance in Saudi Arabia

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Received: 20 June 2020  Accepted: 14 October 2020  DOI: https://doi.org/10.32479/ijeep.10311

ABSTRACT

Oil and non-oil export played essential role in economic activity in Saudi Arabia with amount average of 841816.0 and 162654.6 Saudi riyal respectively in the period 2005-2019. This study investigates from an empirical point of view the impact of oil and non-oil export on economic performance in Saudi Arabia during the period 2005-2019. Data were collected from General Authority for Statistics in Kingdom of Saudi Arabia. Ordinary least square method has been applied to estimate linear and non-linear form of the study models. The obtained results showed that oil export and non-oil export have positive impact on economic performance in Saudi Arabia during period of the study.

Keywords: Oil Export, Non-oil Export, Economic Performance
JEL Classifications: B22, E23, F13, F43, O11

1. INTRODUCTION

Development is not purely an economic phenomenon. In an ultimate sense, it must encompass more than the material and financial side of people’s lives, to expand human freedom. Development should therefore be perceived as a multidimensional process involving the reorganization and reorientation of entire economic and social system. In addition to improvements in incomes and output, it typically involves radical changes in institutional, social, and administrative structures as well as in popular attitudes and even customs and beliefs (Todaro and Smith 2011). They also argued that an important shortcoming of new growth theory is that it remains dependent on number of traditional neoclassical assumption that are often inappropriate for developing economies. For example, it assumes that there is but a single sector of production or that all sectors are symmetrical. This does not permit the crucial growth generating reallocation of labor and capital among the sectors that are transformed during the process of structural change. They went moreover and discussed that economic growth in developing countries is frequently impeded by inefficiencies arising from poor infrastructure, inadequate institutional structure, and imperfect capital and goods markets.

Exports represent the value of what is sold of goods and services between a country and the rest of the world to achieve an increase in national income. These exports play an important role in the process of development and economic growth for both developing and developed countries. Saudi economy ranks among the strongest economies in the world; Saudi Arabia is a member of the Group of Twenty and is one of the most important oil-exporting countries, and according to the Global Competitiveness Report 2019, the Kingdom ranked first in the world in partnership with other countries in the macroeconomic index. The Kingdom’s exports vary between oil exports and non-oil exports. The objective of this study is to investigate from an empirical point of view the impact of oil and non-oil export on economic performance in Saudi Arabia during the period 2005-2019. For that purpose the paper has been organized as follow: Section two reviews the literature. Section three presents data, model and
methodology. Section four provides results and discussion. The conclusion and policy implication put in the end of the paper.

2. LITERATURE REVIEW

The financial system needs to develop in order for natural resource exports to have a positive effect on economic growth. Yet, an advanced financial system is crucial for transferring the revenues from oil exports to productive investments. If the level of development of the financial system remains under a certain threshold, the effect of natural resource exports on economic growth is too low. In this vein, the determination of the level and the deepness of financial development that has a positive impact on the growth of natural resource exports should be clarified (Erdoğan et al., 2020).

Parvin and Tang (2014) attempted to re-investigate the role of oil and non-oil exports in economic growth in Iran; they used the multivariate co-integration and Granger causality methods for annual data from 1970 to 2008. The study found that the variables are co-integrated and the Granger causality test reveals evidence of uni-directional causality from oil and non-oil exports to economic growth. By employed the ARDL bound test for cointegration to analyze the direction among the variables Zoramawa et al. (2020) assessed the contribution of the non-oil sector to the economic growth in Nigeria between the periods 1981 and 2019, their study concluded that there is a negative and statistically significant relationship between non-oil exports (NOE) and economic growth (RGDP) in Nigeria during the period under investigation in the long-run for manufacturing (MANX) and solid mineral (SOLX) except for agricultural export (AGRX). There is also a bidirectional causal relationship between non-oil exports and economic growth in Nigeria during the same period.

Aydin and Acar (2011) analyzed the economic effects of oil price shocks for Turkey as a small, open oil- and gas-importing country. They analyzed the potential long-term effects of oil price shocks on macroeconomic variables of interest, including GDP, consumer price inflation, indirect tax revenues, trade balance, and carbon emissions, this study developed TurGEM-D, a dynamic multisectoral general equilibrium model for the Turkish economy. They obtained that these oil prices have very significant effects on macro indicators and carbon emissions in the Turkish economy.

The decline of petroleum resources is a real problem that needs to be addressed by the non-renewable energy policies applied by world governments. Renewable energies such as solar and wind sources, nuclear power, or hydrogen fuel cells may become viable alternatives to conventional fuel in the future (Al-Maamary et al., 2017).

Nelson et al. (2020) analyzed the impact of exports on the economic growth in the non-oil sector in the Republic of the Congo over the period of 1985 to 2015. Two approaches are used to achieve this study goal- the descriptive approach and the econometric approach. The results of Nelson’s study showed that non-oil exports have a negative effect on economic growth.

Metwally and Tamaschke (1980) summarized oil exports and economic growth in the Middle East. This study represented an econometric investigation into the role played by export in the process of economic development of the major oil producers in North Africa and the Middle-East over the past two decades. Single, as well as simultaneous equation models, were tested using aggregate and disaggregate data. Aggregate real analysis suggested that there is little evidence of the spread effects of oil exports to the rest of the economy. Sectoral analysis indicated that the expansion in oil exports was not fully exploited in stimulating the manufacturing sector. Aggregate and disaggregate investment analysis clearly suggests that gross fixed capital formation, limited as may be, is extremely sensitive to growth in oil exports in all countries considered with the exception of Kuwait and Libya. The statistical results of the simultaneous relationships suggest the absence of feedback effects.

According to Merza (2007), Kuwait is an oil-based economy that adopts an export promotion policy as a fundamental strategy for economic growth. The country has experienced remarkable economic growth and high per capita GDP for the last four decades. The export-led growth (ELG) hypothesis has been commonly used to examine the impact of exports on economic growth. Numerous studies support this hypothesis and found evidence that exports have a significant positive relationship with economic growth. However, it is not yet known how effective the ELG hypothesis is in small oil-producing country like Kuwait. The central question addressed is whether the ELG hypothesis is valid in the case of Kuwait.

Al-Mawali et al. (2016) measured the impact of oil sector on the Oman economy for the last three decades and also provided some forecasting for the major macroeconomics indicators related to the Oman economy. Model simulations indicate that the oil sector has large and positive impact on Oman gross domestic product and its influence spills over to all other non-oil sectors of Oman economy. The study found that largest influence of oil was on the gas sector and the least economic sector influenced by oil was agricultural sector. The findings of the study suggested that Oman economy is far from being diversified and that the proposed model helps the policy makers in Oman to identify and forecast the impact of oil on other components of the Oman economy.

Oil is a useful source of economic growth, but may not be relied upon for long-term sustainable development. Diversification from oil is needed to achieve this (Alodadi and Benhin, 2015). They examined the most important non-oil determinants of growth in the Saudi economy between 1970 and 2011; they found that all variables are important in the growth of the Saudi economy except non-oil exports, which do not have a significant effect on economic growth.

Algahtani (2016) investigated the effect of oil price shocks on the Saudi’s economic activity using annual data (1970-2015) the study used vector autoregressive (VAR) and vector error correction model (VECM). The study found a positive and significant relationship between oil prices and Saudi’s GDP in the long run.

3. DATA, MODEL AND METHODOLOGY

This study discusses the Impact of Oil and Non-oil Export on Economic Performance in Saudi Arabia from the period 2005-
2019. Data were collected from General Authority for Statistics (GAS) in Kingdom of Saudi Arabia. We used ordinary least squares techniques for data covered this period.

The general form of the model is:

\[ Y = f(OX, NX) \]  

(1)

While the specific model takes the following form:

\[ Y = \beta_0 + \beta_1 OX + \beta_2 NX + Ut \]  

(2)

Where:
- \( Y \): Gross Domestic Product with current prices refers to economic performance (in millions Saudi Riyals).
- \( OX \): annual oil exports (in millions Saudi Riyals).
- \( NX \): annual non-oil export (in millions Saudi Riyals).

From equation (2) the study supposes a positive impact of oil and non-oil export on economic performance in Saudi Arabia.

Table 1 shows annual GDP with current prices, oil export and non-oil Export (in million Saudi riyals).

Figure 1 illustrates the GDP, oil export and non-oil export which reported in Table 1.

### Table 1: Annual GDP, oil export and non-oil export- at million Saudi Riyals

| Year | (GDP)   | Oil export (OX) | Non-oil export (NX) |
|------|---------|-----------------|---------------------|
| 2005 | 1230771.342 | 605880.717      | 71263.533           |
| 2006 | 1411491.008  | 705810.618      | 85528.756           |
| 2007 | 1558827.275  | 769935.081      | 104467.908          |
| 2008 | 1980777.497  | 1053860.281     | 121621.624          |
| 2009 | 1609117.122  | 611490.472      | 109618.863          |
| 2010 | 1949237.770  | 807175.511      | 134609.562          |
| 2011 | 2973625.643  | 1191052.099     | 176567.732          |
| 2012 | 2949456.868  | 1265550.610     | 190951.554          |
| 2013 | 2582198.416  | 1207080.084     | 202443.213          |
| 2014 | 2418508.280  | 1066590.000     | 217029.852          |
| 2015 | 2453512.136  | 573411.985      | 189901.078          |
| 2016 | 2836313.802  | 510729.487      | 177693.532          |
| 2017 | 2799926.728  | 638402.283      | 193479.004          |
| 2018 | 2759905.663  | 868442.402      | 235458.084          |
| 2019 | 2517145.650  | 751828.129      | 229184.235          |

Source: General Authority for Statistics (GAS)

### Figure 1: GDP, oil export and Non-Oil export (2005-2019)

4. RESULTS AND DISCUSSION

By applying ordinary least squares (OLS) technique to the study data covered the period (2005-2019) on the variables mentioned above, we estimated equations (2). The regression results are given in equations (3) and (4) below, where the figures inside the brackets are the t- ratio of the parameters:

\[
\text{GDP} = C(1) + C(2)*OX + C(3)*NX \\
\text{GDP} = 509375.580308 + 0.303330337382*OX + 9.24657155316*NX \\
\text{R}^2 = 0.77 \quad \text{F} = 21.11\]

The equation (4) is statistically significant at five percent level as indicated by F statistics. The value of \( R^2 \) suggests that 77% of the variation in economic performance explain by oil export and non-oil export. So that economic performance increases due to increasing of oil export and non-oil export. The values of t-statistics show that two explanatory variables have impact but these variables are insignificant as reported in Figures 2 and 3 below:

Hence the study uses non-linear form (logarithm) for above equation. The results are shown in equation (5) and (6).

\[
\text{LGDP} = C(1) + C(2)*LOX + C(3)*LNX \\
\text{LGDP} = 5.37714460437 + 0.059535182111*LOX + 0.704485506409*LNX \\
\text{R}^2 = 0.87 \quad \text{F} = 40.03 \\
\text{DW} = 1.3 \\
\]

The equation (4) is statistically significant at five percent level as indicated by F statistics. The value of \( R^2 \) suggests that 77% of the variation in economic performance explain by oil export and non-oil export. So that economic performance increases due to increasing of oil export and non-oil export. The values of t-statistics show that two explanatory variables have impact but these variables are insignificant as reported in Figures 2 and 3 below:

Hence the study uses non-linear form (logarithm) for above equation. The results are shown in equation (5) and (6).
Equation (6) is statistically significant at five percent level as indicated by F statistics. The 87% of variation in economic performance is explained by oil export and non-oil export as indicated by the value of $R^2$. Thus as oil export and non-oil export increase, economic performance will increase as well. The values of t-statistics show that two explanatory variables have impact but these variables are insignificant as reported in Figure 1. So the descriptive of these variables represent in following Table 2:

The obtained results in equation (4) and equation (6) are like what reported by economic theory and similar to most empirical results of recent studies which discussed the relationship between export and economic growth.

5. CONCLUSION

The research evaluated the contribution of the oil export and non-oil exports on the economic performance of Saudi Arabia for the period 2005 to 2019. To achieve the specific objectives of the study, the ordinary least squares technique was applied to investigate the impact of explanatory variables on economic performance. Based on our methodology the study findings showed that oil and non-oil exports have positive effects on economic performance in Saudi Arabia during the period under consideration.

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Table 2: Descriptive statistics of variables

| Variables | LOX  | LNX  | LGDP   |
|-----------|------|------|--------|
| Mean      | 13.60187 | 11.93898 | 14.59778 |
| Median    | 13.55406 | 12.08782 | 14.71303 |
| Maximum   | 14.05102 | 12.36929 | 14.90529 |
| Minimum   | 13.14360 | 11.17414 | 14.02315 |
| Std. Dev. | 0.297101 | 0.377151 | 0.291722 |
| Skewness  | 0.161385 | −0.693660 | −0.691848 |
| Kurtosis  | 1.715742 | 2.097850 | 2.088029 |
| Jarque-Bera | 1.095937 | 1.593184 | 1.716440 |
| Probability | 0.578123 | 0.450863 | 0.423916 |
| Sum       | 204.0280 | 179.0848 | 218.9666 |
| Sum Sq. Dev. | 1.235769 | 1.991404 | 1.191422 |
| Observations | 15  | 15  | 15  |

Source: Own calculation based on data from Table 1
### Appendix 1: Estimation Results - Linear Model

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| C        | 509375.6    | 326097.5   | 1.562035    | 0.1443|
| OX       | 0.303330    | 0.337888   | 0.897725    | 0.3870|
| NX       | 9.246572    | 1.596072   | 5.793331    | 0.0001|

R-squared: 0.778699
Mean dependent var: 2268721.

| Additional Statistics |
|-----------------------|
| Adjusted R-squared: 0.741816 |
| S.D. dependent var: 302400.7 |
| Akaike info criterion: 1.10E+12 |
| Schwarz criterion: 208.9031 |
| F-statistic: 21.11240 |
| Durbin-Watson stat: 1.277677 |

### Appendix 2: Estimation Results – Non-Linear Model

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| C        | 5.377145    | 1.490827   | 3.606820    | 0.0036|
| LOX      | 0.059535    | 0.108403   | 0.549201    | 0.5929|
| LNX      | 0.704486    | 0.085395   | 8.249753    | 0.0000|

R-squared: 0.869654
Mean dependent var: 0.155297

| Additional Statistics |
|-----------------------|
| Adjusted R-squared: 0.847929 |
| S.D. dependent var: 0.113760 |
| Akaike info criterion: 0.155297 |
| Schwarz criterion: 12.99440 |
| F-statistic: 40.03126 |
| Durbin-Watson stat: 1.394455 |

Prob (F-statistic): 0.000117