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Role of Oil Prices in Oman's Macro Economic Performance

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Abstract: *After the discovery of Oil in 1962, the emergence of the oil sector as the principal sector and heavy reliance on oil revenues was inevitable in the Sultanate of Oman. In the current economic scenario of oil price volatility, the role of oil prices in the macro economic performance of the Sultanate of Oman needs to be investigated. Against this background the study proposes to answer the following research questions: Is there a long run co-integrating relationship between oil prices and macroeconomic performance indicators included in this study? How do the macro-economic performance indicators respond to an external shock from oil prices? To what extent can innovation in oil prices explain the movements in each macroeconomic performance indicator? The macroeconomic performance indicators selected in the study are Real GDP, Inflation and Nominal Effective Exchange Rate. Data was sourced from The National Centre for Statistics and Information (NCSI). Stationarity of the variables was tested using The Augmented Dickey Fuller and Phillips Perron Unit Root test. As none of the variables I (2), the Auto Regressive Distributed Lag model was used. Variance Decomposition of Forecast Error was used to examine the relative impact of oil prices on the macroeconomic performance indicators. Response of Real GDP, Inflation and Nominal Effective Exchange Rate to a one standard deviation shock from oil prices was examined through Impulse Response Function. The findings of the study are significant to policy makers in Oman.*

Keywords: *Oil Prices, Macro economic Performance, Oman, ARDL*

1. INTRODUCTION

Interest in the impact of natural resources resources on the economic growth of states dates back to the fourteenth century. Historically, the economic progress of countries endowed with natural resources especially fossil fuels is not better than those who do not have these benefits. The discovery and commercial production of oil in the 1930s put the Arabian lands on the petroleum map. After the first oil shock in 1973, these countries amassed vast revenues. Researchers speculated that these oil export revenues were detrimental to their progress and a body of literature especially devoted to the oil exporting countries developed (Neary & Van Wijnbergen, 1986).

Rising oil prices lead to appreciation of real exchange rate and thereby reduce the price competitiveness of manufactured goods in domestic and global market. Further, oil revenues are independent of domestic savings and investment. Volatile global oil prices make the country vulnerable to exogenous fluctuations and thus make investment unattractive in oil exporting countries thereby hindering economic growth. Rising oil revenues are accompanied by an expansionary fiscal policy. Development expenditure, expenditure on public goods and investment leads to increase in money supply and inflation in the economy. A rise in oil price would increase the cost of production of manufactured goods and this increased cost is passed to the consumers, implying an increase in price of imported and domestically manufactured goods. Oil revenues form a major part of total revenues in oil exporting countries and hence the need to examine the impact of oil prices on gross domestic product, exchange rate, and inflation.

In the short run changes in GDP, exchange rate and inflation may occur due to its own shocks. However, in the long run shocks from each of these variables have an impact on other variables as well. The question arises as to what is the relative impact of shocks arising from oil prices on macroeconomic performance variables. A change in oil price may affect the current and future values of GDP, exchange rate, and inflation rate. Oil exporting countries need to examine the direction, magnitude and length of time for which GDP, exchange rate, and inflation are affected by a shock from oil prices.

Oil was discovered in Oman in 1962 and commercial production of oil started in 1967. The quadrupling of oil prices from $3 per barrel in 1973to $12 per barrel in 1974 started the transformation of the Oman from a less developed agricultural to a upper middle income oil dependent economy. The emergence of the oil sector as the principal sector and heavy reliance on oil revenues was inevitable in the Sultanate of Oman. In the current economic scenario of oil price volatility, limited success in the diversification of Oman's economy, the impact of oil prices on the macroeconomic performance of the Sultanate of Oman needs to be investigated. Against this background, the study examines the impact of oil prices on macroeconomic performance of Sultanate of Oman during 2006 to 2020. It also investigates the response of macro-economic performance indicators to an external shock from oil prices and the extent to which innovations in oil prices explain the movements in each macroeconomic performance indicator.

Studies on relationship between oil revenues/prices and macro-economic variables such as GDP, Government Expenditure, exchange rate current account and budget deficits have been conducted Nigeria, Iran, Russia, Indonesia and Malaysia. A study on the relation between oil revenues and macroeconomic performance of Oman is conspicuous by its absence. The current study contributes to the existing body of knowledge by examining the impact of oil prices on GDP, exchange rate and inflation. The current study uses the Auto Regressive Distributed Lag Bounds testing approach which is more suitable for small sample sizes.

2. REVIEW OF LITERATURE

The Gulf Cooperation Council was phenomenally transformed with discovery of oil. The significant rise in oil prices from 2.5 USD in 1972 to 11.6 USD per barrel of oil in 1973 created huge revenues and potential for economic development. Oil revenues were utilized for creation and development of infrastructural facilities, setting up and development of industries and development of agricultural sector. The success of the GCC economies was heavily reliant on oil revenues. Researchers studying the GCC economies raise two major concerns. The first concern is regarding the ability of the GCC countries to sustain long-term economic growth based only on oil revenues. The second concern was economic diversification. The following section reviews empirical literature on impact of oil revenues on macro-economic performance of oil producing and exporting countries.

Eltony & Al Awadi (2001) examined the impact of oil price fluctuations on key macro-economic variables using Structural Vector Auto Regression Model (SVAR). Results indicated that Fiscal Policy is effective in Kuwait and the mechanism through which oil revenues are transmitted in the Kuwaiti economy is government expenditure. Ayadi (2005) examined the effect of oil prices on macroeconomic variables in Nigeria. The key findings of the study are that oil prices do not necessarily affect industrial production. Iwayemi & Fowowe (2011) too found an insignificant relationship between oil price shocks and macroeconomic performance of Nigeria. Aliyu (2009) empirically examined the impact of oil price shocks on the macro economy of Nigeria using linear and non-linear models. Results of the Gragner causality tests block exogeneity and pair wise causality show that there is significant relationship between oil prices and real GDP. The Vector Auto regression results show that in both linear and non-linear models, oil price increases have a positive effect on the real GDP of oil exporting countries.

Farzanegan & Markwardt (2009) examined the relation between oil price shocks, inflation and government expenditure using Vector Auto regression Model. Results of the study show that positive and negative oil price shocks have a strong relation with inflation. However, oil price shocks have a marginal impact on real government expenditure.

Al Saqri (2010) in his P h D thesis entitled *Petroleum Resources,Linkages and Development: The Case of Oman* examined the impact of the oil sector boom on the economic development of Oman.for the period from 1996 to 2006, Empirical findings show that oil price movements had a significant positive impacton G D P and government revenue.The study also investigated the the existence of Dutch disease and its possible impact on Omans economy.The findings show that the booming mineral sector in Oman did not lead to *de-industrialization,*however the agriculture sector did not benefit much from the oil sector boom.

Mehrara, Maki, &Tavakolian (2010) examined the nonlinear relationship between oil revenues and economic growth in Iran. The study used threshold error correction model and found that higher revenues led to rent seeking behavior and lower productivity levels. The study thus confirmed the

existence of the resource curse in Iran. Al-Ezzee (2011) studied the relationship between real oil prices, real exchange rate and real GDP of Bahrain from 2005 to 2011. The results of the study highlight the significance of real exchange rate in Bahrains economy.Suleiman & Muhammad (2011) studied the relation between oil price fluctuations, real exchange rate and productivity differentials in Nigeria from 1980 to 2010. Long run relationship was examined through Johansen Juleuis cointegration test. Results indicated that a 1% change in real oil prices causes a 0.94% increase in the real effective exchange rate. The study concluded by stating that the Nigerian currency Naira can be called as an oil currency.

Hamdi & Sbia (2013) empirically examined using co-integration and Error Correction Model whether oil revenues have led to economic growth in the Kingdom of Bahrain from 1960-2010. Oil revenues are the main source of financing government expenditures and rising oil prices during that period have led to social and economic growth. Omojolaibi (2013) highlights the significance of oil price fluctuations on macroeconomic variables of an oil exporting country. The study found that a rise in oil revenue is followed by an expansionary fiscal and monetary policy which though leads to increase in GDP but also causes domestic inflation. Christian & Teymur (2014) examine the relation between oil prices, GDP and investment in Iran and GCC countries. Results show that co integration exists between oil prices, GDP and investment. Kuboniwa (2014) examined the effect of oil prices on economic growth of Indonesia, Malaysia and Russia. Findings of their study indicate that oil prices have a significant impact on the growth of all the three countries through energy efficiency and terms of trade.

Ftiti, Guesmi, & Teulon (2014) examined the impact of oil prices on economic growth of UAE, Saudi Arabia, Kuwait and Venezuela from 2000 to 2010. The study utilizes evolutionary co-spectral analysis theory. The study concluded that oil price changes have short term and medium-term impact on economic growth, however the medium-term impact is more significant compared to the short-term effect. The authors explain the transmission mechanism of oil prices and business cycles. Mehrara (2014) investigated the relation between non-oil trade, GDP and oil revenues in eleven selected oil-exporting countries. Results of the panel co integration test, Granger causality test state that there is long run causality from oil revenues and GDP to non-oil trade.

Aregbeyen & Kolawole (2015) examined the relationship between oil revenues, public spending and economic growth in Nigeria from 1980 to 2012. Granger Causality results showed that oil revenues granger cause GDP and government spending.

Alavinasab (2015) examined the impact of oil revenues and non-oil exports on the industrial production of Iran from 1961 to 2010. The results indicated "A positive significant relationship existed between oil revenues, non-oil exports, gross domestic product and industrial production of the country within the period under study; while exchange rate demonstrates a negative insignificant impact on dependent variable

Ahmad & Masan(2015) examined the short-run and long-run relationships between real GDP, the real government expenditure and the real oil revenues. The study reported that governement expenditure was the main source of long run economic growth.Short run variation in government expenditure arise from variations in government revenue from oil resources. The study highlights the importance of economic diversification.Al-Mawali et.al (2016) forecasted and analysed the impact of the oil sector on the Sulatanate of Oman from 1980 to 2012 through a macroeconometric model. The researchers based on the forecasting reults state that without any successful diversification the economy will be heavily dependent on the oil sector.The study found that the oil sector had a significant and positive impact on all the sectors , however the largest impact was on the gas sector and the least impact was on the agricultural sector.

Amin & El-Sakka (2016) examined the relation between oil price fluctuations and real exchange rate in the GCC region. The authors state that the weakening of the US Dollar against the Euro and other major currencies of the world leads loss of purchasing power of the domestic country, inflation and detroriation in value of dollar denominated assets.

Mensah et al(2016) examined the impact of oil prices on GDP and Exchange Rates of Ghana from 1980–2013. Results of the Vector Error Correction Model reveal that (1) Oil Prices could increase GDP BY 3% (2) oil prices did not play a significant role in exchange rate volatility and (3) Exchange

rate appreciation revealed the presence of the Dutch Disease symptoms. Mantai & Alom (2016) examined the short and long run impact of crude oil prices on economic growth, inflation and exchange rates in Malaysia from 1981 to 2013. Granger Causality test results show unidirectional causality from crude oil prices to GDP.

Nagmi & Aimer(2016) examined the impact of oil price changes on the economic growth of Libya from 2000 to 2015 .The results of the co integration test reveal that there is no long run relation between crude oil prices and GDP in Libya. Impulse response functions show that in the short run oil shocks have a positive effect on the GDP.Nweze & Edame (2016) examined the relationship and impact of oil revenues on economic growth of Nigeria. The study states that oil revenues have a significant positive impact on economic growth through government expenditure. The major findings of the study are that revenues generated from oil should be used judiciously and to develop the agricultural and manufacturing sector.

Mensah, Triacca, Bondzie, & Fosu(2016) examined the impact of oil prices on GDP and Exchange Rates of Ghana from 1980–2013. Results of the Vector Error Correction Model reveal that firstly Oil Prices could increase GDP BY 3% , secondly oil prices did not play a significant role in exchange rate volatility and lastly Exchange rate appreciation revealed the presence of the Dutch Disease symptoms.

Mantai & Alom (2016) examined the short and long run impact of crude oil prices on economic growth, inflation and exchange rates in Malaysia from 1981 to 2013. Empirical tests prove that crude oil prices affect GDP in the short run . Granger Causality shows unidirectional causality from crude oil prices to GDP.

Alkhateeb, Sultan, & Mahmood (2017) examined the relation between oil revenues, GDP, public spending and employment in Saudi Arabia. VECM based Granger causality reesults reveal that individually oil revenues and government spending have a positive impact on employment.The study concludes by stating that rising oil prices are a boon to Saudi economy.

Trang, Tho, & Hong (2017) examined the impact of oil prices on growth, inflation and fiscal deficit using the Vector Autoregressive model(VAR). Impulse Response Functions show that a one standard deviation shock of oil prices leads to an initial inflationary trend which descends in the later period.A small positive effect of oil price shock on GDP was observed. The response of unemployment too was negligible.The authors conclude that rising oil prices have an unfavorable impact on Vietnams economy. Vohra (2017) studied the relation between oil prices, economic growth, budget deficit and current account balance of GCC countries from 2000 to 2015. Country wise analysis revealed a weak positive relation between current account balance as percentage of GDP and economic growth for Oman where as it was moderate for oil price changes. According to the study, low oil prices have caused budget deficits and potential for instability.

Adedokun (2018) analysed the impact of oil price shocks on government revenues and expenditures in Kenya and how these shocks are transmitted to a number of macro economic variables using Structural VAR and VAR.Results of the study indicate that oil prices shocks affect policy variables in the short run and transmit these effects in the long run. They suggest diversification so that the economy can be safegaurded against the long term effects of oil price shocks.

Al Rasasi, Qualls, & Alghamdi (2018) empirically examine the relation between oil revenues and economic growth of Saudi Arabia from 1970 to 2017. The OLS regression coefficients highlight the important role played by oil revenues. A ten percent increase in Saudi Arabia's oil revenue caused a six-point five rise in non-oil output. Oil revenues were transmitted into the economy through government spending.

3. DATA AND ECONOMETRIC METHODOLOGY

The objective of the study is to examine the impact of oil prices on the macroeconomic performance of Oman. The selected indicators of macroeconomic performance indicators are Real Gross Domestic Product, Nominal Effective Exchange Rate (NEER), and Inflation. Quarterly data from 2006 Q1 to 2020 Q3 was sourced from Statistical Yearbook published by the Ministry of National Economy, Sultanate of Oman. Stationarity of the variables were tested using the Augment Dickey Fuller (ADF) and Phillips Perron (PP) unit root test for stationarity. As inflation was stationary at level and Oil

Prices, Gross Domestic Product, Nominal Effective Exchange Rate were stationary at first difference the Autoregressive Distributive Lag Model (ARDL) was used. The optimal lag length for the dependent and independent variables was selected using an Information criterion. After estimating the ARDL model, long run cointegration was ascertained through Long Run Form and Bounds test. Short Run causality was inferred from the statistical significance of the t –statistic of the regressors. To ascertain the joint significance of the variables, the Wald Coefficient restrictions test is used. Variance decomposition was generated for ten periods to examine the relative impact of Oil Prices and macroeconomic performance indicators on each other. The response of macroeconomic performance indicators to a one standard deviation shock from real oil prices was examined using the Impulse Response Function. The analysis is performed using EViews 9.

4. EMPIRICAL FINDINGS

Stationary properties of real oil prices and macro-economic performance indicators were tested using the Augment Dickey Fuller (ADF) and Phillips Perron (PP) unit root test for stationary. The hypothesis that the series is stationary is tested against the alternative that the series is non-stationary. The following table displays the results of the ADF and PP test statistic

Table1. *Results of ADF & PP Unit Root Tests for Oil Prices and Macro-economic Performance Indicators of Oman*

	At level		At First Difference		
Variables	**ADF Test Statistic**	**PP Test Statistic**	**ADF Test Statistic**	**PP Test Statistic**	**Stationarity Status**
Oil Prices	-0.73458	-0.70964	-6.28488***	-6.29418***	**I (1)**
Log GDP	0.5158	1.014777	-34.7278***	-2.89343***	**I (1)**
NEER	0.379051	0.395853	-5.3869***	-5.61868***	**I (1)**
Inflation	-3.83984***	-4.53237***	NA	NA	**I (0)**
**** and ** indicates significant at 1% and less than 5% level respectively* *ADF: Augmented Dickey Fuller Test; PP: Phillips-Perron Test*					

Source: *Author's own calculation using E-views 9*

From the above table, it can be observed that inflation is stationary at level whereas Oil Prices, Real GDP, and Nominal Effective Exchange Rate are stationary at first difference.

In the ARDL model, each variable can have a different lag length and hence the lag length for each variable is determined. To determine the optimal lag order, an unrestricted Vector Auto Regressive Model was run in EViews 9 for each of the variables. The lag order selected by the lowest statistically significant value of the six Information criteria was selected. Results of the lag length selected by the information criterion is presented in the following table:

Table2. *Optimal Lag Length for Oil Prices and Macroeconomic Performance Indicators of Oman*

Variables	**Lag**	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
Oil Prices	3	-211.255	1.969	169.8304*	7.97241*	8.120	8.029
Log GDP	5	89.57	32.48927*	0.002653*	-3.09519*	-2.874194*	-3.009962*
NEER	3	-98.541	2.372	2.612256*	3.79782*	3.945	3.855
Inflation	3	-45.226	3.188	0.362616*	1.82319*	1.971	1.880016*

Source: *Author's own calculation using E-views 9*

**indicates lag order selected by the criterion*

LR: sequential modified LR test statistic: Final Prediction Error, AIC: Akaike Information Criterion, SC: Schwarz Information Criterion, HQ: Hannan – Quinn Information Criterion

Based on the Akaike Information criterion, the study selected 5 lags for GDP and 3 lags each for oil prices, nominal effective exchange rate and inflation.

The long run form and bounds test was used to investigate the existence of long run causal relation between oil prices, GDP, nominal effective exchange rates and inflation. When GDP is the dependent variable, the null hypothesis of no levels relationship is rejected at the 1% significance level. However, when Nominal Effective Exchange Rate is the dependent variable, there is no sufficient evidence to reject the null hypothesis of no levels relation. The following table summarizes the results of the Long Run Form and Bounds Test:

Table3. *Results of Long Run Form and Bounds test*

DV	F-Statistic
Log GDP	8.96 ***
NEER	2.63

Source: *Author's own calculation using E-views 9*

After inferring the cointegrating relationship, the study investigated the causal relationship. Long run causal relationship can be estimated through the statistical significance of the t-statistic of the regressors and the t statistic of the Error Correction term. The coefficients of all the explanatory variables are significant at the less than 1% level.

Table4. *Estimated Long Run Coefficients (Dependent Variable- LogGDP)*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_PRICES	0.002406	0.000316	7.621860	0.0000
NEER	0.005439	0.001522	3.574686	0.0009
INFLATION	0.010274	0.000957	10.730610	0.0000
C	2.393382	0.139845	17.114497	0.0000

Source: *Author's own calculation using E-views 9*

Other things remaining the same, in the long run, a 1% increase in Oil Prices, Nominal Effective Exchange Rate, and Inflation causes a 0.002%, 0.005% and 0.01% increase in GDP.

The Error Correction term for the long run equation is

EC = LOGGDP - (0.0024*OIL_PRICES + 0.0054*NEER + 0.0103*Inflation + 2.3934)

The coefficient of Error Correction term coefficient -0.87 is negative and significant at the 1% level. The ECT coefficient represents the speed of adjustment to long run equilibrium. The long run reversion to equilibrium occurs at an adjustment speed of 87%. To identify the reversion to equilibrium process, the Error Correction Model was estimated. The following table presents the estimates and coefficients of the cointegrating form.

Table5. *Results of Error Correction Model*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGGDP(-1))	0.020210	0.105404	0.191739	0.8488
D(LOGGDP(-2))	-0.163034	0.079490	-2.051003	0.0463
D(LOGGDP(-3))	-0.393288	0.064507	-6.096851	0.0000
D(LOGGDP(-4))	0.361637	0.060624	5.965275	0.0000
D(OIL_PRICES)	0.002098	0.000293	7.150887	0.0000
D(NEER)	0.004743	0.001350	3.513534	0.0010
D(INFLATION)	0.033094	0.007194	4.599873	0.0000
ECT	-0.872117	0.122318	-7.129899	0.0000

Source: *Author's own calculation using E-views 9*

As in the long run, in the short run too Oil Prices, Nominal Effective Exchange Rate and Inflation have a significant positive causal relation with GDP. Previous year's deviations from long equilibrium will be corrected in the current year or current year's deviations from long run equilibrium will be corrected in the following year through at an adjustment speed of 87%. To adjust to long run equilibrium, GDP will, ceteris paribus, increase in the following quarter by 0.02%, 0.05% and 0.03% as a response to, a 1% increase in oil prices, Nominal Effective Exchange Rate and inflation respectively.

The following table presents the short run ARDL estimates with Nominal Effective Exchange Rate as the dependent variable.

Table6. *Short Run ARDL Estimates (Dependent Variable-NEER)*

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
NEER(-1)	1.144288	0.153228	7.467890	0.0000
NEER(-2)	-0.391439	0.213955	-1.829541	0.0735
NEER(-3)	0.272710	0.130849	2.084155	0.0425
OIL_PRICES	-0.018397	0.019921	-0.923483	0.3604
OIL_PRICES(-1)	0.044653	0.019421	2.299245	0.0259
LOGGDP	0.349184	0.859914	0.406069	0.6865
INFLATION	0.029322	0.035700	0.821367	0.4155
C	-8.654637	7.691206	-1.125264	0.2661
R-squared	0.944222			
Adjusted R-squared	0.936088			
S.E. of regression	1.429169			
F-statistic	116.0792	***		
Durbin-Watson stat	2.073603			

Source: *Author's own calculation using E-views 9*

The first lag of oil prices, nominal effective exchange rate has a significant and positive relation with nominal effective exchange rate.

The model was tested for normality of residuals. There is no sufficient evidence to reject the null hypothesis that the residuals are normally distributed. From the Breusch-Godfrey Serial Correlation LM Test, there is no sufficient evidence to reject the null hypothesis that there is no serial correlation up to two lags. Heteroskedasticity among error terms was tested using Breusch-Pagan-Godfrey test. There is no sufficient evidence to reject the null hypothesis that the model is homoscedastic. Parameter stability was inferred from the plot of CUSUM and CUSUM of Squares graph.

The joint significance of the current and lagged value of oil prices on Nominal Effective Exchange Rate was estimated using the Wald Coefficient Restrictions Test. The following table presents the results:

Table7. *Results of Wald Coefficient Restrictions Test*

DV	Joint Significance	F-Statistic	Chi-square
NEER	OIL PRICES &OIL PRICES (-1)	2.805295*	5.610589*
*** Significant at the 10% level**			

Source: *Author's own calculation using E-views 9*

From the results of the Wald test, F (2, 48) =2.805295, p= 0.07; Chi Square (2) =5.610589, p =0.06, it can be inferred that current and previous years oil prices, jointly, have a weak significant impact on Nominal Effective Exchange Rates.

Variance decomposition of the forecast error gives the percentage of unexpected variation in each variable that is produced by shocks from other variables. It indicates the relative impact that a variable has on the other.

The following tables8 to 10 presents the variance decomposition of GDP, Nominal Effective Exchange Rate and Inflation.

Table8. *Results of Variance Decomposition of GDP*

Period	S.E.	LOGGDP	OIL_PRICES	NEER	INFLATION
1	0.171466	100.0000	0.000000	0.000000	0.000000
2	0.210922	82.42963	8.738803	0.451503	8.380064
3	0.231086	83.32898	9.149623	0.480814	7.040579
4	0.242998	82.29660	9.609482	0.894146	7.199767
5	0.245856	81.52846	9.681632	1.442659	7.347252
6	0.251598	81.56663	9.405931	1.491819	7.535623
7	0.251803	81.47698	9.428723	1.542352	7.551948
8	0.253562	81.36494	9.534929	1.651014	7.449119
9	0.253994	81.17600	9.502509	1.734215	7.587278
10	0.254556	81.19003	9.465491	1.757281	7.587201

Source: *Author's own calculation using E-views 9*

Table9. *Results of Variance Decomposition of NEER*

Period	S.E.	LOGGDP	OIL_PRICES	NEER	INFLATION
1	1.471165	0.266161	1.580798	98.15304	0.000000
2	2.285832	0.422320	1.958132	97.31620	0.303344
3	2.841196	0.394633	5.096220	93.61233	0.896815
4	3.217973	0.326089	7.920329	90.19486	1.558725
5	3.466303	0.320218	9.464283	88.17390	2.041595
6	3.630696	0.295589	10.13657	87.09969	2.468150
7	3.748990	0.290011	10.47819	86.28348	2.948317
8	3.838567	0.316463	10.67342	85.58223	3.427892
9	3.905730	0.334134	10.76456	85.03093	3.870376
10	3.957210	0.347048	10.80318	84.53940	4.310379

Source: *Author's own calculation using E-views 9*

Table10. *Results of Variance Decomposition of Inflation*

Period	S.E.	LOGGDP	OIL_PRICES	NEER	INFLATION
1	0.535891	0.540407	8.269459	3.206233	87.98390
2	0.952551	3.435088	12.74040	4.529444	79.29507
3	1.296501	9.539007	11.02467	7.350354	72.08597
4	1.508630	10.37957	8.456275	10.89732	70.26684
5	1.671492	9.604447	6.986148	13.86387	69.54553
6	1.818721	9.612428	6.145743	15.45404	68.78779
7	1.938882	9.902168	5.701142	16.23694	68.15975
8	2.032022	9.771914	5.543611	16.74608	67.93839
9	2.111380	9.640216	5.423375	17.01035	67.92606
10	2.180332	9.693926	5.281412	17.08013	67.94453

Source: *Author's own calculation using E-views 9*

In period one 100% of forecast error of GDP can be explained by real GDP itself and 8% by real oil revenues. However, as we move from period one to 10 oil prices and inflation explains 9% and 8% of forecast error. Variance Decomposition of Nominal Effective Exchange Rate shows that in period 10, 11% of variation in forecast error can be explained by oil prices.From the variance decomposition of inflation, it can be observed that in period one, oil prices and Nominal Effective Exchange Rate can explain 8% and 3% of the variations respectively. In period ten, exchange rate can explain 17% of the variation.

An innovation in real oil prices causes GDP to increase from period one to period 2. However, after period 2, there is a gradual fall in GDP. Nominal Effective exchange rate falls sharply in period one and there is sharp increase from period two to period four and is steady after period five. Inflation rises sharply until period 2, and then falls. Inflation becomes negative after period 5.

The tabular responses are presented below:

Table11. *Results of Impulse Response Function*

Period	LOGGDP	NEER	INFLATION
1	0.000000	-0.184969	0.154104
2	0.062352	0.260958	0.303071
3	0.031595	0.555944	0.264036
4	-0.028075	0.639368	0.084536
5	-0.013338	0.563010	-0.052184
6	0.010099	0.446138	-0.090003
7	-0.004916	0.369466	-0.105050
8	-0.012333	0.316200	-0.120752
9	-9.74E-05	0.263475	-0.113437
10	0.001777	0.222755	-0.096439
Cholesky Ordering: LOGGDP OIL_PRICES NEER INFLATION			

Source: *Author's own calculation using E-views 10*

5. CONCLUSION

The study investigated the impact of oil prices on the macro-economic performance of Sultanate of Oman.Short Run causal relationship was analyzed through the t-statistic of the regressors in the ARDL model and the Wald Coefficient restriction test in case of lagged variables .The findings reported a significant short run and long run impact of oil prices on GDP. A 1% increase in oil price causes only a 0.002% increase in GDP.A plausible explanation for this weak causal effect is that after the oil boom of 1967, there was no reallocation of factor inputs in favor of the oil sector as Oman depended on expatriate labor. Secondly, the government invested these revenues in social and physical infrastructure, thus inducing the growth of the economy. The positive casual effect of nominal effective exchange rate on GDP and a weakly significant causal effect of oil prices on nominal effective exchange rate signifies the absence of one of the symptoms of Dutch Disease

The study analyzed the response of Real GDP to an external shock from oil revenues through Variance Decomposition of Forecast Errors. In the long run, only nine percent of variationsin GDP can be explained by shocks emanating from oil prices. The findings, reaffirm the absence of one of the symptoms of Dutch Disease.

The response of macroeconomic performance indicators to a one standard deviation shock from real oil revenues was analyzed through Impulse Response Function. The results of VDC analysis, Impulse Response Function validate the short and long run causal effects.

The positive relation between oil prices and real GDP, highlights the Sultanates dependence on oil sector. In case of downward trail in oil prices, the non-oil sector should be able to fuel economic growth. The study suggests that Oman should continue pursuing its economic diversification policies. The projects implemented for the development of the non-oil sector should not be linked to oil revenues so that these projects are insulated from decline in oil revenues. The study inferred a positive and negative causal effect of real exchange rate and inflation on real GDP respectively.

REFERENCES

Adedokun, A. (2018). The effects of oil shocks on government expenditures and government revenues nexus in Nigeria (with exogeneity restrictions). Future Business Journal, 4, 219-232.

Ahmad , H. A., & Masan, S. S. (2015). Dynamic relationships between oil revenue, government spending and economic growth in Oman. International Journal of Business and Economic Development, 3(2), 93-115.

Al Musalami, J. S. (2016). Does Oman Surmount the Effects of the Resource Curse or Not? RSEP International Conferences on Social Issues and Economic Studies, (pp. 47-67). Madrid. doi:10.19257/RSEPCONFERENCES008

Al Rasasi, M. H., Qualls, J. H., & Alghamdi, B. K. (2018). Oil Revenues and Economic Growth in Saudi Arabia. Riyadh: Saudi Arabian Monetary Authority.

Al Saqri, S. (2010). Petroleum Resources, Linkages and Development: The Case of Oman. Melbourne: Centre for Stratégie Economie Studies, Victoria University.

Alavinasab, S. M. (2015). Effect of Oil Revenues and Non-Oil Exports on Industrial Production: A Case of Iran. IOSR Journal of Economics and Finance, 6(2), 29-34.

Al-Ezzee, I. (2011). Real Influences of Real Exchange Rate and Oil Price Changes on The Growth of Real GDP: Case of Bahrain. International Conference on Management and Service Science, 155-165.

Aliyu, S. U. (2009, November). Oil Price Shocks and the Macroeconomy of Nigeria: A Non-linear Approach. Munich: MPRA.

Alkhateeb, T. Y., Sultan, Z. A., & Mahmood, H. (2017). Oil Revenue, Public Spending, Gross Domestic Product and Employment in Saudi Arabia. International Journal of Energy Economics and Policy, 7(6), 17-21.

Amin, Z. A., & El-Sakka, M. T. (2016). DETERMINING REAL EXCHANGE RATE FLUCTUATIONS IN THE OIL-BASED GCC ECONOMIES. Asian Economic and Financial Review, 6(7), 347-389.

Aregbeyen, O., & Kolawole, B. O. (2015). Oil Revenue, Public Spending and Economic Growth Relationships in Nigeria. Journal of Sustainable Development, 8(3), 113-125.

Ayadi, O. F. (2005). Oil price fluctuations and the Nigerian economy. OPEC Energy Review, 29(3), 199-217.

Christian, D., & Teymur, R. (2014). The Impact of Oil Revenues on the Iranian Economy and the Gulf States. Bonn: IZA Discussion Papers, No. 8079,Institute of Labor Economics.

Eltony, N. M., & Al Awadi, M. (2001). Oil Price fluctuations and their Impact on the Macroeconomic Variables of Kuwait: A Case Study Using VAR Model for Kuwait. International Journal of Energy Research, 25(11), 939-959.

Farzanegan, M. R., & Markwardt, G. (2009). The effects of oil price shocks on the Iranian economy. Energy Economics, 31(1), 134-151. doi:https://doi.org/10.1016/j.eneco.2008.09.003

Hamdi, H., & Sbia, R. (2013). Dynamic relationships between oil revenues, government spending and economic growth in an oil-dependent economy. Economic Modelling, 35, 118-125.

Kuboniwa, M. (2014). A comparative analysis of the impact of oil prices on oil-rich emerging economies in the Pacific Rim. Journal Of Comparitive Economics, 42(2), 328-339. doi: https://doi.org/10.1016/j.jce. 2014.03.007

Mantai, M. M., & Alom, F. (2016). Impacts of Oil Price, Exchange Rate and Inflation on the Economic Activity of Malaysia. OPEC Energy Review, 40(2), 180-191.

Mehrara, M., Maki, M., & Tavakolian, H. (2010). The relationship between oil revenues and economic growth, using threshold methods (the case of Iran). OPEC Energy Review, 34(1), 1-14.

Mensah, E. K., Triacca, U., Bondzie, E. A., & Fosu, G. O. (2016). Crude oil price, exchange rate and gross domestic product nexus in an emerging market: A cointegration analysis. OPEC Energy Review, 212-233.

Nagmi, M., & Aimer, M. (2016). The Effects Of Fluctuations Of Oil Price On Economic Growth Of Libya. Energy Economics Letters, 3(2), 17-29.

National Centre for Statistics and Information. (1986). Statistical Year Book (Vol. 15). Muscat: National Centre for Statistics and Information.

National Centre for Statistics and Information. (1991). Statistical Year Book (Vol. 20). Muscat: National Centre for Statistics and Information.

National Centre for Statistics and Information. (2016). Statististical Year Book (Vol. 44). Oman: National Centre for Statistics and Information. Retrieved from www.ncsi.gov.om

National centre for Statistics and Information. (2019). Statistical Year Book (Vol. 47). Oman: National centre for Statistics and Information. Retrieved from www.ncsi.gov.om

National Centre of Statistics and Information. (2017). Statistical Year Book. Oman: National Centre of Statistics and Information. doi:www.ncsi.gov.om

Neary, P. J., & Van Wijnbergen, S. N. (1986). Natural Resources and the Macroeconomy. Cambridge: MA: MIT Press.

Nweze, N. P., & Edame, G. E. (2016). An Empirical Investigation of Oil Revenue and Economic Growth in Nigeria. European Scientific Journal, 12(16), 271-294. doi:10.19044/esj.2016.v12n25p271

Omojolaibi, J. A. (2013). Does Volatility in Crude Oil Price Precipitate Macroeconomic Performance in Nigeria? International Journal of Energy Economics and Policy, 3(2), 143-152.

Sachs, J. D., & Warner, A. M. (1995). Natural Resource Abundance and Economic Growth (NBER Working Paper 5398). Cambridge: National Bureau of Economic Research.

Sachs, J. D., & Warner, A. M. (1999). The big push, natural resource booms and growth. Journal of Development Economics, 59, 43-76.

Sachs, J. D., & Warner, A. M. (2001). Natural Resources and Economic Development: The curse of natural resources. European Economic Review, 45(1), 827-838.

Suleiman, H., & Muhammad, Z. (2011). The real exchange rate of an oil exporting economy: Empirical evidence from Nigeria. FIW Working Paper, No. 72, 1-36.

Trang, N. T., Tho, T. N., & Hong, D. T. (2017). The Impact of Oil Price on the Growth, Inflation, Unemployment and Budget Deficit of Vietnam. International Journal of Energy Economics and Policy, 7(3), 42-49.

Vohra, R. (2017). The Impact of Oil Prices on GCC Economies. International Journal of Business and Social Science, 8(2), 7-15.

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