

The Influence of Oil Prices, Licensing and Production on the Economic Development: An Empirical Investigation of Iraq Economy

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Economic development is the foremost requirement for every nation around the globe and captures the attention of upcoming studies and regulators. Therefore, this study investigates the influence of oil prices, licensing round, oil demand, oil production, and oil sector development on the economic development in Iraq. This study has followed the quantitative methods and extracted secondary data from World Development Indicators (WDI) and trading economies from 1981 to 2019. This study has executed the Augmented Dickey-Fuller (ADF) unit root test to check the stationarity of the variables and autoregressive distributed lag model (ARDL) to examine the relationships among the variables. This study has revealed that oil prices, licensing round, oil demand, oil production, and oil sector development have a positive and significant association with economic development in Iraq. This study is suitable for the upcoming researchers while examining this area in the future and also guided the regulators while developing the regulations related to the oil sector development and economic development.

Keywords: Oil prices, Oil licensing round, Oil sector development, Economic development.

4. INTRODUCTION

The oil and gas resources of the countries which rely on these resources receive significant attention. Iraq is considered one of the world's largest exporters of petroleum and coal. Highlighting the reason for the fact that Iraq's Annual Federal Budget (IAFB) is primarily petroleum-based is a vital source of oil and gas resources. It is hereby estimated that 92 percent, 93 percent respectively, of IAFB's oil sales for 2012 and 2013. In addition, oil revenues control Iraq's economic activities. Iraq is one of the world's five largest oil-exporting countries, including Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. The linked sector must be observed in terms of oil and gas industries in order to develop a strong infrastructure and maintain productivity and development of the production processes for oil and gas (Cameron & Schnusenberg, 2009). The infrastructure compares greatly with established development programs, meaning that the output expansion cannot be constrained and/or struggle to satisfy global demand in time. "Oil and gas developments are marked by large expenditures," the literature also suggested (Hashim, Sultan, Al Maliki, & Al-Ansari, 2020; Huntington, 2018). The dynamics and infrastructure of the oil sector have also made the application of project management processes compelling. "They also have huge interfaces and sophisticated technical endeavors." In the Iraqi oil and gas sector, the key causes for project difficulties are bad

management and expenditure. In 2009, the IOC has awarded a service contract for 25 years of investment to BP, RDS, Eni, Statoil and Exxon, the International Oil Company (IOC); in reality, the form of contract is the Technical Service Contract (TSC) which means a profit-sharing contract with Iraqi MoO (Ministry of Oil). An oil production contract is a financial and legal mechanism used by certain oil-producing countries to work with foreign petroleum companies (IOCs) to produce oil. The multinational petroleum corporation incorporates technology and early financial spending into an oil production deal. The IOCs awarded the field-wise contracts (with its original partners) to Rumaili, Zubair, West Qurna-I, West Qurna-II, Majnoon, Halfaya, and Gharraf oil field (Al-Fehdly, ElMaraghy, & Wilkinson, 2019; Jaccob, 2020).

The Iraqi crisis of the economy is not the outcome of today's shocks of oil prices. But it is also a result of the financial sector's underlying imbalances that do not move at a rate to counter oil price shocks. The Iraqi economy needs to reduce petroleum prices because of the stoppage of oil exports imposed by the UN Security Council economic sanctions following a war between Iraq and Kuwait that has caused GDP and unemployment rates to decline and the government to invest more. In the Current Monetary Edition the monetary strategy, with inflation rates approaching the hyper-inflation levels, facing the State budget's deficit due to higher government spending, including the cost of restoring the war-torn state (Saleh, Hamad, & Hama,

2021). The impact of the Iraqi economy was on oil shocks (2010-2011-2012-2013) that led to high petroleum prices, rising GDP, and public spending, thereby increasing inflation. Iraq has also been subjected to the negative oil shock following the second half of 2014, owing to low oil prices, low GDP payments and marginally increasing inflation and unemployment (Ji & Fan, 2016; Joumayle, 2017). Because of the conditions that the state went through and the economic embargo put on it after the invasion of Kuwait, GDP has fluctuated greatly. It should have been priced (10682.0) million dinars in 1991 at the cost of (29711.1) million dinars in 1990, representing low government budgets of (236316.6) million dinars for 1990 and (97205.5) million dinars in (24.52 to 21.54) US Dollars per barrel for 1990 and 1991 respectively. GDP increased to 40344.9 million dinars in 2002 in the following years.

The consequence of the Memorandum of Understanding (oil for food and medicine), which enabled Iraq to export part of its crude oil production, was this rise in the volume of its production and also due to the increase of

oil prices to \$26.18 a barrel. This led to the government's expenditure increasing to (66362.8) million dinars, especially as it grew to (33905.3) million dinars, while investment expenditure is (23561.1) million for 2002. The price soared in 2004 to \$41.51 a barrel and the amount of GDP (41608) million dollars increased in 2004 because of the direct relationships between the oil price and production. The price of the oil went up in 2003, creating a petroleum shock. In both of 2014-2015, the price of oil rose by 93.17 percent (48.66 percent) US dollars a barrel in the years 2014-2015, both of which started to increase in the second half of the year 2014. Due to the decline in GDP (75581.3) of the total budget of the state (3931309.7) million dinars in 2014, while total government expenditure rose in 2015 to 1330935.1 million dinars due to increased military spending in battling the militant groups dominating nearly two-thirds of the country. The GDP decrease is 42835 million (Hussein, 2019; Smyth & Narayan, 2018). Figure 1 shows Iraq's Oil Production Capacity in 2020-2021.

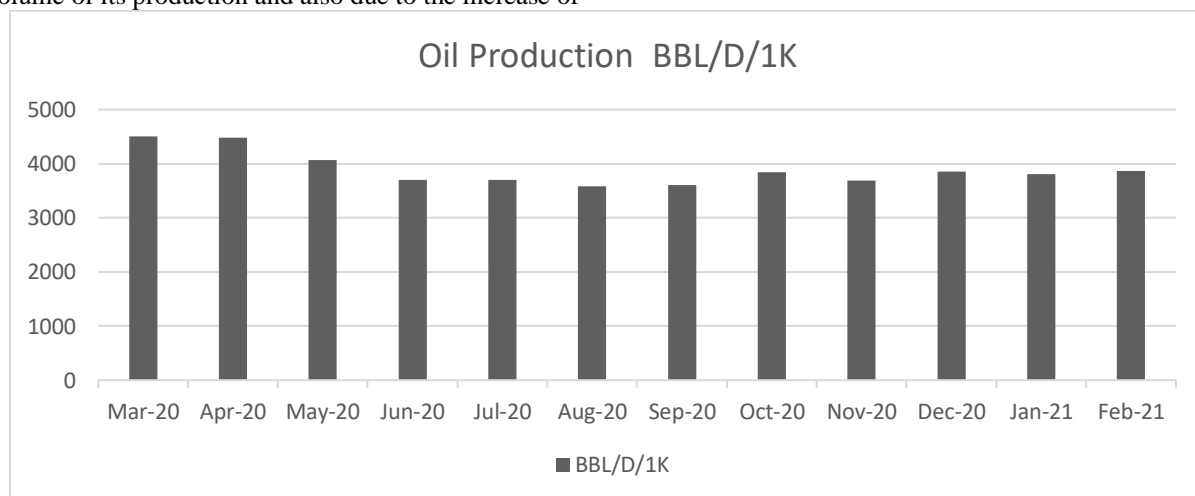


Figure 1: Oil Production in Iraq in 2020-2021

This is the reason the Iraqi government worries about oil fields in southern Iraq, the US Energy Information Administration notes that the 85 percent oil reserve is in southern Iraq. The principle of analysis stems from the major issue of oil in Iraq. A difference in previous studies has been noted. The concern is that Hadi (2017) reported that since 2009, IOC has spent in Iraq the largest oil fields. They expect to increase the production, selling, and exploration of oil, to be resolved and carried out in 2017, but Iraq's petroleum infrastructure has limited the schedule of operations. As oil exports rise, global oil demand is projected to rise by up to 50 percent, based on demand since 2005, by 2030.

2. LITERATURE REVIEW

Many countries have an enormous wealth of natural gases and crude oil which is a high level of luxury for the economic conditions (Nawaz et al., 2020). Although, wealth is sometimes exploited by the countries themselves due to high loans from international economies strong policies and effective controls could bump their economies. This states the positive contribution of oil production toward the economic conditions of developing countries. The different mechanism has been discussed while emphasizing the international oil prices which poses a significant impact on the currency of relevant countries (Zhou, Yu, & Li, 2017). It is the intentions of purchasing which are related to the extensions of chains in industries. Considerably, the fluctuation in oil prices is wider scope for the

developing countries to earn more than their neighbors. In this context, the oil prices are referred to as international economies which insert slight changes toward the oil prices. Many countries are dependent on international oil prices due to their level of purchases and imports. Petrol is the necessity of every country because most of their machinery is dependent on oil. During the regime of inflation, the change in oil prices has passed through different countries while impacting the exogenous factors of economies (Waleed, Akhtar, & Pasha, 2018). This impact is contributed by the core elements of macroeconomic which widely states the failure and success of economic development (Nawaz et al., 2021). Among the countries having natural resources of oil, the trade of oil is processed in the universal currency which poses an impact on the currency of developing countries. Most of the developing countries also produce oil internally but being treated in an international currency is again a barrier to their self-sustainability. Different countries like Iraq and Iran are huge producers of oil but due to the immense policies of great countries they are unable to sale it in their own currency.

The speculative volatility in resources and oil prices shapes the influences termed in many oil-producing countries (Tamba, 2017). This shaping defined the significant rounds of international oil prices important in economic development. Economic development is directly linked with the fluctuation of oil prices because of earning relevancy. This linkage significantly defines the ultimate relation between economic development and international oil prices. Change in the international price of oil directly states the impact toward developing countries that are indulged in importing oil from other countries. International oil prices positively instigate its influence on economic development with many other factors. A significant relationship exists among the economic growth, financial development, production of oil, and international oil prices (Sen & Uzunoz, 2017). This linkage defined the consistency of pricing elements which are important toward economic development (Sun et al., 2020). While observing the defined change in international oil prices, the effects on households are also certain. Although, the household is a major contributor toward economic development the change in international prices is more relevant to the economic conditions. This uplifts the larger contribution of developing countries that are dependent on oil resources. It illustrates an ultimate effect on the services and goods though because of its involvement in economic development. The relationship between economic development, economic growth, and oil consumption with a change in prices is evident in most

Asian countries (Rustamov & Adaoglu, 2018). It states the clear indication of increasing oil consumption with fluctuating oil prices on the economic conditions.

During the bad economic conditions of oil-producing countries, many countries have attained licenses of oil selling to support their economies. This is a positive contribution widely seen in most of the Arab countries which have higher resources of oils. These higher resources are considered as a larger supporter of the economic conditions which have been disrupted due to some adverse conditions. With the indicators of environment, the licensing is based on the sectors of gas and oil which are emphasized in many developed countries with supportive requirements of oil trade (Lyall & Valdivia, 2019). This trends in the challenging conditions of economies that plan the economic development structures. The rounds of licenses are started in the countries which have been indulged in the internal exploration of oil and seek deposits for the extraction of petroleum. It states the feasibility toward the economic development which varies with resources and minerals. The licenses are issued around to the developing countries for selling as well as the exploration of oil from their countries to self-sustainability in economic conditions. Economic growth and crude oil are significantly related to each other with the efficiency of energy policies (de Oliveira Bredariol, 2020). This promotes the transparency of oil management for better economic development circumstances. Licenses are issued on the basis of bid programs which could be supportive to the hosting countries though. Therefore, countries facing bad economic conditions have an alternative to recover the economic discrepancies through the licensing rounds. These rounds perform differently in the terms of demands and innovation. Usually, the license is granted to the companies for joining in ventures by fulfilling the obligations defined in licenses.

The development of new service contracts to the oil selling companies and countries has been posed as eminent in economic development (de Cárdenas García, 2017). Most governments recognize the outsource elements in oil licensing rounds that could help in the sustainability of economic conditions. Within the trade of oil, many countries are dependent on lease agreements with oil-producing countries. Ultimately, the oil-producing countries issue licenses to the countries which fulfill the conditions stated by hosting countries. This explains the dominant impact on economic development. Strong policies toward the oil-selling countries also dominate the rounds of licenses that are mandatory for being indulged in international trade. In turkey, the shocks of oil consumption are

directly linked to economic growth and are also considered as sensitive in some economic conditions (Benramdane, 2017). It uncovers the elements which are hidden under the oil licenses as well as economic development. Oil contributes a major portion toward economic development whether pertinent to production or consumption. It clearly states a significant impact on the economic conditions. Is increasing in licensing authorities could also pose a negative impact on economic development. Therefore, for high economic conditions, the oil license rounds could be primarily important in uplifting the developing economies. Some uncertain conditions of the international conditions are also important for issuing licenses to raise prominent era in the economic development. Among the oil-rich countries, the volatility of economic growth and volatility of oil prices are linked with each other (Albulescu, Oros, & Tiwari, 2017). Usually, this volatility is affected by the natural curse of resources that are disrupted due to the cost elements.

During the indecent conditions of international economies, many countries have been founded in hiking demand for oil. Among many exporters of oil, the prices have been depicted as decreasing which is taken by most of the developing countries. For the evident economic conditions, the international oil demand plays a vital role. This role also states the prevalence of international oil which is dominant among the oil-consuming countries. The demand for oil has depicted the non-linear impact due to the involvement of international agencies operating individually (Yu & Zhang, 2019). This demand for oil has also observed the trade internationally which impacts the economic development. The high use of machinery and vehicles internationally also contributed to the increasing demand for oil. Instead of developed countries, many developing countries have also been countered in importing oil due to the rise in vehicle usage. Therefore, the increasing international demand for oil sometimes poses a significant as well as insignificant impact on economic development. This is due to seek of power globally which could also be damaging to the human. China has played a vital role in the hike of international demand for oil by placing demand and maintaining high storage (Wu, Liang, Yang, & Chou, 2020). This changed the dynamics of global oil prices where the single country dominated among many other countries supplying and demanding oil. Some patterns of oil have been seen influencing economic development. This change is the clear adjustment of consumption and production events which are probable in the rising demands of oil internationally. The consistent rise in demand for oil also helps in rising the economic

development which also elaborates the frequency of benefits to the developing countries.

This frequency provides many corresponding elements which are influential toward economic development. Stock markets are also importantly described in the developing countries facing the influence of oil demands and frequent change in oil prices (Shlimon et al., 2020). This is pertinent with the consistency in supply effects which are distinguished with the variability of stock returns for economic development. The demands and supplies of oil are important elements that contribute a significant portion to economic development. Internationally, the oil demands have instigated a prominent influence on the economies of some countries which have a lack of oil resources. Due to consistent usage of machinery, the oil demand is increased internationally among many companies. A hike in oil prices has stated the downturn conditions for the economies which have faced immense recession. In some countries, the abundance of economic growth and oil are defined with the prevalence of curse in natural resources (D. O. Olayungbo & Adediran, 2017). This is a clear indication of a long-run association between economic growth and oil revenue. Frequent oil shocks have been highlighted in the international trends which not only enhanced the demands of international oil but also directly impacted the economies. These large shocks of oil also increased the production as well as the demand internally. The wonders of change in oil prices have depicted a positive contribution to economic development. Mostly, the oil-producing countries have more benefited themselves due to the international hike in demand and supplies. The effects of quality of institutions and oil revenue are dominated over the economic growth with the relevance of oil demands (Koh, 2017). It confirms the policies and procedures which are attractive toward economic development.

During the indefinite conditions of international economies, the capacity of oil production has been restrained which states a negative indication to the economic development. Usually, the capacity is linked with the consumption of oil in other countries which are usually prevalent in oil production. Various measurements of oil production in the oil-producing countries have posed plenty of elements for the development of effective policies for oil capacities. Various communities have inserted a vital role in the oil production capacity with the composition of consumption and supply (Joumayle, 2017). The pertinence of oil capacity in some countries has a dominant impact on economic development is emphasized internationally. This induced positive policy development which is beneficial for the oil-

producing countries to uplift capacity measures of oil production. During the critical conditions of international economies, the extra capacity elements are beneficial for the developing countries which could help themselves through storage. The Iraqi oil described the prominent institutional change that irrupted the production of oil and its capacity (Hülse & Camponogara, 2017). This stated the change of performance in the trade of oil which lasted an impact on economic development. The hiking demands of oil by oil-importing countries have forced the oil-producing countries to develop effective policies in oil production. This led the oil-producing countries in developing alternative capacities beyond the actual demands which have uplifted the economic development. Different countries have different storage measures for oil production which vary upon the demand as well as consumption.

Some robust formulations are required in the economic development by setting the wells of oil (Das, Bhatia, Pillai, & Tiwari, 2018). This optimization of oil production capacity is a positive measure toward economic sustainability. Some countries have huge production but the level of capacity for storage is not steady due to lack of resources and economic conditions. Therefore, the oil production capacity is the mandatory element for oil-producing countries. This mandatory requirement could also benefit the countries in uplifting the economic conditions. Most of the consumption of oil and production of oil are interrelated with each other due to the confronting situations of competitors internationally. While elaborating on the elements of oil, the certainty of other macroeconomic elements asserts impact on the economic development (Chekouri, Chibi, & Benbouziane, 2017). The demands for oil have been enhanced due to the outpacing gains in excess capacity and oil production. This states the increasing urbanization and industrialization posing significant economic development. Trends of oil production capacity sometimes also result in losses due to lack of demand in the international markets which also influences economic development. The benefit of capacity also beneficial in the high demands when the

consumption of oil increases. The relationship between the prices of oil and the economy of many countries has been revisited due to consideration of other proxies (Aloui, Hkiri, Hammoudeh, & Shahbaz, 2018). The driven supply of oil is positively related to the capacity of oil production which dominates in economic conditions. With the involvement of development in the capacity of oil production, the cycles of growth could be prominent in economic development.

3. RESEARCH METHODS

The present research investigates the influence of oil prices, oil licensing round, oil demand, oil production, and oil sector development on the economic development in Iraq. This study has followed the quantitative methods and extracted secondary data from WDI and trading economies from 1981 to 2019. This study has developed the equation based on past literature given below:

$$ED_t = \alpha_0 + \beta_1 OP_t + \beta_2 OLR_t + \beta_3 OD_t + \beta_4 OPC_t + \beta_5 OSD_t + e_t \tag{1}$$

Where;

ED = Economic Development

t = Time Period

OP = Oil Prices

OLR = Oil Licensing Round

OD = Oil Demand

OPC = Oil Production Capacity

OSD = Oil Sector Development

This study has taken the economic development (ED) as a dependent variable and measured as GDP growth (annual percentage). In addition, five predictors have been used by the study such as oil prices (OP) measured as the changes in oil prices (the base year 1980), oil licensing round (OLR) is measured as the time required to obtained the license (days), oil demand (OD) is measured as the oil consumption (% of GDP), oil production capacity (OPC) is measured as the oil production (% of GDP) and oil sector development (OSD) is measured as the oil sector development expenditures (% of GDP). These constructs with measurements are shown in Table 1.

Table 1: Variables with Measurements

S#	Variables	Measurement	Sources
01	Economic Development	GDP growth (annual percentage)	World Development Indicators
02	Oil Prices	Changes in oil prices (the base year 1980)	Trading Economics
03	Oil Licensing Round	The time required to obtain the license (days)	World Development Indicators
04	Oil Demand	Oil consumption (% of GDP)	Trading Economics
05	Oil Production Capacity	Oil production (% of GDP)	Trading Economics
06	Oil Sector Development	Oil sector development expenditures (% of GDP)	Trading Economics

This research has shown the descriptive statistics showing the means, minimum and maximum values,

and standard deviation. This study has also shown the correlation matrix to check the multicollinearity and

nexus among the variables. This study has executed the ADF unit root test to check the stationarity of the variables, and if the probability values are less than 0.05 at level, then variables are stationary at the level and vice versa. The estimation equation for ADF is as follow:

$$d(Y_t) = \alpha_0 + \beta t + \gamma Y_{t-1} + d(Y_t(-1)) + \varepsilon_t \quad (2)$$

The individual equation for each variable related to the ADF is given as follow:

$$d(ED_t) = \alpha_0 + \beta t + \gamma ED_{t-1} + d(ED_t(-1)) + \varepsilon_t \quad (3)$$

$$d(OP_t) = \alpha_0 + \beta t + \gamma OP_{t-1} + d(OP_t(-1)) + \varepsilon_t \quad (4)$$

$$d(OLR_t) = \alpha_0 + \beta t + \gamma OLR_{t-1} + d(OLR_t(-1)) + \varepsilon_t \quad (5)$$

$$d(OD_t) = \alpha_0 + \beta t + \gamma OD_{t-1} + d(OD_t(-1)) + \varepsilon_t \quad (6)$$

$$d(OPC_t) = \alpha_0 + \beta t + \gamma OPC_{t-1} + d(OPC_t(-1)) + \varepsilon_t \quad (7)$$

$$d(OSD_t) = \alpha_0 + \beta t + \gamma OSD_{t-1} + d(OSD_t(-1)) + \varepsilon_t \quad (8)$$

This study has also executed the ARDL to examine the relationships among the variables, and the estimation equation for ARDL is as under:

$$\begin{aligned} \Delta ED2_t = & \alpha_0 + \sum \delta_1 \Delta ED_{t-1} + \sum \delta_2 \Delta OP_{t-1} + \\ & \sum \delta_3 \Delta OLR_{t-1} + \sum \delta_4 \Delta OD_{t-1} + \sum \delta_5 \Delta OPC_{t-1} + \\ & \sum \delta_6 \Delta OSD_{t-1} + \varphi_1 ED_{t-1} + \varphi_2 OP_{t-1} + \varphi_3 OLR_{t-1} + \\ & \varphi_4 OD_{t-1} + \varphi_5 OPC_{t-1} + \varphi_6 OSD_{t-1} + \varepsilon_1 \end{aligned} \quad (9)$$

Finally, the present research has estimated the error correction model (ECM) by using the following equation:

$$\begin{aligned} \Delta ED_t = & \alpha_0 + \sum \delta_1 \Delta ED_{t-1} + \sum \varphi_2 \Delta OP_{t-1} + \\ & \sum \omega_3 \Delta OLR_{t-1} + \sum \theta_4 \Delta OD_{t-1} + \sum \gamma_5 \Delta OPC_{t-1} + \\ & \sum \varphi_6 \Delta OSD_{t-1} + \delta ECM_t + v_t \end{aligned} \quad (10)$$

4. RESULTS

This research has shown the descriptive statistics showing the means, minimum and maximum values, and standard deviation. The on average ED is 4.098, while OP means the value is 0.394. In addition, on average, OLR is 201.4, while on average, OD is 0.325. Finally, the mean value of OPC is 0.365 and OSD is 0.351. These values are highlighted in Table 2.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ED	4.098	2.554	1.055	11.763
OP	0.394	0.225	0.202	0.463
OLR	201.4	0.541	115.0	247.0
OD	0.325	0.852	0.289	0.604
OPC	0.365	0.414	0.245	0.410
OSD	0.351	0.421	0.242	0.664

This study has also shown the correlation matrix to check the multicollinearity and nexus among the variables. The values highlighted that the no multicollinearity issue in the data because the values are

lower than 0.85. In addition, the nexus among the OP, OLR, OD, OPC, OSD, and ED is positive because the values have shown positive signs. These values are shown in Table 3.

Table 3: Correlation Matrix

Variables	ED	OP	OLR	OD	OPC	OSD
ED	1.000					
OP	0.481	1.000				
OLR	0.435	0.435	1.000			
OD	0.639	0.570	0.575	1.000		
OPC	0.593	0.414	0.443	0.319	1.000	
OSD	0.451	0.387	0.524	0.321	0.695	1.000

This study has executed the ADF unit root test to check the stationarity of the variables, and if the probability values are less than 0.05 at level, then variables are stationary at the level and vice versa. The values

highlighted that OP, OLR, OPC, and OSD are stationary at a level while ED and OD are stationary at first difference. These values are highlighted in Table 4.

Table 4: Unit Root Test

Augmented Dickey-Fuller Test (ADF)	Level	t-statistics	p-values
ED	I(1)	-7.739	0.000
OP	I(0)	-4.013	0.013
OLR	I(0)	-6.245	0.020
OD	I(1)	-7.699	0.000
OPC	I(0)	-5.285	0.000
OSD	I(0)	-2.325	0.000

The ARDL bound test is executed to examine the correlation, and the results indicated that the calculated f-statistics 5.68 is higher than the critical values that

show the correlation exists in the model. These values are shown in Table 5.

Table 5: ARDL Bound Test

Model	F-statistics	Lag	Level of Significance	Bound test critical values	
				I(0)	I(1)
ED/(OP,OLR,OD,OPC,OSD)	5.68	4	1%	4.41	4.77
			5%	3.27	3.69
			10%	2.23	2.49

This short-run analysis of the ARDL approach has revealed that oil prices, licensing round, oil demand, oil production, and oil sector development have a positive and significant association with economic development in Iraq because the positive signs are associated with

beta values, and t-statistics are larger than 1.64 and p-values are lower than 0.05. The R square value 0.5466 has shown that 54.66 percent variations in ED are due to the understudy variables. These links are mentioned in Table 6.

Table 6: Short Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OP)	0.420860	0.160242	2.626403	0.0310
D(OLR)	0.476452	0.241029	1.977115	0.0413
D(OD)	8.601202	1.991072	4.319885	0.0048
D(OPC)	0.190552	0.108634	1.754138	0.0491
D(OSD)	0.421462	0.142542	2.956757	0.0062
CointEq(-1)*	-1.284823	0.283171	-4.537269	0.0000
R-squared	0.546651	Mean dependent var		-0.050852
Adjusted R-squared	0.535255	S.D. dependent var		2.225322

The long-run analysis has revealed that licensing round, oil demand, oil production, and oil sector development

have a positive and significant association with economic development in Iraq. These values are shown in Table 7.

Table 7: Long Term Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OP	0.288623	0.319853	0.902361	0.2622
OLR	2.892114	1.244177	2.324519	0.0332
OD	0.285651	0.161687	1.766691	0.0421
OPC	2.562038	0.643211	3.983199	0.0025
OSD	1.662782	0.323915	5.133389	0.0000
C	0.855174	0.278095	3.075115	0.0055

5. DISCUSSIONS AND IMPLICATIONS

The study results have indicated that the international oil prices are positively linked with the economic development of a country. The study indicates that when the oil prices in the international market are high, a particular country that is engaged in the exports of oil has more foreign exchange, and there are more exploration and refining of oil within the country. Thus, there is high economic growth. These results are in line with the past study of Wen, Min, Zhang, and Yang (2019). This study examines the change in international prices of oil and their influences on the economy of a particular country. It shows that when the oil prices are high at the international market, the inland oil exploration and refining activities are stimulated, and

the economic growth increases. These results are also in line with the past study of Troster, Shahbaz, and Uddin (2018), which shows that the companies which deal in the exploration and refining of oil, and which contributes to the exports of oil products, enjoy more profits and have more productivity in case the international prices are high. In this way, the economy has a high rate of growth. The study results have also indicated that the oil licensing round has a positive relationship with the economic growth of the country. The high frequency to allow the lease of an exploration acreage to oil exploration companies triggers their commercial activities. Thus, their financial performance is high, and the economic growth increases. These results are in line with the past study of Awodumi and

Adeyuyi (2020), which reveals that when an oil exploration company performs under regulations with a great sense of responsibility and enhances the economic growth of the country, the concerned government authority reissues the oil exploration license. Thus, the high share of oil exploration into the local supply and exports leads to high economic growth. These results are also supported by the past study of D. Olayungbo and Olayemi (2018), which shows that oil is used as an energy source and making many food items; thus, the high license round leads to the stimulation in economic activities and rise to economic growth.

The study results have revealed that the international oil demand has a positive association with the economic growth rate of the country. These results are supported by the past study of Brini, Amara, and Jemmali (2017), when there is a high demand for the oil products in the international market, there are high oil prices, a large amount of foreign exchange, and high oil exploration and production within the country. This all indicates the high economic growth of the country. These results are also supported by the past study of Aloui et al. (2018), which shows that the countries which have high international demand for the local oil products have high economic growth as there is a high oil exploration, refining, and production of oil products, and thus, the high employment rate in the country. The study results have also indicated that the oil production capacity of the country has a positive association with its economic growth. The more the oil production capacity of the country, the more is the fulfillment of local and international market demands of oil. These results are in line with the past study of Dash, Sethi, and Bal (2018), which indicates that in the countries which have more capacity for exploration and production of crude and refined oil, there is more employment and more productivity in other economic sectors. It also enables the country to export its oil products to several foreign countries, which increases the foreign exchange earnings. This all determines a high economic growth rate. These results are in accordance with the study of Tamba (2017), which indicates that as the oil products are used as an energy source or as a raw material in many economic organizations, the production of crude and refined oil has great economic significance. The capacity of the country to explore and produce oil products determines the productivity and employment within the country, and thus, it drives the economic growth rate of the country.

The study results have also indicated that the oil sector development has positive impacts on the economic growth of the country. The high development in the oil sector provides a large amount of oil supply to meet

local oil needs and to export the oil products to earn foreign exchange. Thus, oil development leads to high economic growth. These results are in line with the past study Pramudya, Hospes, and Termeer (2017), which indicates that the high rate of development in the overall oil sector stimulates activities in all the other economic sectors because it meets the energy needs in that sector. In this way, the development in the oil sector gives a chance to the economy to grow at a high rate. These results are also supported by the literary work out of Ogbonna, Mobosi, and Ugwuoke (2020), which the importance of oil sector development in a developing economy like Nigeria. This literary workout suggests that the country where there is high development in the oil sector has a high economic growth rate. First, this creates stimulation in the economic activities by providing them energy source and raw-material, and the surplus oil quantity can be exported to earn foreign exchange.

Theoretical, as well as an empirical implication, has been carried on by this study. It has great theoretical significance because of its contribution to the literature on the economy. Our study expands the scope of literature as it deals with the influences of five oil factors like international oil prices, oil licensing round, international oil demand, oil production capacity, and oil sector development on the economic growth rate of the country. Many studies have dealt with the aforementioned factors and checked their influences on economic growth, but they have done so separately. So, our study is a distinction as it addresses the influences of all these factors simultaneously. The study suggests that the international oil prices, oil licensing round, international oil demand, oil production capacity, and oil sector development contribute a lot to the economic growth of the country. This study also has a great empirical significance in an emerging economy like Iraq. This study is suitable for the upcoming researchers while examining this area in the future and also guided the regulators while developing the regulations related to the oil sector development and economic development. This study gives a guideline to the economists on how to increase the economic growth rate of the country with high international prices, highly frequent oil licensing round, increasing international oil demand, high oil production capacity, and high rate of oil sector development.

6. CONCLUSION

Our study aims at examining the change in the economic growth rate in Iraq due to change in economic factors like international oil prices, oil licensing round, international oil demand, oil production capacity, and oil sector development. Our study examines that the change

in international oil prices influences a great the economic growth of the country. When the oil prices in the international market increase, the countries which deal in the export oil products have more economic growth as the high prices, the international market gives more foreign exchange, and there are more exploration and more production of oil production in the country. The oil licensing round leads to the high economic growth rate of the country. When the government frequently reissues the license for oil exploration and production, there is a large amount of oil exploration and high productivity in oil and other sectors in the country. Thus, there is high economic growth. The study suggests that the international oil demand influences the economic growth rate of the country. When there is a high demand for the local oil products in the international market, the productivity in the sector increases within the country and gives high economic growth. Similarly, the study suggests that in the countries which have more oil exploration and production capacity, there is more productivity in all the economic sectors, including the oil sector and high employment rate. This leads to high economic growth. The study highlights that when the country has high development in the oil sector, there is fluency in the economic activities as the oil sector meets the energy needs of many economic enterprises, thus, determines the high economic growth.

The present study has certain limitations that require the attention of future authors. First of all, the study has addressed only oil-related factors like international oil prices, oil licensing round, international oil demand, oil production capacity, and oil sector development as the drivers of economic growth. While there are many other economic factors that have a deep impact on the economic growth of the country, but these factors have not been explored by this study. For the broader scope of the study, future authors are recommended to address more factors. Moreover, the author has extracted the quantitative data regarding the contribution of the aforementioned factors in achieving high economic growth from a limited time of 1981 to 2019. The data extracted from a limited time is limited both in quantity and validity. Therefore, the author who will intend to replicate this study in the future must extract data from a larger period.

References

- Al-Fehdly, H., ElMaraghy, W., & Wilkinson, S. (2019). Carbon Footprint Estimation for Oil Production: Iraq Case Study for The Utilization of Waste Gas in Generating Electricity. *Procedia CIRP*, 80, 389-392. doi: <https://doi.org/10.1016/j.procir.2019.01.029>
- Albulescu, C. T., Oros, C., & Tiwari, A. K. (2017). Oil price–inflation pass-through in Romania during the inflation targeting regime. *Applied Economics*, 49(15), 1527-1542. doi: [10.1080/00036846.2016.1221041](https://doi.org/10.1080/00036846.2016.1221041)
- Aloui, C., Hkiri, B., Hammoudeh, S., & Shahbaz, M. (2018). A multiple and partial wavelet analysis of the oil price, inflation, exchange rate, and economic growth nexus in Saudi Arabia. *Emerging Markets Finance and Trade*, 54(4), 935-956. doi: <https://doi.org/10.1080/1540496X.2017.1423469>
- Awodumi, O. B., & Adewuyi, A. O. (2020). The role of non-renewable energy consumption in economic growth and carbon emission: Evidence from oil producing economies in Africa. *Energy Strategy Reviews*, 27, 100-132. doi: <https://doi.org/10.1016/j.esr.2019.100434>
- Benramdane, A. (2017). Oil price volatility and economic growth in Algeria. *Energy Sources, Part B: Economics, Planning, and Policy*, 12(4), 338-343. doi: [10.1080/15567249.2015.1128015](https://doi.org/10.1080/15567249.2015.1128015)
- Brini, R., Amara, M., & Jemmali, H. (2017). Renewable energy consumption, International trade, oil price and economic growth inter-linkages: The case of Tunisia. *Renewable and Sustainable Energy Reviews*, 76, 620-627. doi: <https://doi.org/10.1016/j.rser.2017.03.067>
- Cameron, K., & Schnusenber, O. (2009). Oil prices, SUVs, and Iraq: An investigation of automobile manufacturer oil price sensitivity. *Energy Economics*, 31(3), 375-381. doi: <https://doi.org/10.1016/j.eneco.2008.12.003>
- Chekouri, S. M., Chibi, A., & Benbouziane, M. (2017). Algeria and the natural resource curse: oil abundance and economic growth. *Middle East Development Journal*, 9(2), 233-255. doi: [10.1080/17938120.2017.1366772](https://doi.org/10.1080/17938120.2017.1366772)
- Das, D., Bhatia, V., Pillai, J., & Tiwari, A. K. (2018). The relationship between oil prices and US economy revisited. *Energy Sources, Part B: Economics, Planning, and Policy*, 13(1), 37-45. doi: [10.1080/15567249.2017.1403497](https://doi.org/10.1080/15567249.2017.1403497)
- Dash, D. P., Sethi, N., & Bal, D. P. (2018). Is the demand for crude oil inelastic for India? Evidence from structural VAR analysis. *Energy Policy*, 118, 552-558. doi: <https://doi.org/10.1016/j.enpol.2018.04.001>
- de Cárdenas García, J. (2017). The new integrated oil service contracts in a Venezuela in dire straits. *Journal of Energy & Natural Resources Law*, 35(4), 417-431. doi: [10.1080/02646811.2017.1371412](https://doi.org/10.1080/02646811.2017.1371412)
- de Oliveira Bredariol, T. (2020). Developing indicators for environmental licensing the case of the Brazilian

- offshore oil and gas sector. *Impact Assessment and Project Appraisal*, 38(5), 427-440. doi: 10.1080/14615517.2020.1804305
- Hadi, H. (2017). *Regulating the oil and gas sector in Iraq*. (PhD), Thesis or dissertation. (2)
- Hashim, B. M., Sultan, M. A., Al Maliki, A., & Al-Ansari, N. (2020). Estimation of Greenhouse Gases Emitted from Energy Industry (Oil Refining and Electricity Generation) in Iraq Using IPCC Methodology. *Atmosphere*, 11(6), 662-670. doi: 10.3390/atmos11060662
- Hülse, E. O., & Camponogara, E. (2017). Robust formulations for production optimization of satellite oil wells. *Engineering Optimization*, 49(5), 846-863. doi: 10.1080/0305215X.2016.1211128
- Huntington, H. G. (2018). Measuring oil supply disruptions: A historical perspective. *Energy Policy*, 115, 426-433. doi: https://doi.org/10.1016/j.enpol.2017.12.020
- Hussein, A. H. (2019). Analysis of the impact of fluctuations in crude oil prices on OAPEC's foreign trade for the period (2000-2016) / Iraq as a model. *Tikrit Journal Of Administrative and Economic Sciences; Vol 3 No 43 (2018): Vol.3,No43,JAES(2018)*, 3(43), 1-17. doi: <http://jaes.tu.edu.iq/index.php/j/article/view/53>
- Jacob, A. A. (2020). Evaluation of Lead and Copper content in hair of workers from oil product distribution companies in Iraq. *Brazilian Journal of Pharmaceutical Sciences*, 56, 1-18. doi: https://doi.org/10.1590/s2175-97902019000318061
- Ji, Q., & Fan, Y. (2016). Evolution of the world crude oil market integration: A graph theory analysis. *Energy Economics*, 53, 90-100. doi: https://doi.org/10.1016/j.eneco.2014.12.003
- Joumayle, O. A. M. E. (2017). Oil production and abrupt institutional change: the multi-cyclic Hubbert model and the case of Iraq. *Contemporary Arab Affairs*, 10(2), 256-285. doi: 10.1080/17550912.2017.1302059
- Koh, W. C. (2017). How do oil supply and demand shocks affect Asian stock markets? *Macroeconomics and Finance in Emerging Market Economies*, 10(1), 1-18. doi: 10.1080/17520843.2015.1135819
- Lyll, A., & Valdivia, G. (2019). The Speculative Petro-State: Volatile Oil Prices and Resource Populism in Ecuador. *Annals of the American Association of Geographers*, 109(2), 349-360. doi: 10.1080/24694452.2018.1531690
- Nawaz, M. A., Hussain, M. S., Kamran, H. W., Ehsanullah, S., Maheen, R., & Shair, F. (2020). Trilemma association of energy consumption, carbon emission, and economic growth of BRICS and OECD regions: quantile regression estimation. *Environmental Science and Pollution Research*, 1-15.
- Nawaz, M. A., Seshadri, U., Kumar, P., Aqdas, R., Patwary, A. K., & Riaz, M. (2021). Nexus between green finance and climate change mitigation in N-11 and BRICS countries: empirical estimation through difference in differences (DID) approach. *Environmental Science and Pollution Research*, 28(6), 6504-6519. doi: https://doi.org/10.1007/s11356-020-10920-y
- Ogbonna, O. E., Mobosi, I. A., & Ugwuoke, O. W. (2020). Economic growth in an oil-dominant economy of Nigeria: The role of financial system development. *Cogent Economics & Finance*, 8(1), 181-199. doi: https://doi.org/10.1080/23322039.2020.1810390
- Olayungbo, D., & Olayemi, O. (2018). Dynamic relationships among non-oil revenue, government spending and economic growth in an oil producing country: Evidence from Nigeria. *Future Business Journal*, 4(2), 246-260. doi: https://doi.org/10.1016/j.fbj.2018.07.002
- Olayungbo, D. O., & Adediran, K. A. (2017). Effects of Oil Revenue and Institutional Quality on Economic Growth with an ARDL Approach. *Energy and Policy Research*, 4(1), 44-54. doi: 10.1080/23815639.2017.1307146
- Pramudya, E. P., Hospes, O., & Termeer, C. (2017). Governing the palm-oil sector through finance: the changing roles of the Indonesian State. *Bulletin of Indonesian Economic Studies*, 53(1), 57-82. doi: https://doi.org/10.1080/00074918.2016.1228829
- Rustamov, B., & Adaoglu, C. (2018). Oil production cost, financial development, and economic growth in Russia. *Energy Sources, Part B: Economics, Planning, and Policy*, 13(6), 301-309. doi: 10.1080/15567249.2018.1477868
- Saleh, M. Q., Hamad, Z. A., & Hama, J. R. (2021). Assessment of some heavy metals in crude oil workers from Kurdistan Region, northern Iraq. *Environmental Monitoring and Assessment*, 193(1), 49-61. doi: 10.1007/s10661-020-08818-w
- Sen, S., & Uzunoz, M. (2017). Is Economic growth sensitive to oil consumption shocks in Turkey? *Energy Sources, Part B: Economics, Planning, and Policy*, 12(1), 70-76. doi: 10.1080/15567249.2016.1170907
- Shlomon, A. G., Mansurbeg, H., Othman, R. S., Gittel, A., Aitken, C. M., Head, I. M., . . . Kjeldsen, K. U. (2020). Microbial Community Composition in Crude Oils and Asphalts from the Kurdistan Region

- of Iraq. *Geomicrobiology Journal*, 37(7), 635-652. doi: 10.1080/01490451.2020.1753131
- Smyth, R., & Narayan, P. K. (2018). What do we know about oil prices and stock returns? *International Review of Financial Analysis*, 57, 148-156. doi: <https://doi.org/10.1016/j.irfa.2018.03.010>
- Sun, H., Awan, R. U., Nawaz, M. A., Mohsin, M., Rasheed, A. K., & Iqbal, N. (2020). Assessing the socio-economic viability of solar commercialization and electrification in south Asian countries. *Environment, Development and Sustainability*, 1-23. doi: <https://doi.org/10.1007/s10668-020-01038-9>
- Tamba, J. G. (2017). Crude oil production and economic growth: Evidence from Cameroon. *Energy Sources, Part B: Economics, Planning, and Policy*, 12(3), 275-281. doi: 10.1080/15567249.2015.1101511
- Troster, V., Shahbaz, M., & Uddin, G. S. (2018). Renewable energy, oil prices, and economic activity: A Granger-causality in quantiles analysis. *Energy Economics*, 70, 440-452. doi: <https://doi.org/10.1016/j.eneco.2018.01.029>
- Waleed, A., Akhtar, A., & Pasha, A. T. (2018). Oil consumption and economic growth: Evidence from Pakistan. *Energy Sources, Part B: Economics, Planning, and Policy*, 13(2), 103-108. doi: 10.1080/15567249.2017.1354100
- Wen, F., Min, F., Zhang, Y. J., & Yang, C. (2019). Crude oil price shocks, monetary policy, and China's economy. *International Journal of Finance & Economics*, 24(2), 812-827. doi: <https://doi.org/10.1002/ijfe.1692>
- Wu, M.-C., Liang, A. Y.-H., Yang, L. T.-Y., & Chou, C.-M. (2020). The non-linear impact of oil price on the oil demand. *Applied Economics*, 52(45), 4992-5004. doi: 10.1080/00036846.2020.1752898
- Yu, Y., & Zhang, W. (2019). The Role of China's Demand in Global Oil Price Dynamics. *Emerging Markets Finance and Trade*, 55(6), 1199-1215. doi: 10.1080/1540496X.2018.1445621
- Zhou, D.-T., Yu, H.-Y., & Li, Z.-G. (2017). Effects of fluctuations in international oil prices on China's price level based on VAR model. *Journal of Discrete Mathematical Sciences and Cryptography*, 20(1), 125-135. doi: 10.1080/09720529.2016.1178909