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Measuring and Analyzing the Impact of Global Oil Price Fluctuations on the Gross Domestic Product in Iraq for the Period 1990-2019

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Abstract

The study examines the impact of global oil price changes on economic growth in Iraq for the period of 1990-2019 using the ARDL model. The gross domestic product (GDP) is used as a proxy for economic growth. The results indicate the presence of a long-run and short-run equilibrium relationship between oil price changes and economic growth in Iraq, meaning there is a long-term and short-term balance between the two variables. The long-run parameters suggest a negative relationship between oil prices (OP) and GDP, indicating that a one-unit change in OP leads to a 0.17% change in GDP, holding other factors constant.

Similarly, the short-run parameters show a negative relationship between OP and GDP, indicating that a one-unit change in OP leads to a 0.36% change in GDP, with a significance level of 0.0020Prob. The estimated error correction term (UECM) has a negative value of -0.15, indicating a significant and negative relationship, with a probability of 0.0214Prob. This reflects the existence of a short-run equilibrium relationship between the variables, moving towards a long-run equilibrium. The UECM value suggests that about 15% of the short-run imbalance in GDP from the previous period (t-1) can be corrected in the current period (t) towards the long-run equilibrium due to a shock or change in the independent variable.

Finally, the study recommends the need to activate the contribution of other sectors to the gross domestic product as a buffer against the impact of global oil price shocks on economic growth in Iraq.

Keywords:

Introduction

Oil markets have witnessed several crises related to oil price fluctuations since the early 1990s up until the present time. The collapse that occurred in 2014 was a turning point in oil prices, sparking a debate on the impact of this decline on oil-exporting countries due to the significance of the oil strategy in the global economy.

Given that the Iraqi economy is primarily rent-based, relying on oil revenues as the main source to drive development, the country's trade balance and various economic activities are highly affected by oil price fluctuations, consequently impacting economic growth. Therefore, this study aims to measure and analyze the impact of oil price fluctuations on economic growth in Iraq using the ARDL program.

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Problem Statement:

The dependence of Iraq on financial revenues from the oil sector as the main source to finance its development programs has made the Iraqi economy susceptible to fluctuations in global oil markets. Therefore, price stability is necessary for sound economic planning and effective economic policies. Considering the volatile nature of the oil market and its implications for economic growth, the problem of the study is posed through the following question:

To what extent do fluctuations in global oil prices affect the Gross Domestic Product (GDP) in Iraq?

Hypothesis:

The study assumes that there is a negative relationship between fluctuations in global oil prices and the GDP growth rate in Iraq.

Importance of the Study:

The significance of the study lies in the role of oil revenues in Iraq's economic growth. Price stability leads to the stability of the country's economy, while price fluctuations can lead to crises and disruptions. Thus, the importance of the study is to present and analyze the significant effects of oil price fluctuations on the Gross Domestic Product (GDP) in Iraq.

Study Objectives:

The study aims to understand the effects of oil price fluctuations on Iraq's economic performance and determine the importance of oil as a crucial element in the production process and a primary factor of production.

Methodology:

The study combines descriptive-analytical methods to present the economic facts contained in the research. Standard analysis methods were employed to measure the relationship between the variables using the ARDL model.

Study Limitations:

1. Geographical Scope: The study focuses on the Iraqi economy.
2. Time Scope: The study covers the period from 1990 to 2019.

Study Structure: To verify the hypothesis and achieve its main objective according to the adopted methodology, this study is divided into sections, including an introduction, conclusions, and recommendations.

The first section focused on the theoretical framework of the oil sector and the Gross Domestic Product (GDP) through two sub-sections. The first sub-section addressed the theoretical framework of the oil sector, while the second sub-section covered the theoretical framework of the Gross Domestic Product (GDP).

As for the second section, it was dedicated to studying the analysis of the reality of the oil sector and the Gross Domestic Product (GDP) in the Iraqi economy through two sub-sections. The first sub-section analyzed the reality of the oil sector in Iraq for the period 1990-2019, while the second sub-section analyzed the reality of the Gross Domestic Product (GDP) in Iraq for the period 1990-2019.

The third section was devoted to studying the measurement and analysis of the relationship between global oil prices and the Gross Domestic Product (GDP) in Iraq for the period 1990-2019, through two sub-sections. The first sub-section addressed the theoretical framework of the standard model used, while the second sub-section focused on estimating and analyzing the relationship between the variables of the standard model

Second Topic: The Reality of the Oil Sector and Gross Domestic Product in the Iraqi Economy

Introduction: The Iraqi economy has gone through two stages during the study period: the first stage (2002-1990) characterized by economic deterioration due to economic sanctions, the burden of the Gulf War, the destruction of infrastructure, the ban on oil exports, and the suffocating blockade imposed on Iraq during that period. This had a negative impact on the reality of the Iraqi economy. The second stage (2019-2003) was a period of change characterized by the lifting of economic sanctions, oil exports, and openness to the external world.

First Issue: Analysis of the reality of the oil sector in Iraq for the period 1990-2019.

First: The growth of Iraqi oil prices in the OPEC basket, its quantities, and its value for the period 1990-2019. After 1973, oil prices experienced continuous growth because oil-producing countries gained significant control over price mechanisms following the establishment of OPEC. They had a significant influence on the quantities of oil supplied to the global markets. When they perceived that supply exceeded demand, the organization worked on reducing the amount of oil exported to those markets in order to maintain prices as high as possible. This is regardless of external factors beyond OPEC's control, such as geopolitical, natural, or health-related circumstances, which play a major role in oil shocks.

The prices of Iraqi oil within the OPEC basket witnessed continuous growth during the study period. In 1990, the price of a barrel of oil was $16.56, which continued to rise until 1998 when these prices dropped to $10.17 per barrel. This decrease in prices was the result of the negative oil shock caused by the Asian Tigers crisis during that period, which affected the economic growth in Southeast Asian countries. Afterward, oil prices began to rise again rapidly due to global economic growth, especially between 2004 and 2008, reaching $87.93 per barrel in 2008. However, in 2009, prices dropped to $59.40 per barrel due to the global financial crisis that originated from the United States due to the subprime mortgage crisis. It then spread to stock exchanges, banks, and insurance companies in America and Europe. However, this decrease in oil prices did not last long as Iraqi oil prices reached their highest level in history during the study period. In 2012, the price per barrel reached $106.01. This achievement was attributed to global economic growth and the resurgence of oil demand. Nevertheless, this increase did not last long. In 2014, the third negative oil shock occurred for oil-producing countries, and prices dropped to their lowest level. In 2016, the price per barrel reached $36.10. One of the main reasons for this price decrease was the increase in US crude oil inventories due to expectations of future increases in oil futures prices in global exchanges. Additionally, some OPEC members exceeded their allocated export quotas, and a price war was initiated by Saudi Arabia, supported by OPEC members, to eliminate US shale oil producers and slow down the global economy. Moreover, there was a political conflict between the United States and Saudi Arabia on one side, and Russia and Iran on the other. Therefore, this price decrease was more politically driven than economically driven (Shanta Devarajan, 2016, pp. 2-10). The compound growth for daily oil exports was 2.52%, for the quantity of exported oil was 2.52%, for the price per barrel was 4.54%, and for the value of exported crude oil was 7.17% during the study period. Refer to Table (1) below

Table (1) the quantity and value of Iraqi crude oil exported and the price per barrel for the period 1990-2019

Exported Crude Oil Value (Million USD/year)	Barrel Price (USD)	Exported Oil Quantity (Million barrels/year)	Daily Export Rate (Million barrels/day)	Year
9932.69	16.56	599.80	1.64	1990
276.71	19.35	14.30	0.04	1991
380.12	17.20	22.10	0.06	1992
330.46	15.37	21.50	0.06	1993
291.49	13.31	21.90	0.06	1994
350.67	15.05	23.30	0.06	1995
657.79	17.13	38.40	0.10	1996
4609.44	17.60	261.90	0.72	1997
5816.22	10.17	571.90	1.57	1998
12012.72	15.85	757.90	2.08	1999
18528.87	24.61	752.90	2.06	2000
13412.01	18.27	734.10	2.01	2001
13489.85	22.80	591.66	1.62	2002
5098.38	25.62	199.00	0.55	2003
17663.80	31.38	562.90	1.54	2004
23418.50	45.66	512.90	1.41	2005
29777.48	54.20	549.40	1.51	2006
39789.46	66.36	599.60	1.64	2007
59537.40	87.93	677.10	1.85	2008
41306.76	59.40	695.40	1.91	2009
52199.26	75.65	690.01	1.89	2010
82989.50	105.05	790.00	2.16	2011
94020.27	106.01	886.90	2.42	2012
89170.72	102.26	872.00	2.39	2013
84129.87	91.63	918.18	2.52	2014
49058.19	44.73	1096.78	3.00	2015
43622.93	36.098	1208.44	3.31	2016
59560.34	49.312	1207.82	3.31	2017
92496.00	65.600	1410.00	3.86	2018
79310.12	62.8	1262.9	3.46	2019
7.17	4.54	%2.52	2.52	compound growth %

Source: Ministry of Planning, Central Statistical Organization, Baghdad, Iraq. OPEC, various reports

Through the data, it can be observed that Iraqi oil prices exported to global oil markets have experienced significant fluctuations during the study period, resulting from political and economic reasons, especially in 1998, 2009, and 2016. The prices were $10.17, $59.40, and $36.98, respectively. These price fluctuations occurred after each oil shock in the global markets, as depicted in Figure 1 below.

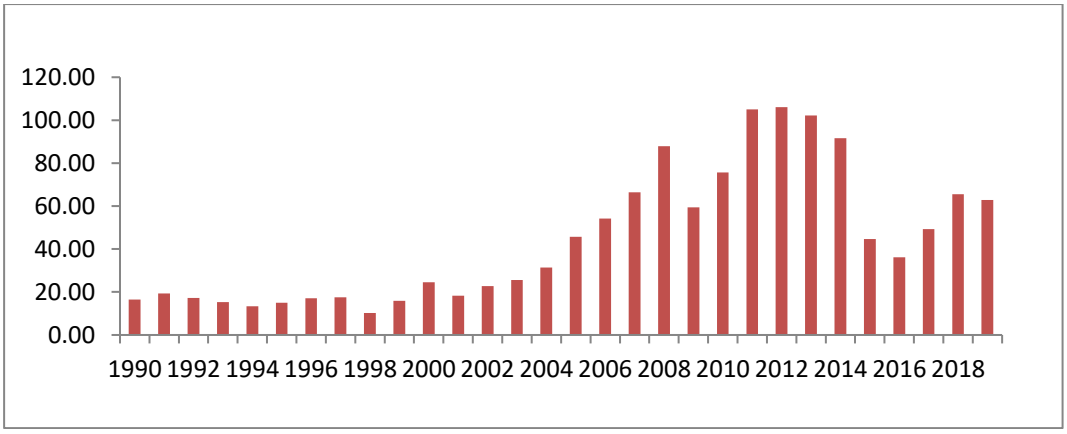

Figure 1: Prices of Iraqi crude oil per barrel exported during the period 1990-2019. Source: Data from Table 1.

In 1990, Iraq's oil exports were 599.80 million barrels annually, with a daily average of 1.64 million barrels. However, after the imposition of international sanctions on Iraq due to the Gulf War, these quantities plummeted to their lowest levels in history. The quantities started to recover when the Oil-for-Food program was established, reaching 752.90 million barrels annually in 2000, with a daily average of 2.06 million barrels. However, there was a decline again in 2003 due to the Iraq War, with exports reaching 199.00 million barrels annually, equivalent to a daily average of 0.55 million barrels. After that, Iraq's share of exported oil increased, reaching 1,410.00 million barrels annually in 2018, with a daily average of 3.86 million barrels. This represents the highest quantity of oil exports during the study period.

Furthermore, the data reveals that the quantity of exported oil is not always subject to the law of decreasing prices. In 1998, prices reached their lowest point at $10.17 per barrel, while the quantity of exported oil continued to increase, reaching 571.90 million barrels annually in the same year. Conversely, in 2003, the price per barrel reached $25.62, while the quantity of Iraqi oil exports decreased to 199.00 million barrels annually. This pattern can be observed for the rest of the years during the study period.

It is evident that political factors played a larger role than economic factors in determining the quantity of Iraqi oil exported to global markets. This is in addition to the quotas determined by OPEC for each member country, including Iraq, which all members are obliged to adhere to.

(Note: The translation of specific figures and references to Figure 1 may vary based on the actual data provided in Table 1.)

Analysis of the Gross Domestic Product (GDP) in Iraq for the period 1990-2019

The Gross Domestic Product (GDP) is one of the indicators that reflect the level of economic performance of a country. Analyzing the growth of GDP and its sectoral structure is essential to identify areas of dysfunction and address them. The GDP in Iraq, at current prices, has witnessed significant fluctuations due to the circumstances the country has gone through, such as wars and economic sanctions imposed on it from 1990 until the present time.

Firstly, analyzing the evolution of GDP:

The GDP in Iraq has experienced clear fluctuations due to the circumstances of wars and economic sanctions. As observed from Table (2), the GDP reached 55,926.5 million dinars in 1990, then declined to 42,451.6 million dinars in 1991, which represents its lowest level. This decline in GDP can be attributed to the outbreak of the First Gulf War and the entry of Iraqi forces into Kuwaiti territories, which resulted in the destruction of infrastructure, factories ceasing production, a significant decline in oil exports, and a

decrease in investment. With the end of the war and the return to normalcy, the GDP started to rise again, witnessing qualitative improvements. This was attributed to increased production in the public sector and support for the agricultural and industrial sectors.

With the intensification of economic sanctions imposed by the United Nations, which led to a decline in industrial and agricultural production and the deterioration of the performance of other productive and service sectors, the GDP value deteriorated. However, after signing the memorandum of understanding with the United Nations, which included the oil-for-food program, the GDP started to recover and continued to increase, reaching 50,213,699.9 million dinars in 2000, with an annual growth rate of 45.6%. Afterwards, it gradually decreased to 41,022,927.4 million dinars in 2002, with a negative growth rate of 0.7%. The decline can be attributed to the decrease in global demand for oil following the events of September 2001 and the repercussions of the war that occurred in 2003.

Regarding the period from 2019 to 2003, it witnessed fundamental changes in various aspects of economic activity due to the change in the governance system in 2003. The GDP started to increase steadily during this period, except for some years characterized by exceptional circumstances. The total GDP increased significantly compared to previous years due to the opening of the Iraqi economy to the outside world after the lifting of economic sanctions and the significant increase in Iraqi oil exports, which contributed to an increase in GDP, strengthening the Iraqi dinar, and an increase in the exchange rate against foreign currencies. The GDP continued to gradually increase with varying growth rates. The value added of the oil sector increased, along with the rise in crude oil revenues resulting from increased export quantities and oil prices. This had a positive impact on the recovery of the Iraqi economy. However, the global crisis in 2008 and its impact on the global demand for oil led to a decline in oil prices and export quantities, resulting in a decrease in the GDP growth rate. Afterward, the GDP started to increase again due to the end of the global crisis, the increase in global demand for oil, the rise in oil prices, and the improvement of the security situation. However, this increase was short-lived as a result of the security situation in Iraq at the beginning of 2014, characterized by the entry of terrorist groups and their control over some provinces, in addition to the sharp decline in oil prices and the deterioration of oil revenues. Then, the GDP gradually increased again, reaching 251,064,479.9 million dinars in 201%

Table (2): The evolution of the gross domestic product in Iraq for the period 1990-2019

growth rate %	gross domestic product	the years	growth rate %	gross domestic product	the years
4	**3**		**2**	**1**	
38.1	**73533598.6**	**2005**	**-**	**55926.5**	**1990**
29.9	**95587954.8**	**2006**	**-24.09**	**42451.6**	**1991**
16.6	**111455813.4**	**2007**	**171.1**	**115108.4**	**1992**
40.8	**157026061.6**	**2008**	**179.4**	**321646.9**	**1993**
-16.8	**130643200.4**	**2009**	**415.5**	**1658325.8**	**1994**
24.05	**162064565.5**	**2010**	**303.7**	**6695482.9**	**1995**
34.09	**217327107.40**	**2011**	**-2.9**	**6500924.6**	**1996**
16.9	**254225490.7**	**2012**	**132.1**	**15093144.0**	**1997**
7.6	**273587529.2**	**2013**	**13.4**	**17125847.5**	**1998**
-2.6	**266332655.1**	**2014**	**101.2**	**34464012.6**	**1999**
-26.9	**194680971.8**	**2015**	**45.6**	**50213699.9**	**2000**
1.1	**196924141.7**	**2016**	**-17.7**	**41314568.5**	**2001**
14.6	**225722375.5**	**2017**	**- 0.7**	**41022927.4**	**2002**
11.2	**251064479.9**	**2018**	**27.9-**	**29585788.6**	**2003**
10.6	**277884869.4**	**2019**	**79.9**	**53235358.7**	**2004**

Source: Table (2) prepared by the researcher based on:

*-Ministry of Planning, Central Statistical Organization, National Accounts Directorate. Columns (2) and (4) were derived from columns (1) and (3).

**- The annual growth rate was calculated using the following equation: (Comparison year value - Base year value) / Base year value * 100.

Figure (2) illustrates the development path of the Gross Domestic Product (GDP) over the study period (1990-2019). The highest level was reached in 2013, where it amounted to (273,587,529.2) million dinars. The reason behind this was the increase in global oil prices during this period, the increase in exports, and the improvement in the security situation, which in turn led to an increase in oil revenues. On the other hand, the lowest level was recorded in 1991, reaching (42,451.6) million dinars, which was very low due to the economic sanctions imposed on Iraq in the 1990s and the cessation of oil exports after the Gulf War. The compound growth rate was (35.03%) and the average annual growth rate was (54.5%) for the studied period (1990-2018), as shown in the graphical representation.

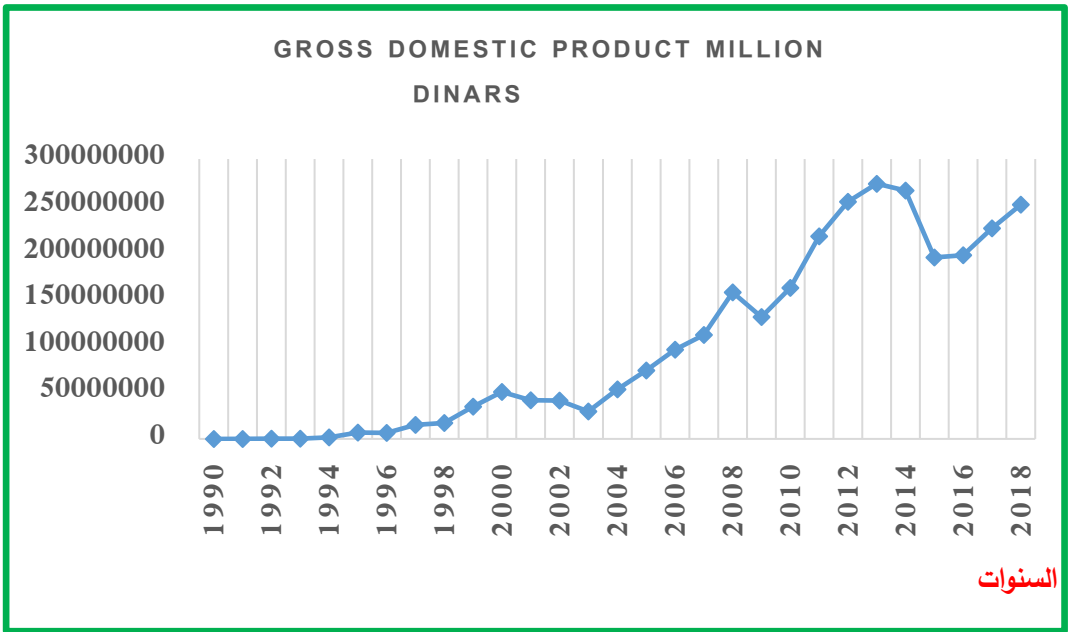

Figure (2): The trajectory of the GDP trend in Iraq for the period (1990-2019)

Source: prepared by the researcher based on the data of Table (2).

The Third Section:

Measurement and Analysis of the Relationship between Global Oil Prices and Gross Domestic Product (GDP) in Iraq for the period 1990-2019.

First Requirement: Study Variables and Unit Root. Firstly, Model Variables: Table (3): Standard Model Variables.

variable symbol	The name of the variable in Arabic	variable type
OP	Oil prices	independent
GDP	gross domestic product	continued

Source: The table prepared by the researcher based on the description of the model0.

Secondly, Unit Root Test: Phillips-Perron (P-P) Test. The P-P test is considered more accurate for small sample sizes compared to the Augmented Dickey-Fuller (ADF) test. Therefore, we will present the results of the P-P test and compare them with the ADF test

results. The results of both tests were similar and did not stabilize at the level, but stabilized at the first difference (1) and at the constant term (Intercept) for all variables. Hence, we reject the null hypothesis (H0=0) and accept the alternative hypothesis (H1=1), as shown in the following table.

Table (4): Phillips-Perron test statistic

Stability test						
Variables variants	**The Level**			**1st Difference(The first difference)**		
	PP	**Sig.**	**Result**	**PP**	**Sig.**	**Result**
OP	**-0.302915**	**0.9131**	**No stationary**	**-7.467289**	**0.0000**	**stationary**
GDP	**0.494091**	**0.9836**	**No stationary**	**-4.238452**	**0.0025**	**stationary**

Source: The table was prepared by the researcher using the program (10Eviews).

The second requirement: measuring and analyzing the relationship between oil prices and GDP.

1. Testing the Autoregressive Distributed Lag (ARDL) model. After testing the stationarity of the time series for the economic variables (oil prices) as the independent variable and (GDP) as the dependent variable, it was found that all variables were stationary at the first difference (I(1)). With this condition fulfilled, we were able to apply the ARDL model test, and the table below illustrates the test results for this model.

Table (4) presents the results of the ARDL model test. It shows that the adjusted R-squared indicates that the variable G, as an independent variable, explains 98% of the variations in the dependent variable GDP. The remaining 0.2% is attributed to other factors

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob*.**
R^2	**0.985063**	**D-W**	**1.455535**	**Prob(F-statistic)**	**0.00000**

In other words, the entry in the model indicates that 98% represents the ability of the independent variable (OP) to predict the dependent variable (GDP). The F-statistic test, with a probability level of less than 5% (Prob. 0.0000), indicates the overall significance of the model from a statistical perspective. Additionally, the Durbin-Watson statistic (D-W), which has a value of 1.455535, suggests that the model is free from autocorrelation issues.

The Bound Test is used to determine the existence of a long-term equilibrium relationship (cointegration) between the independent variable (oil prices) and the dependent variable (GDP). This is done by comparing the F-statistic with the critical upper and lower bounds. The results of the Bound Test are presented in Table (5)

Table 5

(user statistical test) Test Statistic	**(calculated value)Value**	**(number of independent variables) K**
F-statistic	**22.58639**	**1**
(Critical Value Bound) tabular value		
Moral level	**I0 Bound**	**I1 Bound**
10%	**3.02**	**3.51**
5%	**3.62**	**4.16**
2.5%	**4.18**	**4.79**
1%	**4.94**	**5.85**

Source: Table prepared by the researcher based on the appendix

From Table (5), we can observe that the calculated value of the F-statistic is 22.58639, which is greater than the maximum and minimum critical values of 4.16 and 3.62, respectively, at a significance level of 5%. This indicates that we reject the null hypothesis and accept the alternative hypothesis. Therefore, it implies the presence of a long-term equilibrium relationship (cointegration) between oil prices and GDP, indicating a long-term relationship between the two variables.

The estimated parameters test (short-term) and the unrestricted error correction coefficient.

The estimated parameters test reveals the estimation of short-term parameters to determine the degree of influence of the independent variable on the dependent variable, as well as the type of short-term relationship. It also illustrates the error correction coefficient, which represents the speed of adjustment towards long-term equilibrium. The table below presents the results of estimating the error correction model and the short-term relationship.

Table (6): Results of estimating the error correction model and the short-term relationship.

Variable	Coefficient	Std. Error	t-Statistic	Prob*.
C	2.725170	0.451932	6.030044	0.0000
LOGGDP(-1)*	-0.158978	0.064938	-2.448142	0.0214
LOGOP(-1)	0.027950	0.083538	0.334576	0.7406
D(LOGOP)	0.369264	0.107325	3.440612	0.0020

Source: Table prepared by the researcher based on the appendix (199-5).

From Table (6), we observe the results of estimating the parameters of the independent variable in the short term. The table illustrates the inverse relationship between OP and GDP, indicating that a one-unit change in OP leads to a change of 0.36% in GDP, with a significant level of 0.0020 (Prob). This result is consistent with the logic of economic theory, and the value of 0.43% represents the short-term marginal propensity of GDP.

Furthermore, the estimated error correction coefficient (UECM) has a negative value of -0.15, which is significant with a probability of 0.0214 (Prob). This reflects the existence of a short-term equilibrium relationship between the studied variables towards a long-term equilibrium relationship. The value of the error correction coefficient indicates that 15% of the previous period's imbalance in GDP (at time t-1) can be corrected in the current period (at time t) towards the long-term equilibrium relationship due to any shock or change in the independent variable. In other words, GDP takes approximately 6.66 years to converge towards the equilibrium value in response to a shock or change in the independent variable in the model.

The Long-Term Parameters Estimation Test aims to estimate the parameters in the long term in order to detect the degree of influence of the independent variable on the dependent variable and determine the type of long-term relationship.

The results of estimating the long-term parameters are presented in Table (7).

Levels Equation **Case 2: Restricted Constant and No Trend**				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob*.**
LOGOP	**0.175809**	**0.458263**	**0.383643**	**0.7044**
C	**17.14182**	**4.985680**	**3.438211**	**0.0020**

Source: The table was prepared by the researcher based on the appendix (5-

The table (7) provides us with the results of estimating the long-term parameters. The table shows a positive relationship between (OP) and (GDP), indicating that a unit change in (OP) leads to a change of 0.17% in (GDP), holding other factors constant. The statistical significance level is (Prob = 0.7044), which is economically logical. As oil prices increase, the GDP also tends to increase, and the 0.17% represents the long-term elasticity of GDP with respect to oil prices.

During the estimation of short-term parameters in table (5), it becomes evident that there is a negative relationship between oil prices and GDP. The coefficient of the dependent variable (GDP) did not exceed 0.36, indicating that the negative relationship in the short term will persist in the long term. In other words, as oil prices rise, GDP increases, which aligns with the reality of the Iraqi economy.

1- Performing diagnostic tests for estimated residuals.

To ensure the accuracy and reliability of the results obtained in the previous tests, we will conduct some important diagnostic tests to validate them. The following tests will be conducted:

A. Serial Correlation LM Test: This test is used to examine whether the estimated model is free from the problem of serial correlation in the residuals. The results of the test are presented in Table (8):

Table (8): Results of the Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	**2.714333**	**Prob .F(1,25)**	**0.1120**
Obs*R-squared	**2.938190**	**Prob. Chi-Square(1)**	**0.0865**

Source: Table prepared by the researcher based on the outputs of Eviews 10 software.

The table (8) presents the results of the test for serial correlation, and it is observed that the value of the F-statistic at a significance level of (0.1120Prob =) is greater than 5%. This implies the absence of serial correlation, and thus we accept the null hypothesis, which states that there is no correlation problem among the residuals. We reject the alternative hypothesis, which suggests the presence of a correlation problem among the residuals. Therefore, this test enhances the accuracy of the ARDL model results.

The ARCH (Autoregressive Conditional Heteroscedasticity) Heteroskedasticity Test: This test is used to verify the absence of heteroscedasticity in the estimated model residuals, as illustrated below:

Table (9): Results of the ARCH Heteroskedasticity Test.

Heteroskedasticity Test: ARCH			
F-statistic	**0.000574**	**Prob .F(1,12)**	**0.9813**
Obs*R-squared	**0.000669**	**Prob. Chi-Square(1)**	**0.9794**

The table: Prepared by the researcher based on the outputs of Eviews 10 software.

The table (9) shows the results of the ARCH heteroskedasticity test. We observe that the value of the F-statistic at a probability level of (Prob = 0.9813) is greater than 5%. This indicates that the model is free from heteroskedasticity issue. Therefore, we accept the null hypothesis, which states that there is no heteroskedasticity among the residual variances, and reject the alternative hypothesis, which suggests the presence of heteroskedasticity among the residual variances. Hence, this test enhances the accuracy of the ARDL model results

Conclusions:

1. The unit root test indicates that all variables are stable in both levels and first differences.

2. The adjusted R-squared value shows that the independent variable (OP) explains 98% of the variation in the dependent variable (GDP), while 0.2% can be attributed to other factors not included in the model. In other words, 98% represents the predictive power of the independent variable (OP) for GDP.

3. The F-statistic test at a probability level of (Prob = 0.0000) is less than 5%, indicating overall statistical significance of the model.

4. The Durbin-Watson statistic with a value of 1.455535 suggests that the model is free from autocorrelation.

5. The table shows a negative relationship between (OP) and (GDP). A unit change in (OP) leads to a change in GDP of 0.36% at a significance level of (Prob = 0.0020), holding other factors constant. This is consistent with economic theory, and the value of 0.43% represents the marginal effect on GDP.

Recommendations:

1. Address structural imbalances in the Iraqi economy by diversifying the contribution of economic sectors to GDP, reducing reliance on the oil sector, and promoting sectors such as agriculture, industry, banking, services, and tourism.

2. Focus on the manufacturing sector by identifying obstacles and challenges it faces, evaluating the performance of its facilities, and implementing appropriate mechanisms for its development.

3. Utilize oil revenues to finance sustainable and productive projects, and use periods of oil price corrections to fund large-scale projects that are difficult to finance through regular investment expenditures.

4. Decision-makers in Iraq should consider the risks associated with oil price volatility when preparing the general state budget.

5. Support and develop the agricultural sector as it offers quick returns and contributes to import substitution.

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