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# THE IMPACT OF OIL REVENUES ON THE CORRUPTION PERCEPTIONS INDEX USING THE ARDL TECHNIQUE IN IRAQ FOR THE PERIOD 2003–2025

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**Abstract**
The current study aims at shedding light on the Iraqi economy, which is characterized by economic dualism, a rentier mono-structure, and economic dependency due to its link with highly volatile global oil prices and external shocks. Iraq has also experienced wars, economic sanctions, terrorism, and displacement, all of which have negatively affected corruption indicators. The Corruption Perceptions Index appears to decline with increasing oil revenues, which account for more than 90% of total public revenues. Reconstruction requirements exceed the capacity of institutions to ensure proper oversight and control corruption, especially in relation to bribery and excessive public spending. This study tests the statistical significance of the relationship between oil revenues and the Corruption Perception Index from the descriptive, analytical and econometric point of view, using the ARDL model through EViews to check the effect of oil revenues on corruption in Iraq. The study stresses that corruption rates are largely determined by institutional factors and by the latest anti-corruption technologies.
It also stresses the need to plan for and take advantage of high oil revenues by building institutions and digital services, enhancing efforts to combat corruption, and investing in sovereign wealth funds and economic diversification. This helps limit the resource curse and Dutch Disease, two major challenges faced by oil economies. Finally, the research shows that the Iraqi budget is weak due to the lack of fiscal sustainability, and calls for the effective use of oil surpluses in economic development and reform programs.

**Keywords**: Oil revenues.cpi. ARDL. The concept of rent. Dutch disease.

## Introduction

In developed countries, government revenue and taxation are complementary, as these economies are characterized by diversified sectors, investments in sovereign wealth funds, strong institutions, and widespread digitalization across all aspects of life. In contrast, developing countries suffer from structural imbalances and weak sectoral contributions to

GDP due to economic dualism, which reflects underdevelopment and widespread corruption. The Iraqi economy is classified as a developing economy and is characterized by a mono-productive rentier structure, heavily dependent on oil, which constitutes more than 90% of state revenues. Therefore, it is expected that there is an inverse relationship with the Corruption Perceptions Index in the absence of strong oversight institutions. Large inflows of oil revenues may exceed the capacity of institutions to monitor and combat corruption, thereby increasing bribery and corruption through public spending. However, several government measures such as digitalization, automation, institutional reform, and legal development have reduced this effect. This will be examined using the EViews software (Al-Shammari, 2010).

**Research Problem:**

What is the nature of the causal and statistically significant relationship between oil revenues and the Corruption Perceptions Index, in light of fluctuations in oil revenues and the lack of development in oversight institutions, economic digitization, and diversification during the study period?

**5. Hypothesis:**

There is no long-term equilibrium relationship, as the presence of other factors affecting the Corruption Perceptions Index suggests the absence of a causal relationship between them, given that other institutional factors have an influence.

**6. Temporal Limits:** From 2003 to 2025

**7. Spatial Limits:** Republic of Iraq

**8. Importance of the Research:**

This study draws attention to the seriousness of corruption as a destructive phenomenon for the economy and as a major challenge and obstacle to economic development and reconstruction. It deepens the phenomenon of economic underdevelopment in rentier states that rely on oil resources. Achieving financial surpluses resulting from rising oil revenues encourages expansion in both investment and operational spending, with a greater proportion directed toward such expenditures. Due to the pervasiveness of corruption, which benefits from increased spending, and the absence of oversight institutions and effective anti-corruption methods, whether legal or judicial, the problem of corruption worsens and hinders progress. Understanding these factors helps in directing financial surpluses toward investment purposes. Therefore, it is necessary to channel these surpluses toward developing oversight institutions, security, and the judiciary, and to establish sovereign funds to reduce consumption while promoting sustainable investment and a stable, prosperous economy characterized by certainty.

**9. Research Methodology:**

The study relies on a quantitative approach using standard analysis to measure the impact of oil revenues on the Corruption Perceptions Index

**10. Previous Studies:**

A) One hypothesis suggests that revenues negatively affect institutions and significantly reduce transparency due to the state's reliance on oil revenues, alongside declining attention to taxation and its institutions, and the proliferation of tax exemptions. Moreover, large revenues may fuel internal conflicts and instability due to potential coups. Since revenues are volatile due to price fluctuations, sudden increases may catch the state unprepared to confront corruption, thereby increasing corruption rates (Ramadan, 2012).

B) A second academic view suggests that oil is not inherently responsible for corruption, embezzlement and waste, but this is determined by institutions. Countries with well-developed and stable institutions and sophisticated legal systems are less prone to corruption, while those with weak and eroding institutions are more prone to corruption (Karl, 2005).

**Theoretical Framework:**

**First: The Concept of Financial and Administrative Corruption and the Corruption Perceptions Index:**

Administrative and financial corruption are one of the challenges to the process of economic development at different levels and in economic and social terms since they constitute a waste of the resources of society by denying people their legitimate share of wealth and time. They also represent a breach of laws and a departure from the performance of duties in order to achieve private interests at the expense of public interest, and thus waste of public wealth and gains. The meaning of corruption has been defined in several ways; it is considered as a violation of professional ethics and a departure from the objectives of public interest, where it is used to serve private interests (Al-Shammari, 2018). It is also characterised as the abuse of influence to gain unfair advantage to benefit private interest at the expense of public interest and public property. The International Monetary Fund defines it as "the extraction of benefits from this behavior by an individual or a related group of individuals" (IMF, n.d.). Iraq, like other countries whose economies depend on oil revenues, experiences a direct relationship where a reduction in corruption leads to increased revenue flows and reduced leakage into the pockets of corrupt actors. The Corruption Perceptions Index is commonly used as a measure in this context (Salem, 2014).

The Corruption Perceptions Index (CPI) was first introduced in 1995 and was applied to Iraq after 2003 due to the difficulty of obtaining data prior to that period. It measures the perceived level of corruption among public officials and businesspeople based on assessments by experts, business executives, and both resident and non-resident stakeholders. It is considered one of the most important indicators used in research and is issued by Transparency International, a non-governmental organization, based on surveys and questions regarding the extent of abuse of public office, embezzlement, bribery, and related practices. The index is composite, derived from aggregated data, and ranges from 0 to 100: values closer to 0 indicate high levels of corruption, while values closer to 100 indicate low levels of

corruption. It is calculated using the arithmetic mean and standardized through division by the standard deviation to reach a final score.

In the absence of strong institutions and effective oversight, the relationship becomes inverse with oil revenues; increases in oil revenues lead to a decline in the Corruption Perceptions Index, which indicates higher levels of corruption. However, other factors (R. Wells, 1983), particularly institutional ones such as security stability, stricter oversight, and the enforcement of laws, all contribute to reducing the negative impact of rising oil revenues. This is evident in countries such as Norway, which, despite being an oil-dependent economy, benefits from advanced oversight institutions and strong political and security stability, making it one of the most transparent and corruption-resistant countries globally. In addition, automation and the transition to electronic government services have contributed to reducing bribery and embezzlement while improving the efficiency of service delivery. For example, passport services in Iraq have shown effectiveness in this regard. Moving toward a strong digital economy also plays a significant role in reducing corruption rates.

Oil revenues can also be used to develop infrastructure, and increasing public sector wages helps reduce bribery and corruption. Strengthening security, modernizing oversight institutions, and improving tax systems contribute to building a strong and diversified economy that is less affected by oil revenues and their volatility. Establishing sovereign wealth funds is also important, as they reduce the negative impact of oil revenues, increase transparency, and limit corruption by saving for future generations and reducing excessive consumption, which often creates opportunities for corruption while supporting long-term investment across generations, as exemplified by Norway (Auty, 1993; Santos & Fraga, 2020).

**Second: Oil Revenues:**

The term oil revenues has different meanings and interpretations in economic literature. They are usually considered as the revenue from oil sales. Others define them as the revenues obtained from the oil extraction sector (extraction, refining and selling oil as a raw material). Economies relying on oil resources are known as rentier states, such as Iraq. As per the data presented in Table (1) that shows the share of oil revenues in public revenues and their considerable share of the GDP, these economies are confronted with a number of problems because petroleum is a non-renewable resource with price and revenues fluctuations. This is reflected in oil revenues, which are the main component of public revenues (Hani, 2018). Oil revenues can be divided into different types, such as direct sales, production taxes, or revenues from the sale of rights to explore, lease oil fields, and contracting foreign companies to extract oil. Overall, there are several benefits of oil revenues, including:

1. Increasing oil revenues results in increased foreign currency receipts and increases in foreign exchange reserves, which can be used in development strategies (Saleh & Mohsen, 2018).
2. The opportunity to create sovereign wealth funds to invest financial surpluses from higher oil revenues.

3. Increased oil revenues can be invested abroad after paying off international and domestic debts, economic diversification, and restructuring of the economy. Therefore, oil revenues are an opportunity for investment in economic growth (Karl, 2005).

4. Rising oil revenues may help reduce corruption levels by enabling higher levels of government expenditures on security and the establishment of supervision institutions that reduce corruption (Al-Sabahi, 2012)

However, there are also negative aspects, including:

1. Dependence on oil revenues makes the economy vulnerable, unstable, and subject to global oil price fluctuations determined by economic factors and geopolitical risks (Santos & Fraga, 2020).
2. The dominance of oil revenues reduces reliance on taxation (R. Wells, 1983).
3. The absence of effective oversight institutions and regulatory policies leads to the proliferation of corruption (Gylfason, 2001).

Figure (1): The proportion of oil revenues to total public revenues from 2015 to 2021.

| Year | Oil Revenues (billion USD) | Share of State Revenues (%) |
|---|---|---|
| 2015 | 45.206 | 97.5 |
| 2016 | 30.250 | 86.1 |
| 2017 | 50.583 | 86.2 |
| 2018 | 65.278 | 84.2 |
| 2019 | 83.939 | 92.2 |
| 2020 | 45.672 | 86.2 |
| 2021 | 65.704 | 87.3 |

Source: The table was made by the researcher based on reports from the Arab Monetary Fund and statistical reports of the Ministry of Planning.

**Third: The Relationship Between Corruption and Oil Revenues (Channels of Impact Transmission):**

**1. Resource Curse Theory and the Institutional Approach:**

This refers to the excessive reliance on natural resources, which leads to neglect in economic diversification and the marginalization of industry and agriculture. As a result, the economy becomes vulnerable to external shocks due to its dependence on oil, making it financially unsustainable and prone to fiscal fragility. Government reliance on rentier income also leads to the neglect of tax revenues and the failure to develop tax systems, in addition to inefficiency, weak social investment, and fragile institutions, all accompanied by the spread of financial and administrative corruption (Auty, 1993).

The state is characterized by fragility and a lack of concern for the public interest, accompanied by the dominance of an elite class. These elites are individuals with influence and strong presence within state institutions, enabling them to control a large share of natural resource revenues. Through their power, they are able to divert resources from the budget and exclude them from official allocation processes by establishing private investment funds and extraction companies granted to their associates (Mirza Ali Khudair, 2012).

The state is also characterized by reduced returns from natural resource flows due to granting extraction rights to foreign companies that exploit resources for their own benefit without regard for national interests. Such concessions are often awarded through contracts that involve corruption suspicions. The significant gap between the low cost of extracting natural resources and the high revenues generated creates a strong incentive for corruption and embezzlement. Furthermore, weak governance, lack of transparency, and institutional deficiencies play a central role in deepening the resource curse phenomenon (Gylfason, 2001).

**Dutch Disease:**

This phenomenon occurs when the economies of countries that rely heavily and unilaterally on oil and gas revenues experience large inflows from exports, leading to a significant appreciation of the national currency. This appreciation reduces the competitiveness of industrial and agricultural products in global markets, diminishing their role in the economy, weakening economic diversification, and increasing unemployment rates (Saleh & Mohsen, 2018).

Dutch Disease first emerged in the 1950s following the discovery of a natural gas field in the Netherlands. The exchange rate of the Dutch currency appreciated during that period due to gas exports to European countries, leading to higher prices of export-oriented goods and a loss of their competitive advantage. Consequently, export levels declined, and the negative effects spread to other sectors of the economy, contributing to rising inflation rates, as observed in Venezuela and similar cases (Aoun, 2006).

Furthermore, corruption is known to prey on the oil revenues. These revenues tend to result in significant increases in both investment and recurrent government expenditure, beyond the government's ability to manage and monitor corruption. Monitoring agencies may not be able to keep up with the larger scope of corruption that could accompany an increase in spending, enabling diversion of resources into the pockets of corrupt officials. Furthermore, there may be under-investment in human capital, increased consumption expenditure and low marginal propensity to save. Capital inflows also lead to an appreciation of the exchange rate, reducing the competitiveness of local products because of increased prices (Mirza Ali Khudair, 2012).

**Fourth: Characteristics of the Iraqi Economy and the Channels Through Which Oil Prices Affect Corruption:**

1) Iraqi Economy Characteristics: The Iraqi economy is plagued by a deterioration in most economic indicators because of the crises, wars and geopolitical risks it has faced. These include: coups, civil and foreign wars, economic embargoes, and the plunder and destruction of 2003. These have all had a devastating impact on the Iraqi economy, leaving it with damaged infrastructure and wasted material and human resources, thus creating an uncertain and unappealing investment climate. This has negatively and severely impacted domestic productive capacity. In addition, the war against ISIS and climate change have further affected the agricultural sector, threatening food security. All these factors have combined to create the structural problems facing the Iraqi economy (Al-Sabahi, 2012). These can be summarized as follows:

1. The Iraqi economy is a rentier, mono-product economy characterized by structural duality. The oil sector dominates and is almost the sole source of public budget financing, accounting for more than 90%, which threatens the overall economic structure and the future of economic development.
2. Weakness and failure of the private sector, despite state strategies aimed at supporting it to lead the development process, given that the private sector is a key driver of economic growth (Hani, 2018).
3. High poverty rates due to elevated unemployment, forced displacement caused by terrorist activities, and climate-induced migration from rural to urban areas as a result of the deterioration of the agricultural sector.
4. The widespread informal economy, which distorts macroeconomic indicators and hinders economic development while depriving the state of tax revenues, as it operates outside formal regulatory frameworks (Al-Shammari, 2010).
5. Low economic growth rates, resulting in stagnant economic activity due to heavy reliance on the oil sector. In the event of a halt in oil production, economic activity would effectively reach zero.
6. The spread of social and political norms that tolerate and protect corruption, contributing to the failure of efforts to combat it. Additionally, the weakness of the banking system in addressing money laundering further exacerbates the problem, threatening the path of development.
7. Increased public debt, making the Iraqi economy vulnerable to bankruptcy. Iraq has transformed from a nation with a surplus in the early 1980s to one with debts of more than $120 billion to creditors. This debt is seen as one of the main challenges of development, particularly with the high interest payments, which may come at the cost of economic and political sovereignty (Hani, 2018).
8. Large deficits in the public budget, and a deficit gap between investment and operational expenditures, with operational spending (salaries, wages, maintenance and purchase of goods) topping 80%. In times of crisis and falling oil prices, investment expenditure, especially infrastructure investment, is impacted. Limited investment also hampers the evaluation and assessment of government performance and the pressure from civil society organisations on the government to combat corruption. Excessive operational spending has also increased nepotism, ghost jobs and procurement corruption, preventing the development of infrastructure that is crucial for attracting investment and attaining a diversified economy with reduced corruption. This is illustrated in Table (2), which shows total government expenditure, both investment and operational, from 2016 to 2021 in billion Iraqi dinars (Federal Commission of Integrity; Iraqi Ministry of Planning, 2016–2021).

| Year | Operating Expenditures (General Budget) | Investment Expenditures (General Budget) | Total Expenditures (General Budget) | Operating Expenditures (%) | Investment Expenditures (%) |
|---|---|---|---|---|---|
| 2016 | 51,173 | 15,894 | 67,067 | 76 | 24 |
| 2017 | 59,026 | 16,464 | 75,490 | 78 | 22 |
| 2018 | 67,053 | 13,820 | 80,873 | 83 | 17 |
| 2019 | 87,301 | 24,423 | 111,724 | 78 | 22 |
| 2020 | 72,874 | 3,209 | 76,083 | 96 | 4 |
| 2021 | 89,527 | 13,323 | 102,850 | 87 | 13 |

Source: Ministry of Planning and statistical reports of the Central Bank of Iraq.

**Applied Aspect:**

**A: Model Construction (Econometric Equation):**

CPI = C(1)CPI(-1) + C(2)CPI(-2) + C(3)OILREVENUE + C(4)

The dependent variable is the Corruption Perceptions Index (CPI).

The independent variable is oil revenues, which are influenced by external factors such as shocks and economic and political conditions (Quantitative Microsoft Software, 2023).

**B: Data Collection Stage:**

Table (3): Data on the impact of oil prices on the government budget from 2005 to 2025. The Corruption Perceptions Index is treated as a dependent variable affected by annual changes in oil prices.

| Year | Oil Revenues (Billion USD) | Corruption Perceptions Index (CPI) | Global Rank | Number of Ranked Countries | Institutional Factors (Security, Legislation, Authorities) Dummy | Notes |
|---|---|---|---|---|---|---|
| 2003 | 8.123 | 22 | 113 | 159 | 0 | Regime change |
| 2004 | 19.598 | 21 | 136 | 159 | 0 | Absence of institutions |
| 2005 | 24.058 | 22 | 137 | 160 | 0 | Terrorist groups |
| 2006 | 32.242 | 19 | 160 | 163 | 0 | Security instability |
| 2007 | 33.712 | 15 | 178 | 180 | 0 | Security instability |
| 2008 | 65.615 | 13 | 178 | 180 | 0 | Security instability |
| 2009 | 44.061 | 15 | 176 | 180 | 1 | Security improvement |
| 2010 | 56.958 | 15 | 175 | 178 | 1 | Security improvement |
| 2011 | 91.678 | 18 | 175 | 183 | 1 | Security improvement |
| 2012 | 100.604 | 18 | 169 | 175 | 0 | Security instability |
| 2013 | 95.248 | 16 | 171 | 176 | 0 | Security instability |
| 2014 | 88.112 | 16 | 170 | 174 | 0 | Security instability |
| 2015 | 45.206 | 16 | 161 | 168 | 0 | Security instability |
| 2016 | 30.250 | 17 | 166 | 176 | 0 | Security instability |
| 2017 | 50.583 | 18 | 169 | 180 | 1 | Victory over terrorist organization |
| 2018 | 65.278 | 18 | 168 | 180 | 1 | Security improvement |
| 2019 | 83.939 | 20 | 162 | 180 | 1 | Security improvement |
| 2020 | 45.672 | 21 | 160 | 180 | 1 | Development of oversight institutions |
| 2021 | 65.704 | 23 | 157 | 180 | 1 | Security improvement |
| 2022 | 105.947 | 23 | 157 | 180 | 1 | Security improvement |
| 2023 | 97.600 | 23 | 154 | 180 | 1 | Security improvement |
| 2024 | 90.300 | 26 | 140 | 180 | 1 | Digitalization implementation |
| 2025 | 76.500 | 28 | 136 | 180 | 1 | Automation and integrity |

Source: The table was prepared by the researcher based on:

1. Open data from the Arab Monetary Fund
2. Statistics from the Ministry of Planning
3. The Corruption Perceptions Index, which ranges from 0 to 100; higher values indicate lower levels of corruption.

The table shows that oil revenues, represented as the independent variable, do not directly affect the Corruption Perceptions Index, as the latter is influenced by a dummy variable representing shocks or improvements in institutions or security (0 = no improvement, 1 = improvement).

**B: Unit Root Test (ADF):**

It is necessary to conduct a stationarity test for time series variables to ensure reliable results. The procedure is as follows:

Oil revenues as an independent variable: This is theoretically the influencing and causal factor, based on economic logic and the mechanisms through which corruption is transmitted into the economy, as discussed in the theoretical section, including the Dutch Disease and the resource curse. These phenomena weaken regulatory and legislative institutions and increase rent-seeking behavior, thereby raising perceived corruption levels.

Based on the data in the table above, it is evident that the time series is non-stationary at the level according to the Dickey-Fuller test. Relying on the statistical analysis results at significance levels of 1% and 5%, all calculated values are smaller than the critical values, indicating non-stationarity of the time series. Since the calculated t-values are less than the critical values, the first difference of the time series was taken. Accordingly, the researcher concluded that the absolute calculated values became greater than the critical values at the 5% significance level after differencing, leading to the acceptance of the alternative hypothesis indicating that the time series is stationary (Quantitative Microsoft Software, 2023).

Table (4) illustrates how stationarity was achieved after taking the first difference.

| At First Difference | At Level | Details |
|---|---|---|
| 0.003 | 0.163 | Stable variable: Oil revenues in Iraq |

Source**:** The table was prepared by the researcher based on outputs from the EViews program.

The results of testing the dependent variable (the Corruption Perceptions Index) are consistent with economic logic and theoretical expectations discussed earlier, including the resource curse and Dutch Disease. Rentier states such as Iraq and similar cases experience that increases in oil prices lead to higher revenues, which in turn may result in increased financial corruption, excessive spending, and waste (Asteriou Dimitrios & Stephen Hall, 2012).

Based on the data in Table (5), it is evident that the time series is non-stationary at the level according to the Dickey-Fuller test. Relying on the statistical analysis at significance levels of 1% and 5%, all calculated values are smaller than the critical values, indicating non-stationarity of the time series. Since the calculated t-values are less than the critical values, the first difference of the time series was taken. The researcher concluded that the absolute calculated values became greater than the critical values at the 5% significance level after differencing, leading to the acceptance of the alternative hypothesis indicating that the time series is stationary (Chris Brooks, 2019).

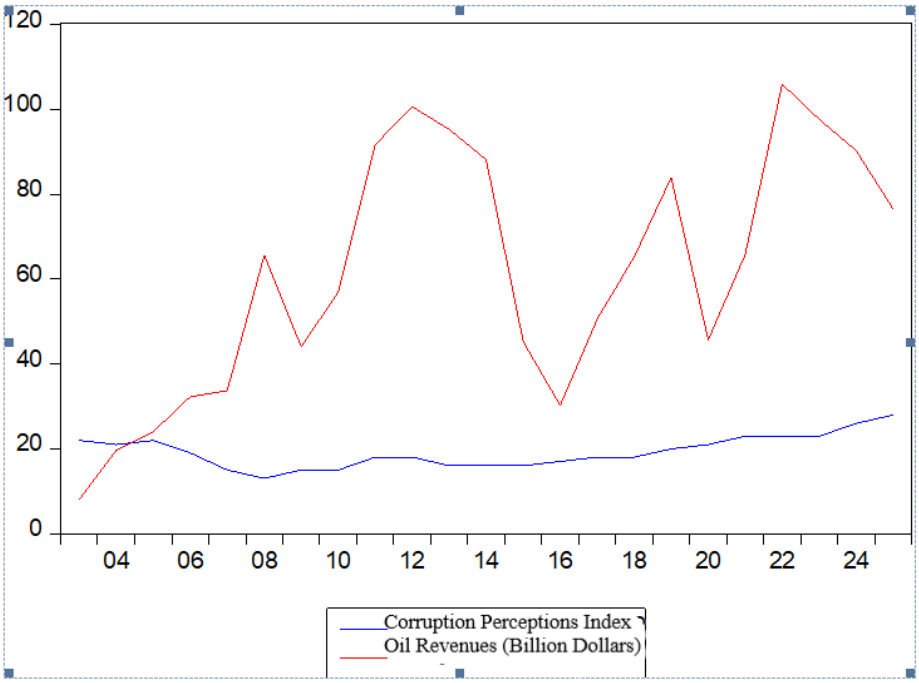
Table (5): Illustrates the unit root test.

| First Difference | Level | Details |
|---|---|---|
| 0.04 | 0.95 | Dependent variable: Corruption Perceptions Index |

Source: The table was prepared by the researcher based on outputs from the EViews program.

**C: Graphical Analysis:**

Figure (1): Graph of the independent and dependent variables.




The blue line representing the Corruption Perceptions Index shows a relatively stable and slow-moving pattern throughout the study period, with values remaining consistent and closely clustered over time. On the other hand, the red line, which shows the oil revenues, shows peaks in 2012 and 2022, with its lowest in 2016 and 2020, coinciding with global falls in oil prices. This negatively affected oil revenue inflows, indicating that they are highly sensitive to external shocks, whether positive or negative, as well as geopolitical risks. From the graph, it is evident that there is no synchronization between the movements of the two lines due to the weak relationship and very limited mutual responsiveness between them.

**Fifth: Estimation Using the ARDL Model**

Table (6) indicates that the dependent variable (the general budget) during the lag period has a probability value of less than 0.05. Economically, this implies that the lagged (previous period) values have a strong influence on current values, meaning that the relationship is statistically significant and persistent over time (William Greene, 2018).

Figure (6): Illustrates the ARDL technique after conducting the stationarity test at first difference and specifying the Corruption Perceptions Index as the dependent variable.

| Variable | T-Statistic | Probability | Standard Error | Coefficient |
|---|---|---|---|---|
| Corruption Perceptions Index (-1) | 5.33 | 0.0001 | 0.23 | 1.26 |
| Corruption Perceptions Index (-2) | -1.33 | 0.20 | 0.25 | -0.34 |
| Oil Revenues | 0.73 | 0.47 | 0.016 | 0.012 |
| Constant | 0.35 | 0.72 | 2.68 | 0.95 |

Source**:** The table was prepared by the researcher based on outputs from the EViews program.

Table (8): Shows the coefficients and the selection criteria values.

| Statistic | Value |
|---|---|
| Coefficient of Determination (R-squared) | 0.82 |
| Adjusted R-squared | 0.77 |
| Durbin-Watson | 1.88 |
| Akaike Information Criterion (AIC) | 4.25 |
| F-statistic | 24.218 |

It can be concluded that there is no immediate response of the Corruption Perceptions Index to changes in oil revenues except after a lag of four time periods.

**Model Evaluation According to Economic Criteria:**

Based on the estimated coefficients of the above model, it is observed that there is no full consistency with economic theory. This suggests the presence of external variables outside the model that strongly affect both variables, including institutional factors and external oil shocks.

**Interpretation of R-squared:**

The coefficient of determination (R-squared) indicates the explanatory power of the independent variable (oil revenues), as it explains 81% of the total variations in the dependent variable, the Corruption Perceptions Index. The remaining percentage is attributed to other factors (William Greene, 2018).

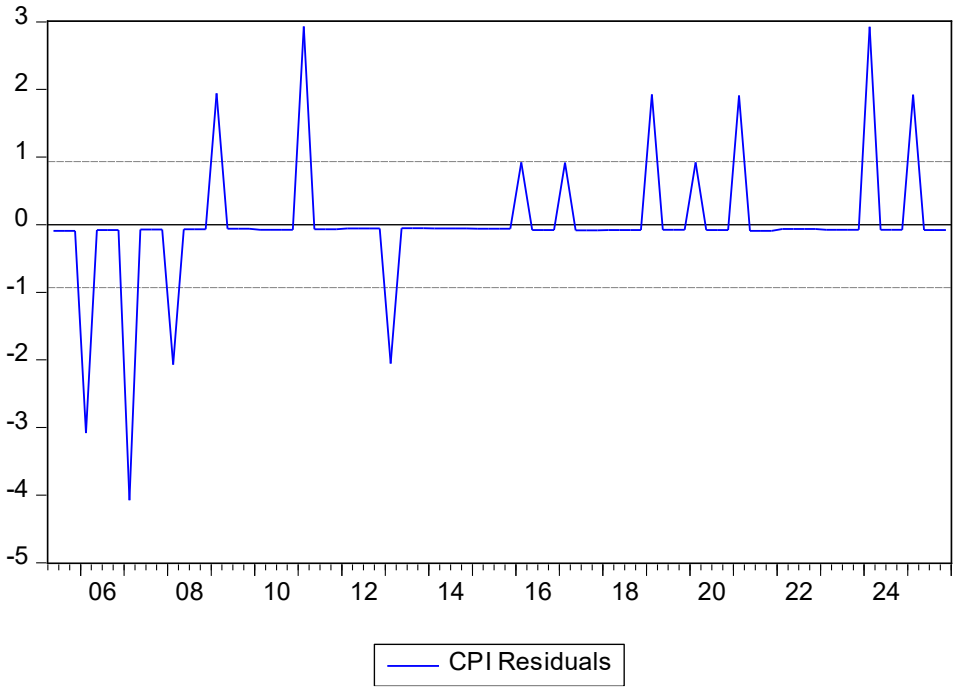
**Interpretation of Adjusted R-squared:**

The Adjusted R-squared indicates a high predictive power of the model, as it is very close to the R-squared value at 77%, which is considered economically acceptable and good. This implies that the model is statistically significant and has strong explanatory power (Damodar Gujarati & Porter, 2009).

**Econometric Diagnostic Tests:**

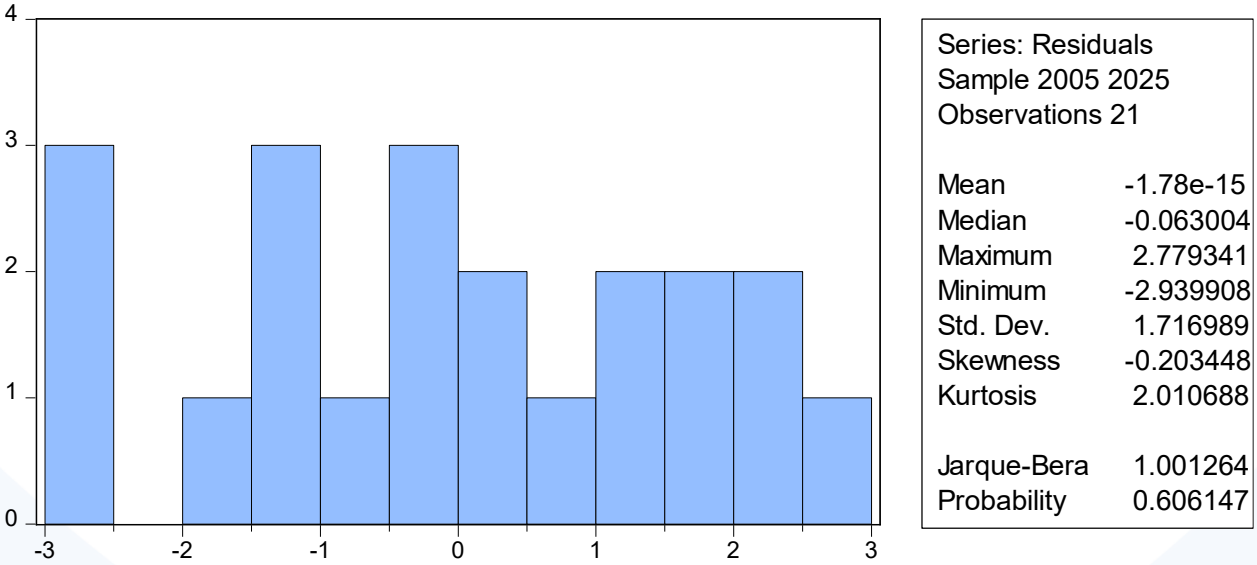
**A) Normality Test:**

Figure (2): Shows the normality test of residuals within confidence bounds, indicating that they fall outside the expected range.




Source: EViews program outputs.

Table (9): Shows the normal distribution of the data.




Source: Outputs from EViews software (version 10).

The purpose of this test is to assess how closely the data follow a normal distribution in order to reach a decision regarding the null hypothesis. The decision rule for accepting the null hypothesis is based on the normal distribution criterion when the probability value is greater than 0.05. From the above table, it can be concluded that all variables follow a normal distribution, as their probability values are greater than 0.05. Accordingly, there is no problem of non-normality in the data, which supports the reliability of the results obtained.

Regarding the standard deviation, its value is (1.7), which is greater than half of the mean (2.9). This indicates instability in the model under study (Peter Kennedy, 2008).

**Heteroskedasticity Test:**

Table (10): Shows the test for confirming that the random errors in the study have constant variance over time.

Null hypothesis: there is no heteroskedasticity, meaning the model is valid when PROB > 0.05.

Alternative hypothesis: heteroskedasticity exists, and the problem should be corrected when PROB < 0.05.

| P-value (Chi-square) | Prob. Chi-square | Obs. R-squared | t-test | F-test |
|---|---|---|---|---|
| 0.499 | 0.85 | 2.3714 | 0.464 | 0.55 |

Source: The table was prepared by the researcher based on outputs from the EViews program.

Since the Chi-square probability value is (0.49), which is greater than 0.05, there is no heteroskedasticity problem. This indicates that the random errors are not dispersed, and the estimators are efficient; therefore, the null hypothesis is accepted.

**Autocorrelation Test:**

Table (11): Shows the correlation or relationship between the random errors. The value obtained is (0.787), which is greater than the probability value threshold of 0.05. Accordingly, the null hypothesis is accepted, meaning that there is no autocorrelation problem among the model's parameters. This confirms the efficiency and validity of the model's estimators (James Stock & Mark Watson, 2015).

| Test | Value | Degrees of Freedom | Probability |
|---|---|---|---|
| F | 0.17 | 15 | 0.84 |
| Observed R-squared | 0.48 | 2 | 0.787 |

Source: The table was prepared by the researcher based on outputs from the EViews program.

**F-Test:**

**Error Correction Model:**

Table (12) shows whether there is a long-run relationship between oil revenues in Iraq and the Corruption Perceptions Index. It also evaluates the strength of the model to determine whether to accept or reject the null hypothesis or the alternative hypothesis. All of this is based on the researcher's own work and effort.

Figure (12): Illustrates the results obtained from the Error Correction Model.

| Variable | Coefficient | Standard Error | t |
|---|---|---|---|
| Variable 1 | 0.34 | 0.21 | 1.60 |
| Variable 2 | -0.07 | 0.07 | -1.17 |

Figure (13): Results of Bounds Test

| Value | Significance Level | Critical Value (Level) | Critical Value (First Difference) |
|---|---|---|---|
| 0.41 | 10% | 3.1 | 3.5 |
| — | 5% | 3.6 | 4.7 |
| — | 2.5% | 4.18 | 4.8 |
| — | 1% | 4.9 | 5.5 |

Figure (14): EViews Output –Quality Statistics

| Measure | Value | Indicator | Value |
|---|---|---|---|
| R-squared | 0.141 | Mean Dependent | 0.333 |
| Adjusted R-squared | 0.09 | S.D. | 1.85 |
| S.E. | 1.76 | Akaike | 4.06 |
| Sum Squared Residuals | 58.9 | Schwarz | 4.16 |
| Log Likelihood | -40.63 | Hannan-Quinn | 4.09 |
| Durbin-Watson | 1.88 | — | — |

Source**:** The table was prepared by the researcher based on outputs from the EViews program.

It is concluded that the value of the error correction speed (CointEq(-1)) indicates that its probability value is greater than 0.05. This means that it is statistically insignificant; therefore, the independent variable does not have a significant effect on the dependent variable, and the model is not suitable for explanation or prediction. Accordingly, the null hypothesis is rejected and the alternative hypothesis is accepted (Jeffrey Wooldridge, 2013).

**CUSUM Test:**

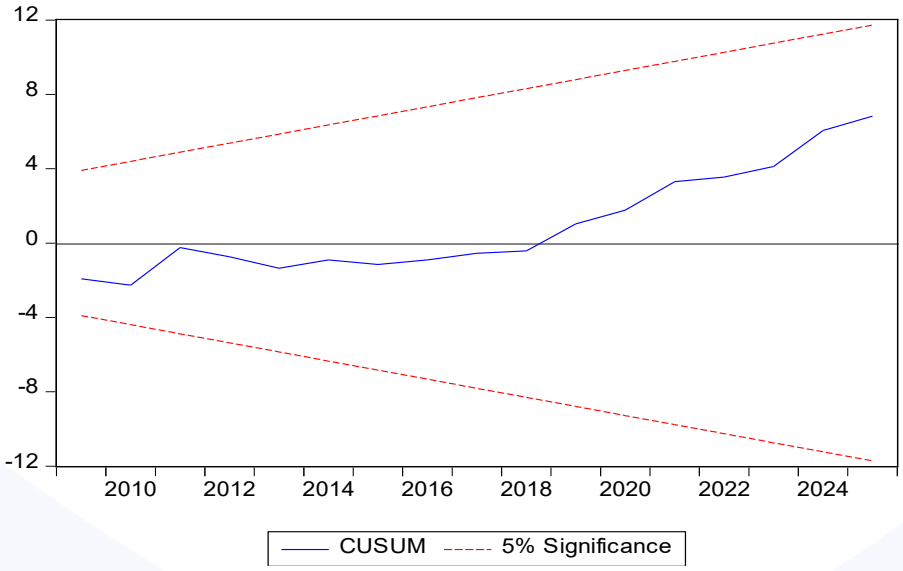



Figure (5): Shows the confidence bounds represented by the red lines, while the blue line represents the residuals.

Source**:** EViews program outputs.

Since the data remain within the confidence bounds, this indicates that the model's parameters are statistically significant; therefore, the results are reliable.

**Cointegration Test (Johansen):**

Table (15): Shows the Johansen test, which indicates the existence of a long-run equilibrium relationship between the two variables.

| Null Hypothesis | Eigenvalue | Trace Statistic | Critical Value | Probability | Max-Eigen Statistic | Critical Value | Probability |
|---|---|---|---|---|---|---|---|
| NONE | 0.322 | 8.39 | 15.5 | 0.5 | 8.17 | 14.2 | 0.4 |
| MOST | 0.01 | 0.21 | 3.85 | 0.6 | 0.21 | 3.85 | 0.7 |

Source**:** EViews 10 output

Table (16): Cointegration Equation Between Variables

| Variables | Coefficient Estimate | Standard Error |
|---|---|---|
| Corruption Perceptions Index | 1 | — |
| Oil Revenues | -0.79 | 0.8 |

**Error Correction Term (Adjustment Model):**

| Variable | Coefficient | Standard Error |
|---|---|---|
| D(CPI) | -0.022 | 0.019 |
| D(O.R) | 0.55 | 0.22 |

Source**:** The table was prepared by the researcher based on EViews program outputs.

The Johansen cointegration test shows that the Trace statistic (8.4) is lower than the critical value (15.5); therefore, the alternative hypothesis is rejected, indicating no cointegrating relationship based on this test. Similarly, the Maximum Eigenvalue test shows that the calculated value (8.17) is lower than the critical value (14.26), leading to the rejection of the alternative hypothesis and confirming the absence of cointegration. Since the critical values are greater than the significance threshold (0.05), this indicates the absence of a cointegrating relationship; accordingly, the null hypothesis is accepted and the alternative hypothesis is rejected. Overall, this suggests the existence of a long-run equilibrium relationship between oil revenues and the Corruption Perceptions Index (James Stock & Mark Watson, 2015).

**Granger Causality Test:**

Table (17): Shows the causal relationship between oil revenues and the Corruption Perceptions Index, as follows:

| Null Hypothesis | Observations | F-Statistic | Probability |
|---|---|---|---|
| Oil revenues do not cause changes in the corruption index | 21 | 0.69 | 0.51 |
| Corruption index does not cause changes in oil revenues | 21 | 0.19 | 0.828 |

Source**:** The table was prepared by the researcher based on outputs from the EViews program.

Based on the results, since the probability values for both variables are greater than 0.05, there is no causality between them. This indicates that the model is statistically weak, meaning that past values of oil revenues do not adequately explain current changes in the Corruption Perceptions Index. This is attributed to slow adjustment and response, where both variables appear to move in a stable and independent manner due to the presence of external factors such as automation, governance improvements, stricter regulatory and legislative enforcement, and institutional development. All of these factors have contributed to slowing and reducing the impact of oil revenues on corruption perceptions. In other words, the response of corruption perception to changes in oil revenues is rigid or sticky due to legal, administrative, and judicial procedures, as well as institutional modernization and electronic automation, which collectively limit the increase in corruption. Therefore, there is a complete short-run decoupling between the two variables (Jeffrey Wooldridge, 2013).

**Results and Recommendations:**

**Results:**

1. It is empirically observed that oil revenues affect the Corruption Perceptions Index under weak institutions, legislation, and insufficient implementation or modernization of anti-corruption technologies.
2. The mono-resource economy, dependent on oil, is vulnerable to global oil price fluctuations, reinforcing economic dependency.
3. Despite high $R^2$ and adjusted $R^2$ values, the absence of cointegration indicates only a superficial relationship with no long-run linkage due to non-stationarity, suggesting a spurious regression problem.
4. The Iraqi economy suffers from fiscal fragility due to shocks affecting oil revenues.
5. The absence of cointegration is due to strong external variables influencing the system.
6. Instability and terrorism have contributed to increased corruption and institutional destruction, creating an insecure investment environment.
7. Recent government efforts toward digitalization and automation have helped reduce corruption and bribery.
8. Income inequality and wage disparities, as features of the rentier economy, deepen feelings of deprivation and thus encourage embezzlement and corruption.
9. The Corruption Perceptions Index remains low because Iraq has not established strong anti-corruption institutions for a long time and has been late in digital transformation, as shown in the graphical analysis.

**Recommendations:**

1. The state should move toward digitalization and automation of services, especially tax services, to combat tax evasion and reduce reliance on cash transactions that facilitate bribery.
2. Building a diversified, resilient, and sustainable economic base to reduce dependence on oil revenues and escape the resource curse and Dutch Disease.
3. Benefiting from the experiences of Norway and Kuwait in establishing sovereign wealth funds to reduce corruption, especially in consumption-driven economies.

4. Strengthening judicial institutions and enhancing their effectiveness.
5. Maintaining preparedness and vigilance during periods of rising oil revenues to ensure effective anti-corruption mechanisms.
6. Enhancing international cooperation with Interpol and global anti-corruption organizations.
7. Reinforcing ethical values, religious principles, and social norms, alongside establishing a fair wage system to reduce inequality.
8. The short-run causality test confirms the absence of a relationship between the two variables.

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