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Fiscal Policy and Economic Growth in Iraq: An ARDL Analysis of an Oil-Dependent Economy (2004 2024)

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Abstract

Purpose - This study explores how fiscal policy influences economic growth in Iraq during the period 2004–2024, with a particular focus on the challenges faced by oil-dependent economies.

Method - To achieve this objective, the study applies the ARDL model to examine both short-term adjustments and long-term relationships using annual time-series data. The analysis includes key macroeconomic variables such as GDP, government expenditure, oil revenues, tax revenues, money supply, and exchange rate. The Phillips–Perron test is used to ensure data stationarity.

Result - The results indicate that economic growth in Iraq is closely tied to fluctuations in oil revenues, which largely drive fiscal activity. Government spending follows oil income patterns but shows limited independent impact in the long run. In contrast, non-oil fiscal tools, particularly taxation, play a relatively weak role, reflecting the narrow fiscal base of the economy.

Implication - These findings suggest that improving fiscal policy effectiveness requires reducing reliance on oil revenues, strengthening the tax system, and enhancing the efficiency of public spending.

Originality - This study presents a comprehensive assessment by combining numerous financial variables within a unified economic model, giving a clearer understanding of how fiscal policy works in a resource-based economy like Iraq.

Keywords: Fiscal policy, Economic growth, Oil-dependent economy, ARDL, Iraq

Introduction

Fiscal policies play a significant role in bolstering the economy, particularly in resource-dependent countries where government revenues are heavily reliant on commodity price fluctuations. In Iraq, oil revenues consistently account for over 90% of total government revenues and more than 40% of GDP, underscoring the structural dependence of fiscal activity on a single commodity (Central Bank of Iraq, various years). Under these circumstances, fiscal instruments such as public spending, taxes, and budget deficits not only play a role in achieving macroeconomic stability, but are also key drivers for boosting aggregate demand and driving long-term economic growth. However, the effectiveness of fiscal policies in fostering sustainable growth, especially in countries heavily dependent on a single source of income, remains a subject of ongoing debate.

Iraq represents a distinctive case of an oil-dependent economy, where fiscal policy is largely driven by oil revenues. According to the Central Bank of Iraq, oil revenues contributed approximately 93% of total public revenues in 2022, reflecting the deep structural reliance on hydrocarbon receipts. Since 2003, the country has undergone major changes in its economy and institutions, with fiscal policy becoming a key means of distributing oil profits and boosting economic activity. While increases in oil revenues have enabled higher public spending and investment, they have also exposed the economy to external shocks and cyclical volatility. As a result, the relationship between fiscal policy and economic growth in Iraq is complex and influenced by structural imbalances, weak diversification, and the limited role of non-oil revenues.

Despite the importance of this topic, available studies show mixed evidence regarding the effectiveness of fiscal policies in oil-dependent countries. Some studies suggest that expansionary fiscal policy can stimulate economic growth by increasing aggregate demand and public investment (Alkhathlan & Malik, 2021; Barro, 1990). Others argue that excessive reliance on resource revenues may lead to inefficiencies, crowding-out effects, and vulnerability to external shocks (Cherif & Hasanov, 2023; Bova et al., 2021).

These divergent findings reflect differences in institutional quality, economic structures, and the degree of fiscal diversification across countries, highlighting the need for country-specific empirical investigations.

In the case of Iraq, empirical research has focused primarily on the impact of oil revenues, price increases, and monetary factors on the economy. However, there has been relatively limited attention paid to the direct impact of fiscal policy as a catalyst for growth. Specifically, prior studies such as Abd (2024) and Al-Shammari and Bekheet (2024) have examined aspects of fiscal policy in Iraq but have not jointly modeled the full set of fiscal, monetary, and oil-related variables within a single framework. Furthermore, only a handful of studies have employed econometric methods capable of distinguishing between short-term dynamics and long-term relationships simultaneously, which is essential for understanding how fiscal policy unfolds over time. The ARDL approach of Pesaran et al. (2001) addresses these methodological gaps and is particularly suited to small samples with mixed integration orders.

This study addresses these gaps by examining fiscal policy and economic growth in Iraq from 2004 to 2024 using the Autoregressive Distributed Lag (ARDL) model, which enables simultaneous analysis of long-term and short-term effects within a unified framework. The ARDL approach was specifically chosen over alternative cointegration techniques such as the Johansen method and the Vector Error Correction Model (VECM) because the sample size is relatively small (21 annual observations), and ARDL provides more reliable and unbiased estimates under such conditions (Pesaran et al., 2001). By incorporating key fiscal variables within a unified analytical framework, the study captures the dynamic mechanisms through which fiscal policy impacts economic activity.

The importance of these findings extends beyond Iraq, as they provide valuable economic insights for other oil-dependent countries, particularly those in the Middle East and Sub-Saharan Africa, that face similar structural challenges, including revenue volatility, limited fiscal diversification, and a heavy reliance on commodity exports. The transferability of findings is further supported by the shared institutional characteristics of rentier economies as

documented in the comparative literature (Bova et al., 2021; Cherif & Hasanov, 2023).

The contribution of this study is threefold. First, it provides updated empirical evidence on the role of fiscal policy in Iraq by examining a period marked by significant economic and political transformations, thereby extending the existing body of research through 2024. Second, it employs the Autoregressive Distributed Lag (ARDL) bounds testing approach, a robust econometric framework capable of capturing both short-run and long-run dynamics while accommodating variables with mixed orders of integration. This methodology has not been consistently applied in previous studies focusing on the Iraqi economy. Third, the study generates policy-relevant insights by demonstrating the dominant influence of oil revenues and the limited effectiveness of non-oil fiscal instruments, thereby highlighting the structural constraints that hinder the transmission of fiscal policy in resource-dependent economies.

Overall, previous studies suggest that fiscal policy can stimulate economic growth under favorable institutional and macroeconomic conditions. However, in resource-dependent economies, the effectiveness of fiscal instruments is often constrained by revenue volatility, weak institutions, and limited economic diversification. These mixed findings underscore the need for country-specific empirical investigations that simultaneously consider fiscal, monetary, and resource-related factors, an approach adopted in the present study.

The importance of these findings is not limited to Iraq alone; they also offer economic insights for other oil-dependent countries facing similar financial and structural difficulties.

Literature Review

Recent research has comprehensively examined the impact of fiscal policy on economic development, particularly in developing countries dependent on natural resources. However, the evidence remains inconsistent, reflecting

differences in institutional quality, financial structures, and the degree of dependence on fluctuating natural resource returns (Gaspar et al., 2019; Ilzetzki et al., 2013). Studies from sub-Saharan Africa report positive fiscal multipliers under sound institutional frameworks (Balogun et al., 2024), while evidence from Gulf Cooperation Council economies reveals weaker multiplier effects due to high import leakages and the dominance of current expenditure (Arezki et al., 2022). These contrasting results underscore the context-specific nature of fiscal policy effectiveness.

A central point emphasized in this research is the need for stable and efficient fiscal policy. Financial volatility may have negative long-term effects on economic growth (Afonso & Jalles, 2020), especially in developing economies, by increasing uncertainty and reducing investment incentives. Similarly, Ramey (2020) argues that the effectiveness of fiscal policy depends on macroeconomic conditions and the timing of fiscal interventions. In resource-dependent economies, Bova et al. (2021) show that fiscal policy tends to be procyclical, amplifying economic fluctuations rather than stabilizing them, particularly when governments rely heavily on commodity revenues. Procyclicality arises because commodity-dependent governments tend to increase public spending during periods of economic expansion, when commodity revenues are abundant, and are subsequently forced to reduce expenditure during downturns as revenues decline. As a result, fiscal policy amplifies economic fluctuations rather than mitigating them, thereby exacerbating macroeconomic instability instead of smoothing the business cycle.

Recent research also demonstrates that the relationship between fiscal policy and economic growth is often mediated by inflation dynamics, where higher inflation reduces the effectiveness of government spending in stimulating growth (Opayinka, 2025). This highlights the importance of macroeconomic stability in enhancing fiscal outcomes. This view is further supported by Vegh and Vuletin (2015) and Frankel et al. (2013), who highlight the prevalence of procyclical fiscal behavior in developing and commodity-exporting countries.

The interaction between fiscal policy and natural resource revenues has also received significant attention. Arezki et al. (2022) find that oil price shocks strongly influence government expenditure patterns, leading to unstable growth trajectories. In the same vein, Cherif and Hasanov (2023) emphasize that weak fiscal institutions in resource-rich economies limit the ability of fiscal policy to promote sustainable growth. Evidence from emerging economies further confirms that procyclical fiscal behavior increases macroeconomic volatility, while countercyclical policies contribute to greater stability (Pieschacón, 2022; Calderón & Schmidt-Hebbel, 2008). Empirical findings also suggest that institutional quality plays a key role in determining the effectiveness of fiscal policy, where weak institutions limit the growth-enhancing impact of government expenditure (Balogun et al., 2024).

At the country level, empirical findings remain diverse. Alkhathlan and Malik (2021) show that government expenditure can positively influence economic activity in oil-exporting countries, particularly through consumption channels. However, Devarajan et al. (1996) highlight that the composition of public expenditure is more important than its size, as inefficient allocation may hinder growth. Similarly, Habib and Kalamova (2020) argue that excessive dependence on resource revenues may weaken long-term growth prospects due to structural imbalances and limited economic diversification. Recent ARDL-based evidence shows that fiscal policy shocks significantly affect economic performance in oil-exporting countries, particularly through their impact on government expenditure and investment patterns (Fahad, 2024).

More recent evidence by Beck et al. (2000) suggests that financial development plays a crucial role in enhancing the effectiveness of fiscal policy in developing economies. Recent empirical evidence indicates that fiscal policy plays a crucial role in influencing economic growth in oil-dependent economies, where fluctuations in public revenues often lead to unstable macroeconomic outcomes (Abd, 2024).

Recent research has broadened the scope of analysis to include structural and environmental aspects. Maarof et al. (2023) demonstrate that fiscal policy has a significant impact on supporting sustainable development when

integrated with energy transition strategies and investment policies. Taghizadeh-Hesary et al. (2021) further highlight the role of environmental fiscal policies in promoting sustainable economic growth.

Kadhim and Maarof (2023) highlight the importance of fiscal policy composition in supporting economic growth in emerging economies, finding that government spending and taxation contribute to growth when directed toward productive sectors. This underscores the importance of fiscal efficiency alongside fiscal expansion, a conclusion also supported by Barro (1990) and Bose et al. (2007).

Despite these contributions, the literature reveals several unresolved issues. First, much research has focused on specific fiscal variables in isolation without integrating them into a single analytical framework. Second, insufficient attention has been given to econometric methods capable of capturing both short-term dynamics and long-term relationships simultaneously (Pesaran et al., 2001). Third, ARDL-based studies confirm that oil price shocks have significant effects on GDP fluctuations, establishing a long-run relationship between energy markets and economic performance (Jalil et al., 2024).

Furthermore, differences persist in research findings regarding the direction and temporal dynamics of fiscal policy effects. Some research has documented positive impacts, while others highlight neutral or negative effects, particularly in resource-dependent contexts. These differences reflect the fact that the impact of fiscal policy is highly context-dependent and conditioned by local institutional and structural factors (Rodrik, 2008).

Evidence from Iraq specifically confirms that discretionary fiscal policy significantly influences GDP dynamics, especially under conditions of oil price volatility, where fiscal responses tend to amplify or stabilize economic cycles depending on policy design (Al-Shammari & Bekheet, 2024). Accordingly, this study employs the ARDL model to provide a comprehensive analysis that integrates fiscal, monetary, and oil-related variables within a single

framework, tracking both short-term dynamics and long-term equilibrium relationships.

Methods

This study adopts a quantitative econometric research design to examine the impact of fiscal policy on economic growth in Iraq over the period 2004–2024. Specifically, the study employs a time-series analytical framework using the Autoregressive Distributed Lag (ARDL) model, which allows for the analysis of both short-run dynamics and long-run equilibrium relationships among macroeconomic variables.

This approach was selected due to the nature of the Iraqi economy, which is resource-dependent and characterized by structural variations, fiscal volatility, and sensitivity to external shocks. The ARDL model offers several advantages over alternative cointegration techniques such as the Johansen method and the VECM. Most importantly, the ARDL approach can be applied when variables exhibit different orders of integration, namely I(0) and I(1), without requiring all variables to be integrated at the same level. This flexibility is particularly valuable given the mixed stationarity results commonly found in macroeconomic time series. Furthermore, the ARDL bounds testing procedure provides more reliable and efficient estimates with small sample sizes, such as the 21 annual observations used in this study, making it more appropriate than the Johansen approach, which requires larger samples for reliable inference (Pesaran et al., 2001).

The empirical model is specified as follows:

$$GDP_t = \beta_0 + \beta_1 GE_t + \beta_2 TR_t + \beta_3 OR_t + \beta_4 MS_t + \beta_5 EX_t + \varepsilon_t$$

where GDP represents real economic growth, GE denotes government expenditure, TR refers to tax revenues, OR represents oil revenues, MS denotes broad money supply, and EX refers to the exchange rate, while ε_t is the error term.

Theoretically, government spending is expected to positively impact economic growth by increasing aggregate demand and contributing to infrastructure development. Tax revenues can have either positive or negative effects depending on their efficiency and composition. Oil revenues, being the major source of fiscal income in Iraq, are likely to positively influence economic growth, although this impact may be contingent on structural characteristics. The money supply is expected to positively impact growth by improving liquidity and increasing investment. Conversely, exchange rate fluctuations may exert uncertain or negative effects depending on economic stability and external factors.

To validate the findings, the study employs a structured econometric methodology including: (i) unit root tests using the Phillips–Perron (PP) procedure to determine the order of integration; (ii) bounds testing within the ARDL framework to identify long-run relationships; and (iii) diagnostic tests including tests for heteroskedasticity, serial correlation, normality, and structural stability.

Data and Variables

This research is based on annual data from 2004 to 2024. This period was chosen because of the significant developments in the Iraqi economy after 2003, which saw a shift towards a more open market system, as well as major impacts on fiscal sustainability, exchange rate regimes, and oil revenue management. Furthermore, this period encompasses significant events such as global oil price fluctuations, increased fiscal volatility, and macroeconomic shocks that have shaped Iraq's economic landscape.

Data were extracted primarily from the Central Bank of Iraq Annual Statistical Bulletin (various issues, 2004–2024) and the Ministry of Finance Fiscal Reports (various years). These sources are internationally recognized and are consistent with data reported to the International Monetary Fund and World Bank. It should be noted that some minor data gaps exist in earlier years,

which were addressed through standard interpolation methods consistent with the literature.

To improve the efficiency of estimation and reduce potential econometric problems such as heteroskedasticity and non-normality, all variables are transformed into natural logarithmic form (ln). In addition, the majority of variables are expressed in real terms, allowing inflationary effects to be accounted for and ensuring reliable comparisons over time. The logarithmic transformation also allows the estimated coefficients to be interpreted as elasticities, providing clearer economic insights.

The variables used in the study are defined as follows:

- GDP: Gross Domestic Product, used as an indicator of economic growth (at constant prices).
- GE: Government Expenditure, representing fiscal expansion (expressed in real terms).
- TR: Tax Revenues, reflecting fiscal capacity (expressed in real terms).
- OR: Oil Revenues, representing the main source of public income (expressed in real terms).
- MS: Broad Money Supply (M2), capturing monetary conditions (expressed in real terms).
- EX: Exchange Rate, representing macroeconomic stability (local currency per USD).

Results and Discussion

Descriptive Analysis of Economic Trends in Iraq (2004–2024)

The growth of the Iraqi economy during the study period can be classified into four main stages, reflecting the fundamental transformations that were greatly affected by oil revenues, in addition to the effects of fiscal and monetary policies.

Table 1. Descriptive Statistics of Macroeconomic Variables (2004–2024)

Years	GDP at current prices	government spending	tax revenues	oil revenues	broad money supply	parallel exchange rate
2004	53,235,358	121,236,262	614,769	125,481,185	47,130,769	1,453
2005	73,533,598	86,604,331	1,391,242	110,899,070	41,247,191	1,472
2006	95,587,954	68,797,172	1,084,824	86,069,901	38,678,899	1,475
2007	111,455,813	55,053,710	1,720,359	72,410,786	37,753,608	1,267
2008	157,026,061	83,678,104	1,226,165	93,729,218	43,432,432	1,203
2009	130,643,200	63,749,680	3,824,322	56,045,537	52,107,704	1,182
2010	162,064,565	78,537,738	1,716,056	74,826,058	67,621,597	1,186
2011	217,327,107	83,518,206	1,891,403	104,019,315	76,540,775	1,196
2012	254,225,490	105,139,576	2,633,357	116,597,076	75,466,360	1,233
2013	273,587,529	116,335,503	2,809,430	108,083,537	85,624,516	1,232
2014	266,332,655	111,686,531	1,855,440	95,543,711	89,299,017	1,214
2015	194,680,971	67,885,745	1,943,088	49,942,255	79,648,499	1,247
2016	196,924,141	64,425,968	3,709,789	42,523,596	84,612,866	1,275
2017	221,665,709	72,377,866	6,038,611	62,469,386	85,753,919	1,258
2018	268,918,874	77,242,778	5,430,955	91,327,432	91,108,596	1,208
2019	276,157,867	106,912,462	3,841,638	94,943,845	98,986,699	1,196
2020	215,661,516	72,390,526	4,489,237	51,806,388	114,087,782	1,234
2021	304,053,321	92,241,848	4,068,377	85,444,207	125,458,276	1,474
2022	416,689,736	99,965,455	3,343,074	131,301,946	143,838,779	1,482
2023	353,780,243	115,613,341	4,799,666	100,997,360	146,895,801	1,55
2024	363,533,635	195,986,412	7,813,132	111,467,162	160,983,349	1,6

Source: Source: Central Bank of Iraq, Annual Reports and Statistics (Multiple Years).

Ministry of Finance, Annual Financial Reports (Multiple Years).

Table 1 presents the basic data related to the variables used in this study. The data reveal significant variability across the study period, with GDP growing from approximately 53 trillion Iraqi dinars in 2004 to over 416 trillion dinars at its peak in 2022, reflecting the dominant influence of oil revenues on economic performance. Oil revenues and government spending follow closely correlated patterns throughout, confirming the structural dependence of fiscal activity on hydrocarbon income. Tax revenues remained comparatively low throughout the period, consistently representing only a small fraction of total public revenues, which reflects the narrow non-oil fiscal base of the Iraqi economy.

The data exhibit the traditional characteristics of a rentier economy, where economic performance is heavily influenced by external commodity price cycles. Under these circumstances, the role of non-oil sectors remains limited, hindering the achievement of sustainable long-term economic stability.

Phase One: Growth and Expansion (2004–2013)

During this period, Iraq experienced significant development, which greatly contributed to economic progress. This was driven by the expansion of oil production, which financed government spending and overall economic activity.

Simultaneously, the new economic model stabilized, supporting economic growth. Despite this, prices remained low, contributing to a stable economic environment and fostering anticipated growth,Ultimately, this period can be described as one of strong prosperity.

Phase Two: Decline and Instability (2014–2016)

This period was exceptional, with its direct impact felt in Iraq, particularly during 2015. While the influx of public funds boosted economic activity by increasing financial resources, these funds were insufficient to offset the decline in oil revenues.

Despite this, spending indicators remained noticeably high, allowing for adjustments to interest rates and significant economic changes. This period

highlighted the weakness of the Iraqi economy and heightened investor uncertainty.

Phase Three: Gradual Recovery (2017–2019)

At this stage, the Iraqi economy entered a new phase, described as a gradual recovery, although oil revenues did not fully support this recovery.

This was accompanied by continued growth in the money supply, which contributed to a revival of economic activity, while the exchange rate remained stable compared to previous years.

This phase can be considered positive, as there are clear indicators of improvement and support for the Iraqi economy. However, the Iraqi economy remains heavily dependent on the oil sector.

Phase Four: Recent Shocks and Fluctuations (2020–2024)

This period is characterized by significant macroeconomic turbulence. GDP contracted in 2020 due to the sharp decline in global oil prices associated with the COVID-19 pandemic and the collapse in global demand. In 2021 and 2022, however, the Iraqi economy experienced a strong rebound, as reflected in the GDP figures presented in Table 1, which increased from approximately 304 trillion dinars in 2021 to 417 trillion dinars in 2022. This recovery was primarily driven by a surge in global oil prices following the post-pandemic economic recovery and geopolitical developments. The exchange rate experienced notable depreciation in 2021, reflecting monetary adjustment and inflationary pressures.

In 2023 and 2024, economic performance showed signs of moderation, while government spending expanded considerably, reaching approximately 196 trillion dinars in 2024, the highest level recorded during the study period. These expenditure patterns appear to reflect an expansionary fiscal stance aimed at supporting economic stability. Overall, the data confirm that fiscal policy decisions in Iraq are primarily driven by oil revenue fluctuations, with monetary expansion serving as a supplementary tool during periods of recession.

Summary of Stationarity Results

The stationarity of the study variables was tested using EViews 13 software, by applying the Phillips–Perron (PP) test in order to determine whether the variables are stationary or non-stationary, that is, whether they contain a unit root, as well as to identify the order of integration. After conducting the test for the variables, the following results were obtained:

Table 2. Summary of Phillips–Perron Test Results for the Stationarity of the Time Series of the Study Variables for the Period (2004–2024)

Unit Root Test Results Table (PP)

Null Hypothesis: the variable has a unit root

		At Level					
		GDP	GE	TR	OR	MS	EX
With Constant	t-Statistic	-10.235	-10.960	-0.6202	-28.206	1.5129	-10.288
	Prob.	0.7239	0.6962	0.8450	0.0732	0.9986	0.7220
		n0	n0	n0	*	n0	n0
With Constant & Trend	t-Statistic	-25.429	-14.716	-23.463	-25.649	-16.179	-0.5463
	Prob.	0.3065	0.8051	0.3930	0.2975	0.7488	0.9713
		n0	n0	n0	n0	n0	n0
Without Constant & Trend	t-Statistic	1.7330	0.3826	2.1325	-0.6769	3.7381	0.2866
	Prob.	0.9755	0.7850	0.9891	0.4110	0.9997	0.7589
		n0	n0	n0	n0	n0	n0
	At First Difference						
		d(GDP)	d(GE)	d(TR)	d(OR)	d(MS)	d(EX)

With Constant	t-Statistic	-75.081	-31.916	-44.131	-54.787	-31.507	-31.642
	Prob.	0.0000	0.0366	0.0030	0.0003	0.0396	0.0386
With Constant & Trend	t-Statistic	-72.407	-36.581	-43.627	-78.868	-34.301	-43.889
	Prob.	0.0001	0.0514	0.0138	0.0000	0.0770	0.0132
Without Constant & Trend	t-Statistic	-40.463	-32.211	-38.389	-57.545	-17.276	-32.350
	Prob.	0.0004	0.0029	0.0006	0.0000	0.0795	0.0028

Notes:

a: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

b: Lag Length based on SIC

c: Probability based on MacKinnon (1996) one-sided p-values.

This Result is The Out-Put of Program Has Developed By:

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Source: Prepared by the researchers based on EViews 13.

It is evident from Table 2 that, according to the Phillips–Perron test, the time series of all variables are non-stationary, meaning they do not exhibit a consistent level of stationarity at levels. They contain a unit root and become stationary after taking the first difference. This indicates that the variables are integrated of order one (I(1)).

Cointegration Test among the Study Variables

Based on the unit root test results, which show that each variable is integrated of order one, the variables become stationary at the first difference. Therefore, variables that exhibit cointegration reflect a long-run equilibrium

relationship. Accordingly, they can be modeled using the Error Correction Model (ECM), which facilitates the estimation of both short-run and long-run relationships among the model variables and helps avoid spurious regression.

To test for cointegration, the Johansen–Juselius (J-J) test was employed, as it is more appropriate for this study given the presence of more than two variables.

Table 3. Cointegration Results of the Study Variables Using the Johansen–Juselius Method

Date: 03/26/26 Time: 13:16
Sample (adjusted): 2004 2024
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: GDP GE TR OR MS EX
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.981757	212.3181	95.75366	0.0000
At most 1 *	0.940886	136.2427	69.81889	0.0000
At most 2 *	0.918091	82.50515	47.85613	0.0000
At most 3 *	0.693565	34.96432	29.79707	0.0116
At most 4	0.471783	12.49208	15.49471	0.1348
At most 5	0.019046	0.365365	3.841465	0.5455

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.981757	76.07544	40.07757	0.0000
At most 1 *	0.940886	53.73754	33.87687	0.0001
At most 2 *	0.918091	47.54083	27.58434	0.0000
At most 3 *	0.693565	22.47224	21.13162	0.0322
At most 4	0.471783	12.12672	14.26460	0.1060
At most 5	0.019046	0.365365	3.841465	0.5455

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Prepared by the researchers based on EViews 13

From the first part of the table, the Trace test results show that the first column on the left represents the test hypothesis, namely the null hypothesis, which states that there are no cointegrating vectors. This hypothesis is rejected at the 5% level of significance. Accordingly, the alternative hypothesis, which indicates the existence of one cointegrating vector, is considered, and the results point to the presence of five cointegration relationships among the study variables.

The second part reports the results of the Maximum Eigenvalue test. The first column on the left specifies the hypotheses, where the first hypothesis assumes that there is at most zero cointegrating vector. This hypothesis is rejected at the 5% significance level, as its probability value is less than 0.05. Therefore, the second hypothesis, which assumes that there is at most one

cointegrating vector, is accepted. Based on this test, the number of cointegrating vectors is four.

Estimation of the Study Model Using the Autoregressive Distributed Lag (ARDL) Approach

Following the stationarity testing of the study variables, the next step is to estimate the ARDL model for economic growth in Iraq. After estimating the model, the results are presented in Table 4:

Table 4. Summary of the ARDL Model Estimation Results for the Study over the Period (2004–2024)

Dependent Variable: GDP
Method: ARDL
Date: 03/26/26 Time: 15:14
Sample (adjusted): 2005 2024
Included observations: 20 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (0 lag, automatic): GE TR R MS EX
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.208006	0.152554	1.363.497	0.1959
GE	-0.463719	0.325841	-1.423.145	0.1782
TR	1.930.126	5.090.244	0.379181	0.7107
OR	1.423.428	0.337881	4.212.807	0.0010
MS	2.010.041	0.473719	4.243.105	0.0010
EX	-129619.2	53352.11	-2.429.504	0.0304
C	90419303	61899151	1.460.752	0.1678
R-squared	0.954633	Mean dependent var		2.28E+08
Adjusted R-squared	0.933695	S.D. dependent var		91773643

S.E. of regression	23631481	Akaike info criterion	3.706.327
Sum squared resid	7.26E+15	Schwarz criterion	3.741.178
Log likelihood	-3.636.327	Hannan-Quinn criter.	3.713.131
F-statistic	4.559.247	Durbin-Watson stat	1.771.303
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Source: Prepared by the researchers based on EViews 13

It can be observed from Table 4 above that the estimation results of the ARDL model indicate that the explanatory power of the estimated model for economic growth in Iraq is high, as the Adjusted R-squared reaches 0.93. This means that the independent variables included in the model explain 93% of the variations in the dependent variable, namely Gross Domestic Product (GDP), while the remaining 7% of the variations are attributed to the random error term (Ui). Moreover, the model is statistically significant based on the F-test, where the calculated F-statistic is 45.59247, which is significant at the 5% level, with a probability value of Prob (F-statistic) = 0.000000. This implies that the estimated model is statistically significant; therefore, the null hypothesis (H0: $\beta = 0$) is rejected and the alternative hypothesis (H1: $\beta \neq 0$) is accepted. In addition, the value of the Durbin–Watson statistic is 1.77, which is close to 2, indicating that the model does not suffer from autocorrelation among the residuals. Accordingly, the null hypothesis is accepted and the alternative hypothesis is rejected, since the null hypothesis states that there is no autocorrelation problem.

Bounds Test

The next step is to test for the existence of a cointegration relationship, that is, a long-run equilibrium relationship, using the Bounds Test, as presented in the table below:

Table 5. Bounds Test for the Estimated Model of Economic Growth in Iraq

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	9.910747	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15
Actual Sample Size	20		Finite Sample: n=30	
		10%	2.407	3.517
		5%	2.91	4.193
		1%	4.134	5.761

Source**:** Prepared by the researchers based on EViews 13

It is evident from Table 5 above, which presents the results of the Bounds Test, that the calculated F-statistic is 9.910747, which exceeds both the lower bound critical value (2.08) and the upper bound critical value (3) at the 10% significance level. Accordingly, the null hypothesis of no long-run equilibrium relationship among the study variables is rejected, and the alternative hypothesis is accepted, indicating the existence of a long-run equilibrium relationship among the variables over the period (2004–2024).

Diagnostic Tests

After estimating the model parameters, it is necessary to verify the efficiency of the model used in the study by conducting a set of econometric tests to assess its adequacy, as follows:

Heteroskedasticity Test

Table 6. Breusch–Pagan–Godfrey Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.441371	Prob. F(6,13)	0.8385
Obs*R-squared	3.384.700	Prob. Chi-Square(6)	0.7592
Scaled explained SS	2.031.519	Prob. Chi-Square(6)	0.9168

Source: Prepared by the researchers based on EViews 13

It can be observed from Table 6 that the model does not suffer from heteroskedasticity, as the statistical indicators are not significant, indicating that the error variance is homogeneous. The probability value associated with the F-test is 0.8385, which is greater than the significance level of 0.05. This leads to the acceptance of the null hypothesis, which assumes homoscedasticity of the residuals.

Serial Autocorrelation Test of Residuals

Table 7. LM Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.597552	Prob. F(2,11)	0.5671
Obs*R-squared	1.959.972	Prob. Chi-Square(2)	0.3753

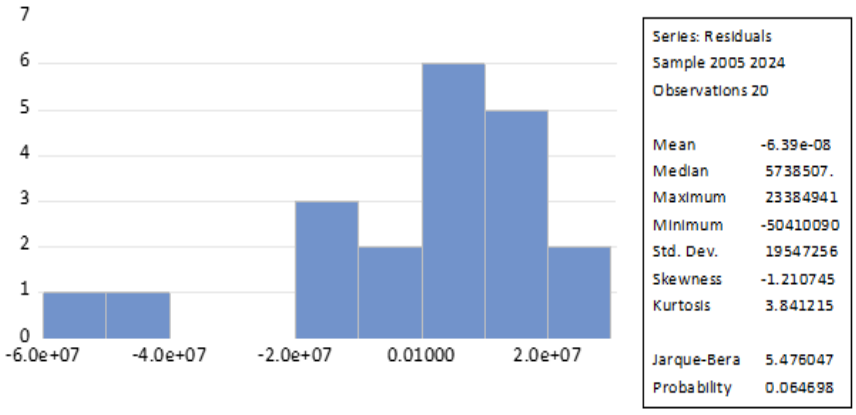
Source**:** Prepared by the researchers based on EViews 13.

It can be observed from Table 7 that the model does not suffer from serial autocorrelation in the residuals, as the statistical indicators are not significant.

The probability value associated with the F-test is 0.5671, which is higher than the adopted significance level of 0.05, indicating the acceptance of the null hypothesis of no autocorrelation.

Normality Test

Figure 1. Results of the Normality Test for the Residuals



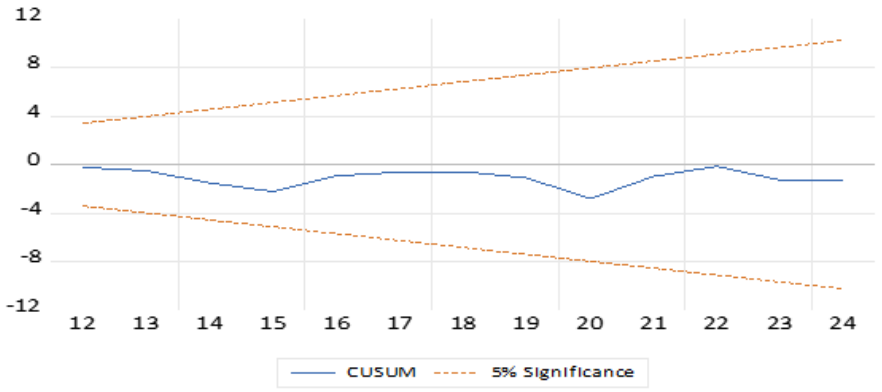
Source: Prepared by the researchers based on EViews 13.

The Jarque–Bera test, which is used to examine whether the data follow a normal distribution, shows a probability value (P-value) of 0.064698, which is greater than 0.05. This indicates that there is no evidence of non-normality. Therefore, the null hypothesis that the residuals follow a normal distribution is accepted.

Structural Stability Test of the Model Parameters

The next step is to test for the existence of a cointegration relationship, that is, a long-run equilibrium relationship, using the Bounds Test, as presented in the table below:

Figure 2. Structural Stability of the Estimated Model Using the CUSUM Test



Source: Prepared by the researchers based on EViews 13.

Figures 2 show that the results of the structural stability test using the CUSUM test fall within the critical region for the model, confirming the model's stability at the 5% significance level. The same applies to the CUSUM of Squared. Therefore, it can be said that there is consistency and stability between the long-term and short-term results of the estimated model.

Estimation of the Error Correction Parameter

Based on the results of the diagnostic test, which showed the stability of the estimated model and the existence of a long-term equilibrium relationship between the variables, the next step is to estimate the error correction parameter using an error correction model (ECM), within the framework of the distributed autoregression methodology (ARDL).

Table 8. Results of the Error Correction Model

ARDL Error Correction Regression

Dependent Variable: D(GDP)

Selected Model: ARDL(1, 0, 0, 0, 0, 0)

Case 2: Restricted Constant and No Trend

Date: 03/26/26 Time: 15:34

Sample: 2004 2024

Included observations: 20

ECM Regression

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	-0.791994	0.078653	-1.006.949	0.0000
R-squared	0.823739	Mean dependent var		15514914
Adjusted R-squared	0.823739	S.D. dependent var		46559491
S.E. of regression	19547256	Akaike info criterion		3.646.327
Sum squared resid	7.26E+15	Schwarz criterion		3.651.306
Log likelihood	-3.636.327	Hannan-Quinn criter.		3.647.299
Durbin-Watson stat	1.771.303			

* p-value incompatible with t-Bounds distribution.

Source: Prepared by the researchers based on EViews 13.

The results of the Error Correction Model (ECM) indicate a long-term equilibrium relationship between the studied economic variables. The ECM shows a statistically significant negative value of -0.79, demonstrating the overall stability of the model and the ability of the economic system to effectively correct short-term deviations and return to its equilibrium pathThe results of the Error Correction Model (ECM) indicate a long-term equilibrium relationship between the studied economic variables. The ECM shows a statistically significant negative value of -0.79, demonstrating the overall stability of the model and the ability of the economic system to effectively

correct short-term deviations and return to its equilibrium path.. The magnitude of the coefficient also indicates a high adjustment speed, with approximately 79% of the deviation from equilibrium being corrected within a single period, demonstrating the efficiency of the adjustment mechanisms in the economy.

Estimation of Long-Run Parameters

Table 9. Results of the Long-Run Relationship

ARDL Long Run Form and Bounds Test

Dependent Variable: D(GDP)

Selected Model: ARDL(1, 0, 0, 0, 0, 0)

Case 2: Restricted Constant and No Trend

Date: 03/26/26 Time: 15:36

Sample: 2004 2024

Included observations: 20

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	90419303	61899151	0.000000	0.0000
GDP(-1)*	-0.791994	0.152554	-5.191.577	0.0002
GE**	-0.463719	0.325841	-1.423.145	0.1782
TR**	1.930.126	5.090.244	0.379181	0.7107
OR**	1.423.428	0.337881	4.212.807	0.0010
MS**	2.010.041	0.473719	4.243.105	0.0010
EX**	-129619.2	53352.11	-2.429.504	0.0304

* p-value incompatible with t-Bounds distribution.

** Variable interpreted as Z = Z(-1) + D(Z).

Source: Prepared by the researchers based on EViews 13.

Based on the results presented in table 9, the following observations can be made:

- The study's findings are consistent with the characteristics of rentier economies, showing that economic growth in Iraq during the period (2004–2024) relies primarily on oil revenues and monetary policy, whereas conventional fiscal policy tools (government spending and tax revenues) did not exhibit a significant long-run effect.
- Regarding government spending, its lack of significance aligns with numerous studies indicating that the effectiveness of public expenditure in developing and rentier economies is often limited due to weak institutional efficiency and the allocation of spending toward current consumption rather than productive investment. Consequently, the absence of a positive effect reflects a deficiency in translating public spending into an actual driver of economic growth.
- As for tax revenues, their insignificant impact is consistent with the literature showing that tax systems in oil-dependent economies often play a limited role in influencing growth, given the state's heavy reliance on oil revenues, which reduces the importance of taxes as a financing source or as an economic policy tool.
- In contrast, oil revenues have a positive and significant effect on economic growth, which aligns with economic literature highlighting that the Iraqi economy exhibits characteristics of a rentier state, where oil revenues serve as the main driver of economic activity by financing government spending and stimulating aggregate demand.
- The results also indicate that money supply positively affects economic growth, consistent with monetary theory, which suggests that an expansion of liquidity can support economic activity in the long run, especially under weak structural constraints on the economy.
- Exchange rates, on the other hand, show a negative and significant effect on growth, which aligns with the literature linking a weak local

currency to higher import costs and increased inflationary pressures, ultimately negatively impacting overall economic performance.

- Overall, the study's findings are in line with the literature describing oil-based economies as experiencing limited fiscal policy effectiveness compared to their heavy reliance on oil revenues and monetary policy, reflecting ongoing structural challenges in diversifying Iraq's sources of economic growth.

Variance Decomposition

Variance decomposition analysis aims to measure the contribution of each economic variable in explaining changes or fluctuations in another variable within a dynamic system over a given period. This analysis shows the percentage of forecast error variance for each variable that can be attributed to shocks from other variables, allowing for an understanding of the relative impact and interactions among economic variables, and identifying which variables are the most influential and most responsive to shocks.

Table 10. Variance Decomposition Results

Coefficient Variance Decomposition

Date: 03/26/26 Time: 16:17

Sample: 2004 2024

Included observations: 20

Eigenvalues	3.83E+15	3.98E+08	22.94761	1.364238	0.034962	-0.044370	-0.403612
Condition	-1.05E-16	-1.02E-09	-0.017588	-0.295852	-1.154.425	9.096569	1.000000

Variance Decomposition Proportions

	Associated Eigenvalue						
Variable	1	2	3	4	5	6	7
GDP(-1)	0.236064	0.000892	0.013609	0.016113	1.163268	-0.429666	-0.000279
GE	-0.021836	-0.000979	-0.001882	-0.123052	-0.003465	0.013853	1.137360
TR	0.050393	0.082728	0.866817	6.46E-05	4.62E-07	-1.33E-06	-2.18E-06
OR	0.004385	0.048333	0.003129	0.989738	0.001657	-0.006285	-0.040957

MS	0.139562	0.000949	0.127324	0.824693	0.012223	-0.056322	-0.048431
EX	0.860345	0.139655	4.43E-17	1.71E-20	1.76E-22	-7.12E-22	-4.08E-21
C	1.000000	6.63E-14	3.65E-29	1.65E-32	5.92E-36	-1.50E-34	-2.80E-33

Eigenvectors

	Associated Eigenvalue						
Variable	1	2	3	4	5	6	7
GDP(-1)	1.20E-09	-2.28E-07	0.003715	-0.016579	-0.879960	0.474728	-0.004010
GE	-1.31E-09	8.61E-07	0.004970	-0.164839	0.172777	0.306684	-0.921356
TR	1.86E-08	-7.41E-05	0.998732	0.035369	0.018682	0.028149	0.011933
OR	1.06E-09	-1.09E-05	0.011584	-0.844961	0.215958	0.373371	0.316012
MS	-3.94E-09	-1.01E-06	-0.048601	0.507290	0.385788	0.735106	0.226013
EX	0.000799	1.000000	7.41E-05	-5.97E-06	3.79E-06	6.76E-06	5.36E-06
C	-1.000.000	0.000799	7.81E-08	-6.81E-09	8.05E-10	3.59E-09	5.16E-09

Source: Prepared by the researchers based on EViews 13.

- The results of the Variance Decomposition indicate that fluctuations in economic growth in Iraq during the period 2004–2024 are primarily explained by the exchange rate (EX), which accounts for approximately 86% of the variation in economic growth. This is followed by the money supply (MS), contributing nearly 14%, while the effects of oil revenues (OR) and government expenditure (GE) are very limited within the dynamic system.
- The results also show that the exchange rate is a highly dominant variable within the model, as it explains the largest portion of its own fluctuations (about 86%), reflecting a high degree of autonomy and limited interaction with other variables. In contrast, the money supply explains part of its variance through interactions with interest rates and GDP, indicating its role as an intermediate channel for monetary policy transmission.
- As for oil revenues (OR), despite their structural importance in the Iraqi economy, most of their variance is explained internally (around 87%) with very limited influence from other variables, reflecting the

weak transmission of oil effects to other economic sectors. Similarly, government expenditure (GE) shows limited connectivity within the system, with no clear impact on economic growth.

- Overall, the findings confirm that during the study period, the Iraqi economy is characterized by the dominance of the exchange rate as the main factor in explaining economic fluctuations, while the influence of oil revenues and fiscal policy is weak. This reflects a relative disconnect between the oil sector and the real economy, and a greater reliance on monetary and external channels in explaining economic growth

Discussion

The empirical findings of this study provide a nuanced understanding of the fiscal policy–growth nexus in Iraq, highlighting that the effectiveness of fiscal policy is fundamentally conditioned by the country's structural dependence on oil revenues. Rather than operating as an independent policy instrument, fiscal policy appears to function primarily as a transmission mechanism through which oil revenue fluctuations are translated into broader economic outcomes.

This result is strongly aligned with the growing body of literature emphasizing the dominant role of resource revenues in shaping macroeconomic performance in oil-dependent economies. In particular, the findings are consistent with Arezki et al. (2022) and Cherif and Hasanov (2023), who argue that fiscal behavior in resource-rich countries is largely driven by external shocks, especially oil price volatility. The Iraqi case provides further empirical support for this argument, as the observed co-movement between oil revenues, government expenditure, and GDP reflects a high degree of fiscal dependence on oil cycles.

Moreover, the evidence reinforces the argument advanced by Bova et al. (2021) and Vegh and Vuletin (2015) regarding the procyclical nature of fiscal policy in commodity-exporting economies. The expansion of government

spending during oil booms and its contraction during downturns suggest that fiscal policy in Iraq amplifies, rather than mitigates, economic fluctuations. This pattern weakens the countercyclical role of fiscal policy and limits its capacity to stabilize economic activity over time.

A more critical interpretation of the results reveals that the relationship between fiscal variables and economic growth is not only driven by their magnitude but also by their structural characteristics. The findings support the conclusions of Kadhim and Maarof (2023) regarding the importance of fiscal composition. While fiscal expansion is observed in the data, its growth-enhancing effect appears constrained by the allocation of resources. The predominance of recurrent expenditure, particularly on wages and transfer payments, relative to productive investment expenditures, may account for the limited long-run effects of government spending observed in this study.

The results diverge in important ways from parts of the existing literature. For example, Alkhathlan and Malik (2021) report a direct and statistically significant relationship between government expenditure and economic growth in oil-exporting countries. In contrast, the present study finds that government spending does not exert a strong independent long-run effect in Iraq. This discrepancy can be explained by the structural context of Iraq, where public expenditure is largely financed by oil revenues and thus reflects revenue conditions rather than autonomous fiscal decisions. Government spending in Iraq appears to be endogenous to oil income rather than an exogenous driver of growth.

Furthermore, the limited contribution of non-oil fiscal instruments, particularly taxation, reflects a fundamental institutional constraint within the fiscal framework. In contrast to evidence from more economically diversified countries, where tax revenues serve as a sustainable source of growth-enhancing public financing, the effectiveness of taxation in supporting long-term economic development appears to remain constrained (Barro, 1990; Bose et al., 2007), the insignificant contribution of tax revenues in Iraq reflects a narrow fiscal base and weak institutional capacity that reduce the effectiveness of fiscal policy beyond oil-related channels.

In terms of robustness, the consistency of the estimated relationships across both short-run and long-run dynamics enhances confidence in the results. The ARDL approach provides a clearer picture of how fiscal policy interacts with growth by allowing simultaneous analysis of immediate changes and long-term relationships. The model's structural stability, confirmed by the CUSUM tests, further indicates that the identified relationships reflect enduring structural characteristics of the economy rather than short-term disturbances.

Despite these contributions, some limitations must be acknowledged. First, the relatively small sample of 21 annual observations may reduce the statistical power of some tests, limiting the generalizability of the findings. Second, the model focuses on a selected set of macroeconomic variables and does not explicitly incorporate institutional, governance, or geopolitical factors that may influence fiscal performance in Iraq. Third, the reliance on a single econometric framework, while appropriate for this study, may not fully capture all dimensions of the complex fiscal policy–growth relationship.

These limitations suggest several directions for future research. Future studies could expand the analysis by incorporating institutional quality indicators and governance metrics. From a methodological perspective, complementary approaches such as Vector Autoregression (VAR) models, Vector Error Correction Models (VECM), or panel-data techniques applied to a group of oil-dependent economies could provide additional robustness checks and comparative insights. Time-varying parameter models could also be employed to examine whether the fiscal policy–growth relationship has changed across different phases of the oil cycle.

Conclusion

This study examined the relationship between fiscal policy and economic growth in Iraq over the period 2004–2024 using the ARDL bounds testing approach. The empirical analysis provides clear evidence that fiscal policy plays a role in determining economic performance in Iraq; however, its

effectiveness remains significantly constrained by the country's deep structural dependence on oil revenues.

The empirical results indicate that economic growth in Iraq is closely linked to fluctuations in oil revenues, which directly affect government spending and overall fiscal activity. The long-run coefficient on oil revenues is positive and statistically significant (OR coefficient = 1.42, p = 0.001), confirming that hydrocarbon income is the primary driver of economic activity in Iraq. Rather than acting as an independent and stabilizing policy tool, fiscal policy appears to operate largely in response to external oil shocks, limiting its capacity to promote sustainable and stable economic growth.

Furthermore, the results indicate that non-oil fiscal instruments, particularly taxation, play a limited role in influencing economic activity, as evidenced by the statistically insignificant coefficient of tax revenue (TR coefficient = 1.93, p = 0.711). This reflects structural weaknesses in the fiscal system, including a narrow revenue base and limited institutional capacity for tax administration and enforcement. The effectiveness of fiscal policy thus depends not only on the scale of expenditure but critically on the composition of revenues and the quality of fiscal institutions.

The heavy reliance on oil revenues weakens incentives to develop alternative sources of income and perpetuates the structural characteristics of a rentier economy, where economic activity is driven by external commodity cycles rather than productive domestic investment. This dynamic limits the autonomy and effectiveness of fiscal policy as a growth-promoting instrument.

From a policy perspective, these findings have significant implications. Enhancing the effectiveness of fiscal policy in Iraq requires a multi-dimensional strategy: (i) reducing dependence on oil revenues through broadening the tax base and improving revenue administration; (ii) reorienting public expenditure from recurrent consumption toward productive capital investment in infrastructure, education, and technology; (iii) establishing fiscal stabilization funds to decouple government spending

from oil price cycles; and (iv) strengthening institutional frameworks for fiscal transparency and governance.

Furthermore, the negative and significant exchange rate effect (EX coefficient = −129,619, p = 0.030) highlights the importance of exchange rate stability in supporting economic performance. Better coordination between fiscal and monetary policies is therefore essential for managing economic volatility. The money supply's positive and significant long-run effect (MS coefficient = 2.01, p = 0.001) further underscores the role of monetary policy as a complementary stabilization tool, consistent with the study's finding that monetary channels dominate the variance decomposition results.

Institutional reforms aimed at enhancing transparency, improving governance, and strengthening fiscal discipline are prerequisites for fiscal policy to function as a genuine stabilizing force in Iraq. These empirical findings directly support the need for such reforms: the insignificance of government expenditure in the long run reflects the weak institutional transmission of fiscal spending into productive economic activity.

Despite its contributions, this study acknowledges certain limitations, including the sample size and the set of variables modeled. Future research could broaden the scope by incorporating institutional and political factors, employing complementary methodologies such as VAR, VECM, or panel-data approaches, and extending the comparative analysis to other resource-dependent economies.

Ultimately, the evidence presented in this study underscores a fundamental conclusion: fiscal policy in Iraq cannot be fully effective as long as it remains structurally dependent on oil revenues. Achieving sustainable economic growth requires not only improved financial management but a deeper structural transformation to reduce vulnerability to external commodity shocks and build a more diversified and resilient economic base.

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