International Journal of Financial Management and Economics

P-ISSN: 2617-9210
E-ISSN: 2617-9229
Impact Factor (RJIF): 5.97
IJFME 2025; 8(2): 118-128
www.theeconomicsjournal.com
Received: 20-06-2025
Accepted: 23-07-2025

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Measuring and analyzing the relationship between the exchange rate gap and current spending in Iraq for the period (2004-2023)

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DOI: https://www.doi.org/10.33545/26179210.2025.v8.i2.564

Abstract
Since the US invasion of Iraq in 2003, the Iraqi economy has undergone profound changes in its financial and monetary structure. This is due to the security, political and economic turmoil, which had direct effects on the exchange rate balance and the mechanisms for implementing monetary and fiscal policy. The exchange rate gap has become a major structural issue in the Iraqi economy, as this gap is represented by the continuous difference between the nominal exchange rate, which is determined by the Central Bank of Iraq, and the parallel exchange rate (black market), which led to the emergence of wide challenges in controlling public spending and budgeting.

The results showed that the gap in the exchange rate increases significantly in times of crises and shocks such as low oil prices or the application of sanctions, which causes a significant fluctuation in the cost of government expenditures, especially with regard to government revenues and projects that depend on the foreign market. This gap also contributes to the disturbance of financial estimates when preparing the general budget and leads to an imbalance between expenditures and revenues, which sometimes leads to the emergence of unplanned financial deficits. It became clear that the Central Bank's intervention through the currency sales window did not contribute to achieving the desired stability, but rather caused the parallel market to expand in size and deplete the country's foreign exchange reserves, The analysis also showed that the lack of coordination between fiscal and monetary policy has increased the impact of this gap, as fiscal policy when preparing budgets was based on inaccurate exchange rates that did not match the Iraqi reality. The study calls for the importance of developing the general budget preparation mechanisms to be flexible, diversified and able to deal with several exchange rate scenarios, strengthening the relationship and interdependence between monetary policy and public finance and gradually moving towards the adoption of a more flexible exchange rate controlled by effective monetary tools, while the study calls for focusing on revitalizing and developing national production and diversifying other non-oil revenues to reduce the direct impact of exchange rate fluctuations.

Keywords: Exchange rate, current expenditure, preparation mechanisms

1. Introduction
Given the prominent role of the dollar exchange rate against the dinar as the main indicator of the prices and values of goods and services traded both locally and internationally in Iraq, as the economy is fundamentally dependent on international experiences to cover and secure the bulk of its needs and requirements.

Therefore, the dollar is the basis for all financial, commercial and economic transactions of the Iraqi economy, not only for the government and its public institutions, but for all members of society and companies, The gap between the exchange rate of the dollar sold at the Central Bank through the currency sale window and its price in the parallel market often arises for several internal reasons, including the increasing demand for dollars by importing traders, companies and individuals to secure their foreign requirements, and external reasons, the most prominent of which is the slow flow of dollars from the US Federal Bank to the Central Bank of Iraq as a result of the so-called fictitious financial transfers through which dollars flow to other illegal sources and channels. Therefore, our research came to shed light on this gap between exchange rates throughout the research period and analyze it, in addition to sensing the extent of its effects and consequences on the Iraqi economy through the most

important indicators that reflect its performance and stability, represented by the current spending.

II: Research issue

The research issue can be formulated through the following question:

How does Iraq's exchange rate gap affect current spending after 2004?

III: Research hypothesis

The exchange rate gap did not play a positive role in increasing current spending in Iraq during the research period.

IV: Research Goals

1. Studying the impact of exchange rate changes on current spending in Iraq during the research period.
2. Using standard models and methods to analyze the extent of the impact of this emerging gap on some indicators of economic performance in Iraq after 2003.

V: Research Importance

The importance of the research comes through

1. There is a set of concerns, whether financial or economic, especially those related to the change that occurred in the Iraqi economy after 2003 and the beginning of reliance on the market economy, after 2003, the Iraqi economy turned from a centralized economy to a more open economy than it was, which affected the exchange rate and became a key tool in the country's monetary policy and its impact on current spending.
2. High dependence on oil revenues in dollars, and the exchange rate gap, which means (the difference between the nominal exchange rate at which the government deals and the parallel rate).
3. The gap affects the country's current spending through its direct impact on the government's purchasing power, as government expenditures float in Iraqi dinars while revenues are determined in dollars, and therefore the wider the gap between the nominal price and the parallel price, the higher the government losses when the dollar is converted into Iraqi dinars at irrational prices.

VI: Research Methodology

The researcher relied on the inductive method in order to achieve the desired objectives of the research, which is to confirm its hypothesis based on answering the main research question using the descriptive analysis method based mainly on the theoretical information available from sources and books, The researcher relied on the quantitative econometric analysis method based on time series data after 2003, and in order to estimate the adopted standard model, the following statistical data expressed in current prices were used. A standard program (Eviews9) was used to estimate the model.

VII: Temporal and spatial boundaries of the research

1. Spatial boundaries: Iraqi economy
2. Temporal boundaries: The time period adopted in the research (2004_2023).

Previous Studies

Sabrin Adnan Wali 2020 [36]: (The impact of exchange rate fluctuations on the general budget of Iraq (2004_2018) The essence of the issue addressed by the study lies in the lack of clarity of the impact of foreign exchange rate fluctuations on the Iraqi budget and the main issue of the research revolves around the positive and negative effects of the foreign exchange rate on the general budget, The research is based on the hypothesis that foreign exchange rate fluctuations have positive and negative effects on the public budget. The study aims to clarify the effects that foreign exchange rate changes can have on the public budget, and to identify the relationship between the exchange rate and the public budget, The study showed that there is an inverse relationship between the dollar exchange rate and the general budget deficit, as any case of a decrease in the exchange rate for any country works to increase the demand for its exports, and a decrease in the exchange rate for the dollar works to increase the deficit in the general budget of the country. Establishing an institution that is responsible for the foreign exchange rate and is supervised by the Central Bank to collect data and information on foreign exchange rates for foreign currencies.

Rushdy Ibrahim Elsayed Abu Karima 2022[25]

(The impact of exchange rate liberalization on the general budget and some economic indicators in Egypt) The issue of the study includes the economic problems suffered by the Egyptian economy, which cast a shadow on some economic variables, including the country's budget deficit and exchange rate changes, The liberalization of the exchange rate and the devaluation of the Egyptian pound in addition to variables such as public debt, inflation, trade balance, and interest rates increase the deficit in Egypt's public budget, The study aims to prove the relationship between the impact of exchange rate changes on the country's general budget and clarify the extent of its seriousness. Most developing countries, especially Egypt, suffer from a semi-permanent deficit in their general budgets as a result of the increasing rise in public spending with a sharp decline in public revenues, and the exchange rate liberalization policy must be accompanied by an increase and diversification in exports and not depend on specific areas of export.

Santiago Acosta ormaechea 2020 [37]

(Intra year exghange rate fluctuation and public debt dynamics) Countries, especially those with debt denominated in foreign currency, face the risk that public debt-to-GDP ratios are affected by exchange rate changes during the fiscal year. Failure to consider the impact of exchange rate fluctuations leads to distortions in the public debt account, which reduces the accuracy of forecasting financial risk indicators, Clarify the impact of exchange rate changes during the year and not only at the end of the fiscal year on the stock of public debt, countries that have experienced severe exchange rate depreciation, the release of the stock resulting from exchange rate changes within the year recorded up to 1.2% of GDP, this is a significant impact, the change resulting from exchange rate disturbances during the year must be included in public debt analyses to give a highly accurate assessment of financial risks, especially countries that rely on external support or face exchange rate fluctuations.

The first topic: Theoretical and conceptual framework of the exchange rate gap and current spending
The first requirement

First: The concept of the exchange rate gap
The exchange rate gap represents the difference between the nominal rate that is set by the Central Bank of Iraq and the parallel rate that is dealt with in unofficial markets, and the exchange rate gap in Iraq appeared prominently after the events of 2003 due to economic changes and began to widen after 2020 due to the limitation of foreign transfers and the lack of dollars in the internal market in addition to the tightened sanctions on most banks, The exchange rate gap expresses the existence of disorder and chaos in the country's monetary policy or in the way foreign exchange is managed, which adversely affects the country's economic process by raising the volume of inflation, undermining the credibility of monetary and financial policies, and reducing the purchasing power of individuals, in addition to providing an opportunity for money laundering and smuggling phenomena.
This gap is due in part to US regulations on financial transfers, which affected Iraqi banks and their ability to buy dollars at official prices, which stimulated parallel markets to set higher prices. (Central Bank of Iraq 2023, International Monetary Fund).
According to the International Monetary Fund, the exchange rate gap can be defined as the difference between the nominal prices set by the monetary authority for the local currency towards foreign currencies and the prices traded in the unofficial (parallel) market, which reflects the presence of defects and sagging in the exchange market due to restrictions imposed or lack of confidence in the local currency of the state, which leads to a difference in the nominal and parallel prices (International Monetary Fund, 2022).
The World Bank defines an exchange rate gap as an economic event that occurs when there are two dissimilar currency rates, one officially determined by the state and the other determined in the parallel market. The gap usually indicates a scarcity of hard currency and balance of payments issues (World Bank, 2023) [32].
Economists (Krugman and Obstfeld) [38] define the gap as the asymmetry between the official foreign currency market and the parallel market, and it appears clearly in countries that try to stabilize the exchange rate of their currency despite the existence of market pressures that give a lower or higher exchange rate (Krugman *et al.*, 2018: 441) [38].
A group of Arab researchers define the gap as the discrepancy between the official price of national currencies towards the dollar in the official market and the actual prices dealt in the parallel markets or what is known as the black market, and this discrepancy is considered one of the most important signs of the existence of imbalances and chaos in monetary policies and the volume of demand for foreign exchange (Al-Khalifa, 33:2020) [20].
The exchange rate gap is defined as the difference between the official exchange rate announced by the Central Bank of Iraq and the parallel (market) exchange rate.
The exchange rate differential - the difference between the official rate and the parallel rate - is a real issue affecting the national economy in many ways. The economic aspects associated with parallel exchange rates are clear: they are very costly and highly distracting for all market participants, and are characterized by high inflation rates, hindering the development of private sectors and foreign investment, and low economic growth rates, Parallel exchange rates benefit groups that can obtain foreign currency at the subsidized rate paid by all, and there is a strong correlation between the existence of parallel exchange rates and corruption. Parallel exchange rates often arise in countries when imbalances in the balance of payments, and IMF policies call for resolving and addressing exchange rate distortions. (Malpas, 2023) [39].
The gap in the exchange rate of the dollar against the Iraqi dinar represents the divergence of the exchange rate of the dollar sold at the Central Bank in the currency window from its price in the parallel market, and this difference is due to several reasons, some of which are internal, represented by the increasing demand for dollars by individuals, importing traders and companies in order to obtain their insurance against their foreign obligations. As for the external reasons, they are represented by the slow and erratic flow of dollars from the US Federal Bank to the Central Bank of Iraq as a result of the so-called “fictitious money transfers” and the transfer of foreign currency from Iraq to some countries and traders that the United States considers hostile and are used, according to the US, to finance terrorist activity.
The Central Bank of Iraq is striving to minimize this difference according to the target price announced by it. When the reality of the dollar exchange market in the Iraqi economy is analyzed, several different exchange rate gaps are observed (Mohammed 2023.5) [40].

Second: Types of Exchange Rate Gap
Official Gap: This is the gap between the dollar price that is sold by the government, represented by the Ministry of Finance, to the Central Bank, which is set at 1300 dinars per US dollar, and this process is done in order to restrict the dollar assets that the government has as a result of its export of dollarized oil and convert them into local currency in order to complete the process of public spending and the continuation of the government in its financial activity, and the Central Bank, for its part, sells these dollar assets through the currency window to foreign exchange companies and commercial banks at a price of 1310 dinars per US dollar, This gap is estimated at 10 dinars per US dollar and contributes to an increase in the general rate of prices by 0.77%, and based on this difference, the central bank makes a net profit by the amount of its daily dollar sales multiplied by this difference.

Organizational Gap: This is the gap between the price of the dollar set by the Central Bank to commercial banks and to exchange and foreign transfer companies through the currency window, which is set at 1310 dinars per US dollar, and this process occurs in order to secure the external obligations of individuals, importing traders and companies on the basis that transfer companies and banks sell dollars at 1320 dinars per US dollar, and here this gap is estimated at 10 dinars per dollar and contributes to increasing the general rate of prices by 0.76.

Market Gap: It is the gap between the price of the dollar that is determined by the Central Bank to commercial banks, exchange companies and foreign transfer companies through the sale of dollars to importing traders, individuals and companies in order to meet their foreign obligations at a

rate of 1320 dinars for one US dollar, and what is actually done in the parallel market, and this difference changes temporarily according to supply and demand, which amounted to 1470 dinars per one US dollar, so there are two prices:

- **The first:** The USD selling price, which represents the supply of USD in the parallel market.
- **The second:** The dollar purchase price, which represents the demand for dollars, and is usually mediated by the market price, which is more or less than the market price, which ranges between 500_1000 dinars according to the exchange companies and the market. This gap is estimated at 160 dinars per dollar and leads to an increase in the general rate of prices by 12.2% (Muhammad: 2023 7_9).

Third: Factors affecting the exchange rate gap

There are several factors affecting the exchange rate gap in Iraq, most notably are:

Monetary expansion and monetary deregulation

The expansion of the money supply and financial liberalization is one of the most prominent factors that increase the difference between the official rate and the parallel rate (the gap) in Iraq. As the expansion of the money supply with high liquidity accompanied by the pumping of large quantities of oil leads to the deterioration of the official exchange rate and deepens the gap between the official price and the parallel price. (Al-Shammari, 2023:41). (Country Report, 2022) (United States, 2024) [41, 42].

Changes in oil prices: Where fluctuations in oil prices lead to fluctuations in revenues, as Iraq is directly dependent on oil revenues as the main financier of revenues, so any fluctuation in oil prices, whether high or low, directly affects government revenues, especially when oil prices fall, then revenues decrease and affect the exchange rate and create more pressure on the Iraqi dinar (Gunter, 2024:25) [44].

Monetary policies of the Central Bank of Iraq

The central bank's monetary policies affect the exchange rate gap through the mechanism of selling foreign currency, where the central bank relies on obtaining dollars since 2004, but this policy has become a loophole that leads to the smuggling of hard currency abroad at times, which reduces monetary efficiency. Also, the nominal exchange rate remaining fixed for a long time at 1450 and then coming down to 1300 in 2023 does not always reflect real demand and supply (Abdul Abbas, 2024: 101) [45].

Political stability and good governance

In times of political stability, the confidence of investors and individuals in the national economy rises, and thus limits the shift to buying foreign currency as a safe investment resort, and thus the demand for it from the parallel market decreases, and political stability helps the central bank to use effective monetary policies such as managed floatation, which works to regulate the flow of dollars and thus widen the gap between the official and parallel prices (Hantoush, 2025: 23) [46].

The second requirement

First: The concept and definition of public spending

After the clear development of the role of the state and its importance in intervening in all areas of economic, social and political life, one of the most prominent means of its intervention was public expenditures, and this made financial jurisprudence double the interest in studying these expenditures in terms of their definition, their forms, how they are divided and so on.

Writers in finance and economics almost unanimously agree on one definition of public expenditure, namely: It is a monetary amount paid by the state or one of its public legal entities in order to achieve a public benefit. Through this definition, we can identify three pillars of public expenditure: It is a monetary amount, paid by a public person, and the purpose of paying it is to achieve a public benefit (Ahmed: 2017:13) [2].

The role of public expenditures has evolved according to modern trends to become one of the most important tools of fiscal policy, especially by controlling purchasing power, the volume of employment and national income. Public expenditure is a major component of aggregate demand, as spending, both investment and consumption, is the axis on which the analysis and determination of aggregate demand levels is based and the most influential factor on the trends and pace of the national economy, and is mainly related to the country's development in economic activity and the reflection of this development in all instruments of fiscal policy.

The importance of public spending (public expenditures) is due to the fact that it is the means used by the state in achieving the role it plays in various fields and areas, as it reflects all aspects of activities, and clarifies government programs in all fields in the form of figures and allocations for each aspect of them, in order to meet the general needs of individuals and seek to achieve the greatest possible service for them.

Based on the above, researchers define public expenditure as "an amount of money that comes out of an administrative person's pocket to pay for a public need".

It is also defined as "a sum of money incurred by a person in the public sector, in implementation of the provisions of the public budget, with the aim of satisfying a public need." (Dagher, 2010:114) [21].

Second: Forms of Current Expenses

Salaries and wages

Employee salaries: This is done in exchange for the state obtaining the services of individuals according to the cost of living and the nature of the work based on the scientific and professional qualifications available in it. The state must also take into account the competition from the private sector and take into account the prevailing wages so as not to lead to the migration of experts and competent energies.

Pensions: represented by a cash amount provided by the state on a monthly basis to employees who have already deducted a certain part of their monthly salary during service to enjoy retirement from work, and this body may develop its resources by investing these accumulated amounts.

State procurement of various goods and services

Authority over procurement processes: Depending on the type of procurement, those that do not require expertise or

study are left to the decentralized authority, while contracts for public works and investments are handled by the central authority. The state obtains purchases by purchasing needs directly or relying on specialized suppliers.

Obtaining specialized suppliers: This is done through tendering or through practice, i.e. making an agreement with a specific supplier without announcing in advance the nature of the work you want to carry out when you want to keep confidentiality for a specific project, such as military and security projects.

Public debt installments and interest

Public loans represent a heavy burden on the state's general budget because they require it to bear annual interest as well as the repayment of the principal amount borrowed at the end of the time period specified in the terms of issuing the public purpose, and it is important for the state to get rid as much as possible of the burden of its public debts, whatever the type of these loans and their terms, by allocating financial resources to pay the public debt and its due interest, so the state establishes a so-called principal and interest fund (Riyadh: 43:46,2023) [47].

Third: Factors affecting public spending

There are a number of factors that affect the size of public spending in Iraq, most important ones are:

a. **GDP and high level of economic performance:** The GDP represents a base for the size of spending, as the larger the GDP, the more the national economy enjoys an abundance of financial resources flowing into the state treasury, especially non-oil revenues, which expands government spending on development projects and infrastructure services (Mohammed, 2020) [40].
b. **Inflation and its impact on government spending:** It leads to an increase in the prices of goods and services and thus pushes the state to adjust salaries and wages and enhance spending on government purchases due to the decline in the real value of the dinar. Unstable inflation limits the state's ability to plan long-term projects, and the budget is estimated on current prices that do not take into account future price fluctuations, which increases the cost of realistic implementation. (Tohmeh, Ali, 2024).
c. **Unemployment and high population growth:** Unemployment works to expand government jobs as a social factor to reduce the unemployment rate and thus increase the size of expenditures, especially current expenditures. Also, the large increase in the population raises the size of public needs and requirements such as services, thus generating more pressure on the general budget of the country. (Harran, Al-Shammari, 2023) [41, 49].
d. **International oil prices:** When oil prices rise, oil revenues also increase, thus increasing state revenues in hard currency and expanding operational and investment spending, as the cruder oil prices increase, the more financial flows to the treasury and allow the state to stimulate spending on development projects and public sectors (Abdul Latif, Khamas, 2023) [50]. Iraq's budget depends very heavily on oil and this makes public spending in Iraq go through severe fluctuations according to the level of prices in the world, so any setback in oil prices with weak investment spending forces the state to limit spending and resort to borrowing. (Maarouf, 2016) [51].
e. **Lack of optimal utilization** of oil revenues and the absence of a culture of government savings, where poor financial planning and the absence of rational management of oil revenues reduce the volume of effective government spending and the country's almost complete dependence on oil revenues makes the spending process very dependent on changes in oil prices without an effective and flexible savings policy. (Jawad, 2012) [19].
f. **Military spending and the inadequacy of austerity policy:** Security spending increases due to security conditions and crises, thus shifting spending towards security and military services and reducing the volume of investment revenues. Also, responding to changes in revenues, especially oil, by reducing the size of spending and following an austerity policy directly affects strategic projects and a shift in the annual spending pattern. (Karfoua, *et al.* C2: 2021) [52].

The third requirement: Analyzing the relationship between the exchange rate gap and current spending

The rise in public spending in general and current spending in particular has led to continuous increases in the monetary incomes of members of society, which in turn leads to an increase in internal demand and consumption. From the data in Table 1, we note that current expenditure has recorded fluctuations between low and high for the years (2004 - 2008) due to the development of the administrative government and the absorption of more numbers of workers in new government jobs, as well as the rise in operational expenses to provide production inputs to government institutions and the updates made by the state on the scale of wages and salaries.

Where the gap between the official and parallel prices for those years amounted to (0,3,8,12.10) where the exchange rate of the Iraqi dinar witnessed a development towards the US dollar as a result of the intervention of the Central Bank of Iraq in the currency auction and this reflected positively on the exchange rate despite the size of public spending and specifically the demand for goods in front of the fragility of local production in meeting total demand and in 2009 and as a result of the reduction in the price of oil due to the global financial crisis (mortgage) current spending in Iraq decreased to record (45,941) billion dinars and the exchange rate gap for that year reached (9), The current expenditure then varied between the increase and decrease for the years 2014, 2015, then recorded an increase in 2017 and continued to rise more in 2018 and 2019 to reach the current expenditure in 2018 (67,053) billion dinars and 2019 (87,301) and the reasons for the increase in current expenditure are due to improving the security situation and rid some cities from the control of ISIS (security stability) and the rise in oil prices in the world and the gap between the official and parallel prices reached (16).

As a result of the pandemic that hit the world (Covid-19) in 2020, current spending decreased and then rose again in 2021 as a result of controlling the pandemic, the rise in oil prices, and the increase in Iraqi oil revenues. Where the gap widened a lot and the gap between the official and parallel price reached (125), From 2021 to 2023, Iraq's exchange rate gap remained relatively stable between 2021 and 2022, which was reflected in current spending. As the gap

stabilized, the government was able to maintain current spending levels without a significant increase despite economic challenges. In 2023, changes in the gap emerged, requiring an adjustment in current spending to counter fiscal pressures and inflation. This correlation illustrates the responsiveness of current spending to stabilize government services and salaries under exchange rate changes. This shows that the exchange rate gap, even if it does not change, plays a role in determining the size of current spending in line with the economic situation. In the following, the stability of the gap emerges as an important factor in maintaining the balance of current spending.

Table 1: shows the relationship between the exchange rate gap and current expenditure in Iraq for the period 2004-2023

year	Public spending	Current spending	Exchange rate gap	year	Public spending	Current spending	Exchange rate gap
2004	31,531	27,594	0	2014	125,320	86,568	48
2005	30,861	27,066	3	2015	84,695	56,917	57
2006	37,495	32,218	8	2016	73,571	55,163	35
2007	39,310	32,721	12	2017	75,491	59,062	68
2008	67,278	52,302	10	2018	80,873	67,053	16
2009	55,590	45,941	9	2019	111724	87,301	12
2010	70,135	54,581	16	2020	72,873	60,866	125
2011	78,760	60,926	26	2021	102,849	89,526	27
2012	105,140	75,789	67	2022	116,959	104,941	27
2013	119,130	78,747	66	2023	198,910	149,559	18

Source: Prepared by the researcher based on data from: Republic of Iraq, Ministry of Finance, Economic Department, Data Series.

The second topic: Standardized analysis of research variables

The first requirement\ I: Results of unit root tests for the time series in question

Based on the Phelps-Perron and Dickey-Fuller tests, the unit root test for the time series of the study variables is presented in the following table:

Table 2: Symbols of research variables

Name of Variable	Symbol	Indication
Exchange Rate Gap	X111	Independent Variable
Public Spending	CG	

Source: Prepared by the researcher

II: Dickey-Fuller Composite Test (ADF) results

Table (2) shows the results of the unit root test according to Dickey Fuller's composite test for the variables in the presence of a fixed term, a constant term and a general trend, as the results of the test indicate that there is no stationarity at the original level, as the (t) value calculated is smaller than its critical value at a significant level (1%, 10%), so the null hypothesis is accepted (H0: B=0) which states that there is no unit root in these time series data.

The results of this test also indicate that the variables are not stationary at their original level and that they stabilize when the first difference is taken, as the calculated t value is greater than its critical value at a significant level (1%), so the null hypothesis (H0: B=0) is rejected and the alternative hypothesis (H1: B≠0) is accepted. which states that there is no unit root, thus concluding that these variables are integrated of the first order I(1) and that this result is supported by critical probability values smaller than (1%).

Table 3: Results of the Augmented Dickey Fuller (ADF) test for the variables

At Level		GC	X111
With Constant	t-Statistic	-4.4626	-1.9763
	Prob.	0.0005	0.2966
With Constant & Trend	t-Statistic	-4.7883	-1.8259
	Prob.	0.0012	0.6822
At First Difference		d(GC)	d(X111)
With Constant	t-Statistic	-3.3633	-3.3718
	Prob.	0.0155	0.0152
With Constant & Trend	t-Statistic	-3.2813	-3.4360
	Prob.	0.0774	0.0544

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

1. (*), (**), (***) are significant at 1%, 5%, and 10% significance level according to the tabular values, respectively.
2. () The numbers in parentheses indicate the length of the appropriate slowdown period according to the Schwarts Criterion.

III: Phelps-Perron (PP) test results: Table (4) shows the results of the unit root test according to Dickey Fuller's composite test for the variables in the presence of a fixed term, a constant term and a general trend, as the results of the test indicate that there is no stationarity at the original level, as the (t) value calculated is smaller than its critical value at a significant level (1%, 10%), so the null hypothesis is accepted (H0: B=0) which states that there is no unit root in the data of these time series, The results of this test also indicate that the variables are not stationary at their original level and that they stabilize when the first difference is taken, as the calculated (t) value is greater than its critical value at a significant level (1%), so the null hypothesis (H0: B=0) is rejected and the alternative hypothesis (H1: B≠0) is accepted. which states that there is no unit root, thus concluding that these variables are integrated of the first order I(1) and that this result is supported by critical probability values smaller than (1%). These results are consistent with the unit root test using the Augmented Dickey Fuller (ADF) test.

Table 4: Results of the Phelps-Perron (PP) test for the variables

At Level		GC	X111
With Constant	t-Statistic	-3.9078	-2.1114
	Prob.	0.0031	0.2409
With Constant & Trend	t-Statistic	-3.7523	-2.0030
	Prob.	0.0245	0.5906
At First Difference		d(GC)	d(X111)
With Constant	t-Statistic	-4.8148	-5.3964
	Prob.	0.0001	0.0000
With Constant & Trend	t-Statistic	-4.8291	-5.3789
	Prob.	0.0010	0.0001
		***	***

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

1. (*), (**), (***) are significant at 1%, 5%, and 10% significance level respectively. According to (adj. t-Statistic) tabulated values of (Mackinnon: 1996).
2. () The numbers in parentheses represent the optimal number of serial correlation intervals in the PP test according to the (Newey west) test using the (Bartlett Kernel) method.

The unit root test was performed using Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) tests to check the stability of the variables. The results showed that most of the variables were unstable at level but became stable at first difference. This result supports the possibility of using an ARDL model that requires the variance of the degrees of integration to vary between I(0) and (1).

The second requirement- Standard Model Estimation

First: ARDL model selection criteria

Based on the Akaike criterion (AIC), the ARDL (2, 1, 2) model was selected as the best model, as it achieved the lowest AIC value and the highest value of the adjusted coefficient of determination (Adjusted R-squared), which indicates its high efficiency in explaining the relationship between the variables.

Second: Bounds Test for Co-integration Boundaries

The results of the bounds test showed that the F-statistic value amounted to (5.55), which is greater than the critical values at different significance levels, which means rejecting the null hypothesis and accepting the existence of a cointegrating relationship between the variables in the long run.

Table 5: Results of the co-integration test using the bounds test for the (UECM-ARDL) model.

Result	Value	Test statistic
Having a co-integration relationship	5.550279	F statistic
Critical value Bonds for F-test when k = 1		
Upper bound value I***(1)***	Threshold value I***(0)***	Significance level
3.09	2.2	%10
3.49	2.56	%5
3.87	2.88	2%
4.37	3.29	1%

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9) Ninth version.

Table (5) shows the results of calculating the (F) statistic using the method of boundary test, as the calculated F value of (5.550279) is greater than the upper boundary value of (4. 37) at a significant level (1%), which means accepting the alternative hypothesis (H_(1): b_1≠b_2≠b_3≠⋯≠b_7≠0) and rejecting the null hypothesis (H_0: b_1=b_2=b_3=⋯=b_7=0), that is, there is a long-term equilibrium relationship between the exchange rate and the explanatory variables and thus the existence of a co-integration relationship between the variables in the model used for research.

Third: Error Correction Model (ECM)

Table 6: Error Correction Model (ECM)

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	-5.991942	0.032286	-0.193456	CointEq(-1)*

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

The results of the error correction model showed that the error correction coefficient was negative and significant (-0.1935), indicating a rapid correction of deviations and a return to long-term equilibrium that reflects the ability of fiscal policy to restore equilibrium after economic shocks.

Fourth: Estimation results for long- and short-term parameters: Since the F statistic indicates the existence of a long-run equilibrium relationship between government spending and the explanatory variables, the long-run and short-run estimators of the ARDL model parameters must now be obtained. The following tables show the results of these estimates.

Table 7: Short-term Estimates

ARDL Error Correction Regression				
Selected Model: ARDL(2, 2, 2, 1, 2)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GC(-1))	0.412367	0.073487	5.611444	0.0000
D(X111(-1))	0.023941	0.008102	2.954943	0.0044
CointEq(-1)*	-0.193456	0.032286	-5.991942	0.0000
R-squared	0.822936	Mean dependent var		-0.130710
Adjusted R-squared	0.802406	S.D. dependent var		0.971266
S.E. of regression	0.431743	Akaike info criterion		1.266192
Sum squared resid	12.86171	Schwarz criterion		1.538120
Durbin-Watson stat	2.126209			
* p-value incompatible with t-Bounds distribution.				

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

It can be seen from Table 7 that the variables that were selected based on economic theory to explain the magnitude of changes in government spending, some of them were positive and others were negative, and most of the variables were significantly significant and affect government spending significantly.

Table 8: Long-term estimates

ARDL Long Run Form and Bounds Test				
Selected Model: ARDL(2, 2, 2, 1, 2)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.168004	0.864884	4.819146	0.0000
GC(-1)*	-0.193456	0.037772	-5.121612	0.0000
X111(-1)	-0.012052	0.003161	-3.813046	0.0003
D(GC(-1))	0.412367	0.083651	4.929621	0.0000
D(X111)	-0.038201	0.008608	-4.437710	0.0000
D(X111(-1))	0.023941	0.008762	2.732214	0.0081
* p-value incompatible with t-Bounds distribution.				

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

The long-run results indicated a non-significant positive relationship between GDP and government spending, while inflation and the gap had a negative and significant effect.

It is clear from the estimates of the parameters of the short-term model in Table (8) that they largely agree in terms of the level of significance and signs with the results of the long term estimators, although the values of the parameters varied in different proportions, and the error correction coefficient (Coint Eq(-1)) expresses the speed of adjustment from the short term to the long term, which requires it to be negative and significant to provide evidence of a long-term relationship between the research variables, and through the results in Table (3-8) the value of the error correction coefficient (ECM) appears) is significant and takes a negative value, That is, deviations in the short term are corrected in the long term to set the equilibrium, as the error correction parameter takes the negative sign, which is statistically significant at a significance level of less than (1%), which means that the imbalance in the long-term equilibrium is corrected with an adjustment speed of (19%), Note that the estimates of the parameters of the long-run model measure the total effect, i.e. the direct and indirect effect of the change in the independent variables (external or internal time-bound) in each internal (dependent) variable, while the estimates of the parameters of the short-run model measure the direct effect only of the independent variable (internal or external) in the dependent (internal) variable, and what matters to the policy maker is the total effect of the changes of the explanatory variables in the adopted variable.

The Third Requirement- Evaluating the estimated model statistically and metrically

I: Evaluating the statistically estimated model

As for the statistical indicators, it is noted that the estimated model is statistically sound in general, all explanatory variables are significant according to the (t) test, except for the short-term parameter of the variable of the degree of economic openness, and the value of the corrected coefficient of determination (Adjusted R-squared) reached 80% indicating the quality of the model and this indicates that the explanatory variables in the model explain a large percentage of the behavior of the dependent variable government spending, and the standard error of the model was very small (0. 451730) and the (F) test was statistically significant at a significance level (1%) of (122.5729), which confirms the validity of the estimated model as a whole.

II: Evaluating the estimated model

After estimating the parameters of the model for the long-term and short-term relationship, and in order to ensure the quality of the estimated model before adopting it, diagnostic tests or the so-called Diagonstic Checking test were conducted as in the following table:

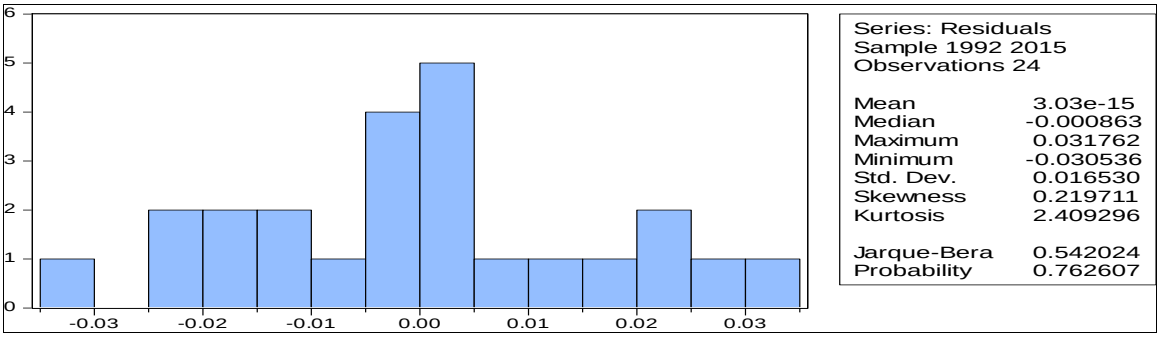
Table 9: Tests to examine the fit of the estimated model

BGLM	ARCH	JB	RESET
F= 5.3137 Pro.: (0.2024)	F= 2.6068 (0.0999)	0.5420 (0.7626)	F= 9.9216 (0.0128)

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

Table (9) shows the following

1. The BGLM statistic indicates that the model is free of serial correlation issue.
2. The ARCH statistic indicates acceptance of the null hypothesis of homoscedasticity in the estimated model.
3. The Jarque _ Bera (JB) test statistic indicates the acceptance of the null hypothesis that the random errors are normally distributed in the estimated model as shown in Figure (1)



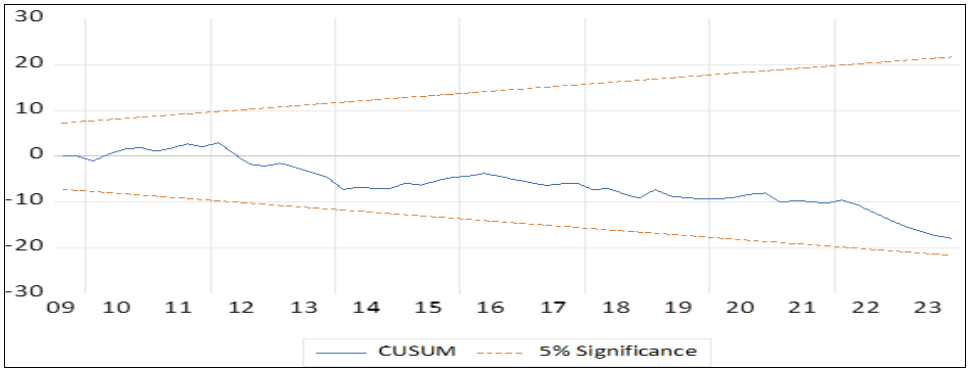
Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

Fig 1: Normal distribution of estimated model residuals

1. The RESET (Ramsey symbolic test) and F-test statistics indicate the validity of the (logarithmic) functional form used in the model.
2. As for the issue of autocorrelation, the value of the D-W statistic (2.126) can be used to detect the issue of autocorrelation. The above result indicates that the value of the D-W statistic is insignificant, which indicates that the estimated model is free from the issue of autocorrelation of the random error term.

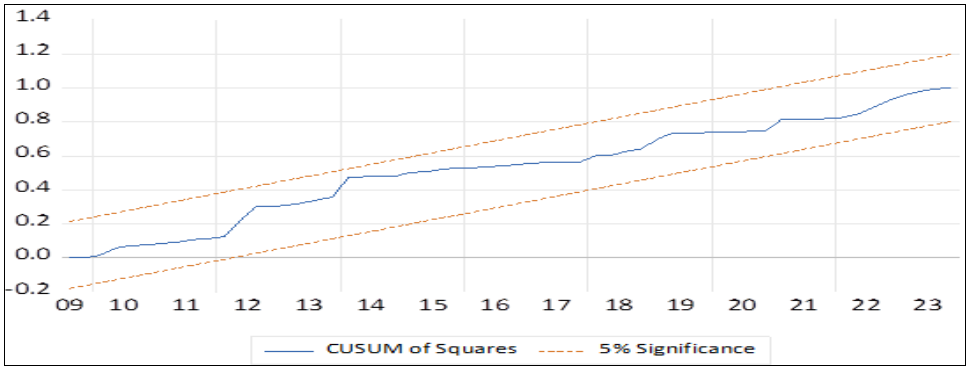
III: Results of the structural stability test for the coefficients of the ARDL model

To ensure that the data used in this study are free of any structural changes and the stability and consistency of long-term coefficients with estimates of short-term parameters, the tests used for this are the cumulative sum of residuals test (CUSUM) and the cumulative sum of squares test (CUSUM SQ), which are two of the most important tests in this field, as shown in the following graphs:



Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

Fig 2: Cumulative sum of residuals returned to test the stability of the ARDL model coefficients



Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 9).

Fig 3: Cumulative sum of squares of the residuals returned to test the stability of the ARDL model coefficients

Many studies have shown that such tests are associated with the ARDL methodology, and it is clear from graph (13) that the cumulative sum of squares (CUSUM) test for this model falls within the critical limits at a significant level (5%), indicating that there is stability and consistency in the model estimates between the long term results and the short term results, That is, the estimated coefficients of the unrestricted error correction model (UECM) used are structurally stable

during the time period under study, and the results of the cumulative sum of squares test showed the stability of the estimates during the time period (2009-2012) as shown in graph (3).

Conclusions

1. The exchange rate gap in Iraq is one of the most important issues that have weakened the effectiveness of fiscal policy, as it has caused significant fluctuations in the cost of government spending, especially with regard to government supplies and foreign contracts.
2. The exchange rate gap between the nominal and parallel rates has led to financial imbalances within the structure of the general budget, especially with regard to the estimation of current and investment spending.
3. The error correction coefficient indicates the speed of correction of short-term fluctuations. The ecm parameter was negative and statistically significant, which indicates the ability of the economic system to create equilibrium after a crisis, as about 19% of the deviations are adjusted in each time period.
4. The cusum and cusumsq tests show that there are no structural differences that limit the stability of the coefficients of any structural equilibrium of the model coefficients during the study period (2004_2023), which enhances the reliability of the results derived from the model.

Recommendations

1. The need to develop formal mechanisms for coordination between monetary and fiscal policies to ensure the harmonization of objectives and the unification of measures to effectively address exchange rate fluctuations. And activate the use of unconventional monetary policy tools such as open market operations and direct intervention in the exchange market to reduce the exchange rate gap and enhance its stability.
2. It is necessary to adopt a flexible exchange rate policy that allows adaptation to market fluctuations and reduces the gap between the official and parallel rates, which contributes to the stabilization of government spending. Work to improve budgeting methods by including multiple scenarios for exchange rate fluctuations to achieve greater flexibility and accuracy of budgets that reflect the actual conditions of the economy.
3. Raising the level of transparency in the exchange market by modernizing trading mechanisms and monitoring financial operations to reduce the parallel market and minimize the gap between the official and parallel price. In addition to establishing an integrated economic information system that combines revenue and expenditure data and exchange rate indicators in order to produce accurate reports that contribute to improving the financial decision-making process
4. Reducing and controlling the exchange rate gap to stabilize government spending and encourage fiscal performance. Therefore, it is necessary to use and apply political and economic measures to reduce the size of the gap between the nominal and parallel rates to support fiscal stability.

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