

# Analyzing and Measuring the Relationship between Public Spending and the Parallel Exchange Rate in the Iraqi Economy for the Period 2004-2022

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## **Abstract**

Public spending represents the government's financial leverage and has a significant impact on real and monetary economic variables, and one of these effects is the effect of public spending on the exchange rate as an important monetary variable for monetary policy, As we know that public spending in Iraq is financed from oil revenues sold in US dollars, and the Ministry of Finance converts the US dollar into Iraqi dinars to finance the government's need to spend within the requirements and obligations of the state's general budget, And converting the US dollar into Iraqi dinars has an impact on the parallel exchange market, even if there is a contractual exchange rate between the Ministry of Finance and the Central Bank of Iraq to convert the budget dollar into Iraqi dinars. However, the impact of public spending on reserves makes financial shocks have a significant impact on the exchange rate. The researcher believes that there is a reciprocal relationship between the effect of public spending on the exchange rate and the impact of the exchange rate on public spending because the conversion compass between the dollar and the dinar leaves great effects on public spending in the state's general budget, and this is what the researcher achieved by using modern standard software to discover the nature of the relationship between public spending and the price of Exchange in the parallel market with realistic monthly data taken from the official website of the Central Bank of Iraq.

**Keywords:** Public Expenditure, Parallel Exchange Rate, Nominal Stabilizer, Co-integration, Error Limit Correction Vector Model.

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## **Introduction**

With the rentier nature of the Iraqi economy, being an economy that depends on extracting and exporting minerals without relying on the production of goods produced by the public on the one hand, and the weakness and imbalance in the management of financial resources due to fixed financial obligations corresponding to unstable financial credits, on the other hand, public spending shocks left on the market exchange rate due to the impact of spending year on foreign reserves, and during the presentation of the research variables, it was found that public spending began to increase due to unnecessary expenditures included in the budget, in addition to the presence of corruption in public institutions. And because of the general tendency towards the budget's orientation towards maximizing consumer welfare at the expense of maximizing production, it has strengthened the rentier phenomenon of the Iraqi economy, leaving it with the influence of the philosophy of the local economy, which maximizes the phenomenon of free rides for individuals.

The conclusion drawn from the research is the existence of reciprocal effects between public spending and exchange rate shocks in the market through the effect of public spending on the demand for foreign currency represented by the US dollar, and that short-term fluctuations between public spending and the exchange rate led to equilibrium in the long run.

## **Research Problem**

The rentier nature of the Iraqi economy and the disruption of the local production structure caused a rise in aggregate demand for goods and services produced abroad, which means high levels of public spending and shocks in the parallel exchange market.

## **Research Hypothesis**

There is a long-term equilibrium relationship between public spending and the parallel exchange rate in the Iraqi economy by the increase in public spending and meeting aggregate demand from abroad and the budget need for the Iraqi dinar and the replacement of foreign currency with the Iraqi dinar for the purpose of running public spending.

## **Research Objective**

Shedding light on the relationship of public spending to the parallel exchange rate in a rentier economy that is closely linked to abroad in meeting aggregate demand.

## **Research Limits**

The limits of spatial research is the Iraqi economy, and the limits of temporal research are the period between the first month of 2004 until the second month of 2022.

## **Research Methodology**

The descriptive approach, both deductive and inductive, was relied upon to study the main concepts of public spending and the exchange rate, data analysis and extrapolation to display the relationship between the studied research variables and the reliance on the standard approach in proving the research hypothesis that there is a causal relationship between public spending and the parallel exchange rate.

## **Research Structure**

The research was divided into three main sections, where the first topic focused on the conceptual framework of public spending and the exchange rate, and the second topic touched on the analytical framework of the relationship of public spending with the parallel exchange rate in the Iraqi economy, while the role of the third topic was to estimate the relationship between public spending and the parallel exchange rate in The Iraqi economy for the period between the first month of 2004 until the second month of 2022.

### **1. The Conceptual Framework of Public Spending and the Exchange Rate**

#### **a) The Conceptual Framework of Public Spending**

The theoretical basis for public spending can be started from Wagner's law, which shows the relationship of income and population growth to the growth of public spending in the German economy, He stressed that the high rate of economic growth stimulates the increase in the growth of public spending at a rate greater than the rate of economic growth itself due to the traditional functions of the state, the expansion of economic activity and the increase in demand for public goods. A.T. Peacock - J. Wiseman analysis also states that public spending is a function of the political decision related to voters' votes, with the aim of voters benefiting from public services provided by the state and reducing taxes imposed on them. However, the volume of public spending is affected in times of natural

crises and wars, which reduces public spending and increases Tax levels imposed on the public, which is achieved by the effect of substitution or substitution between public spending and tax on voters. (Khoshnaw, 2012). It is clear from the foregoing that changes in public spending as a public financial policy are a function of economic growth, population growth and the development of the political culture of voting individuals and that the state has a heavy foothold in the economy and has a significant impact on many real and monetary economic variables alike.

The changes in public spending and public revenue affect the gross domestic product in the short term, and these changes work to counter the economic cycles that distance the actual GDP from the expected level of output. Therefore, changes in expenditure and public revenue are called fiscal policy that is resistant to the economic cycle. In order for the financial policy that resists the economic cycle to succeed, it must take into account the three-time intervals, which are the perception interval, which is the time interval between the need for state intervention and the realization of that need, and the anchoring interval is the time interval between realizing the need and approving the appropriate policies for treatment or intervention, and the impact interval is the time interval between the use of appropriate financial policies and their impact on the gross domestic product. (Al-Dagher, 2019). It is possible to reduce the time intervals of the financial policies to an internal interval, which is the standard time for realizing the specific problem in the economy and developing appropriate financial solutions to it. And to an external time interval, which is the standard time to address the specific problem in the economy and to show the impact of that treatment and its positive and negative repercussions on all economic variables, whether monetary or real. In the least developed countries, public spending is linked to increased trade openness, and the more centralized public spending is, the greater the link with trade openness (Shelton, 2007).

This is true in the case of the less developed Iraqi economy, as it is one of the rentier countries that depend on extracting and exporting minerals instead of relying on the commodities produced by the economic community. This production is governed by the economic activities associated with production such as distribution, exchange, consumption, and the availability of organized market mechanisms that determine prices, production and the volume of aggregate demand.

We also know that the increase in the highly centralized public spending in the Iraqi economy causes great pressure on the inelastic aggregate supply, which causes the increase in public spending to shift to the development of the external commodity production base for the exporting countries of Iraq and the increase in trade openness. This makes a link between central public spending and trade openness with abroad, which causes bleeding of foreign currencies and pressure on foreign reserves generated from the oil dollar. Public spending may affect GDP growth more than inflation, provided that aggregate supply is elastic in the short term (Coyal, 2018).

A summary of the foregoing is that public spending affects trade openness, which affects the exchange rate through its impact on the interest rate and the increase in hard currency flows to the local economy, meaning an increase in demand for the local currency and an increase in the exchange rate of the local currency this may lead us to the phenomenon of double deficit in the state's general budget and trade balance due to changes in public spending that lead to an increase in output and a rise in the volume of commodity imports on the one hand, and changes in public spending that raise the interest rate according to the updated Keynesian model, which encourages an increase in demand for the local currency and an increase in the value of The currency and the decline in the value of exports and the realization of a deficit in the current account.

#### **b) The Conceptual Framework of the Exchange Rate**

The exchange rate is defined as the price of exchanging a foreign currency for units of a local currency or vice versa. This is done in the exchange market or the various local and foreign currencies market according to the mechanisms of supply and demand for currencies (Abu Sharar, 2015).

The exchange rate has three systems, the first is the free or flexible exchange rate system, the second is the floating exchange rate system, and the third is the controlled exchange rate system by the state. The free exchange rate system is the system that is determined by market forces and mechanisms without interference by the state, and the floating exchange rate system is the system in which the monetary authority intervenes indirectly to modify the exchange rate and is a compass and indicator of the parallel exchange rate, while the controlled exchange rate system is the system Determined by the state directly and according to specific regulations (Abdul Qadir, 2011).

From the foregoing, the exchange rate represents an important monetary tool for evaluating foreign currencies, and that the exchange rate is not a single price system, but rather several systems, and according to the economic philosophy of the state, and the extent and ability of the monetary policy's impact on the management of the exchange rate and the regulation of foreign payments, therefore, the market, monetary policy and the government

represented by the Ministry of Finance are the triangle that determines the nature of the exchange rate system in the local economy and the impact of this difference in the nature of the exchange rate system on the trade balance and other economic variables. The nominal exchange rate represents the bridge that links the local economy to the global economy. The nominal exchange rate is the basis for determining the value of the real exchange rate. The exchange rate has an important role in achieving macroeconomic stability and represents the incentive to engage in foreign trade (Williamson, 2009). In the sense that the nominal and real exchange rate and the foreign price index and domestic prices determine the value of exports and imports, that is, the value of the trade balance, so it is not only the nominal exchange rate that links the relationship between the local economy and the global economy, but the real exchange rate and the price index of foreign and domestic goods.

The expansion in public spending is one of the reasons for the increase in the volume of GDP, which raises the level of import of goods and services and realizes the deficit in the trade account, which raises at the same time the tendency towards raising the interest rate and the flow of foreign currency into the economy and the realization of a surplus in the capital account and addressing the temporary deficit. (Dornbusch, 1982) In the sense that what Dornbusch went to reflects the truth of the analysis that Marcus Fleming and Robert Mandel went to in their model (IS-LM-BP) in the impact of public spending on the transitions of the commodity or real market curve with the monetary policy remaining without causing changes in its monetary tools such as amounts of money supply Which drives changes in fiscal policy, i.e. changes in public spending, to an increase in GDP and an increase in the interest rate, which means temporary self-treatment of the current account deficit through the capital account surplus and the transition of the balance point in the local economy to a higher point.

The monetary model that explains the movement of the exchange rate focuses on the balance in the balance of payments as the final determinant of the exchange rate. Where the monetary model emphasizes the effect of equilibrium in the money market and the quantities of money supply in determining the nominal exchange rate. The model gives a clear idea of the interest rate relationship with the exchange rate in the local economy (Mussa, 1984).

When the state pursues expansionary financial policies, this leads to an increase in the interest rate in the case of free movement of capital between countries, an increase in foreign demand for the local currency and an increase in its internal value, which causes a decrease in the value of exports and an increase in the value of imports, which is reflected in the current account deficit. The state adopts contractionary fiscal policies. (Sawyer-Sprinkle, 2015) Therefore, the monetary model that explains the movement of the exchange rate links the exchange rate to the monetary balance specified for the interest rate and the automatic treatment of imbalances in the trade balance. It also explains the effects of movements in the real market as a result of intervention by fiscal policy.

## **2. The Analytical Framework of the Relationship of Public Spending and the Parallel Exchange Rate in the Iraqi Economy**

The monetary system in Iraq after the Central Bank of Iraq obtained relative independence according to Law 56 of 2004 changed the exchange system for foreign currencies, Where the exchange rate system, which represents the exchange rate the external value of money, and because of the correlation between oil revenues in foreign currency and the monetary issuance, the exchange rate system has gradually changed from a floating exchange rate system managed by the Central Bank of Iraq to a highly stable exchange rate system, and the currency window managed by the Central Bank of Iraq performs the function of monetary sterilization, that is, avoiding the impact of foreign currency on the monetary basis through the Central Bank buying the dollar and converting it into dinars granted to the government to meet the needs of the state's general budget (Saleh, 2019). Therefore, the exchange rate in Iraq has become an important monetary tool for monetary policy and an important signal to the public in feeling the pulse of economic and monetary stability, and that monetary policy's defense of the official exchange rate gives a strong signal to the market in regulating and determining the amount of the parallel exchange rate. Therefore, the nominal exchange rate does not deviate much from the parallel exchange rate, except by a very small margin. Therefore, the relationship between public spending and the parallel exchange rate will be measured and estimated. Where the increase in public spending pushes towards an increase in the demand for domestic and an increase in the supply of foreign currency in the market, which leaves a clear impact on the parallel exchange rate, as we witness many fluctuations in the event of an imbalance in public spending through the general budget that leads to expected changes in the parallel exchange market. An increase in public spending means an increase in demand for commodity imports due to the weak flexibility of the production system, and this leads to changes in the parallel exchange rate through reference to the nominal exchange rate.

Government spending in Iraq, as is the case in all oil-producing countries, is financed by the government selling oil and converting the oil dollar into dinars to cover the needs of the general budget, which expands the size of the monetary base, and government spending stimulates two types of demand: (Al-Dagher, 2016).

1. The aggregate demand for tradable goods due to the increase in government spending and the demand for foreign currency, and this leads to an increase in monetary policy intervention and the injection of more foreign reserves.
2. The aggregate demand for non-tradable goods such as residential land and services, most of which are transformed into tradable goods. This also requires the intervention of monetary policy and the use of foreign reserves to defend the exchange rate.

Therefore, the Nominal Anchor considered the inflationary expectations resulting from the increase in aggregate demand for tradable and non-tradable commodities, especially that these commodities are mostly imported commodities. That is why the exchange rate has become nominally fixed due to the failure of monetary tools such as interest from transferring the impact of monetary policy on the overall activity of GDP. The exchange rate would not have occupied this importance for monetary policy had it not been for the presence of foreign reserves resulting from the Ministry of Finance selling the dollar and obtaining the dinar for the purpose of fulfilling the requirements of the general budget.

The Iraqi economy suffers from a number of major problems that have left traces on the reality of production and productivity of many economic projects of a real nature, which represents the real lever for the levels of use and the reduction of unemployment levels which is reflected in the increases in public spending in the increase in demand for imported goods and the increase in demand for the local currency and the occurrence of many changes in the foreign reserves used by monetary policy to defend the stability of the exchange rate, which is an indicator of price stability in the local economy, Overall (from the researcher's point of view) the basic problems of the post-2003 Iraqi economy can be diagnosed with the following points:

1. The reality of the Iraqi economy is a confusing and distorted reality at best. The top of the Iraqi economy is a highly rentier central summit, and the bottom of the Iraqi economy is a semi-liberal bottom that brings its benefits from the top, where there is an intersection between the state's orientation and the market's orientation.
2. The rentier nature of the Iraqi economy affected by the Dutch disease, which has made the economy vulnerable to external supply shocks and the concomitance of the internal economic cycle with the external economic cycle, that is, the financial resources of the Iraqi economy are recovering due to the rise in oil prices (a positive external shock) and are declining due to the decline in oil prices (a negative external shock). This is what is known in the recent public finance literature as the Bath Tub Theory, which has been confirmed by many studies. What further complicates the matter is the extreme fluctuations in public revenue due to the association of public revenue with the foreign oil market in exchange for the rigidity or inflexibility of the public spending structure, especially with regard to the wages clause and Salaries and compensation where the annual expenditure for the wages, salaries, compensation and wages section of the losing public companies is estimated at 60 trillion Iraqi dinars, to include the category of employees (4) million employees, the category of retirees (2) million retirees, and the category of recipients of social assistance (1) million recipients of social assistance.
3. The administrative and technical construction of the state's general budget does not reflect the technical and distributive efficiency of financial resources and ways of spending them, as it is the budget for free rides and the general tax holiday. We have not seen the inclusion of economic and social goals in the items and paragraphs of the general budget, as it is a record of salaries and expenses of fixed and governing care that does not accept change.
4. The dominance of the destructive triumvirate of any developing or advanced economy (corruption - bureaucracy - security) is a major reason for the expulsion of local investments and the weak desire of foreign investors to make investments in the local economy. The size of the projects lagging due to corruption, bureaucracy and insecurity is estimated at about 10,000 projects worth 300 trillion dinars, or 210 billion dollars, representing 70% of the cost of rebuilding Iraq, estimated at 300 billion dollars at the beginning of 2003.

5. Financial policy did not play its role in economic development, solving the problem of unemployment and raising the level of output, although the cost of economic and monetary stability was high by the Central Bank of Iraq. As the Central Bank of Iraq worked under Law 56 of 2004 to provide an environment of economic stability that stimulates development and growth, which consists of (a stable exchange rate - an acceptable inflation rate - and foreign reserves supporting the value of the Iraqi dinar) therefore, the beginning of economic reforms in any highly centralized economy is to achieve stability in the value of the currency and build a competitive production base that enhances economic growth rates.

In an economic study by (Mauro) linking corruption and public spending, he confirmed that corruption is in the components of public spending, especially public spending directed to health and education, and because of corruption, the benefit of government spending decreases to society and the degree of competition between companies operating in the markets decreases (Mauro, 1998).

This is what we find in practice from the impact of corruption on the components of public spending, as this is reflected in the large increases in public spending, which create increasing pressure on foreign reserves due to the replacement of the dollar with the Iraqi dinar. The increase in the volume of public spending with the weakness of public spending programs and its economic and social objectives reflects the presence of corruption in the institutions of managing and disbursing public spending, as shown by international transparency organizations from Iraq's ranking among the most corrupt countries. This affects the marginal benefits of public spending and the decrease in the degree of competition between companies operating in the markets, those that follow the state or that operate according to market techniques.

The monetary policy has worked to strengthen the public's confidence in the Iraqi dinar and has created a suitable ground for achieving financial stability. Dollarization has become one of the main objectives of monetary policy in many countries in order to achieve price stability, build growth and advance the operation process in the country. Therefore, monetary policy worked to achieve stability in the monetary system, enhance the value of the foreign dinar, build foreign cash reserves, and reduce the inflation rate to one decimal place (Saleh, previous source).

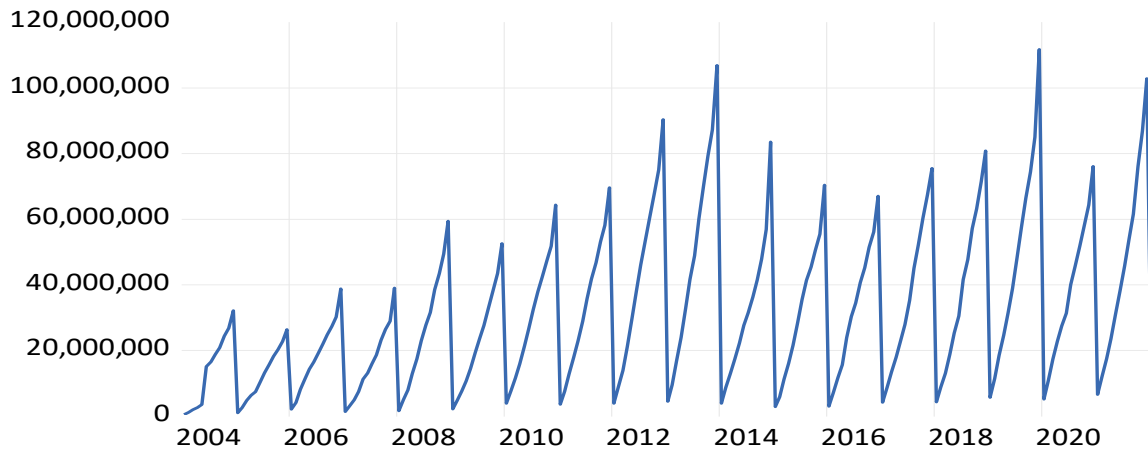
And by observing the data for the actual monthly public expenditures of the state, we note that public expenditures are increasing increasingly during most of the research period, and this is what causes great pressure on foreign reserves and expands the volume of cash issuance, Actual public expenditures witnessed a decline in four specific years, as the decline that occurred in 2005 is due to the political and economic instability of the state after the political change in the structure of the ruling regime. In 2009, actual spending decreased due to the repercussions of the global financial crisis in the United States of America in mid-2008 and the resulting drop in oil prices from \$140 per barrel to \$40, meaning a drop of 71%. This affects the level of public spending as a result of the general budget being affected by the low level of public revenues, which constitutes 95% of oil revenues, which constrains the public budget to spend the ruling operating expenses and neglect investment expenditures, as is customary to follow this method in times of economic crises that affects the state's general budget. Actual public expenditures also witnessed a decrease in 2014, and this is due to the political and security deterioration due to the entry of ISIS gangs and the low levels of investment spending as a result of these disturbances, which were reflected in the drop in global oil prices. However, public expenditures have improved after 2016 due to the large debts provided by the Central Bank of Iraq indirectly, i.e., debts provided under public treasury transfers sold by the state to commercial banks, and the Central Bank of Iraq liquidating these transfers to increase the banks' cash reserves, then the actual spending levels deteriorated in 2020 due to the global Corona pandemic, the demonstrations and the drop in oil prices as a result of the Corona pandemic, and the Iraqi government directed to change the currency exchange rates from 1190 to 1450 as the contractual official exchange rate at which the government sells the dollar obtained from the sale of oil and converts it into dollars at the end of 2020, which left an impact on the increase in public expenditures in 2021 until the end of the research period in the second month 2022 and this can be seen in the monthly data (14 months) due to the increase in government imports from the Iraqi dinar as a result of the increase in the dollar exchange rate from 1190 dinars to 1450 dinars and this gives an indication of the Changes occurred in the parallel market for exchange.

**Table 1: Monthly Data of Actual Public Spending in the General Budget for the Period (1/2004 - 2/2022)**

2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	G
4,470,874	3,843,468	3,583,740	3,861,589	2,129,132	1,607,046	1,350,445	2,087,710	1,010,030	468,749	JAN
9,491,016	9,032,673	7,539,833	7,688,959	4,687,280	4,995,678	3,084,154	4,096,114	2,527,842	1,119,353	Feb
16,788,178	13,879,760	12,735,146	11,624,023	7,573,558	7,975,770	4,946,238	8,110,930	4,757,612	1,920,634	Mar
24,036,601	21,146,963	17,828,846	15,931,096	10,659,729	12,954,951	7,473,210	11,358,817	6,332,496	2,618,212	Apr
32,741,459	29,653,611	22,951,921	21,249,373	14,480,889	17,400,673	11,251,064	14,333,493	7,432,887	3,488,315	May
41,687,042	37,979,778	28,861,159	26,691,602	19,308,998	22,952,019	13,101,040	16,459,986	10,352,309	15,097,975	Jun
48,892,341	46,132,256	35,791,501	32,432,019	23,562,094	27,721,807	16,008,157	19,257,550	13,160,137	16,540,405	Jul
60,192,555	53,576,997	41,786,546	37,881,009	27,604,557	31,612,445	18,617,390	21,938,206	15,705,267	18,797,954	Aug
70,225,129	60,540,661	46,753,668	42,410,560	33,073,579	38,556,973	23,147,986	24,742,634	18,229,751	20,869,089	Sep
79,434,769	67,880,750	53,102,654	47,319,988	38,198,670	43,450,505	26,411,509	27,352,221	20,267,030	24,374,839	Oct
87,274,923	75,091,126	58,146,385	51,839,037	43,521,533	49,385,768	28,960,902	30,206,873	22,791,497	26,800,967	Nov
106,873,027	90,374,783	69,639,523	64,351,984	52,567,025	59,403,375	39,031,232	38,806,679	26,375,175	32,117,491	Dec
	2022	2021	2020	2019	2018	2017	2016	2015	2014	G
	7,255,950	6,569,312	5,133,306	5,650,331	4,274,429	4,161,531	2,943,531	2,826,894	3,858,545	JAN
	14,376,295	12,277,142	10,749,424	11,440,142	8,792,330	8,817,856	7,058,029	5,823,480	8,647,883	Feb
		17,443,689	17,377,596	18,429,560	13,042,887	13,496,166	11,687,629	11,237,128	13,035,950	Mar
		23,521,979	22,756,417	24,629,112	18,821,427	17,977,964	15,639,813	16,135,540	17,347,076	Apr
		31,132,696	27,478,471	31,432,960	25,276,526	22,896,085	23,911,618	21,570,927	22,215,339	May
		38,121,117	31,354,308	38,824,983	30,488,415	27,924,908	30,328,588	28,186,469	27,602,713	Jun
		45,761,687	40,056,757	48,371,033	41,587,673	35,226,042	34,459,129	35,520,403	31,470,255	Jul
		53,831,475	45,685,763	57,626,488	47,736,089	45,085,375	40,681,257	41,353,105	36,274,228	Aug
		61,572,130	51,734,178	66,448,687	57,218,567	52,226,418	45,198,901	45,435,844	41,474,407	Sep
		76,094,426	57,865,491	74,456,452	63,159,398	60,413,958	51,455,567	50,680,027	47,857,507	Oct
		86,918,080	64,360,943	85,050,465	71,483,665	67,344,150	56,131,024	55,475,580	56,938,729	Nov
		102,849,659	76,082,443	111,723,523	80,873,189	75,490,115	67,067,437	70,397,515	83,556,226	Dec

Source: The official website of the Central Bank of Iraq <https://cbi.iq/page/79>(

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**Figure 1: The Path of Government Spending During the Research Period 2004-2022**

The source is from the researcher's work based on the data in Table (1).

As for the increase in public expenditures and their impact on the parallel exchange rate, by observing the data in Table (2), we note the presence of changes in the parallel exchange rate of the dollar, and these changes reflect the increase in public expenditures in Iraqi dinars and the re-transformation of the Iraqi dinar into an actual demand force for the US dollar in the market. In principle, we consider that the parallel exchange rate receives its signals from the nominal exchange rate of the US dollar sold by the Central Bank of Iraq. However, the large increases in the side of the state's general budget expenditures make the parallel exchange rate slightly away from the target price by the Central Bank due to the transformation of the Iraqi dinar spent by the budget into a demand for the dollar, Especially that the increase in the monthly salaries of senior officials and the middle class pushes them to convert part of their received monthly salaries into US dollars to increase their hedging against the fluctuations of the local currency, and that the dollar is a safe haven for their remaining savings from their monthly salaries. In general, the parallel exchange rate runs parallel to the nominal exchange rate, but with a difference due to the price differentiation of the nominal exchange rate in the Central Bank of Iraq. Where there is an exchange rate for commercial banks, an exchange rate for personal, medical and travel needs, and an exchange rate for money transfer and banking companies, which are considered non-bank financial institutions registered with the Central Bank of Iraq. However, the bulk of the parallel exchange rate fluctuations are due to fluctuations in public spending as a result of fluctuations in international oil prices, where oil revenues in dollars that the government obtains represent the base of foreign reserves in the central bank. These reserves represent the first line of defense on the value of the Iraqi dinar and make it stable and safe for savers, especially after considering the exchange rate is the median target and the nominal stabilizer for price stability and containing inflationary expectations in the Iraqi economy. Initially, there was an improvement in the value of the Iraqi dinar from 1476 at the beginning of 2004 to 1178 at the beginning of 2009, but due to the financial crisis and the desire of individuals to keep the US dollar, the value of the Iraqi dinar deteriorated from 1269 in the middle of 2013 due to the desire of savers to convert their savings into dollars. As a result of the repercussions of ISIS entry, the political, security and financial deterioration, and the prevalence of pessimistic expectations of the state's inability to pay the salaries of employees, the public's hedges in US dollars increased, which decreased the value of the Iraqi dinar to 1309 in May of 2015. Then the Central Bank re-mobilized its defenses about the value of the Iraqi dinar through the foreign reserves, which improved the value of the Iraqi dinar in mid-2018 to reach 1200 dinars against the dollar after facing the increasing demand in the market, then the Iraqi dinar continued to gradually improve due to the Central Bank's defense of the value of the Iraqi dinar until 20/12/2020, when the Central Bank of Iraq decided to change the official dinar exchange rate from the Central Bank of Iraq so that the Iraqi dinar decreased from 1190 dinars as a contractual exchange rate to buy the dollar from the Iraqi government represented by the Ministry Finance to 1450 dinars, i.e. a 22% decrease in the value of the Iraqi dinar, this is due to the depletion of oil revenues as a result of the Corona pandemic and the paralysis of the global economy and its entry into the most severe stage of economic stagnation after the 1929 crisis. Where, in the last quarter of 2020, the government was unable to pay employee salaries and other necessary expenses and had to borrow more than \$21 billion from commercial banks with short-term remittances and bonds, which the Central Bank would later monetize the money when commercial banks needed, and the devaluation of the



Iraqi dinar from 1190 to 1450 naturally left its effects on the parallel exchange rate, as the parallel market for the dollar witnessed the largest decline in the value of the Iraqi dinar in the sixth month of 2021, reaching 1486.93, and it continued to decline, but at a lower rate until the second month of 2022, which is a period end of term, and that the decision to reduce the value of the Iraqi dinar was obligatory and not optional, with the aim of maximizing public revenues in Iraqi dinars and reducing the value of the debts of the Central Bank of Iraq in US dollars on the Iraqi government. The repercussions of the devaluation of the Iraqi dinar led to a loss of confidence in the dinar, the opposite of what was previously, an increase in the demand for foreign currency and the continuation of the Iraqi dinar in relative deterioration despite the improvement in oil prices and the increase in oil revenues denominated in US dollars.

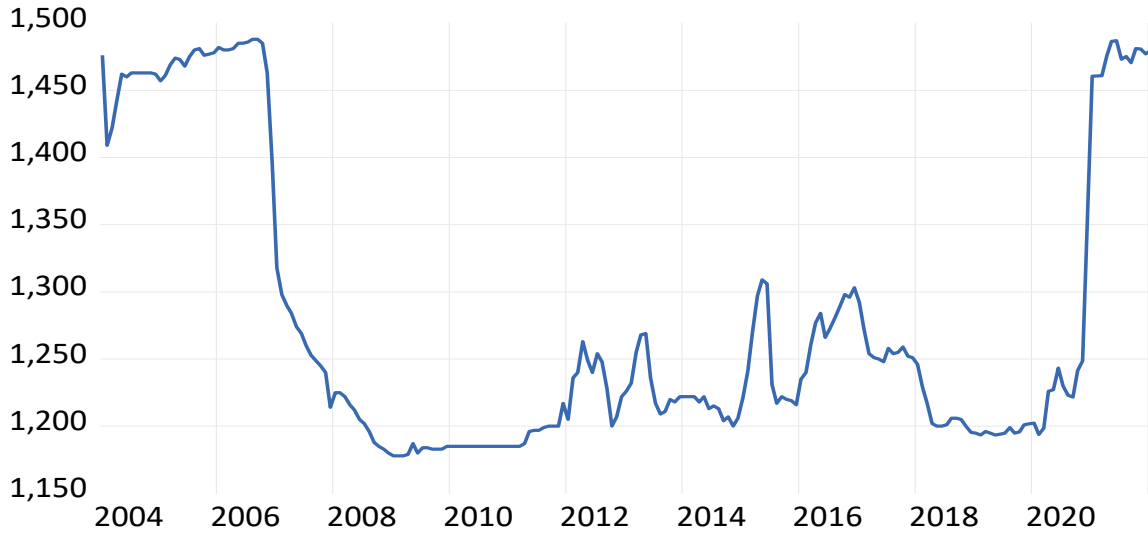
**Table 2: Monthly Data of the Exchange Rate of the Dinar in the Market for the Period (1/2004 - 2/2022)**

2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	EX
1,226	1,205	1,185	1,185	1,178	1,225	1,318	1,482	1,457	1,476	JAN
1,232	1,236	1,185	1,185	1,178	1,225	1,298	1,480	1,461	1,409	Feb
1,255	1,240	1,185	1,185	1,178	1,222	1,290	1,480	1,469	1,422	Mar
1,268	1,263	1,187	1,185	1,179	1,216	1,284	1,481	1,474	1,442	Apr
1,269	1,249	1,196	1,185	1,187	1,212	1,274	1,485	1,473	1,462	May
1,236	1,240	1,197	1,185	1,180	1,205	1,269	1,485	1,468	1,460	Jun
1,217	1,254	1,197	1,185	1,184	1,202	1,260	1,486	1,475	1,463	Jul
1,209	1,248	1,199	1,185	1,184	1,196	1,253	1,488	1,480	1,463	Aug
1,211	1,228	1,200	1,185	1,183	1,188	1,249	1,488	1,481	1,463	Sep
1,220	1,200	1,200	1,185	1,183	1,185	1,245	1,485	1,476	1,463	Oct
1,218	1,207	1,200	1,185	1,183	1,183	1,240	1,463	1,477	1,463	Nov
1,222	1,222	1,217	1,185	1,185	1,180	1,214	1,396	1,478	1,462	Dec
	2022	2021	2020	2019	2018	2017	2016	2015	2014	EX
	1,479.49	1,460.50	1,202.34	1,194.81	1,246	1,292	1,235	1,221	1,222	JAN
	1,475.10	1,460.72	1,193.84	1,193.40	1,229	1,272	1,240	1,241	1,222	Feb
		1,460.79	1,198.53	1,196.01	1,217	1,254	1,261	1,270	1,222	March
		1,475.64	1,226	1,194.83	1,202	1,251	1,277	1,297	1,218	April
		1,486.38	1,227.21	1,193.50	1,200	1,250	1,284	1,309	1,222	May
		1,486.93	1,243.33	1,193.99	1,200	1,248	1,266	1,306	1,213	June
		1,473.04	1,230.01	1,194.82	1,201	1,258	1,273	1,231	1,215	July
		1,475.14	1,223.09	1,198.97	1,206	1,254	1,281	1,217	1,213	Aug
		1,470.57	1,221.61	1,194.87	1,206	1,255	1,289	1,222	1,204	Sept
		1,481.06	1,241.42	1,195.63	1,205	1,259	1,298	1,220	1,207	Oct
		1,480.78	1,248.62	1,201.09	1,199.78	1,252	1,296	1,219	1,200	Nov
		1,477.10	1,351.35	1,201.71	1,195.31	1,251	1,303	1,216	1,206	Dec

Source: The official website of the Central Bank of Iraq <https://cbi.iq/page/79>

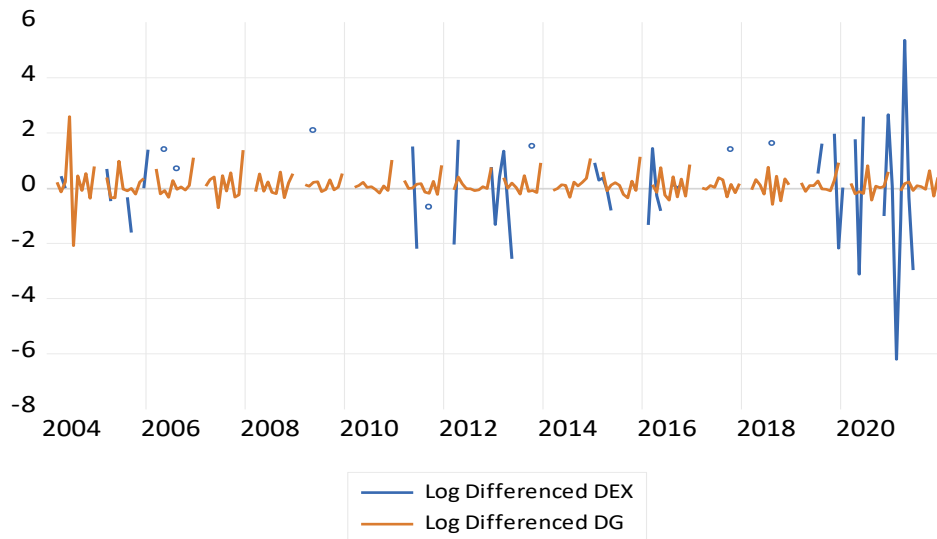
The chart below represents the movement of the parallel exchange rate from the first month 2004 to the second month 2022. It is clear from the path that there is instability of the original data, which means at the standard level that there is a unit root problem. This problem will be addressed when addressing the standard estimate of the relationship between public spending and the parallel exchange rate, which reflects the movement of the official exchange rate with a small difference margin representing the profits of banking and non-banking financial institutions in Iraq.

EX



**Figure 2: Parallel Exchange Rate Path During the Research Period 2004-2022**

The source is from the researcher’s work based on the data in Table (2).



**Figure 3: The Path of Growth Associated with Government Spending and Exchange Rate during the Research Period 2004-2022**

The source is from the researcher’s work based on the data in Table (1-2).

**3. Estimating the Relationship between Public Spending and the Parallel Exchange Rate in the Iraqi Economy for the Period 2004-2022**

**First: The Dicky-full Augmented Test**

The Extended Dickey Fuller Test was conducted on the Public Expenditure and Parallel Exchange Rate series, which is a monthly data series starting from the first month of 2004 and ending in the second month of 2022. And it turns out that there is a unit root in the original level of the data, and this leads us to accept the null hypothesis ( $H_0: B = 0$ ) which says that there is a unit root problem and reject the alternative hypothesis ( $H_0: B \neq 0$ ) which says the opposite, but after making the first difference for the two series of public spending and the parallel exchange rate, the static time series was achieved, which leads us to reject the null hypothesis and accept the alternative hypothesis as we have indicated. The results of the estimation of the unit root tests can be clarified in the table below.

**Table 3: D.F Test for the Time Series G-EX at the General Level (2004-2022)**

Time series	Level		Integration
	Constant	Constant and Linear Trend	
G Public spending	1.624	2.694	Prob.*
EX Exchange rate	1.368	1.038	Prob.*
Critical Values	2.874	3.430	5%
First Different			
Time series	Constant	Constant and Linear Trend	Integration
G Public spending	4.770	4.762	Prob.*
EX Exchange rate	9.733	9.815	Prob.*
Critical Values	2.874	3.430	5%

The source is from the researcher’s work based on E-views 12 software.

**Second:** The co-integration test between public spending and the parallel exchange rate according to the Johansen-juselius 1990 methodology.

The Dickey Fuller Unit Root Test proves that the time series of public expenditure and the parallel exchange rate remain at the first difference, and this allows us to make a choice of co-integration (Johansen juselius 1990 methodology) which is one of the best methods used to estimate the co-integration vector and confirm its singularity based on the trace test (trace  $\lambda$ ) and the Maximum Eigenvalue test (max).

Table (4) shows the results of the trace test (trace  $\lambda$ ) to analyze the long-term relationship between public spending and the parallel exchange rate, where the impact test shows that the calculated value (103.5514) is greater than the critical value (15.49471) at a level of 5% this means rejecting the null hypothesis ( $H_0: B = 0$ ) that there is no co-integration vector between public spending and the parallel exchange rate, and accepting the alternative hypothesis that there is one or more co-integration vectors. The trace test (trace  $\lambda$ ) also reveals the existence of a second co-integration vector, as the calculated value (34.02095) is greater than the critical value (3.841465) at the (5%) level. And thus, there is a relationship of co-integration between public spending and the parallel exchange rate throughout the research period, and we expect an equilibrium relationship between the research variables. The same table shows the results of the Maximum Eigenvalue test ( $\lambda_{max}$ ) to analyze the long-run relationship between public spending and the parallel exchange rate. Where the trace test shows that the calculated value (69.53043) is greater than the critical value (14.26460) at the 5% level. This means rejecting the null hypothesis ( $H_0: B = 0$ ) that there is no co-integration vector between public spending and the parallel exchange rate, and accepting the alternative hypothesis ( $r \neq 0$ ) or ( $r = 1$ ) that there is one or more co-integration vectors. Also, the Maximum Eigenvalue test reveals the existence of a second vector of joint integration, as the calculated value (34.02095) is greater than the critical value 3.841465 at the (5%) level, and thus there is a relationship of joint integration between public spending and the parallel exchange rate throughout the research period.

**Table 4: The G-EX Co-integration Test (2004-2022)**

Unrestricted Cointegration Rank Test (Trace)

Prob.**	0.05 Critical Value	Trace Statistic	Eigenvalue	Hypothesized No. of CE(s)
0.0000	15.49471	103.5514	0.279618	None *
0.0000	3.841465	34.02095	0.148262	At most 1 *

Trace test indicates 2 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)

Prob.**	0.05 Critical Value	Max-Eigen Statistic	Eigenvalue	Hypothesized No. of CE(s)
0.0000	14.26460	69.53043	0.279618	None *
0.0000	3.841465	34.02095	0.148262	At most 1 *

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

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

The source is from the researcher's work based on E-views 12 software.

**Third:** The causality test according to a vector model to correct the error limit between public spending and the parallel exchange rate in the Iraqi economy for the period (2004-2022).

The reason for choosing the Vector Error Correction Model test is to find out the existence of the long-term equilibrium relationship between the variables and the direction of this relationship, meaning what is the variable that causes the change of the other variable, more precisely, and based on the research variables, does public spending affect the parallel exchange rate or on the contrary, or is there a regressive relationship between the variables? Where the results of the error correction vector test appeared in Table (5) with the existence of a two-way equilibrium relationship between public spending and the parallel exchange rate during the study period, where the error limit parameter (T-test) for public spending is negative and significant (-9.82342) and the error limit parameter (T-test) for the exchange rate Parallel negative and significant (-2.02126) and the imbalances in the short term are modified towards equilibrium in the long term very quickly, as shown by the large values of co-integration in the vector error correction model table for public spending and the parallel exchange rate.

**Table 5: Vector Error Correction Model for Public Expenditure and Parallel Exchange Rate in the Iraqi Economy for the Period (2004-2022) and Monthly Data (218 Views)**

Vector Error Correction Estimates		
CointEq1	Cointegrating Eq:	
1.000000	DEX(-1)	
4.21E-06	DG(-1)	
(4.1E-07)		
[ 10.1962]		
-0.373642	C	
D(DG) D(DEX) Error Correction:		
-326594.4	-0.051228	CointEq1
(33246.5)	(0.02534)	
[-9.82342]	[-2.02126]	
51010.70	-0.202097	D(DEX(-1))
(89873.5)	(0.06851)	
[ 0.56758]	[-2.94977]	
143781.5	-0.188093	D(DEX(-2))
(84467.0)	(0.06439)	
[ 1.70222]	[-2.92110]	
0.202826	2.02E-07	D(DG(-1))
(0.11113)	(8.5E-08)	
[ 1.82513]	[ 2.38770]	
0.104498	1.00E-07	D(DG(-2))
(0.07269)	(5.5E-08)	
[ 1.43756]	[ 1.80667]	
73898.68	0.015629	C
(1443279)	(1.10025)	
[ 0.05120]	[ 0.01421]	

The source is from the researcher's work based on E-views 12 software.

### Conclusions

1. There is a correlation between the shocks of public spending and the shocks of the parallel exchange rate in the exchange market outside the Central Bank, despite the intervention of the Central Bank of Iraq to defend the exchange rate.
2. The economic and security crises have caused the parallel exchange rate to rise, and this causes great pressure on foreign reserves.
3. Corruption in the state's public institutions, which is embodied in unnecessary spending, causes an increase in the demand for the dollar, which raises the value of the nominal exchange rate of the dollar.

4. The shock occurring in the nominal exchange rate and a decrease in the value of the Iraqi dinar by 22% resulting from the decrease in the Ministry of Finance's sales of dollars to the Central Bank and a large deficit in the state's general budget.

## **Recommendations**

1. Reducing unnecessary public spending to reduce pressure on the nominal exchange rate and foreign reserves, which means reducing shocks in the parallel exchange market.
2. Diversifying the revenues of the state's general budget and disengaging the general budget from fluctuations in the global oil market, for fear that the Iraqi government will have to change the official exchange rate and transfer this change to the parallel exchange rate.
3. Increasing financial allocations for investment spending in order to be a tax base in the future and reducing revenue shocks in the general budget.
4. Raising the levels of local production for the purpose of reducing dependence on foreign imports, as foreign imports cause pressure on the foreign currency.

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