



# ANALYSIS AND MEASUREMENT OF THE IMPACT OF PUBLIC DEBT ON PUBLIC SPENDING

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Article history:	Abstract:
<b>Received:</b> 24 <sup>th</sup> August 2024 <b>Accepted:</b> 20 <sup>th</sup> September 2024	The research focuses on Analysis and measurement of the impact of public debt on public spending, as public debt is one of the sources of financing the deficit in the general budget, which in turn reflects on the structure of economic activity in Iraq, and the research problem revolves around what Iraq suffers from excessive public spending, especially consumer spending in light of unsecured public revenues, especially the main resource on which the general budget depends, namely oil, which is subject to conditions beyond control production, pricing and marketing, forcing the state to resort to public debt to cover the budget deficit, and on this basically, continuing to borrow leads to an increase in the volume of The public debt is reaching levels that exceed the state's ability to meet its financial obligations to creditors, which negatively affects the economic activity of the state and the occurrence of paralysis in development efforts and the accompanying economic and social repercussions, in addition, the increasing amount of funds resulting from the burden of servicing public debt that can be used to finance economic development plans, and: The existence of a common integration between public debt and public spending in both current and investment, and that 13.3% of the imbalance in the previous period is corrected in the subsequent period after any shock to the independent variables and affects the dependent variable, while the most important recommendations indicate the need to adopt a fiscal policy consistent with monetary policy, aimed at rationalizing public spending to reduce pressure on the state budget, which in turn reduces the need for internal or external borrowing.

**Keywords:** Public Debt, Public Spending, Public Budget

## INTRODUCTION:

The public debt is one of the most important sources of financing the general budget and has been a burden on the Iraqi economy, as a result of the financing policy that has been relied upon, the Iraqi economy has witnessed the fluctuation of public revenues after 2003 to the present due to fluctuations in oil revenues, which represent the backbone of the Iraqi economy, and this is an indication that the cash flows Therefore, the increase in both internal and external public debt came to meet the needs of the current generation without regard to future generations .

## RESEARCH PROBLEM:

The search problem lies through. The state's reliance on public debt as a primary source of financing and addressing the deficit in the general budget, as a result of excessively increased public spending, especially consumer spending, in light of unsecured public revenues, especially the main resource on which the general budget depends, namely oil, which is subject to conditions beyond control production, pricing and marketing.

## RESEARCH HYPOTHESIS:

The research proceeds from the hypothesis that: There is a long-term equilibrium relationship between public debt and increasing government spending according to criteria aimed at controlling and reducing the budget deficit in Iraq.

## OBJECTIVES:

The research aims to: 1-highlighting the relationship between public debt and public spending according to an analytical theoretical framework that reflects the contents of the research problem. 2-submit proposals to address the research problem in accordance with the requirements of scientific research.



## **METHODOLOGY:**

The research was based on the analytical and measurement approach based on the foundations of economic theory and empirical studies by measuring and analyzing data in order to find out the role of public debt to finance public spending in Iraq after 2003.

### **Frontiers of research: Iraq is a case study after 2003.**

#### **The first axis: the relationship between public debt and public spending.**

The relationship between public spending and debt is based on the idea that the total amount of public debt should never exceed the average revenues over the previous five years. In the event of a disaster or war, the amount of public loans can be increased so that the interest paid does not exceed 15% of national income; however, this percentage has caused the public debt to surpass 2.5 to 3 times national income. However, experiments have shown that there is a financial imbalance when public loans exceed 1.5 times national income, and IMF experts believe that the public debt to GDP ratio should not exceed 60%, but this ratio cannot be ideal for religion. Consequently, the size of the amount of national income at a level that is almost equal to the full functioning of resources and the type of tax system and its influence on the marginal efficiency of capital and the inclination to consume are the two elements that determine the amount of public debt (Atman, 2011: 409). By depending on different types of public debt in terms of repayment terms, marketability, or interest rate, it should be noted that these acceptable limits are not an absolute and unchangeable barrier because they were set at the time the Maastricht Treaty was drafted. In fact, the maximum is not interpreted as the ideal of level debt because the rise in the public debt ratio to more than this percentage does not indicate a crisis. This goal serves as the foundation for controlling the budget deficit to ensure financial sustainability. It is based on the European Union's "Maastricht" agreement, which limits the maximum allowable budget deficit of its member states to no more than 3% of GDP. Additionally, public spending should be rationalized and its efficiency increased in an effort to achieve a balance between public expenditures and public revenues by reducing unnecessary spending extravagances (Al-Harouni, 2011: 11). This is because raising the deficit eliminates the effect of tax cuts or a public spending on aggregate demand, particularly since it necessitates a large amount of money to cover and then crowds out the private sector, which restricts fiscal policy to achieve stability. Conversely, lowering the deficit helps the government borrow less money to finance it, which in turn lowers interest rates and encourages investment (Sharon & Shaniska, 2009:230). Thus, the relationship between public debt and public spending should fall under the purview of financial sustainability since it should finance investment spending rather than consumer spending. In other words, public debt should finance investment because it benefits future generations, and the need to spread out the costs of capital formation over the years when it is negatively biased against investment spending is the justification for keeping investment spending out of the deficit. The amount and quality of infrastructure will have a positive or negative impact on the GDP growth rate. Since private investment depends not only on the quantity and quality of labor and capital employed, but also on the quality of the environment in which it operates and the availability of basic services, infrastructure provision can be an effective means of reducing poverty. This is accomplished through the integration of public and private investment.

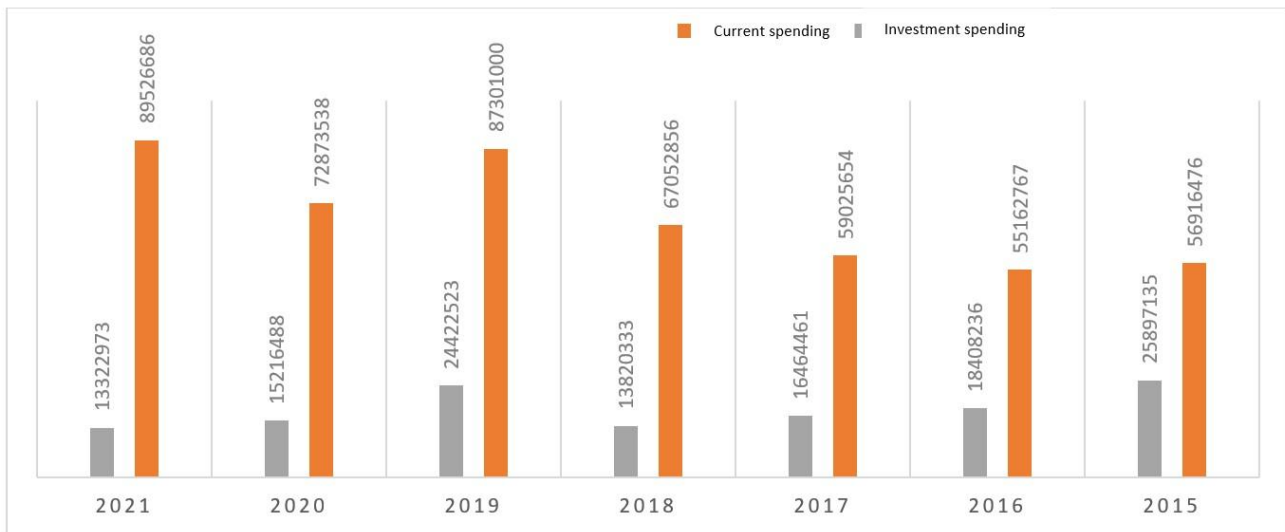
#### **The second axis: the analytical framework of the study variables:**

##### **First: analysis of the reality of public spending:**

The reality of public spending can be analyzed by following up the data issued by the Central Bank of Iraq – Directorate of Statistics and research. Which were tabulated in Figure (1), we note the following.

- The total cash outflows from the general budget, both current and investment, witnessed an increase at a compound annual growth rate of (3.7%) to (102849659) m/d in 2021 compared to (82813611) m/d in 2015.
- Cash outflows from the general budget in its current form witnessed an increase at a compound annual growth rate of (7.8%) to (89526686) m/d in 2021 compared to (56916476) m/d in 2015.
- Cash outflows from the general budget in its investment form have decreased by an average of (10.48%) to (13322973) m/d in 2021 compared to (25897135) m/d in 2015.
- The dominance of current expenditures on the total cash outflows from the general budget ranged from 68.7% - 87% during the period 2015-2021, while the proportion of investment expenditures of the total cash outflows from the general budget ranged from 12.9% - 31.2%.

This indicates the expansion of government spending of a consumer nature at the expense of low investment spending, from the total cash outflows from the general budget, which reflected its shadow on the expansion of the structural imbalance in the Iraqi economy.



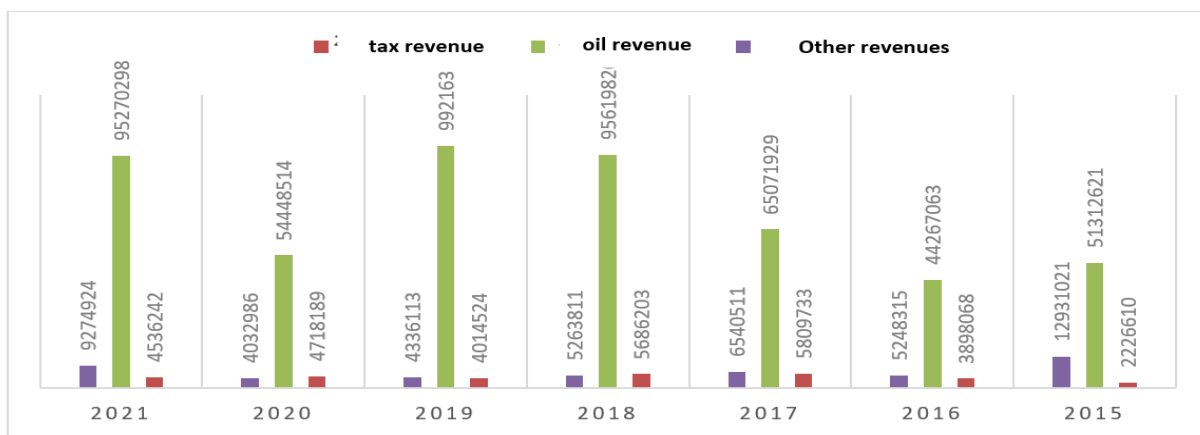
**Figure (1) the current and investment hypocrisy in Iraq .**

Source: Researcher's work based on data from the Central Bank of Iraq / Directorate of Statistics and Research

**Second: analysis of the reality of public revenues:**

The reality of public revenues can be analyzed by following up the data issued by the Central Bank of Iraq – Directorate of Statistics and research. Which have been tabulated in Figure (2), we note the following.

- The total cash inflows from the general budget, both oil, tax and other, witnessed an increase at a compound annual growth rate of (8.6%) to (109081464) m/d in 2021 compared to (66470252) m/d in 2015.
- Cash inflows from the general budget in its oil form witnessed an increase at a compound annual growth rate of (10.8%) to (95270298) m/d in 2021 compared to (51312621) m/d in 2015.
- Cash inflows from the general budget in its tax form witnessed a decrease with a growth rate of (5.38%) to (9274924) m/d in 2021 compared to (12931021) m/d in 2015.
- Cash inflows from the general budget in other terms (government property rent, government service revenues and the budget's share of public sector companies ' profits) have increased at a compound annual growth rate of (12.59%) to (4536242) m/d in 2021 compared to (2226610) m/d in 2015.
  - The dominance of oil revenues on the total cash inflows from the general budget, the ratio ranged between 77.19% -3.87% during the period 2015-2021, while the proportion of investment expenditures from the total cash outflows from the general budget ranged between 3.3% -7.5% .



**Figure (2) the reality of public revenues**

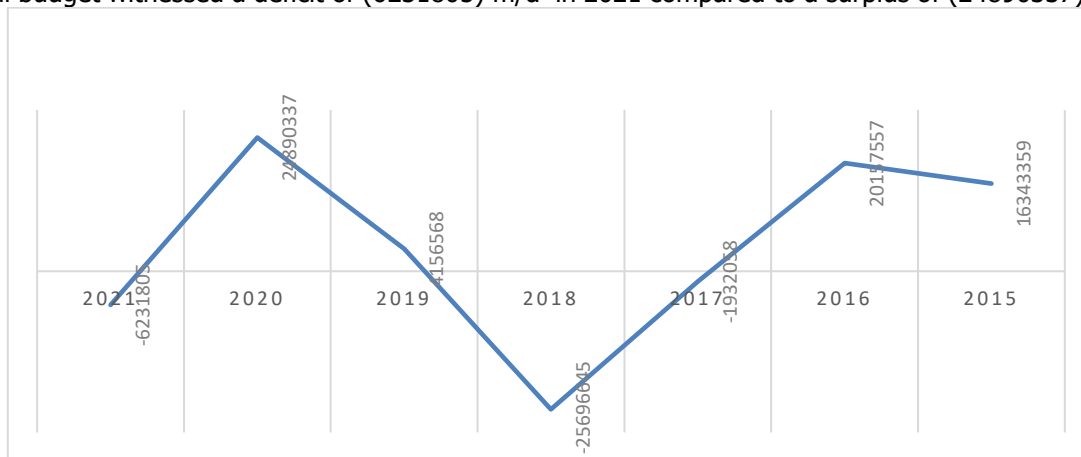
**Source: Researcher's work based on data from the Central Bank of Iraq / Directorate of Statistics and Research**

Therefore... We note that the main factor in the changes in cash inflows to the budget is the change in prices and quantities of oil exported to the outside world, and this indicates that the cash inflows in the budget are affected by external factors reflected in their dominance over the Iraqi economy. This reflects the degree of dependence of the Iraqi economy on the outside world, which makes the financial sustainability of Iraq exposed to great risks with future generations bearing the financial burden.

It is also an axiom of public financial policy that increasing current spending means providing public services to society, which must be offset by an increase in tax revenues, but we note that the Iraqi economy, despite the high current spending, which expands to three quarters of the general budget, on the other hand, the decline in tax revenues means that society enjoys public services without contributing to their costs, and therefore the absence of a methodology for exchanging roles between the government and society in the sustainability of financial resources and therefore future generations bear the problem of high financial burden.

**Third: General budget analysis:**

- The reality of the deficit and surplus in the general budget can be analyzed by following up the data issued by the Central Bank of Iraq – Directorate of Statistics and research. Which was tabulated in Figure (3), we note the following.
- The general budget witnessed a surplus with a growth rate of (23%) to (20157557) m/d in 2016 compared to (16343359) m/d in 2015. This means that the total cash inflows from the general budget, both oil and tax, are higher than the cash outflows from the budget, both current and investment.
- The general budget witnessed a deficit of (25696645) m/d in 2018, and (1932058) million dinars in 2017. This means that the total cash inflows from the general budget, both oil, tax and other, are lower than the cash outflows from the budget, both current and investment.
- The general budget witnessed a deficit of (6231805) m/d in 2021 compared to a surplus of (24890337) m/d in 2020.



**Figure (3) deficit and surplus in the general budget.**

**Source: Researcher's work based on data from the Central Bank of Iraq / Directorate of Statistics and Research**

We see the general budget achieves a surplus in periods of high prices or exported oil quantities, which is reflected in an increase in cash inflows into the general budget, and achieves a deficit when the prices or exported oil quantities decrease and thus the cash inflows in the general budget decrease. On the other hand, the increase in cash outflows from the general budget, both current and investment, especially the current, is reflected in the increase in the amount of the deficit in the general budget.

There is a clear flaw detected by the researcher. The basic concepts of Public Finance indicate that public finance differs from private finance through a set of criteria, the most important of which is the spending criterion, as the state sets its operating and investment spending and then creates the necessary revenues for this spending, unlike private finance, which controls the cash flows that it owns (revenues), and on the basis of these revenues directs its expenses.

Therefore, we find that the general budget in Iraq begins with an intentional deficit designed to stimulate aggregate demand, and ends with a surplus, and this surplus, which indicates a deviation in the level of utilization of investment absorption capacity, turns into an added financing factor within the annual expansion of the operational budget. This is reflected in the increasing figures of the general budget without correlation with achievements or development plans.

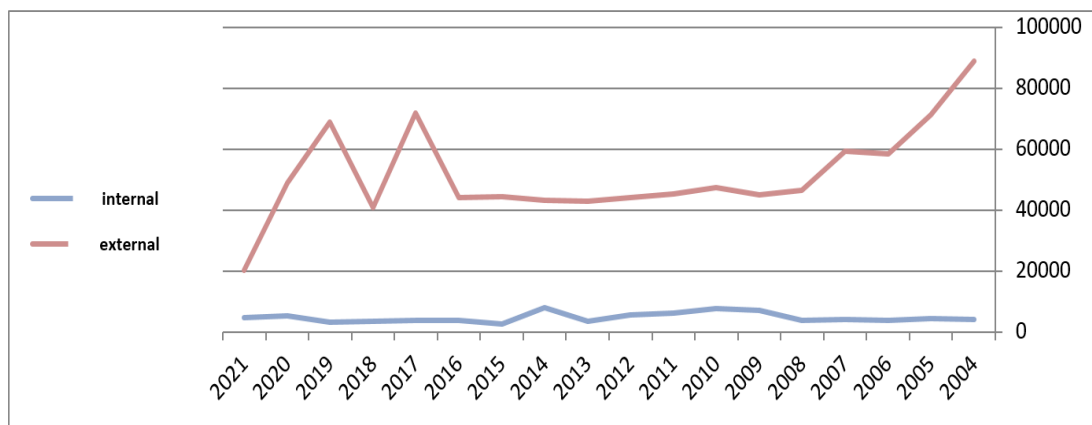


This constitutes an annual financial illusion, like a tax on the estimation of oil revenues, as if the annual general budget starts with a virtual deficit and ends with a real surplus that is transferred as an opening balance in the budget of the subsequent fiscal year, which is in fact a financial illusion.

**Fourth: Domestic and external debt analysis:**

When viewing the data of public debt (external and internal), classified in Figure (4) and based on the plan of the Ministry of Cooperative Planning / Central Statistical Agency - National Man Directorate, we note the following...

- The size of public debt in its two types (external and internal) witnessed a state of fluctuation between rise and fall during the years of study, the financial policy is restricted by estimates thanks to the increasing government oil revolution, in another concept we find an increase in public debt because of its two parts (external and internal) the battle of government hypocrisy when it created oil revenues, which is met by a decrease in the level of public debt when oil revenues grow, so it is noted that the debt was modified during the period 2004-2013 to reach (46452) million dollars in 2013 compared to (92959) million dollars in 2004, and another time the debt increased during the period 2014-2019 to reach about (72108) million dollars in 2019 compared to (51368) million dollars in 2014. In contrast, the period of 2020-2021 recorded about (25149) million dollars in 2021 compared to (54240) million dollars in 2020.
- The ratio of domestic debt / total public debt did not exceed (20%) during the period (2004-2021). ), while the ratio of external debt to total public debt during the same period varied, reaching its highest (95%) in 2004 and its lowest (81%) in 2021, and from here the following question arises: Was the external debt used in various fields to cover the need for partial work, population and roads, considering the external debt's expected expectations for future generations. Most of these debts fall under the description of odious debts and are used to finance war allowances rather than to finance investment projects that benefit the Iraqi economy (Hassan, 2018, 61)



**Figure (4) Domestic and external debt.**

**Source : Ministry of Planning and Development Cooperation / Central Statistical Organization- National Accounts Directorate.**

**The third axis: the standard framework for study variables.**

**First: characterization of the study model:**

The model description stage is considered one of the most important stages of building a standard model, as it indicates the indication and extreme accuracy of the relationship between the variations and the appropriate model study that must be applied to it, as the variations are determined, researched and agreed upon in particular with the difference in concepts. In addition to determining the main aspect, including the subscriptions and the dependent. And by using econometrics, which is the main tool for tensions, statistical and standard hypotheses in a way that gives the economic theory its applied aspect by using historical data to examine economic theories and hypotheses related to economic reality, then using these connections to control the future of these data and economic reality (Hesham, 2021: 3).

Hence, the analysis of the time series of the study variables will be addressed using time series stationarity tests and then the joint integration test through the autoregressive distributed lag (ARDL) model. The model parameters were estimated based on the data of the model variables with 68 observations ranging between (2004Q1-2021Q4) using the Eviews10 program, to analyze the variables used in the model, which are divided into dependent variables, which are (CE, IE) and the independent variable is (DG).

**Where the:**





**CE: current expenditure**

**IE: investment spending**

**Public debt: DG**

**Second: the results of the standard analysis:**

✓ **Analysis of the stability of time series (stability Tests)**

All applied studies that use time series data assume that the series is stationary, and this characteristic is determined by some statistical properties. In the absence of this characteristic, the regression obtained between the time series variables is often spurious, despite the fact that the coefficient of determination  $R^2$  is high. This is due to the fact that time data often have a trend factor, which may reflect certain conditions that affect the variables either in the same direction or in opposite directions.

Since there is a general increasing or decreasing trend in the time series data, it is difficult to rely on the average values in prediction, because one average value cannot be used to express all the values of the series, because relying on it in prediction will give values lower (higher) than reality in the increasing trend (in the decreasing trend), and thus the average's ability to predict will be weakened.

Also, if the variance (expresses the degree of uncertainty in the prediction) differs from one group to another for the same series, this makes the average of the values with the highest variance weaker than the average of the values with the lowest variance in the prediction, as the uncertainty in the group with the highest variance is greater compared to the group with the lowest variance, so the stability of the variance is also considered one of the characteristics of stationarity.

By following the results of Table (1) which shows the Augmented Dickey-Fuller test. The time series of public debt (DG) is stationary at the level with the presence of (stationary, stationary and trend, without stationary and trend) as the value of prob was recorded less than 0.05, which means rejecting the null hypothesis and accepting the alternative hypothesis which states that the variable is stationary at the level At Level.

As for the current expenditure variable (CE), it was not stationary at the level because the value of prob was higher than 0.1, whether in the presence of a constant, a constant and a trend, or without a constant and a trend, and when calculating the first differences of the variable, the value of prob was less than 0.1 at any level of significance (1%, 5%, and 10%) and it was stationary in the cases (constant, constant and a trend, without a constant and a trend), meaning that the variable was stationary at the first difference, and this means rejecting the null hypothesis and accepting the alternative hypothesis that the time series was stationary at the first difference, meaning that it is integrated of the first order  $I(1)$ .

While the estimation results indicate that the time series of the investment spending variable (IE) are not stationary at the level with the presence of (fixed, fixed and trend, without fixed and trend), as the value of prob was recorded higher than 0.05, and when calculating the first differences of the variable, the value of prob was less than 0.1 at any level of significance (1%, 5% and 10%) and it is stationary in the cases (fixed, fixed and trend, without fixed and trend), meaning that the variables are stationary at the first difference, which means rejecting the null hypothesis and accepting the alternative hypothesis that the time series of the variable is stationary at the first difference, meaning that it is integrated of the first order  $I(1)$

**Table (1) time series stability analysis test**



<b>UNIT ROOT TEST TABLE (ADF)</b>				
<b>At Level</b>				
With Constant	t-Statistic	CE	DG	IE
	<i>Prob.</i>	-1.7509 <b>0.4008</b>	-3.7798 <b>0.0049</b>	-2.3896 <b>0.1491</b>
		n0	***	n0
With Constant & Trend	t-Statistic	-1.6189	-3.6916	-2.4838
	<i>Prob.</i>	<b>0.7734</b>	<b>0.0299</b>	<b>0.3348</b>
		n0	**	n0
Without Constant & Trend	t-Statistic	0.6982	-1.8617	-0.5720
	<i>Prob.</i>	<b>0.8635</b>	<b>0.0601</b>	<b>0.4652</b>
		n0	*	n0
<b>At First Difference</b>				
With Constant	t-Statistic	d(CE)	d(DG)	d(IE)
	<i>Prob.</i>	-3.3686 <b>0.0162</b>	-3.3729 <b>0.0157</b>	-2.1895 <b>0.02122</b>
		**	**	**
With Constant & Trend	t-Statistic	-3.2266	-3.1104	-2.2928
	<i>Prob.</i>	<b>0.0894</b>	<b>0.1130</b>	<b>0.04310</b>
		*	n0	**
Without Constant & Trend	t-Statistic	-3.4146	-3.5318	-2.2121
	<i>Prob.</i>	<b>0.0010</b>	<b>0.0006</b>	<b>0.0271</b>
		***	***	**
Notes: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant *MacKinnon (1996) one-sided p-values				

**Source: output of the eviews10 program**

✓ **Cointegration using the distributed slowdown autoregressive model (Cointegration Test)**

Since the model variables are not integrated at the same order, the Johansen cointegration test cannot be applied because the test assumes that all variables are stationary in first differences, so we use the ARDL model. There is cointegration between the model variables according to the limits approach if the calculated F value is greater than the upper limit of the critical values, so we reject the null hypothesis stating that there is no long-term equilibrium relationship and accept the alternative hypothesis that includes cointegration between the model variables. However, if the calculated values are less than the lower limit of the critical values, we reject the alternative hypothesis and accept the null hypothesis that includes no cointegration between the model variables according to the limits approach.

- The relationship between public debt and current spending: By following Table (2), which shows the results of the Bound Test, to confirm the existence or non-existence of a joint integration relationship using the distributed lag autoregressive methodology between public debt and current spending, it becomes clear to us that the calculated F statistic value of (6.984351) came greater than the upper limit of the limits (Bounds test) as determined by Pesaran, meaning we accept the alternative hypothesis and reject the null hypothesis that confirms the existence of a joint integration relationship between the study variables. Accordingly, we reject the null hypothesis and accept the alternative hypothesis that the public yen and current spending are integrated together and achieve a long-term equilibrium relationship at a significance level of 5% and 10%.

After testing the joint integration between the study variables, we proceed to estimate the error correction model, which represents the relationship between the study variables in the short term. When following the results of Table (2), we notice that the value of the error correction parameter is significant, negative, and less than one, which increases the accuracy and validity of the equilibrium relationship in the long term between the model variables. And 13.3% of the imbalance rate in the previous period is corrected in the subsequent period after any shock to the study variables.

**Table (2) results of the Bound Test**



ARDL Bounds Test						
Sample: 2004Q4 2021Q1						
Included observations: 66						
Null Hypothesis: No long-run relationships exist						
CE ( DG)	ARDL Bounds Test	Test Statistic	Value	Significance	I0 Bound	I1 Bound
		F-statistic	6.984351	10%	4.04	4.78
				5%	4.94	5.73
ARDL Cointegrating And Long Run Form						
	Variable	Coefficient	t-Statistic	Prob.		
	CointEq(-1)	-0.133828	-3.675542	0.0005		

**Source: output of the eviews program**



The relationship between public debt and investment spending: By following Table (2), which shows the results of the boundary test, to confirm the existence or non-existence of a joint integration relationship using the autoregressive distributed lag methodology between public debt and current spending, it becomes clear to us that the calculated F statistic value of (5.949945) was greater than the upper limit value of the boundary (Bounds test) as determined by Pesaran, meaning we accept the alternative hypothesis and reject the null hypothesis that confirms the existence of a joint integration relationship between the study variables. Accordingly, we reject the null hypothesis and accept the alternative hypothesis that the public yen and current spending are integrated together and achieve a long-term equilibrium relationship at a significance level of 5% and 10%.

After testing the joint integration between the study variables, we proceed to estimate the error correction model, which represents the relationship between the study variables in the short term. When following the results of Table (2), we notice that the value of the error correction parameter is significant, negative, and less than one, which increases the accuracy and validity of the equilibrium relationship in the long term between the model variables. And 10% of the imbalance rate in the previous period is corrected in the subsequent period after any shock to the study variables.

**Table (3) results of the Bound Test**

ARDL Bounds Test						
Sample: 2004Q4 2021Q1						
Included observations: 66						
Null Hypothesis: No long-run relationships exist						
IE ( DG)	ARDL Bounds Test	Test Statistic	Value	Significance	I0 Bound	I1 Bound
		F-statistic	5.949945	10%	4.04	4.78
				5%	4.94	5.73
ARDL Cointegrating And Long Run Form						
	Variable	Coefficient	t-Statistic	Prob.		
	CointEq(-1)	-0.100382	-2.937758	0.0047		

**Source: output of the eviews program**

**CONCLUSIONS:**

- 1- Public debt and public spending, both current and investment, have a long-term equilibrium connection. Following any shock to the study variables, the imbalance in the preceding period is adjusted by 10% and 13.3% in the subsequent period.
- 2- The Iraqi economy, despite the high current spending, which expands to three quarters of the general budget, in contrast, the tax revenues decrease, meaning that society enjoys public services without contributing to their costs.
- 3- The absence of a methodology for the exchange of roles between the government and society in the sustainability of financial resources, and therefore the problem of increasing the financing burden for future generations.
- 4- The annual general budget begins with a virtual deficit and ends with a real surplus, which is transferred as an opening balance in the budget of the subsequent fiscal year, which is in fact a financial illusion.
- 5- Investment spending was prioritized over the public debt, both external and internal, which had a detrimental effect on the ability to fund investment projects and enhance economic conditions.

**RECOMMENDATIONS:**

- 1- The financial policy should have a major and active role in controlling and influencing economic activity, through the application and activation of its financial rules, and reducing inappropriate financial policies that lead to the





loss of a large percentage of the available financial allocations, which causes a financial deficit in the general budget of the state.

- 2- Determining public spending and not responding to successive annual increases as a result of increasing oil revenues, by determining its percentage of GDP so that it does not exceed (50%), for example.
- 3- Work to direct the increase in oil revenues towards investment spending to develop economic and social infrastructure, and this is one of the components of stability in economic activity and economic development.
- 4- Achieving financial sustainability through the use of the financial surplus in the general budget in the establishment of sovereign funds through which these surpluses are invested, or in paying off the external and internal debts incurred by the country or covering the deficit in the general budget.
- 5- Coordination between the fiscal and monetary policies to reduce the inflationary effects of government spending policy, and work to develop clear mechanisms for coordination and interaction between them.

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