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The impact of public debt fluctuations on investment in Iraq for the period (2004-2020).

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Abstract:

With public expenditures increasing at high rates and oil prices fluctuating as the main source of public revenues, Iraqi governments have become addicted to filling the deficit in the general budget by borrowing, whether internal or external borrowing. Public debt rates have different economic effects on some economic variables, including investment, as the research aims to show the impact of public debt on investment in Iraq.

The relationship between public debt and investment in Iraq during the period (2004-2020) was tested using the ARDL model. The results showed the weak impact of public debt, both internal and external, on investment in Iraq during the study period, which indicates the limited impact of public debt on investment and the latter's association with variables other than public debt, in terms of the lack of a safe and stable environment for investment, as well as the weak support provided by the sector year in investment development.

Keywords: public debt in Iraq, investment, market fluctuations

1. Introduction

The Iraqi economy suffers from the resource curse or what is known as the paradox of oil abundance. Since the discovery of oil in Iraq until the present time, the Iraqi economy has been plagued by the "Dutch disease". This country has not been able to develop its economy and benefit from oil revenues to build a strong and diversified economy that achieves development and catches up with advanced countries.

Despite its vast human, natural, and other resources, the Iraqi economy suffers from significant structural imbalances that have led to the failure of development and investment programs and plans. While other countries that were at a similar starting point with Iraq have managed to

transition to a more advanced and progressive economic model by following specific economic plans. These include focusing on the golden rule of public finance, which states that "all debt should be directed towards investments" to achieve sustainability in public debt, whether domestic or external. According to this rule, the state borrows to cover investment expenses without current expenses. However, it is noted in Iraqi budgets that the allocation for investment constitutes a very small percentage, while the majority goes towards operational spending. Moreover, the economic policies implemented in Iraq during the past decades have not worked on investing oil revenues to diversify the economy and develop its sectors in order to drive economic growth.

1.1 The importance of research:

The relationship between public debt and investment has been widely debated in previous studies due to the widespread policy of government borrowing in most countries around the world to offset the contraction caused by the repeated economic and financial crises in the global economy, and the clear neglect in investment allocations in the state's general budget, as well as resorting to these allocations in case of a decrease in government revenues and their expenditure on the consumption side.

1.2 Research problem:

With Iraqi governments' addiction to resorting to public debt in case of revenue decline and its impact on the Iraqi economy, the research problem lies in the fact that the increase in public debt has a negative impact on investment rates in Iraq and its negative repercussions on the Iraqi economy.

1.3 Research hypothesis:

The research is based on the hypothesis that public debt has a negative impact on investment rates in Iraq.

1.4 Research objective:

The research aims to explain the relationship between public borrowing (domestic and external) and investment, as it is of utmost importance in achieving financial sustainability.

1.5 Research limitations:

Time boundaries: The time boundaries of the research are represented by using quarterly data for both public borrowing (domestic and external) and investment for the period (2004-2020).

1.6 Spatial boundaries: The spatial boundaries are represented by the Iraqi economy.

1.7 Research Structure:

In order to achieve the research goal, the research was divided into three sections. The first section addressed the impact of public debt on investment. The second section discussed the relationship between public debt and investment in Iraq, and presented two demands. The first demand addressed the relationship between domestic debt and investment in Iraq for the period (2004-2020), while the second demand discussed the relationship between external debt and investment

in Iraq for the period (2004-2020). Finally, the third section focused on measuring and analyzing the relationship between public debt and investment, and presented two demands. The first demand addressed the results of testing the stability of time series, while the second section presented the results of estimating the relationship between domestic and external public debt with investment in Iraq during the period (2004-2020). The research concluded with a series of conclusions and recommendations.

2. Public Finance and Investment

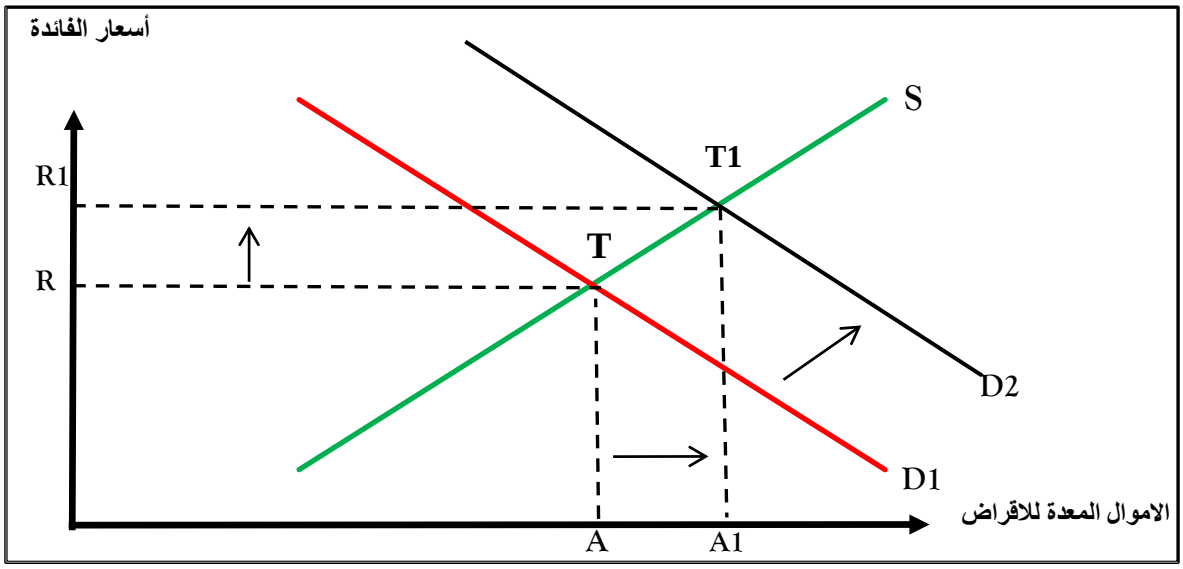
The classical theory has warned since the end of the nineteenth century of the dangers of public borrowing on private investment due to limited financial resources (funds available for lending). Therefore, what the government borrows will be at the expense of private sector investments, as government demand for borrowing to finance budget deficits leads to higher interest rates. Considering the sensitivity of investment to interest rates as a cost on production, investment rates are inversely related to interest rates and public borrowing. This argument in explaining the impact of public borrowing on investment through the interest rate channel was a tool to curb public borrowing and reduce the role of the state in economic activity due to the damages caused by government spending funded by public borrowing. Moreover, the use of public funds, according to the classical theory, tends to be for consumption purposes, which reduces investment rates, capital accumulation, and economic growth. Despite Keynes' criticism of this relationship and his emphasis on the weak sensitivity of investment to interest rates, economic studies related to classical thinking have promoted this understanding over the past decades of the twentieth century. The relationship between public borrowing and investment rates through the interest rate channel continues to be a subject of research and measurement to the present day .(1) .

The economic theory holds that when the government demands a large proportion of available savings by selling government bonds to the non-banking sector to finance an increase in public spending, it leads to a reduction in the supply of savings in the money market allocated for lending, thus causing an increase in interest rates .(2) When the deficit is financed by borrowing from the public, it is considered a purely financial act for the government because the money supply does not change. Current deposits or demand deposits for individuals will decrease while current deposits for the government will increase by the same amount. The government then uses the funds it has obtained to increase its purchases of goods and services. Financing the budget deficit through borrowing leads to a decrease in the money available for private investment and private consumption spending, as an increase in interest rates reduces the expansionary effect of the budget deficit.

(1) Abbas Naser Ali, Mechanism of Financing the General Budget Deficit in Iraq and Its Effects on Some Monetary Variables, Master's Thesis submitted to the Council of the College of Administration and Economics - University of Baghdad, 2018, p. 18.

(2) Awad Fadel Ismail, Theory of Government Spending, Study in Legal, Financial, and Economic Aspects, Saddam University, Baghdad, 2003, p. 508.

Fig (1) The effect of borrowing from the public on the demand for funds.



N, Gregory, Mankiw, Brief Principles of Macroeconomics, 5th ed, South-Western, USA, 2009.p.173.

It is clear from figure (1) that an increase in loan volume leads to a shift of the demand curve for lendable funds to the right from (D1) to (D2), indicating an increase in public borrowing and an increase in demand for lendable funds from (A) to (A1). The figure also shows that the shift takes into account how the equilibrium changes from point (T) to point (T1) through an increase in interest rates as a result of the increased demand for lendable funds, leading to higher interest rates. [(1)] From point (R) to point (R1). And an increase in interest rates means an increase in the opportunity cost of investing in physical capital, thus reducing the incentive for the private sector to invest in less profitable projects as investors in the private sector prefer to invest in bonds rather than capital goods. Similarly, high interest rates lead to a weakening of private sector consumption due to the higher interest rates in the markets. That is, the increase in public borrowing has crowded out private investment by raising interest rates, pushing private sector investors to reduce investment or seek other sources of funding, with commercial banks being the most important of these sources, raising interest rates as demand for financial resources increases. However, the ultimate impact depends on the short-term interest rate and the central bank's stance on providing liquidity to commercial banks to meet the growing demand for financial resources. If banks can refinance their liquidity with the central bank, this will help maintain moderate interest rates. However, if the central bank adopts a tight monetary policy towards providing liquidity to commercial banks, this policy will push interest rates higher .[(2)] .

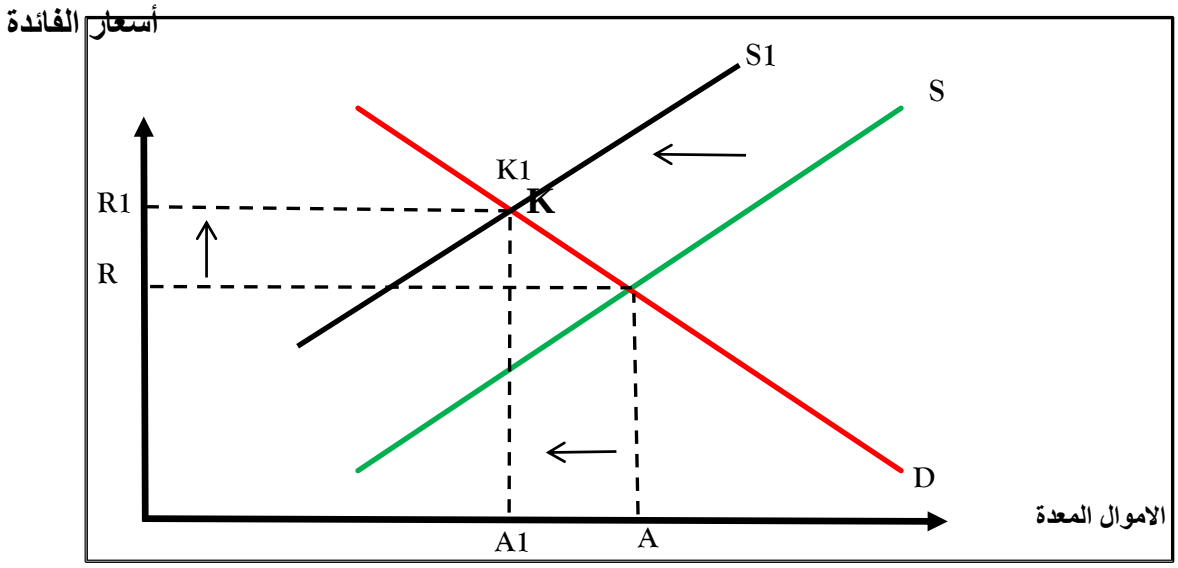
The impact of crowding out private investment by public borrowing can be represented through the interest rate by focusing on the money supply curve available for lending. When the

(1) N. Gregory Mankiw, Brief Principles of Macroeconomics, 5th ed, South-Western, USA, 2009, p. 173.

(2) Awad Fadel Ismail, Money and Banks, Dar Al-Hikma Printing and Publishing Press, Mosul, 1990, p. 573.

government faces a budget deficit, public savings are negative, reducing national savings. In other words, when the government borrows to finance the budget deficit, it reduces the supply of available funds for lending to finance investment by the public, thus public borrowing shifts the money supply curve to the left from (S1) to (S2), as shown in Figure.(2)

The fig (2) the impact of borrowing from the public in the presentation of funds



N, Gregory, Mankiw, Brief Principles of Macroeconomics, 5th ed, South-Western, USA, 2009.p.174.

When the budget deficit decreases the available loanable funds from (S) to (S1) in Figure (2), the interest rate rises from point (R) to point (R1), leading to a change in the behavior of market participants. The decrease in the number of borrowers seeking loanable funds due to the higher interest rates leads to a reluctance to invest, resulting in a decrease in capital accumulation and economic growth. The decrease in investment due to public borrowing (crowding out effect) is represented in the figure by a movement along the demand curve (D) reflecting a decrease in demand for loanable funds from point (K) to point (K1). When the government borrows to finance its budget deficit, it crowds out borrowers trying to finance investment .[(1)] .Therefore, the analysis of the relationship between public borrowing and investment starts with the effects of public borrowing on the supply and demand for lendable funds. When government savings decrease due to public expenditures exceeding public revenues, both public savings and national savings decrease, leading to an increase in interest rates. Consequently, investment decreases, capital accumulation declines, and economic growth decreases. [(2)].

However, it should be noted that the relationship between public borrowing and investment through interest rates is subject to multiple considerations, as interest rates are directly affected by monetary policy, fiscal policy, and the level of economic activity. On one hand, monetary policy

(1) Ahmed Barihi Ali, Theory of Government Debt, Iraqi Central Bank, Research and Studies Department, 2020, p. 24.

(2) N. Gregory Mankiw, op. cit. p. 174.

affects the money supply and its circulation speed, while fiscal policy plays an important role in influencing the behavior of interest rates through the level of public debt .[1] .Borrowing from the central bank directly (overdraft) or indirectly (selling government bonds) to finance the increase in government spending means issuing new money equal to the deficit funded by this method, which reflects an increase in the money supply and therefore a decrease in interest rates in the short term. Therefore, expansionary fiscal policy combined with monetary expansion does not lead to a shortage of funds that individuals and businesses can use, and therefore does not result in reducing private spending on consumer and investment goods. In other words, pursuing a monetary policy that is in line with expansionary fiscal policy puts pressure to reduce short-term interest rates and thus enhance private spending and aggregate demand. On the other hand, when the government spends new money, individuals' incomes and their deposits in commercial banks increase, leading to an increase in their cash reserves and giving banks greater ability to provide more credit through credit multiplier operations, expanding the money supply and causing interest rates to fall in the short term.[2] .

2.1 Second Topic: The Relationship between Public Religion and Investment in Iraq

The observer of the Iraqi budget path notes that the allocation for investment spending is used to absorb fluctuations. When revenues increase, the size of public investment increases, and when revenues decrease, operational expenses are not significantly affected but rather the cuts are mostly from the investment allocation. It is evident in Iraq that domestic and external loans have exceeded investment expenditures, and that the economic policies implemented in the past decades have not worked on investing oil revenues within sectors that drive economic growth and make the oil sector a secondary rather than a primary resource, given its depleting nature. Moreover, these policies in Iraq are characterized by centralization, continued unlimited government intervention, and not giving a real opportunity to the private sector under conditions, controls, and monitoring by the central authority, which has led to the private sector's role in investment remaining marginal and symbolic at best. This has resulted in the lagging of productive sectors and the failure to achieve the desired economic growth and build a sustainable economy based on solid foundations. Based on this, we address the analysis of the debt impact on the investment path in Iraq [3] .During the period (2004-2020) as in the following table:(1)

(1) Zaher Al-Nuwaran, Measuring the Impact of Changes in Interest Rates on the Volume of Deposits and Loans in Jordanian Commercial Banks (A Case Study of Cairo-Amman Bank), Journal of Economic Development, Hassiba Benbouali University, Issue 4, Algeria, 2017, p. 58.

(2) Awad Fadel Ismail, Theory of Government Spending, previous source, p. 510.

(3) Sultan Jasim Al-Nasrawi et al., The Dual Crisis and the Problematic of Achieving Financial Sustainability in Iraq, Journal of College of Administration and Economics for Economic, Financial, and Administrative Studies, University of Babylon, Volume 12, Issue 2, 2020, p. 230.

Table (1): Internal and external debt and investment in Iraq for the period (2004-2020): In Trillion Dinars

Investment growth	Investment	External debt growth	External debt	Domestic debt growth	Domestic debt	Public debt	Year
7	6	5	4	3	2	1	
-	0.1756552	-	84.881	-	6.398	91.279	2004
%18	0.2068493	%-38	52.459	%3	6.594	59.053	2005
%102	0.4186986	%-38	32.371	%-14	5.645	38.016	2006
%2	0.4268	%-4	31.214	%-9	5.194	36.408	2007
%30	0.5531933	%2	31.953	%-13	4.456	36.409	2008
%74	0.9636667	%-36	20.458	%91	8.504	28.962	2009
%50	1.443917	%-1	20.248	%26	10.714	30.962	2010
%21	1.744417	%4	21.037	%15	12.294	33.331	2011
%94	3.378833	%-8	19.393	%-6	11.536	30.929	2012
%105	6.909833	%-11	17.24	%13	13.078	30.318	2013
%40	9.686	%9	18.8	%53	19.958	38.758	2014
%21	11.675	%7	20.063	%60	31.977	52.04	2015
%-33	7.856667	%-23	15.389	%47	47.055	62.444	2016
%31	10.29633	%98	30.475	%4	48.749	79.224	2017
%-23	7.911917	%3	31.429	%-10	43.954	75.383	2018
%3	8.167167	%-3	30.588	%-11	38.91	69.498	2019
%-92	0.61875	%-7	28.32	%70	66.255	94.575	2020

Column (1, 2, 4) Ministry of Finance, Public Debt Department, Statistical Bulletins for the period (2004-2020). Column (6) Central Bank, General Directorate of Statistics and Research, Statistical Bulletins for the period (2004-2020). Columns (3, 5, 7) are the work of the researcher.

3.1 The first demand: The relationship between domestic debt and investment in Iraq for the period:(2020-2004)

The relationship between domestic public debt and investment is important and necessary as it is essential to direct domestic public debt towards real investment. The utilization of this debt in an economic manner leads to an increase in the Gross Domestic Product (GDP), higher income levels, increased savings, and filling the gap in financial resources necessary to finance investment projects. Therefore, the accumulation of domestic public debt works to reduce investment spending due to the payment of debt principal and debt servicing costs, negatively impacting savings, reducing the ability of banks to provide loans to the private sector, decreasing investment, lowering GDP, and slowing down economic growth rates.

The internal debt in Iraq is not directly linked to investment because the primary purpose of internal debt is to finance the budget deficit, which may not reflect on investment expenditure rates, especially if budget deficit financing neglects investment expenditure. This contradicts the logic of the golden rule for achieving public debt sustainability, as internal debt is tied to oil

revenues, with internal debt in Iraq rising whenever oil revenues decrease, and vice versa ،[1] . And we address the internal religious orientation and investment direction during the study period in Iraq through the table above:

Through reviewing Table (1), we notice that after the political system transformation in 2003, the volume of domestic borrowing increased from around 6.398 trillion dinars in 2004 to about 66.255 trillion dinars in 2020. The reason for this increase is attributed to financing the growing deficit. However, these domestic loans were not invested in creating investment projects and infrastructure but were used to meet the financing needs of the general budget. The contribution of domestic loans to financing investments was low due to the increase in oil revenues and openness to the external world. Nevertheless, investment increased during the study period from around 0.1756552 trillion dinars in 2004 to about 0.5531933 trillion dinars in 2008, as a result of changes in the political and economic situations in the country, the increase in oil exports and prices, .accompanied by an increase in domestic debt, which reached around 4.456 trillion dinars in 2008

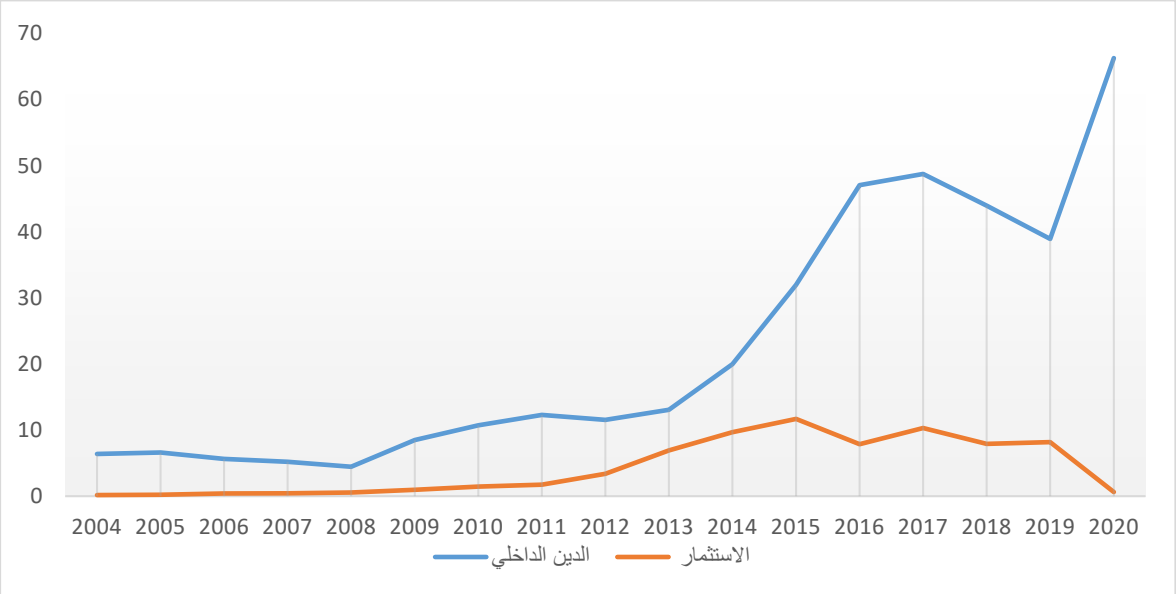
With the continued rise in domestic debt accompanied by an increase in investment, it reached nearly 11.675 trillion dinars in 2015, the highest investment rate during the study period, while domestic debt reached approximately 31.977 trillion dinars in 2015. In 2016, domestic debt increased due to the dual crisis faced by Iraq, namely the decrease in global demand for oil and its prices, resulting in a decline in general revenues contributing to the budget, and Iraq also faced a fierce terrorist attack as the government was trying to provide the necessary revenues to combat terrorism, creating an investment-repelling environment and diverting most of the investment allocations in the budget to public expenditures dominated by military nature, leading to a decrease in the volume of investment ،[2] .When it reached about (7.856667) trillion dinars, recording a negative growth rate of (33%) compared to the year (2015), then the investment volume increased to about (10.29633) trillion dinars in the year (2017) and the reason for that is attributed to the improvement in oil prices and the increase in production capacities of the oil sector, while the domestic debt reached about (48.749) trillion dinars. However, investment spending quickly decreased in the year (2018) to reach about (7.911917) trillion dinars with a growth rate of (23%) compared to the year (2017), due to the deterioration of the political and security conditions, while the domestic debt also decreased to about (43.954) trillion dinars.

In 2019, investment improved to witness a slight increase, reaching approximately 8.167167 trillion dinars, achieving a growth rate of 3% compared to 2018. However, before the global crisis due to the coronavirus pandemic in 2020, which halted many economic sectors, there was a decrease in global demand, a decline in oil prices, a decrease in public revenues, and an increase in borrowing at high rates, with the domestic debt reaching approximately 66.255 trillion dinars. Most of the expenses were directed towards operational and health expenditures, resulting in a sharp decrease in investment spending, which reached approximately 0.61875 trillion dinars this year, with a negative growth rate of 92% compared to 2019, as shown in figure (3) below:

(1) Sultan Jasim Al-Nasrawi, previous source, p. 231.

(2) Khalid Rukan Awad, Bilal Mohammed Asaad, Amar Abdul Hadi Shalal, The Relationship Between Public and Private Investment and Its Impact on Gross Domestic Product, Al-Kut Journal of Economic Sciences, Issue 34, 2019, p. 143.

The Form (3): Direction of internal debt and investment in Iraq for the period:(2020-2004)



The researcher worked based on the data in Table (1).

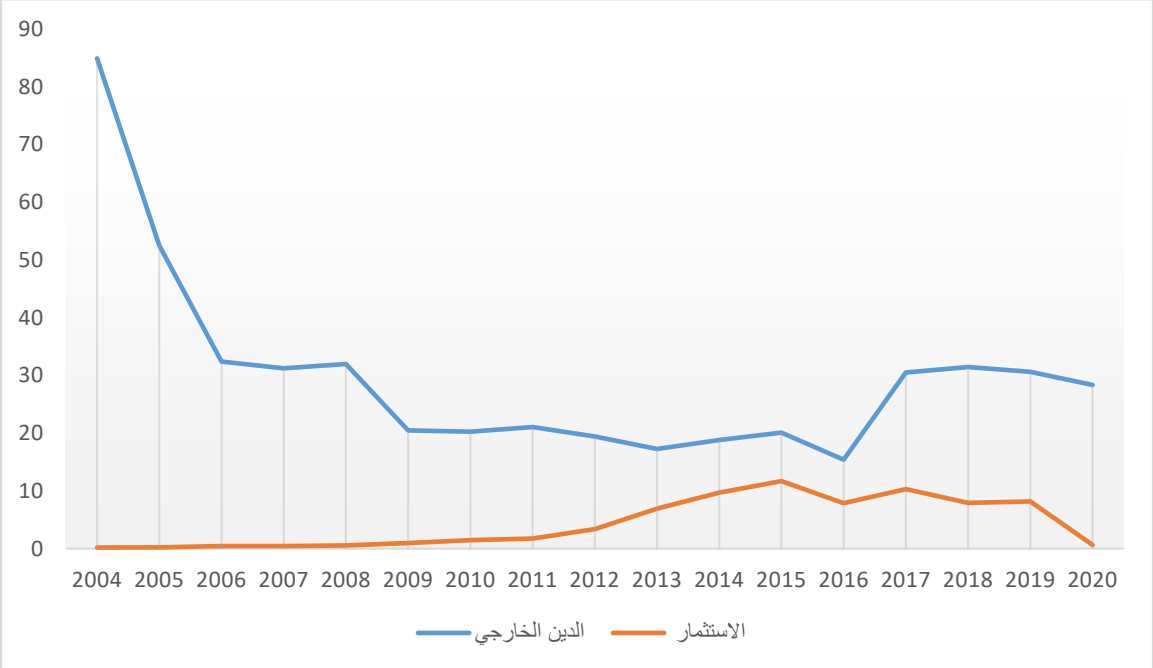
The figure above illustrates the trends of both domestic debt and investment spending in Iraq during the period (2004-2020). It shows the upward trend of domestic debt despite fluctuations between increases and decreases. Additionally, the figure above also indicates that investment spending varies from year to year. The growth of domestic public debt during the study period exceeded multiple times the growth of investment, indicating that Iraq will undergo a very difficult phase characterized by its inability to repay its debts and the interests thereof. It is evident that even in years where investment spending increases, it has no real impact due to political, security, and economic disturbances, as well as administrative and financial corruption, and the weakness of monitoring channels for loan utilization .

3.2 The second demand: The relationship between external debt and investment in Iraq for the period (2004-2020):

The table (1) above shows that the previous analysis we relied on in analyzing the relationship between the direction of internal debt and investment growth in Iraq applies to the relationship between the direction of external debt and investment growth in Iraq during the same period. As shown in Figure (4), despite the fluctuations in external debt rates, the overall trend of external debt has been decreasing from around (84.881) trillion dinars in 2004 to around (28.32) trillion dinars in 2020 due to the repayment of debts owed to Iraq by many entities during the study period due to the change in the political system. However, external debt increased in 2016 due to the dual crisis that Iraq faced, namely the drop in oil prices and a terrorist attack on Iraq. But it returned to the overall downward trend by the end of the study period. However, these loans were not directed towards investment spending because the government resorted to these loans to cover the deficit in the general budget, especially to cover the deficit in current and operational expenses without considering the investment aspect of the budget, However, investment increased during the period

(2015-2004), as it was around (0.1756552) trillion dinars in 2004, and recorded varying positive growth rates during this period. The highest growth rate was recorded in 2013at %105compared to 2012, due to the improvement in political and security conditions. Investment expenditure reached around (11.675) trillion dinars in 2015, with a positive growth rate of %21compared to 2014. However, in 2016, it decreased due to the extended impact of the dual crisis that Iraq faced, making it an investment-repellent environment. Investment prospects reached around (7.856667) trillion dinars, recording a negative growth rate of %33compared to 2015. In the following years, investment expenditure fluctuated between increases and decreases until 2020, where there was a sharp decrease in investment expenditure, reaching around (0.61875) trillion dinars with a negative growth rate of %92compared to 2019, as Iraq, like most countries in the world, was affected by the health crisis, negatively impacting most sectors and economic activities, reducing overall demand and directing most spending towards healthcare, leaving other sectors as shown in Figure .(4)

The fig (4) External Religious Orientation and Investment in Iraq for the period (2004-2020):



The researcher worked based on the data in Table (1).

The figure (4) above illustrates the paths of both external debt and investment spending in Iraq during the period (2004-2020). It shows the downward trend of external debt despite fluctuations between increase and decrease, as well as the contemporary path of investment spending, which appears to have taken an upward trend with a fluctuating growth rate, but decreased in the years of shocks, including the dual crisis that occurred in Iraq in 2014 and its impact extended to the following years, as well as the global crisis due to the coronavirus in 2020, during which investment spending sharply declined.

3. Measuring the relationship between public debt and investment.

The third section deals with presenting and analyzing the results of standardized tests regarding the relationship between public debt in its internal and external aspects and investment in Iraq during the period.(2020-2004)

3.1 Results of time series stability test

The stability test is used to express the degree of integration of the time series by estimating the presence of Unit Roots. If it contains a single unit root, then this series is considered integrated of order one (I(1)). Time series that do not contain a unit root or are stable are considered integrated of order zero (I(0)). Stability condition is essential in the study and analysis of time series. If the time series are not stable, accurate and logical results will not be obtained. It is noted from the table that the original series were unstable at the level. Therefore, a unit root test with first differences was conducted for the original series, and it was found that all variables stabilized at a significant level (5%), indicating that the variables are cointegrated of order one (I(1)), whether there is a trend or not as shown in table (2) below:

Table (2) ADF and PP tests for level and initial differences

UNIT ROOT TEST RESULTS TABLE (ADF)				
Null Hypothesis: the variable has a unit root				
At Level				
		DE	DI	IN
With Constant	t-Statistic	-1.6483	0.548631	-1.413358
	Prob.	0.4451	0.9857	0.5630
		n0	n0	n0
With Constant & Trend	t-Statistic	-2.3124	-1.983041	-1.395832
	Prob.	0.4141	0.5874	0.8422
		n0	n0	n0
Without Constant & Trend	t-Statistic	-0.2818	1.340577	0.520272
	Prob.	0.5750	0.9513	0.4831
		n0	n0	n0
At First Difference				
		d(DE)	d(DI)	d(R)
With Constant	t-Statistic	-2.5976	-1.568187	-3.850942
	Prob.	0.1057	0.4864	0.0064
		n0	n0	***
With Constant & Trend	t-Statistic	-4.0108	-3.955430	3.197819
	Prob.	0.0192	0.0716	0.0237
		**	*	**

Without Constant & Trend	**t-Statistic**	**-2.7196**	**-1.130448**	**3.738839**
	Prob.	**0.0085**	**0.2292**	**0.0005**
		*******	**n0**	*******

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

The researcher worked relying on the Eviews-9 software.

3.2 Testing common integration using boundary testing.

The table (3) shows the results of the initial test of the (ARDL) model, as noted in it the value (0.970815=R-squared), which means that the independent variables (DE, DI) have explained the dependent variable (IN) by 97%. This confirms the validity of diagnosing the model according to the optimal lag period criterion (as shown in the appendix), which determines the appropriate model that estimates the short-term and long-term relationship between the independent variables and the dependent variable in Iraq. The statistical (Durbin-Watson) indicates that its value reached (1.743498), which explains that the model is free from autocorrelation problem, as shown in the table below.

Table (3) Results of the initial test of the ARDL model for the investment function.

Dependent Variable: IN				
Method: ARDL				
Dynamic regressors (2 lags, automatic): DE DI				
Fixed regressors: C				
Number of models evalulated: 18				
Selected Model: ARDL(2, 2, 0)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
IN(-1)	**1.435873**	**0.180408**	**7.959039**	**0.0000**
IN(-2)	**-0.436194**	**0.213827**	**-2.039935**	**0.0525**
DE	**0.145147**	**0.061279**	**2.368618**	**0.0262**
DE(-1)	**-0.227490**	**0.088298**	**-2.576377**	**0.0166**
DE(-2)	**0.080668**	**0.047338**	**1.704065**	**0.1013**
DI	**-0.018637**	**0.020509**	**-0.908690**	**0.3725**
C	**0.615478**	**0.590950**	**1.041505**	**0.3080**
R-squared	**0.970815**	**Mean dependent var**		**4.917948**
Adjusted R-squared	**0.963519**	**S.D. dependent var**		**3.997621**
S.E. of regression	**0.763542**	**Akaike info criterion**		**2.493983**
Sum squared resid	**13.99192**	**Schwarz criterion**		**2.817786**
Log likelihood	**-31.65673**	**Hannan-Quinn criter.**		**2.599535**
F-statistic	**133.0588**	**Durbin-Watson stat**		**1.743498**
Prob(F-statistic)	**0.000000**			
***Note: p-values and any subsequent tests do not account for model Selection.**				

The researcher worked using Eviews-9 software.

3.2 Testing common integration using boundary testing:

Table (4) shows the results of the boundary test where the results reveal that the calculated (F) value of (1.006858) is smaller than the critical (F) value of (3.17) and smaller than the maximum tabulated value of (4.14) at a significance level of 10%. Therefore, we accept the null hypothesis (no cointegration among variables) and reject the alternative hypothesis (presence of cointegration), meaning there is no long-term equilibrium relationship between the variables, whether in the maximum or minimum value at levels of 1%, 2.5%, 5%, and 10%.

Table (4) Results of the boundary test for the investment function

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	1.006858	2
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
%10	3.17	4.14
%5	3.79	4.85
%2.5	4.41	5.52
%1	5.15	6.36

The researcher worked relying on the Eviews-9 software.

3.3 Fourth: Estimating the short-term model and the error correction equation:

Table (5) shows the results of estimating the teachers in order to reveal the degree of impact of the independent variable on the dependent variable in the short term. The results show a short-term negative relationship between the independent variable (external debt DE) and the dependent variable (investment IN), as well as a short-term inverse relationship between the independent variable (internal debt DI) and the dependent variable (investment IN). However, these results cannot be relied upon in interpreting the relationship between public debt and investment in Iraq, as the boundary test results revealed no common integration between the mentioned variables. Therefore, there is no long-term equilibrium relationship between public debt, both internal and external, and investment in Iraq during the study period. This is in line with the reality of private investment in Iraq, which is closely related to the business climate, legislative environment, and competition with foreign products. Interest rates and financial crowding out do not have a significant impact on the growth and development of private investment in Iraq.

Table (5) Short-term model estimation results for the investment function.

ARDL Cointegrating And Long Run Form
Dependent Variable: IN
Selected Model: ARDL(2, 2, 0)
Included observations: 31
Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IN(-1))	0.436194	0.213827	2.039935	0.0525
D(DE)	0.145147	0.061279	2.368618	0.0262
D(DE(-1))	-0.080668	0.047338	-1.704065	0.1013
D(DI)	-0.018637	0.020509	-0.908690	0.3725
CointEq(-1)	-0.000320	0.086368	-0.003708	0.9971
Cointeq = IN - (-5.2288*DE -58.1976*DI + 1921.9813)				

The researcher worked relying on the Eviews-9 software.

3.4 Long-term model estimation:

Table (6) reveals the presence of two long-term effects of the type of public debt on investment (IN) in Iraq in the opposite direction, as there is a long-term inverse effect of external public debt (DE) on investment in Iraq. We also find another long-term inverse effect of internal public debt (DI) on investment in Iraq. Also, these results cannot be relied upon in interpreting the relationship between public debt and investment in Iraq, as the boundary test results revealed no common integration between the mentioned variables, and therefore there is no long-term equilibrium relationship between public debt, both internal and external, and investment in Iraq during the study period. This is in full agreement with the reality of private investment in Iraq, which is closely related to the business climate, legislative environment, and competition with foreign products, and interest rates and financial crowding out do not have a significant impact on the growth and development of private investment in Iraq

Table (6) Long-term model estimation results for the investment function.

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DE	-5.228841	1387.827971	-0.003768	0.9970
DI	-58.197648	15752.731641	-0.003694	0.9971
C	1921.981343	517880.082237	0.003711	0.9971

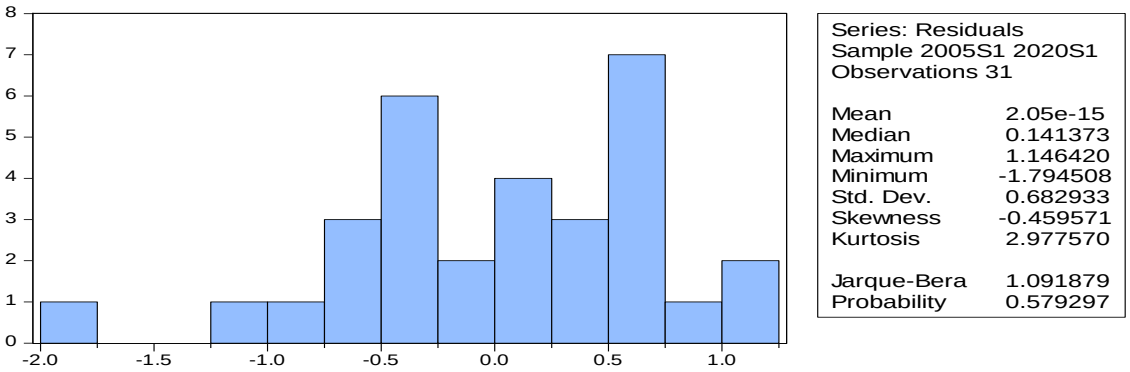
The researcher worked relying on the Eviews-9 software.

3.5 Model Quality Test: To judge the quality of the model used and to ensure that the model is free from standard problems, the following standard tests were conducted:

Test for normal distribution of residuals:

The residual (1) indicates that the residuals are normally distributed in the estimated model since the value of Jarque-Bera is not significant at the 0.05 level.

The plan (1) is to test the normal distribution of the investment function.



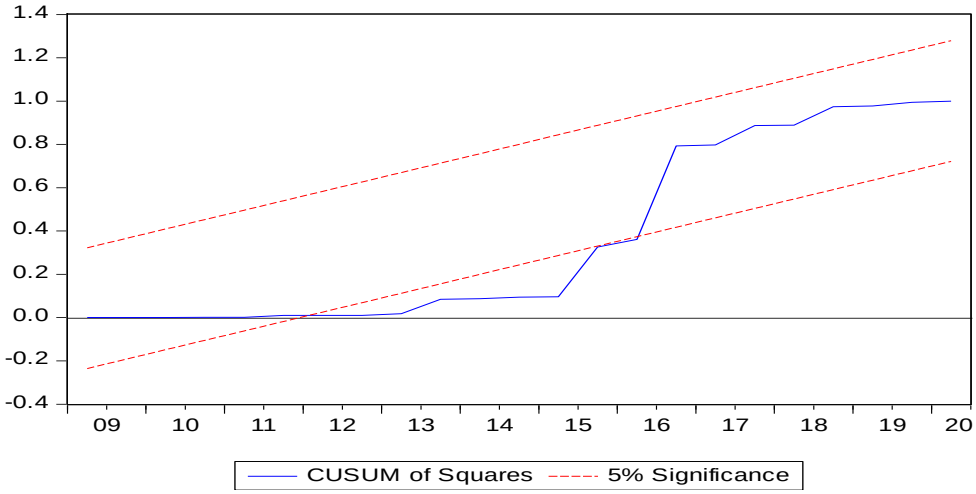
The researcher worked relying on the Eviews-9 program.

1. **Testing the stability of the function over the study period:**

This test reflects the short and long term coefficients of the data used, devoid of any structural changes over time, and this is done using two tests for this purpose. We notice that the statistical chart falls outside the lower limits in the (Cumulative Sum of Squares of Residuals) test as shown in Figure (5) at a level of (0.05), which means the instability of the data due to the crises that Iraq has gone through. On the other hand, the (Cumulative Sum of Residuals) test, as shown in Figure (6), shows that the statistical chart falls in between the critical region boundaries, indicating the stability of the short and long term parameters of the estimated model (ARDL) according to statistical tests at a level of (0.05).

- **Cumulative sum of squares repeated residuals test**

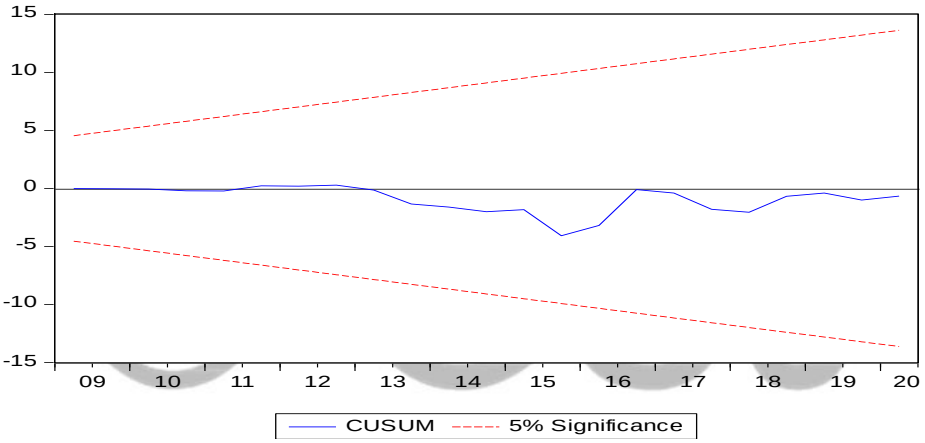
The form (5) the cumulative total of the squares of the residuals for the investment function.



The researcher worked relying on the Eviews-9 software.

Cumulative residual sum of squares test

Figure (6) Cumulative residual sum of squares for the investment



The researcher worked relying on the Eviews program.

Seventh: Standard Model Issues:

.1Self-attachment test for residual LM:

Table 7 indicates the lack of self-correlation in the model as the calculated F-statistic was not significant at a level greater than 0.05.

Table (7) Autocorrelation of Residuals for the Investment Function

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	**1.470767**	**Prob. F(2,22)**	**0.2515**
Obs*R-squared	**3.656052**	**Prob. Chi-Square(2)**	**0.1607**

The researcher worked relying on the Eviews program.

2.Heteroscedasticity Test

) shows the model's lack of heteroscedasticity problem and the calculated (F) value is 8Table (.(0.05) not significant at a higher level than

Table (8) Heteroscedasticity of residuals for the investment function

Heteroskedasticity Test:			
F-statistic	**0.608689**	**Prob. F(6,24)**	**0.7209**
Obs*R-squared	**4.094299**	**Prob. Chi-Square(6)**	**0.6639**

The researcher worked relying on the Eviews-9 software.

Conclusions:

1. An increase in government demand for loans to finance the budget deficit leads to higher interest rates. Given the sensitivity of investment to interest rates as a cost on production and the inverse relationship between investment rates and interest rates and public borrowing, this explains the negative impact of public borrowing on investment through interest rates.
2. Public debt in Iraq is not directly linked to investment, as the main purpose of public debt is to finance the budget deficit. This may not reflect on investment expenditure rates, especially if financing the budget deficit to cover current and operational expenses neglects investment expenditures. With public debt linked to oil revenues, public debt in Iraq rises as oil revenues decline and vice versa.
3. During the study period, public debt exceeded investment by multiples, meaning Iraq will face a very difficult phase where it may struggle to repay its debts and their interests. It is evident that even in years where investment volumes increase, there is no real impact due to political, security, and economic disruptions, as well as administrative and financial corruption and weak monitoring of loan spending.
4. The results of time series stability tests showed that all study variables were stable at the first difference, necessitating the use of the Autoregressive Distributed Lag (ARDL) model to determine the relationship between public debt, both domestic and external, and investment in Iraq.
5. The results of the standard test showed the presence of a negative relationship in the short term between external debt and investment, as well as a short-term inverse relationship between internal debt and investment. However, these results cannot be relied upon to interpret the relationship between public debt and investment in Iraq, as the boundary test results revealed no common integration between the mentioned variables. Therefore, there is no long-term equilibrium relationship between public debt, both internal and external, and investment in Iraq during the study period. This is in line with the reality of private investment in Iraq, which is closely linked to the business climate, legislative environment, and competition with foreign products. Interest rates and financial crowding out do not have a significant impact on the growth and development of private investment in Iraq.
6. The results of the standard test indicated a long-term inverse effect of public debt, both internal and external, on investment in Iraq. Similarly, these results cannot be relied upon to interpret the relationship between public debt and investment in Iraq, as the boundary test results revealed no common integration between the mentioned variables. Therefore, there is no long-term equilibrium relationship between public debt, both internal and external, and investment in Iraq during the study period. This is in line with the reality of private investment in Iraq, which is closely linked to the business climate, legislative environment, and competition with foreign products. Interest rates and financial crowding

out do not have a significant impact on the growth and development of private investment in Iraq.

Recommendations:

1- Enhancing the efficiency of implementing the investment budget by creating a guarantee fund for investment, where annual investment allocations or any financial surpluses are deposited for the purpose of providing development and foreign implementation supplies in the budget. This fund will be funded and guaranteed for contracting companies in order to increase the absorptive capacity of the investment budget with the assistance and high support for international contracting companies.
2- Working on developing plans and strategies to reduce the size of public debt and directing it towards investment projects that generate returns to the budget.
3- Exploring alternative sources of income through cooperation between the private and public sectors and the financial system through financial accounting policies to increase the contribution of other sectors (industry, commerce, agriculture, tourism, transportation, etc.) to the gross domestic product, and then providing the budget with new financial resources.
4- Attracting foreign investments and improving the investment climate through enacting laws and regulations that attract investments, as well as improving the business environment for companies and commercial establishments.
5- Directing the public sector to support the private sector in a way that does not compete with the private sector for investment opportunities and establishing a real partnership between the public and private sectors in investment through joint stock companies in this aspect.
6- Adapting laws and regulations for ministries and their affiliated departments that conflict with investment laws to contribute to attracting and enhancing investments and encouraging the private sector by providing guarantees and tax exemptions.
7- Directing public investments towards infrastructure sectors and avoiding productive sectors by directing public investments specifically towards agriculture, electricity, communications, construction, and building sectors, as this yields a positive return towards stimulating the private sector with higher productivity compared to the public sector.

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