

Measuring and Analyzing the Impact of the Efficient Use of Public Debt towards Public Investment in Iraq for the Period 2003-2021

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Abstract

Despite the significant increase in the volume of public spending in the past years, it was not directed towards public investment. The pivotal structures or vital productive sectors, hence the idea of the study, whose aim is to study the importance of public debt and its role in promoting public investment, and to know the reasons for Iraq's resort to public debt as well as the appropriate financial policies that contribute to enhancing the reality of investment. As the study proved that there is a long-term equilibrium relationship between public debt and public investment, but it is inverse, as an increase in external and domestic debt by one unit leads to a decrease in investment by (-1.29) (-0.65), as it goes towards salaries, wages, and increased military spending, contrary to what it was stipulated by the golden rule, and the study produced many recommendations, the most important of which is directing public debt funds, whether domestic or external, towards importing capital goods that contribute to expanding production capacity by enhancing the role of investment instead of directing them towards importing consumer goods. And the necessity of fully adhering to the golden rule, which stipulates that the condition for borrowing must be for investment and not for other purposes, and to work on using public debt funds in productive investments, not consumption, by setting a well-studied policy for public debt and following an intentional expansionary fiscal policy that contributes to supporting the private sector. Being the main driver for all productive sectors.

Keywords: Analyzing, Public, Debt, Investment, 2003-2021.

I. Introduction

It can be considered an investment in public investment, large investment in public investment, investment in public investment, investment in public investment, investment in investment There has been a continuous rise in the volume of public investment in Iraq, whether at the base or industrial level.

Research Problem

The continuous increase in public debt, both domestic and external, with a continuous decline in the volume of public investment in Iraq gives an image of the incorrect use or direction of those funds spent by it.

The Importance of the Research

The importance of the research appears through studying the importance of public debt and its role in promoting public investment, and knowing the reasons for Iraq's resort to public debt as well as the appropriate financial policies that would lead towards the efficient use that contributes to enhancing the reality of public investment in Iraq.

Research Hypothesis

The research stems from the hypothesis that directing public debt funds towards important public investment will positively affect the productivity rates of economic sectors.

Research Objective

The research aims to clarify the importance of directing public debt funds towards areas of investment in public projects, especially infrastructure, which have an important and complementary impact on the activity of the private sector, which contributes to the promotion of important economic sectors.

Research Methodology

The research relies on the inductive and deductive approaches in revealing the economic relations between public debt and public investment.

The temporal and spatial limits of the research: The temporal limits of the research were in the period 2003-2021, while the spatial limits were represented in focusing on the Iraqi economy.

Research Structure

To take note of all aspects of the research, it was divided into four axes, as the first axis included the theoretical and conceptual framework of public debt, while the second axis included the philosophical relationship between public debt and public investment, while the third axis included an analysis of the relationship between public debt and public investment in Iraq, while the fourth axis included Standard analysis of the impact of public debt on public investment in Iraq and concluded the research with conclusions and recommendations.

The Theoretical and Conceptual Framework of Public Debt First

The Concept of Public Debt

Public debt is an important source of public revenues that the state obtains when other revenues are unable to finance its public expenditures. Public debt has several definitions in the literature of financial and economic thought. Its general budgets with its pledge to pay off this debt with the interest accrued from it according to the terms agreed upon by the two parties) (Alwan and Taleb, 2019: 35).

The Structure of Public Debt

The structure of the public debt can be analyzed according to the creditor's place of residence as follows:

Internal Public Debt

It is represented in all obligations due to individuals, companies and institutions residing in the country that have previously lent to the government, that is, a group of government obligations towards local creditors (Kadhim and Alwan, 2020: 163), also defined as an agreement between two parties that According to which the creditor party (national institutions, individuals) provides an amount of money in the national currency to the government by purchasing them treasury transfers and government bonds in exchange for an undertaking to pay the value of the loan and its benefits within a specified period of time (Abdul Latif, 2012: 5).

External Public Debt

It is that part of the debt owed to non-resident creditors in the country, regardless of whether they are natural or legal, and is usually in foreign currency and in the form of securities, as it represents a group of government obligations towards non-local creditors, and is considered The residence condition is the main factor in determining the type of debt, whether it is local or external, and not the regional borders, and it is used to address the deficit in the public budget or to finance economic projects or for any other purpose (Ali and Salman, 2020: 206).

The external public debt reflects a negative impact on the resources available to citizens in the debtor country. When paying interest and debt installments, this means transferring part of the real output to the creditor countries, which leads to a decrease in the available output and thus is a burden on the current and future generation because the creditors are external parties (Ismail Hazal, 2019: 39).

Public Debt Instruments

Treasury Transfers

It is a short-term debt instrument that is traded in the secondary stock market. It is securities issued to its bearer for a period ranging between (3-12) months. Usually, the value of its sale at the first issuance is less than its nominal value, and the difference between them represents the return on the transfer, which determines According to the forces of supply and demand when underwriting, it is also characterized by its high liquidity and the low degree of risk associated with it to zero, as well as a rewarding return (Dagher, Salman, 2019: 134).

Government Bonds

Government Bonds Securities issued by the government in order to finance its public spending with a payback period of more than one year, and they are characterized by a low degree of risk and low

degree of liquidity compared to treasury transfers, as the government resorts to using this type of debt when there is a structural defect in the revenue structure represented by weakness Regular revenues from financing public spending, as the government issues bonds with a specific interest rate and a specific repayment period, which depends on the current economic conditions and the purpose of the debt (Whim, 2009: 54).

Public Debt and Public Investment

The Philosophical Relationship between Public Debt and Public Investment

The main objective of resorting to external and domestic public debt is to finance the investments required by the economic development process and the way in which these funds are used to finance productive investment projects that lead to increasing the productive capacity of the national economy of the debtor country, and that the ability of investment projects to pay service burdens The debt depends on the amount of that energy by increasing the necessary rate of return that is sufficient to pay off the debt burdens incurred on it. The investment project may be profitable, but the borrowing conditions may not be appropriate because the increasing reliance on short-term borrowing from commercial banks at high interest rates would Production projects have high costs that affect their profitability (Manati and Majid, 2017: 5).

Foreign debt affects investment through two factors. The first is the increase in dependence on external public debt. The second factor is the restrictions imposed on public debt. A study conducted by a number of International Monetary Fund experts on the impact of foreign debt on investment showed that most of the debtor countries suffer from difficulties in servicing public debt, as investment rates decreased significantly and a decline in the investment rate relative to the gross domestic product was found. This decline in investment was accompanied by a decrease in both the ability to service debts and a decrease in other foreign capital inflows.

Here it can be said that the increase in the size of public debt and its burden mainly affects investment. The effects of external indebtedness on investment and development plans can also be diagnosed through domestic savings, import capacity, and inflation rates (Campbell and Stanley, 2012: 221). It has become clear through several studies conducted on developing countries that public debt has led to a decrease in the investment-to-GDP ratio, as it has been spent on non-productive and economically unsound investment projects and therefore did not contribute to achieving the necessary and sufficient return to pay off the debt burdens incurred on it. On the one hand, and on the other hand, the investment project may be profitable, but the type of debt and its terms may be inappropriate, as the increasing reliance on borrowing from commercial banks in the form of short-term debts with variable and high interest rates, and this would cost productive projects exorbitant costs affecting the profitability (Michael And Charles, 2009: 432).

The impact of public debt on investment also appears through the use of public debt resources in government investments crowding out and competing with the private sector instead of being supportive and supportive of it, especially if we know that the private sector constitutes 80% of the contribution to the investment plan and finances most of it from its own resources and a large part of the savings. In society, on the other hand, the effect of public debt appears on investment, as the high ratio of domestic debt to GDP may prompt local economic entities to transfer their capital abroad instead of saving and investing it locally, because local investors will fear future tax obligations to serve this debt which is reflected negatively on investment.

Public Debt Efficiency under Financial Rules

The Importance of Public Debt Management

The efficiency of the public debt is obtained through the application of a strategy to manage the government's debt in order to provide the required amounts of financing and achieve the government's objectives related to risks and costs, in addition to other general objectives that the government has set for managing public debt, such as establishing and maintaining efficient markets for government securities, and ensuring the ability of its economy to Bearing the level of public debt and its rate of growth with the possibility of servicing this debt under a wide range of different circumstances This will only happen by

directing the public debt towards efficient investment fields that expand the production base and build a diversified production structure that contributes to achieving financial enhancement and thus financial sustainability that allows decision makers in public finance to continue to obtain more debt without an increase in the burden of public debt. , with the development of a reliable strategy to reduce excessive levels of debt, and each of the ratio of public debt to GDP and to tax revenues are among the examples of indicators that address the issue of the possibility of continuing public debt (International Monetary Fund, 2001: 2).

Types of Public Debt Rules

Types of fiscal rules The International Monetary Fund has defined several rules for public finance through which public debt can be ensured, controlled and used efficiently, which can be described as follows:

Balance Budget Rule

This rule is described as a rule for total equilibrium or cyclically adjusted equilibrium, and equilibrium during cycles helps to ensure levels of public debt to GDP within specific levels. The budget and public debt. This rule also aims to reduce the budget to a certain level, by rationalizing public spending and raising its efficiency, in accordance with the Maastricht Agreement of the European Union, which sets the maximum allowable general budget deficit for the member states of the European Union so that the deficit does not exceed (3%). percent of GDP, This objective represents the main objective in regulating the public budget deficit, as the increase in the deficit eliminates the effect of public spending or tax cuts on aggregate demand, as it requires abundant funds to cover it and then crowds out the private sector, which limits the effectiveness of fiscal policy in achieving stability. to the gross domestic product leads to an increase in the average per capita share of output by the range of (0.25-0.5%) (Samaqa B and Badawa B, 2006: 80).

Debt Rule

This rule sets an explicit goal to determine the public debt as a percentage of the gross domestic product, and this type of rule is more efficient and easier in terms of ensuring public debt levels within the desired or safe limits that society can bear without leading to negative effects on stability and economic growth. As the experts of the International Monetary Fund believe that the ratio of public debt to output should not exceed (60%), bearing in mind that this ratio varies from one country to another according to economic conditions and therefore it cannot be relied upon to determine an ideal ratio of debt, as the volume of debt is determined by two factors: The size of the national income at a level close to full employment and the nature of the tax system and its impact on the marginal efficiency of capital and consumption (Osman, 2011: 409).

Expenditure Rule

This rule places permanent limits on public spending or current spending in absolute terms, growth rates, or as a percentage of the gross domestic product, with a period of time ranging between (3-5) years. This rule works to restrict public spending during the temporary boom periods when Sudden large revenues are achieved, which facilitates the process of adhering to the deficit limits, as well as works to achieve economic stability and achieve the greatest possible ability to face cyclical fluctuations by excluding expenditure items of a cyclical nature such as unemployment support expenditures. This rule can be employed in a way that contributes to narrowing the widening gap Debt, especially when it is synchronized with the debt base or the budget balance rule; it provides debt sustainability (Kuma et al, 2009: 5).

Revenue Rule

The general revenue rule specifies ceilings or floors on public revenues (usual and occasional) that aim to increase revenue collection and not place an excessive tax burden, in the sense that it defines the upper and lower limits of the revenues expected to be collected in order to reduce excessive tax burdens and improve the collection of actual revenues as a ratio to the gross domestic product. The total,

as its cyclical nature follows the economic cycle, boom and contraction (Budina et al, 2012: 9).

The Golden Rule, Growth and Public Investment

This rule means that resorting to public debt during the economic cycle is limited to financing public investment only, which would work to develop and strengthen the infrastructure of the economy, develop important productive sectors, and create an environment conducive to the work of the private sector that works to improve overall productivity, and then create a financial boost that contributes to achieving financial sustainability that allows decision-makers in the country to continue to collect more debts without borrowing causing additional burdens, as the depleted natural resource revenues in themselves do not guarantee the achievement of sound macroeconomic management, so the rule stipulated not to borrow in order to cover current expenses (salaries and wages).

In the sense of restricting borrowing to current expenditures and striving to achieve a balance between current revenues and current expenditures and allowing borrowing in order to finance government investment spending or in order to support investment in the private sector by strengthening infrastructure and creating economic growth, as private investment does not depend on the amount and quality of work and capital. Not only the money employed, but depends on the quality of the environment in which it works and the availability of basic services, and thus improving overall productivity (Al-Ani, 2018: 71-72).

Analysis of Public Debt and Public Investment Trends in Iraq for the Period (2003-2021)

Analysis of the Relationship between Public Debt and Investment (The Golden Rule)

Public investment is the main driver of economic activity and an important means of achieving capital accumulation. Achieving the goals of sustainable development (Al-Aydami and Jabr, 2020: 22), and the relationship between public debt and investment appears through directing public debt funds towards investment that complements private sector activity, according to what was stipulated in the golden rule, as directing public debt funds towards consumption or investment expenditures is not. Real leads to the accumulation of public debt service and burdens and failure to achieve sustainable development goals. The relationship between public debt and investment will be dealt with as follows:

External Debt and Public Investment Index

From tables (1) and (2) it is clear that public investment is significantly low, reaching (2857807) million dinars in 2004 due to the security events that Iraq went through, which led to the creation of a repelling investment environment. External debt (129,630,480) million dinars as a result of the accumulation of old debts, and the ratio of external debt to public investment was very large, reaching (4536.012%), which means that there is a great weakness in public investment and that external debt was not directed towards investment projects, after which public investment tended to increase gradually, reaching (16911155) million dinars in 2006. With a positive annual growth rate of (66.08%), the external public debt decreased to (81,418,012) to decrease the ratio of external debt to investment, but it is still large, reaching (481.44%). 2014, with a positive annual growth rate of (1.45%), so that the ratio of external debt to investment decreased to its lowest level, reaching (88.64%) as a result of the decrease in external debt to (49494368) million dinars due to the improvement in oil prices, then investment decreased significantly as a result of the security conditions that witnessed by Iraq, which greatly affected the economic situation, followed by a significant drop in oil prices, as it amounted to (32330276) million dinars.

In the year 2017, at an annual growth rate of (0.08), this was offset by a large increase in the external debt as a result of the continuous deficit in the general budget, as it rose to (73,153,440) million dinars, so that the ratio of external debt to investment increased, reaching (142.89%), then there was a slight improvement in investment, as it increased to (39,220,810) million dinars in the year 2019, at an annual growth rate of (22.77%). The ratio of external debt to investment was (110.69%), offset by a decrease in external debt to (57,888,450) million dinars in the same year. It amounted to (32,798,436) million dinars in the year 2020, and the ratio of external debt to investment increased to (129.23%) due to the repercussions of the Corona pandemic and the drop in oil prices., As for the year 2021, public

investment increased to (41,967,356) million dinars, and the ratio of external public debt to investment reached (100.60) due to the improvement in oil prices.

From the foregoing, it is clear that in most of the years in which the external debt increased, there was a decline in public investment, which means that the external debt was not directed towards investment, but rather in order to cover the budget deficit. Efficient use of external debt funds.

Domestic Debt and Public Investment Index

From tables (1) and (2) it is clear that public investment amounted to (2,857,807) million dinars in the year 2004 due to the security events that Iraq went through, which led to the creation of a repellent investment environment. In contrast, the domestic debt was high, as It amounted to (5,925,061) million dinars as a result of the accumulation of old debts, and the ratio of domestic debt to investment was high at its highest level, reaching (207.32%), which means that there is a weakness in public investment and that the local debt was not directed towards the implementation of vital investment projects that contribute to improving the situation and sustainable development goals in Iraq, Then, the public investment gradually increased, reaching in 2008 (23,240,539) million dinars, at a positive annual growth rate (208.62). The local public debt decreased to (4,455,569), so that the ratio of domestic debt to investment decreased, reaching (19.17%). Investment decreased significantly as a result of the security situation in Iraq, which greatly affected the economic situation, followed by a significant drop in oil prices, which led to a significant decrease in investment, as it reached (32,330,276) million dinars in 2017, with an annual growth rate of (0.08). This was offset by a large increase in the domestic debt as a result of the continuous deficit in the government budget, as the domestic debt rose to (47,678,796) million dinars, so that the ratio of domestic debt to investment increased, reaching (147.47%), then there was a slight improvement in the level of investment, as it rose to (39220810) million Dinars in the year 2019, at an annual growth rate of (22.77%), and the domestic debt-to- investment ratio decreased, reaching (97.93%). Likewise, the ratio of domestic debt to investment rose to (166.58%).

From the foregoing, it is clear that despite the improvement in investment in some years, it was not at the required level, and that the ratio of domestic debt to public investment was high in most years, which means that there is weakness in public investment and that local debt funds were not directed towards public investment, as it turns out That in most of the years in which the domestic debt rose, there was a decline in the level of public investment, which indicates that the relationship is inverse between the invaders and that the domestic debt was not directed towards public investment, but was found to cover the budget deficit. Through productive public investment and then the inefficient use of local debt funds.

Table 1: Public Investment in Iraq and its Ratio to Domestic and Foreign Debt for the Period (2003-2022) (Million Dinars)

| Domestic Debt to Investment Ratio (%) | External debt to investment ratio (%) | Investment annual growth rate (%) | public investment | years |
|---------------------------------------|---------------------------------------|-----------------------------------|-------------------|-------|
| 394.44 | 12259.54 | - | 1405452 | 2003 |
| 207.32 | 4536.01 | 103.33 | 2857807 | 2004 |
| 64.75 | 1031.85 | 256.29 | 10182362 | 2005 |
| 33.38 | 481.44 | 66.08 | 16911155 | 2006 |
| 68.96 | 951.92 | -55.47 | 7530404 | 2007 |
| 19.17 | 224.16 | 208.62 | 23240539 | 2008 |
| 62.60 | 388.09 | -42.03 | 13471242 | 2009 |
| 34.97 | 199.00 | 94.88 | 26252777 | 2010 |
| 19.98 | 141.82 | 41.90 | 37255269 | 2011 |
| 17.16 | 133.94 | 2.37 | 38139871 | 2012 |
| 7.73 | 90.68 | 44.30 | 55036676 | 2013 |
| 17.04 | 88.64 | 1.45 | 55837403 | 2014 |
| 63.45 | 95.11 | -9.28 | 50650573 | 2015 |
| 146.61 | 144.06 | -36.22 | 32303209 | 2016 |

| | | | | |
|--------|--------|--------|----------|------|
| 147.47 | 142.89 | 0.08 | 32330276 | 2017 |
| 130.92 | 141.45 | -1.19 | 31944572 | 2018 |
| 97.73 | 110.69 | 22.77 | 39220810 | 2019 |
| 195.88 | 129.23 | -16.37 | 32798436 | 2020 |
| 166.58 | 100.60 | 27.95 | 41967356 | 2021 |

Source: Column (1): Republic of Iraq, Ministry of Planning, Central Statistical Organization, Directorate of National Accounts, multiple years.

Measuring and Analyzing the Impact of Debt on Public Investment in Iraq

In order to give the economic theory a practical aspect and to match it with reality, one of the methods of quantitative measurement and statistical means of persuasion must be used, as the relationships between variables can be formulated in the form of a standard mathematical model through which the various economic relations between the explanatory variables and the dependent variables are explained and interpreted, and the stability of the estimated model for the duration is studied. (2003-2021) In order to verify the existence of a relationship between the explanatory variable public debt in its two parts (domestic and external) and the dependent variable (I), the Autoregressive Distributed Deceleration (ARDL) model was used to find out the effect of the relationship in the short and long terms.

Stagnation Test

Stagnation or stability of time series can be tested in several ways, but the most common one is the Unit Root Test, as it is one of the most important tests used in diagnosing whether or not a time series is static, and despite the multiplicity of its tests, we will use two tests, which are more accurate and more common:

Extended Dickie-Fuller Test (ADF)

Dickie-Fuller developed the unit root test to pass the random error autocorrelation problem that the simple Dickie-Fuller test ignored, as this test is used to test the unit root in time series, meaning when there is no The presence of stillness of the time series data at the level (Level) The first and second differences can be taken, and it is one of the widely used tests to indicate the extent of the stillness of the time series and get rid of the problem of autocorrelation.

It is based on two hypotheses, the first is the null hypothesis ($H_0: B = 0$), which states that the time series is not stationary, and the second is the alternative hypothesis ($H_1: B = 1$), which states that the time series is stationary, and the acceptance or rejection of the two hypotheses is by comparing the value of (Prob) Or the statistic (t) calculated for the parameter (α) with the tabular value, so if the value of (t) calculated for the parameter (α) is greater than the tabular (t) value of the parameter itself, we reject the null hypothesis and accept the alternative hypothesis, meaning that the time series is static, but if the value of (t) calculated for parameter (α) is less than the tabular (t) value of the parameter. In this case, we accept the null hypothesis and reject the alternative hypothesis, that is, the time series is not static.

The Philips-Perron Test (p.p)

It is more accurate than the Extended Dickey-Fuller test (ADF), especially because of its size and volume, and it relies on a non-parametric statistical method in self-correction in an equation remainder. The expanded Dickie Fuller Test, and the p-test test requires an estimation of the following equation:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 T + e_t$$

Describing the Variables used in Measurement

The model description stage is one of the most important stages of preparing the standard model, as the variables produced by the analytical side of the research are used in order to determine the nature of economic relations mathematically in order to measure their coefficients according to the logic of economic theory, as the importance of this aspect is evident in Supporting the results of the analysis through the use of a set of tests that help to stabilize the time series and get rid of the problem of false regression. The annual data for the period (2003-2021) were adopted, and the (ARDL) model was used. The variables were divided as in the following tables:

Table 2: Variables of the first standard form for the period (2003-2021)

| public investment Y1 | external public debt X2 | domestic public debt X1 | years |
|----------------------|-------------------------|-------------------------|-------|
| I | EXD | IND | |
| 1405452 | 172301900 | 5,543,684 | 2003 |
| 2857807 | 129630480 | 5,925,061 | 2004 |
| 10182362 | 105066720 | 6,593,960 | 2005 |
| 16911155 | 81418012 | 5,645,390 | 2006 |
| 7530404 | 71683734 | 5,193,705 | 2007 |
| 23240539 | 52097744 | 4,455,569 | 2008 |
| 13471242 | 52281450 | 8,434,049 | 2009 |
| 26252777 | 52244010 | 9,180,806 | 2010 |
| 37255269 | 52836030 | 7,446,859 | 2011 |
| 38139871 | 51087124 | 6,547,519 | 2012 |
| 55036676 | 49908298 | 4,255,549 | 2013 |
| 55837403 | 49494368 | 9,520,019 | 2014 |
| 50650573 | 48174774 | 32,142,805 | 2015 |
| 32303209 | 46538886 | 47,362,251 | 2016 |
| 32330276 | 46197312 | 47,678,796 | 2017 |
| 31944572 | 45187860 | 41,822,918 | 2018 |
| 39220810 | 43414860 | 38,331,548 | 2019 |
| 32798436 | 42387702 | 64,246,559 | 2020 |
| 41967356 | 42220000 | 69,912,394 | 2021 |

Source: From the researcher's work based on data on public debt and gross domestic product. Third: Analyzing the results of the standard model used:

The Expanded Dickie Fuller Test (ADF)

From table (3) it is clear that the external debt is static at the original level (Level) according to the extended Dickie Fuller test, meaning that there is no unit root. Therefore, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1), which states static. The time series between the two variables according to the value of (Prob), which was less than (0.05%), as the two series are considered complementary of the first degree, I (0), while public investment and domestic debt are residing in the first difference, meaning that they suffer from a unit root, so we accept the null hypothesis (H0) Which means that the two series are not stationary according to the value of (Prob), which was greater than (0.05%), and we reject the alternative hypothesis (H1).

Phelps-Peron Test (P.P)

From table (4) it is clear that the results of the two tests are similar, as it turns out that the external debt is static at the original level (Level) according to the expanded Dickie Fuller test, meaning that there is no unit root, so we reject the null hypothesis (H0) and accept the hypothesis The alternative (H1), which states that the time series between the two variables is stationary according to the value of (Prob), which was less than (0.05%), as the two series are considered complementary of the first degree, I (0), while public investment and domestic debt are stationary in the first difference, meaning that they suffer from a root Therefore, we accept the null hypothesis (H0), which means that the two series are not at rest according to the value of (Prob), which was greater than (0.05%), and we reject the alternative hypothesis (H1).

Table 3: Results of the Extended Dickey-Fuller Test (ADF)

| Prob. 5% | | At Level | | | At First Difference | | |
|-----------------|--------------|---------------|-----------------------|--------------------------|---------------------|-----------------------|--------------------------|
| Study variables | درجة التكامل | With Constant | With Constant & Trend | Without Constant & Trend | With Constant | With Constant & Trend | Without Constant & Trend |
| | | | | | | | |

| | | | | | | | |
|-----|------|--------|--------|------|--------|--------|--------|
| IND | I(1) | 0.98 | 0.57 | 0.96 | 0.02 | 0.04 | 0.00 |
| EXD | I(0) | 0.0000 | 0.0000 | 0.56 | 0.00 | 0.24 | 0.0000 |
| I | I(1) | 0.40 | 0.67 | 0.68 | 0.0017 | 0.0063 | 0.000 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

Table 4: Phelps-Byron Results

| Prob. 5% | | At Level | | | At First Difference | | |
|-----------------|---------------|---------------|-----------------------|--------------------------|---------------------|-----------------------|--------------------------|
| Study variables | ترجمة التكامل | With Constant | With Constant & Trend | Without Constant & Trend | With Constant | With Constant & Trend | Without Constant & Trend |
| IND | I(1) | 0.99 | 0.89 | 0.99 | 0.04 | 0.03 | 0.00 |
| EXD | I(0) | 0.0000 | 0.0000 | 0.0003 | 0.0008 | 0.04 | 0.0000 |
| I | I(1) | 0.42 | 0.65 | 0.69 | 0.0017 | 0.0064 | 0.0001 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

Estimating and Analyzing the Relationship between Domestic and Foreign Public Debt with the Gross Domestic Product

Bound Test Results for Co-Integration

The Bound Test is used to find out the existence of a long-term equilibrium relationship (the presence of co-integration) between domestic and foreign public debt as an independent variable and public investment as a dependent variable through a statistical comparison (F) with the lower and upper tabular value, From Table (5), it is clear that the value of (F-statistic) amounted to (4.76), which is greater than the tabular value of the lower and upper limits, as they amounted to (3.1) (3.87) at a significant level (0.05%). Therefore, we reject the null hypothesis (H0) and accept the hypothesis Alternative (H1). This means that there is a co-integration relationship between the domestic and external public debt and the gross domestic product, that is, the existence of a long-term equilibrium relationship between them.

Table 5: Results of the Bound Test for the Relationship between Domestic Debt and Public Investment

| Test Statistic | Value | K |
|---|----------|----------|
| F. statistic | 4.76 | 2 |
| (Critical Value Bounds) القيمة الجدولية | | |
| Significance | I0 Bound | I1 Bound |
| %10 | 2.63 | 3.35 |
| %5 | 3.1 | 3.87 |
| %2.5 | 3.55 | 4.38 |
| %1 | 4.13 | 5 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

The Estimated (Short-Term) Parameters Test and the Unrestricted Error Correction Coefficient

This test demonstrates the estimation of the short-term parameters in order to reveal the degree of influence of the independent variable on the dependent variable as well as to determine the type of short-term relationship. The error correction coefficient also shows the speed of return to equilibrium in long term. From table (6), it is clear that there is an inverse relationship between domestic and external public debt as independent variables and public investment as a dependent variable, but it is statistically insignificant between external debt and public investment. As for domestic public debt, increasing it by one unit leads to a decrease in public investment by (0.65)At a significant level (Prob = 0.0097) with other factors remaining constant, the reason for this is that most of the domestic public debt was found in order to cover the budget deficit resulting from the drop in oil prices and not for investment purposes. Therefore, it was not used in the development of productive sectors, but most of it goes towards consumption at the expense of Public investment Contrary to the golden rule, the results also showed that the unrestricted error correction coefficient (UECM) was (-0.483144) negative and significant with a

probability (Prob=0.0045) and this reflects the existence of an equilibrium relationship in the short term between the variables studied towards a long-term equilibrium relationship.

Also, the value of the error correction coefficient means that (48%) of the imbalance (imbalance in the short term) in (C1) in the previous period (t-1) can be corrected in the current period (t) towards the long-term equilibrium relationship as a result of any shock or change in the independent variable.

Table 6: The Results of Estimating the Error Correction Model and the Short-Term Relationship

| Variable | Coefficient | Std. Error | t-Statistic | Prob |
|--------------|-------------|------------|-------------|--------|
| D(EXDT)(-1) | -0.424121 | 0.316014 | -1.342097 | 0.2507 |
| D(INDT)(-1) | -0.655663 | 0.141231 | -4.642479 | 0.0097 |
| CoinEq (-1)* | -0.483144 | 0.083656 | -5.775346 | 0.0045 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

Testing the Long-Term Estimated Parameters

This test shows the estimation of the parameters in the long-term in order to reveal the degree of influence of the independent variable on the dependent variable, as well as to determine the type of long-term relationship, as it is clear from Table (7) that there is an inverse relationship between External public debt as an independent variable on the one hand, and public investment as a dependent variable on the other hand, as an increase in external debt (EXD) by one unit leads to a decrease in investment (INV) by (-1.297637) units, with other factors remaining constant, and at a significant level (0.0333).) In the sense that the external debt was not directed towards investment, but was found in order to cover the budget deficit and that most of it goes towards current and military spending and was not directed towards public investment that diversifies the production base.

Table 7: The Results of Estimating the Error Correction Model and the Long-Term Relationship

| Variable | Coefficient | Std. Error | t-Statistic | Prob |
|----------|-------------|------------|-------------|--------|
| EXDT | -1.297637 | 1.099365 | -1.180351 | 0.0333 |
| INDT | 0.542687 | 0.428521 | 1.266420 | 0.2741 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

Conducting Diagnostic Tests for the Estimated Remainder

In order to ensure the validity and accuracy of the results obtained in the previous tests, we will perform some important diagnostic tests to prove this as follows:

The Autocorrelation Problem Test (LM Test)

This test is used to ensure the extent to which the estimated model is free from the autocorrelation problem of the residuals, as it is clear from Table (8) that the value of (F- statistic) at the probability level reached (0.11), which is greater than of (0.05%), which means that there is no autocorrelation problem, and then we must accept the null hypothesis (H0), which states that there is no correlation problem between random residues, and reject the alternative hypothesis (H1), which states that there is a correlation problem between random residues, Hence, this test enhances the accuracy of the results of the model (ARDL).

Table 8: Results of Testing the Autocorrelation Problem (LM) of the GDP Model

| Breusch-Godfrey Serial Correlation LM Test: | | | |
|---|-------|---------------------|------|
| F-statistic | 31.42 | Prob .F (1,5) | 0.11 |
| Obs-R-squared | 11.62 | Prob. Chi-Square(1) | 0.06 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

The ARCH Test

This test is used to ensure that the estimated model is free from the difference of variance problem for the residuals, as shown in the following:

Table (9) shows the results of testing the difference of variance problem for (ARCH), as we note that the value of (F- statistic) at the probability level reached (0.90), which is greater than ((0.05), and this

means that the model is free from the problem of difference of variance, and then here We must accept the null hypothesis, which states that there is no variance problem between the random residues, and reject the alternative hypothesis, and then this test enhances the accuracy of the results of the model (ARDL).

Table 9: Results of the Stability of Variance Test Error Limits (Smoothing of Variance) for the GDP Model

| Heteroskedasticity Test: ARCH | | | |
|-------------------------------|------|---------------------|------|
| F-statistic | 0.01 | Prob .F (1,9) | 0.90 |
| Obs*R-squared | 0.01 | Prob. Chi-Square(1) | 0.89 |

Source: prepared by the researcher based on the outputs of the statistical program E Views (10)

II. Conclusions

It was concluded that the research hypothesis was denied, since the public debt funds in Iraq were not directed towards the important sectors, and then its impact was negative on public investment.

The results of the analysis proved that there is an inverse relationship between domestic and foreign public debt and public investment, meaning that public debt was not directed towards public investment.

The standard results proved that there is a long-term equilibrium relationship between public debt and public investment. However, the impact of domestic and foreign public debt was negative on public investment, as it was not directed towards important investments, but most of it goes to treat the budget deficit and pay salaries, in addition to the increasing military spending.

III. Recommendations

Directing public debt funds, whether domestic or external, towards importing capital goods that contribute to expanding production capacity in order to contribute to enhancing the role of investment instead of directing them towards importing consumer goods.

The necessity of fully adhering to the golden rule, which stipulates that the condition for borrowing must be for investment and not for other purposes.

Work on using public debt funds in productive investments, not consumption, by setting a well-studied policy for public debt and following a disciplined and intentional expansionary fiscal policy that leads to support for the private sector as it is the main engine for all productive sectors.

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