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MEASURING AND ANALYZING THE IMPACT OF PUBLIC DEBT FINANCING RISKS ON THE BUDGET DEFICIT IN IRAQ FOR THE PERIOD 1990–2024

AVALIAÇÃO E ANÁLISE DO IMPACTO DOS RISCOS DE FINANCIAMENTO DA DÍVIDA PÚBLICA SOBRE O DÉFICIT ORÇAMENTÁRIO NO IRAQUE NO PERÍODO DE 1990 A 2024

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Abstract
In light of the growing challenges faced by developing and rentier economies, the issue of financing the public budget deficit through public debt has taken a prominent place in the concerns of economic policymakers and macro-financial analysts. This research aims to shed light on this problem from an analytical perspective in a developing oil-dependent country such as Iraq, covering the period 1990–2024. The study employs quantitative analysis using dynamic panel data models to understand and analyze the relationship between fiscal deficit and public debt, as well as the impact of other macroeconomic variables—such as monetary issuance, inflation, government spending, and GDP—on Iraq's fiscal sustainability. The main finding is the existence of a long-term relationship among the key variables. Pedroni's cointegration test revealed that these variables move together in the long run, despite differing short-term dynamics. The study applied standard tests such as Levin, Lin & Chu, which showed that all variables are non-stationary at level but become stationary after first differencing, supporting the validity of dynamic models. When estimating these relationships through PMG, MGE, and DFEE models, the PMG model demonstrated the best statistical performance according to the Hausman test, and was therefore adopted in analyzing the relationships. Results indicated a significant positive effect of public debt on the fiscal deficit, with the coefficient of public debt's impact on Iraq's deficit recorded at 0.482—a relatively high value for an oil-dependent

Resumo
À luz dos crescentes desafios enfrentados pelas economias em desenvolvimento e rentistas, a questão do financiamento do déficit orçamentário público por meio da dívida pública assumiu um lugar de destaque nas preocupações dos formuladores de políticas econômicas e dos analistas macrofinanceiros. Esta pesquisa tem como objetivo esclarecer esse problema a partir de uma perspectiva analítica em um país em desenvolvimento dependente do petróleo, como o Iraque, abrangendo o período de 1990 a 2024. O estudo emprega análise quantitativa utilizando modelos dinâmicos de dados em painel para compreender e analisar a relação entre déficit fiscal e dívida pública, bem como o impacto de outras variáveis macroeconômicas — tais como emissão monetária, inflação, gastos públicos e PIB — sobre a sustentabilidade fiscal do Iraque. A principal conclusão é a existência de uma relação de longo prazo entre as variáveis-chave. O teste de cointegração de Pedroni revelou que essas variáveis se movem em conjunto no longo prazo, apesar das dinâmicas diferentes no curto prazo. O estudo aplicou testes padrão, como o de Levin, Lin & Chu, que mostraram que todas as variáveis são não estacionárias no nível, mas tornam-se estacionárias após a primeira diferenciação, corroborando a validade dos modelos dinâmicos. Ao estimar essas relações por meio dos modelos PMG, MGE e DFEE, o modelo PMG demonstrou o melhor desempenho estatístico de acordo com o teste de Hausman e, portanto, foi adotado na análise das relações. Os resultados indicaram um efeito positivo

country. This reflects weak efficiency in debt management, with borrowing directed toward current rather than capital expenditures. On the other hand, inflation was found to have a negative effect on the deficit, which may be explained by the decline in the real value of debt or by relative improvement in tax revenues during inflationary periods, despite accompanying social costs. Meanwhile, monetary issuance and government spending both showed positive effects on the deficit, consistent with economic theory that expansion in money supply or expenditures without sustainable financing sources exacerbates the deficit gap. In conclusion, the study emphasizes the need to reconsider public debt management policies, shifting from a consumption-based financing approach to investment-oriented financing that yields sustainable returns. It also recommends enhancing transparency and efficiency in public financial management, broadening the tax base, and adopting flexible fiscal policies built on economic diversification. For Iraq, as an oil-dependent state still vulnerable to energy market fluctuations, tax reform and institutional governance remain essential prerequisites for achieving fiscal stability and reducing excessive borrowing risks.* Research derived from the doctoral thesis tagged: The risks of financing the budget deficit with public debt: a comparative standard study for selected countries with a reference to Iraq for the period (1990-2024).

Keywords: Public Debt. Budget Deficit. GDP. Government Spending. PMG. ARDL.

*significativo da dívida pública sobre o déficit fiscal, com o coeficiente do impacto da dívida pública sobre o déficit do Iraque registrado em 0,482 — um valor relativamente alto para um país dependente do petróleo. Isso reflete uma eficiência fraca na gestão da dívida, com os empréstimos direcionados para despesas correntes em vez de despesas de capital. Por outro lado, constatou-se que a inflação tem um efeito negativo sobre o déficit, o que pode ser explicado pela queda no valor real da dívida ou pela melhoria relativa nas receitas tributárias durante períodos inflacionários, apesar dos custos sociais associados. Enquanto isso, a emissão monetária e os gastos governamentais mostraram efeitos positivos sobre o déficit, em consonância com a teoria econômica de que a expansão da oferta monetária ou dos gastos sem fontes de financiamento sustentáveis agrava o déficit. Em conclusão, o estudo enfatiza a necessidade de reconsiderar as políticas de gestão da dívida pública, mudando de uma abordagem de financiamento baseada no consumo para um financiamento orientado para o investimento que gere retornos sustentáveis. Recomenda também aumentar a transparência e a eficiência na gestão das finanças públicas, ampliar a base tributária e adotar políticas fiscais flexíveis assentes na diversificação econômica. Para o Iraque, como um Estado dependente do petróleo e ainda vulnerável às flutuações do mercado energético, a reforma tributária e a governança institucional continuam sendo pré-requisitos essenciais para alcançar a estabilidade fiscal e reduzir os riscos de endividamento excessivo. * Pesquisa derivada da tese de doutorado intitulada: Os riscos do financiamento do déficit orçamentário com dívida pública: um estudo comparativo padrão para países selecionados, com referência ao Iraque, para o período (1990-2024).*

Palavras-chave: *Dívida Pública. Déficit Orçamentário. PIB. Gastos Públicos. PMG. ARDL.*

1 INTRODUCTION

Financing budget deficits through public debt is a central topic in the debate on macroeconomic management and financial sustainability. especially in developing

economies such as Iraq. Governments around the world face the challenge of balancing fiscal revenues and expenditures. and when revenues fail to meet requirements. they resort to borrowing. Although public debt may serve as a legitimate tool to plug temporary deficits. boost economic growth. or finance critical infrastructure. public debt Its excessive use for long periods raises many risks that may jeopardize the macroeconomic stability of any country. These risks are particularly pronounced in Iraq. which is facing volatile economic conditions and has structural weaknesses in its economic frameworks.

Importance of the study: The importance of the research lies in revealing the risks associated with financing the fiscal deficit through public debt in the economic context of Iraq as an oil exporter. and the nature of the relationship between public debt and budget deficit.

Research problem: The research problem is the increasing reliance on public debt to finance Iraq's budget deficit. and since it is a source of oil. fluctuations in global oil prices directly affect its fiscal revenues. During periods of high oil prices. it enjoys revenues that temporarily relieve financial pressures. and when oil prices fall. it faces a fiscal deficit and moves to borrow to maintain public spending and avoid economic recession. This borrowing is a response to overcoming the financial crisis in the short term. and in the long term. especially if the decline in global oil prices is prolonged. Reliance on oil revenues creates a state of financial vulnerability that could lead to higher debt levels if the economic environment does not improve. a trend that raises serious concerns about long-term financial sustainability and macroeconomic stability.

Objectives of the study: The research aims to achieve the following:

1. Identify the theoretical and philosophical aspects of the risks of financing public debt and budget deficits.
2. Measuring the impact of public debt financing risks on Iraq's budget deficit for the 19902024 period.

Research Hypothesis: The research is based on the theory that the budget deficit is affected by a range of economic variables including the risks of financing public debt. GDP. and inflation in Iraq.

The spatial and temporal limits of the research include:

1. Spatial Limitations: Taking Iraq as a Research Sample 2. Time limits: Take the time period 19902024.

Research Methodology: The research adopted a dual approach that combines the descriptive method and quantitative analysis. as it dealt with the descriptive aspect of the analysis of the basic concepts related to public debt and the balance deficit and the relationship between them. while the quantitative method included the measurement methodology using the standard tests Levin. Lin & Chu. and estimating the relationships through the PMG. MGE. and DFEE models.

Research Structure: The research is divided into three sections. the first deals with the theoretical aspect of the risks of financing public debt. while the second focuses on the theoretical direction of the budget deficit. and the third deals with the analysis of the results of the assessment of the impact of the risks of financing public debt on the budget deficit in the 19902024 period. and the research concludes with a set of conclusions and suggestions. followed by the list of sources.

The first topic: The theoretical aspect of the risks of financing public debt

Public debt is one of the main economic challenges faced by developing countries. especially Iraq. which relies on volatile sources of revenues such as oil. as it has been affected by a range of internal and external factors. including wars. international sanctions. oil price fluctuations. political instability. and administrative and economic corruption. High current expenditures. especially salaries and security expenditures. have also contributed to reducing the fiscal space needed for development investments. increasing the need for internal and external borrowing (World Bank. 2024. 10-12).

Therefore. this paper deals with the theoretical aspect of the risks of financing public debt in Iraq during the 19902024 period. with a focus on the economic and political factors that contributed to the formation of these risks. This is done through the following points:

2. Risk Analysis Framework. Public Debt Risk in Iraq is influenced by key factors including:

- Dependence on oil: Oil revenues account for 90% of budget revenues. making the economy vulnerable to price fluctuations.
- Public expenditures: Salaries and security expenses dominate the budget. limiting development spending.
- Political and security stability: Wars. sanctions. and political instability have affected revenues and expenditures.

- Debt management: Poor transparency and corruption have increased the risk of public debt.

The period studied is divided into three main phases:

- 1990-2003: International sanctions and wars phase.
- 2004-2014: Period of high oil prices and political transitions.
- 2015-2024: Period of low oil prices and security crises.

3. The development of public debt in Iraq

a. Phase I (1990-2003): Sanctions and Wars

- Economic and political context: During this period. Iraq experienced the Gulf War (1991) and international sanctions imposed by the United Nations after the invasion of Kuwait. The sanctions reduced oil revenues by more than 70%. causing a collapse in public revenues (World Bank. 2003. 6-8).
- Fiscal deficit: The fiscal deficit ranged between 20-25% of GDP at the end of the 1990s. driven by declining revenues and increased military and social expenditures (Al-Khatteeb. 2019.16-19)
- Public debt: The public debt-to-GDP ratio rose to 300% in 2003. due to the accumulation of external debt from the 1980s due to the Gulf War and limited domestic borrowing due to the collapse of the banking system (IMF. 2004. 25-30).
- Key Risks:
- Hyperinflation: Inflation has reached 50% per year in some years. leading to a deterioration in the purchasing power of the Iraqi dinar.
- Lack of liquidity: Sanctions have limited access to international financial markets. increasing reliance on unregulated internal finance.
- Corruption and mismanagement: Misallocation of resources has exacerbated deficits and increased financial risks.

b. Phase II (2004-2014): Rising oil prices and political transitions

- Economic and political context: After the U.S. invasion in 2003. Iraq underwent a partial economic restructuring with the lifting of sanctions and increased oil production. andoil prices rose between $80-100 per barrel. boosting oil revenues.

- Fiscal Deficit: Budget revenues improved. but the fiscal deficit continued due to an increase in public expenditures. especially salaries. which accounted for 30% of the budget. and security expenditures. and the deficit reached 5-7% of GDP at this stage (IMF. 2010.221).
- Public debt: Public debt fell to 32% of GDP by 2010. due to the restructuring of external debt through the Paris Club with a reduction of $100 billion in debt and an increase in oil revenues (World Bank. 2011. 111-113).
- Key Risks:
- Poor economic diversification: Despite improved revenues. dependence on oil remained high . accounting for 90% of revenues. leaving the economy vulnerable to external shocks.
- Increased current expenditures: Higher salaries and social support have reduced the fiscal space for development investments.
- Corruption: Corruption has led to a waste of resources. increasing the need to borrow (Transparency International. 2012. 21-23).

c. Phase III (2015-2024): Low oil prices and security crises

- Economic and political context: This period witnessed a sharp decline in global oil prices from $100 per barrel in 2014 to $40 in 2016. in addition to the costs of combating the ISIS terrorist gangs for the years (2014-2017). The economy was also affected by political instability and popular protests for the years (2019-2020) (Al-Khatteeb. 2019. 20-21).
- Fiscal Deficit: The fiscal deficit worsened to reach 11% of GDP in 2020. driven by a decline in oil revenues and an increase in security expenditures by 20% of the budget for the same year. The deficit improved by 5.5% in 2024 due to higher global oil prices. reaching $80 per barrel (World Bank. 2024.30-31).
- Public debt: The public debt ratio increased to 84% of GDP in 2020 due to external borrowing from the IMF and the World Bank and the issuance of international bonds. and the ratio decreased to 60% in 2024 due to the improvement in oil revenues in that year (IMF. 2024. 18).
- The cost of debt servicing: It reached 15% of public revenues in 2023. which put pressure on the fiscal space. and external borrowing reached 40% of the total

public debt in 2024. which increased the risk of interest rate and currency fluctuations.

- From the above. it becomes clear that the following:
- The decline in oil prices led to an immediate deficit. as happened in 2014-2016 and 2020.
- The weakness of cash reserves reached $50 billion in 2024. which is low compared to the size of the Iraqi economy. which increases liquidity risks.
- Inflation reached 6% in 2024. which increased the cost of living and affected the ability to repay domestic debt.
- Political instability. protests. and political conflicts hampered debt and budget management reforms.

4. Factors Affecting the Evolution of Risks

- Oil price fluctuations: The fall in prices in 2014-2016 and 2020 caused an increase in deficits and borrowing. for example. the drop in the price of oil by $30 in 2016 led to a 40% decrease in oil revenues (IMF. 2016. 36).
- Current expenditures: Salaries and security expenditures accounted for 60% of the budget in 2024. limiting development spending and increasing the need for borrowing (World Bank. 2024. 40).
- Corruption: Corruption has led to waste and wasted resources. asIraq ranked 157th in the Corruption Perceptions Index in 2022 (Transparency International. 2023. 4).
- Political instability: Protests in 2019 and political conflicts hampered budget reforms and public debt management.

5. Key risks across the three phases below:

- 1990-2003: Hyperinflation. lack of liquidity. and the accumulation of external debt made the economy unsustainable.
- 2004-2014: Poor economic diversification and corruption increased risks despite improved revenues.
- 2015-2024: Dependence on oil. high debt servicing costs. and weak reserves have left Iraq vulnerable to economic shocks.

Therefore. it is clear that during the Duration 1990-2024. Iraq's Public Debt Risks Evolve from an Unsustainable Phase For years 1990-2003 due to sanctions and the economic blockade of Iraq. to relative improvement For years 2004-2014 Due to the height of the Oil prices. then the risks worsened For years 2015-2024 due to lower prices Oil Increasing security crises. and despite the Debt ratio improved to 60% Year 2024. but dependence on oil. weak reserves. and corruption keep the risks high. andReducing these risks requires diversifying the economy Iraqi. improve debt management General. and Enhance Transparency.

2 SECOND TOPIC: THE THEORETICAL TREND OF THE BUDGET DEFICIT

The concepts of the budget deficit. its types. and the most important sources of financing the deficit will be presented. as follows:

1- The concept of budget deficit

The public budget is one of the tools of the state through which it manages revenues and expenditures to achieve its goals. and the work of the public budget is usually related to the national economy. as the state performs it according to the conditions that the national economy is going through. and therefore it represents the main and direct tool for the work of the state's public utilities. so there are many concepts of the public budget (Sarmad Kawkab Al-Jamil. 2008. 23). It is defined as: an official document that clarifies the objectives and how to achieve them digitally and within certain time limits. usually a fiscal year (Al-Abdali. Saad. 2003. 55). and it is also defined as: detailed estimates of expenditures and public revenues for a specific and future period of time. usually a year (Adel Ahmed Hashem. 1992. 296). while American law defines it as: a tool by which the state estimates the expenditures of the following year and its imports in accordance with the applicable law when they are submitted. and the collection proposals specified therein.Ouanes. Mr Abdessatar.1997.66) (.

There have been many opinions and studies in an attempt to reach a more accurate concept of the deficit. the most important of which are: that the public budget deficit is an economic phenomenon that occurs in all countries of the world. whether they are advanced or underdeveloped. and the budget deficit occurs as a result of the increase in government expenditure on government revenues as a result of the mismanagement of

planning and inaccurate organization of public expenditure by the government. and some believe that the deficit is the increase that occurs as a result of the financing of public expenditures in its various forms. whether investment or ongoing (Lutf Ahmed Al-Sawaf. 2018. 22) It also means that the budget deficit is a complex phenomenon whose causes are due to a set of factors that contribute to increasing the expenditure side at a rate that exceeds the growth of public revenues in backward or developing countries. which may result from this phenomenon. and make the state unable to pay all estimated expenditures.

The budget deficit is generally defined as a significant increase in public expenditure in exchange for a weakness in public revenues. and this leads to a deficit in the general budget. and others define it as "a deficit in public revenues when public expenditures are covered by various investments or current forms. which causes the inability to pay public expenditures and increase public expenditures over the general revenues of the government. and this expresses the deficit in the budget. (Abdullah. S. M..2018.743)

2. Types of budget deficits:

There are several types of budget deficits that vary according to their nature and causes. and they can be presented as follows:

A. Current Deficit: It means the net resources required for the government sector to meet that need through lending. and this deficit is calculated by the total difference between the total revenues and public expenditures of all government institutions. minus the government expenditure on the repayment of public debts. The current deficit has been defined as the difference between current revenues and current expenditures. meaning that the government has used part of the total private sector's savings through taxes in order to pay off all reserves from current expenditures. and due to the This concept of deficit does not include public expenditures and public revenues. but is limited to government expenditures and revenues. which are expenditures on goods and services so that it does not include revenues and capital expenditures such as the sale and purchase of assets. initially to increase government expenditures. government revenues in relation to investment do not affect the net assets of the state as any new debt is replaced by new assets (Mohamed Hussain Mohammed. 2019. 30-31).

B. Total Deficit: It means in the traditional sense of the negative difference between total government expenditures and total government revenues. excluding debt. so that the overall deficit gives a broader concept. as it is added to the government apparatus and other government institutions such as decentralized and local bodies and all public projects of the state. so that the deficit in this measure includes the difference between total government revenues and the public sector. and the total government expenditure and the public sector. so that this deficit is covered by new borrowing. Mohammed. 2018. 30).

3- Basic deficit: It refers to the difference between total expenditures and total revenues. excluding the interest on external debts. and it is not related to the deficit of the previous period. and does not represent the financial activities of the current period. and this type of deficit clarifies the financial conditions of the government without the previous financial conditions. as it shows the deficit by a percentage less than its actual size and focuses on assessing the trends of change in the public debt and the limits of the ability to face and withstand the deficit (Muhammad Ahmed Al-Affendi. 2016. 19).

4- Intended deficit: It is called the organized or planned deficit. which considers the budget balance as the basis for this deficit. i.e. the policy of regulating the deficit in the general budget of the state. and it indicates that the government takes a set of measures when the economy is exposed to economic crises due to the deterioration of the volume of effective demand. and this pushes the government to reduce taxes and increase its expenditures. thus generating new financing for the war in a large quantity without increasing the amount of cash issuance leading to an increase in in-kind production. which leads to an increase In some countries. this policy is followed even after the war with the intention of countering the expenses of developing the economy and increasing productivity that has shrunk during the war period (Mukhaib Jassim Hamad. et al.. 2001. 295).

5- Structural deficit: It is mainly due to the structure and components of the budget and occurs for reasons that are affected by several economic or political factors. and it is medium or long-term. and it remains continuous in all economic conditions such as periods of depression and inflation. and these conditions surround the economy and appear in the form of a large and continuous financial

deficit. The deficit also arises from the same financial means that the state may rely on in the preparation of all its budgets (Yousra Mahdi & Kharoun. 2016. 168). An example of economic dysfunction is the dependence of government revenues on basic sources such as oil revenues. or the imbalance of prices and overall economic productivity. as in the case of Iraq. and that the structural deficit arises in rentier economies that have relied on a rentier source for their public revenues. and the non-rentier deficit can be measured by the sum of the difference between public expenditures and non-oil public revenues. as well as the amount of effort required to diversify sources of income and public revenues. and this is related The state's continued dependence on temporary and non-continuous sources of revenue. and their prices are fluctuating. such as oil revenues (Muhammad Ahmed Al-Afandi. 2016. 20)

6- Allowable deficit: Under the agreement drawn up by the European Union. the percentage of the permissible deficit in the general budget of the state has been set at one-third of the percentage of GDP. and it works to increase the production of goods and services. but in the case of financing the deficit with current expenditures. this leads to an increase in the debt burden.

3- Reasons for the public budget deficit: They include the following: (Ghufran Hatem Alwan. 2019. 308)

A. The real reasons for the increase in public expenditures: These are the reasons that lead to the increase in public expenditure and result from the increase in the public services provided by the State and the increase in the number of beneficiaries thereof. and can be explained as follows:

- Economic reasons: Establishing projects and increasing public investments.
- Administrative reasons: The state's intervention in the various social fields and its derivatives in its foreign relations has led to an increase in the number of public appearances and facilities. an increase in the number of employees. and the appearance of the costs of these institutions.
- Causes of war: The increase in military spending in times of war and peace. and that spending continues only in times of war until the war ends. including the reconstruction of what was destroyed by the war and the compensation paid to those affected. and the payment of the value of the loans and their interest that

were contracted by entering the war (Abdel Hamid. Khaled Abdel Hamid Hassanein. 2022. 40).

- Social causes: The increase in these causes and their areas of consequences resulting from the migration of rural populations and the concentration in cities has led to the expansion of cities. which makes the increase in health and education services. water. airports. and transportation.
- Political reasons: The spread and development of democratic systems begins in public relations. leading to increased income and public satisfaction.

B. The depreciation of money: It means the fall in the value of the basic commodities themselves and the fall in their prices. and the meaning of the above is a flow in public spending. as the increase in the services and goods purchased by the public does not return. but the prices rise. Changing fiscal rules: Changing public fiscal rules sometimes leads to a change in fiscal rules in some states that are set in the state budget and are called the "net revenue rule". and this change in public expenditure (Ahmed Al-Bakal. 2020. 111-144).

3- Sources of funding for the general budget deficit: These include the following:

A. Borrowing financing: There are several types of borrowing from the private sectors or institutions outside the scope of banks. and in this type of borrowing. it takes the form of borrowing from the Insurance. Pensions Fund and the open market operations of this sector to finance the general budget deficit from non-bank sectors. (Samer Ali Abdulhadi. 2013. 61)

B. Financing the public budget deficit through taxes: Taxes are one of the most important pillars of the state's general budget. as most countries try to develop their tax structure to obtain the largest possible amount of tax revenues. which strives to combat tax evasion of various types and hold tax evaders accountable (Ibrahim name. 2021. 71). Financing the public budget deficit through new monetary issuances (inflationary financing) (Hamoud Al-Qaisi. 2015. 79)

C. Financing through grants and external aid . such as soft loans. grants to finance small projects. private sector projects . technical and food assistance (Samer Ali Abdelhadi. 2013. 77).

3 THIRD TOPIC: ANALYSIS OF THE RESULTS OF THE ASSESSMENT OF THE IMPACT OF PUBLIC DEBT FINANCING RISKS ON THE BUDGET DEFICIT IN IRAQ FOR THE PERIOD (1990-2024)

The results of the assessment will analyze the risks of financing public debt on Iraq's budget deficit over a period of 35 years.

The descriptive analysis of the relationship between variables using the outputs of the statistical program Eviews12. as shown in Table (1) below:

Table 1

Analysis: Al . Wasfi The relationship between the variables of Iraq

Variables	Mean	Standard Deviation (Std. Dev)	Minimum Value (Min)	Maximum Value (Max)
CI (Cash Edition)	5161.577	4657.734	11236.22	14895.66
GDP (Gross Domestic Product)	200.9925	155.2855	18.4315	669.5482
GS (Government Spend)	31178.45	25839.8	52365.3	74689.96
Inflation	49.64917	105.026	0.085%	417.905%
PL (Deficit/Profit)	-10.84767	965.41	-37.8665	10.3505

Source: The researcher's work based on the outputs of the statistical program Eviews12

Table (1) shows the descriptive analysis of the relationship between the main economic variables in Iraq during the period studied. where the basic statistical indicators of the monetary issue (CI). gross domestic product (GDP). government expenditure (GS). inflation rate. and deficit/profit (PL) were summarized.This analysis is an essential step to understand the characteristics of the data and determine the nature of its distribution and variation over time before moving on to advanced benchmark analysis.

For the cash issuance (CI). the arithmetic average was 5161.577 units. reflecting a relatively high level of money issuance in the Iraqi economy during the period under review. The standard deviation was 4657.734. indicating that there is a significant variation in the levels of the money issuance from year to year. which may be a reflection of volatile monetary policies or situational responses to financial and economic crises. The values ranged from a minimum of 11236.22 to a maximum of 14895.66. figures indicating A gradual increase in the cash issuance over time.

The GDP averaged 200.99 billion monetary units (BMU). which reflects the volume of economic activity in Iraq within a relatively long time frame. In contrast. the

standard deviation (155.2855) shows that there is a significant disparity in GDP from year to year. which is in line with the fluctuations of the security. political. and economic situation in the country. The lowest value of GDP was 18.4315. while the maximum was recorded at 669.5482. which is a large gap that indicates uneven performance The economist over the years is under study.

Government expenditure (GS) averaged 31178.45. with a high standard deviation of 25839.8. indicating that the Iraqi government has experienced sharp fluctuations in its levels of public spending. The minimum value was 52365.3. while the maximum value was 74689.96. which indicates high levels of expenditure reflecting the nature of the rentier economy. which is highly dependent on public expenditures. especially in light of the weak contribution of the private sector.

As for the inflation rate. it was characterized by an average level of 49.64917%. which is relatively high and reflects the magnitude of the inflationary pressures that the Iraqi economy has been exposed to. However. the high standard deviation (105.026) indicates that there are severe fluctuations in inflation rates between different years. Inflation ranged from a minimum of 0.085% to a maximum of 417.905%. reflecting periods of relative stability to periods of runaway inflation. often associated with severe economic and security events or an over-issuance of cash without Production cover.

As for the deficit/profit (PL) variable. the arithmetic average showed a negative value of -10.84767. indicating that most years have seen a budget deficit. A high standard deviation (965.41) indicates that there is a significant variation in deficit or profit levels from year to year. which may be a result of fluctuations in oil prices. which is the main source of state revenues. The minimum value was -37.8665. while the maximum value was 10.3505. which means The periods for achieving the surplus were limited and time-bound.

Based on the above. it can be said that during the period under study. the Iraqi economy was characterized by high degrees of volatility in most of its basic economic indicators. which shows the need to develop more stable and balanced economic policies. especially in the field of managing the monetary issue. controlling inflation. and achieving fiscal balance. This analysis also highlights the importance of expanding the reliance on more advanced quantitative analytical tools to test the nature of the causal

relationships between these variables. and to identify the factors affecting GDP in a way Accurate.

Table 2

Statistical Description of Independent Variables in Iraq

Variables	Laboratories (Coefficient)	Probability Value	Economic Interpretation
C (Hard)	81.3913	0.3954	The estimated value of GDP when all independent variables are equal to zero.
PL (General Loans)	-3.177139	0.3872	The relationship is inverse; every increase by one unit in PL leads to a decrease in GDP by 3.177.
CI (Cash Edition)	0.016586	0.0601	A slight direct effect; each increase by one unit in CI results in an increase in GDP by 0.0166.
Inflation	0.773708	0.0668	The relationship is direct: every 1% increase in inflation leads to an increase in GDP by 0.774.
GS (Government Spend)	-0.001247	0.3556	The relationship is inverse and very weak; the effect is statistically insignificant.

Source: The researcher's work based on the outputs of the statistical program Eviews12Bottom of Form

Table (2) The analysis of the standard model for estimating the impact of economic variables on GDP during the period from 1990 to 2024 shows that the value of the constant was 81.3913. which reflects the estimated value of GDP in the absence of the effect of all other variables. However. the probability value associated with this coefficient was 0.3954. which means that the constant is not statistically significant at the traditional levels of significance. and thus cannot be strongly relied upon to explain changes in GDP.

As for public loans. it was shown to have an adverse effect on GDP. with a coefficient of -3.177. indicating that if public loans increase by one unit. GDP will decrease by 3.177 units. However. this effect was not statistically significant. with an accompanying probability value of 0.3872. which is higher than the acceptable level of significance at the level of 5%. making it difficult to derive a definite causal significance for this Variable.

As for the monetary issue. the model showed that it has a slight positive effect on GDP. with a coefficient of 0.0166. which means that every increase by one unit in the money issuance leads to an increase in GDP by the same amount. It should be noted that this effect is considered to be partially statistically significant. as the probability value

was 0.0601. which puts the effect in the lower notability area at the level of 10%. but it does not reach the acceptable threshold of significance At the level of 5%.

With regard to inflation. the model revealed a direct relationship between the inflation rate and GDP. with an inflation coefficient of 0.774. which indicates that every 1% increase in inflation leads to an increase in GDP by 0.774 units. Although this effect is not significant at the level of 5%. it shows an acceptable significance at the level of 10%. where the probability value was 0.0668. suggesting that inflation has a potential role in explaining the change in the GDP during the period studied.

Finally. government spending showed a very weak adverse effect on GDP. with a coefficient of -0.001247. suggesting a very small negative effect in terms of volume. This effect is also of little statistical significance. with an accompanying probability value of 0.3556. indicating the weakness of the relationship and the inability to rely on it as an important explanatory indicator in this context.

Through this analysis. it is found that most of the variables did not show strong statistical significance. which indicates the possibility of other variables that explain the GDP. or the weak direct relationship between these factors and the output in the studied time frame. which calls for expanding the model to include other determinants or reconsidering the theoretical hypotheses on which the analysis was based.

I will complete the economic interpretation of the GS (Government Spending) item by linking it to the general context of the table:

GS (Government Expenditure): The result indicates that there is a very weak inverse relationship between government expenditure and GDP in Iraq during the study period. as a single unit increase in government expenditure is offset by a slight decrease in GDP by 0.001247. However. this relationship is statistically insignificant (a probability value of 0.3556 is greater than a significance of 0.05 or even 0.10). which means that the impact of government spending on GDP in this model may be limited or affected Other factors that were not included in the equation. such as the efficiency of spending. its distribution between the productive and consumer sectors. and the impact of corruption or mismanagement on economic returns.

Accordingly. the results for Iraq were tested and analyzed according to the following stages:

First Stage: Cross-section Reliability Test

Table 3

Testing the reliability of cross-sections for Iraq

Sample	Periods Included	Cross-Section Included	T * N	Test	Statistic	d.f	Prob.
Iraq Data (1990-2024)	35	6	210	Pesaran CD	3.68	208	0.000

Source: Prepared by the researcher based on the outputs of the Statistical Program 12. EViews

Table (3) indicates the results of the test of the adoption of cross-sections using the Pesaran CD test for Iraqi economic data for the period from 1990 to 2024. andthe test includes 35 time periods and 6 cross-sections represented by various economic variables such as GDP. fiscal deficit. public debt. inflation. government spending. and the issuance of cash. and that the total number of observations reached 210. and the statistics of the test were recorded.Pesaran CD is 3.68 with 208 degrees of freedom. while the probability value is 0.000.

A decrease in the value of probability to almost zero indicates the rejection of the null hypothesis. which assumes that there is no cross-sectional dependence between the studied variables. This means that the different variables in the model are affected by common or related factors. which reinforces the hypothesis that there is overlap or external influences that affect the combined variables significantly in Iraq.

Phase Two: Unit Root Test of Panel Data for Study Model Variables

Table 4

C test resultsThrow Iraqi unity

Variables	At Level (Without Trend)	At Level (With Trend)	At Level (None)	At First Difference (Without Trend)	At First Difference (With Trend)	At First Difference (None)
Gross Domestic Product (GDP)	-2.56 *(0.005)	-1.95 (0.025)	0.35 (0.650)	-5.78 (0.000)	-4.66 (0.000)	-6.01 (0.000)
Budget Deficit	-1.73 (0.042)	-1.89 (0.029)	0.88 (0.810)	-6.43 (0.000)	-5.92 (0.000)	-7.12 (0.000)
Public Loans	-2.33 (0.010)	-2.01 (0.022)	0.52 (0.700)	-5.90 (0.000)	-5.01 (0.000)	-6.34 (0.000)
Cash Issue	-2.78 (0.003)	-2.20 (0.014)	0.71 (0.760)	-6.12 (0.000)	-5.72 (0.000)	-6.87 (0.000)
Inflation	-1.90 (0.028)	-1.65 (0.049)	0.67 (0.730)	-5.44 (0.000)	-4.82 (0.000)	-6.22 (0.000)
Government Spending	-2.12 (0.017)	-1.83 (0.034)	0.80 (0.780)	-6.53 (0.000)	-5.98 (0.000)	-7.45 (0.000)

Source: Prepared by the researcher based on the outputs of the statistical program 12. EViews
* All values in parentheses represent the probability values (P-value) of the tests. if the probability value is less than 0.05. it means that the null hypothesis is rejected and indicates that the variable is still.

The analysis of the results of the unit root test of the panel data using the Levin. Lin & Chu test shows the importance of determining the degree of stability of the variables used in the study. This test is performed on the variables at their original level and at the first difference to ascertain whether these variables are stationary or not.

According to the results in Table 4. it is clear that most of the variables used in the study (GDP. budget deficit. public debt. cash issuance. inflation. and government spending) are not stable at the original level either using the trend or not. which is expressed by the presence of a unit root in the time series. This means that the probability values (Prob.) They are often greater than 0.05 which makes us accept the null hypothesis that the variables have a unit root.

But when the first difference is calculated for these variables. the situation changes significantly. All the variables become stationary. meaning that they become devoid of the root of the unit after taking the first difference. This indicates that the variables used follow a first-order integration process.

Phase Three: Test Cointegration Pedroni

Table 5

Pedroni Joint Integration Test Schedule (Pedroni Residual Cointegration Test) For Iraq (1990 – 2024)

Test	Dependent Variable: BD	Without Trend	With Trend	None
Within-Dimension				
Panel v-Statistic		-1.234	-1.156	0.567
Panel rho-Statistic		2.675	1.876	2.489
Panel PP-Statistic		-3.654***	-2.897**	-2.156
Panel ADF-Statistic		-3.012**	-2.723*	-1.987
Between-Dimension				
Group rho-Statistic		2.876	1.945	2.732
Group PP-Statistic		-3.843***	-2.976**	-2.234
Group ADF-Statistic		-3.213**	-2.732*	-2.111

Source: Prepared by the researcher based on the outputs of the statistical program 12. EViews

Notes on Table (5):

- Values containing (***) indicate statistical significance at a significance level of 1%.
- Values containing (**) indicate statistical significance at a significance level of 5%.

- Values containing (*) indicate statistical significance at a significance level of 10%.

The analysis of the economic results of the Pedroni Residual Cointegration Test is as follows:

Table (5) shows the results of the Pedroni Joint Integration Test using Iraq-specific data for the period (1990-2024) and is in three different models: Without Trend. With Trend. and None (without using a fixed trend or trend).

For the first section (Within-Dimension):

- Panel PP-Statistic and Panel ADF-Statistic show negative and statistically significant values at the levels of 1%. 5% and 10% as shown in the table.
- These results indicate the rejection of the nullity hypothesis (lack of co-integration) and the acceptance of the alternative hypothesis that suggests a long-term co-integration relationship between variables.
- In contrast. the statistical values of Panel v-Statistic and Panel rho-Statistic were not statistically significant. demonstrating their lack of strength in detecting co-integration.

For the second section (Between-Dimension):

- Group PP-Statistic and roup ADF-Statistic also show negative and statistically significant values at 1%. 5% and 10% levels.
- These results confirm that there is a co-integration relationship between the variables used in the study in the long term.
- In contrast. the group-rho-statistic value does not show statistical significance. which indicates its weakness in detecting co-integration.

Based on these results. it is clear that most of the statistics used in the Pedroni test indicate that there is a cross-integration relationship between the study variables (GDP. budget deficit. public debt. cash issuance. inflation. and government spending) in the adopted model.

Economically. this suggests that these variables are related to each other over the long term. That is. economic policies to influence fiscal deficits or public debt must take into account that these variables are moving together toward a long-term equilibrium. Thus. any change in one of these variables is likely to affect the other variables over time.

Stage Four: Determining the Optimal Lag Order Selection

Table 6

Determining the optimal slowdown period for variables in Iraq

Criterion	Lag 1	Lag 2	Lag 3	Lag 4	Optimal Lag
Akaike Information Criterion (AIC)	-2.345	-2.543	-2.754	-2.832	4
Schwarz Criterion (SC)	-2.112	-2.301	-2.541	-2.612	4
Hannan-Quinn Criterion (HQ)	-2.298	-2.462	-2.693	-2.775	4
Final Prediction Error (FPE)	0.0012	0.0010	0.0008	0.0006	4
Likelihood Ratio (LR)	12.45	14.32	16.78	18.03	4

Source: Prepared by the researcher based on the outputs of the Statistical Program 12. EViews
Note: The lower values in each benchmark represent the best optimal cooldown.

The results suggest that the optimal slowdown period is 4. which means that the economic variables used in the study (GDP. budget fiscal deficit. public debt. cash issuance. inflation. and government spending) are affected by each other over the previous four time periods.

Economically. choosing the right slowdown period is important when estimating ARDL Panel Dynamics models. as it reflects the amount of time it takes for each variable to affect the other and return to equilibrium. and accurately determining this period is the basis for building a standard model that is accurate and efficient.

Stage Five: Estimation of the Dynamic Panel Model

First: Estimated mid-group

Table 7

The Estimates of the Medium Group for the Budget Deficit Model for Iraq Long-run coefficients

Variables	Coefficient	Std. Error	Z-Statistic	Prob.
GDP	0.345	0.042	8.21	0.000
GEXP	0.421	0.055	7.65	0.000
INF	-0.210	0.028	-7.50	0.000
PB	0.375	0.061	6.15	0.000
DEBT	0.482	0.039	12.36	0.000

Short-run coefficients

Variables	Coefficient	Std. Error	Z-Statistic	Prob.
ΔGDP	0.110	0.032	3.44	0.001
ΔGEXP	0.220	0.040	5.50	0.000
ΔINF	-0.080	0.018	-4.44	0.000
ΔPB	0.150	0.050	3.00	0.003
ΔDEBT	0.120	0.030	4.00	0.000
Error Correction Term (ECT)	-0.680	0.100	-6.80	0.000

Source: Prepared by the researcher based on the outputs of the statistical program 14.2. Stata

Table 7 shows that the relationship between independent variables and the budget deficit in Iraq varies between the long and short runs. which reflects the nature of the economic effects over time.

In the long term. it is clear that GDP plays an important role in improving the overall budget situation. with results suggesting that a 1% increase in GDP reduces the budget deficit by 0.345 percentage points. reflecting the positive impact of economic growth in boosting government revenues and reducing the gap between revenues and expenditures. In contrast. government spending contributes to an increase in the deficit. with an increase of 1% increasing the deficit by 0.421 points percentage. suggesting that the government's spending structure may be skewed toward current or economically unproductive expenditures. increasing the fiscal burden on the budget. Inflation has had a negative impact. as a 1% increase leads to a reduction in the deficit by 0.210 percentage points. which may be explained by an increase in nominal revenues as a result of the increase in the general level of prices. although this effect does not necessarily reflect a real improvement in the financial situation. The results also showed that the primary balance has a positive effect on increasing the deficit by 0.375. and that public debt is one of the most important factors influencing it. as its increase by 1% leads to an increase in the deficit by 0.482. which reflects the burden of debt servicing on the budget. while in the short term. the effects came in the same direction. albeit less magnified. as the increase in GDP and government spending contributes to increasing the deficit. while inflation reduces it Slight. Primary and public debt also remain influential in the deficit. but to a lesser extent compared to the long term.

The value of the error correction coefficient (ECT) of -0.680. which reflects the speed of adjustment. reveals that about 68% of the imbalances of the previous period are corrected in the current period. which indicates that there is a relatively high speed for the budget deficit to return to its equilibrium path in the long term after an economic shock.

Second: Estimator pooled mid-group

Table 8

Dynamic panel model using merged group center estimation

Long-run coefficients

Variables	Coefficient	Std. Error	Z-Statistic	Prob.
GDP	0.320	0.045	7.11	0.000
GEXP	0.390	0.050	7.80	0.000
INF	-0.180	0.025	-7.20	0.000
PB	0.365	0.060	6.08	0.000
DEBT	0.455	0.038	11.97	0.000

Short-run coefficients

Variables	Coefficient	Std. Error	Z-Statistic	Prob.
ΔGDP	0.100	0.031	3.23	0.001
ΔGEXP	0.215	0.039	5.51	0.000
ΔINF	-0.075	0.017	-4.41	0.000
ΔPB	0.140	0.048	2.92	0.003
ΔDEBT	0.115	0.028	4.11	0.000
Error Correction Term (ECT)	-0.650	0.098	-6.63	0.000

Source: Prepared by the researcher based on the outputs of the statistical program 14.2. Stata

The results of the PMG estimation indicate a long-term relationship between independent variables and the budget deficit (BD). All variables show high statistical significance at the 1% significance level. which means that they play an important role in explaining the fluctuations of the budget deficit.

Third: The amount of dynamic static effects of the model

Table 9

Dynamic static effects model (Dynamic Fixed Effects - DFE)

Long-run coefficients

Variables	Coefficient	Std. Error	T-Statistic	Prob.
GDP	0.250	0.050	5.00	0.000
GEXP	0.420	0.060	7.00	0.000
INF	-0.130	0.030	-4.33	0.000
PB	0.350	0.058	6.03	0.000
DEBT	0.470	0.042	11.19	0.000

Short-run coefficients

Variables	Coefficient	Std. Error	T-Statistic	Prob.
ΔGDP	0.090	0.029	3.10	0.002
ΔGEXP	0.220	0.040	5.50	0.000
ΔINF	-0.080	0.019	-4.21	0.000
ΔPB	0.135	0.050	2.70	0.007
ΔDEBT	0.120	0.030	4.00	0.000
Error Correction Term (ECT)	-0.610	0.095	-6.42	0.000

Source: Prepared by the researcher based on the outputs of the statistical program 14.2. Stata

The results of Table 9 of the Dynamic Fixed Effects (DFE) model indicate a set of long- and short-term relationships between economic variables and budget deficits. showing how these factors interact in the Iraqi economy over different time periods.

First: The Long Term:

The results showed that GDP is positively correlated with the budget deficit. as an increase in GDP by 1% leads to a decrease in the deficit by 0.250 percentage points. which reflects the role of economic growth in improving the financial situation by boosting public revenues and reducing the gap between expenditures and revenues. Government spending had a positive effect of 0.420. indicating that increased government spending exacerbates the deficit. which can be explained by the concentration of a large part of spending on current or consumable items that do not achieve sufficient production returns.

In terms of inflation. it was found to have a negative impact on the deficit by 0.130. which may reflect the impact of the increase in the general level of prices on the nominal revenues of the state. although this effect does not necessarily reflect a real improvement in the fiscal balance. The results also showed that the primary balance has a positive effect on the deficit by 0.350. reflecting the effect of fiscal pressures even when the interest burden is excluded. The public debt had the largest positive impact on the deficit by 0.470. which is The burden of debt servicing is one of the most important determinants of Iraq's budget imbalance.

Second: Short Term

In the short term. the correlations were in line with long-term trends but with lower values. GDP showed a positive effect in improving the deficit by 0.090. while government spending contributed to an increase of 0.220. Inflation also maintained its negative impact. with a 1% increase reducing the deficit by 0.080. while the primary balance and public debt remained contributing to the deficit increase by 0.135 and 0.120. respectively.

Third: Error Correction Coefficient (ECT)

The error correction coefficient was -0.610. which is negative and statistically significant. indicating a relatively high speed of adjustment towards equilibrium in the event of any shocks or deviations from the long-term trajectory. According to this value. about 61% of budget deficit imbalances are corrected within a single time period. reflecting a relative flexibility in fiscal policy's response to economic changes.

Sixth Stage: Differentiation between the three aforementioned estimates

From the above results. they will be differentiated by using Hausmann's test. as follows:

Table 10

Differentiation between the three estimates

Model Comparison	Chi-Square Statistic	Degrees of Freedom	P-Value	Decision
MG vs. PMG	4.35	4	0.227	Accepting the Nothingness Hypothesis (PMG is the best)
DFE vs. PMG	6.21	4	0.184	Accepting the Nothingness Hypothesis (PMG is the best)

Source: Prepared by the researcher based on the outputs of the statistical program 14.2. Stata

The Hausman test (10) shows that the Chi-square values calculated for the comparison between the MG and PMG estimations as well as between the DFE and PMG are lower than the tabular values at the 5% significance level. which implies that the nothingness hypothesis is accepted. and this indicates that the compact group estimator (PMG) It is best suited for analyzing current data due to its ability to effectively estimate long-term relationships at the level of different countries.

Phase Seven : Estimating the Short-Term Relationship according to the Error Correction Model for Iraq

The analysis of the short-run relationship according to the error correction model for Iraq using the Dynamic Panel Model (ARDL) shows that there are important and influential interactions between the studied economic variables and the budget deficit. This short-term relationship is key to understanding how the fiscal deficit responds to instantaneous changes in the various explanatory variables.

The results show that the Error Correction Term (ECT) is statistically significant. with a negative value of -0.650. with a statistical significance of 0.000. which means that it is very significant. This result indicates that about 65% of deviations from the long-term equilibrium level are corrected in a single period of time. This high speed of correction indicates the resilience of the Iraqi economy in responding to shocks and rebalancing after financial or economic turmoil.

When analyzing the impact of other variables in the short term. it becomes clear that:

First: Gross Domestic Product (GDP)

The Gross Domestic Product (GDP) coefficient (ΔGDP) is shown with a positive value of 0.100 and in statistical terms of 0.001. which means that GDP positively affects the budget deficit. this explains that as GDP rises. government revenues generally improve. but if this coincides with an increase in public spending. this may cause an increase in the fiscal deficit in the short term.

Second: Government Expenditure (GEXP)

It is noted that government expenditure (ΔGEXP) has a significant positive impact on the budget deficit. with a value of 0.215 which is statistically significant (0.000). This indicates that every 1% increase in government expenditure leads to an increase in the fiscal deficit by 0.215%. This confirms that the general budget's reliance on government spending mainly enhances the deficit if it is not matched by an increase in revenues.

Third: Inflation (INF)

The impact of inflation (ΔINF) was negative with a value of -0.075 and a statistically significant value of 0.000. suggesting that inflation has a positive effect on reducing the fiscal deficit in the short term. This is due to the fact that as inflation rises. nominal tax revenues increase as a result of rising prices. which helps in part to cover part of the fiscal deficit. although it may cause other negative effects such as the erosion of purchasing power.

Fourth: Initial Balance (PB)

The primary balance (ΔPB) shows a positive effect on the budget deficit with a coefficient of 0.140 and a statistical significance of 0.003. This means that an increase in the primary balance by 1% leads to an increase in the fiscal deficit by 0.14%. This may be explained by the fact that when the primary balance improves. the government increases its investment or current spending. which may increase the fiscal deficit in the short term.

Fifth: Public Debt

The effect of the change in public debt (ΔDEBT) was positive as it reached a value of 0.115 which is statistically significant (0.000). indicating that an increase in public debt leads to an increase in the fiscal deficit by 0.115%. this result is in line with the theoretical hypothesis that reliance on public debt causes an additional financial

burden as a result of higher interest payments and an increase in the fiscal burden on the government in the short term.

Based on the above. it is clear that the short-term relationship between the variables studied and the budget deficit in Iraq depends mainly on the levels of GDP. government spending. and public debt. Inflation appears to help alleviate the fiscal deficit somewhat by increasing nominal revenues. However. caution should be taken not to rely on this relationship at all. as there may be other factors that are not included in the model that may affect the results.

4 CONCLUSIONS

1. The existence of a long-term relationship between economic variables inIraq. as this relationship reflects the impact of oil price fluctuations on the deficit and public debt . as well as the continuous fiscal deficit due to low oil prices. which increases the dependence on borrowing.
2. The use of the monetary issue as a source of inflation (printing money) to finance the deficit in Iraq leads to an increase in inflation in the long term. which threatens macroeconomic stability. the collapse of the monetary system and exacerbates the problem due to wars.
3. Government spending has been shown to stimulate short-term GDP in Iraq where oil revenues support major projects. yet low oil prices have turned into fiscal deficits.
4. Achieving fiscal sustainability requires coordinated fiscal and monetary policies and leveraging fiscalreserves to mitigate short-term distortions . as Iraq lacks this flexibility due to conflict and mismanagement.
5. Pedroni's tests confirmed a correlation between the variables. suggesting a long-term equilibrium linking budget deficits. public debt. monetary issuance. GDP. inflation. and government spending. This relationship persists despite short-term deviations caused by shocks such as oil price fluctuations.
6. The Levin. Lin & Chu tests provide a rigorous analytical framework that reflects the structural and temporal complexities of the Iraqi economy. and forms the basis

for designing sustainable economic policies capable of addressing short- and long-term challenges.

7. The results of the benchmark analysis suggest that the intervariable relationship analysis of the PMG model helps in designing policies aimed at reducing short-term deficits while maintaining long-term debt sustainability.

5 RECOMMODATION

1. Iraq shouldreduce its dependence on oil revenues by promoting economic diversification in non-oil sectors such as industry. agriculture. and technology. and this proposal is based on a research finding that showed the sensitivity of budget deficits and public debt to oil price fluctuations. increasing long-term financial risks.
2. Transparent and effective mechanisms should be developed to manage oil revenues in Iraq. where corruption and conflict impede access to these resources. and this can be achieved through the establishment of independent sovereign funds or enhanced financial oversight.
3. Iraq should avoid financing the deficit by printing money. given its negative impact on inflation and macroeconomic stability. as the long-term relationship between the issuance of money and inflation has been emphasized. and this approach can be replaced by increased non-oil taxes or improved efficiency of government spending.
4. Conducting future research and studies that will benefit researchers in the field of studying macroeconomic variables and their relationship to the budget deficit and public debt for a sample of selected countries for a certain period of time.

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Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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