السنة الثالثة والعشرون العدد 84/ شهر اذار/ سنة 2025 2025

تاريخ قبول النشر/2/2/2025

https://doi.org/10.31272/IJES2025.84.19

المجلة العراقية للعلوم الاقتصادية
Iraqi Journal For Economic Sciences

PISSN : 1812-8742 EISSE : 2791-092X Arcif : 0.375

Measuring and analyzing the relationship between monetary policy and the public budget in Iraq for the period (2004-2023)

قياس وتحليل العلاقة بين السياسة النقدية والموازنة العامة في العراق للمدة [2004 - 2023]

أ.م.د علي وهيب عبدالله
Ali Wahaib Abdallah
liwaheebeco@uodiyala.edu.iq

أ.م.د علياء حسين خلف الزركوشي
Alyaa Hussein Khalaf Al-Zarkroushi
aliaeco@uodiyala.edu.iq

كلية الإدارة والاقتصاد – جامعة ديالى

المستخلص:

الهدف من البحث هو التحقق من وجود علاقة ارتباط طويلة الاجل بين السياسة النقدية متمثلة بعرض النقد الواسع والموازنة العامة للمدة عام 2004 إلى عام 2023 باستخدام أسلوب اختبار الحدود ARDL للتكامل المشترك. بعد اختبار استقرار السلسلة الزمنية باستخدام الاختبارات المعتمدة بناءً على البيانات السنوية. أكدت نتائج البحث وجود ارتباط بين متغيرات البحث. حيث أثبتت الطريقة القياسية وجود علاقة عكسية بين المتغير المستقل (M_2) والذي يرمز إلى عرض النقد الواسع ومتغير الموازنة العامة (BD) بالتالي قبول فرضية البحث. مع وجود علاقة إيجابية طويلة الاجل بين الناتج المحلي الإجمالي والموازنة العامة. ونتيجة لذلك، يوصي البحث ضرورة إرساء سياسة نقدية أكثر فعالية لتحقيق أهداف التوازن الداخلي من خلال إدارة المعروض النقدي بما يتناسب وحالة الاقتصاد والعمل على توجيه وترشيد الانفاق العام للحد من تفاقم عجز الموازنة العامة.

الكلمات الرئيسة: الموازنة العامة، السياسة النقدية، عرض النقد الواسع، التكامل المشترك.

Abstract:

The research aims are to verify the existence of a long-term correlation between monetary policy represented by the broad money supply and the public budget for from 2004 to 2023 using the ARDL bounds test method for joint integration, after testing the stability of the time series using the approved tests based on annual data. The research results confirmed the existence of a correlation between the research variables. The standard method proved the existence of an inverse relationship between the independent variable (M2), which symbolizes the broad money supply, and the public budget variable (BD), thus accepting the research hypothesis. With a long-term positive relationship between the gross domestic product and the public budget. As a result, the research recommends the necessity of establishing a more effective monetary policy to achieve the goals of internal balance by managing the money supply in line with the state of the economy and working to direct and rationalize public spending to reduce the aggravation of the public budget deficit.

Keywords: Public budget, monetary policy, broad money supply,joint integration.

1. Introduction:

The public budget is not just a numerical, financial and accounting estimate of financing the state's activities and effectiveness, but rather a practical translation of all its objectives. The public budget is a political, economic and social tool that reflects the government's orientations and objectives because it is the most effective means of ensuring the achievement of these orientations and objectives. This is what made the structure of public spending, the structure of public revenues, the nature of the public budget deficit and the methods of financing it decisively reflect the nature and content of these objectives. The impact of monetary policy on the budget deficit is an important topic in macroeconomics, as monetary policy overlaps with the economic factors that affect the state's public budget. Expansionary monetary policy can lead to an increase in the deficit, while contractionary monetary policy can contribute to reducing it. Fiscal policy in developing countries in general and Iraq in particular has been characterized by major structural imbalances, as the state's public budget relies heavily on a single and limited source to obtain a large portion of public revenues, which is the oil sector. The state's public expenditures have also been characterized by imbalance as a result of focusing on current spending more than investment spending, which reflects the consumer nature of government spending, as current expenditures have become the largest part of public expenditures. The major structural imbalances that characterize the Iraqi economy include the imbalance in the state’s public budget, which relies primarily on expected oil revenues, because the revenue side of the budget has become almost entirely dependent on one source to finance the state’s public budget, which is crude oil. At the same time, the size and importance of other revenues, especially taxes, has declined because the abundance of oil revenues has led to a significant neglect of the importance and role of other revenues. Expansionary monetary policy may exacerbate the deficit by enabling more government borrowing, which may lead to an increase in the fiscal deficit and a weakening of the currency, which may lead to a reduction in the budget deficit. Contractionary monetary policy may reduce the deficit by raising borrowing costs and strengthening the currency, although it may also lead to an increase in the budget deficit by making exports more expensive.Thus, a budget deficit reduces the supply of loanable funds, raises interest rates and crowds out investment. A decrease in the supply of loanable funds will lead to higher interest rates and lower net foreign investment. Higher interest rates also attract foreign investors who want to earn higher returns. Hence, a budget deficit leads to higher interest rates (both domestic and foreign) which leads to lower net foreign investment. Because net foreign investment

falls, people need less foreign currency to buy foreign assets and the real exchange rate rises. Thus, in an open economy, a government budget deficit actually raises interest ratescrowds out domestic investment, and in turn causes currencies to appreciate against the domestic currency and further worsens the trade deficit. Therefore, it is necessary to look at the relationship between the budget deficit on the one hand and monetary policy on the other hand. Monetary policies play a major role and have a direct impact on the country's fiscal deficit, so it is necessary to analyze monetary policy and know the effect of the money supply on the budget deficit.

Research Problem:

The research problem is that the Iraqi economy suffers from the problem of accumulating deficit in the public budget, which is a result of its dependence on one resource, which is oil revenues, as oil revenues determine the public budget and are reflected in its direction towards deficit and surplus, which is negatively reflected towards achieving real economic growth, which requires monetary and financial treatment.

Importance of the research:

The importance of the research lies in analyzing the form of the relationship between the budget deficit and the impact of monetary policy through the money supply variable and the subsequent effects reflected on economic activity.

Research Hypothesis:

The research hypothesis is as follows:

The monetary policy indicator broad money supply has a significant impact on the deficit or surplus in the public budget.

Research objective:

The research seeks to verify the research hypothesis, through the following objectives:

-Analyzing the impact of monetary policy on the public budget deficit

-Analyzing the short- and long-term relationship between monetary variables and the budget deficit.

- Providing and proposing to the decision-maker to reform the public budget structure.

Research Methodology:

The research adopted the inductive approach to verify the validity of the hypothesis through analytical description and the use of modern econometric methods that are consistent with the objectives that the researcher seeks to achieve and the use of data, bulletins and reports issued by the Central Bank and the Ministry of Planning related to economic activity in Iraq for the period (2004 - 2023). These data provide a valuable set of information for the researcher to analyze the relationship and to answer the research problems raised, through which the impact of the independent variable on the dependent variables will be studied.

Some Previous Studies:

Many previous studies have addressed the topic of monetary policy and its impact on the public budget, including:

The study (Al-Abtan, 2024) aimed to verify the existence of the hypothesis of the double deficit in a group of developing countries. The most important results reached by the study showed that all monetary policy variables showed that their impact on the current account deficit is greater than their impact on the budget deficit in the sample countries. Therefore, it recommends following a sound monetary policy in line with the economic situation of the country, activating its role, paying attention to its tools, developing banking activities, and not leaving the value of its local currency to float freely in order to avoid destructive crises. As for the study (Muhammad, 2020), the study aims to measure the impact of the public budget deficit on the exchange rate in Algeria through a standard study of annual data using the Autoregressive Distributed Lagging (ARDL) approach during the period 2003-2018. The study concluded that there is a long-term inverse equilibrium relationship between the public budget deficit and the exchange rate, indicating that increasing the public budget deficit by one unit would lead to a decrease in the exchange rate, and the exchange rate of the Algerian dinar against the dollar is about 1.64%. The study recommended the need to work to stabilize the exchange rate by establishing exchange offices and eliminating the parallel market to maintain the value of the currency inside and outside the banking system. The study (Olanrewaju & Causality, 2021) examines the relationship between budget deficit, monetary policy and inflation level in Nigeria. The study uses Johansen cointegration and Cranger causality as estimation techniques. The findings of the study confirm that there is no long-run co-movement between budget deficit, money supply and inflation in Nigeria. The study also confirms the existence of bidirectional causality between budget deficit and inflation. In addition, there is one-way causality between budget deficit and money supply, where causality only moves from money supply to budget deficit. Anayochukwu (2012) studies the causal relationship between inflation and fiscal deficit in Nigeria, covering the period 1970-2009. This was done by developing an estimation model for inflation and fiscal deficit, with the aim of testing the causes and effects as well as the relationship between them. The estimation technique used is the Autoregressive Distributed Lag (ARDL) model and the Kranger Causality Test. The result of the Kranger Causality Test shows that the null hypothesis that fiscal deficit does not cause inflation should be rejected as the result is significant with a probability of less than 0.05. This implies that fiscal deficit/GDP causes inflation. However, no feedback mechanism was observed.The results of the ARDL test confirm a significant negative relationship between growth in fiscal deficit (% of GDP) and inflation. The above findings confirm the prior expectations. It is recommended that policies aimed at controlling inflation in Nigeria can best be achieved if they are aimed at reducing the fiscal deficit. In addition, the government should support growth in the real sectors of the economy.Lumengo Bonga (2012) in his research paper

pointed out the extent to which systematic and abrupt changes in the budget deficit affect the long-term interest rate in South Africa. The specific vector autoregressive regression (VAR) techniques were used, where the co-integration vectors were determined based on the Fisher effect theory and the term structure expectations hypothesis to assess the impact of systematic changes in the budget deficit on the long-term interest rate. Furthermore, the impulse response functions obtained from the VAR were used to assess the impact of an abrupt change in the budget deficit on the long-term interest rate. The results of the research paper showed a positive relationship between the budget deficit and the long-term interest rate under different assumptions of price expectations by economists.

2. Theoretical framework:

The concept of the public budget: Many concepts have been put forward, rarely agreeing with each other. The government budget is meant as a plan that includes estimating the state's expenditures and revenues over a coming period of time, usually one year (Al-Janabi, 1990). It is also defined as an account of all state expenditures and revenues in an estimated and detailed manner, and that are likely to be achieved during the coming fiscal year. This report is approved and issued by a law from the government (Mustafa, 1999). Another concept of the budget can be given as an organized financial plan that aims to achieve strategies to direct it towards the future, and includes expected results for both public expenditures and public revenues during the coming fiscal year (H.W. Allen Sweeny, 1981). The Accounting Principles Law No. 28 of 1940, as amended in Iraq, defined it as "tables that include an estimate of revenues and expenditures for one fiscal year specified in the budget law" (Al-Ali, 2007). It is worth noting that the term public budget differs from the term public budget in the following points (Makkawi Hajira, 2020). The purpose of the budget is to achieve planning and control, while the purpose of the public budget is to clarify the financial position of the establishment, and therefore the budget is a planning tool.The budget contains estimated figures determined in advance before the operations actually occur, while the public budget contains actual figures for operations that actually occurred, and through this it can be said that the budget is closer to the concept of final and general accounts. This means that the budget is what represents the financial position of the establishments and not the budgets. The budget is prepared for a specific future period, while the budget is prepared for a specific date for a past period.**Monetary Policy Concept:** Monetary policy is defined as a set of measures and actions taken by monetary authorities to influence monetary variables, as well as to influence the behavior of banking and non-banking institutions (Al-Rufai, 2014). Monetary policy aims to achieve the objectives set by monetary authorities. Monetary policies applied vary from one country to another, and according to the objectives that monetary

authorities seek to achieve. In addition to the existence of a main objective, in most monetary policies, which is stability in the general price level, which in turn makes the difference in final objectives limited to a number of these objectives and not to their content. Among the common final objectives are the following (Ghaidan, 2017): A-Achieving monetary and price stability, this goal is considered one of the most important monetary policy goals, based on the seriousness of the consequences resulting from monetary instability, and its impact on economic growth in general. On the one hand, the rise in inflation above the targeted levels, in an economy, results in a decline in the real income of individuals, which in turn leads to a decline in consumption, which in the medium- and long-term results in a decline in investments and the level of employment. On the other hand, deflation leads to a decline in production and an increase in its cost, which in turn also leads to a decline in investments, income, consumption and economic growth.

B- Contributing to achieving a balance in the balance of payments and improving the value of the currency.

C- Achieving economic growth by controlling the size of credit and its cost in a way that establishes economic growth, which means a continuous increase in the country's real gross domestic product.

D-Optimal use of resources by employing human resources and reducing unemployment and the negative effects that accompany it, such as a decline in production and income.

3. Results and Discussion:

To measure the relationship between the deficit or surplus in the public budget and the broad money supply for the period 2004-2023, the equations of the study variables will be described and the results will be reached to verify the validity of the hypothesis or not. The general model of the research is represented according to the following formula:

$$\mathbf{BD = f\ (M_2,\ GDP)\ \ldots\ldots\ (1)}$$

$$\mathbf{\Delta BD_t = C + \sum_{t-1}^{n} \propto_1 BD_{t-1} + \sum_{t-1}^{n} \propto_2 M2_{t-1} + \sum_{t-1}^{n} \propto_3 GDP_{t-1} + \beta_1 M2 + \beta_2 GDP + \mu_t \ldots (2)}$$

Where BD represents the budget deficit or surplus. M_2 represents the broad money supply. GDP represents the gross domestic product. Δ: the first difference of the variable. C: the constant term. n: the upper limit of the optimal lag period. $\propto_1$, $\propto_2$, $\propto_3$: the short-run slope. ⟦β_1, β_2: the long-run slope. μt represents the random error term.

3.1 Unit Root Test:

The unit root test is the first and basic step in standard models that use time series data. Before starting to estimate economic models, it is necessary to determine the order of integration of the time series, whether it is of degree (I_0) or (I_1). This is done by conducting the stationarity test, as the results of this test help us choose the appropriate model that gives accurate realistic results. In the case of non-stationary

time series, the estimation results that will be obtained will be unrealistic (false regression). Verifying the stationarity of time series is a basic requirement to avoid false regression, which gives unreal results (Corlett & Aigner, 1972). To verify the stationarity of the variables, the augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test were used before starting the statistical estimation of the model. From the data in Table1, it is clear that the results of the stationarity tests for the time series of the budget deficit (BD) variable are stationary at the level (I0) in both tests. As for the other variables, both broad money supply (M2) and gross domestic product (GDP) are stationary at the first difference (I_1), therefore the null hypothesis that states the existence of a unit root (non-stationarity of time series) is rejected, and the alternative hypothesis that states that the time series of the model variables are stationary at the 5% significance level is accepted.

Table (1) Test (ADF, PP)

Unit root tests:								
At(Level) *					At the first difference			
Tests / Variables	ADF		PP		ADF		PP	
	T-Statistic	Prob	T-Statistic	Prob	T-Statistic	Prob	T-Statistic	Prob
log_BD	-4.186	**0.0047**	-4.173	**0.0049**	/	/	/	/
log_M_2	-1.927	**0.6404**	-1.929	**0.6392**	-4.084	**0.0066**	-4.097	**0.0064**
log_GDP	-0.601	**0.9789**	-0.384	**0.9874**	-4.596	**0.0010**	-4.701	**0.0007**

Source: The work of the researchers based on the statistical program (Stata $_{17}$).

Notes: *The model includes the intersection At level, as well as the first difference.

3.2 F-Bounds Test:

Since the sample size is small and the variables are fixed at the level and first difference, the ARDL model can be used, as this model is considered one of the most appropriate models in the case of a small sample, compared to other standard models, as it provides better results in the case of (Fatukasi et al.,2015). We note from Table2 below that there is a joint integration between the research variables (BD, M_2, GDP), as the calculated (F-Bounds Test) statistic value of (4.975) is greater than the upper tabular limits at a significance level of (5%), the model, and as a result, the null hypothesis is rejected and the alternative hypothesis is accepted, which states that there is a joint integration between the dependent and independent variables.

Table (2) Results of the F-Bounds Test for Cointegration

F-statistic = 4.975		K= 2
Critical Value Bounds		
I_0 Bound	I_1 Bound	Significance
3.17	4.14	**10%**
3.79	4.85	**5%**
4.41	5.52	**2.5%**
5.15	6.36	**1%**
T-statistic = -2.610		

Source: Researchers' work based on the statistical program (Stata $_{17}$).

3.3 ARDL Model Estimation:

After passing the estimated model for statistical tests, we move to estimate the short-term and long-term relationship between the variables using the ARDL model, where the data values in Table3 indicate the results of the model estimation that there is a significant long-term relationship between the research

variables (the deficit or surplus in the budget, the broad money supply, and the gross domestic product), as the statistical value of (T) is greater than the tabular value, in addition to that the value of (P - Value) is less than (5%), which means rejecting the null hypothesis and accepting the alternative hypothesis, as an increase in the broad money supply (M_2) by (1%) will lead to a decrease in the deficit or surplus in the budget (BD) by (-.7347372), and the opposite occurs in the case of a decrease. This means accepting the alternative hypothesis, which states that there is a long-term relationship between the dependent and independent research variables (i.e. the statistical criterion is not significant), and rejecting the null hypothesis, which states that there is no long-term relationship between the research variables, which explains the existence of a significant negative effect in the long run of the broad money supply on the public budget deficit or surplus.

Table (3) ARDL model estimation results

ARDL (1,2,0) regression Sample: 2006 thru 2023

Number of obs: 18 R – squared = 0.7069

Adj R – squared = 0.5848 Log likelihood = -28.927442

D.log_BD	Coefficient	Std. Error	t-Statistic	Prob.
ADJ log_BD L1.	-.7347372	.2815308	-2.61	0.023
LR log_M_2 log_GDP	-1.598808 9.705956	2.85767 10.30968	-0.56 0.94	0.586 0.365
_Cons	-103.1806	92.40962	-1.12	0.286

Source: Researchers' work based on the statistical program (Stata $_{17}$).

3.4 Testing the quality of the standard model estimate:

To verify the quality of the model, a number of tests were highlighted, in order to reveal whether the model is free of standard problems or contains them. The results of Table (4) below indicate that the independent variables explain about (47%) of the changes in the public budget deficit or surplus, and the estimated model is statistically acceptable as the value of the statistical test (F) is (2.16) and its probability value (P-Value) is (0.0274) which is less than (5%), which means accepting the alternative hypothesis with the significance of the estimated model as a whole and rejecting the null hypothesis, in addition to that the residuals of the estimated model do not suffer from the problem of serial correlation as shown by the (Breusch-Godfrey) test as its (Prob) value is (0.249) which is greater than (5%), which means accepting the null hypothesis and rejecting the alternative hypothesis. The model does not suffer from the problem of instability of variance as shown by the (Breusch – Pagan – heteroskedasticity) test, as its (Prob) value is (0.3127) which is greater than (5%), which means accepting the null hypothesis and rejecting the alternative hypothesis. The estimated model is well described, as confirmed by the (Ramsey Regression Equation Specific Error) test, as the statistical value of the F test is (3.9) and its (P)

value is (0.0696) which is greater than (5%), which means rejecting the null hypothesis and accepting the alternative hypothesis, i.e. the estimated model is well described.

Table (4) Results of model quality tests

Sample: 2006 thru 2023 **Included observations: 18** **F(5, 12) = 2.16** **Prob F = 0.0274** **R – squared = 0.4737** **Adj R – squared = 0.3544**				
Breusch – Godfey LM test for autocorrelation				
Lags (p)	**Chi2**	**df**	**Prob.**	
1	**5.028**	**1**	**0.249**	
Breusch – Pagan / Cook – Weisberg test for heteroskedasticity				
Chi2 (1)			**Prob.**	
1.02			**0.3127**	
Ramsey Reset test using powers of the fitted values of D.log_BD				
F (3, 9)			**Prob.**	
3.58			**0.0696**	
Durbin–Watson d-statistic (6, 18) = 2.383751				

Source: Researchers' work based on the statistical program (Stata $_{17}$).

4 .Conclusions and Recommendations:

4.1 Conclusions:

The research dealt with the impact of monetary policy on the public budget in Iraq for the period 2004-2023 using the Autocorrelation Approach for Distributed Lag Periods (ARDL). The most important results in this research work are:

1 .The boundary test for joint integration indicates the existence of a long-term relationship between the deficit or surplus of the public budget (BD), the broad money supply, and the gross domestic product in Iraq during the research period, which confirms the research hypothesis.

2 .The results of the expanded Dickey-Fuller and Phillips-Perron tests indicate that the dependent variable (BD) is stationary at the level, and the independent variables are stationary at the first difference.

3 .The RESET test showed the quality of the description of the model adopted in the research, as the level of significance was greater than (0.05), which means accepting the alternative hypothesis and rejecting the null hypothesis.

4 .The existence of a long-term relationship (co-integration) between the deficit or surplus in the public budget and the gross domestic product.

5. There is a long-term relationship (joint integration) between the deficit or surplus in the public budget and the broad money supply (M_2). If there is an increase in the broad money supply (M2) by (1%), this increase will lead to a decrease in the deficit or surplus in the budget (BD) by (-.7347372), and the opposite will happen in the case of a decrease.

4.2 Recommendations:

1 .The necessity of establishing a more effective monetary policy to achieve the goals of internal balance by managing the money supply in a manner consistent with the state of the economy.

2 .The monetary authority should manage and direct the money supply in a way that ensures the availability of local liquidity, especially in times of economic crises, to reduce the government deficit.

3 .Economic policy makers in Iraq should consider diversifying financial resources according to the economic situation to ensure achieving financial balance.

4 .Work to direct and rationalize public spending to limit the aggravation of the public budget deficit.

References:

1- Al-Abtan, A. K. (2024). The impact of monetary policy on the twin deficits in the selected group of countries. *Al-Sharai' Journal for Legal Studies*, *4*.

2-Al-Ali, A. F. (2007). *Public Finance and Financial and Tax Legislation*. Dar Al Hamed, 1st edition.

3-Al-Janabi, T. (1990). *Studies in Public Finance*. Higher Education Press Baghdad.

4-Anayochukwu, O. B. (2012). Fiscal Deficits And Inflation In Nigeria : The Causality Approach. *International Journal of Scientific & Technology Research*, *1*(8), 6–12.

5-Corlett, W. J., & Aigner, D. J. (1972). Basic Econometrics. *The Economic Journal*, *82*(326), 770. https://doi.org/10.2307/2230043.

6-Fatukasi, B., Olorunleke, G. K., Olajide, G. F., & Santos Alimi, R. (2015). Bounds Testing Approaches to the Analysis of Macroeconomic Relationships in Nigeria. *European Journal of Business and Management www.Iiste.Org ISSN*, *7*(8), 26–35. www.iiste.org

7-H .W . Allen Sweeny, and R. R. (1981). *Handbook of Budgeting*. by planview.

Lumengo Bonga-Bonga. (2012). Budget deficit and long-term interest rates in South Africa. *African Journal of Business Management*, *6*(11), 3954–3961. https://doi.org/10.5897/ajbm11.713

8-Makkawi Hajira, A. B. M. (2020). The impact of the public budget deficit on the exchange rate in Algeria: an econometric study using the autoregressive distributed lag model (ARDL) during the period 2003-2018. *Strategy and Development Magazine*, *Special is*, 71–88.

9-Mustafa, Mohamed Abdel Moneim Afar, and A. F. (1999). *Positive and Islamic financial economics between theory and practice*. 301.

10-Olanrewaju, S. M., & Causality, G. (2021). Budget Deficit, Monetary Policy and Inflation Dynamics In Nigeria. *Quest Journals Journal of Research in Business and Management*, *9*(7), 2347–3002. www.questjournals.org