

Received: May 2023 Accepted: June 2023

DOI: <https://doi.org/10.58262/ks.v11i02.045>

The Standard Analysis of the Relationship Between Aggregate Demand and Government Spending and Their Impact on Money Supply in the Iraqi Economy for the Period 2004-2020

Shaimaa Khattab Obaid¹, Jaafar Baqer Mahmoud²

Abstract

The aim of the current research is to investigate the impact of increasing government spending upon aggregate demand and upon the trends of monetary policy in terms of motivating its tools, especially the money supply to meet the demand that the increasing government spending creates. Therefore, in the current research, monetary policy trends represented by money supply management in the narrow sense M1 were investigated and explained, and the extent to which they were impacted by the whole changes in the country on the one hand, and changes in government spending and aggregate demand on the other hand. The research also studied how monetary policy finances the aggregate demand created by government spending during the study period. It was concluded that changes in government spending have a clear and obvious impact on aggregate demand and its components. This is indicated by the compound growth rates of both government spending and aggregate demand during the study period. Aggregate demand is being financed by monetary policy. Therefore, it is recommended to work on studying the changes in government spending trends and the extent of their impact on the total aggregate demand and the mechanism of its creation. This is in order to restrict its excessive increase in a way that generates negative effects in the economy. The most important and obvious one is the inflationary pressure created by excessive supply of money and its components in the economy.

Keywords: *government spending, aggregate demand, monetary policy.*

Introduction

In many developed and developing countries, despite their varying economic, political and international systems and their various economic, social and demographic structures, analyzing the government spending attracts the attention of economic policy makers of all kinds. This is ascribed to its significant role in contributing effectively to growth and economic stability programs. It is postulated that the Iraqi economy has suffered greatly and continues to suffer from economic imbalances as well as from the divergent trends in economic policy, including fiscal policy and its interactions with other economic policies, particularly monetary policy and its key tool, the money supply. As far as the tools of fiscal policy is concerned, which is government spending, it is necessary to reveal the expansionary trends of fiscal policy, which led to an increase in the expansion of the government spending. Those trends had a reflection on the overall economic variables, especially aggregate demand and the proportions of its components in the country, and the study of the overall changes in government spending, total aggregate demand, and monetary policy represented by the money supply. (Okamoto, 2023; Jiménez & Moreno, 2023)

¹ Department of Banking and Financial Sciences / Wasit departments / Imam Al-Kadhim College of Islamic Sciences / Iraq. Email: shaimaaoabaid6@gmail.com

² Department of Economics / College of Administration and Economics / University of Wasit / Iraq. Email: jaffallwsh@gmail.com

First: The research objective

The aim of the current research is to investigate the impact of increased government spending on aggregate demand and the necessitated trends in monetary policy in terms of motivating its effective tools to meet the demand created by government spending. The most important of these tools is the increase in the money supply.

Secondly: The research importance

The research derives its importance from focusing on explaining the overall changes in the trends of each of government spending, aggregate demand and monetary policy (represented by the money supply (M1) resulting from changes in the overall economic, political and international conditions on the one hand. The reason behind is that it studies how government spending generate aggregate demand and how financed by monetary policy.

Third: The research problem

The research problem is determined by answering the following questions:

- 1- What is the capacity of government spending to create aggregate demand? What are the general trends of this demand?
- 2- Are monetary policies capable of absorbing and financing aggregate demand and managing it by increasing the money supply?

Fourth: The research hypothesis

The hypothesis of the research is that there is an obvious effect of government spending on aggregate demand, where that monetary policy bears the burden of managing aggregate demand through its tools, especially increasing the money supply.

The conceptual framework of government spending, monetary policy and aggregate demand**First: The conceptual and theoretical framework of government spending****The concept of government spending and their bases**

Those who keep up with the history of government spending will observe that some authors concentrated on the financial side while others concentrated on the spending party. Others gave their attention to both sides together, as some of them saw that the government spending is the use of an amount of money that comes out of the responsibility of an administrative person to meet a public need (Ali, 2002; Korstanje, 2022) Others defined it as a cash amount that comes out of the government's financial responsibility or one of its constituent authorities with the aim of achieving public benefit (Mithani, 1998). Also, government spending represent all payments and purchases made by various government agencies, as they include payments and purchases that the private sector cannot provide but are important for the public interest as a whole. Spending on defence, health, infrastructure and social welfare as well as education and other public services are one of these purchases and payments (Deepashre and Vantia, 2007; Wojciechowska, 2022)

It can be noticed from the concepts mentioned in the previous paragraph that the government spending has a set of elements or pillars represented by a monetary amount, the presence of a public person in charge of the expenditures, and the existence of a public benefit that is the target of this expenditure. (Al-louzi et al, 2013; Amaral et al., 2022)

1. The government spending is a cash sum.
2. The government spending is carried out by a public person.

3. Issuing government spending to achieve public benefit.

Second: Rules and forms of government spending

Government spending have the bases that must be observed, as they work to regulate the process of spending public money. These rules are called the constitution of government spending, which are three rules represented in the rule of benefit, the rule of economy and the rule of licensing. Some writers add a fourth rule, which is the rule of justice in the distribution of government spending (Mihrizi, 2005). As for the forms of government spending, the government's implementation of government spending can appear in multiple forms. The most important forms are the following (Abd Almahdi et al, 2011; Van Ngo & Vu, 2022)

- 1- Wages and salaries paid by the state to retired employees
- 2- State purchases of goods and services
- 3- Subsidies
- 4- Paying the interest and installments of the public debt

The second requirement: The conceptual and theoretical framework of monetary policy

First: The concept of monetary policy and its objectives

Monetary policy is defined as the control of the central bank in the amount of money and interest rates in order to achieve the objectives of economic policy. It works to increase the amount of money and reduce interest rates in the stages of deflation and increase interest rates and reduce the amount of money in the stages of expansion in order to maintain economic stability and balance (Al-Katabiri, 2011; Chattopadhyay et al., 2022) Monetary policy has also been defined as the use of the money supply to achieve certain economic goals, when the monetary authorities want to increase aggregate demand to achieve high levels of income and employment. They will increase the nominal supply of money, but if they want to reduce aggregate demand, they will resort to reducing this supply (Al-Mashhdani et al, 2013). It is also seen as a set of decisions and actions taken by the monetary authority to control the money supply in order to achieve a specific goal or set of economic goals using available monetary tools (Al-Ghalibi, 2015; Haugen, 2022)

Monetary policy in its narrow sense means that it is the procedures used by the monetary authorities to monitor the money supply and achieve specific economic goals such as full utilization. As for its meaning according to the broad concept, it means the monetary and banking measures aimed at controlling the amount of available money supply in the national economy. That is, it is the work that is directed to influence cash and credit, as well as government borrowing, i.e. the size and composition of government debt (Arestis et al, 2006). The concept of monetary policy aims to achieve a set of economic goals. The most important ones are: (Hamood, 2013; Aljoghaiman et al., 2022)

- A- Stabilizing the general level of prices.
- B- Working to achieve balance for the balance of payments
- C- Achieving a high level of use
- D- Raising the rate of economic growth.

Second: The tools of monetary policy

Monetary policy seeks to manage money supply and bank credit depending on two types of quantitative or indirect means and qualitative or direct means. We will discuss these methods as follows:

Quantitative Monetary Policy Tools (Indirect)

The quantitative tools are among the traditional indirect tools used by the monetary authorities to influence the monetary mass in general and to influence the volume and cost (the interest rate on loans) and the quality of credit provided to economic units in particular in order to achieve economic stability (Al-Wazni, 2009). They include the following (Al-Hajjar, 2012):-

- Re-discount rate policy
 - Market Operations Policy
 - Statutory cash reserve policy
2. Specific (direct) monetary policy tools:

The qualitative tools are among the direct selective tools used by the monetary authority in monitoring and regulating bank credit. These tools are used to influence the quality and cost of credit, not its volume. (Al-Quraishi, 2007). It includes the following tools (Abdul-Raheem, 2014):-

- 1- Regulating the consumption credit.
- 2- Borrowing by bonds with specifying the guarantee margin.
- 3- Regulating the credit granted for the purpose of construction.
- 4- Literary impact or persuasion.
- 5- Direct impact.

The conceptual and theoretical framework of the total demand

The concept of aggregate demand and its components

First: What is aggregate demand?

“Demand” is the desire to obtain a good or service, or a group of goods and services, supported by the ability to pay or purchasing power. That is, it is the desire accompanied by the ability to buy different quantities of goods and services at different prices during a certain period of time. The aggregate demand is considered the basis for deciding whether or not the project is valid. Thus, the aggregate demand represents a conditional expression of the need or desire to obtain goods and services, that is, it does not represent an absolute expression, as the need or desire that is not supported by purchasing power does not represent a demand (Abadi et al, N.D.).

It is also viewed as the total demand for final goods and services in the economy, and aggregate demand is measured by the total expenditure by society on goods and services (Nashid, 2004). It is also defined as the total expenditure that a society plans to incur to purchase goods and services. Thus, aggregate demand is synonymous with aggregate expenditure in the economy. If the total (actual) expenditure on the purchase of goods and services is greater than (planned), it indicates a rise in aggregate demand and the emergence of the inflationary gap (Hussein, 2015; Gómez, 2023)

Second: The components of aggregate demand

Aggregate demand consists of several main components divided into two main parts, the private part and the general part. They are as follows (Miller & Leroy, 2011):

- 1- The consumption demand, which is divided into private consumption demand and public (governmental) consumption demand.
- 2- Investment demand, which is divided into private investment demand and government investment demand (capital formation).
- 3- Net exports

Time series analysis

The first requirement: What is the analysis of the stability of time series?

A time series is defined as a set of observed values of a specific phenomenon over equal time periods. The time period is usually either weekly, monthly, quarterly or yearly, and it has many advantages in the decision-making process. (Al-Nueimi and Tuoma, 2008). It indicates that the proposed or existing economic project will witness expansion, contraction or halt in production. (Badr, 2007). As for time series analysis, it is intended to divide the time series into its components in order to clarify the impact of each component on the values of the studied phenomenon. (Al-Duleimy, 2018). The stability of the time series is one of the key characteristics that must be available in these series in order to be employed correctly in order to reach accurate results in forecasting. Many of these chains can be described as unstable, indicating that it suffers from a problem known as the unit root. This means that the mean and variance of the studied series are not independent of time. (Al-Taie, 2015). This leads to a false regression (unreal) between the independent and dependent variables. (Al-Sawai, 2012).

The second requirement: The co-integration test and the Autoregressive Distributed Lags Model (ARDL).

Co-integration can be defined as one of the methods used to address instabilities in the time series. It indicates that there is a long-term relationship between two unstable chains, as they can stabilize if they are of one degree. This means that both series will become stable if the 1st difference is taken for each variable. The linear combination of the two variables is stable, that is, the residual or error limit of the regression relationship is stable. (Edrewhish and Abdul-Qadr, 2013).

The ARDL model is based on merging autoregressive models for the dependent variable with distributed lag time models for the independent variable in one model. According to that model, the time series of the values of the dependent variable becomes a function of the value of the dependent variable and the variable or independent variables lagged for one period of time. (Edrewhish, 2012)

Measurement and analysis of standard models

The first requirement: hypotheses of standard analysis and description of the model

First: Standard analysis hypotheses

The changes in monetary policy (represented by some cash) and government spending were proportionate in most of the years of study. These changes often started with increased government spending and then moved to activate aggregate demand and then to the money supply represented by monetary policy. This indicates that when the supply of spending increases or decreases in a particular year, the impact of this decrease will cause a decrease in the values of aggregate demand, even in the domestic product and even in the money supply in the same year and subsequent years. Therefore, the following basic hypotheses were built:

- 1- The growth of government spending leads to increasing the volume of aggregate demand created by that spending. The monetary authorities are forced to monetize government spending.
- 2- Financing the demand is made by covering it by the monetary authorities by increasing the money supply in the Iraqi economy, whose trends are determined by both government spending and aggregate demand and their trends.

Second: Description of the study model

In order to ensure that the previous hypotheses have been verified or not, a description of the model for which the standard analysis is to be conducted must be developed. It describes the effect of each of government spending and aggregate demand on the money supply through the following formula:

Where: Aggregate demand = AD, government spending = G, money supply =M1

The second requirement: The results of testing the stability of the time series of the studied variables

First: The values of the studied variables.

The data as in Table (1) were used to estimate the standard models according to the previous hypotheses:

Table (1) The values of government spending, money supply and aggregate demand in the Iraqi economy for the period (2004-2020)

The amounts are counted by million dinars.

| vrt | M1 Money supply | Government spending G | Year |
|-----------|-----------------|-----------------------|------|
| 31910577 | 10148626 | 32117491 | 2004 |
| 47277227 | 11399125 | 26375175 | 2005 |
| 79287630 | 15460060 | 38806679 | 2006 |
| 91100186 | 21721167 | 39031232 | 2007 |
| 129249850 | 28189934 | 59403375 | 2008 |
| 109392614 | 37300030 | 52567025 | 2009 |
| 137587898 | 51743489 | 70134201 | 2010 |
| 183464964 | 62475464 | 78757666 | 2011 |
| 220769607 | 63735871 | 105139576 | 2012 |
| 241092739 | 73830964 | 119127556 | 2013 |
| 248610266 | 72692448 | 115937762 | 2014 |
| 194289559 | 65435425 | 70397515 | 2015 |
| 183879333 | 75523952 | 75055865 | 2016 |
| 187081451 | 76986584 | 75490115 | 2017 |
| 203803479 | 77828984 | 80873189 | 2018 |
| 232597249 | 86771000 | 111723523 | 2019 |
| 173709262 | 103353000 | 76082443 | 2020 |

Source

1- Central Bank of Iraq, Monetary Policy Report of the Central Bank of Iraq, General Directorate of Statistics and Research, Department of Macroeconomics and Monetary Policy. Annual reports 2005-2020.

2- Ministry of Finance, General Budget Department.

Second: The results of time series stability tests for the studied variables

Firstly, the co-integration methodology requires knowing the order of stability of the time series for the values of the studied variables during the research period, using Dickey-Fuller Augmented test. Through the data of Table (2), it is clear that all variables are unstable in the level and are stable in the 1st difference, except for the money supply that is stable in the 1st difference (with lags interval and time trend), but at a rather weak level of significance (10%).

Table (2) Dickey - Fuller Augmented test results for the variables of the study

| Money Supply M1 | | Aggregate Demand AD | | Government spending G | | Test rank |
|-----------------|-------------|---------------------|-------------|-----------------------|-------------|------------------------------|
| Prob | t-statistic | Prob | t-statistic | Prob | t-statistic | Rank |
| 0.9246 | -0.170804 | 0.2613 | -2.059697 | 0.3696 | -1.793943 | With lags interval |
| 0.0655* | -3.6940 | 0.9277 | -0.919445 | 0.7124 | -1.679916 | With lags interval and trend |
| 0.9978 | 2.959217 | 0.7616 | 0.305708 | 0.6268 | -0.120130 | With no lags interval |
| Prob | t-statistic | Prob | t-statistic | Prob | t-statistic | 1 st difference |
| 0.0818* | -2.799346 | 0.1184 | -2.579610 | 0.0138** | -3.784556 | With lags interval |
| 0.0265** | -3.653776 | 0.0438** | -3.087613 | 0.0468** | -3.801506 | With lags interval and trend |
| 0.0138** | -3.842155 | 0.0133** | -2.597997 | 0.0010*** | -3.785673 | With no lags interval |

Source: The table is from the researcher's work based on the outputs of the statistical program (Eviews.12).

*Significant at the 10% level... **Significant at the 5% level... ***Significant at the 1% level

Econometric and economic analysis of models

First: The results of analyzing the standard relationship between money supply and each of government spending and aggregate demand

Considering that the money supply is a function of government spending and aggregate demand through the following formula:

$$M1 = f(G, AD)$$

Co-integration test

Table (3), which illustrates the results of Johansen test for co-integration, shows that it is not possible to accept the absence of co-integration when imposing ($R = 0$). It is not possible to accept the hypothesis stating no integration at least with a number of vectors = 1 when the assumption is ($R = 1$). That is, there is an integration relationship, at least in one direction, between the two variables, according to both the Trace test and the Max-Eigen test. These two tests show that there are at least two directions for the integrative relationship between money supply, government spending, and aggregate demand. This relationship goes from government spending to aggregate demand and then to money supply according to the probability value that was significant at the 5% level.

Table (3) The test results for the co-integration between money supply M1 and each of government spending G and aggregate demand AGD

| Date: 06/05/23 Time: 12:27 | | | | |
|--|------------|-----------|----------------|---------|
| Sample (adjusted): 2007 2021 | | | | |
| Included observations: 15 after adjustments | | | | |
| Trend assumption: Linear deterministic trend | | | | |
| Series: M1 G AGD | | | | |
| Lags interval (in first differences): 1 to 1 | | | | |
| Unrestricted Cointegration Rank Test (Trace) | | | | |
| Hypothesized | | Trace | 0.05 | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** |
| None | 0.638016 | 21.69864 | 29.79707 | 0.3156 |
| At most 1* | 0.333843 | 6.456298 | 5.49471 | 0.0416 |

| Date: 06/05/23 Time: 12:27 | | | | |
|---|------------|-----------|----------------|---------|
| At most 2* | 0.423900 | 0.362848 | 3.141466 | 0.0469 |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) | | | | |
| Hypothesized | | Max-Eigen | 0.05 | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** |
| None | 0.638016 | 15.24234 | 21.13162 | 0.2723 |
| At most 1* | 0.333843 | 6.093450 | 4.26460 | 0.0416 |
| At most 2* | 0.423900 | 0.362848 | 3.141466 | 0.0469 |

Source: - The results of the E-views program -12

Assessing the Ardle short-run model

We find through the results of the short-term estimation in Table (4), that there is a relationship between money supply as a dependent variable and its value with one delay period (the coefficient appeared 1.214699 with a high significance of 1%). The estimation also showed a positive and significant economic relationship between current supply and current government spending, whereas the relationship was negative and significant between money supply and aggregate demand. The table showed a high explanatory power of the model represented by the high coefficient of determination that appeared with the value of the test (F), whose calculated value and significance were high 1%. Also, the value of Darbin Watson is close to the number (2) and is also higher than the upper limit in the tables of Darbin Watson, as there is no possibility of an autocorrelation of the first type between the residuals.

Table (4) The results of testing the short-term ARDL model estimates of the relationship between the money supply and each of government spending and aggregate demand

Dependent Variable: M1

Method: ARDL

Date: 06/13/23 Time: 20:38

Sample (adjusted): 2006 2021

Included observations: 16 after adjustments

Maximum dependent lags: 1 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (0 lag, automatic): G AGD

Fixed regressors: C

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|--------------------|-------------|-----------------------|-------------|--------|
| M1(-1) | 1.214699 | 0.140362 | 8.654036 | 0.0000 |
| G | 0.541079 | 0.233511 | 2.317150 | 0.0390 |
| AGD | -0.329907 | 0.142766 | -2.310821 | 0.0394 |
| C | 9175390. | 4575892. | 2.005159 | 0.0680 |
| R-squared | 0.964557 | Mean dependent var | 57777969 | |
| Adjusted R-squared | 0.955697 | S.D. dependent var | 27292321 | |
| S.E. of regression | 5744572. | Akaike info criterion | 34.17773 | |
| Sum squared resid | 3.96E+14 | Schwarz criterion | 34.37087 | |
| Log likelihood | -269.4218 | Hannan-Quinn criter. | 34.18762 | |
| F-statistic | 108.8588 | Durbin-Watson stat | 1.837933 | |
| Prob(F-statistic) | 0.000000 | | | |

Source: - The results of the E-views program -12

Error correction form

The results of Table (5) for the error correction model according to the ARDL methodology showed that the error correction coefficient was statistically acceptable ($0.214699 > -1 > 0$), which was not significant. This reveals that the speed of the return of the growth variables towards equilibrium in the long run is low and is equal to (0.214699).

Table (5) the results of the error correction model according to the ARDL methodology for the relationship between money supply and each of government spending and aggregate demand

ARDL Error Correction Regression
Dependent Variable: D(M1)
Selected Model: ARDL(1, 0, 0)
Case 2: Restricted Constant and No Trend
Date: 06/13/23 Time: 20:40
Sample: 2005 2021
Included observations: 16

| ECM Regression Case 2: Restricted Constant and No Trend | | | | |
|--|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| CoIntEq(-1)* | 0.214699 | 0.040916 | 5.247258 | 0.0002 |

Source: - The results of the E-views program -12

Long-term model estimation and boundary testing:

After making short-term assessment and performing an error-correction model, the long-term relationship can be assessed, which is shown in Table (6). The results of the assessment were according to the following equation:

$$(M1 = -42735980 - 02.520171G) + 1.5366AGD$$

This assessment indicates that there is a negative but highly significant relationship between the supply as a dependent variable and government spending as an explanatory variable. The model also confirms that there is a statistically significant and positive relationship between money supply and aggregate demand. So that, the coefficient of aggregate demand indicates that in the long term, the money supply rises by 1.5366 million dinars when the total demand increases by one million dinars.

Table (6) The long-term assessments of the AARDL model for the relationship between money supply and both government spending and aggregate demand

| Levels Equation Case 2: Restricted Constant and No Trend | | | | |
|---|-------------|------------|-------------|--------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| G | -2.520171 | 1.369802 | -1.839807 | 0.0907 |
| AGD | 1.536600 | 0.633217 | 2.426656 | 0.0319 |
| C | -42735980 | 28806712 | -1.483542 | 0.1637 |

$$EC = M1 - (-2.5202 * G + 1.5366 * AGD - 42735980.4526)$$

Source: - The results of the E-views program -12

5- Testing residuals by Lagrange Multiplier Test (LM test)

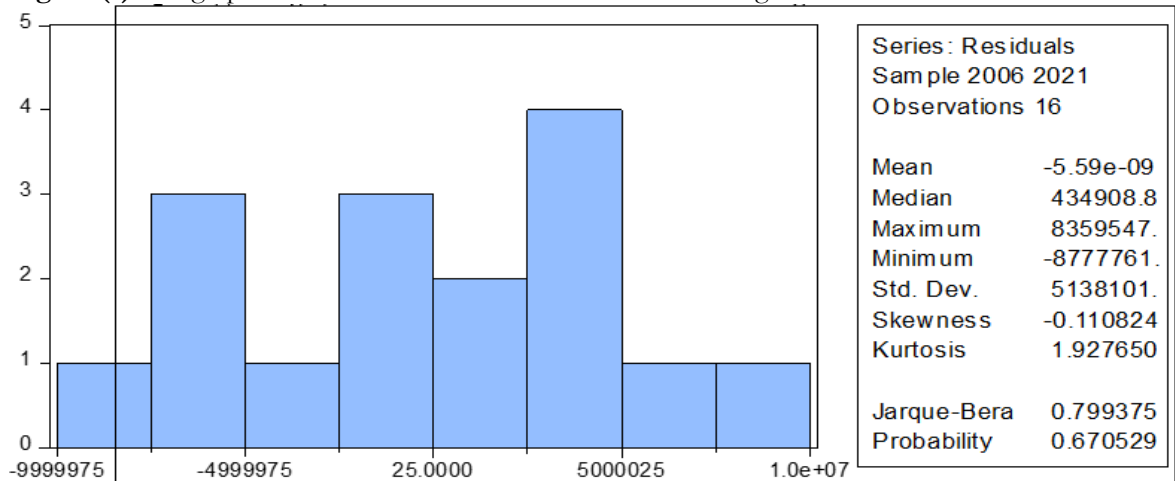
It is the serial residual correlation test for long-term estimations as well, through the (LM) test. As shown in Table (36), we note that there is no autocorrelation problem, through the probability value of Chi-Square, which appeared equal to (0.9346), and is not significant at a level greater than (5%).

Table (7) The results of the LM autocorrelation test for residuals

Breusch-Godfrey Serial Correlation LM Test:

| | | | |
|----------------|----------|---------------------|--------|
| F-statistic | 0.042611 | Prob. F(2,10) | 0.9585 |
| Obs *R-squared | 0.135202 | Prob. Chi-Square(2) | 0.9346 |

Source: - The results of the E-views program -12

Figure (1) The graph of the distribution of the residuals according to the LM test

Source: - The results of the E-views program -12

Autoregressive Conditional Heteroscedasticity (ARCH) test.

Table (8) showed that the probability value of Chi-Square was not significant. That is, the estimated model indicates that there is no problem for conditional heteroscedasticity. The Chi-Square probability value was (0.7388), which is not significant. Therefore, the hypothesis, stating there is a problem of instability of variance squares of the residuals in the long-term estimated model between money supply as a dependent variable and government spending as an independent explanatory variable, can be rejected.

Table (8) The results of the conditional variance stability (ARCH) test for the estimated ARDL model
Heteroskedasticity Test: ARCH

| | | | |
|----------------------|-----------------|----------------------------|---------------|
| F-statistic | 0.097109 | Prob. F(1,13) | 0.7603 |
| Obs*R-squared | 0.111219 | Prob. Chi-Square(1) | 0.7388 |

Source: - The results of the E-views program -12

The fourth requirement: The economic analysis of the results of the standard models

The following equation below is adopted for the purpose of verifying the research hypothesis and in agreement with the theoretical and quantitative analysis of the relationships that have been adopted, namely:

First: - The growth of government spending leads to an increase in aggregate demand. The standard model confirmed this relationship, which appeared in the following formula:

$$(AGD = 24296735 + 1.999343G)$$

Any increase in government spending will lead to a double increase in aggregate demand (in the long run). The growth rate of spending was 5.2%, whereas the growth rate of aggregate demand was 10.4%. The aforementioned relationship also indicates that the aggregate demand is created by government spending in the Iraqi economy during the study period.

Second: - When determining the relationship between government spending and money supply, it was found that there was some kind of weakness resulting from the correlation of expenditures with aggregate demand. Thus, the money supply is intended to finance the demand created by government spending, whether the government request for the Iraqi dinar from the Central Bank or financing the

public and private consumption and investment demand as well.

Third: - The model, that reinforced the hypothesis "the increase in money supply in the Iraqi economy is determined by its trends through both government spending and aggregate demand" showed that there was a strong positive relationship between money supply and aggregate demand in the long term. On the other hand, there was a strong negative relationship with government spending, caused by the fact that government spending change up and down (especially decreasing in the years when oil prices declined). This causes a fluctuation in the values of the time series showing a negative relationship with the money supply, which continued to increase during the same period. The model was in the following formula:

$$(M1 = -42735980 - 02.520171G) + 1.5366AGD$$

The strong and positive relationship between money supply and aggregate demand indicates an increase in aggregate demand that will lead to an increase of (1.5) times in the money supply. The table showed that the aggregate demand growth rate was 10.4% and the money supply growth rate was 14.6%, i.e. one and a half times the growth rate in aggregate demand. In sum, there is a strong relationship between government spending and aggregate demand, and that money supply (as a tool for monetary policy) increases with the increase in aggregate demand created by government spending. This result is a confirmation of the research hypothesis.

Conclusions

The results of the standard analysis revealed that:

1. The growth in the volume of government spending leads to increasing the aggregate demand, as any increase in government spending will lead to a double increase in aggregate demand. The compound growth rate of government spending was about (5.2%), while the growth rate of aggregate demand (double) was (10.4%), whereas the compound growth rate of money supply was about (14.6%), which is one and a half times greater than the growth rate of aggregate demand.
2. There is a weakness in the relationship between government spending and money supply due to the correlation of expenditures with aggregate demand. Thus, the money supply is intended to finance the demand created by government spending.
3. The increase in the money supply in the Iraqi economy is determined by its trends through both government spending and aggregate demand. There is a complementary relationship between each of the government spending, going from government spending to aggregate demand to the money supply during the study period.

Recommendations

- 1- It is urgent to study the impact of government spending on aggregate demand and how government spending create aggregate demand and contribute to its increase, and track its impact on the rest of the economic or even social variables in the country.
- 2- There should be coordination between what can be created through government spending of aggregate demand and the possibility of monetary policy to meet or finance this growing demand due to the growth of government spending in the country in order to avoid the occurrence or continuation of inflationary pressures.
- 3- Developing plans to achieve proportionality among changes in government spending and total aggregate demand, and attempting to direct these changes in order to achieve economic stability in the country.
- 4- When assessing the government spending of the state, economic policy makers must take into account the impact that such spending can lead, create, or increase on aggregate demand and the ability of monetary policy to finance this demand (monetization of expenditures).

References

- Abdel-Al-Nuaimi, M. & Tohme, H, Y. (2008) *Applied Statistics*, Wael Publishing House, Jordan - Amman, 1st edition.
- Abdel-Raheem, M, I. (2014) *The Economics of Money and Banking*”, University Education House for Publishing, Egypt.
- Abdul-Mahdi, A, and et al, (2011) *A study in the foundations of government spending*. 1st edition, Arab Community Library, Amman.
- AlAli, R, S. (2002) *Government spending*, University House for Printing, Publishing and Translation, Basra Branch.
- Al-Dulaimi, M. (2018) *Measurement and Analysis of the Determinants of Money Demand in the Iraqi Economy for the Period (1985-2015)*, Master Thesis, Department of Economics, College of Administration and Economics, University of Fallujah, Iraq.
- Al-Ghalbi, A. (2015) *Central Banking (Theory and Policies)*, 1st Edition.
- Al-Hajjar, B. (2012) *Monetary and Banking Economy*, 2nd edition, Al-Manhal Lebanese Publishing House, Lebanon.
- Aljoghaiman, A., Rahman, M. A., Baurizhanovna, B. A., & Bhatti, M. A. (2022). Effects of Supply Chain Strategy (Lean, Agile, Hybrid) on Saudi Firm Performance: Exploring Mediating Role of Supply Chain Integration. *INTERNATIONAL JOURNAL OF CONSTRUCTION SUPPLY CHAIN MANAGEMENT*, 12(2), 124-142. <https://ijcscm.com/menu-script/index.php/ijcscm/article/view/178>
- Al-Lawzi, S, A., and et al., (2013) *Government spending*, Dar Zahran for Printing and Publishing, Jordan.
- Al-Mashhadani, K, A, F, and et al, (2013) *Principles of Economics*, Arabic Edition, Dar Al-Ayyam for Publishing and Distribution.
- Al-Qatari, M. (2011) *The Role of Monetary Policy in Stability and Economic Development*, Dar Ghaida, 1st Edition, Amman.
- Al-Quraishi, A, H. (2012) *Monetary Policy in Iraq between the Enormous Role and Limited Tools*, Euphrates Basin Press / Najaf Al-Ashraf.
- Al-Sawaei, K. (2012) *E-Views and Economic Measurement*, National Library House, Jordan.
- Al-Taie, F, A. (2014) *Prediction and smoothing of time series using transformations with application*, *Iraqi Journal of Statistical Sciences*, special issue of Proceedings of the Second Scientific Conference on Mathematics, No. 17.
- Al-Wazni, K, W., & Al-Rifai, A, H. (2009) *Principles of Macroeconomics between Theory and Practice*, Wael Publishing House - Amman.
- Amaral, I. s., Basílio-Simíues, R., & Poleac, G. (2022). Technology gap and other tensions in social support and legal procedures: stakeholders perceptions of online violence against women during the Covid-19 pandemic. *Profesional de la información*, 31(4). <https://doi.org/10.3145/epi.2022.jul.13>
- Badr, S, E., & Ababneh, E, G. (2007) *Principles of Applied Statistics*, Dar Al Masirah for Publishing, Distribution and Printing, Amman, 1st edition.
- Central Bank of Iraq (2011) *Monetary Policy Report of the Central Bank of Iraq*, General Directorate of Statistics and Research, Department of Macroeconomics and Monetary Policy.
- Chattopadhyay, R., Das, P. P., & Chakraborty, S. (2022). Development of a rough-MABAC-DoE-based metamodel for supplier selection in an iron and steel industry. *Operational Research in Engineering Sciences: Theory and Applications*, 5(1), 20-40. <https://oresta.org/menu-script/index.php/oresta/article/view/178/80>
- Deepashree and Vantia Agarwal, (2007) *India-company limited*, Tata MCGraw-Hill Publishing, "Macroeconomics".
- Edrewish, D. (2012) *Econometrics - A guide to uses with solved examples using ready-made informatics programs: Spss, Excel Eviews, Gretl, Microsoft*, Djilali Liabes University, Sidi Bel Abbes, Faculty of Economic

- and Commercial Sciences, Department of Economic Sciences, Algeria, 2012.
- Edrewhish, D., & Abdelkader, N. (2013) *An Econometric Study of the Determinants of Private Investment in Algeria Using the Autoregressive Lagging Distributed Time Lag Model ARDL*, International Conference Research, Faculty of Economic, Commercial and Management Sciences, Setif University, March.
- Gómez, J. Á. (2023). Approach to musical rhythm in Primary Education. Perceptions of Chilean specialist teachers. *Revista Electrónica de LEEME*, (51), 36-54. <https://doi.org/10.7203/LEEME.51.25579>
- Hammoud. M, Y. (2013) *The Economics of Money, Banks and Financial Markets*”, 1st Edition, Egypt, University Education House for Printing and Publishing.
- Haugen, K. K. (2022). A Game Theory Explanation for Menstrual Synchrony: The Harem Paradox. *Mathematics for applications*, 11, 33-43. <https://doi.org/10.13164/ma.2022.04>
- Hussein, M, Y. (2015) *Macroeconomics, Dar Amjad for Publishing and Distribution*, 1st edition.
- Jiménez, A. P. M., & Moreno, P. G. (2023). Motivación y formación continua de docentes de artes en educación básica en el estado de chihuahua, méxico. *ARTSEDUCA*, (34), 9-22. <https://artseduca.com/wp-content/uploads/2023/06/6644.pdf>
- Korstanje, M. E. (2022). The power of Lingua Franca: the presence of the “Other” in the travel writing genre. *Cultura International Journal of Philosophy of Culture and Axiology*, 19(2), 73-85. <https://culturajournal.com/article-detail/?id=167>
- LeRoy, M, R. (2012) *Economics Today THE MACRO VIEW*, *Research Professor of Economics*, University of Texas–Arlington, Sixteenth Edition. email at www.pearsoned.com/legal/permissions.htm
- Mahrezi, M, A. (2005) *Economics of Public Finance*, University Press Office, Algeria. Ministry of Finance, General Budget Department.
- Mithani, (1998). *Modern Public Finance. Theory and Practice*, Himalaya House, New York.
- Nashed, S, A. (2004) *Government spending, government spending*, Public Revenue and the Public Budget, Al-Halabi Human Rights Publications, AleppO.
- Okamoto, I. (2023). Assessing the Efficacy of Virtual Reality Therapy in the Treatment of Post-Traumatic Stress Disorder (PTSD) in Veterans. *Archives of Clinical Psychiatry*, 50(3), 26-32. <https://archivespsy.com/menu-script/index.php/ACF/article/view/2146>
- Philip Arestis & et al, *The New Monetary Policy Implications and Relevance*, Edward Elgar Publishing Limited, 1st edit.
- Van Ngo, Q., & Vu, H. T. T. (2022). A new perspective of brand equity: the case of pottery craft village collective brand in Vietnam. *Transnational Marketing Journal*, 10(1), 155-170. <https://transnationalmarket.com/menu-script/index.php/transnational/article/view/15/201>
- Wojciechowska, M. (2022). The Role of social capital in education. Results of a survey on the individual social capital of school librarians. *Profesional de la información*, 31(6). <https://doi.org/10.3145/epi.2022.nov.05>