International Academic Institute for Science and Technology

International Academic Journal of Economics
Vol.10, No.1, 2023, pp.11-17.
ISSN 2454-2474

International Academic Journal of Economics

www.iaiest.com

The Effect of Money Supply on the Gross Domestic Product in Iraq for the Period 2010-2020

Harith Adnan Mohammad [a]

[a] *Department of Oil and Gas Economics, College of Administrative and Financial Science, Imam Ja'afar Al-Sadiq University, Baghdad, Iraq. E-mail: hareth.adnan@sadiq.edu.iq*

Abstract

The aim of the research is to study the relationship between money supply and GDP in Iraq. The research concluded that the relationship between money supply and GDP is complex and multi-faceted. An increase in the money supply may stimulate economic activity and boost GDP growth, but it can also lead to inflation and currency depreciation. Conversely, a decrease in money supply may reduce inflation but may also lead to a decrease in economic activity and GDP growth. Other factors, such as government policies, international trade, and market conditions, also play an important role in determining the relationship between money supply and GDP.

Keywords: Money Supply, GDP, Iraq, Economic.

DOI:10.9756/IAJE/V10I1/IAJE1002
Received:22 February 2023/Accepted:14 March 2023/Published:22 March 2023

Introduction

Many recent studies focus on money because of its impact on most economic variables, as the features of the economy in any country are determined by the size of monetary exchanges and capital accumulations. Money is a unit for measuring the volume of trade exchange between different countries of the world, and for measuring the size of the budgets of those countries. Money also gives an indication of the nature of the directions of financial and monetary policies that are applied in the economy of any country.

During the past years, Iraq was able to achieve important achievements that contributed to improving the investment climate, as Iraq entered into many economic and trade agreements, and followed the policy of economic openness, economic correction programs in cooperation with the International Monetary Fund, trade liberalization, and integration into foreign markets. As well as maximizing the role of the private sector in the national economy and making this sector a real partner in the economic development process.

In order to direct the role of the private sector in the required direction, the Central Bank of Iraq had to follow the monetary policy it deems appropriate to manage the money supply to enhance the role of this sector due to its importance as a key partner and supporter of the public sector. With the aim of mitigating the repercussions of unfavorable regional and international developments represented by external economic shocks, such as the drop in oil prices.

1. **The Importance of Research:** Monetary policy is considered an important economic policy because of its economic and social effects. This policy aims to solve many economic problems such as external indebtedness, high inflation rates, declining economic growth rates, instability of currency exchange rates, unemployment, and others. The effectiveness of monetary policy increases in free economies in which the private sector is an important partner in the economic growth and development processes. Monetary policy, by controlling the money supply, and thus through its impact on interest rates, can affect the performance of the private sector, whether positively or negatively.
2. **Objectives of the Study:** This study aims to measure the impact of the money supply on the gross domestic product for the period from 2010 to 2020.
3. **Research Problem:** It is a statement of the impact of money supply on the gross domestic product in Iraq for the period 2010-2020.
4. **Study Hypotheses:**
    - There is a statistically significant relationship between money supply and GDP at a significant level (0.05) during the study sample 2010-2020.
    - There is a significant effect between money supply and GDP at a significant level (0.05) during the study sample 2010-2020.

Reference Review

There are many studies that have attempted to investigate the impact of the money supply on economic activity in general, whether in developing or developed countries, while there has been a dearth of studies that have dealt with the impact of money supply on the GDP of the private sector. These studies will be divided into two main parts:

The study (Miller 1991) came to test a long-term relationship between the amount of money and real income in the US economy using the cointegration test and using the methodology (Granger and Engel) during the period (1959-1987), and the study concluded that there is a positive long-term relationship between the amount of money supply and income Real.

(Cochrane 1995) measured the expected and unexpected effects of monetary policy in the United States, during the period (1982-1994), and monetary policy was represented by money supply while economic activity was represented by GDP, and the vector autoregressive (VAR) model was used. The study concluded that the money supply has a positive effect on the gross domestic product.

The study of Awad (1995), which used quarterly data for the period (1978-1992) AD, to compare the effectiveness of each of monetary and fiscal policy in Jordanian economic activity, as this study covered two periods, the first (1978-1988) AD, and the second (1989-1992)) m, and policy | was represented Money supply in its narrow sense, while fiscal policy was represented by government spending. The results of the study showed that the positive effect of money supply was greater than the positive effect of government spending on the Jordanian GDP.

A study (2001, Bruce & Coxwell) aimed at comparing monetary and fiscal policies in the United States of America, and the impact of each of them on some economic variables such as consumption, investment, and gross domestic product of the American economy, using quarterly data for the period (1966-2000), and to represent monetary policy, it was used Both the money supply and the interest rate, and the study concluded that monetary policy was more effective in predicting and influencing economic variables than fiscal policy.

Shkoukani (2005) estimated a quantitative relationship between economic activity and fiscal and monetary policies in Jordan during the time period (first quarter 1976-second quarter 2004), using the St. In its broad sense of representing monetary policy, the results of the study, which used the Ordinary Least Squares (OLS) method in standard estimation, showed that the impact of monetary policy is greater and stronger than the effect of fiscal policy in the long and short term, and that monetary policy is more able to predict changes in economic activity. of fiscal policy in Jordan.
In the study of Bouatrous and Dahan (2010), which examined the relationship between the gross domestic product and the amount of money in the Algerian economy during the period (1970-2005), the study concluded that there is a positive causal relationship in one direction from the gross domestic product to the amount of money in the narrow and broad terms.

Theoretical and Conceptual Framework

Monetary Policy

Monetary policy represents the most important elements of the economic policy system that can be used to achieve the economic goals of society. Monetary policy primarily aims to influence the money supply and interest rates, which in turn affect the level of economic performance in general (Khalil, 1983, 41).
From here, the field of monetary policy took wide interest by economists and is considered an important topic, and it is the tool to achieve stability by the classics. As for the Keynesian thought, it presented fiscal policy over monetary policy to get out of the state of economic contraction (Abdul Hamid, 2007, 271).
Monetary thought, unlike Keynesian thought, believes that monetary policy is more effective than fiscal policy, that monetary policy is an important part of macroeconomic policy and plays an important role in regulating the money supply and controlling cash and credit, so the monetary authorities represented by the central bank can through this role as the highest authority Cash that achieves specific vital goals according to priorities determined by the economic problem that the economy suffers from. Sometimes the monetary authority uses intermediate goals, such as money supply, to achieve an ultimate goal, such as price stability and reducing inflation (Sadiq, 2005, 34).
The concept of monetary policy is a set of procedures used by the monetary authority to influence the supply of money and direct credit using certain monetary means for the purpose of reaching the achievement of economic goals (Al-Dulaimi, 1995, 438).

Monetary Policy Objectives

1. Achieving stability in the price level: It is one of the main objectives of the monetary policy that it seeks to combat the change in the price level and its tendency to rise, i.e. reducing inflation and combating it for the purpose of achieving economic stability. High prices negatively affect the value of money and have harmful effects on the income level. and riches. At such times, wages lag behind rising prices, which leads to lower incomes for those with fixed incomes. At the same time, the profits of businessmen will increase because of the widening gap between the prices sold and the wages paid to workers. Monetary policy maintains price stability as long as it leads to the elimination of such imbalances, which helps create an appropriate investment environment that facilitates the process of investment Investors planning as a result of making sure of expected prices, costs, and profits (Al-Douri and Al-Samarrai, 2006, 187).
2. Increasing economic growth: - Growth represents an increase in the size of the country's gross domestic product, an increase in the average per capita income, and the state seeks to achieve it for the purpose of increasing the income of individuals, raising the standard of living for them, improving the balance of payments and obtaining a larger amount of foreign currency (Al-Dulaimi, 1995, 586). The goal of monetary policy is to achieve economic growth through its impact on the volume of investment as one of its most important determinants. The changes brought about by monetary policy in the cash reserves of commercial banks and thus the money supply is reflected in the form of corresponding changes in the interest rate, which is determined by the volume of investment (Al-Mandalawi, 2004, 11).
3. Achieving a balanced balance of payments: Monetary policy plays an important role in improving the balance of payments by working to raise interest to attract foreign capital to move inside the country and to follow an appropriate foreign exchange system that leads to encouraging exports and limiting imports. In addition to maintaining a balanced balance of payments to obtain as much foreign exchange as possible as a reserve because of its effects on the internal and external conditions of the country.
4. Achieving full employment: - It is one of the main objectives of monetary policy. The monetary authority is keen to make economic activity at the highest level of employment of natural and human resources. The monetary authority takes the necessary measures to maintain the stability of economic activity and avoid unemployment.

And working to reduce them and the accompanying deflationary factors in production, income and disturbances in social relations, and among these measures is to raise the volume of aggregate demand to the level of operation of untapped productive resources (Hani, 2004, 146).

Economic Theories on Money Supply

The Traditional (Classical) Theory

Given the traditionalists' belief in the validity of Say's Law, which states that supply generates its own demand, the prevailing state in the economy for the traditionalists is a state of full employment, and therefore overproduction or widespread unemployment is unlikely to occur, as Say's law makes the function of money in economic life neutral and its role is limited only as a means of exchange. Based on the foundations of this theory, balance in markets occurs automatically, and the government's role is limited to certain matters such as defense, judiciary, and carrying out public projects that the private sector is reluctant to do. Therefore, this theory believes that achieving free competition is the main condition for economic progress and increasing the amount of satisfaction for all members of society (Shokokani, 2005, 54).

Keynesian Theory

According to the Keynesian theory, the interest rate is the main transmission tool through which monetary policy can convey its impact on the level of economic activity, by controlling the money supply, as the money supply is an important factor in determining the interest rate. An increase in the money supply leads to a decrease in the interest rate prevailing in the market, which is inversely related to the volume of private investment, which will result in an increase in the volume of total spending, and this will reflect positively on increasing levels of income through the multiplier and accelerator, which positively affects activity.

Modern Quantity Theory

The modern quantitative monetary theory, known as the Chicago method, appeared since the end of the fifties of the twentieth century, pioneered by Milton Friedman. Changes in the production of goods and services. Friedman stresses that most economic downturns or recessions are preceded by a decrease in the growth rates of the money supply, and that cases of economic expansion are preceded by a rise in the money supply growth rates (Khalil, 1982, 77).

Economic Measurement and Model Building

Build the Form

A model will be built to measure the impact of the money supply as an independent variable on the GDP as a dependent variable during the period 2010-2020, then estimating the parameters of the model, the stage of testing hypotheses, then the stage of evaluating the estimated parameters of the model, and finally the stage of testing the ability of the model to forecast.

The model includes the stability of other factors that affect the variable of the function of the function, where the models are formed as follows:

$$Y = \beta 0 + \beta 1\ (X1) + ui$$

Y: the dependent variable, which is the gross domestic product.
X1: The independent variable is the money supply.
B0: constant of the GDP function.
B1: coefficient of the independent variable (money supply).

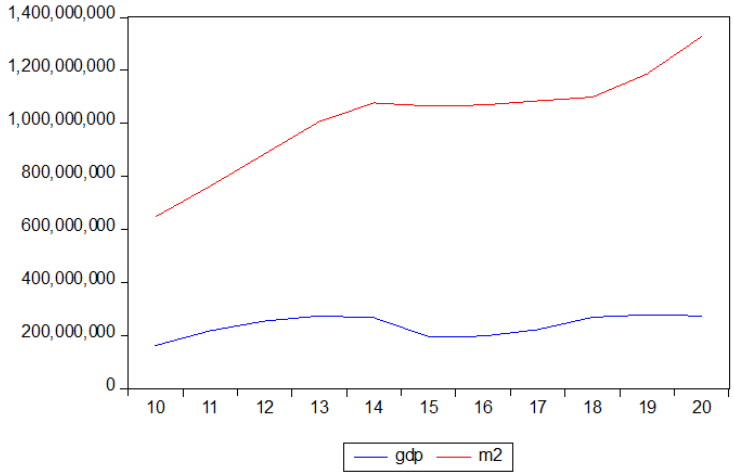
Statistical Data Compilation

Table 1: Statistical Data Compilation

the year	gross domestic product	money supply
2010	162064565.5	647630281
2011	217327107.4	763164936
2012	254225490.7	885301765
2013	273587529.2	1007563962
2014	266332655.1	1076605787
2015	194680971.8	1065164509
2016	196924141.7	1069225690
2017	221665709.5	1085224213
2018	268918874	1099233186
2019	277884869.4	1186441430
2020	273401871.7	1328127850

Source: Central Bank of Iraq 2010-2020.

Data Graphic Display



Source: App on Eviews10.

Descriptive Statistics for Data

Table 2: Descriptive Statistics for Data

Descriptive Statistics for Data	Gross Domestic Product	Money supply in the broadest sense M2
Mean	2.37E+08	1.02E+09
Median	2.54E+08	1.07E+09
Maximum	2.78E+08	1.33E+09
Minimum	1.62E+08	6.48E+08
Std. Dev.	40181725	1.91E+08
Skewness	-0.555791	-0.534549
Kurtosis	1.929813	2.800164
Jarque-Bera	1.091254	0.542165
Probability	0.579478	0.762554
Sum	2.61E+09	1.12E+10
Sum Sq. Dev.	1.61E+16	3.64E+17
Observations	11	11

Source: App on Eviews10.

The average gross domestic product of the sample under study for the period (2010 to 2020) was a value of (2.37), with a median of (2.54), the upper value of the average gross domestic product (2.78, and the lower value of 1.62), and the value of the standard deviation of the output (40,181,725), while the distortion coefficient was a negative value (0.555791) indicates that the frequency distribution curve is twisted to the left with a kurtosis coefficient of (1.929813), as shown in Figure (1).

The average money supply of the sample under study for the period (2010 to 2020) was a value of 1.02, with a median of (1.07), the upper value of the money supply (1.33), the minimum value (6.48), and the value of the standard deviation of the money supply (1.91), while the distortion coefficient was a negative value (-0.534549).) indicates that the frequency distribution curve is skewed to the left with a kurtosis coefficient of (2.800164), as shown in Figure (1).

To check how close the data are to the Normal Distribution: the Bera Jarque test was used through the "E Views" statistical software package, and the decision rule is to accept the null hypothesis that the data follows a normal distribution if the probability value of the test is greater than 0.05. Table shows No. (2) that all the variables under study follow the normal distribution, where the probability value (0.762554 -0.579478) is greater than 0.05, and thus there is no problem with the normal distribution.

Simple Linear Regression Model

Estimation and evaluation of estimation results: The Model Regression Linear Simple equation method was adopted to estimate the standard model to measure the effect of money supply on the GDP of the equation:

$Y = \beta 0 + \beta 1\ (X1) + U$

Table 3: The Table Below Shows the Results of the Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	**1.04**	**57061890**	**1.82**	**0.10**
MONEY SUPPLY	**0.130601**	**0.055105**	**2.37**	**0.04**
R-squared	0.384284	Mean dependent var		2.37
Adjusted R-squared	0.315871	S.D. dependent var		40181725
S.E. of regression	33235144	Akaike info criterion		37.63908
Sum squared resid	9.94E+15	Schwarz criterion		37.71142
Log likelihood	-205.0149	Hannan-Quinn criter.		37.59348
F-statistic	5.617127	Durbin-Watson stat		1.042605
Prob(F-statistic)	0.041906			

Source: Eviews10.

Evaluation of the Model According to the Economic Criterion

- The sign of the value of the constant is a positive sign with a value of (1.04), which represents the value of the Gross Domestic Product when the value of the independent variable (money supply) is equal to zero.
- The sign of the coefficient of the independent variable money supply is positive (0.130601) indicating that there is a direct relationship between it and the gross domestic product (gdp), and the probability value (0.04) is less than 0.05 statistical function at a significant level of 1%, meaning that the GDP is affected by a degree of confidence of 99% affected by the money supply Positively, that is, the higher the value of the money supply, the higher the value of the gross domestic product.
- The correlation coefficient shows that there is a direct positive relationship between the GDP and the money supply, as the value of Squared -R2 = 0.384284
- The Adjusted R-squared coefficient indicates that 31% of the changes in the GDP are explained by changes in the supply, and other factors not included in the model explain the remaining 69%.
- The value of F-STATISC = 5.61 came with a probability value of 0.04 less than 0.05, which indicates a significant regression and a significant effect of the independent variable money supply on the dependent variable GDP.

Autocorrelation Test Between Random Errors

Linear autocorrelation is considered among the most important problems facing standardists in their estimation of models, which leads to standard errors and thus wrong statistical tests. This problem occurs when the error limit for the time period is directly related to the errors of the period preceding it.
It is possible to test the presence of linear self-correlation for first-order errors using the Durbin-Watson test, after extracting the calculated value from the linear regression table and comparing it with the tabular values.
It is a value located in the acceptance region as shown (1.042605), and since the value of Durban Watson.
According to the table of critical values for Durbin Watson, when the number of observations is 11, the value of dl, du is equal to (0.93,1.32), and accordingly, according to the test of the Fuse program for simple linear regression, the value of Durbin Watson is equal to 1.042605, which is a value located in the acceptance region at a significant level of 0.05. k = 1 and n = 11, this indicates that there is no autocorrelation problem between the variables and that the model does not suffer from the autocorrelation problem.

Estimation of the Simple Linear Regression Model Equation

Based on the previous results, the relationship between money supply as an independent variable and GDP as a dependent variable was estimated.

$$Y = \beta 0 + \beta 1\ (X1) + ui$$

GDP= 1.04 + 0.130601 * (X) + ui

Through this equation, we can predict the value of the gross domestic product through the value of the money supply. We find that whenever the money supply increases by one unit, the value of the gross domestic product increases by 0.130601 units (one million).

Conclusion

1. Value Sign: The constant is a positive sign with a value of (1.04), which represents the value of the GDP when the value of the independent variable (money supply) is zero.

2. Coefficient sign: the independent variable money supply is positive (0.130601) indicating the existence of a direct relationship between it and the gross domestic product (gdp), and the probability value (0.04) is less than 0.05 statistical function at a significant level of 1%, meaning that the GDP is affected by a confidence degree of 99% by supply Money is positively affected, that is, the higher the value of the money supply, the higher the value of the gross domestic product.
3. The correlation coefficient shows: that there is a direct positive relationship between the gross domestic product and the money supply, as the value of Squared -R2 = 0.384284.
4. The Adjusted R-squared coefficient indicates that 31% of the changes in the GDP are explained by changes in the supply, and other factors not included in the model explain the remaining 69%.
5. The value of F-STATISC = 5.61 came with a probability value of 0.04 less than 0.05, which indicates the significance of the regression and the significance of the effect of the independent variable money supply on the dependent variable GDP.

The Reviewer

Central Bank of Iraq 2010-2020
Apply to Eviews10
Khalil, S. (1982). Monetary and Financial Theories and Policies.
Al-Dulaimi, A.F.I. (1990). Money and banks. *Dar Al-Hikma for Printing, Mosul*.
Al-Douri and Al-Samarrai, Zakaria and Yusra, 2006, Central Banks and Monetary Policy, Al-Yazuri Al-Alami for Publishing and Distribution, Amman.
Shkoukani, Hanan Muhammad, (2005). The impact of fiscal and monetary policy on economic growth in Jordan. Unpublished master's thesis, University of Jordan, Amman, Jordan
Al-Sadiq, Ali Tawfiq, 2005, Monetary Policies in the Arab Countries, Arab Monetary Fund.
Abdel-Hamid, A.M. (2007). The Economics of Money and Banking. *University House Alexandria, Egypt*, 285.
Bruce, Donald, and Coxwell, Tricia (2001). The Cuts and Interest Rates Cuts: An Empirical Comparison of the Effectiveness of Fiscal and MonetaryPolicy. http:// web-utk.edu/dbruce/SEA%20 Conference %20 Paper Pdf.
Cochrane, Johu. (1995), What Do the VARs Mean: Measuring the Output Effect of Monetary Policy. National Bureau of Economic Research NBER.