

تحليل تأثير السياسة النقدية على النشاط الاقتصادي العراقي (دراسة اقتصادية قياسية)

Analysis of the impact of monetary policy on Iraqi economic activity (An econometric study)

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Abstract:

The study explained, monetary policy, and the extent of its impact on the economies of the world in general and the Iraqi economy in particular, and the stages of the history of the development of monetary policy and its role in the nature of economic activity, as well as identifying the gross domestic product as it represents the basic criterion in Iraqi economic activity, through its definition And measured, and the research dealt with the impact of monetary policy analysis on Iraqi economic activity as an econometric study, based on the statistical program Aviose, starting with the normal distribution of variables and the Durbin-Watson test, and showing the impact and correlation of the effectiveness of monetary policy in the short and long term through the unit root model and the Johansen co-integration test, depending on Central Bank of Iraq data for the period(2004-2022).

The study showed that the problem of the research is the nature of drawing up the appropriate and influential monetary policy in the activity of the Iraqi economy, which therefore represents, if successful, the main goal in achieving economic stability through the role played by monetary policy in economic activity, and assuming the existence of an influential relationship between them.

Key Words: monetary policy, gross domestic product, unit root, Johansen.

المستخلص :

وأوضحت الدراسة، السياسة النقدية، ومدى تأثيرها على اقتصاديات العالم بشكل عام والاقتصاد العراقي بشكل خاص، ومراحل تاريخ تطور السياسة النقدية ودورها في طبيعة النشاط الاقتصادي، فضلاً عن التعرف على الناتج المحلي الاجمالي باعتباره يمثل المعيار الأساسي في النشاط الاقتصادي العراقي، من خلال تعريفه وقياسه، وتناول البحث أثر تحليل السياسة النقدية على النشاط الاقتصادي العراقي كدراسة اقتصادية قياسية، بالاعتماد على البرنامج الإحصائي. أفيسوس، بدءاً بالتوزيع الطبيعي للمتغيرات واختبار دوربين- واتسون، وإظهار تأثير ارتباط فعالية السياسة النقدية على المدى القصير والطويل من خلال نموذج جذر الوحدة واختبار يوهانسن للتكامل المشترك، اعتماداً على المركزي. بيانات مصرف العراق للفترة (2004-2022).

وبيّنت الدراسة أن مشكلة البحث تتمثل في طبيعة رسم السياسة النقدية المناسبة والمؤثرة في نشاط الاقتصاد العراقي، والتي تمثل بالتالي، في حال نجاحها، الهدف الأساسي في تحقيق الاستقرار الاقتصادي من خلال الدور الذي تلعبه السياسة النقدية. في النشاط الاقتصادي، وبافتراض وجود علاقة مؤثرة بينهما.

الكلمات المفتاحية: السياسة النقدية، الناتج المحلي الإجمالي، جذر الوحدة، جوهانسن

1.the introduction

Monetary policy is considered one of the most important economic policies at the macro level, as a result of the role it plays in achieving the goals of economic activity, along with other policies. Its importance comes from its great impact on economic activity. Any imbalance in the performance of the monetary system casts a shadow on the performance of the economic system. For its functions in terms of growth rates and the level of gross domestic product.

The use of the term monetary policy dates back to the nineteenth century, and it was studied more in the twentieth century as a result of the impact of the Great Depression in the year (1929-1933), as a result of the economic instability of the capitalist countries from its century itself.

Through the data that was used by the Central Bank for the period (2004-2022), the study reached the extent of the impact of monetary policy represented by the money supply and the exchange rate on Iraqi economic activity, and the nature of economic variables that are reflected in the nature of the domestic product, so the aim of the study is the impact of politics Cash on GDP for the period (2004 - 2022) in the short term by testing the unit root and choosing the appropriate model for the Iraqi economy, which is the Phillips-Berron model, and in the long term, the Johansen joint merger test, which was conducted during the study period.

2.Structure of The Study

2.1.Research problem: It is the nature of drawing monetary policy, and what is seen in the activity of the Iraqi economy is a view that represents the weakness of monetary policy tools within the economy.

2.2.Research objective: achieving economic stability through the role played by monetary policy. in economic activity.

2.3. The importance of the research: the role that monetary policy plays in the Iraqi economic activity, especially on the gross domestic product, being the basic criterion in the activity

2.4. Research hypothesis: There is a direct relationship between monetary policy and economic activity represented by the gross domestic product.

2.5 Research methodology: The study included a theoretical aspect between the two main variables, which are the monetary policy represented by the exchange rate, and the money supply as two independent variables, and another variable represented by the Iraqi economic activity, represented by the gross domestic product as a dependent variable, and a quantitative aspect represented by the analysis of statistical models that began with the normal distribution of variables and ended with the co-integration model.

3. Previous studies

Previous studies, which dealt with the quantitative side, are as follows:

(Ka-Fu Wong,2000), Studies have shown that there is a positive effect in the short term and a neutral effect in the long term, during the study period (1959-1994), in the United States.

(Osasohan Agbonlahor,2014), The study showed that there is a long-term relationship between monetary variables and the United kingdom economy, for the duration(1940-2012).

(Khaysy Srithilat & Gang Sun,2017), It showed that there is a relationship in the short term and the long term during the study period (1989-2016), From the Lao People's Democratic Republic.

4 .Search method:

Using the theoretical side and the quantitative side to show the effect of monetary policy through its tools represented by the exchange rate (ER) and money supply (M2), which represent two independent variables on the dependent variable, which is the gross domestic

product in the short run, using the unit root test and the effect of the exchange rate and money supply in the long run using integration The participant through Johansen cointegration Test , for the period (2004-2022), as well as displaying the data using graphs.

5. The theoretical framework for monetary policy and domestic economic activity

5.1. Concept, stages of development and role of monetary policy

5.1.1 The concept of monetary policy

is a set of tools provided by the central bank of the state, to enhance its economic growth, by controlling the total money supply available to the state's banks, customers, and companies.

Central banks aim behind monetary policy to influence economic activity. In addition to adjusting the interest rate ,(Bernanke, Ben and Alan Blinder, 1992), central banks use several tools to adjust monetary policy, including buying or selling government bonds, regulating foreign exchange rates, and determining the amount of money that banks must keep in reserve.(monetary Bernanke, Ben and Alan Blinder, 1992:24) (Alper, Emre and Ziya Onis, 2003:73) . Economists, analysts and investors await the decisions of the Monetary Policy Committee, because of their long-term effects on the overall economy, and on specific sectors and industries(Berument, Hakan and Bilin Neyapti, 1999:65).

5.1.2. Stages in the history of monetary policy development

In this context, the most important different economic theories about the role and impact of monetary policy on macroeconomic variables, and the extent (Labonte, Marc,2013), of its effectiveness in changing the paths of those variables, as well as the justifications for those opinions based on the views of their owners and supporters, are discussed in this context(Sayan, Serdar and Hakan Berument, 1997:323).

4.1.2.1.Monetary policy within the framework of the classical school:

The classical school explained the importance of the money supply in influencing economic activity, in order to achieve the economic goal, since the money supply has a direct and significant impact on prices, compared to the extent of its impact on economic activity, and the level of balance of production and work is achieved through market forces, in addition to that The rates of change in prices are equal to the rates of change in the quantities of money minus the rates of change in production, assuming that the speed of money circulation is constant. (Edwards, Cheryl L,1990:76).

5.1.2.2. Monetary policy within the framework of the Keynesian school:

John Maynard Keynes criticized the classical school, its view that equilibrium is always achieved at the level of full use, and believes that its occurrence occurs at lower levels of full use or at its full level, and in this regard criticized its assumption of Say's law for neglecting the level of aggregate demand On the one hand, and its disagreement with what it adopted regarding the flexibility of prices and wages and their susceptibility to rise and fall until automatic equilibrium is achieved at the level of full use(Grenville, Stephen,1997:98).

Where Keynes sees aggregate demand as a direct determinant of the level of production, it is not necessary that it coincide with the size of total income and that their difference causes either unemployment (excess productive capacity) or inflation (the rise in the general level of prices).

5.1.2.3.Monetary policy within the framework of the monetary school:

There are some opinions that are identical to the classical school, and this school is complementary to the classical school. The difference is only in the speed of money circulation, in this school it is variable and not fixed (Cobham, David,2000:23:88).

5.1.2.4. Monetary policy within the framework of the school of rational expectations:

The summary of what this school came up with is the assumption that economic units, and through what they can obtain from information about monetary and financial economic phenomena and variables, will enable them and make them be able to build their future expectations, and the most important of these expectations is what individuals can expect in relation to prices in The future and the results of the economic policies pursued by the state based on what happened in the past for such policies.

With regard to monetary policy, Lucas believes that monetary changes through the money supply lead to periodic fluctuations in the economy, and as a result, the response of changes in real gross national product to changes in monetary policy decreases, and thus reduces the effectiveness of this policy, especially when enough time passes and people get to know on the manner in which this policy is developed.

The ability and expectations of the private sector regarding policy measures, especially in the early stages of the monetary policy that it wants to take, has a major role in analyzing policies and their future in achieving their goals, and in order for individuals to be able to know the results of their economic decisions and in order for their expectations to be rational, monetary policies must be clear and announced for the coming periods. .

Thus, when wages and prices are flexible, the nature of monetary policy, which is characterized by flexibility, is unsuccessful, as a result of economic expectations affecting the nature of real output in the short and long term.

Based on the views of the proponents of this hypothesis, when eliminating and generalizing monetary policy, expectations must be taken into account to reduce uncertainty, and it supports a fixed-rate money supply policy (Tobin, James, 2005:65).

5.1.2.5 .Monetary policy in the context of supply-side economics:

This school emerged in the late seventies of the twentieth century after it became clear to most of its economists, including (Arthur Laver, Craig Robertson, and Norman Teeor), that the method of economic policies that were directed to influence macroeconomic variables has become an unsuccessful means, whether by the method of moving aggregate demand Or through the measures of the strict monetary authorities, and despite the agreement of most economists on the importance of monetary policy in affecting unemployment and output in the short term, the economists of this school realized the need to confront the risks of inflation and unemployment not through strict monetary policies or cutting expenditures until they were described bitter treatment.

As the economists of this school see the supply of goods and services as the most important determinant of economic growth, and thus it contradicts the Keynesian theory in its reliance on aggregate demand because demand can falter. Producers' desires to provide and create goods and services to raise and influence economic growth, and on this basis, supply-side economists prefer expansionary rather than strict monetary policies (Berument, Hakan and Bilin Neyapti, 1999:98).

5.1.3.The role of monetary policy

The role of monetary policy in economic activity is considered an important and influential role, and therefore the monetary authority uses monetary policy tools to achieve the objectives of the required economic activity, and the role of monetary policy in this field is to bring about changes in some or all monetary tools, and certainly the effectiveness of monetary policy

depends on The nature of the prevailing monetary system in an economy, is the economy concerned, in which the monetary and financial system is strong or weak, such as the diversity of the degree of financial investment is large and contributes to the movement of economic activity is greater and vice versa, the greater the degree of investment, the greater the nature of the activity, in addition to that great role that Monetary policy plays a role in monitoring the movement of economic activity, which contributes to the sustainability of economic stability(Tobin, James,2005:76).

5.2. Concept, measurement of the components(GDP), and factors affecting the gross domestic product

5.2.1. The concept of gross domestic product

It can be defined as expressing the sum of the values of goods and services within a specific country, and over a period of time, usually a year.

In other words, it is possible to define that economic indicator that measures the monetary value of the total goods and services that were produced within the country during a specific period of time.

The Gross Domestic Product represents the productive activity of all residents of a given country, including foreign companies operating in that country, while the Gross National Product, which measures the productive activity of all persons of a particular nationality, regardless of their place of residence(Leeper, Eric M. and David B. Gordon:98).

5.2.2 .measure gross domestic product

Gross domestic product is measured by the total expenditure method, as it is measured by taking into account all final expenditures that occurred during a specific period in the economy, as it can be measured as follows: (Frankel, J., 1987:87)

5.2.2.1 .own consumption expenditure (c)

It represents the consumption expenditures of households, and thus expresses the measure of the financial value of consumer goods and services that were purchased by those households and non-profit institutions during the period of calculating the gross domestic product, and during a certain period of time.

5.2.2.2. investment expenses (I)

It represents each of the physical stock of capital, housing construction, machinery, factories, offices, etc., during a certain period of time.

Investment expenditures can be categorized into four types, namely fixed investment for business, investment in inventory, investment in residential construction, and public investment.

5.2.2.3. Government procurement of goods and services (G)

This measure includes government spending on goods and services, and includes the purchase of intermediate goods and wages and salaries paid by the government, as a result of considering that all government purchases are an alternative measure of government production, as these government purchases are treated as part of final production, and therefore, payments are not counted Transfer by the government to households and businesses, in order to avoid double counting in GDP, where consumption or investment by the recipient of transfer payments is counted in private consumption spending and investment spending.

5.2.2.4. net exports (X – M)

Net exports represent the difference between domestic spending on foreign goods (imports) and foreign spending on domestic goods (exports), so the difference between them represents net exports (XM).

5.2.3. Factors affecting the gross domestic product

There are many factors that contribute to the impact on the gross domestic product, the most important of which are as follows: (Edison, H.J. and R.W. Tryon, 1988:123)

5.2.3.1. recreational preference

As a result of technological progress, the average productivity in general increases, including the labor force, in most industrialized countries, which allows workers free time that allows them to entertain more, and although their activities enhance their well-being, their extra hours of leisure are not priced. in the markets and thus is not reflected in the GDP.

5.2.3.2. Non-marketing activities

Some important activities in the economy are not bought and sold in the market, such as non-market economic activities. Therefore, it has been omitted from the gross domestic product such as: unpaid housekeeping services, voluntary services for non-governmental organizations and educational services provided free of charge to poor children, and although these services are unpaid and unpriced, they increase welfare, but they were omitted from Gross domestic product due to the difficulty in estimating its market value.

5.2.3.3. Underground Economy

There are many economic activities that are carried out informally, which is called the lined economy, and it includes both legal and illegal activities, which are not included in the calculation of the gross domestic product, such as: private nursing, house cleaning and childcare. Where it is possible House cleaners or plumbers are paid in cash, without anyone noticing these transactions and without being taxed, yet such activities have an effect on welfare either by an increase or a decrease.

5.2.3.4. Environmental Quality and Resource Depletion

The expansion of the industrial bases of countries has affected, in one way or another, the quality of the environment in countries, such as the decrease in air and water quality and the increase in environmental pollution that causes a decrease in the quality of life, and because of the inability to buy and sell air and water quality in the markets, the GDP does not reflect this negative aspect of economic growth, as Integrating specific factors such as air quality and resource depletion into a comprehensive measure of GDP is difficult.

5.2.3.5. Quality of life

There are many different factors that may make some countries an attractive place to live in, and some of these factors and desirable characteristics may be reflected in the gross domestic product, such as: spacious, well-built homes, good-star hotels and restaurants, however, other indicators of a good life are not sold and bought in Markets, such as: low crime rate, minimal traffic congestion, active civic organizations and open spaces, thus these last factors will not be accounted for in GDP.

5.2.3.6. Poverty and Economic Inequality

Gross domestic product measures the quality and total quantity of goods and services produced and sold in the economy, but it does not convey any information about who enjoys these goods and services. ; People's economic satisfaction does not depend only on their absolute economic

status as measured by the quantity and quality of food, clothing and shelter they have, but by comparing it with others,(Cushman, David O. and Tao Zha, 1997:32).

5.3.The relationship between monetary policy and gross domestic product in Iraq

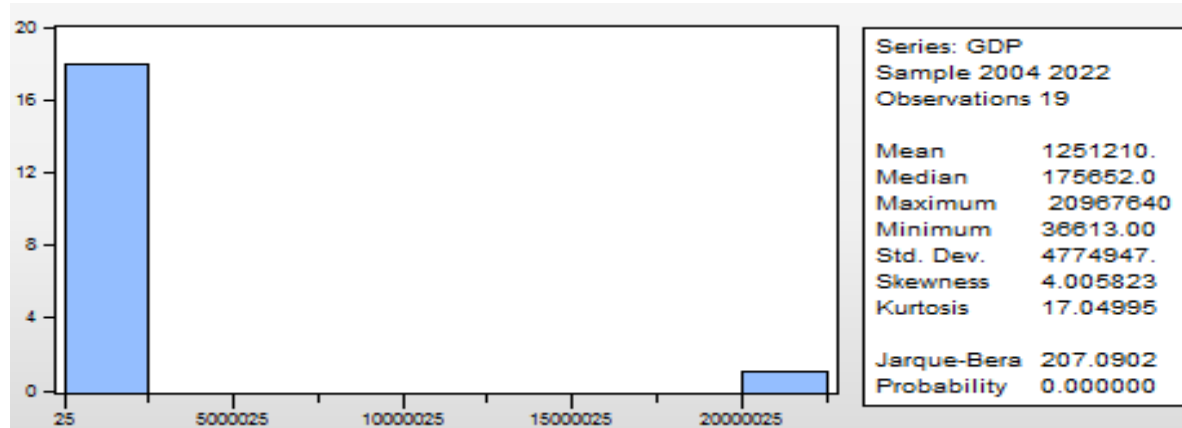
The relationship of monetary policy to the Iraqi gross domestic product for the period 2004-2022, and within the framework of the relationship between politics and gross domestic product, economic theory emphasizes the existence of a relationship between the two variables, gross domestic product (GDP), the dependent variable, and monetary policy tools represented by the money supply and the exchange rate, and that there is an impact relationship For example, any change in the money supply through an expansionary monetary policy leads to a decrease in the interest rate, and with the prevailing state of optimism among businessmen, an increase in investments will be a result of a decrease in the interest rate in light of the inverse relationship between investment and the interest rate, which generates A double increase in income, which in turn increases aggregate demand, which will constitute an incentive to increase the gross domestic product, and the situation is reversed in the event that the monetary authority follows a contractionary policy, when you reduce the money supply, a rise in interest rates will generate a decrease in investment and income with a decrease in aggregate demand, which generates A decrease in output. Through the foregoing, the direct relationship between monetary policy and gross domestic product becomes clear, and to infer the relationship of monetary policy to the Iraqi gross domestic product for the period 2004-2022, it can be analyzed later statistically(Berument, Hakan and Bilin Neyapti, 1999:78).

6. Analysis of the results of monetary policy and gross domestic product

6.1. Examination of variables: Jarque – Bera test model .

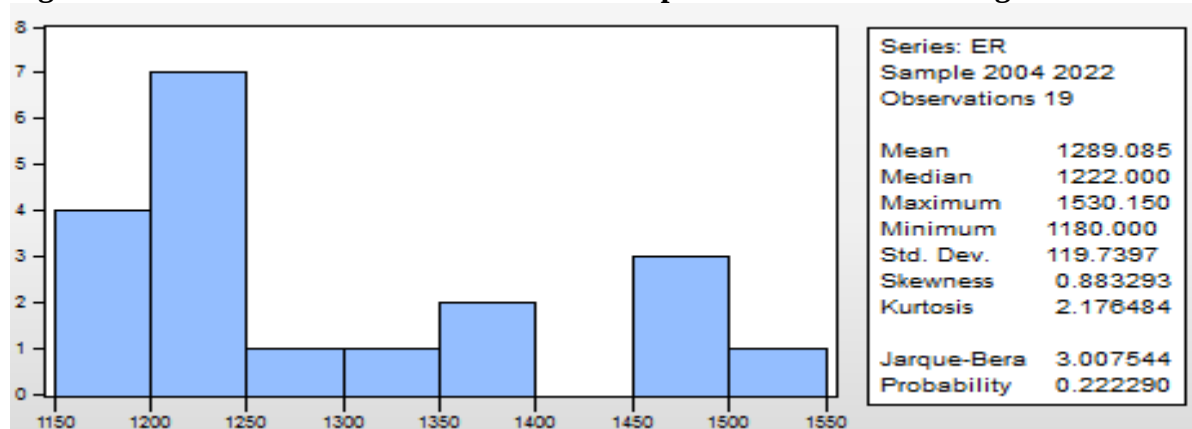
Jarque – Bera test : $P < 0.05$; Not Normal distribution , $P > 0.05$; Normal distribution

Figure with table 6.1.1 . Examination of the dependent variable gross domestic product(GDP)



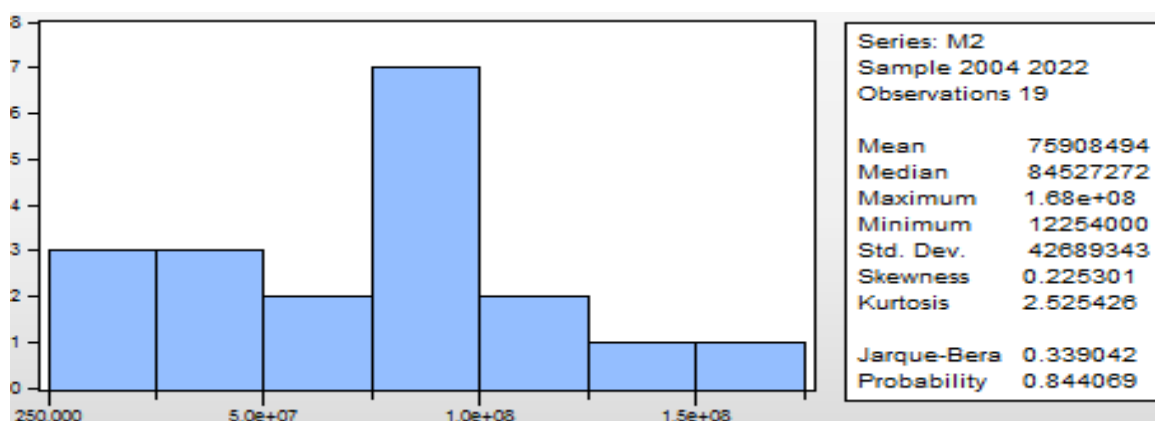
Jarque – Bera test : $P < 0.05$; Not Normal distribution, That is, it does not follow the normal distribution, and thus accepting the allowance hypothesis and rejecting the null hypothesis.

Figure with table 6.1.2. Examination of the independent variable exchange rate



Jarque – Bera test: $P > 0.05$; It is a normal distribution by Probability(0.222290), that is, the exchange rate, which represents an independent variable, follows the normal distribution, thus accepting the null hypothesis and rejecting the alternative hypothesis.

Figure with table 6.1.3 Examination of the independent variable money supply(M2)



Jarque – Bera test: $P > 0.05$; It is a normal distribution As indicated by Probability(0.844069).

Source: search results

Figure 6.2 Darbin Watson test for autocorrelation between random errors

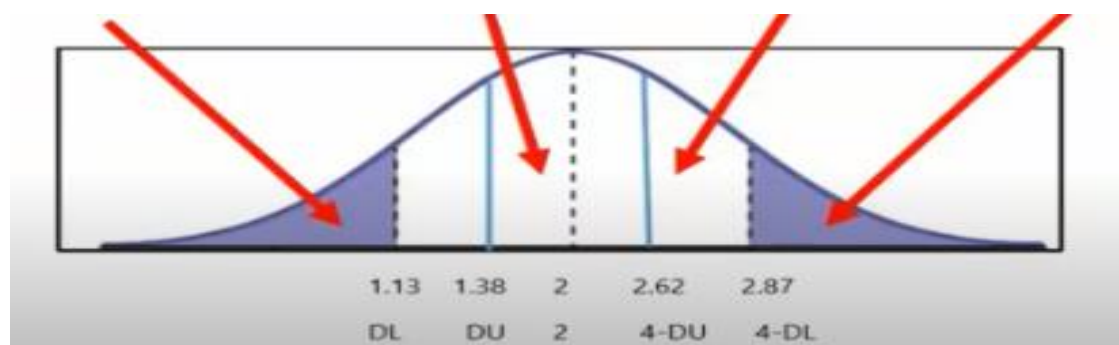


Table 6.2.1 The value of the Darbin Watson test:

Dependent Variable: GDP

Method: Least Squares

Date: 04/03/23 Time: 03:58

Sample: 2004 2022

Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ER	1118.673	835.8673	1.338338	0.1974
R-squared	0.024584	Mean dependent var		1251210.
Adjusted R-squared	0.024584	S.D. dependent var		4774947.
S.E. of regression	4715888.	Akaike info criterion		33.62197
Sum squared resid	4.00E+14	Schwarz criterion		33.67168
Log likelihood	-318.4087	Hannan-Quinn criter.		33.63038
Durbin-Watson stat	1.070820			

Table 6.2.2The value of the Darbin Watson test: (1.070820) is located in the positive region, so we accept the suit hypothesis and reject the null hypothesis.

Dependent Variable: GDP

Method: Least Squares

Date: 04/03/23 Time: 04:11

Sample: 2004 2022

Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
M2	0.026430	0.011535	2.291300	0.0342
R-squared	0.169697	Mean dependent var		1251210.
Adjusted R-squared	0.169697	S.D. dependent var		4774947.
S.E. of regression	4350979.	Akaike info criterion		33.46090
Sum squared resid	3.41E+14	Schwarz criterion		33.51060
Log likelihood	-316.8785	Hannan-Quinn criter.		33.46931
Durbin-Watson stat	1.178272			

The value of the Darbin Watson test (1.178272) falls into uncertainty.

6.3. Unit root test

6.3.1. Unit root test by choosing a statistical model for the Phillips-Perron test(PPT), for the dependent variable, gross domestic product(GDP).

Table 6.3.1.1.Phillips-Perron Unit Root test on D(GDP,2)

Null Hypothesis: D(GDP,2) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-14.52837	0.0000
Test critical values:		
1% level	-3.920350	
5% level	-3.065585	
10% level	-2.673459	

We accept the alternative hypothesis with a significance level (0.0000) less than 1% and less than 5% as well, and we reject the null hypothesis.

6.3.2. Unit root test by choosing a statistical model for the Phillips-Perron test(PPT), for the Independent variable, gross domestic product(ER).

Table 6.3.2.1. Phillips-Perron Unit Root test on D(ER,2)

Null Hypothesis: D(ER,2) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 15 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-6.581882	0.0004
Test critical values:		
1% level	-4.667883	
5% level	-3.733200	
10% level	-3.310349	

6.3.3. Unit root test by choosing a statistical model for the Phillips-Perron test(PPT), for the Independent variable, gross domestic product(M2)

Table 6.3.3.1 Phillips-Perron Unit Root test on D(M2,2)

Null Hypothesis: D(M2,2) has a unit root
Exogenous: None
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

	Adj. t-Stat	Prob.*
Phillips-Perron test statistic	-4.334387	0.0003
Test critical values:		
1% level	-2.717511	
5% level	-1.964418	
10% level	-1.605603	

Through the unit root test, a table can be extracted that shows the level and all of the following: **Table 6.3.4.**

variable	Level		First deference	
	PPT Statistics	Result	PPT Statistics	Result
GDP	-4.217672	Non	-14.52837	Stationary
ER	-6.218673	Non	-6.581882	Stationary
M2	-1.217679	Non	-4.334387	Stationary

Through the above table, it is clear to us that all variables reject nullity in the absence of a unit root and at the level of the second degree, and all variables at a significant level of less than 1%.

6.4. Cointegration and the use of Johansen cointegration Test

Table 6.4.1 .Johansen cointegration Test

Date: 03/31/23 Time: 13:24
Sample (adjusted): 2006 2022
Included observations: 17 after adjustments
Trend assumption: Linear deterministic trend
Series: GDP ER M2
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.659490	30.45247	29.79707	0.0420
At most 1	0.443579	12.13816	15.49471	0.1504
At most 2	0.119953	2.172251	3.841466	0.1405

After conducting the integration test, it was found that (Non), which shows the existence of one integral, while it was found that (At most 1) and also found that (At most 2), and according to the rule, if there is an integration in one of them, the existence of integration can be judged by testing the model Johansen cointegration, and the existence of integration can also be clarified by By comparing the trace statistic with the critical value, in which the value of the critical value is less than the trace statistic, By accepting the alternative hypothesis and rejecting the null hypothesis

7. Conclusion and Recommendation

7.1. Conclusion

- By reviewing the study, it was found that the appropriate model for the Iraqi economy is the Phelps model, for the slowdown period, and all independent tests and the gross domestic product at the first level.
- Monetary policy through its tools, which is represented in this study by the money supply and the exchange rate affects the Iraqi gross domestic product more accurately, since the latter is one of the basic criteria for economic activity and thus the impact of monetary policy on economic growth in general, in the short and long term through the results of tests that were conducted on The subject of the study.

7.2. Recommendation

- Reforming the monetary policy program, and keeping pace with the development taking place in the economies of developed countries.
- The need to increase the value of the Iraqi dinar, to achieve economic stability, to reduce the increase in the money supply, and to get rid of the problem of monetary inflation.

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