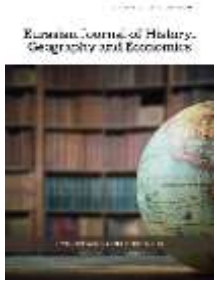


The impact of monetary policy on economic growth in Iraq during the period (2003-2020)

Dr. Prof. Sami Obaid Muhammad Al-Tamimi
University of Basra -Iraq- College of Administration and Economics - Department of Economics
extract

Shahad Hassoun Radhi Attia
University of Basra -Iraq- College of Administration and Economics - Department of Economics
extract

ABSTRACT

This study aims to demonstrate the impact of monetary policy on economic growth by applying to the state of Iraq during the period 2003-2020. The analytical descriptive approach was relied on, using a standard model that was applied using time series and joint integration to show the impact of monetary policy.expressed in terms of the money supply (M1,M2,M3)on economic growthexpressed as an average per capita GDP)The study reached a number of results, the most important of which are; That time series is variableshe sawThe model is unstablee in the levelWhile he found thattime seriesstraightsee when takingfirst differences,Whichthat changes inIngredientsTheMnakedAnd thez cash(M1,M2,M3)emotionally affectThe average per capita share ofGDP,And theThere is a positive relationship and a clear effect in the short term and at a high levelybetween variableatThe independent and the dependent variable and then this effect begins to fade relatively with the passage of time in the long run. recommendTresearchereThe necessity of coordinating economic policies to increase economic growth rates to achieve comprehensive and sustainable development.
At the end of this study, the researcher presented the results, recommendations and references on which the study relied

Keywords: Monetary policy, economic growth, theMnakedAnd thez cash, the average per capita

Introduction : It became clear the interest in the practice of monetary policy during monetary crises, and its role emerged with the development of central banks and the increase in their specialization, as monetary policy is one of the most important means of economic policy adopted by the state to achieve various economic purposes, and monetary policy seeks to achieve one of the important economic goals, which receives great attention One of the economic authorities in various countries at the present time, which is raising the rate of economic growth, which is defined as the rate of increase that occurs in the state in the level of the real output of society resulting from the effective exploitation of economic resources and by increasing worker productivity and technological progress. High focuses on maximizing the exploitation of available economic resources, the goal of economic growth focuses on maximizing the productive capacity of the economy.

Research importance: The importance of this study lies in the topic's novelty and importance, especially since Iraq is still in the reform stage,

and it also results from the importance of research into the challenges faced by the Iraqi economy during the period of reform.the study,Which forced him to correct his monetary policy to keep pace with developmentsGlobalism,as soughtIraq.

Research problem:

1- What is the impact of monetary policy on economic growth in Iraq?

2- Does the increase in the size of the money supply affect theaverage per capita.

Hypothesessearch:

Changes in the money supply in the economyIraqi himRelationship to the change in the average per capita GDPTotal,From this main hypothesis a group of the following partial hypotheses emerge:

1- There is a direct relationship between the money supplyand averageGDP per capita inIraq.

2- The direction of the causal relationship is from the money supply towards the average per capita GDP

3- NoThere is nutritionThe inverse of the money supplyand averageper capita GDPTotal.

Objectives of the study:that goalsThe objectives of this research are:

1- To highlight the impact of the money supply on the average per capita GDP

2- Analyze and track the development of each policypurifyfriendlyand shownThenoldand averagePer capita GDP in Iraq

3- Knowing the quality of the relationship between the money supply and the average per capita share of GDPTotal,To infer the extent of the effect that each variable has on the other variable.

Study Methodology: The analytical descriptive approach was relied upon in studying the ideas and the theoretical framework of monetary policy and its impact on economic growth, using some standard methods that help in the analysis process and showing the impact of monetary policy and economic growth.

(Eviews12) in conducting a causal testkrangerAnd testing the joint integration model, which depends on the data of the Ministry of Planning and the Central Bank of Iraq.

The limits of the study The study is limited to the following limits:

1- Objective limits: The study is limited to knowing the impact of monetary policy (components of money supply) on economic growth inIraq representedin per capita GDPGDP during the period (2003-2020).

2- Time limits: the applied study was conducted on economicsIraqi throughThe period (2003-2020) as this period witnessed monetary developments.

Study axes: This study is based on several axes, namely:

The first axis: the theoretical framework of monetary policy and economic growth.

The second axis: the evolution of monetary policyand componentsMoney supply in the economyIraqi throughperiod (2003-2020).

The third axis:Average per capita GDPin the economyIraqi throughperiod (2003-2020).

Fourth axis: Presentation and analysis of the results of the econometric model in economicsIraqi throughperiod (2003-2020).

The first axis:Conceptual framework for monetary policy and economic growth

First, monetary policy

Monetary policy represents one of the most important elements of economic policies that can be used to achieve the economic goals of society, where monetary policy aims mainly to influence the money supply, as 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 that the monetary authorities represented by the Central Bank, through this role as the highest monetary authority, can achieve specific vital goals in accordance with the priorities determined by the economic problem that the economy suffers from. Sometimes the monetary authority uses intermediate goals such as the money supply to achieve an ultimate goal such as price stability and reducing inflation. The concept of monetary policy is a set of procedures used by the monetary authority to

influence the money supply and direct credit by using certain monetary means for the purpose of reaching the achievement of economic goals (Shehab, 227 , 2013) .

Second: the money supply

Also referred to as the money supply-A quantity of mother-And traded in economy total in any time-t fromThe times, no doubtto General consists ofThe money supply of the currency in Trading + depositsbanking,so mess up-The displayed size is the price-Di according to size and nature-Bank deposits entered into money supply. (Al-Issa, picking283,2016,)

Meaning-On the other hand, the money supply means-j is the absolute amount of purification-Wed available in The-society, and takes the monetary exhibition as a means-l Payment three forms (M3, M2, and M1), which represent measures to measure the different estimates of the money supply. (Soliman and others, 160, 2020).

Third, the concept of economic growth

Economic growth is an indicator that is not easy to define comprehensively, as more than one concept is used, and economic growth reflects quantitative changes in production capacity and the extent to which this energy is exploited (Al Wazni and Al Rifai, 381, 2007). canDefining economic growth as the rate of increase in production or real income in a country during a certain period of time, and economic growth reflects quantitative changes in production capacity and the extent to which this energy is exploited. National and vice versa. (Erekat, 26, 2006).

The second axis:monetary policy developmentand componentsMoney supply in the economyIraqi throughperiod (2003-2020).

First: The course of monetary policy in Iraq during the period 2003-2020

Monetary policy is an important part of the country's macroeconomic policy, due to its large and effective role in regulating the monetary exhibition, controlling the levels of monetary liquidity, and the volume of credit. After 2003, the monetary authority in Iraq took a set of important measures and steps at the monetary level, aimed at coordinating With the financial policy, including: (Al-Obaidi, 91, 2017)

1- Issuance of the new Central Bank of Iraq Law No. 56 of 2004 after monetary policy under Law No. 64 of 1976 was a tool linked to fiscal policy and random spending policies. This law guarantees the independence of the Central Bank in drawing up its monetary policy and implementing it on the basis of unconventional procedures commensurate with the environment The Iraqi economy, especially its orientation towards a market economy.

Here it is necessary to refer to the concept of independence, which means three main points: (Al-Khazraji, 8, 2010).

A- Not to lend directly or indirectly to the government.

B - Not receiving orders from the government in managing monetary policy tools.

C- Presenting its accounts to the external auditor in accordance with international auditing standards for central banks, but this independence is within the government, and cooperation and consultation in achieving the state's economic goals cannot be denied. In addition to the developments of monetary policy in Iraq under the new legislative structure, the issuance of the "Banks Law No. (93) for the year 2004" to form the basis for banking institutions and thus enhance confidence in them.

2- Replacing the old currency with a new one, as the critical stage in managing monetary policy began after replacing 4 trillion of the old currency with a new one on January 15, 2004, which helped to achieve a number of positive advantages, including the unification of the currency throughout the country, improving The permanence of the currency and the reduction of counterfeiting operations, and the adoption of a unified currency used throughout Iraq after there were two types of currencies, which were metaphorically called the paper dinar printed in Baghdad and the dinar printed abroad (Swiss version), which restored confidence in the Iraqi dinar as well as abolishing the phenomenon of multiple Exchange rates for the Iraqi dinar and the elimination of the price difference between the

different versions of the currency. (Al-Mamouri, Al-Nadawi, 2011).

3- The monetary authorities sought to activate the role of interest rates in addressing inflation and the expectations resulting from it. In 2003, the interest rate was liberalized and an interest rate was adopted for monetary policy as a signal and an operational goal through which it sought to adopt a policy of restricting the impact of the expansion of government spending in both its current and investment sectors. With the goal of containing and restraining the inflationary pressures of this spending.

4- Reducing the interest rate in a way that stimulates bank credit and encourages an increase in private sector investment in productive areas in line with the state of financial stability and low levels of inflation.

5- To confront inflation, monetary policy worked to achieve the goal of stability by relying on the reference to the nominal interest rate, considering it the cash price, and the exchange rate signal to represent the external value of money. (Al-Obaidi, 92, 2017)

6- One of the monetary policy developments after 2003 was the issuance of the "Anti-Money Laundering Law No. (93) for the year 2004," which refers to the central bank's role in combating money laundering. (Shendi, 10, 2016).

From the above we note that there are many developments that had an impact on monetary policy in Iraq, but there are still some distorted features of monetary policy in Iraq, including:

First: the increase in the money supply at rates higher than the increase in the gross domestic product, and this indicates a move away from the monetary stability index to the correct indicator.

Second: The improvement in the value of the Iraqi dinar and the stability of price trends led to the addition of hidden income to the nominal wage and the maximization of the real wage at the expense of reduced productivity, and as a result, consumption and saving rates rose in light of the loss of the ability to convert these savings into local investments capable of meeting the requirements of the local market, While the increase in consumption rates tended to increase the demand for foreign goods at a high rate, the savings made their way abroad, which worked to enter the country's economic activity into a state of continuous stagnation, especially in the real non-oil sector, as a result of dumping the country in consumer goods. Imported at the expense of unemployment and stagnation in the main sectors of the economy (agriculture and industry), and then make the environment of the Iraqi economy a generator of negative economic activity, and this can be called the "Iraqi economic disease" compared to the Dutch disease in the economy.

Third: Separating monetary behavior from the real behavior of monetary policy adopted by the Central Bank, as the Central Bank announced through its economic report issued in 2008, that it adheres to a monetary framework based in its regulation of the internal nominal stabilizer on the "Taylor rule" in its application of the monetary inflation targeting framework, as This rule is based on making the interest rate a direct function in both inflation and the real output gap, and therefore the interest rate is raised when the actual inflation rate exceeds the target inflation rate and decreases when the economy is heading towards recession, but when analyzing the Iraqi economy we find that there is a separation between Changes in the interest rate and changes in output, that is, they are in line with an ambiguous relationship, because distortion of the real sector makes it incompatible with changes in interest rates. (Shendi, 10, 2016).The monetary policy in Iraq during this period was characterized by a new monetary path completely different from the previous one in terms of the introduction of new monetary tools by the Central Bank in addition to its traditional set of tools (direct and indirect),Where these tools represented a new formulation of his role in directing monetary policy to work with markets, and other securities markets to create a payment system and manage banks' liquidity more effectively, especially managing short-term liquidity and encouraging these banks to deal with each other more broadly instead of being Limited in dealing with the Central Bank in managing liquidity, and that the lack of a developed financial market in Iraq caused a deficiency in the use of indirect monetary policy means, and

in this regard, the Central Bank of Iraq abandoned the condition that commercial banks possess government securities equivalent to 10 % of the deposits volume, and although the Central Bank Law did not specify the tools that the Central Bank resorts to to implement its policy, it later issued a press release in which it identified the effective tools that affect the liquidity market, and they are as follows: (Kazim, Sahib, 221) 2017).

A- A foreign currency auction in which the Central Bank buys or sells dollars from or to the market in light of its political objectives.

B- A list of legal reserve requirements that banks depend on their holding according to public deposits, that is, at varying levels with the Central Bank of Iraq, and cash in safes and securities in the Ministry of Finance.

C- Exposure facilities for banks that have reserve accounts with the Central Bank of Iraq, but they are not sufficient to settle their obligations at the end of the banking business day.

d- Discount window on bills of exchange or similar banknotes with a lifespan of less than 90% and ratified by at least two signatures (currently imposed at 11% for first-class securities).

T- Lending facilities of last resort, which are granted to banks that suffer from chronic liquidity problems in return for a guarantee provided by them.

g- The Securities Window at the Ministry of Finance, under which banks buy or sell these government securities at their nominal value (ie, at the interest rate upon issuance).

Second: The evolution of the money supply in Iraq during the period (2003-2020)

The money supply is one of the most important monetary variables that reflect the picture of the economic situation at a particular point in time, and it is called (monetary mass). Changes in it lead to important changes in other economic variables such as output, prices, exchange rates and interest rates, and the central bank is the monetary authority that controls the money supply, whether through the issuance of legal money, the monetary multiplier, or banking credit and supervision.

The philosophy of monetary policy with regard to the variable money supply is based mainly on the idea of-As measures enable the authorities-cash from controlling monetary expansion at a constant and stable rate-t with the GDP growth rate-And with the needs of dealers in the economy, as it is the method that reduces economic fluctuations and leads to more independence.-It reduces the element of uncertainty as seen by the critics: (Al-Fatlawi, 2017, 84) We will analyze the money supply in Iraq according to its main components, as follows:

First: the evolution of money supply in the narrow sense (M1):

The money supply depends in the narrow sense (M1) on two main components, namely, the net currency in circulation-and current deposits, however, the ratio of these two components-Rin varies from country to country-from one to the other, to make you happy-Q. This contradiction in the application of-The impact of the monetary and banking environment on the economy, as the period (2003-202 witnessed0The continuation of the money supply in the narrow sense, increasing from (2,898,189) billion dinars in the year-Mother (2003) to (1 .)03,553,556(Billion dinars in (2020) and at an annual rate of change)19.11%) As a result of the strategy followed by the new monetary policy in managing the growth rates of the narrow money supply to maintain the value of the currency, And the large cash issuance carried out by the Central Bank of Iraq for many reasons, such as replacing old Iraqi currencies, and the surplus of foreign cash reserves as a result of the rise in crude oil prices, because the latter is the source of foreign currency and the consequent increase in spending in the general class of the state, encouraged to increase-The House of Criticism in the Economy (Kadhim et al., 121, 2019)

Table (3)
The evolution of the money supply in Iraq for the period from (2003 - 2020)

Annual rate of changeM3%	M3	Annual rate of changeM2%	M2	Annual rate of changeM1%	M1	the year
.....	6,222,090	.....	4,021,847	.....	2,898,189	2003
152.54%	15,713,057	185.89%	11,498,148	250.17%	10,148,626	2004
43.60%	22,563,622	27.49%	14,659,350	12.32%	11,399,125	2005
55.33%	35,047,041	43.60%	21,050,249	35.62%	15,460,060	2006
32.20%	46,333,896	27.88%	26,919,996	40.50%	21,721,167	2007
17.14%	54,275,827	29.50%	34,861,927	29.78%	28,189,934	2008
26.81%	68,826,578	30.10%	45,355,289	32.32%	37,300,030	2009
17.30%	80,735,100	32.93%	60,289,168	38.72%	51,743,489	2010
23.28%	99,527,304	19.54%	72,067,309	20.74%	62,473,929	2011
13.87%	113,329,268	4.54%	75,336,128	2.02%	63,735,871	2012
9.42%	124,004,166	16.18%	87,526,585	15.84%	73,830,964	2013
3.36%	128,167,748	3.47%	90,566,930	-1.54%	72,692,448	2014
-5.38%	121,272,998	-6.67%	84,527,272	-4.24%	69,613,150	2015
-0.36%	120,831,363	7.03%	90,466,370	8.49%	75,523,952	2016
2.68%	124,069,026	2.64%	92,857,047	1.94%	76,986,584	2017
18.00%	146,405,257	2.73%	95,390,725	1.09%	77,828,984	2018
0.73%	147,467,846	8.44%	103,441,131	11.49%	86,771,000	2019
9.59%	161,615,294	15.92%	119,906,260	19.11%	103,353,556	2020

Source: Central Bureau of Statistics, Annual Statistical Collection, for the years (2003-2020), Baghdad: Central Bank of Iraq.

We can also see from the table (1The decrease in the money supply in the narrow sense in the two years (2014-2015) with a negative growth rate (-1.54) and (-4.24), respectively, and the reason for this is the decline in oil exports and the decline in revenues from those exports due to the ISIS war and the drop in global oil prices, and then the impact The negative impact on the size of the money supply and its growth rate (Khoshnaw, 37, 2019).

As for the year (2016), the money supply recorded (M1) increased by (8.49%), and the reason for this increase is mainly due to the growth of the currency outside banks with the percentage of its contribution reaching-(55.71%) of the total money supply, in contrast to the decline in the relative importance of current deposits, whose contribution amounted to (44.29%) of the money supply. The reason for this is due to the case-The public's fear of retaining cash savings to face the state of uncertainty in light of the state's economic stagnation. (The Central Bank of Iraq's annual economic report, 26, 2016).

But in the year 2017And the2018 the money supply has increased (M1) to (77,828,984) at the end of (2018) compared to (76,986,584) in (2017), and this is mainly due to the growth of current deposits by (47.97%) to record (37,330,917) of the money supply (M1), while the currency outside banks recorded A slight decrease of (0.4%) to reach (40,498,067) in (2018) compared to (40,343,309) in 2017. and to constitute (52.03%) of the money supply (M1).

As for the years (2019) and (2020), the money supply continued to rise, with annual growth rates of (11.49%) and (19.11%), respectively.resultThe growth of the currency in circulation outside banks to record (59,987,098) compared to (47,638,603) and to constitute a rate of (58.04%) of the money supply.M1) This rise is attributed to the rise in public spending during the spread of Covid-19 on medical supplies and rehabilitation of hospitals, as well as painnh provided to families during the implementation of the comprehensive ban, while current deposits

increased to (43,366,458) compared to (39,132,397) in 2019, and constitute (41.96) of the money supply (M1), and this shows that the money supply is still growing at high rates parallel to the percentage of the currency in circulation. This imbalance is due to the nature of the rentier Iraqi economy as a result of the oil sector leading most of the public revenues by about (95%), which generates the emergence of a new problem, which is a major challenge to the Central Bank, which is the extent to which the Bank is able to control the money supply in light of the increased demand for currency the local government to cover its increasing expenses, while at the same time putting the independence of the bank on the line (Kadhim et al., 121, 2019).

Second: The evolution of the money supply in the broad sense (M2) :

The money supply (M2) (domestic liquidity) is one of the important economic variables because of its effective impact on economic indicators such as economic growth, inflation, interest rates, the general budget, the balance of payments and the exchange rate. (1) that (M2) maykeep goingupwhat's wrongDrYear (2003) until (2015) this is due to : (Khoshnaw, 37, 2016)

A- The continuous increase in the current public expenditures represented in the increase in the salaries, allowances and wages of workers in the state.

B - Increasing investment spending and inflating the number and size of projects in Iraq.

C- Increasing military expenditures and arming the armed forces to confront enemies.

D- Increasing security expenditures and developing security services.

E- Increasing the foreign reserves of the Central Bank of Iraq, which are necessarily offset by the national currency, for the purpose of achieving stability in the Iraqi dinar exchange rates.

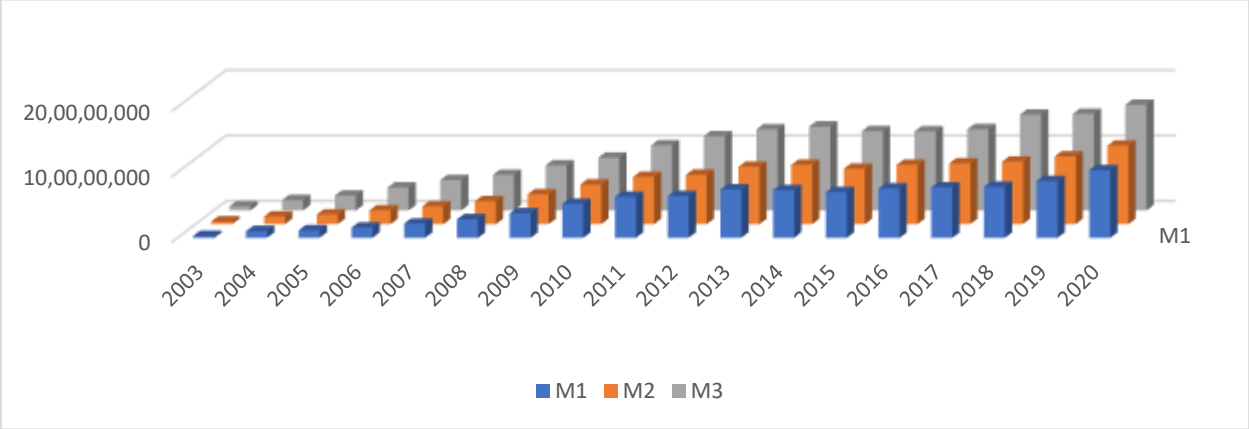
As for the year (2015)has witnessed (M2) decreased with a negative annual growth rate of (- 6.67) due to the decrease in oil prices and the decrease in net foreign assets. During the years (2016-2020), we note that (M2) increased with different growth rates as well (7.03, 2.64, 2.73, 8.44). , 15.92), as this increase in growth came as a result of the growth of the money supply in the narrow sense (M1) and quasi-money (other deposits).

Third:The evolution of the money supply in the broadest senseM3)

We note from the table (1) that (M3) continues to increaseduring the period(2003-2014) due to an increase in the money supply (M2) and government deposits, as the highest contribution rate of government deposits to the money supply in the year (2008) was (46.01%), but during the two years (2015-2016), the annual rate of change in the money supply became negative due to the decrease in each of the money supply (M2).) and government deposits, as for the years (2017-202 .).0) continue (M3) will increase and thus will reflect the extent of the development of the volume of local liquidity in the Iraqi economy.The developments in the components of the money supply in Iraq during the study period can be observed through the following graph:

shape (1)

The evolution of the components of the money supply in Iraq for the period (2003-2020)



Source: Prepared by the researcher

The third axis:Average per capita GDPin the economyIraqi throughperiod (2003-2020).

International organizations have adopted a number of indicators to indicate the standard of living in different countries, including the per capita GDP, as the per capita output is calculated by dividing the output in a particular year by the population in the same year and according to the following formula: 295,2021)

The rate of change in the average per capita share of GDP is one of the most important indicators of the level of well-being in the society, especially as it reflects the extent to which the average per capita income has changed and the extent of the development of its share of total income in the economy-Ed (Barihi, 29, 2011), and although the development of the average per capita GDP may not reflect the real goal for development, which is to raise the standard of living for the individual, as this average may rise without accompanying This is a real development in the standard of living of most individuals. However, the development literature has enriched this indicator by adopting the development indicator, which expresses the economic and social characteristics of the country. Economic growth means a continuous increase in the average per capita share of GDP over time. The increase leads to raising living standards in the absence of problems such as inflation, imbalance in the balance of payments and distributive justice. (Ali, Obaid, 194, 2020), as the table indicates (2) to the development of an average per capita indicator of GDPat pricesfixed in the Iraqi economy during the period (2003-2020), as it is noted the continuous development in the average per capita share ofGDP during the study period, as it nearly doubled in (2019) to (5412.88) after it was (2518.44) in (2003), then the average per capita GDP decreased in (2020) due to the spread of the Covid-19 virus and its accompanying from the decline in crude oil prices in world markets.

Its growth rate achieved its highest level in (2004) as it reached (48.93%), and this is due to an improvement in-The situation of the country after the change in the political system and the economy in Iraq and the export of crude oil, which was reflected in maximizing oil revenues, but it may not reflect a parallel improvement in the standard of living of the individual in light of the deterioration of infrastructure and social services (Ali, Obaid, 194). It is also noted that there are negative growth rates in the years (2005) (2007) (2014) (2017) (2018) (2019) (2020), and the reason for this decline is the economic and political events that occurred in the global economy in general and The Iraqi economy in particular.

Schedule (7)

Per capita index ofGDPat pricesFixed in Iraq for the period (2003-2020) (Million

Per capita growth rate % (4)	average per capita ofGDP (3)	population (2)	GDP at constant prices (1)	the year

.....	2518.445254	26340	66,335,848	**2003**
48.93%	3750.6333737	27139	101,788,449	**2004**
-1.25%	3703.767443	27963	103,568,449	**2005**
2.50%	3796.194689	28810	109,368,369	**2006**
-1.09%	3754.996732	29682	111,455,813	**2007**
0.03%	3756.138611	31895	119,802,041	**2008**
4.81%	3936.948648	31664	124,659,542	**2009**
3.77%	4085.28815	32490	132,731,012	**2010**
4.78%	4280.407253	33338	142,700,217	**2011**
11.04%	4752.909644	34208	162,587,533.1	**2012**
4.91%	4986.043281	35096	174,990,175.0	**2013**
-0.32%	4970.182111	36005	178,951,406.9	**2014**
4.92%	5214.593096	35,212	183,616,252.1	**2015**
10.78%	5776.552011	36,169	208,932,109.7	**2016**
-4.38%	5523.306144	37,139	205,130,066.9	**2017**
-0.02%	5522.318938	38,124	210,532,887.2	**2018**
-1.98%	5412.880484	39,127	211,789,774.7	**2019**
-13.44%	4685.486072	40,150	188,122,265.8	**2020**

Source:columns(1)(2) Central Statistical Organization, Annual Statistical Bulletin,For the years (2003-2020), Baghdad: Ministry of Planning.

-(Columns (3) (4) prepared by the researcher

Despite this rise in the per capita share of the Iraqi GDP, it does not negate the disparity in living standards among citizens, or the difference in living standards between urban and rural residents, or the income difference between the sexes, as the poorest 20% of families obtain Less than 7% of the total income of Iraqi families, while the richest 20% receive 44% of the total Iraqi family income, which is equivalent to (6) times what poor families receive,this means thatInequity in the distribution of income.(Ali, Obaid 195, 2020).

Fourth axis: Presentation and analysis of the results of the econometric model in economics Iraqi throughperiod (2003-2020).

The automatic regression model of distributed time gaps (ARDL) is one of the best methods used to study co-integration in recent times, as there is a relatively long time period in time series models between the variables of economic decision-making and the final effect on the policy variable, which means that the modification in the dependent variable Y) due to the change in the explanatory variable (X) widely distributed over time, and if the interval between the response and the effect is relatively long, then the lagging independent variables must be included in the model, which is one of the ways to build a dynamic response model by including the time-delayed explanatory variables as variables. This means that the ARDL model becomes a mixture of two models, namely the Distributed lag Model and the Autoregressive Model, meaning that the effect of the explanatory variable is not only for the current time period (t), but extends over multiple time periods. Antecedent (t-r). (Al-Obaidi, 19, 2022).

Or not-a teststabilitytime series(root testUnitTheUnit Root Test)

Table (3) shows the presence of a unit root in the time series of variables (LPIB,LM1,LM2(at its original level, which means that the null hypothesis is accepted)H°:b=0) which states after the time-series inactivity WhereProbIt was greater than 5% at its original level, and after taking the first difference to it, the time series became static as the value ofProbLess than 5%, so it is considered a first-class integratedI(1), as for the time series (LM3It was static at the level and did not containyon the unit root where the null hypothesis is rejected and the alternative hypothesis is accepted

(H°:b=0) so it is considered an integral of degree zeroI(0).

What about the results of the Philips Peronne test?PPI showedHaving a unit root in the time series of a variable (LPIB(at its original level, which means that the null hypothesis is accepted)H°:b=0) which states that time series are not static whereProbwhere it was greater than 5% at its original level, and after taking the first difference to it, the time series became stationary as the value ofProbLess than 5%, so it is considered a first-class integratedI(1)As for time series (LM2,LM1,LM3It was static at the level and did not containyon the unit root where the null hypothesis is rejected and the alternative hypothesis is accepted (H°:b=0) so it is considered an integral of degree zeroI(0).

It is clear from the above a state of inconsistency and inconsistency between the results of the two tests (Dickey Fuller and Phillips Perron) for the variables, which makes us rely on the results of Phillips Perron because they are more accurate than Dickie Fuller.

Table (3) Results of unit root test according to Dickey-Fuller testADF and Philips Peron PP

degree of integration	ADFtest					Series
		When the first difference	at level			
	Prob.*	t-Statistic	Prob.*	t-Statistic		
I(1)	0.0000	-5.981728	0.0413	-3.035777	fixed limit only	LPIB
	0.0000	-6.824684	0.2614	-2.651860	jumpy limitTand general direction	
	0.0000	-7.134891	0.9467	1.285524	without a bouncy limitTand general direction	
I(1)	0.0000	-7.338383	0.10226	-2.602469	fixed limit only	LM1
	0.0000	-7.304239	0.4604	-2.22100	jumpy limitTand general direction	
	0.0000	-6.420186	0.9972	2.641249	without a bouncy limitTand general direction	
I(1)	0.0000	-6.368526	0.0541	-2.916947	fixed limit only	LM2
	0.0000	-6.293784	0.6625	-1.839501	jumpy limitTand general direction	
	0.0000	-5.705199	0.9952	2.417331	without a bouncy	

					limitTand general direction	
I(0)	-	-	0.0003	-5.141864	fixed limit only	LM3
	-	-	0.0026	-4.968804	jumpy limitTand general direction	
	-	-	0.9802	1.794503	without a bouncy limitTand general direction	
Phelps-Beron test (PP)						
	When the first difference		at level			
	Prob.*	t-Statistic	Prob.*	t-Statistic		
I(1)	0.0000	-5.981728	0.0314	-3.156675	fixed limit only	LPIB
	0.0000	-6.824684	0.2830	-2.598968	jumpy limitTand general direction	
	0.0000	-5.744563	0.9501	1.321770	without a bouncy limitTand general direction	
I(0)	-	-	0.0000	-7.611385	fixed limit only	LM1
	-	-	0.0853**	-3.285523	jumpy limitTand general direction	
	-	-	0.9977	2.707843	without a bouncy limitTand general direction	
I(0)	-	-	0.0000	-8.568571	fixed limit only	LM2
	-	-	0.0005	-5.404896	jumpy limitTand general direction	
	-	-	0.9976	2.691292	without a bouncy limitTand general direction	
I(0)	-	-	0.0000	-10.28197	fixed limit only	LM3
	-	-	0.0144	-4.092128	jumpy limitTand	

					general direction	
	-	-	0.9993	3.166044	without a bouncy limitTand general direction	

***at the 5% level**
****at 10% level**

The source was prepared by the researcher based on the outputs (EViews 12)
secondly-Autoregressive model estimation of distributed deceleration (ARDL)

We note from Table (4) that the estimation was made by the autoregressive model of the distributed slowdown, and the best formula was among (500)ARDLIt is (4,4,4,4) according to the criterion(AIC)Which represents the lowest value for this criterion, and the graph (24) shows the optimal rank of the modelARDLWhich has been tested, and the model does not sufferyFrom the problem of self-correlation as shown by the Durban-Watson test, and that the probability value of(F)significant, and the parameters are consistent with the economic theory, and that the variables used in the model explain the amount (99%) of the changes in the dependent variable according to the test (,R^{-2} (R^2.

Table (4) Model Estimation ResultsARDL

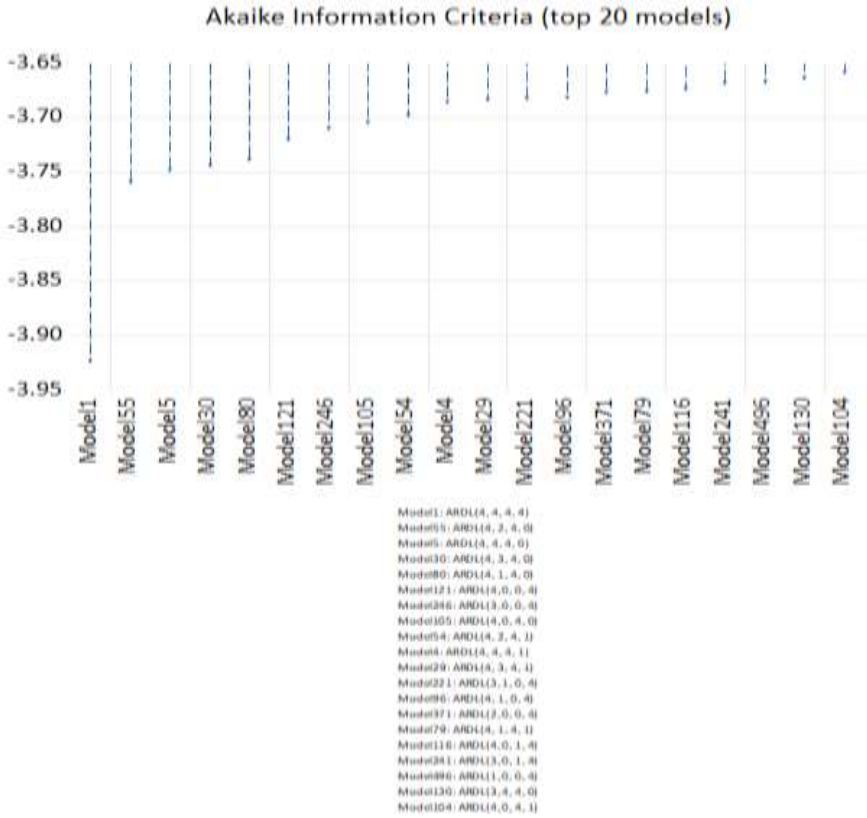
Dependent Variable: LPIB
Method: ARDL
Date: 08/21/22 Time: 21:19
Sample (adjusted): 2005S1 2020S2
Included observations: 32 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LM3 LM2 LM1
Fixed regressors: C
Number of models evaluated: 500
Selected Model: ARDL(4, 4, 4, 4)

Variable	Coefficient	std. Error	t-Statistic	Prob*
LPIB(-1)	0.211104	0.177398	1.189997	0.2571
LPIB(-2)	0.484548	0.242723	1.996300	0.0691
LPIB(-3)	-0.057249	0.244447	-0.234199	0.8188
LPIB(-4)	-0.700695	0.272248	-2.573735	0.0244
LM3	0.115126	0.236401	0.486996	0.6350
LM3(-1)	-0.034386	0.250202	-0.137433	0.8930
LM3(-2)	-0.449735	0.261197	-1.721826	0.1108
LM3(-3)	-0.018258	0.168442	-0.108395	0.9155
LM3(-4)	-0.497200	0.0201397	-2.468760	0.0296
LM2	1.296016	0.863056	1.501658	0.1590
LM2(-1)	0.020881	0.467222	0.044692	0.9651
LM2(-2)	0.798739	0.636145	1.255592	0.2332
LM2(-3)	0.032688	0.468826	0.069722	0.9456
LM2(-4)	1.835364	0.607430	3.021521	0.0106

LM1	-1.214267	0.671674	-1.807822	0.0957
LM1(-1)	-0.015371	0.339950	-0.045217	0.9647
LM1(-2)	-0.644260	0.496081	-1.298698	0.2184
LM1(-3)	0.009989	0.302455	0.033027	0.9742
LM1(-4)	-0.996266	0.424123	-2.349003	0.0368
C	4.489809	1.145490	3.919555	0.0020
R-squared	0.986181	Mean dependent var		8.429432
Adjusted R-squared	0.964301	SD dependent var		0.157424
SEof regression	0.029744	Akaike info criterion		-3.923209
Sum squared resid	0.010616	Schwarz criterion		-3.007124
Log likely	82.77135	Hannan-Quinn criter.		-3.619553
F-statistic	45.07231	Durbin-Watson stat		1.546822
Porb(F-statistic)	0.0000000			

Source: Prepared by the researcher based on the outputs of (EViews 12)

Figure (2) Optimum rank test for a model(ARDL)according to standard(AIC)



Source: Prepared by the researcher based on the outputs of (EViews 12)

Third: Model quality tests: It includes two tests

1- Tests for the series of residuals(Residuals Diagnostics Test)

It is represented by a normal distribution test and a test for instability of variance, as shown in the following table:

Table (5) Summary of the results of the detection of the quality of the estimated model

TEST				
Normality test (Jarquebera) Null hypothesis: Residual are normally Distributed	Stat. Value 4.488159		Prob. 0.106025	
Heteroskedasticity Test: Breusch-Pagan-Godfrey Null hypothesis: Homoskedasticity	F-statistic	0.989435	Prob. F(19,12)	0.5238
	Obs*R-squared	19.53217	Prob. Chi-Square(19)	0.4232
	Scaled explained SS	3.618470	Prob. Chi-Square(19)	1.0000

Source: Prepared by the researcher, based on outputs .EViews 12

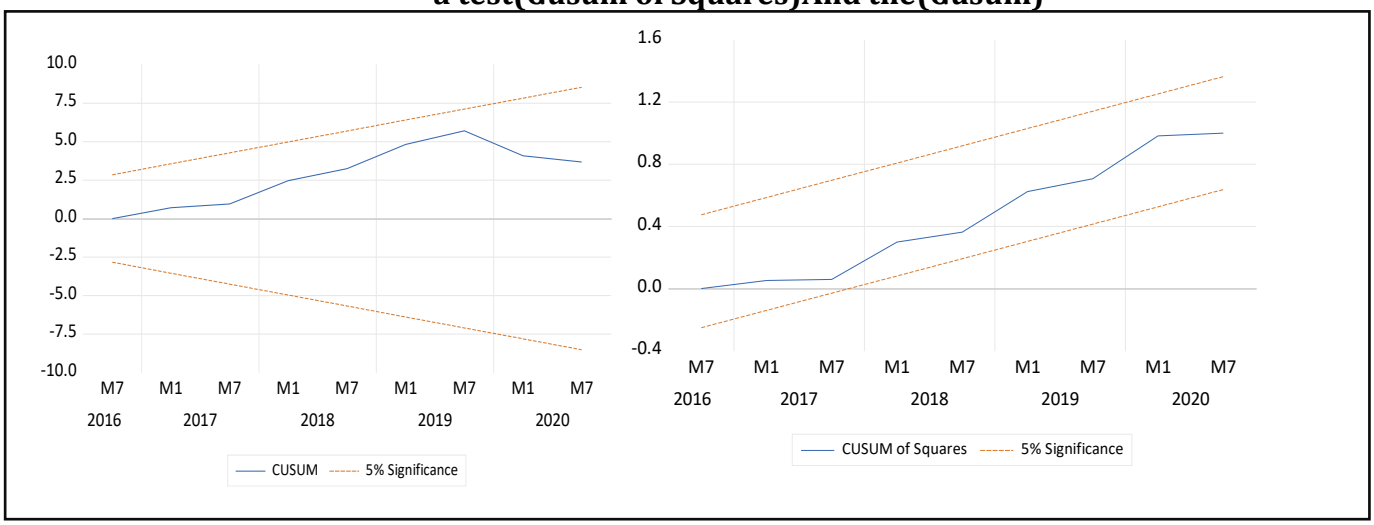
nlaGood luck from the table)5) that the model Estimated by testNormality testThe residual series follows a normal distribution, as the probability value of a statistic isJarque Bearb (4.488159), which is not significant at the 5% level, and this means accepting the null hypothesis which states that the residuals are free from the problem of the normal distribution, which means that the residuals follow the normal distributionIt was also free from the problem of heterogeneity of variance because the statistical indicators were also insignificant, meaning that the variance of errors was homogeneous.

2- Model structural stability tests(Model structure Stationary Tests)

Two tests are conducted to ensure that the model data is free of any structural changes that may negatively affect the quality of the estimated model. Our current study relied on the use of the cumulative sum test for residuals.(Gusum), The cumulative sum of the squares of the residuals test(Gusum of Squares)To test the stability of the estimated coefficients according to the modelARDL, if the similar line falls on each of theGusumAnd theGusum of SquaresBetween the two critical value terms, the null hypothesis will be accepted, and the model will be unstable

As we notice from the figure below for the two tests the static parameters in the short and long terms because the curve according to the two tests falls within the critical limits and varies around the zero value at the 5% level.

a test(Gusum of Squares)And the(Gusum)



Source: Prepared by the researcher based on the outputs of the 12 . programEViews

Fourth, the boundary test(Bound Test)

toTesting for the existence of a common complementarity, i.e. the existence of a long-run equilibrium relationship, by means of a boundary test (Bounds Test By comparing the value ofF computed for the time-delayed coefficients of the independent variable with the critical F-statistic value, and the test is carried out based on the hypothesisnonwhich states

that there is no long-run equilibrium relationship between the variables.

Table (6) Border Test Results

Test Statistic	Value	k
F-statistic	8.968830	3

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Source: Prepared by the researcher based on the outputs of (EViews 12)

note fromTheScheduleaboveStatistical value has been estimatedF-statistic for models with (8.968830) which leads to rejecting the null hypothesis that there is no long-term relationship that goes from the explanatory variables to the dependent variable and accepting the alternative hypothesis, which states that there is a long-term relationship at a level of 5% betweenlogarithmMMeaning of money supplythe narrowthe wideand the wider And the average per capita, and this can be done by choosing the co-integration of the equilibrium relationship in the long run.

V. Estimating the error correction modelARDL Error Correction Model

The table below shows the results of the error correction vector between the average per capita share and the components of the money supply.

Table (7) Outputs of the error correction model

ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	std. Error	t-Statistic	Prob
D(LPIB(-1))	0.273396	0.120183	2.274826	0.0421
D(LPIB(-2))	0.757945	0.159695	4.746203	0.0005
D(LPIB(-3))	0.700695	0.175276	3.997673	0.0018
D(LM3)	0.115126	0.152317	0.755834	0.4643
D(LM3(-1))	0.965194	0.197719	4.881637	0.0004
D(LM3(-2))	0.515458	0.116743	4.415306	0.0008
D(LM3(-3))	0.497200	0.121592	4.089083	0.0015
D(LM2)	1.296016	0.338066	3.833613	0.0024
D(LM2(-1))	-2.666,790	0.448125	-5.950992	0.0001
D(LM2(-2))	-1.868051	0.362256	-5.156714	0.0002
D(LM2(-3))	-1.835364	0.372553	-4.926454	0.0003
D(LM1)	-1.214267	0.266421	-4.557699	0.0007
D(LM1(-1))	1.630537	0.296326	5.502502	0.0001
D(LM1(-2))	0.986277	0.228354	4.319074	0.0010
D(LM1(-3))	0.996266	0.225627	4.415537	0.0008
CointEq(-1)*	-1.062293	0.137380	-7.732542	0.0000

Source: Prepared by the researcher based on the outputs of (EViews 12)

We note from table (7).The results showed that the correction parameterThe errorshe1.062-cointEq(-1)*= is negative and significant at 5% i.e. the condition for the value of the error correction coefficient is met, which It confirms the existence of a long-term equilibrium relationship, that is, there is a correction

relationship from the short term to the long term at a speed of 106.2%.

Sixth: Short-term causation test

The Kranger causality test will be used, and the slowdown period will first be determinedI showedtests results (HQ, AIC, SC) that was used To determineThe optimal deceleration period that achieves the best estimate for a model in the table (8), that period is the periodthe fourthtotochangedshe saw, because its value is the lowest compared to the rest of the values in the testsTherefore, that period will be adopted in the estimation of this model, which meansythat model vectorsCorrection of the error that will be used to reveal the direction of the relationship between the variablesatThe place of study will include a slowdown period(4) .

Table (8) Optimum deceleration period

Lag	Log	LR	FPE	AIC	SC	HQ
0	132.9508	NA	3.72e-09	-8.059422	-7.876205	**-7.998691**
1	229.6689	163.2119	2.42e-11	-13.10431	-12.18822	**-12.80065**
2	256.0555	37.93069	1.33e-11	-13.75347	-12.10452	**-13.20689**
3	273.0721	20.20721	1.43e-11	-13.81701	-11.43518	**-13.02750**
4	325.3031	*48.96657	1.98e-12*	-16.08144*	-12.96675*	**-15.04901***

Source: Prepared by the researcher based on the outputs of (EViews 12)

After determining the slowest period and making sure that there is a co-integration between the model variables, the Kranger causality test was adopted to reveal the existence of a causal relationship between the variables as follows:

Table (9) TestSasabi Kranger

Pairwise Granger Causality Tests Tags:4			
Null Hypothesis	Obs	F-Statistic	**Prob.**
LM1 does not Granger Cause LPIB LPIB does not Granger Cause LM1	32	4.37121 3.07360	**0.0089** **0.0364**
LM2 does not Granger Cause LPIB LPIB does not Granger Cause LM2	32	4.59467 2.47278	**0.0071** **0.0729**
LM3 does not Granger Cause LPIB LPIB does not Granger Cause LM3	32	1.28013 1.16887	**0.3066** **0.3504**

The source was prepared by the researcher based on the outputs (EViews 12)

The table shows (9)The results of the causal relationship between the two variables used in the model using the Kranger method in the causal relationship test, where the hypothesis states(H:b=0)°There is no causal relationship between the variables used, but the hypothesisalternative(H1:b)≠ 0 It states that there is a causal relationship between the variables, and if the hypothesis is rejected(H0)This means that there is a causal relationship, but in the case of acceptance, it means that there is no causal relationship between the two variables, and the results showed:

There is a two-way causal relationship between the narrow money supply and the average per capita share, by comparing the value of(F)Calculated and amounting to (4.37121) (3.07360) respectively with the tabular values (0.0364) respectively, which are less than 5%, as it is clear that the alternative hypothesis is accepted and the null hypothesis rejected, and then there is a vector relationship from the wasted money supply to the average per capita share, meaning that The change in the narrow

money supply affects the average per capita share and vice versa.

As for the relationship between the broad money supply and the average per capita share, the results indicated the existence of a one-way causal relationship.(F)Calculated (4.59467), which is greater than the tabular at the 5% level, that is, we accept the alternative hypothesis and reject the null, that is, the broad money supply affects the average per capita share and not the other way around.

- As for the relationship between the broader money supply and the average per capita share, the results indicated that there is no causal relationship between them, that is, the wider money supply does not affect the average per capita share, accepting the null hypothesis and rejecting the alternative hypothesis.

Seventh: The long-term relationship test

has been testedToda Yamamoto test in the long run to find out the direction of causation betweenaverage per capitaAnd theIngredientsmoney supply,And to measure the direction Causal relationship The appropriate deceleration periods were chosen, namely (4),The maximum degree of homogeneity of the variables taken into account is one (1). i.e. that The number of decelerations included in Toda Yamamoto's test is (1) periods. And the results came as follows:

Table (10)Toda Yamamoto's causality test

significant level 5%	p-value	Chi-sq	df	explanatory variables	dependent variable
lack of causation	0.8674	1.866063	5	LM1	**LPIB**
lack of causation	0.1700	7.759955	5	LM2	
existence of causation	0.0252	12.80763	5	LM3	
lack of causation	0.1071	9.050653	5	LPIB	**LM1**
lack of causation	0.4901	4.424319	5	LM2	
lack of causation	0.2306	6.868708	5	LM3	
lack of causation	0.2337	6.828288	5	LPIB	**LM2**
lack of causation	0.2941	6.126712	5	LM1	
lack of causation	0.1328	8.457408	5	LM3	
lack of causation	0.3263	5.798941	5	LPIB	**LM3**
lack of causation	0.3330	5.733232	5	LM1	
lack of causation	0.4128	5.025075	5	LM2	

Source: Prepared by the researcher based on the outputs of (EViews 12)

Through the results we note

The absence of a causal relationship between the average per capita share as an independent variable and the narrow and broad money supply as independent variables in the long run, as the above table shows insignificance and rejection of the null hypothesis asLPIBdon't swearB LM1,LM2At a significant level of 5%, and there is a causal relationship betweenAverage per capita share as an independent variable and money supply in the

broadest sense, asLPIBcursingBAllLM3at a significant level of 5%.

-The absence of a causal relationship between the money supply in the narrow sense as an independent variable and the average per capita share and the money supply in the broad and broader sense as independent variables in the long term, as the above table shows insignificance and rejection of the null hypothesis asLM1don't swearB (LPIB,LM2,LM3) at a significant level of 5%.

-The absence of a causal relationship between the money supply in the broad sense as an independent variable, average per capita share, and the money supply in the narrow and broad sense as independent variables in the long term, as the above table shows insignificance and rejection of the null hypothesis, asLM2don't swearB (LPIB,LM1,LM3) at a significant level of 5%.

-The absence of a causal relationship between the money supply in the sense The broader as an independent variable, the average per capita share as an independent variable, and the money supply in the narrow and broad sense as independent variables in the long term, as the above table shows insignificance and rejection of the null hypothesis, as theLM3don't swearB (LPIB, LM2,LM1) at a significant level 5%.

Conclusions:

1- Monetary policy, although it is one of the most important economic policies that directly affect the economy, especially growth, but its impact is still limited in Iraq.

2-It is evident through the results of the stability test for the study variables according to the developed Dickey Fuller test that the variablesLPIB, LM1, LM2,LM3)) are not stable at the original level, so the first difference was taken for them, and thus the variables became stable and integrated of the first degree.

3- The results of the optimal deceleration period indicate that period (4) is the optimal period for time delays because its value is the lowest according to the tests(AIC,SC,HQ)So it was adopted in the model.

4. By estimating the model using the . methodology(ARDL)And conducting a boundary test, it was found that there is a co-integration relationship at the level of .(5%), which means that there is a long-term equilibrium relationship between the variables.

5-The existence of a one-way causal relationship in the short term of the money supply with its three components (M1,M2,M3) to the average per capita.

Recommendations:

1- Coordination between fiscal and monetary policies to complement each other and contribute to raising economic growth.

2-The government must implement public policies that allow the national economy to prepare itself and realize new job opportunities that support the economy in order to create an investment environment that is acceptable and attractive to local and foreign investments.

Sources:

1. 50- Shehab, Eng. Samira Fawzy. (2013). Measuring the effect of money supplyM1) On the Gross Domestic Product in Iraq for the period 1987-2010, Tikrit Journal of Administrative and Economic Sciences, Volume 10 (30), p.
2. Al-Afandi, Dr. Muhammad Ahmad. (2018). Monetary and banking economics, first edition, Jordan: Amman, Academic Book Center.
3. Suleiman, A.D. Osman Hussein, Mohammed, m. M. Sana Jassim. (2020). The determinants of money supply in Iraq for the period 2003-2016 (standard study). Journal of Administration and Economics, Al-Mustansiriya University, No. 124.
4. Suleiman, A.D. Osman Hussein, Mohammed, m. M. Sana Jassim. (2020). The determinants of money supply in Iraq for the period 2003-2016 (standard study). Journal of Administration and Economics, Al-Mustansiriya University, No. 124, p.
5. Erekat, by Harbi Mahmoud Moussa. (2006). Principles of Economics, Macro Analysis, Edition 1, Jordan: Amman, Dar Wael for Publishing and Distribution.

6. Al-Obaidi, Shaker Hammoud Salal. (2017). The effect of fiscal policy rules on the effectiveness of monetary policy in Iraq, PhD thesis in economic sciences, University of Baghdad, College of Administration and Economics.
7. Al-Khazraji, Dr. Soraya. (2010). Monetary policy in Iraq between the accumulations of the past and the challenges of the present. Journal of Baghdad College of Economic Sciences, University Twenty-Third Issue.
8. Shendi, A.; Dr.. Adeeb Qassem Shendi and Abdel-Khader, Nagham Hamid Abdel-Khader. (2016). Measuring the relationship between money supply and indicators of economic stability in Iraq for a period (1980-2014), Al-Kout Journal of Economic and Administrative Sciences / Wasit University, Volume 1 (21), s .
9. Kazem, Prof. Kamel Allawi and Sahib, M, Miami Salal. (2017). Monetary policy in Iraq before and after 2003, an analytical study. Al-Qadisiyah Journal of Administrative and Economic Sciences, Volume 19(2), .
10. Al-Mamouri, Prof. Abdul Ali Kazem and Al-Nadawi, m. Khudair Abbas Ahmed. (2011). Economic Policies in Iraq after the American Occupation. Journal of the College of Administration and Economics, No. IV, p.
11. Al-Fatlawi, Hussein Majid Thamer. (2018). Fiscal policy and its impact on the money supply in Iraq for the period (1990-2014), a master's thesis in economic height, Al-Qadisiyah University, College of Administration and Economics.
12. Khoshnaw, Prof. Dr. Sabah Saber Muhammad. (2019). Analyzing and measuring the causal relationship between money supply and GDP in Iraq for the period (1988-2018). Anbar University Journal of Economic and Administrative Sciences, Volume 11 (26).
13. General Directorate of Statistics and Research, Annual Economic Report (2016). Baghdad: Central Bank of Iraq.
14. Ali, MD. Maha Karim. (2021). Criteria of economic growth in Iraq (for the period 2000-2012). Journal of Educational Studies, No. 55.
15. Ali, Prof. Dr. Rahman Hassan Ali and Obaid, Marwan Shaker (2020). Analysis of economic growth indicators in the Iraqi economy environment for the period 2004-2017. Al-Kut Journal of Economics and Administrative Sciences, Issue 35.
16. Brihi, Dr. Fares Karim. (2011). The Iraqi economy ..... Opportunities and challenges (analytical study of economic indicators and human development). Journal of Baghdad College of Economic Sciences, No. 27.
17. Central Bureau of Statistics, Annual Statistical Bulletin, for the years (2003-2020), Baghdad: Ministry of Planning.
18. Central Bureau of Statistics, Annual Statistical Collection, for the years (2003-2020), Baghdad: Central Bank of Iraq.
19. Al-Obeidi, Marwa Iyad Muhammad. (2022). Using the ARDL methodology and the simultaneous equations system to predict oil prices for the period 2021-2025, Master's thesis in Statistics, University of Basra, College of Administration and Economics.