THE IMPACT OF MONETARY DEVELOPMENTIN ECONOMIC GROWTH IN IRAQ (A STANDARD STUDY USING A METHODOLOGY (ARDL) FOR THE PERIOD (2003-2020))

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Keywords: money supply, growth economic, Gross domestic productat fixed pricese.

INTRODUCTION:

Monetary policy has recently gained great importance, especially after the state's intervention in economic activity has increased, and as a result, the effects of monetary policy on the entire economy have increased. Monetary policy is an effective means of influencing the economy, and this effect stems from an important fact related to the monetary effects of monetary policy, which are particularly reflected in the money supply and the abundance and cost of credit, which is caused originally by a deficit or surplus in the public budget. Therefore, it is self-evident that monetary development has a positive impact on economic growth. The many functions of monetary policy that are embodied, to name a few; in accumulating savings and better appraising investment; As these jobs must benefit the economy and the pace of its growth. In any case, this relationship between monetary development and economic growth can be crystallized through the liberalization of the financial sector, the liberalization of the interest rate and directed credit, the reduction of legal reserve ratios and the use of indirect tools in monetary policy. The government has givenIraqiThere has been an increasing interest in the recent period to develop the use of monetary policy tools and to develop, reform and liberalize their financial and banking sectors, based on the important role that these sectors play in promoting balanced and sustainable economic growth, through the development of monetary policy, considering that such a policy constitutes a decisive factor in achieving economic growth and contributing In raising the efficiency of the economy and achieving stability, in addition to increasing the capacity of economy to withstand unexpected external shocks. Countries also differ among themselves in the conditions of their financial and banking sectors and the degree of their development, and this is due to a number of things, including the difference in income, and the difference in their economic structures, especially their economic conditions on the eve of economic reform programmes.

RESEARCH IMPORTANCE: The money supply is one of the most important macroeconomic variables that affect the overall national economywill be reflectedOn output, income, use and others, and from here the research problem emerges in the form of a question that says:what mdyThe effect of changes in the money supply and its componentsthe basicOn economic growth in Iraq?.

Problemsearch: Economic stability at the general level of prices is one of the main objectives of monetary policy, and achieving this goal may collide with the goal of achieving economic growth. Hence, the problem of the study is characterized in the form of a question that:

what mdyThe effect of money supply on real economic growth?

Hypothesissearch: There is a one-way causal relationship from money supply to economic growth, expressed in GDP at current prices

Search Objective: The research seeks to achieve the following objectives:

1- Studying the nature of the relationship between monetary developmentM1,M2,M3) and economic growth(GDP)in Iraq

2- Determine the causal relationship and the behaviors that exist between the variables

3- Analyzing the role of monetary developmentM1,M2,M3) in economic growth(GDP)in Iraq

Spatial and temporal limits of research: The research used Iraq as a spatial limit for it. As for the time limits, the research included (18) years extending since 2003, which is the beginning of a new political and economic system in Iraq and ends until 2020, which is the last year that allows obtaining data available in its primary sources, which is the Ministry Planning, and the Central Bank of Iraq.

RESEARCH METHODOLOGY: The research depends on the inductive approach to analyze the research variables and using the descriptive analysis method of the research data and modern economic measurement methods represented by the methodology of(ARDL)By using modern statistical software(EViews12).

First: The concept of monetary policy and its objectives:

1- The concept of monetary policy:

monetary policy represents One of the most important elements-The economic policies that can be used to achieve the economic goals of the society. The monetary policy aims Mainly to affect the money supply, as that monetary policy An important part of economic policy overall and plays an important role in Regulating the money supply and controlling cash flow and credit, as can salad-cash represented by the central bank through this role as the highest monetary authority that achieves specific vital goals according toaTo the priorities determined by the economic problem that the economy suffers from, And thein sometimes you use-The blood of monetary power GoalsaIntermediate such as money supply to achieve an end goal such as price stability-and reduce inflation-m mouth-What is the monetary policy? It is a set of procedures used by the monetary authority to influence-the money supply and directing credit by using certain monetary means for the purpose of reaching the achievement of economic goals. What are the measures taken by the Central Bank?-Controlling the money supply in economy National This supply is proportional to the growth of goods and services output (Shehab, 227, 2013).

2-monetary policy goals

Monetary policy can be seen As an economic plan, it must have clearly defined end goals to facilitateachieve it,Therefore, the most important objectives of monetary policy confined to The following: (Daoud, 2009, 350)

a-Achieving a high level ofEmployment:use-As long as the optimum economic resources such as labor and capital-and natural resources.

B-stabilization of the broadest-R: to avoid extreme fluctuations in the wide-R and anti-inflation and deflating-ash in economic activity.

c-stabilization-Exchange t: The value of the local currency for the unemployed-Not foreign because the volatility of capacity-The exchange rate or the value of the local currency in relation to other foreign currencies has bad effects-on the balance of payments, and economic activity-for a year.

Dr-High economic growth rate: Monetary policy can affect an important element in The field of economic growth is investment. The higher the rateinvestment,The size of the head of the mummy increased-the fixed in society, which leads to increased productivity and a higher rate of output growth-c national.

There are other objectives that can be achieved through monetary policy:

y-Contributing to Accelerate the process of economic and social development by providing various credit facilities necessary for this by increasing savings and investments.National.(League,99,2007)

R- Developing banking and financial institutions and the markets that deal with them (the foreign market).-To and the market of pain-No) to serve the development of the economy The National. (Ghadeer, 35, 2010)

s- keep calm-wide rar-Interest rates to support future economic planning and to direct bank credit Towards goals aligned with goals the government in achieving development in different sector-(Khreis, 110, 2002)

secondly:Monetary interpretation of money supply:

The monetary school witnessed New additions stems-The adherence of the proponents of this theory to focus on the importance of money in The impact on economic activity and the criticisms leveled at the Keynesian theory, and thus revived the critical school Modern led by Milton Friedman, quantity theory to economic leadership, by reformulating it in A modern form that differs from the Keynesian theory ofWhereaccreditation in Revealing facts about experiences over periods of time that exceed a century-The popularization of the contemporary quantitative theory of the quantity of money not only through the contributors-not only by the advanced academic conditions of Friedman and the members of his school, but also by the economic climate that prevailed in the economies of Western countries in The

seventies of the last century. (Haddad and Hathouli, 121, 2005),soThe basic idea that was launched by the critics, led by the economist (Milton Friedman) in Select displayedcash inAchieving economic stabilitysoIt requires an increase in the money supply at a fixed and stable rate-t is in line with the rate of economic growth, and it can be expressed machines (Al-Rafie, 22, 2020):

$$\frac{\Delta M}{\Delta Y} = 1 \rightarrow M = F(y)$$

Since:

: represents the change inΔM Showncash (increase in exhibitioncash)

:ΔY The output, which is expressed as economic growth

This means that the quantity of money supply is a function-for real change in output, so the growth of the money supply at fixed rates is in line-with economic growth ratesthatIt is the responsibility of the monetary authority, which means that (Milton Friedman) gave attention totoThe supply of money rather than the demand for money, and monetarists also believe that an increase in the money supply has the effect of-There is no multiplier if the open market policy is used and this is what Friedman and Schwartz suggested, and when the central bank-behind government bonds, this will lead to a wider increase-This will lead to a decrease in the price of these bonds-The interest on the one hand, and on the other hand leads to the disruption of the arrangement of the financial portfolios of the publictoThey keep a quantity of cash without bringing it a return, as an attempt by them to restore the balance in their wealth, they will increase their spending, and buy more financial and in-kind assets, and this will lead to a direct increase in total-demand, which leads to an increaseproductionand the level of employment and this happens in short term, as for In the long run, critics believe that economics in A case of full

employment, and that long-term growth in The resulting It is determined by real factors such as the savings rate, etc-industry, and therefore the increase in The money supply in the long term leads to higher inflation rates, not higher growth rates in the As a result, from the above, we can conclude that the critics believe that changes in the money market will have a direct and short impact on the real sector. This leads to an increase in the money supply, which leads to an imbalance in the monetary sector, and if the public has a surplus in cash balances, it will be eliminated by increased spending, which may include the purchase of financial assets (stocks and bonds), or tuberculosis-p and other assets, and therefore the increase in The money supply will directly lead to an expansion in production, but in the long run, the effect of money is limited to the price level only, which means the neutrality of money in the long term. (Adaileh, 19, 2010).

And you recommend-Friedman to an important conclusion is that when the amount of money people have increases, they tend to replace it with less liquid financial or physical assets.toEarning a return higher than the expected return on cash-D, and then individuals' spending increases when they reduce their cash balances, and then Friedman concluded that the change in Total expenditure is directly related to the change in The amount of money. (Khoshnaw, 35, 2019)

in In conclusion, we can say that in In light of the stability of the demand for money, the increase in the money supply will lead to a change in the incomecash,Once again, this confirms Friedman's belief that the money supply has a huge impact-t onEconomy,And money is not neutral as the classic claimed, which is illustrated by the following figure: (Al-Afandi, 349, 2014).

Figure (3) The effect of money supply on economic activity
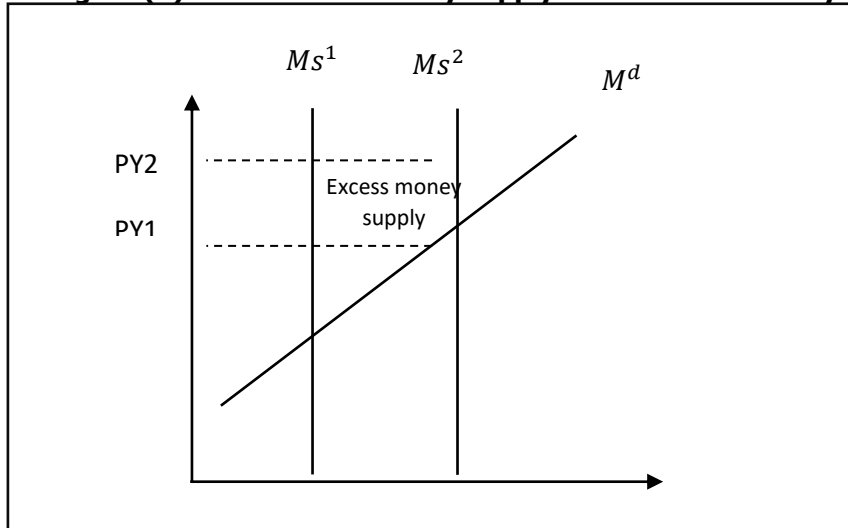
Source:mandarin,MohammedAhmed.(2012a). Macroeconomic theory (politics and practice), first edition, Sana'a, Al-Ameen for Publishing and Distribution, p. 349.

Friedman noted that there is an excess of The money supply people want to keep it more thanothers,which leads toexpenditureperfect-z ofmoney,And then either a real increase in production-j or heightthe prices,and loyal In all cases cash income rises. From (PY1). to (PY2),From the foregoing, we conclude that the main idea of monetary theory Contemporary is that the potential changes in The amount of money can address economic imbalances and lead to economic stability.

Third: economic growth

is a phraseThe phenomenon of continuous increase in the real gross national product during a decade or several decades and the accompanying quantitative and qualitative changes that deal with various aspects of the economy and society and all that enters into the cultural factors and technical conditions that would support the population's ability to achieve a continuous increase in their total real production in the long run the long,In addition to the fact that economic growth is achieved automatically without the intervention of government authorities, and hereA distinction must be made between two types of actual growth and latent growth, qactual growthhe isThe actual annual increase in national product or real GDP is usuallysusceptibleRelatively speaking, this growth can be presented in the form of per capita income growth, on the contrary, latent growth is the periodic or annual increase in the productive capacity of the state, where the actual growth may be less than the latent growth if the national economy operates at a level below its

total capacity, In other words, if the national economy operates within the production possibilities curve(Al-Quraishi,148,2008)Thus, economic growth is "desirable because the higher the growth, the better the standard of living and health of the population.",Therefore, the goal of any economy in the world is to reach the so-called sustainable economic growth based on the sustainability of resources and income,It is also known as the increase in the annual production rate compared to the previous year, when the population grows at the same rate of growthoutput qThere is nothereeconomic growth, and longerper capita rate of outputIt is the true indicator of economic growth and well-being, or the continuous expansion of production possibilities as measured by the increase in real GDP over a given period. (Hasoun ,22,2014)

Fourthly:The relationship between money supply and economic growth inframework cash school

One of the most important evidence supporting the existence of a relationship between the change in the money supply and its important role in economic growth is what Friedman and Schwartz presented in 1964 in their study of the development of the historical record of the United States of America, where Friedman showed in 1963 that the rate of growth in the money supply has a strong impact on economic growth and its growth rate and that any effect that occurs as a result of the change in the money supply will affect the gross domestic product, and when the monetary authority adopts an expansionary monetary

policy, it will increase the money supply, and this increase in the money supply will lead to a rise in the general level of prices and push towards a decrease in the interest rate and this decrease In turn, it will lead to an increase in the volume of investments (as a result of the negative relationship between investments and the interest rate), which will lead to an increase in output, and this increase in output will generate an increase in aggregate demand (2013,69,Mishkin, fs), that is, it leads to an increase in one, some or all of its components (consumption, investment, government spending, imports) and this increase in income, and thus aggregate demand, will lead to an increase in GDP, and, conversely, if the monetary authority follows Deflation policy, it will reduce the money supply to deal with a certain inflationary situation, and this will lead to a decrease in the general level of prices and an increase in interest rates, which leads to a decrease in investments, which is one of the components of aggregate demand, and therefore its decrease will lead to a decrease in income and thus a decrease in GDP, as We note that the money supply has an important impact on the gross domestic product and is linked to it with a positive relationship. As for the direction of the relationship between money supply and real output, the owners of the monetary school see that any change in the quantity of money has significant effects on total real output in the short term and the general level. For prices the term long , and with A reverse causal relationship may occur, and both Friedman and Schwartz support this argument by saying: Despite the effect of the quantity of money on prevailing economic activity, there is a possibility that the effect will be in the other direction at least in the short run, but if monetary expansion continues in the long run, they They agree with the neoclassical on the quantity neutrality of money, whereby monetary expansion will depend on the rise in the interest rate and the general level of prices rather than on real aggregate output. (Khoshnaw, 2019, 35).

Fifth: The evolution of money supply and gross domestic product in the Iraqi economy for the period (2003-2020)

1-The evolution of 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 prices.Benefit,The central bank is the monetary authority that controls

the supply.cash,Whether through the issuance of legal money, the monetary multiplier, or banking and credit 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).

We can also note 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).
Schedule (1)

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

M3%	M3	M2%	M2	M1%	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: Source: Central Bureau of Statistics, Annual Statistical Collection, for the years (2003-2020), Baghdad: Central Bank of Iraq.

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

We note from the table (1) The (M3) is constantly increasingduring 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)
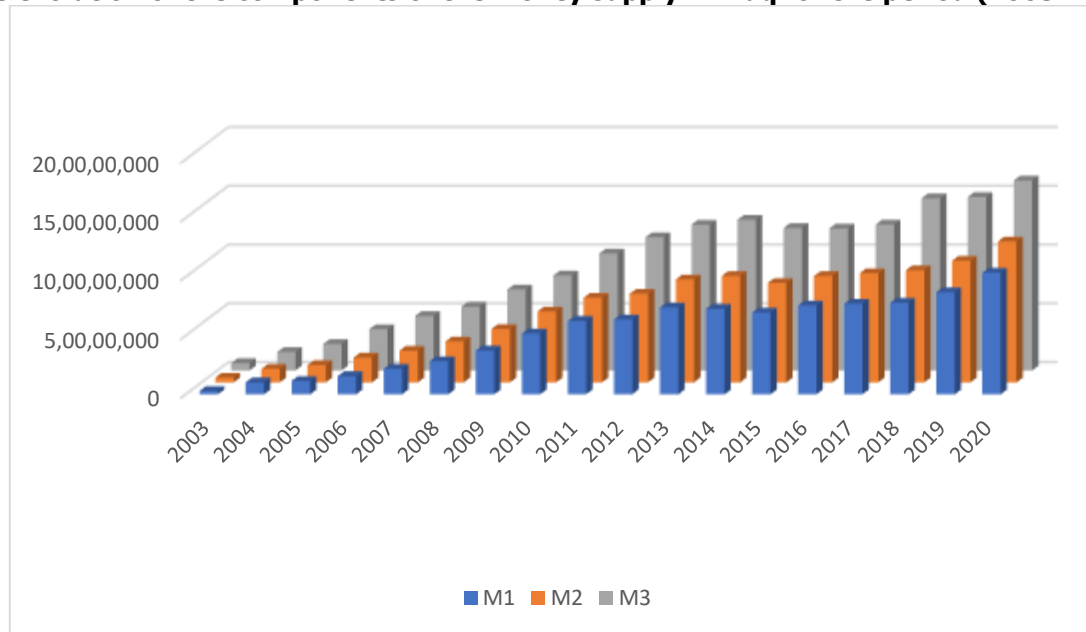
Source: Prepared by the researcher based on the table (1)

2- has evolvedThe gross domestic product in Iraq for the period (2003-2020):

Consumer consumption of goods and services and a decline in investments, and vice versa in the event of an increase in domestic product. (Ali, 294, 2021),in the beginningStudy DurationIraq entered a new turning point on the economic, political and social levels, as the political system in Iraq was changed, and during this period they were-do you feel-There is a noticeable growth in the GDP, especially after the lifting of economic sanctions (Al-Fatlawi, 63, 2017), as the GDP tookat pricesThe current trend has been steadily increasing from (2003-2008) with varying growth rates (79.94%) (38.13%) (29.99%) (16.60) (39.95%) respectively, as a result of the openness of the Iraqi economy to the outside world (Hayawi, 317, 2018),

The relative stability in the country in terms of security and the economy, as well as due to the increase in oil revenues (Ali, 299,2021) as well as the noticeable decrease in the inflation rate as a result of the success of the monetary policy pursued by the Central Bank in achieving stability in the price level (Central Bank of Iraq, Economic Report Annual, 48,2008).

As for the year (2009), the GDP growth declinedat pricesIt achieved a negative growth rate of -16.24 %, which was due to the global financial crisis, which led to a decline in oil prices. As for the years (2010-2013), we note from the table (2) An increase in output with different growth rates (24.05%) (34.10%) (16.98%) (7.62%) respectively, as a result of the return of the rise in oil prices.

As for the year (2014-2015), it was witnessed by the gross domestic productat pricesThis is due to the repercussions of the war with ISIS and what some economic sectors have been exposed to, especially agriculture and industry, after ISIS occupied large areas in Iraq and the destruction inflicted on these sectors, as well as About his control of multiple oil wells, most notably the Al-Akaza oil wells and Bai Hassan and others, and the decline in oil revenues, but the sharp drop in international oil prices (Khoshnaw, 40, 2019),As for the years (216-2018), the total output increased by the current notice as a result of the improvement in oil prices globally as a result of the growth and development of the performance of the global economy, as it is the main driver of most advanced economies and the scarcity of supply, which was accompanied by a rise in investment rates, as its positive impact was reflected on the Iraqi economy Which depends largely on oil production and export to meet its requirements and finance its general budget, but during (2019-2020) the output decreased with negative growth rates (-2.23%) (-24.40) as a result of the significant decline in the performance of the Iraqi economy, as the Corona epidemic and the decline in prices Global crude oil and (OPEC) decisions have many negative repercussions on GDP (Annual Economic Report, 12, 2020).- 40%) as a result of the significant decline in the performance of the Iraqi economy, as the Corona epidemic, the decline in global crude oil prices and (OPEC) decisions had many negative repercussions on the gross domestic product (Annual Economic Report, 12, 2020).- 40%) as a result of the significant decline in the performance of the Iraqi economy, as the Corona epidemic, the decline in global crude oil prices and (OPEC) decisions had many negative repercussions on the gross domestic product (Annual Economic Report, 12, 2020).

Schedule (2(Gross Domestic Product)at pricesCurrent and fixed prices in Iraq for the period (2003-2020) (Million

growth rate forGDP in current prices % (2)	GDP at current prices (1)	the year
....	29,585,788.6	2003
79.94%	53,235,358.7	2004
38.13%	73,533,598.6	2005
29.99%	95,587,954.8	2006
16.60%	111,455,813.4	2007
39.95%	155,982,258	2008
-16.24%	130,643,200.4	2009
24.05%	162,065,565.5	2010
34.10%	217,327,107.4	2011
16.98%	254,225,490.7	2012
7.62%	273,587,529.2	2013
-2.65%	266,332,655.1	2014
-26.90%	194,680,971.8	2015
1.15%	196,924,141.7	2016
12.56%	221,665,709.5	2017
21.32%	268,918,874.0	2018
-2.23%	262,917,150.0	2019
-24.40%	198,774,325.4	2020

Source: column (1)central Statistical Organization ,National accounts, annual statistical releases, for years(2003-2020), Baghdad: Ministry of Planning,Columns (2) of the researcher's work.

Sixth: The results of applying the standard using a model (ARDL) :

sleep longer-singapore-Automatic house of the vagina-Watt time-Distributor-e (ARDL) one of the best-to-ask-yep-used for studies-Co-integration lately, since there areIn time series models-long time-relatively easy.Among the variables of economic decision-making-Ade and the final impact on the political variable-, which means that the modification in the dependent variable (Y) due to the change in the explanatory variable (X) distributed.widely-p by the passage oftime,And theIf the interval between response and effect is relatively long-a., q-The independent variables must be includedslowIn the model, which is one of the ways to build a dynamic

response model by including explanatory variableslag time kvariablesexplanatory.This means that the model (ARDL) becomes a mixture of two models, namely Distributed lag Model and Autoregressive Model, meaning that the effect of the explanatory variable is not only for the current time period (t), but extends over multiple previous time periods (tr). Al-Obaidi, 19, 2022).

The stability of the time series of the data of the variables used must be ensured before starting to estimate the model The above figure shows the instability of these variables, and therefore the problem of instability must be addressed by taking the first differences and using unit root tests

Figure (2) Results of the dormancy test for components of the money supply and indicators of economic growth
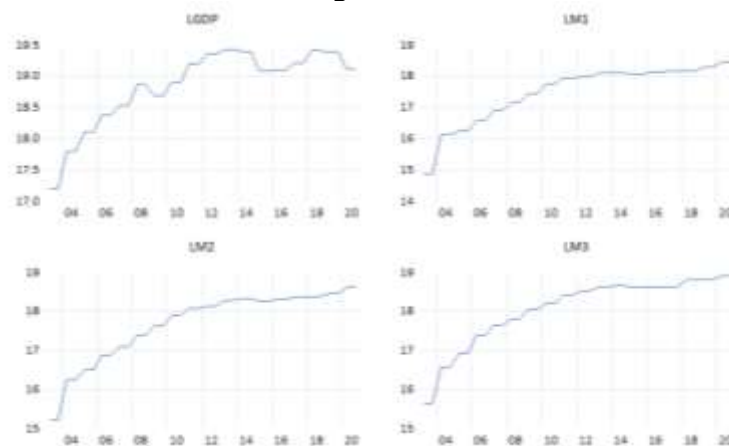
Source: Prepared by the researcher based on program outputs(EViews12)

1-a teststabilitytime series(root testUnitTheUnit Root Test)

As a first stage we test the stability of time series, which is a condition for co-integrationAnd theUnit root tests are one of the most important ways to determineStabilityTime series, knowing the statistical properties, as well as knowing the characteristics of the time series under study in terms of their degree of integration, And theThe Dickey-Fuller test was usedDeveloper and Tester Phelps PerronTo test for the presence of a unit root orstabilityin the variables under study,socheckthese twohidingRainThe null hypothesis that the variable in question has a unit root, i.e. it is unstable, versus the alternative hypothesis that the variable in question does not have a unit root, i.e. it is stable (Habib, Hassan 2019, 6) I.N

H°:b=0 (having a unit root and the string is unstable) null hypothesis

H1: b≠ 0Alternative Hypothesis (no unit root and series is stable)

Table (3) shows according to the Dickey-Fuller test(ADF)The presence of a unit root in the time series of variables (LGDP,LM1,LM2(at its original level, which means that the null hypothesis is accepted)H°:b=0) which states that time series are not static, and this is certainProbWhere it was greater than 5% at its original level, and after taking the first difference for 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).

Table (3) Results of the unit root test according to the developed Dickey Fuller test (ADF) and Philips Perron (PP)

degree of integration	ADFtest					Series
	When the first difference		at level			
	Prob.*	t-Statistic	Prob.*	t-Statistic		
(1)	0.0000	-6.316769	0.0176	-3.404235	fixed limit only	LGDP
	0.0000	-8.35838	0.6254	-1.915089	jumpy limitTand general direction	
	0.0000	-5.744563	0.9804	1.794499	without a bouncy limitTand general direction	
(1)	0.0000	-7.338383	0.11026	-2.602469	fixed limit only	LM1
	0.0000	-7.304239	0.4604	-2.221100	jumpy limitTand general direction	
	0.0000	-6.420186	0.9972	2.641249	without a bouncy limitTand general direction	
(1)	0.0000	-6.368526	0.0541	-2.916947	fixed limit only	LM2
	0.0001	-6.293784	0.6625	-1.839501	jumpy limitTand general direction	
	0.0000	-5.705199	0.9952	2.417331	without a bouncy limitTand general direction	
(0)	-	-	0.0003	-5.141864	fixed limit only	LM3
	-	-	0.0026	-4.958804	jumpy limitTand general direction	
	-	-	0.9802	1.794503	without a bouncy limitTand general direction	

*at the 5% level
The source is prepared by the researcher, based on Appendix(3) and outputs (EViews 12)

2-Autoregressive model estimation of distributed deceleration (ARDL)

Depending on the standard(Akaike)Which is the best in autoregressive models to slow the distributor(ARDL)To fit the small samples, the optimal slowdown periods were distributed among the study variables automatically, as the model (4,4,4,4) was determined as the best model, and the following figure shows that:

Figure (3) Optimum rank test for a model(ARDL)according to standard(AIC)

Akaike Information Criteria (top 20 models)

Model1: ARDL(4, 4, 4, 4)
Model251: ARDL(2, 4, 4, 4)
Model126: ARDL(3, 4, 4, 4)
Model276: ARDL(2, 3, 4, 4)
Model305: ARDL(2, 2, 4, 0)
Model376: ARDL(1, 4, 4, 4)
Model301: ARDL(2, 2, 4, 4)
Model151: ARDL(3, 3, 4, 4)
Model180: ARDL(3, 2, 4, 0)
Model280: ARDL(2, 3, 4, 0)
Model304: ARDL(2, 2, 4, 1)
Model277: ARDL(2, 3, 4, 3)
Model302: ARDL(2, 2, 4, 3)
Model176: ARDL(3, 2, 4, 4)
Model26: ARDL(4, 3, 4, 4)
Model252: ARDL(2, 4, 4, 3)
Model55: ARDL(4, 2, 4, 0)
Model279: ARDL(2, 3, 4, 1)
Model179: ARDL(3, 2, 4, 1)
Model152: ARDL(3, 3, 4, 3)

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

As a result, and by looking at Table (4), the estimation was made by the autoregressive model of the distributed slowdown, and the best formula was among (500)ARDLThe parameters are consistent with the economic theory, and 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, and also that the model does not sufferyFrom the problem of self-correlation as it appears from the Durban-Watson test, as its value is (2.30), meaning that it falls in the acceptance point, and the quality of the model is good as it appears from its probabilistic value(F) .

Table (4) Model Estimation ResultsARDL

Dependent Variable: LGDP
Method: ARDL
Date: 08/19/22 Time: 13:51
Sample (adjusted): 2005S1 2020S2
Included observations: 32 after adjustments
Maximum dependent lags: 4 (Automatic sele
Model selection method: Akaike info criterion
Dynamic regressors (4 lags, automatic): LM1
Fixed regressors: C @TREND
Number of models evaluated: 500
Selected Model: ARDL(4, 4, 4, 4)

Variable	Coefficient	std. Error	t-Statistic	Prob*
LGDP(-1)	0.052174	0.122238	0.426827	0.6777

LGDP(-2)	-0.157165	0.282524	-0.556289	0.5892
LGDP(-3)	0.029634	0.139437	0.212522	0.8356
LGDP(-4)	-0.631053	0.134001	-4.709300	0.0006
LM1	-4.629871	0.763501	-6.064004	0.0001
LM1(-1)	0.095927	0.455252	0.210712	0.8370
LM1(-2)	0.526022	0.826019	0.636816	0.5373
LM1(-3)	-0.163518	0.525814	-0.310980	0.7616
LM1(-4)	-2.134318	1.070322	-1.994091	0.0715
LM2	5.598693	1.301840	4.300601	0.0013
LM2(-1)	0.095633	0.649800	0.147173	0.8857
LM2(-2)	-1.548869	1.022746	-1.514423	0.1581
LM2(-3)	0.295606	0.815931	0.362293	0.7240
LM2(-4)	3.209519	1.567904	2.047013	0.0653
LM3	0.901514	0.430343	2.094876	0.0601
LM3(-1)	-0.100800	0.433594	-0.232476	0.8204
LM3(-2)	1.669315	0.687315	2.428748	0.0335
LM3(-3)	-0.095089	0.296929	-0.320243	0.7548
LM3(-4)	-1.377862	0.466467	-2.953827	0.0131
C	-10.37423	3.653281	-2.839701	0.0161
@TREND	-0.045857	0.006240	-7.348846	0.0000
R-squared	0.995551	Mean dependent var		19.9997
Adjusted R-squared	0.987462	SD dependent var		0.395260
SEof regression	0.044258	Akaike info criterion		-3.152888
Sum squared resid	0.021547	Schwarz criterion		-2.190999
Log likely	71.44621	Hannan-Quinn criter.		-2.834049
F-statistic	123.0756	Durbin-Watson stat		2.305597
Porb(F-statistic)	0.0000000			

Source: Prepared by the researcher based on the outputs of (EViews 12)
3- Model quality tests: It includes two tests
A- Tests for the series of residuals(Residuals Diagnostics Test)
It is represented by the lack of autocorrelation test between errors and the test for the instability of variance as in the following table:

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

				TEST
Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 2 lags	F-statistic	0.470092	Prob. F(2,9)	0.6395
	Obs*R-squared	3.026695	Prob. Chi-Square(2)	0.2202
Heteroskedasticity Test: Breusch-Pagan-Godfrey Null hypothesis: Homoskedasticity	F-statistic	0.596427	Prob. F(20,11)	0.8477
	Obs*R-squared	16.65465	Prob. Chi-Square(20)	0.6753
	Scaled explained SS	16.647955	Prob. Chi-Square(20)	1.0000

Source: Prepared by the student based on appendix (3) outputs.EViews 12)

nlaluck from the table (5) The estimated model is devoid of serial correlation, i.e. we accept the null hypothesis which states that there is no serial correlation between the residuals because the test

valueF and Chi-Square are not significant at the level of significance 5%, and we reject the alternative hypothesis in the presence of the serial correlation and also that it is free from the problem of heterogeneity of variance because the statistical indicators also have a positive error.

b- Structural stability tests of the model(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 modelARDLIf the curve represented by a statistic falls,eFor each of theGusumAnd theGusum of SquaresBetween the critical value terms means the stability of the model, then the null hypothesis will be accepted, and the model will be stable.

It shows from the figure below (4) of the two tests the inactivity of the 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.

Figure (4) Test(Gusum of Squares)And the(Gusum)
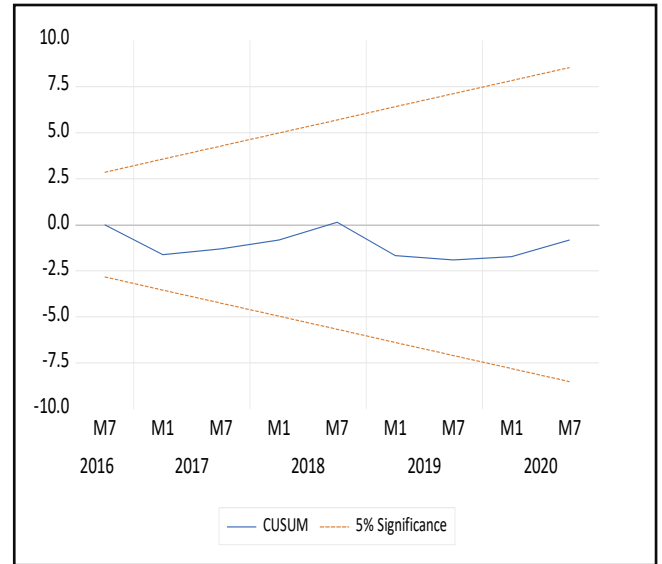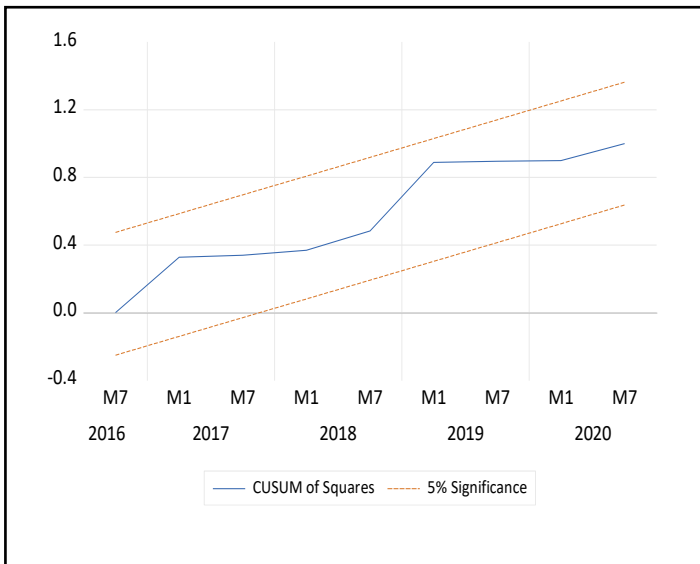
4- Boundary Test(Bound Test)

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 calculated for the coefficients of the variablelagging independentchronologically with a statistical valueF is critical, and the test is carried out based on the hypothesis .nonwhich states that there is no long-run equilibrium relationship between the variables.

Table (6) Border Test Results

Test Statistic	Value	k
F-statistic	27.31125	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	3.47	4.45
5%	4.01	5.07
2.5%	4.52	5.62
1%	5.17	6.36

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

Note fromTheScheduleaboveStatistical value has been estimatedF-statistic for models with (27.31125) 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 widerand GDP at pricesOngoing, and this can be done by choosing the co-integration of the equilibrium relationship in the long runAnd that the relationship is logical between the dependent variable and the independent variables according to the testt-Bounds Test

5- Estimation of the error correction modelARDL Error Correction Model

This model isECMThe basis for identifying the short and long-term parameters in the estimated model and identifying the error correction parameter, which must be negative and statistically significant, to know the speed required to return to the equilibrium position in the long term, as the table below shows the results

Table (7) Outputs of the error correction model

ECM Regression Case 5: Unrestricted Constant and Unrestricted Trend				
Variable	Coefficient	std. Error	t-Statistic	Prob
C	-10.37423	0.894870	-11.59300	0.0000
@TREND	-0.045857	0.003745	-12.24374	0.0000
D(LGDP(-1))	0.758585	0.108601	6.985073	0.0000
D(LGDP(-2))	0.601420	0.114851	5.236504	0.0003
D(LGDP(-3))	0.631053	0.103754	6.082219	0.0001
D(LM1)	-4.629871	0.473986	-9.767955	0.0000
D(LM1(-1))	1.771814	0.321704	5.507596	0.0002
D(LM1(-2))	2.297836	0.289802	7.928994	0.0000
D(LM1(-3))	2.134318	0.378838	5.633859	0.0002
D(LM2)	5.598693	0.672319	8.327441	0.0000
D(LM2(-1))	-1.956255	0.438409	-4.462168	0.0010
D(LM2(-2))	-3.505125	0.442887	-7.914262	0.0000
D(LM2(-3))	-3.209519	0.585962	-5.477348	0.0002
D(LM3)	0.901514	0.245664	3.669700	0.0037
D(LM3(-1))	-0.196364	0.278361	-0.705429	0.4952
D(LM3(-2))	1.472951	0.164663	8.945250	0.0000
D(LM3(-3))	1.377862	0.218332	6.310852	0.0001
CointEq(-1)*	-1.706410	0.144715	-11.79148	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 errorshe1.706- cointEq(-1)*= is negative and significantstatisticallyAt 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 170.64%.

6- Short-term causation test

The Kranger causality test will be used, and the slowdown period will first be determined, if it

showstests 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 period ofsecondtotochangedshe 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 periodthe second .

Table (8) Optimum deceleration period

Lag	Log	LR	FPE	AIC	SC	HQ
0	102.8279	NA	2.94e-08	-5.989569	-5.808174	**-5.928535**
1	194.4540	155.4868	3.04e-10	-10.57297	-9.665997	**-10.26780**
2	226.1297	*46.07374	1.23e-10*	-11.52301*	-9.890460*	**-10.97371***
3	241.3701	18.47318	1.46e-10	-11.47698	-9.118842	**-10.68354**

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

After determining the slowdown period, the short-term relationship is tested byKranger's causal testas it showsschedule (8)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 one-way causal relationship from the narrow money supply to the GDP at current prices, by comparing the value of(F) calculatedAnd the extreme(3.39388) with tabular values (0.0474) that are less than 5%as it turns outAcceptance of the alternative hypothesisrefusedHypothesisnothingness,And then there is a one-way relationship from wasted money supply tooutput anyThe change in the money supplydistress affectsinThe resulting.

As for the relationship between the broad money supply and the current GDP, the results indicated a one-way causal relationship, as it reached(F) Calculated (4.00434) which is greater than the tabular at the 5% level, meaning that the broad money supply affects the output and not the other way around. - As for the relationshipBetween the broader money supply and the current GDP, the results indicate a one-way causal relationship(F)The calculated (4.47813) is greater than the tabular at the 5% level, meaning that the broader money supply affects the output and not the other way around.

Table (9) TestSasabi KrangerThe components of money supply and GDP at current prices

Pairwise Granger Causality Tests Tags: 4			
Null Hypothesis	Obs	F-Statistic	Prob
LM1 does not Granger Cause LGDP LGDP does not Granger Cause LM1	32	3.39388 0.99630	0.0474 0.3815
LM2 does not Granger Cause LGDP LGDP does not Granger Cause LM2	32	4.00434 0.62693	0.0291 0.5413
LM3 does not Granger Cause LGDP LGDP does not Granger Cause LM3	32	4.47813 0.23001	0.0202 0.7960

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

SEVEN: CONCLUSION

The money supply and the GDP are among the important variables that constitute the study and search for the direction of the relationship between them of great importance to the economy as a whole and the Iraqi economy in particular, as it is possible from the direction of the relationship and its mutual effects to reach future predictions about monetary policy and its impact on setting a goal for GDP growth. The study reached a number of conclusions, the most important of which are: -

1- There is a co-integration relationship between the study variables, which indicates the existence of a long-term equilibrium relationship between money supply and GDP in Iraq during the study period.

2- The error correction model estimation also showed the existence of a long-term causal relationship between money supply and GDP, which explains that any change that occurs for both variables is an important factor in explaining the other variable.

3- The existence of a causal relationship in one direction in the long term between GDP and money supply, meaning that the direction of the relationship moves from money supply to GDP.

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