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TESTING THE CAUSAL RELATIONSHIP BETWEEN MONEY SUPPLY AND ECONOMIC GROWTH IN IRAQ USING (GRANGER TEST AND TODA YAMAMOTO TEST)

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Abstract:

This research aims to attempt to highlight the extent of the existence of a relationship between the money supply and economic growth in Iraq during the period (2003-2020). The standard study data include each of the three components of the money supply (M1,M2,M3) and real economic growth rates. Where the research is divided into three parts according to modern research methodologies. In the first part, we touched on the most important modern applied studies, and in the second part we dealt in detail the path of each of the components of the money supply and real economic growth in Iraq. As for the third part, we devoted it to a standard study on the relationship between the money supply and economic growth in Iraq, and the study found that there are A one-way causal relationship between the money supply in the narrow sense that causes GDPat pricesThe fixed and one-way causal relationship between the money supply in the broad sense and the gross domestic productat pricesPersistent and there is no causal relationship betweenShownIn the broadest sense, monetary and gross domestic productat pricesfixed Using the causality test presented byGranger using the Toda Yamamoto Extended TestThe results of the failure to achieve the monetary school's point of view showed that there is no long-term relationship between the money supply and economic growth.

Keywords: money supply, economic growth, causality testkrangerToda Yamamoto's test.

INTRODUCTION:

Monetary policy is an important part of quantitative economic policy, as monetary policy plays an important and effective role in regulating the money supply and controlling monetary liquidity and credit, and through this important role, the monetary authorities are represented in the central bank as the highest monetary authority that can achieve specific vital goals and priorities determined by the problem Sometimes the monetary authorities use intermediate goals such as the money supply to reach the final goal they aspire to, such as price stability, and reducing inflation, which is one of the most prominent and most important goals pursued by all economies of the world, as inflation has negative effects that are reflected on the economy and economic growth,Where is the criticism?YoonThey stress that money plays an effective role in bringing about positive changes in the level of income,and thereforeThat the increase indisplayedCash may lead To a corresponding increase in GDP in the short term, Wanits effectLimited to general levelfor pricesIn the long runTomedium and long

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?.

Problem Search: 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,

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the problem of the study is characterized in the form of a question that:
what mdyThe effect of money supply on real economic growth?
Hypothesis Search: The money supply and the gross domestic product have undergone significant changes in the quantitative and structural aspect, which was reflected on the monetary stability in Iraq.
Search Objective: The research seeks to achieve the following objectives:
1- Follow through analysis the paths and developments of the money supply and the real economic growth in Iraq.
2-Explanation of the impact of the money supply on economic growth inIraq.
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, with the help of modern statistical programs(EViews12).
Structuralthe study: The research consists of three axes
the hubthe first:the foundationtheoretical presentationcashand growthEconomic.
The second axis: analysis of the RAAT path and the evolution of the components of the money supplyand growtheconomic inIraq.
the hubThird: measure trace betweenMoney supply is growingEconomic.
The first axis: acestheoreticaltofor cash offerand growthEconomic
Or not:money supply conceptAnd its components:
Economists have had a hard time trying to agree on a specific definition ofMnakedAnd thez cash includes its componentsthe basic,This dispute revolves around a pointbasic and isThe constituent elements ofMnakedAnd thez cashsopointing conceptPainnakedAnd thez puritydeTo 'the amount of payment methods available inthe society,which is the sum ofFrommoneydifferentSpecies present in a community over a period of timecertain,The money supply can also be defined as the sum of monetary units owned by a society during a given period of time. (Shendi,Abdul Khader,20166 ,).
The components oftoThe money supply is represented by the so-called monetary aggregatesWhichQuantitative indicators related to the nature of the economy and the degree of development of banks, as they give information to the monetary authority about growth rates, and that many central banks, whether in developing or developed countries, have followed the achievement of intermediate goals based on the rate of growth of the money supply at a fixed rate within the limits of the growth rate in the monetary base Which amounts to about 4% to face the fluctuations that occur in prices, especially in the seventies and eighties of the last century, as this trend stems from a strong conviction that compels the central bank to maintain a stable and weak growth rate of the monetary mass, which is attributedyTo the contemporary critical theory of Milton Friedman (Dagher, Farhan, Bedoon, 2017), asThese aggregates provide information to monetary authorities about the pace of SEO growthnothe following different:
1-cash complex(Mo)(monetary base):The monetary base consists of a circulating part represented by the cash balance in the possession of the public and symbolized by the symbolE, and the non-current part represented by bank reserves and is symbolized by the symbolR, so that the monetary base equation can be formulated as follows: (slaveAs-Samad, 4, 2018)
M0= E + R
2-monetary aggregate (M1):It is represented by the total means of payment circulating in a country during a period of timespecific,Where the following are included in this definition:(vegetable, foodn,188,2018)
aCirculating money:It is the paper and coin currency that is used in various transactions.
B- Deposits: They are deposits held in the form of current accounts or demand deposits in bankscommercial,Both tools are instant payment methodsof high liquidity.
An equation can be writtenmoney supplyIn the narrow sense according to the following formula:(Al-Janabi,2014, 60-59)
M1=M0+ R1
Where:
M0: the currency in circulation
R1: current deposits
3-monetary aggregate (M2) Cash offer in the senseWide:qlocal cashown and sheInclude (M1) In addition to time deposits in banks and savings deposits in savings funds (semi-money), which is less liquid than (M1) (Abdul Rahim, 138,2014), and accordingly,

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it can be considered about the money supply in the broad sense in the following equation: (Al-Shammar, Al-Sharrouf) ,332,2009)
M2 = M1 + R2 + R3
whereas:
M2: Money supply in its broadest sense
M1: money supply in the narrow sense
R2: Term Deposit(temporal)
R3:savings deposits(deposit savings)
4- The complexcash (M3): Widthmeaning moneythe widestM3 This monetary complex includes all the elements of the monetary complex (M2).add toTerm deposits with other financial institutionsTheBanking and we symbolize it with the codeR4, And theCanFormulating the concept ofMcash offerIn the broadest senseThis is through the following relationship:(slaveSamad,2,2018):
M3 = M2 + R4
Wherethat:
M3:Money supply in the broadest sense
M2: ShowMoney in a broad sense
R3:Term deposits with non-bank financial institutions
5 -monetary aggregate (M4) is called liquiditythe public:The general liquidityM4 frommoney supplyM3In addition to the rest of the financial assets owned by the non-banking economic units.(Al-Fatlawi,39,2017)
6-monetary aggregate (M5): There are those who add to the previous societies a fifth monetary complex, which consists of M4 and to which certificates are added.Deposit. (slaveSamad,7,2018)

Second: The concept of economic growth and its measures:

The concept of economic growth: It is an indicator that is not easy to determinecomprehensive,where more than one is usedConcept, qEconomic growth reflects quantitative changes in production capacity and the extent to which it is exploitedenergy, and risesThe rate of growth in national income with an increase in the rate of use of this generated energy and vice versaRight.(weightand Al-Rifai, 381,2007). qEconomic growth is also known as the increase in real national product (income) during a certain period of time, or the continuous increase in the real output of a person (income) during a certain period of time. (Mandarin,312, 2012).

Economic Growth Metricsy:Three types of scales can be distinguishedeconomic growth, which are as follows:
1Monetary rates of growth: Growth rates are calculated based on monetary estimates of the size of the economytotal,That is, after converting in-kind and service productsto whatcurrency equivalentcash, And thisThe method is the easiest and the best, despite the reservationsaround,like badAppreciation,Ignore the effect of inflationand hereDistinguish between growth rates in pricesongoing, and growth ratesAt constant prices, growth rates in pricesGlobalism.(Al-Mahi, 171, 2010)
A- Growth rates at current prices: It is a measure of growth in local currencyfor the state,so. is publishedits dataannually,Therefore, annual growth rates can be measured based on thesedata,This method is suitable for studying local growth rates for a short period.
B - Growth rates at constant prices: Since the current prices do not accurately reflect the real increase in income or production as a result of the phenomenon of economic inflation and price increase, it has become necessary to adjust the data based on index numbersfor prices,Any estimate of GDP at pricesfirmware.
C- Growth rates at international prices: local currencies must be converted when conducting international economic studiescomparison,Because local currencies cannot be used due to the difference in currency exchange rates from one country to another, this method is used, especially in foreign trade studies.
2- In-kind rates of growth: It expresses the extent of improvement in the per capita share of in-kind services due to the inaccuracy of using monetary measures in the field of services, such as: the number of doctors per thousand people, the number of hospital beds per thousand people, the per capita share of goods and foodstuffs ... etc.) Al-Quraishi, 39, 2017).
3-Purchasing Power Comparison: International organizations use a measure of the value of national product (the value of goods and services produced by the national economy during a certain period of time, often in a year) denominated in the US dollar when publishing their reports when comparing the economic growth of countries in the world, and then they arrange countries according to the degree of progress and backwardness according to that measure , which is one of its most important shortcomings as it links the strength of the economy and the exchange rate of the national currency to the US dollar, at a time when the value of most currencies in the global financial markets is turbulent, as the International Monetary Fund experts warned that this measure hides the real value of the economies of developing countries, so it was Preparing a scale that depends on the purchasing power of the national currency within its borders, that is, the volume of goods and services that an individual needs in return for one unit of his national currency

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compared to the purchasing power of foreign currencies in other countries. (behind,470,2018)

The second axis: analysis The evolution of the components of the money supplyand growthThe economist in IraqFor the period (2003-2020)

Or not:**evolution analysistracksdisplayedTheCash in Iraq during the period 2003-2020**

The development of the money supply reflects a true picture of the development of the banking system and the banking awareness among the public and the degree of development of the financial and monetary markets, as the money supply started small and then increased and expanded during the study period until now, according to the data in Table (1),soThe period (2003-2021) witnessed the continuation of the money supply in the narrow sense, increasing from (2,898,189) billion dinars in (2003) to (119,944,017) billion dinars in (202).0) with an annual change rate (16.66%) 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 made by the Central Bank of Iraqfor reasonsMany, 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 state's general budget to accommodate the working class, all of this encouraged an increase in the issuance of cash in the economy (Kadhim et al. , 121, 2019) for the components of tight money supplyM1 The net currency in circulation increased during this period, from (1878486.1) billion dinars in (2003) to (71,526,054) in (2021), while current deposits increased in (2021) to reach (48,417,963) after it was (1,019,703) In (2003), where we note from the table (1The development of the net currency in circulation was to a greater degree than the current deposits, and that the growth rates of the currency in circulation recorded the highest level in the money supply in 2005, reaching (79.94%), and recorded its lowest level in (2011) to reach (45.28%), as for current depositsI registeredThe highest contribution percentage was in (2011) at (54.72%), while the lowest percentage was in (2005) at (20.06%).

as wellWe note from the table (1) The decrease in the money supply in the narrow sense in the two years (2014-2015) with a negative growth rate of (-1.54%) and (-4.24) overstraight and causeIncluding the decline in oil exports and the decline in revenues from those exports due to the ISIS war and the decline in international oil prices, and consequently 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), an increase of (8.49%), and the reason for this increase is mainly due to the growth of the currency outside banks, with 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 the state of fear among the public to keep cash savings to face the uncertainty in light of the state's economic stagnation., (Annual Economic Report of the Central Bank of Iraq, 26, 2016). In 2017, 2018 the money supply increased (M1) to (77,828,984) at the end of (2018) compared to (76,986,584) in (2017), which 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, constituting (52).03%) of the money supply (M1), but during the years (2019) and (2020), the money supply continued to rise with annual growth rates (11.49%) and (19.11%), respectivelyresultThe growth of the currency in circulation outside banks to record (59,987,098) compared to (47,638,603) and it constitutes (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 hospitalsIn additionTo the money provided to families during the application of the comprehensive ban, as for current deposits, it rose to (43,366,458) compared to (39,132,397) in 2019, and constitute (41.96) of the money supply (M1), and in the year (2021), the money supply (M1) increased by (16.05%) to reach (119,944,017) billion dinars, and the reason for this increase is due to a rise ineThe currency is in circulation by (59.63%) of the money supply to record (71,526,054), while current deposits rose to recordEndThe year (48,417,963) billion compared to the previous year (43,366,458), but the percentage of its contribution to the money supply decreased by (41.36%) compared to the percentage of the currency in circulation, 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's leadership in most public revenues by about (95%), which generates the emergence of a new problem, which is considered a major challenge for the Central Bank, which is the extent of the bank's

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ability to control the money supply in light of the government's increasing demand for the currency Local government to cover its increasing expenditures, while at the same time putting the independence of the bank on the line (Kazim et al., 121, 2019).

2-The evolution of money supply in the broad sense (M2)sonote from the table(1) that (M2) maykeep it upupwhat's wrongDrYear (2003) to (2015): (Khoshnaw, 37, 2016) This is due to:

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 increasing the armament of the armed forces to confront the enemies.

D - Increasing security expenditures and developing security services.

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

2015 witnessed (M2) decreased with a negative annual growth rate of -6.67, due to lower oil prices and a decrease in net foreign assets,As for the years (2016-202 .)0) We note that (M2) has increased at different rates of growth as well (7.03, 2.64, 2.73, 8.44, 15.92), where this increase in growth came as a result of the growth in supply.cash meaningydistress(M1) and quasi-money (other deposits).

3-The evolution of the money supply in the broadest senseM3)so We note from the table (1) that (M3) has been increasing continuously from (2003-2014) due to the increase in both the money supply (M3) and government deposits, with the highest contribution of government deposits to the money supply. In (2008) at a rate of (46.01%), while during the two years (2015-2016), the annual rate of change in the money supply became negative due to the decrease in both money supply (M2) and government deposits, while the years from (2017-2021) continued to increase (M3) and thus will reflect the extent of development of the volume of local liquidity in the Iraqi economy.

Table (1)
The evolution of the money supply in Iraq for the period from (2003 - 2020)

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: coffeeKIraqi Central Bank, annual statistical group, for different years (2003-2020)

Secondly:Gross domestic productat pricesfirmware: between table (2) that the gross domestic productat pricesThe constant (700=100) during the period (2003-2016) sDrIt achieved an increase, but with fluctuating growth rates (53.44%) (1.75%) (5.60%) (1.91%) (7.49).%)(4.05%) (6.47%) (7.51%) (13.94%) (7.63%) (2.26%) (2.61%)(13.79%), respectively, as a result of the

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remarkable improvement in the internal factors represented by the improvement in security conditions, in addition to external factors and the rise in oil prices in global markets, which contributed to pushing growth indicators forward. As for the year (2017), the GDP witnessedat pricesRelatively declining and with a negative growth rate (-1.82%) due to the decline in the contribution of some economic activities, in addition to the fiscal policies taken by the state to finance spendingto reAges in the regionsliberated,During (2018-2019), the GDP increasedat pricesFixed due to increased oil exports and increased contribution to GDP. As for the year (2020) achievedGDP growth rateat pricesThe constant growth rate is negative (-11.18%), which is due to the decline in oil revenues as a result of the outbreak of a pandemiccorona,This had a significant impact on the gross domestic productTotal. soKWhoever follows the path of the GDP, we note that it is affected by the local and external shocks that Iraq and the world are exposed to as a result of the dependence of the growth of the output on one sector, which is oil, which is hostage to the variables that the world and the country are going through, and that this imbalance has been sustainable in its content for decades, and we did not notice an effective strategy for the advancement of the country, Today, Iraq urgently needs to accelerate the adoption of the policy of economic diversification and the method of participation between the public and private sectors as a strategic option during the current stage to overcome the problem of insufficient government allocations and address the inefficiency of performance in the implementation of development projects. (Ali, 300, 2021).

Table No. (2)
The GDP index at current and constant prices in Iraq for the period (2003-2020)

growth rate forGDP at constant prices %	GDP at constant prices	the year
.....	66,335,848	**2003**
53.44%	101,788,449	**2004**
1.75%	103,568,449	**2005**
5.60%	109,368,369	**2006**
1.91%	111,455,813	**2007**
7.49%	119,802,041	**2008**
4.05%	124,659,542	**2009**
6.47%	132,731,012	**2010**
7.51%	142,700,217	**2011**
13.94%	162,587,533.1	**2012**
7.63%	174,990,175.0	**2013**
2.26%	178,951,406.9	**2014**
2.61%	183,616,252.1	**2015**
13.79%	208,932,109.7	**2016**
-1.82%	205,130,066.9	**2017**
2.63%	210,532,887.2	**2018**
0.60%	211,789,774.7	**2019**
-11.18%	188,122,265.8	**2020**

Source:Column Ministry of Planning, accountsnationalism,Annual Statistical Bulletinse, for years mKhturn
* The percentage was extracted by the researcher

Theside Third: measure EffectMoney supply in economic growth

This most important part of the research aims to show and measure the impact of the components of the money supply on the gross domestic product in Iraq during the period (2003-2030), and to know the direction of the relationship between them. As we will use an appropriate standard model using these variables, which allows us to know the causal relationship between them in the Iraqi economy. We will use the quantitative analytical approach, which is based on the use of modern standard methods in the direction of the dynamic relationship between the components of the money supply and the rates of economic growth in Iraq. In order to obtain accurate results, a statistical program was usedEViews 12In building and estimating the applicable models. In this

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chapter, we will present an applied study on two levels:

1- Determining the direction of the relationship between foreign direct investment and economic growth in the short run using causalitykranger

2- Determining the direction of the relationship between foreign direct investment and economic growth in the long run using Toda Yamamoto causality

First: a description of the variables used in the measurement

Here, the independent and dependent variables must be identified. The following is a description of the variables included in the model:

1- The dependent variable:NGDPGross domestic product at constant prices expressing economic growth.

2- Independent Variables:

-M1The money supply in the narrow sense.

-M2The money supply in the broad sense.

-M3Money supply in the broadest sense.

After defining the dependent and independent variables, we can formulate the following functional relationships for the model variables

$$NGDP_t = \alpha + \beta 1M1\tau + \beta 2M2\tau + \beta 3M3\tau + U\tau \dots \dots (1)$$

Second: Estimating the relationship between the components of the money supply(M1,M2,M3)and GDP at constant prices

The stability of the time series of the data of the variables used must be ensured before starting to estimate the model And its use in analysis and prediction in the study where the logarithmic formula was used because it is more suitable for the study data and its fluctuations and instability to make sure oftheir levels,As this is a prerequisite for the correctness of the analysis, estimation, orForecasting.(Sheikhi, 195, 2011)And as in the following equations:

$$LNGDP_t = \alpha + \beta 1LM1\tau + \beta 2LM2\tau + \beta 3LM3\tau + U\tau \dots \dots (2)$$

And that this model uses semi-annual data in estimating the relationship between the components of the money supply and the GDP at constant prices.

1- The results of the sleep test Stationarity

Unit wall tests were used to find out if the variables were static or not, and to identify the degree of integration of the economic variables.(ADF)To find out the extent of the inactivity of the variables under study, the results were as follows:

Table (3) Results of unit root test according to Dickey-Fuller testADF

degree of integration	ADFtest					variable
		When the first difference		at level		
	Prob.*	t-Statistic	Prob.*	t-Statistic		
	-	-	0.06944**	2.793840-	fixed limit only	LNGDP
I(0)	-	-	0.0322*	3.750726-	jumpy limitTand general direction	
	-	-	0.9901	2.105717	without a bouncy limitTand general direction	
I(1)	0.0000*	7.338383-	0.11026	2.602469-	fixed limit only	LM1
	0.0000*	7.364239-	0.4604	2.221100-	jumpy limitTand general direction	
	0.0000*	6.420186-	0.9972	2.641249	without a bouncy limitTand general direction	
	0.0000*	6.368526-	0.0541	2.916947-	fixed limit only	LM2
	0.0001*	6.296784-	0.6625	1.839501-	jumpy limitTand general direction	
I(1)	0.0000*	5.705199-	0.9952	2.417331	without a bouncy limitTand general direction	

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I(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
**At level 10
The source was prepared by the researcher based on the outputs (EViews 12)
Table (3) shows the presence of a unit root in the time series of variables (LM1,LM2(at its original level, which means that the null hypothesis is accepted)H°:b=0) which states after the time-series inactivityWhereProbIt 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 (LM3,LGDPIt 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) .

2-Determining the duration of slowdowny:

I showedtests results (HQ, AIC, SC) used To determineThe optimal deceleration period that achieves the best estimate for a model in the table (4), 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 (4) the optimal deceleration period

Lag	Log	LR	FPE	AIC	SC	HQ
0	128.1694	NA	NA	-7.760590	-7.577373	**-7.699859**
1	229.8029	171.5065	171.5065	-13.11268	-12.19660	**-12.80903**
2	255.6098	37.09730	37.09730	-13.72561	-12.07666	**-13.17903**
3	272.9475	20.58860	20.58860	-13.80922	-11.42740	**-13.01971**
4	323.6215	*47,50684	*47,50684	-15.97634*	-12.8665*	**-14.94391***

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

3-Short Term Relationship Testkranger's Causal Test):

After 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:

Pairwise Granger Causality Tests
Date: 08/19/22 Time: 23:59
Sample: 2003S1 2020S2
Tags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
LM1 does not Granger Cause LNGDP	32	3.63744	0.0194
LNGDP does not Granger Cause LM1		2.58624	0.0638
LM2 does not Granger Cause LNGDP	32	4.55342	0.0074
LNGDP does not Granger Cause LM2		1.79535	0.1642
LM3 does not Granger Cause LNGDP	32	1.58123	0.2129

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Table (5) Granger

LNGDP does not Granger Cause LM3	0.73790	0.5757	Causality Tests

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

Table shows(5)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 constant prices, by comparing the value of(F)The calculated amount of (3.63744) with tabular values (0.0194) which is less than 5%, as it is clear that the alternative hypothesis is accepted and the null hypothesis rejected, and then there is a one-way relationship from the wasted money supply to the output, that is, the change in the narrow money supply affects the output.

As for the relationship between the broad money supply and the constant GDP, the results indicated that there is a causal relationship in one direction.(F)The calculated (4.55342) 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 relationship between the broader money supply and the current GDP, the results indicated that there is no causal relationship between them, meaning that the broader money supply affects the output and vice versa.

4-long-term relationship test(Tooda Yamamoto test)

has been testedToda Yamamoto test in the long run to find out the trend of causation between the growth of output GDPat pricesThefixed and showncash(M1,M2,M3),and to measuredirection 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.cameThe results are as follows:

Table (6)Toda Yamamoto's causality test

significant level 5%	p-value	Chi-sq	df	explanatory variables	dependent variable
lack of causation	0.0926	9.445579	5	LM1	**LNGDP**
existence of causation	0.0016	19.37464	5	LM2	
existence of causation	0.0084	15,52070	5	LM3	
lack of	0.2996	6.069044	5	LGDP	

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causation					**LM1**
lack of causation	0.4141	5.014890	5	LM2	
lack of causation	0.2957	6.109402	5	LM3	
lack of causation	5.372882	0.3721	5	LGDP	**LM2**
lack of causation	7.233494	0.2038	5	LM1	
lack of causation	7.594641	0.1800	5	LM3	
lack of causation	0.4907	4.419381	5	LGDP	**LM3**
lack of causation	0.4027	5.109046	5	LM1	
lack of causation	0.4368	4.831167	5	LM2	

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

Through the results we note

The absence of a causal relationship between GDP at constant prices as a reactive variablepAnd the narrow money supply as an independent variable in the long run, as the above table shows insignificance and rejection of the null hypothesis as theLNGDPdon't swearB LM1At a significant level of 5%, and there is a causal relationship betweenGDP at constant prices as a TAP variablepThe money supply in the broadest senseLNGDPcursingBWhoeverLM2,LM3at a significant level of 5%.

-The absence of a causal relationship between the money supply in the narrow sense as a repentant variablepAnd gross domestic product at constant prices and money supply in the broadest and broadest sense as independent variables in the long run, as the above table shows insignificance and rejection of the null hypothesis asLM1don't swearB (LNGDP,LM2,LM3) AboutDrSignificant level of 5%.

-The absence of a causal relationship between the money supply in the broad sense as a repentant variablepAnd gross domestic product at constant prices and money supply in the narrow and broader sense as independent variables in the long run, as the above table shows insignificance and rejection of the null hypothesis asLM2don't swearB (LNGDP,LM1,LM3) AboutDrSignificant level of 5%.

-The absence of a causal relationship between the money supply in the sense The widest as a tab variablepAnd GDP at constant prices as an independent variable and the existence of a causal relationship between the broader money supply 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 (LNGDP, LM2, LM1) AboutDrMoral level 5%.

CONCLUSIONS:

1- It is evident through the results of the stability test for the study variables according to the developed Dickey Fuller test that the two variables(LNGDP,M3)They are stable at their original level, so they are considered integrals of degree

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zero(M1,M2)They are not stable at the level, so the first difference was taken for them, and thus the two variables became stable and integrated of the first degree.

2- 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.

3- The results of the Kranger test indicate the existence of a vector causal relationship from the money supply in the narrow sense to the output, the existence of a vector causal relationship from the broad money supply to the output, and the absence of a causal relationship between the broader money supply and the output.

RECOMMENDATIONS:

1-The monetary authority should use its efforts to control the growth of the money supply in line with the requirements of economic activity,and soIn proportion to the growth rates of domestic product in order to avoid excessive monetary issuance with no equivalent on the part of real production, in order to maintain monetary stability and raise economic growth rates, in addition to the necessity of providing the necessary liquidity for the economy to reach the rates of this desired economic growth on the one hand, and from On the other hand, all highly qualified moral and human potentials must be harnessed and given the tasks of managing the various economic sectors.

2- Creating a developed and stable financial environment for the success of policy toolscash,and keep it up to date with developmentscurrent,As well as coordination between monetary policy and other economic policies to increase the degree of their effectiveness in influencing the volume of GDP.

3-Because of the great importance of relying on and using statistically superior methods in the processForecasting,We see the need for economic policy makers to obtain information about the nature of the relationship between money supply and economic growth in the short termand long, To find out the effectsand adopt appropriate and consistent policies to achieve the desired economic objectives.

SOURCES:

1. Ministry of Planning and Development Cooperation, Statistical Totals for the Years (2003-2020), BaghdadDr: Central Agency for Statistics and Information Technology.
2. Central Bank of Iraq, Al-NashraTannual for years(2003-2020), Baghdad, circulareStatistics and research
3. Ali, M. Dr..whatgenerous,2021, Standards of Economic Growth in Iraqfor a while2000-2012),Studies Journaleducational,Number 55.
4. Al-Mahi, MahmDr, 2010, Planning and Financing Development (Curriculums - Models - Application), 1st Edition, Orchard Al Maarifa Publishing, Egypt.
5. Al-Quraishi,Mr. Dr. Ali Hatem,2017, Economicsdevelopment, basin Euphrates Najaf,editionFirst.
6. Khushnaw, 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, Issue 26.
7. Al-Jubouri andothers,Mr. Dr. Mahdi SoheirJubouri,Mr. Dr. Kazem SaadAl-Araji, mM. Khudair Abbas Al-Waeli, 2017, Modeling and Analysis of Fiscal Policy in Iraq Using Autoregressive Modelto slow downdistributor(ARDL) (Autoregressive distributed lag model) for the period (1990–2015), Management Journaland economyVolume Six, Issue Twenty-One.
8. Shendi, Abdel-Khader, a. Dr.. Adeeb Qassem Shendi and Nagham Hamid Abdel-Khader, sizeRelationshipBetween the money supply and indicators of economic stability in Iraq for a period (1980-2014Al-Kout Journal of Economic and Administrative Sciences, No21,2016
9. Abdel Samad, Dr. Abdel Basset Abdel Samad, 2018, the role of money supply growth in the growth of the private sector in Algeria during the period 1990-2012 (a prospective study with Malaysia), PhD thesis in the economics of finance and banking, Department of Economic Sciences, University M'hamed Bougara, Algeria.
10. Janabi, heytoAjami, 2014, Money, Banking and Monetary Theory, 2nd Edition, Wael Publishing House, Amman.
11. Khader, Taan, 2018, sizeand analysisThe relationship of money supply with some macroeconomic variables in Iraq for the period (2004-2016).

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 15, October 2022
ISSN: 2749-3628,

12. Lashmari, Shrouf, Nazim and Muhammad Musa, 2009, Introduction to Economics, Zahran Publishing House, Amman - Jordan.
13. Al-Fatlawi, Hussein Majid Thamer Al-Fatlawi, 2017, fiscal policy and its impact on the money supply in Iraq for the period (1990-2014), a master's thesis in economic altitude, Al-Qadisiyah University, College of Administration and Economics.
14. Weight andAl Rifai, Dr.. maternal uncleDrWassef andDr.. ahemDrHussein, 2007, Principles of Macroeconomics between Theory and Practice, Wael Publishing House, third edition, Amman.
15. Al-Afandi, Muhammad Mahmoud Al-Afandi, 2012,principlesMacroeconomics, University Book House, Sana'a, second edition.
16. Dagher, Farhan, 2017, Monetary policy in Iraq through the analysis of the two gaps, Al-Kut Journal of Economics and Management issued by the College of Administration and Economics, Wasit University, No. 26.