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Determinants Of The Demand For Real Money Balances And Its Stability In The Iraqi Economy For The Period (2003-2018)

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ABSTRACT:

This paper dealt with estimating and analyzing the determinants of demand for real cash balances and their stability in Iraq for the period (2003-2018).A stable demand on real cash balances function give the green light for the monetary policy maker to use money supply as an effective toolto achieve its goals. The econometric approach was used to estimate and then test the stability of the demand on real cash balances function.

The stationary test confirmed that some of our variables are stationary at level and others at the first difference. As our co-integration test revealed a long run relationships between the independent variables (exchange rate, Consumer price index, and Gross domestic product) and the real cash balances. According to that the ARDL model was used to estimate the short and the long run coefficients and the error correction parameter by using Eviews11. The results of the estimated model confirmed our hypothesis (The stability of the demand of real cash balances) as the results of CUSUM, and CUSUM SQ shows. This means the success of using money supply as an effective tool by the monetary policy maker. The ARDL results reflects the significant of the independent variables parameters on the short and the long run economically and statistically. The adjustment coefficient was -0.20 which confirm the stability of the model if departed from the equilibrium level and will return back in 5 quarters. The model shows high capability in tracking the historical data. This confirmed the forecasting merit of the model. Five different scenarios postulated to simulate the answer to the What if question for the period 2019-2025. The result of the forecast shows strong sensitivity of the demand of real cash balances to the large shock in the Exchange rate, Consumer price index, and the contraction of the GDP. The combined effect of the strong shock in the independents variable will force the public to abandon the local currency and replace it with US dollar. This will weakened the effectiveness of using the money supply as an effective tool of the monetary policy.

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1. INTRODUCTION

The argument between the monetarist and the Keynesian Camp was about the effectiveness of the short-run macroeconomic stabilization policies. In another word the debate hinged on the relative effectiveness of monetary against fiscal policy on a short run stabilization tools.

The monetarist believe that the demand for real money balances is inelastic to the interest rate, while the curve of investment demand is elastic towards the interest rate.

Keynesian on the other hand believe that the fiscal policy is more effective as a macroeconomic stabilization tool. This is becausethe demand of real money balances is elastic towards the interest rate, while investment demand function is inelastic.

Many research were carried out to test these argument on developed and developing countries.

This paper aims is to shed the light on the determinants of the demand on money function and test its stability in the Iraqi economy for the period (2003-2018).

The importance of this research comes from the vital role the stability of the money demand function plays on the effectiveness of the monetary policies.

The paper is organized as follow: Section two will present the literature review on the demand of money function. Section three will deals with Methodology and model specification. Section four exhibits estimation and analysis the empirical result. Section five is the conclusion.

2. LITERATURE REVIEW

Nwude, Offor, and Udeh(2018) examined the determinants of broad money demand and its stability in Nigeria over the quarterly period 1991:Q1 to 2014:Q4. With ordinary least squares and other statistical methods the results indicate that a long-run relationship exists between the real broad money aggregate and real
income, domestic interest rate, inflation rate, exchange rate and foreign interest rate. Real income and exchange rate are directly related to the real broad money balances while domestic interest rate, inflation rate and foreign interest rate are inversely related to the demand for broad money.

Al Rasasi, andBanafea (2018)empirically investigates the stability of money demand function in Saudi Arabia based on the cash-in-advance model using quarterly data covering the time period 2000-2016. With aid of various econometric testing procedures, they found evidence suggesting the presence of stable long and short run relationship between money demand, M2, and its determinants.

Hassan, Ali,and Mamoon (2016) investigated the factors such as interest rate, GDP per capita, exchange rate, fiscal deficit, urban and rural population to determine money demand function for Pakistan over the period from 1972-2013. They use ARDL Bound Testing approach in order to test long run relation between money demand and its factors whereas both long and short run coefficients will be found using similar approach. The results show that real interest rate exerts significant and negative effect upon money demand in both long and short run in Pakistan. The results also disclose that exchange rate and rural population are leaving significant but negative effect on the demand for money. These findings are robust to different diagnostic tests.

Hatem, and AbdAlsaheb (2017) studied the effect of money demand and its stability on Exchange Rate in Iraq for the period 1991-2013.

Their results showed unstable money demand function. This happened due to the high inflation rate which cause the reducing in the value of the Iraqi Dinar. This led to the decline in the exchange rate.

Issa Ali (2017) examined the demand for money in Libya using annual data for the period(1970-2010) The tests results shows that money demand is stable,as that demand for money is temporally stable in Libyaand, therefore, it can be said that monetary aggregate is the appropriate intermediate target for monetary policy for the Central bank of Libya.

Suliman and Dafaalla (2011) applied cointegration and error correction models on time series data (annually observations) to examine the behavior of money demand in Sudan during the period, 1960–2010. Co-integration results revealed there is a long-run relationship between real money balances and the explanatory variables and the stability tests showed that the money demand function is stable between 1960 and 2010. The study concluded that it is possible to use the

narrow money aggregate as target of monetary policy in Sudan.

3. METHODOLOGY

3.1. Model Specification

The demand for real money balances is a function of real income and cost opportunity of holding real balances.

The general specification takes the following functionalrelationship for the long–term demand for money:

$M/P = (Y, i)$ ……..(1)

Where M/P is demand for real balances. This is the narrow definition of the money supply (M1) over the consumer price index (p).

(Y) is a chosen scale variable to represent economic activity. GDP at constant prices will represent (Y).

(i) is the the opportunity cost of holding money. Interest rate for short-run will be used as proxy to (i).

Many researcher in our above literature review used other determinant for the demand of money besides Y, and (i) such as inflation rate, Exchange rate, and population , budget deficit, and many other factors.

We are going to add consumer price index,population and exchange rate to equation (1) to formulate our basic model.
M/p = f(Y, i,CPI, EX)……(2)

In applying the cointegration technique, we determined the order of cointegration of each variable. The error correction version of the ARDL model pertaining to the variables in Equation (2) is stated below:

$\Delta \ln Mt = \alpha 0 + \beta 1 \ln Mt-1 + \beta 2 \ln yt-1 + \beta 3 \ln idt-1 + \beta 4 \ln ift-1 + \beta 5 \ln reert-1 + \Sigma \varphi iki=1 \Delta \ln Mt-i + \Sigma \gamma jkj=0 \Delta \ln yt-j + \Sigma \beta lkl=0 \Delta \ln idt-l + \Sigma \delta h \Delta \ln ift-hkh=0 + \Sigma \theta m \Delta \ln reert-mkm=0 + \varepsilon t$

$$\Delta RMBt = \alpha 0 + a1MBt-1 + a2Yt-1 + a3it-1 + a4INFt-1 + a5EXt-1 + \sum_{h=1}^{n} B1h\, \Delta RMB\boldsymbol{t-h} + \sum_{\boldsymbol{l=0}}^{\boldsymbol{n}} \boldsymbol{B2l}\, \Delta Yt-l + \sum_{c=0}^{n} B3c\, \Delta i-c + \sum_{j=1}^{n} B4j\, \Delta INF\boldsymbol{t-j} + \sum_{m=1}^{n} B5m\, \Delta EX\boldsymbol{t-m} + \sum_{j=1}^{n} B6\, \Delta pop\boldsymbol{t-j} + \mathbf{Ut}$$

Where: Δ denotes the first difference operator.

The bounds test can be applied to examine the existence of the long run relationship between money demand and its determinants by using F-test. This test examines the joint significance of the coefficients on the one period lagged levels of the variables in equation (2) (Narayan, 2005). Therefore, the null hypothesis *H*0: a1= a2= a3= a4= a5=a6=0 is tested by F-test against the alternative hypothesis that *H*0 is not true. Thus, if the computed F statistic is higher than the upper bound of the critical values then the null hypothesis *H*0 is rejected, indicating that there is a long run relationship between money demand and its determinants in the long run. On other word, if the computed F statistic higher than the upper bound, we conclude that there is a cointegration between money demand and its determinants, but if the F statistic falls below the lower bound, we conclude that there is no cointegration. In the case of F statistic falls between the lower and upper bounds, indicates that the result of bounds test is inconclusive.

Additionally, if the long run relationship exists, the next step is to estimate the long run elasticities of the cointegrated equation (2). Therefore, the ARDL (c, j, l, h, m) specifications can be written as follows:

$RMBt = \alpha 0 + \sum_{i=0}^{h} a1\, RMB\boldsymbol{t-i} +$

$\sum_{i=0}^{n} \boldsymbol{B2}\, Yt - i + \sum_{c=0}^{n} B3c\, \Delta i - c\ + \sum_{j=1}^{n} B4j\, \Delta INF\boldsymbol{t} - \boldsymbol{j} + \sum_{m=1}^{n} B5m\, \Delta EX\boldsymbol{t} + \sum_{j=1}^{n} \Delta POP\boldsymbol{t} - \boldsymbol{j} - \boldsymbol{m} +$ **Ut**

3.2 **estimating and analyzing econometric model results**

3.2.1Stationary Test Results

The Stationary Test Results confirmed in table (1), that some of our variables (RQMD, QCPI, QEX) are stationary at level and variable(QFIXGDP) at the first difference. According to, we will use the ARDL model to estimate the short and the long run coefficients and the error correction parameter by using Eviews11

3.2.2 **The co-integration Test Results**

The co-integration test revealed in table (2) that a long run relationships between the independent variables (exchange rate, Consumer price index, and Gross domestic product) and the real cash balancesat the 0.05 level.

3.2.3Estimated long-run coefficients and short-run error correction model (ECM) for the real moneybalances

The results of the model in attached table No. (3) indicate that the parameters of the independent variables agree with what the economic theory assumes in terms of the signal in the short and long terms, as the CPI signal was negative in the short and long terms, as the partial elasticity of demand for Real cash balances with respect to the price index (-4.366401) in the short term, that an increase in inflation by 1% leads to a decrease in the demand for real cash balances by (-4.366401), while the long-term elasticity reached (-21.707670), meaning that an increase in inflation By 1% leads to a decrease in the real demand for money by (21.707670-) in the long term, which is a logical result in general and applies to the Iraqi situation in particular, as the high rates of inflation and the expectation of its continuation will push individuals not to keep cash balances in the Iraqi currency, but to strive to replace them In dollars in order to avoid the depreciation of its value, and the index price variable appeared significantly in the short term, especially in the first and fourth quarter of the year, and this can be attributed to the rapid effect and this appears in the first quarter and to the strengthening of the Expectations in the fourth quarter, and the parameters of the exchange rate (EX) appeared, consistent with the economic theory, as its sign was negative in the short and long terms and was statistically high and consistent with the economic theory in terms of the negative parameter signal, especially in the fourth quarter, when the partial elasticity of demand for money reached The real (9.813695 -)% in the short term, that an increase in the foreign currency exchange rate against the local currency in the parallel market by (1%) leads to a decrease in the demand for real cash balances by (9.813695%), while the long-term elasticity reached (- 17.950572), meaning that an increase in the foreign currency exchange rate against the local currency in the parallel market by (1%) leads to a decrease in the demand for real cash balances by (17.950572-) in the long term. The negative exchange rate signal means that individuals will try to get rid of Their balance is from the Iraqi currency and converting it into the dollar or they acquire fixed assets due to the deterioration of the

value of the Iraqi currency and their expectations for the continuation of this deterioration, as for the variable of GDP (GDP), his sign was positive and consistent with economic theory, as The growth of output will reflect positively on the desire of individuals to increase their demand for cash balances to meet their growing needs due to optimism and increase the level of income in the short and long term, as the partial elasticity of demand for real cash balances in relation to GDP reached (5.379598)% in the short term, meaning that an increase The GDP by 1% leads to an increase in the demand for real cash balances by (5.379598)%, while the long-term elasticity reached (13.209223)%), meaning that an increase in GDP by 1% leads to an increase in the demand for real cash balances by (13.209223)% in the long term, as Table (3) indicates that the value of the ECM error correction factor (--0.200257) is negative and significant at a significant level less than 1%, and this indicates that (0.200257) of short term errors are automatically corrected In the economic system to reach a state of equilibrium in the long term, that is, the demand for real cash balances requires about (0.9 = 0.200257 1), i.e. approximately (5) months, which is a quick response ((Quick Response) to reach its equilibrium value in the long term.

3.2.4 Self-correlation (LM) test of the final model

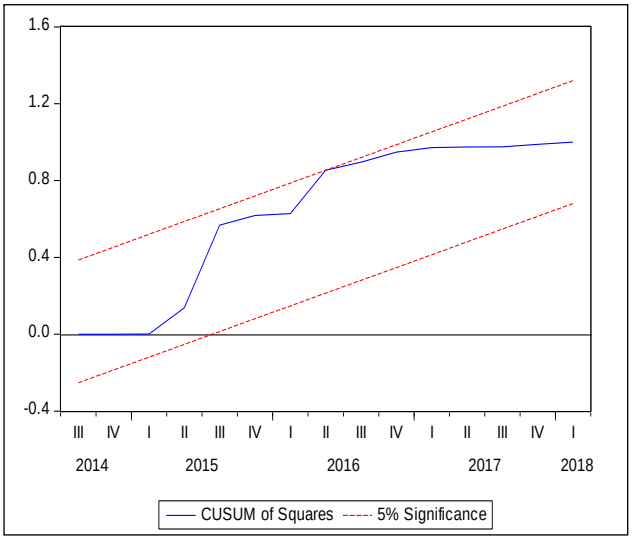
It is evident from the annex of Table No. (4) that the calculated significance value (F) amounted to (0.3110) which is greater than (Prob> 0.05), in addition to the statistical significance exceeding (5%) to the value of (R2), and this means that we are unable to reject The null hypothesis, but acceptance of it, is that there is no self-correlation in the model.

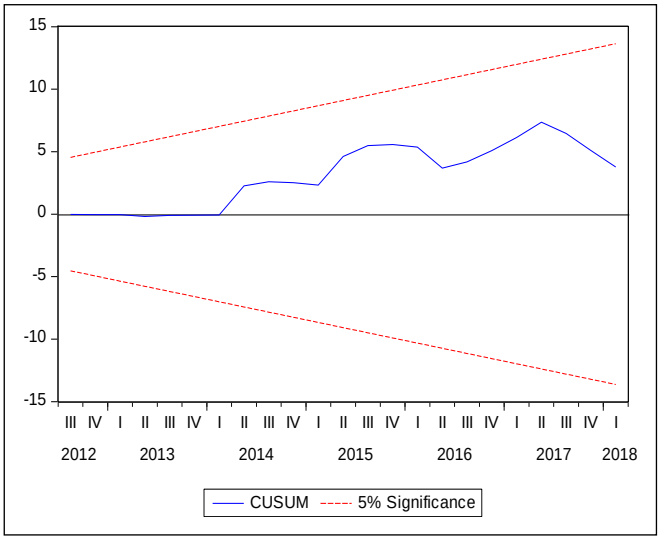
3.2.5Bound test results

The results clearly indicate in the attached table No. (5) that there is a long-term equilibrium relationship that moves from the independent variables towards the dependent variable, as the calculated F-Test value of (5.879837) is greater than the critical value of the upper and lower bound at a significant level (1)%, and this means that we reject the null hypothesis and accept the alternative hypothesis.

3.2.6 The (cu sum, cu sum sq) Test Results

Figure(1) The (cu sum, cu sum sq) Test Results

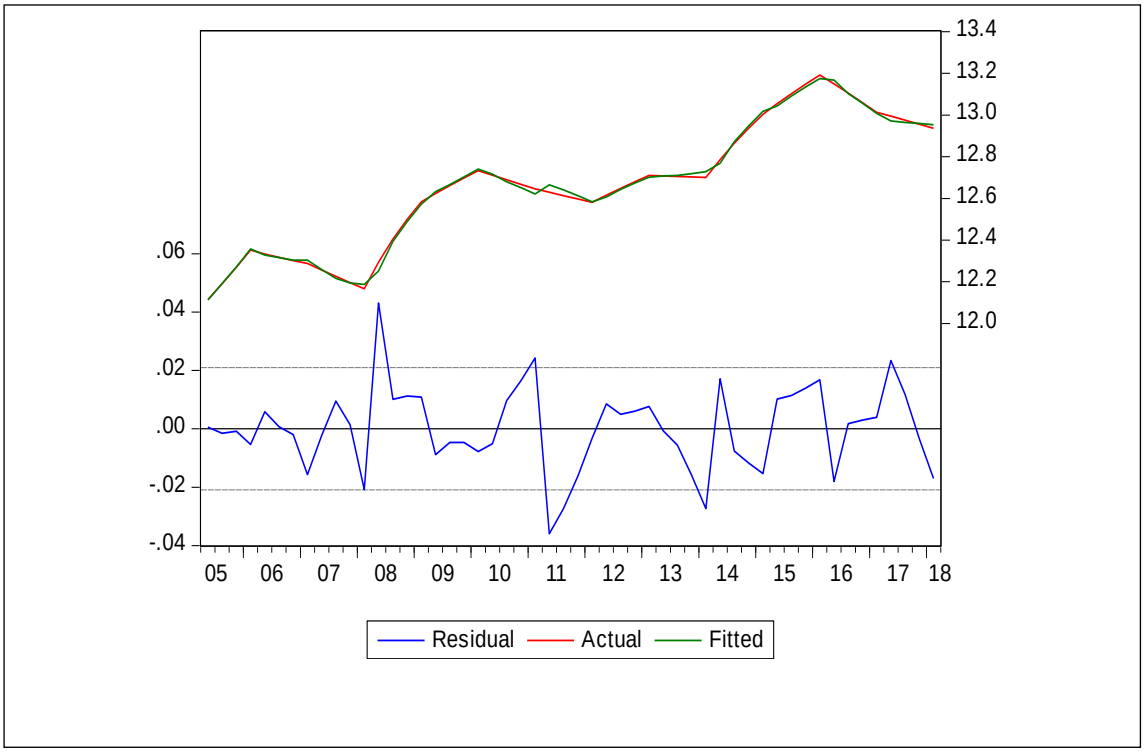




It is clear to us from Figure (1) that the results of the two tests fell within the critical limits (the minimum and the upper limit) at a significant level (5%), which means the stability of the estimated parameters model over the time period under study, and this result confirms the validity of the research hypothesis, and that the model If exposed to any shock, it will return to the state of equilibrium in five chapters, as the value of the equilibrium parameter indicates that ((-0.20). This is very important, as the meaning of the demand for real cash balances is stable means the effectiveness of monetary policy when it is used to display money as an effective tool. For monetary policy and achieving its goals, what we have reached in this model is consistent with studies of most developing countries in the world, as well as with some Iraqi studies in this regard.

We will test the predictive ability of our model by its ability to predict historical data used in measuring the model for the period (2003-2018). Five different scenarios have been assumed to simulate the answer to the question (what if) for the period (2019-2025) .

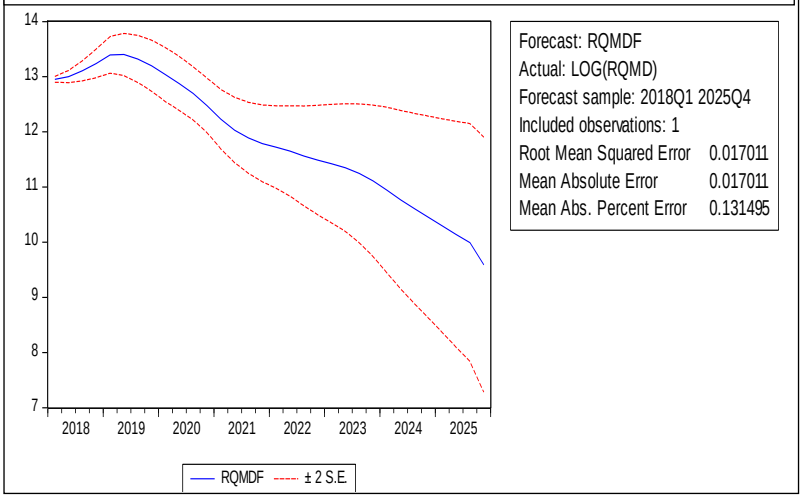
Figure (2) shows the historical values and the estimated values of the demand for cash balances for the period (2003-2018)



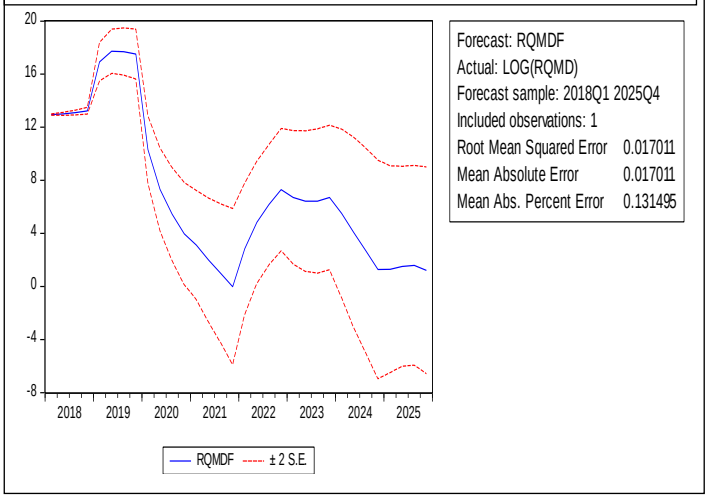
The graph in Figure (2) clearly shows the high possibility of the model to predict the values of demand for real cash balances for the research period (2003-2018), as the model was able to follow the real values during the time period in the periods of decline and rise very accurately, and this will enable us to use the model to predict For the next period (2019-2025).

3.2.7 Results of the answer to the hypothetical scenarios

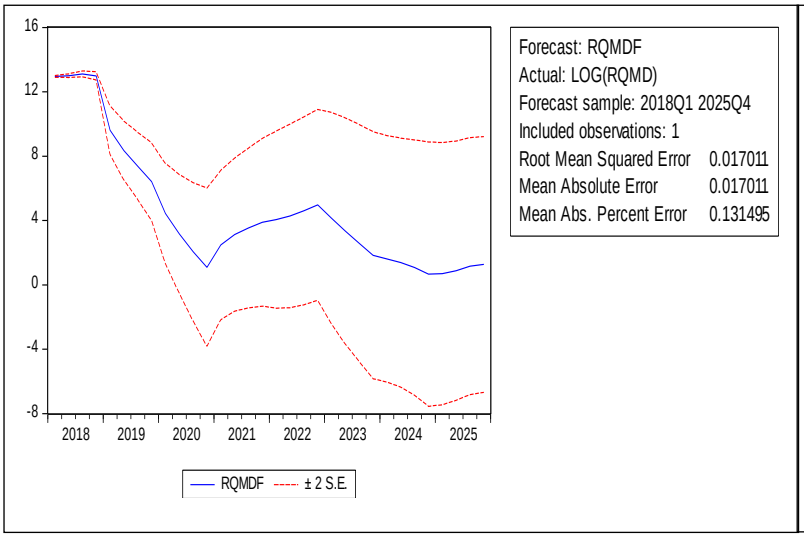
The first scenario: Assuming that the independent variables will maintain their growth rates for the next



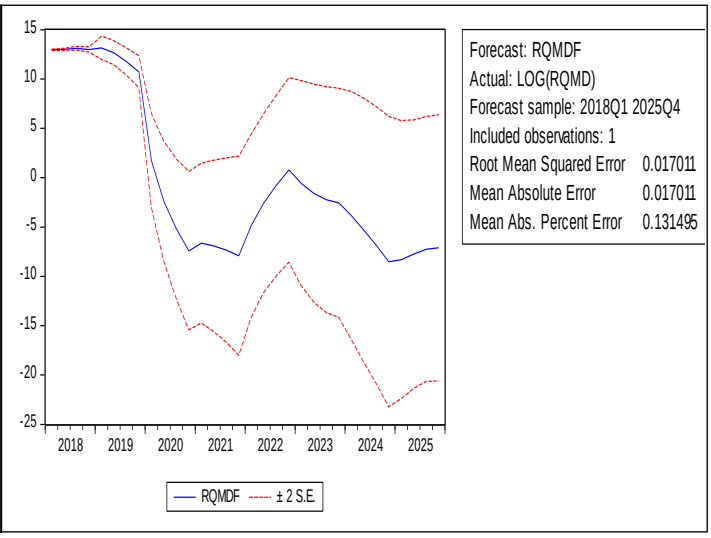
The second scenario: creating a shock with a 50% decline in the exchange rate for the period



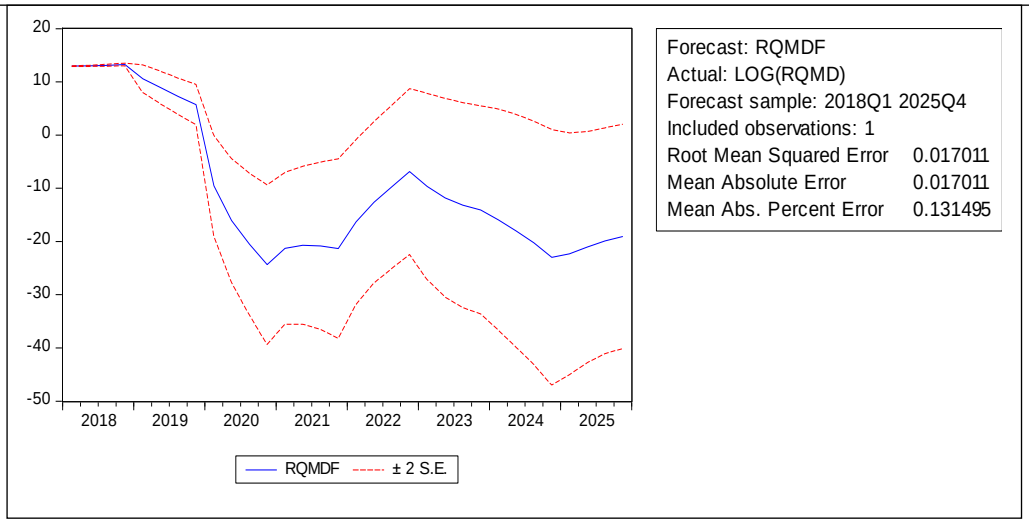
The third scenario: creating a shock with high price rates by (50)% for the period (2019-2025), assuming



The fourth scenario: high rates of prices and a decrease in exchange rates by 50%



The fifth scenario: a decrease in oil revenues to 50%, a decrease in the local currency exchange rate, and an increase in price rates by 50% simultaneously for the period (2019-2025



The first scenario indicates that the independent variables will maintain their general trend, and this means that they will continue at their growth rates that took place in the historical period (2003-2018), as the compounded growth rates of the independent variables CPI, GDP, EX were calculated) and the default values were calculated (2019-2025 In light of these growth rates, as these values for the period (2019-2025) were entered into the model and the model estimated for us the demand for real cash balances for the period (2018-2025), the results of which are indicated by the above figure, as it shows us that at the beginning of 2019 continues The demand for real cash balances continues to decrease, and this is normal since our assumption is that things remain as they are, as the demand for real cash balances will continue to decline

It is evident from the second scenario that the model assumes that there is a strong and negative relationship between the exchange rate and the demand for real cash balances, so that the decrease in the exchange rate of the Iraqi dinar by (50)% will lead to a decrease in the demand to maintain the Iraqi currency. Individuals expect that this decline will continue and the Iraqi currency will deteriorate further. More, and as is clear from the above graph, the decline in demand for real cash balances will start from the first quarter of the year (2020) and continue to the fourth quarter of the year (2021). The results of our model indicate that and it can be economically explained that individuals believe during the year (2019) that this deterioration in the exchange rate is temporary and that the dinar will recover again, especially since the gross domestic product did not decrease and the price rates did not increase at rates higher than the average, then the demand for Iraqi money begins. To decrease rapidly during the years (2020) and (2021), and this may be attributed to individuals'

belief that the decline in the exchange rate is not emergency and may continue, so out of caution and precaution, individuals will begin to reduce their demand for the national dinar. Raky and increase their demand for other currencies, especially the dollar, and then start to rise until the fourth quarter of the year (2023) and decrease significantly within the year (2024) and stabilize during the year (2025).

The third scenario in the figure shows us that the impact of the price increase is immediate and negative on the demand for real cash balances. As the decline in demand begins from the first semester of 2019 until the fourth semester of 2020. Statistically, the effect of prices on demand for money in the short term starts from the season in which the change in prices occurs and the results of the model confirm this, as the effect of prices on demand has been negative and significant since At first glance, it is very large, as indicated by the results of the model estimation, and the negative impact of prices is reinforced in the fourth quarter of the year. This decrease in the demand for cash balances as soon as prices rise, which is a logical act, as the rise in price rates means the deterioration of the purchasing power of the Iraqi monetary unit, in other words, the decrease in the value of the Iraqi dinar, in addition to the factor of expectations that the rise in price rates will increase the impact of high prices on the desire of individuals to keep the dinar Iraqi. It can be seen from the fee that the demand decreased from 327747.9 at the end of 2018 to nearly zero at the end of 2020. But it returned to increase at the beginning of 2021 until the end of 2022. This may be due to individuals' belief that this increase in prices is an isolated phenomenon. The currency exchange rate and GDP remained at the same rates of growth for the previous period, which restored confidence in the souls of individuals, and their demand for cash balances began to increase.

From 2023 until the end of the period, the demand for cash balances returned to the general trend, which is a downward trend due to the great price hike and the currency's deterioration.

The fourth scenario indicates a significant impact of a 50% rise in prices and a 50% depreciation of the Iraqi currency against the dollar, and this double effect in that one will push individuals to abandon holding and search for a stable, secure alternative to preserve the value of their cash assets, as we see that the effect is beginning Since the beginning of 2019, it has accelerated dramatically during 2019 and into the third and fourth quarter of the year (2021) .

It was a greatly accelerated decline as the demand for real cash balances decreased to negative values, and this is due to the great impact of the elasticities of demand for price cash balances and the elasticities of demand for cash balances for exchange rates as indicated by the model results in the figure above, and this acceleration of the decline in demand for funds Real cash is caused by individuals losing confidence in the Iraqi currency and their expectations of the continuing deterioration of its value, and the rise in prices reinforces this belief, as it can be seen from the above figure that the demand for real cash balances at the end of 2021 and the beginning of 2022 begins to rise again, and this may be due to people's belief that this decline The deterioration in the Iraqi currency and the high rates of prices may not continue for a longer period due to the constant growth rates of the gross domestic product, and this is what sends confidence in the souls of individuals, but did not reach large

positive rates (2022). At the beginning of the year (2023), the demand for real cash balances began to decline again to reinforce the belief among individuals that this decline in the value of the currency (the decrease in the exchange rate) and the high rates of prices will continue for longer periods and therefore it is not correct to keep their cash balances in the form of Iraqi currency. In these periods, the use of money supply as a tool of monetary policy will become useless due to the instability of the demand for real cash balances and the resort of individuals to get rid of the Iraqi currency and resort to alternatives to hard currency or fixed investments.

The fifth scenario shows a prediction of a decline in oil revenues to 50%, since it represents 39% of GDP, so the GDP will decrease by 18%.

In this scenario, we assumed that the government would resort to devaluing the currency by 50%, and we also assumed that the consumer price index would rise by 50%, which is a reasonable percentage in light of the deterioration in the value of the currency and the scarcity of the supply of goods due to the decline in our oil revenues and the scarcity of imported goods.

What we have seen from this extreme scenario is that the demand for real cash balances will decrease dramatically during the year 2019, and its decline rates escalate rapidly and descend into negative values, which can be explained by individuals 'expectations of the continuing deterioration of the currency's value and the rise in prices, which leads individuals not to keep the local currency and transfer any sums. They have to invest in hard currencies like dollars or fixed assets.

4.RESULTS:

1. The stability of the demand function for real cash balances as clearly indicated by the result of the CUSUM CUSUM SQ test at a level of significance (5%). If the model is exposed to any shock, it will return to the equilibrium state in five quarters as the value of the balance parameter indicates that ((-0.20. This is very important, as the meaning of the demand for real cash balances is stable means the effectiveness of monetary policy when it is used to display cash as an effective tool for monetary policy and the achievement of its objectives" .
2. The final results in estimating the parameters of the short and long terms proved that the parameters of the independent variables agree with what the economic theory assumes in terms of reference in the short and long terms as well as the statistical criteria, and that the demand for real cash balances is directly related to (GDP) and inversely with (, CPI). , I EX)
3. The forecast results proved that the demand for real cash balances is very sensitive to the exchange rate and price rates and that the large shocks in these two variables will result in structural changes in the demand for real cash balances and become unstable.

Recommendations:

1- We recommend the use of the demand function for real monetary balances in Iraq by monetary decision makers when formulating monetary policy.
2- We recommend the continued use of money supply as an effective tool in making monetary policy.
3- We recommend that money supply (in the case of multiple scenarios) not be used as a monetary policy tool in the event that the exchange rate and price rates are exposed to major shocks to the instability of the demand for real cash balances .

The indexes

Table (1)

ADF Test Results with Unit Roots

Variable	**ADF**	**Critical**	**Degree of integration**	**Significance**	
RQMD	**-3.59**	**-3.48**	**I(0)**	**0.05**	**Trend and Intercept**
QCPI	**-3.3194**	**-2.91**	**I(0)**	**0.05**	**Intercept**
QEX	**-3.359**	**-2.91**	**I(0)**	**0.05**	**Intercept**
QFIXGDP	**-2.67**	**-2.59**	**1(1)**	**0.10**	**Intercept**

Table (2)

The co-integration Test Results between the dependent variable and in dependent variable

	0.05	Trace		Hypothesized
Prob.**	Critical Value	Statistic	Eigenvalue	No. of CE(s)
0.0000	95.75366	165.4142	0.743356	None *
0.0013	69.81889	86.53040	0.465371	At most 1 *
0.0295	47.85613	50.21185	0.333039	At most 2 *
0.1086	29.79707	26.72047	0.190916	At most 3
0.0718	15.49471	14.43305	0.179785	At most 4
0.0865	3.841466	2.938128	0.049396	At most 5
Trace test indicates 3 cointegratingeqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
	**MacKinnon-Haug-Michelis (1999) p-values			

Table(3)

Estimated long-run coefficients and short-run error correction model (ECM) for the real money balances

		Included observations: 52		
Cointegrating Form				
Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0166	2.575778	0.124907	0.321732	DLOG(RQMD(-1))
0.3512	0.950677	0.139098	0.132238	DLOG(RQMD(-2))
0.3667	0.920149	0.139011	0.127911	DLOG(RQMD(-3))
0.1032	-1.693973	0.136061	-0.230483	DLOG(RQMD(-4))
0.2557	1.164295	0.124357	0.144788	DLOG(RQMD(-5))
0.3737	0.906475	0.126085	0.114293	DLOG(RQMD(-6))
0.3129	1.030855	0.126998	0.130917	DLOG(RQMD(-7))
0.0033	-3.265249	0.137336	-0.448435	DLOG(RQMD(-8))
0.0001	-4.689570	1.946689	-9.129137	DLOG(QCPI)
0.5307	0.636201	0.535298	0.340557	DLOG(QCPI(-1))
0.9146	0.108407	0.536464	0.058156	DLOG(QCPI(-2))
0.0002	4.357629	1.428167	6.223421	DLOG(QCPI(-3))
0.0002	-4.366150	1.000058	-4.366401	DLOG(QCPI(-4))
0.0000	5.460535	1.597780	8.724732	DLOG(QEX)
0.7726	0.292319	1.229861	0.359512	DLOG(QEX(-1))
0.9637	-0.045934	1.222570	-0.056158	DLOG(QEX(-2))
0.0003	4.165219	3.355211	13.975186	DLOG(QEX(-3))
0.0005	-4.044165	2.426631	-9.813695	DLOG(QEX(-4))
0.0085	2.868134	1.010955	2.899554	DLOG(QFIXGDP)
0.9817	0.023233	0.965113	0.022423	DLOG(QFIXGDP(-1))
0.9624	0.047622	0.964990	0.045955	DLOG(QFIXGDP(-2))
0.0014	-3.619603	1.985589	-7.187043	DLOG(QFIXGDP(-3))
0.0012	3.676671	1.463171	5.379598	DLOG(QFIXGDP(-4))
0.0275	-2.347651	0.085301	-0.200257	CointEq(-1)
Cointeq = LOG(RQMD) - (-21.7077*LOG(QCPI) -17.9506*LOG(QEX) +				
	13.2092*LOG(QFIXGDP) -2.3064)			
Long Run Coefficients				
Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0136	-2.664023	8.148456	-21.707670	LOG(QCPI)
0.0148	-2.626813	6.833593	-17.950572	LOG(QEX)

0.0083	2.878826	4.588407	13.209223	LOG(QFIXGDP)
0.6790	-0.418976	5.504865	-2.306406	C

Table(4)

Breusch-Godfrey Serial Correlation LM Tes

	Breusch-Godfrey Serial Correlation LM Test:		
0.3110	Prob. F(2,22)	1.232133	F-statistic
0.0729	Prob. Chi-Square(2)	5.237920	Obs*R-squared

Table(5)

Bound test results

	K	Value	Test Statistic
	3	5.879837	F-statistic
	Critical Value Bounds		
	I1 Bound	I0 Bound	Significance
	3.77	2.72	10%
	4.35	3.23	5%
	4.89	3.69	2.5%
	5.61	4.29	1%

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