# A comparative Analysis of the Monetary Trends in Iraq

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Based on empirical data, this paper attempts to understand the intricate relationships and regularities among monetary aggregates, and how the latter interact with other crucial macroeconomic variables, like inflation, interest rate and output. The controversial relationship among broad money, monetary base, and interest rates highlighted for further research and discussion.

#### **Monetary Base and Broad Money**

The general view often associates money creation with central banks, and the traditional textbooks depict that central banks directly control the broad money supply by manipulating the monetary base through a stable money multiplier.

in modern economies the majority of the money supply is created by commercial banks, in the form of bank deposits when they issue new loans. A commercial bank does not lend out pre-existing money or deposits that savers have placed with it. Instead, it creates new money by crediting the borrower's bank account with a new deposit, it does not typically hand over physical cash, a different style from what most people are accustomed to in Iraq.

In a clear disparity with the typical banking, the contribution of commercial banks to money creation in Iraq is significantly limited. This is due to low credit extension, and a public preference for cash, these two factors restrict the possibility of deposit expansion through credit in a fractional reserve banking system as in Iraq. The monetary base is created by the process of central banking, and supposed to be controlled by the central bank, while objective empirical analysis made this assumption doubtful.

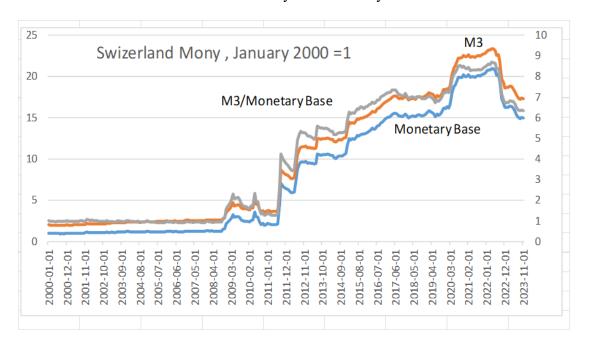
The link between the monetary base and the broad money is not stable, thus challenging the idea of direct central bank control over the money creation process. This paper presents so many evidences highlighting the instability and unpredictability of the relation between monetary base and broad money in the short run as well as in the long run.

The extent to which a central bank can control the monetary base has been a subject of a significant debate. The monetary base components, currency in circulation and commercial banks deposits at the central bank, are liabilities of the central bank influenced by its actions, guided by its policy. But the central bank cannot force commercial banks to lend more or less. The banks may choose to hold excess reserves due to uncertainty or lack of acceptable lending opportunities, therefore the money supply intended by a central bank may not be actualized as predicted by money multiplier.

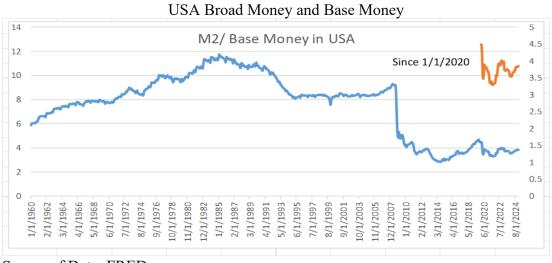
The weak impact of base money on broad money was very clear in the context of quantitative easing, indicating a low elasticity of broad money with respect to base money. Empirical studies conclude that the expansion in base money due to central banks' quantitative easing has not supported a similar uptrend in broad money. The money multiplier has shown a strongly negative trend, reflecting a reduced and unpredictable influence of base money on broad money. In advanced economies the trends of two moneys have effectively decoupled since the inception of international financial crisis.

Base money creation and broad money expansion or contraction must be understood within a comprehensive framework of macroeconomic theory and central banking interaction with commercial banking and public finance. Key variables such as output, employment, interest rates, inflation, and the balance of payments need to be considered in a combined causal mechanism conditioned by the national context. Recent literature recognizes that the relationship between bank lending behavior and macroeconomic factors, or between interest rates and banking sector development can be unstable and difficult to predict in the short run.

Switzerland Broad money and Monetary Base

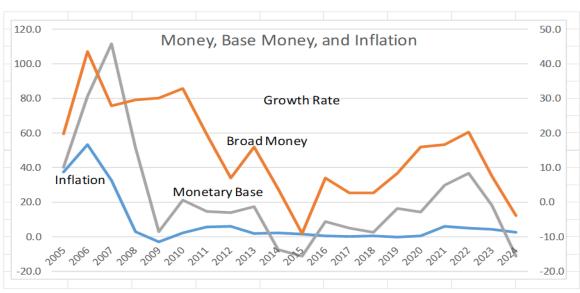


The behavior of the Monetary main variables in Switzerland replicates what has become own of unstable and unpredictable relations. The same Perplexities displayed in the 1g graph of the money in USA.



In USA the multiplier of monetary base on broad money has been sharply dropped in 2007 and stayed since then at the new lower level with instability, so cannot be used as a policy guide.

In Iraq monetary base formation is dominated by oil dependent public finance, where the exchange of oil foreign exchange into Iraqi dinar is the main source of money creation. The monetary phenomena in Iraq is a mirror of unstable oil revenue in terms of foreign exchange. The central bank of Iraq (CBI) rarely uses monetary base manipulation to effectively control broad money, primarily due to an inability to fully control bank reserves and the dominance of public finance dynamics in its balance sheet. The graph below reflects the common experience of monetary phenomena in the world comparing the growth rates of broad money, monetary base, and the rate of inflation in Iraq since 2004.



Iraq's monetary trends in terms of growth rates

Source of Data: CBI

Because of these complexities of indeterminacy, particularly the central banks cannot control the money changes, the operational focus has been shifted from targeting the monetary base and monetary supply to targeting short- term interest rates. This new policy is seen as a more reliable way for achieving goals, mainly in advanced and financially deep emergent market economies.

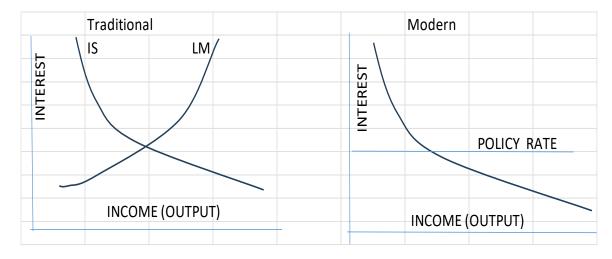
Iraq's monetary sector development requires improved banking behavior, including deposit attracting incentives and credit expansion, and a more effective interest rates to function properly. The anticipated role of the central bank through interest rates and related regulation of credit is conditioned by an Effective Transmission Mechanism. The main stream monetary policy effectiveness depends on the transmission of the central bank's policy rate changes to other market interest rates, particularly lending and deposit rates offered by commercial banks.

# Note on the NEW monetary Policy

Traditional monetary policy, based on the IS-LM model, IS (Investment – Saving) function represents the possible equilibrium points in the goods market, while the LM (liquidity – Money) represents possible equilibrium in the money market assuming a negative relation between interest rates and demand for money. Both of the functions showing combinations of interest rate (real or nominal) and national income. In this model the central bank is assumed to control the nominal money supply and adjusted to influence interest rates and, consequently aggregate demand and output. the equilibrium point in the IS-LM model **is** the specific intersection of the two functions, i.e. the same interest rate and the same income at which both the goods market and the money market are simultaneously in equilibrium.

Modern central banks often target interest rates directly rather than the money supply, which changes the interpretation of the LM curve to a horizontal line called "monetary policy" curve in some contemporary models as the graph below

Traditional and Modern Frameworks of Monetary Policy

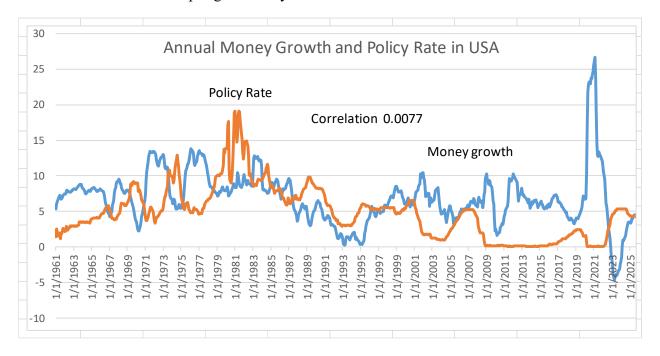


The more recent framework of monetary policy is the well-known New Keynesian monetary policy. The policy model based on the modern macroeconomics uses a forward-looking IS curve, a forward-looking Phillips curve, it models inflation dynamics by relating current inflation to the rationally expected future inflation and a measure of the real economic activity, such as the output gap or real marginal costs.

The policy rule of the new model, often the Taylor rule, describes how a central bank sets the nominal interest rate in response to inflation gap (between the desired and the actual) and the output gap as a measure of utilization of productive capacity or unemployment. The New Keynesian model replaces the LM function with a rule-based interest rate policy, and deemphasizes the direct role of money, reflecting modern central banking practices.

Decoupling of money growth and policy rates has been observed in the USA since at least the 1960s, as the traditional relationship between money supply and interest rates has become more complex due to factors like changing financial markets. The graph reflects nothing of link between money growth and policy rate as the correlation coefficient just 0.01. From all these evidences the broad money has been practically ignored and this practical disregard for broad money might have significant implications, including potential turmoil for the world economy.

## Decoupling of Money Growth and Interest Rates in USA



Source of Data: FRED

The monetary policy frameworks of countries classified by IMF considering their exchange rate arrangements, this may be useful to be incorporated into our vision anticipating a formal monetary policy could be possibly committed in the near future. The IMF' system classifies exchange rate arrangement on the basis of the degree to which the exchange rate is determined by the market rather than by official action. The monetary policy frameworks of countries classified according to their nominal anchor. As stabilization is generally considered the primary or core objective of central banks. In this issue I cannot agree with the IMF's stance since the developing economies have more of significant objectives than just the price stability notwithstanding its importance.

The countries classified into four categories: Exchange Rate Anchor, Monetary Aggregate Target, Inflation targeting, and other. The countries of conventional peg, like Iraq, classified under the exchange rate anchor. The Pegged exchanged rate in terms of a reserve currency like US\$ could be a nominal anchor in a typical economy, while in Iraq the experience of two decades disproved this assumption. That is another criterion of the mainstream has no empirical validity in Iraq and meaningless for practical policy guidance.

In summary, the proper functioning and effectiveness of monetary policy framework, including using interest rates, depend on a combination of sound macroeconomic conditions, a well-developed and competitive financial system, and the central bank's ability to influence market rates, and economic expectations.

Fiscal dominance in oil-dependent economies leads to several negative effects on money and credit, primarily by compromising central bank independence and distorting the banking system's function. An oil dependent economy needs a specialized framework designed to account for the unique structural characteristics such as massive, volatile injections or withdrawals of foreign currency and government revenue due to oil price swings. Without a case theoretic approach, standard rules can exacerbate the "boom-bust" cycles inherent in oil economies. For example, a massive inflow of oil revenue can lead to excess liquidity; applying standard contractionary measures without considering the source of the liquidity might be ineffective or cause undue stress in non-oil sectors.

Implementing Modern policy using interest rates as the primary instrument requires well developed and functioning financial markets, which are absent in Iraq like the most of developing economies. In such a context, the central bank needs to rely on alternative tools and strategies. A deeper, more analytical approach to economics should be supported, to move beyond simply memorizing established theories and ready - made recipes, to focus on understanding the fundamental structures and causal relationships that actually derive the economic system of Iraq.

## **Exogeneity/Endogeneity of money Controversy**

Whether money is exogenous or endogenous is the subject of one of the most important and intriguing debates in the monetary economics. This discussion is not a hoppy, but rather relates to highly important practical matters for countries with long-standing experience in monetary policy. Addressing these concepts in many developing countries is of theoretical importance rather than a practical purpose yet.

Exogeneity of money defined as the money supply is primarily determined by an authority like a central bank, and is not significantly influenced by the economy's conditions i.e. it is not a response to, or determined by, the price level, interest rates, or the level of economic activity. The endogeneity concept based on the money supply is determined by the interactions of economic variables, including the demand for loans and the level of economic activity. Endogeneity emphasizes the role of commercial banks in money creation as the money supply is a response to the demand for credit.

Traditional Keynesian, as in the IS-LM model, neoclassical, and new classical economists supported the exogeneity of money supply within their models. Post Keynesians strongly support the endogeneity of money, which is linked to their interest in the financial sector of the modern economy. New Keynesians treat the money supply as endogenous, this approach is consistent with their policy framework, where central banks use the interest rate as their primary policy instrument rather than directly controlling the quantity of money.

If the money supply is considered exogenous, it means it is a cause and is the main operational target of the central bank. In this framework, the central bank uses open market operations, reserve requirements, and the interest rate to control the quantity of money, mainly through the monetary base, to achieve its ultimate objectives like inflation or employment.

The endogeneity/exogeneity debate in monetary economics is directly tied to the "proper" theory of banking, as it concerns the mechanism of money creation and the role of commercial and central banks. According to the exogenous view, banks need reserves in order to grant loans and the central bank can regulate the available reserves to banks. Meanwhile the endogenous view claims that loans create deposits. The failure of quantitative-easing programs to revive credit activity provides evidence of endogeneity in that sense. In Iraq the process of money creation is dominated by public finance and the private sector activity is limited considering the small private financial market. The case of Iraq needs further research and discussion in a direct link to the potential role of the central bank.

## **Empirical Verification of Monetary Relations in Iraq**

This section devoted to quantitative analysis, mainly correlation and proportionality, to see how the elements of money could have different configuration in the context of Iraq.

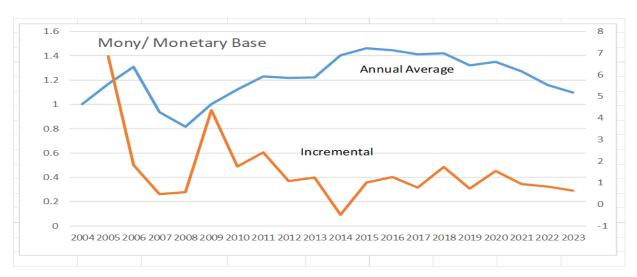
## **Money and Base Money**

Starting with the broad money and monetary base, the graph shows unstable relation and more unpredictable at margin. Monetary base (or high-powered money) is recorded as a liability of the central bank's balance sheet. This liability is created when the central bank acquires assets, such as government bonds, through operations like open market purchases, or foreign exchange reserves formation. It does not use pre-existing funds. Instead, it creates new central bank money—specifically, by crediting the reserve accounts of the commercial banks at the central bank.

The expansion of the monetary base is a direct accounting result of the asset purchase, For the central bank, the newly acquired assets appear on the asset side of its balance sheet, and the newly created monetary base appear on the liability side. The monetary base is composed of currency in circulation plus commercial bank reserves held at the central bank. Bank reserves as a component of the monetary base are far more volatile than the currency in circulation component. The latter tends to change relatively slowly over time, largely driven by the public's demand for cash which is positively and significantly related to national income.

It is quite usual for commercial banks in Iraq to hold excess reserves at the Central Bank. This practice is common in the Iraqi banking sector due to specific operational and market conditions, where viable, profitable lending opportunities or secure investment options might be limited.

Unstable relation between broad money and monetary base in Iraq



Source of Data: CBI

Now we calculate regression equation for Money as a function of monetary base and the lagged of the latter.

Model: BM=7.1623 + 0.3759 MB + 0.1059 LMB

Predictor	Coefficient	Estimate	Standard Error	t- statistic	p-value
Constant	β0	7.1623	3.286	2.1797	0.0446
MB	β1	0.3759	0.1298	2.8967	0.0105
LMB	β2	0.1059	0.1356	0.7813	0.446

Summary of Overall Fit: R-Squared =0.4652; Adjusted R- Square 0.3984; Residual Standard Error =10.6381on 16 degrees of freedom; Overall

F- statistic =6.959 on 2 and 16 degrees of freedom; Overall P- value

= 0.0067.

Although, the Monetary base has significant effect on broad money in this regression equation as p-value equals 0.01, but the overall relationship cannot be reliable as a policy guide.

Unstable relation between banks reserves and broad money in Iraq

Banks Reserves % of Base Money

Description of Base Money

20
20
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

Source of Data: CBI

The graph shows that the central bank faces inherent limitations in targeting the money supply through commercial bank reserves because unpredictability of the result.

The following matrix displays the Pearson correlation coefficients among the growth rates of monetary variables and GDP along with inflation rate in Iraq for the period 2004 – 2024. Broad money demonstrated strong positive correlations with all variables including GDP and inflation.

The correlation coefficient between broad money and deposits suggesting a substantial contribution of deposits to money creations.

Correlation Matrix of Monetary Variables in Terms of Growth Rates

Correlation Among Monetary Variables in term of Growth Rates in Iraq 2004-2024							
	Currency outside banks GDP Base Mony inflation Broad Money						
Deposits	0.38	0.41	0.46	0.53	0.92		
Currency	1.00	0.30	0.69	0.42	0.70		
GDP	0.30	1.00	0.43	0.40	0.48		
Base Money	0.69	0.43	1.00	0.40	0.65		
inflation	0.30	0.40	0.40	1.00	0.54		

Source of Data: CBI

# **Inflation and Money Growth**

while some studies conclude a more stable long-run relationship between broad money growth and inflation. This finding of correlation over a very long period provides little immediate policy guidance in certain situations where in the short run, money can be irrelevant for inflation and output determination. Also, it could not be interpreted as a causal relation, considering the correlation between two variables can often be explained by their relationship with other variables.

The correlation, even in the long run it could not be confirmed, for instance the correlation coefficient between broad money growth and inflation for the period 1990 – 2024: was negative (0.19) in United Kingdom, in Chile 0.25, and in Australia 0.08. In the USA the correlation was 0.23 for the period 1960- 2022. The explanation of inflation by money growth, fundamentally, requires the assumption that the velocity of money is constant.

The relationship derived by differentiating the identity: MV=PY, where P is the price level and Y is the real output is:

Money growth rate +Velocity growth rate= inflation rate +Output growth rate. Rearranging this equation to solve for the inflation rate we get: Inflation rate= Money growth rate +velocity growth rate - Output growth rate. Instability in the velocity of money and fluctuations in output growth rates can break down the direct relationship between money growth and inflation predicted by the simple quantity theory of money.

Monetary policy in advanced economies like the USA uses interest rates as its primary tool to manage inflation. Interest rates more directly impact borrowing cost and aggregate economic demand. In USA the correlation between federal funds effective rate (the policy rate) and inflation was 0.67, and between primary lending rate and inflation 0.68, and between the two interest rates 0.99 for the period 1980 – 2024, highlighting the effectiveness of transmission mechanism through the interbank market. the graph and the correlation coefficients indicate that monetary policy cannot perfectly control inflation.

25 Inflation and Interest Rates in USA 20 Correlatio Inflation:FFER 0.67 Inflation:BPLR 0.68 FFER:BPLR 0.99 5 8/1/2000 10/1/2003 11/1/1995 1/1/1999 3/1/2002 2/1/2006 4/1/2013 1/1/2018 5/1/2005 7/1/2008 6/1/1997

Correlation between policy rate, primary lending rate, and inflation in USA

Source of Data: FRED

# Inflation as a Function of Broad Money Growth in Iraq

The following regression explains inflation rate in Iraq as a function of the broad money growth and the lagged value of the of the same independent variable. The independent variables have a weak total explanatory power based on the coefficient of determination which is only 0.335 and the adjusted reduced to 0.246. But, a P-value of 0.046 is generally considered to be statistically significant at the conventional 0.05 significance level to conclude that the equation has some significance.

The coefficient of the money growth of the same year has a p-value of 0.0543 is generally considered to be of marginal or borderline statistical significance, while the lagged money growth has been totally insignificant.

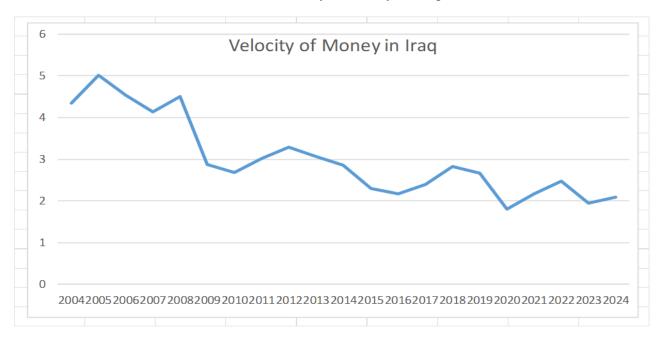
Regression Analysis of inflation explained by money growth

Inflation= -2.6063 + 0.599 BM + 0.0004 LBM

Predictor	Coefficient	Estimate	Standard	t-statistic	p-value
			Error		
Constant	β0	-2.6063	4.7931	-0.5438	0.5946
BM Growth	β1	0.599	0.2869	2.0877	0.0543
L BM Growth	β2	0.0004	0.2897	0.0013	0.999

Summary of overall Fit: R- Square= 0.335; R-Square Adjusted =0.2454; Residual Standard Error=11.9915 on 15 degrees of freedom; Overall F-statistic =3.7787 on 2 and 15 degrees of freedom; Overall p-value =0.0469.

Unstable Velocity of Money in Iraq



# Growth of money as a function of inflation and the lagged of the latter.

Both classical and neoclassical economic theories assume that, in the long run, inflation is fundamentally determined by money supply growth, this view is rooted in the quantity theory of money which we have shown above.

A reverse dynamic may exist where inflation can cause changes in the money supply and circulation patterns. The following regression equation is an attempt to see how inflation and its lag affect the money growth. The overall explanatory power is similar to that of explaining inflation by money growth in spite of inflation and its lag are insignificant as P-values indicate.

Model: BM= 10.2068+ 0.3623 Inflation+ 0.2463 L Inflation

Predictor	Coefficient	Estimate	Standard Error	t-statistic	p-value
Constant	β0	10.2068	3.1007	3.2918	0.0046
Inflation	β1	0.3623	0.3313	1.0938	0.2902
L Inflation	β2	0.2463	0.2945	0.8365	0.4152

Summary of Overall Fit: R-Squared=0.3522; Adjusted R- Squared=0.2712; Residual Standard Error=11.708 on 16 degrees of freedom; Overall F-statistic=4.3499 on 2 and 16 degrees of freedom; Overall p-value=0.031.

#### **Subtleties in the Money Growth-Inflation dynamic**

Empirical analysis generally demonstrate that the price level and the money supply tend to move in the same direction over time. This type of correlation is quite normal among macroeconomic elements, the degree of this "moving together" is a matter of economic theory and policy. The very weak relationship between inflation and money growth is not a deviation of the short run, but a long – standing reality. The analysis focuses on the disparity between the growth rates of money and output and its implications on inflation.

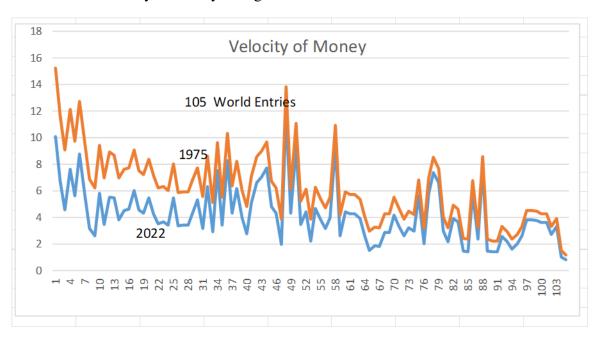
According to the portfolio-balance approach to money as one asset among many, inflation negatively affects the demand for money by eroding its purchasing power, therefore investors reallocate their portfolios towards assets that offer a better hedge against inflation.

The fact that money serves not just a medium of exchange but also a store of wealth that is subject to new allocation, considering the demand for money depends positively on wealth, income, and negatively on the expected return of alternative uses. As individuals shift their portfolios, the demand for domestic money balances decreases. In episodes of very high inflation, individuals may shift into more stable foreign currency to protect their wealth.

Inflation increases the opportunity cost of holding money relative to other assets whose nominal returns might correlate positively with inflation. When inflation is high, individuals are incentivized to hold less money than they need for transactions. Periods of high inflation is typically associated with high velocity of money as people try to get rid of rapidly depreciating currency. The experience of Iraq was consistent with this tendency, in the year 2005 the velocity was 5 while in 2024 declined to 2.1. Also, in the years of sanctions the velocity of money increased in response to hyperinflation. The positive relation between velocity of money and inflation is a negative relation between inflation and money per unit of output.

The graph demonstrates worldwide decline in velocity of money; this pattern could be explained by the negative relation between broad money to GDP and inflation which has been a characteristic of contemporary economy. The graph depicts the trends of 105 countries for 48 years. The pattern could not be explained by low interest rates or uncertainty. The phenomenon is largely explained by structures and causal relations including the role of financial sector, in addition to the fact that

money creation exceeds the real sector' ability to absorb more money at the same time, it resists rising prices.



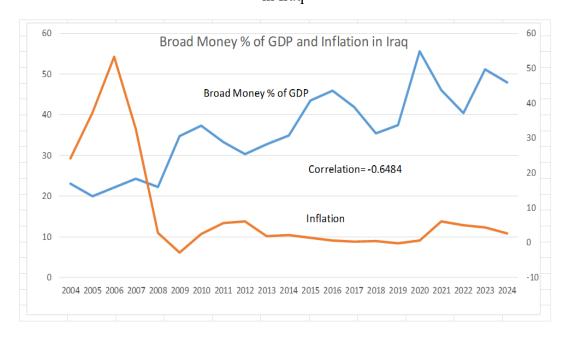
Velocity of Money: A significant Shift between 1975 and 2022

Source of Data: World Bank Open Data

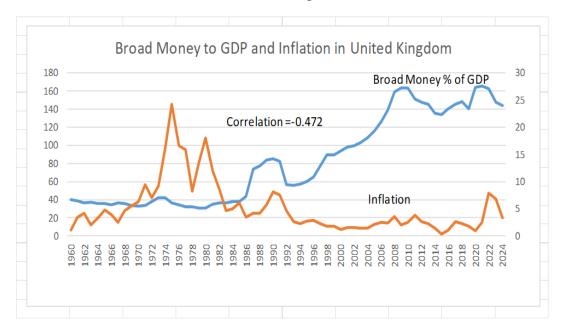
Let us examine the other side of the relation to highlight the negative effect of inflation on money-to output ratio. The graph demonstrates this phenomenon in Iraq. The correlation coefficient was negative (0.6484). In United Kingdom the correlation was negative (0.472), and in Denmark also negative (0.74979). The period of analysis was between 2004 and 2024 for Iraq, between 1960 and 2024 for the United Kingdom, and between 1968 and 2024 for Denmark.

These cases support the pattern of declining velocity of money. This characteristic appears to be universal across the stages of development. However, the relationship warrants further study, and inflation can negatively affect the demand for money itself, not just its ratio to output. I have observed something similar in our country, but it requires more thorough examination.

The Inverse Relation Between Inflation and Money - to -Income ratio in Iraq



The Inverse Relation Between Inflation and Money – to -Income ratio in United Kingdom



18 80 Broad Money % of GDP and Inflation in Denmark 16 70 Broadf Money % of GDP 14 60 12 50 10 40 8 Correlation = -0.74979 30 Inflation 20 10

The Inverse Relation Between Inflation and Money – to -Income ratio in Denmark

Source of Data: World Bank open Data

The similar tends of negative effects of inflation on money – to- GDP of the three countries highlight the importance of understanding the demand for money in a different framework, particularly that inflation incentives people to hold less national money. Also, I am suggesting to consider the real sector resistance of more money by maintaining the level and structure of the prevailing prices.

#### **Determinants of Credit Level**

The process of credit and money creation was analyzed in the previous sections of this paper. Now we need to address the potential determinants of the domestic credit level. The latter can directly affect the economic growth, and it is an important issue considering the household welfare.

The entire economic and financial environment impacts the level of credit significantly. Financial depth and GDP per capita are key indicators explaining country's credit level, as financial depth, a measure of the financial size, is strongly linked to GDP per capita which is a measure of economic development. A higher GDP per capita often indicates a more developed economy where credit is more accessible and the financial system can support more borrowing and lending activities.

Creditworthiness is a critical factor that explains low levels of credit in most developing economies, and Iraq is an example, as the commercial banks cannot find enough credit worthy borrowers. The excess liquidity of the commercial banking sector in Iraq indicates that perceived risk is a primary factor impeding credit expansion, as banks prefer holding liquid assets over lending in a high- risk environment. Robust and clear collateral enforcement laws encourage of credit expansion and help mitigate high non – performing loans.

Lower interest rates and low inflation stimulate credit demand by reducing borrowing costs and debt servicing burdens. Expectations of economic growth, real assets prices, and political stability may affect the banks and households and business attitudes, particularly, high level of economic uncertainty negatively affect domestic credit as both lenders and borrowers become more cautious. A smaller lending – deposit interest rate spread indicates greater efficiency in the banking sector and higher level of credit. The spread in private Iraqi banks is high reflecting challenges and inefficiencies in the banking sector.

The spread of public banks is typically smaller than that of private banks, and a significant amount of credit extended at rates can be lower than typical commercial banks deposit rates. While moderate credit growth is essential for economic development, excessive credit beyond a certain limit can harm economic growth and stability. A clear, shared vision between the central bank and political authority is crucial for effective banking sector functioning and credit allocation in Iraq. This alignment helps to balance the central bank's mandate for stability with the government's broader development goals.

#### **Estimating a Model to explain Credit level**

The model attempts to predict Credit % of GDP as a function of GDP per capita, natural resources rents % of GDP, and nonperforming loans % of total loans.

Y = Credit to Private Sector % of GDP; X1= GDP Per Capita; X2= Natural Resources Rents % of GDP; X3 = Nonperforming Loans % of Total Loans.

The model estimated by using the latest five – year average for 35 countries their natural resources rents more than 5 % of GDP.

Overall, Goodness of Fit: Results of the Multiple Linear Regression Indicated That There was A Strong Collective Significant Effect between the GDP Per Capita, Natural Resources Rents % of GDP, Non-Performing Loans % of Total Loans, and Credit % of GDP. F(2, 32) = 25,67, P < 0.01,

R squared = 0.63, R- squared adjusted = 0.6. The predicted Credit - to - GDP in Iraq is nearly equal to observed. This outcome suggests the model is reliable to explain credit behavior in Iraq.

Iteration 1, Adjusted R- squared= 0,618

Predictor	Coefficient	SE	t- stat	P- Value
Constant	0.2735	0.893	3.062	0.005
X1	0.3045	0.091	3.346	0.002
X2	-0.55	0.185	-3.569	0.001
X3	0.2089	0.136	-1.536	0.135

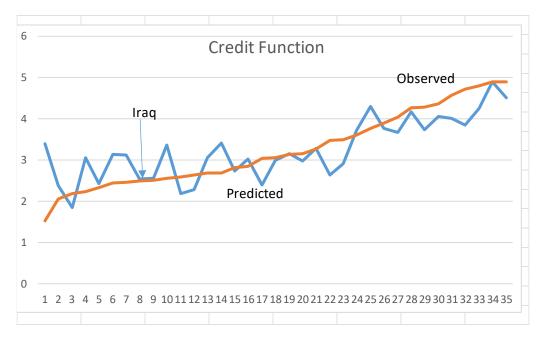
Y=0.2735+0.3045 Ln (X1) -0.55 (X2) +0.2089 Ln (X3)

Iteration 2, Adjusted R- squared= 0,602

Predictor	Coefficient	SE	t- stat	P- Value
Constant	1.9091	0.7284	2.621	0.013
X1	0.3968	0.0698	5.587	0.000
X2	-0.7842	0.1697	-4.620	0.000

Y = 1.9091 + 0.3968X1 - 0.7842X2.

#### Actual and Predicted Values of Credit % of GDP



The analysis indicated that X1 (t=5.687, P < 0.01) and X2 (t= -4.62, P < 0.01) were significant predictors in the model, and was X3 was non – significant predictor.

Credit % of GDP inIraq and the wold World Left Hand Side Iraq Right hand Side 

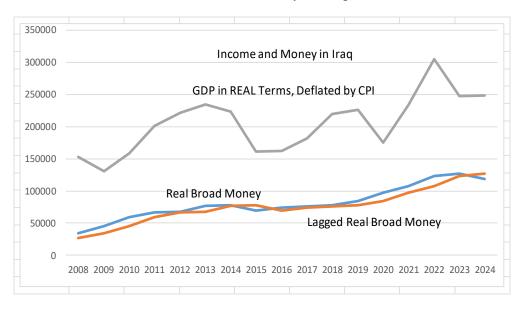
Credit % of GDP: Iraq Compared to the World Average

Source of Data: world Bank Open Data

The credit in Iraq started from a very low level in the year 2004 as an aspect of the socio – economic conditions ravaged by wars and sanctions. The credit % of GDP rapidly increased to recover the level it was at in 1970, but it remained only about 10 % of the global average. Many studies have been conducted on commercial banking and credit in Iraq, but no approach has yet been agreed upon that enjoys general consensus.

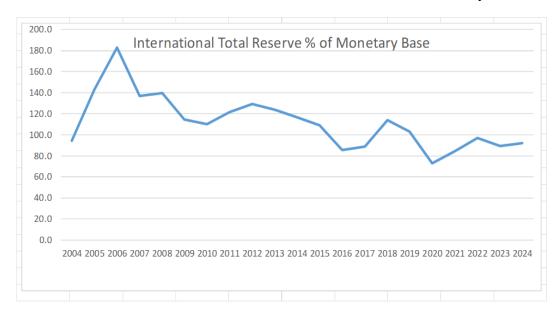
**Appendix** 

Income and Money in Iraq



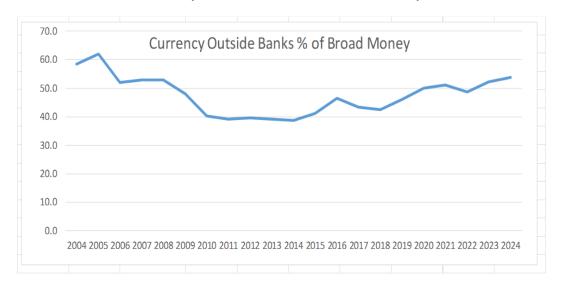
Source of Data: CBI

International Total Reserve of Central Bank % of Broad Money



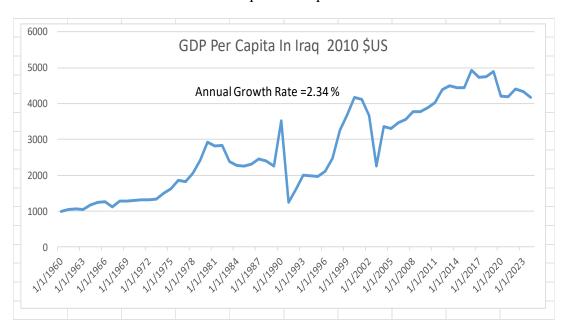
Source of Data: World Bank Open Data

Currency Outside Banks % of Broad Money



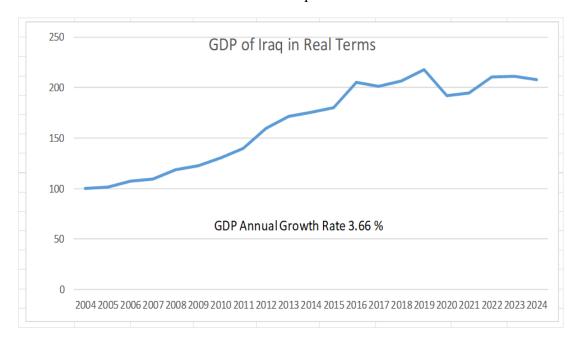
Source of Data: CBI

GDP Per Capita in Iraq 1960-2024



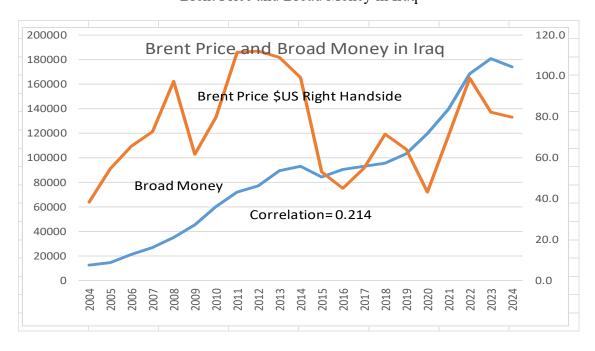
Source of Data: FRED

Real GDP in Iraq 2004- 2024



Source of Data: World Bank Open Data

Brent Price and Broad Money in Iraq



Source of Data: CBI, FRED.