

Measuring the Relationship Between Foreign Reserves and Indicators of Monetary Stability in Iraq for the period (2004-2021)

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Abstract

The primary tasks of the Central Bank of Iraq is to build a foreign cash reserve with the aim of strengthening and covering the exchange rate of the Iraqi dinar and creating monetary stability, which is one of the indicators of the success of monetary policy applications. Here we can indicate that the Central Bank of Iraq succeeded in collecting reserves at a high level of foreign exchange, which contributed to stabilizing the exchange rate of the Iraqi dinar against the US dollar, and is considered appropriate and required at the current stage, as foreign cash reserves exceeded the barrier of 92 billion dollars, and it must be noted To the role played by the private banking sector in achieving this stability as a result of its implementation of the central policy, and this enhances the monetary transition to influence the balance of the money market and then the stability of real activity that requires raising the external value of the Iraqi dinar in a manner commensurate with the real exchange rate to contain inflationary expectations, and adjusting interest rates The Central Bank of Iraq in a way that gives the financial market strong signals for commensurate and desirable changes with the evolution of the temporal structure of interest rates.

Introduction.

Foreign reserves in Iraq represent the economic power through which monetary policy is reformed, its performance developed, its role activated in addressing monetary and economic imbalances, reducing the deficit in the balance of payments and stabilizing the exchange rate by focusing on the monetary stability coefficient, excess and monetary depth, given that monetary policy, including In which the exchange rate policy is a major component and an essential element of the economic policy of the state, and it is entrusted with playing a distinguished and significant role in contributing to achieving the goals of the state's economic programs and policies, especially in addressing the deficit in the balance of payments and inflation, which is considered one of the most important problems facing developing countries. Including Iraq. And in the midst of these economic and financial

transformations that occurred in the countries, Iraq is not far from the fluctuations in oil prices that the world witnessed, and this explains that the economies of the rentier countries depend mainly on oil, so it is necessary to know the extent of the adequacy of foreign reserves to hedge and beware of external shocks Because it directly affects production.

First: the importance of research.

Foreign reserves play a fundamental role in the safety of the economy in case it is exposed to economic crises, as it works to finance the deficit and address structural imbalances in the monetary system, since achieving economic stability can only be achieved in the presence of a stable monetary sector that is able to direct foreign reserves to ensure the safety of the economy from crises that could be exposed.

Second: Research problem.

The research problem focuses on whether the monetary authorities in Iraq were able to control the management of foreign currency reserves and the extent of its impact on the stability of monetary stability indicators, as well as following macro-precautionary policies that contribute to enhancing the safety and flexibility of the banking system.

Third: Research Hypothesis.

The research stems from the hypothesis that the nature of the relationship between foreign reserves and indicators of monetary stability is an inverse relationship.

Fourth: Research objective.

: The research aims to reach several goals as follows

First- Statement of the nature of the relationship between indicators of monetary stability and foreign reserves.

Second - Knowing the extent of the impact of foreign reserves on monetary stability indicators through the use of econometric methods.

the theoretical side.

First: Foreign reserves are a conceptual and cognitive framework

1- The concept of foreign reserves.

The term foreign reserves is the term used in the economic literature, which is also called international reserves or foreign reserves, and it represents the assets or assets that governments maintain for the purposes of foreign currency reserves, which are available at the disposal of the monetary authorities and are subject to their control in order to meet the needs of financing the balance of payments and sometimes intervention to influence the currency exchange rate with increased confidence in the local currency to be an external cover for it, in addition to representing a base upon which to rely for the purposes of external borrowing. (1)

Reference may be made here to the concept of foreign reserves according to the Balance of Payments and International Investment Position Manual issued by the International Monetary Fund (they are the external assets at the disposal of the monetary authority and subject to its control to meet the financing needs of the balance of payments or to intervene in the exchange markets to influence the currency exchange rate, or otherwise Relevant purposes, such as maintaining confidence in the local currency and forming a basis for external borrowing) and reserve assets must be assets in foreign currency and already existing assets, and potential assets are excluded from them. The concept of reserve assets is based on the concepts of "control" and "allowance of use" for the monetary authorities. (2)

On this basis, these reserves are external assets, and they are always at the disposal of the monetary authorities to finance the deficit or external imbalance through intervention in the exchange rate or through other effects, according to the monetary authorities and their limits drawn by the law, which differ from one country to another, and the same applies to how to determine the size of Reserves and according to the classification approved by the state in this regard and based on the size and nature of foreign reserves as well as economic conditions, and the management of these reserves through a comprehensive and integrated strategy aimed at achieving a strategic goal represented in preserving the value of the reserves and maintaining specific limits. (3)

2- Objectives of foreign reserves.

Monetary policy works to make available the largest amount of foreign assets and make them at the disposal of the monetary authorities to reach strategic goals that can be referred to as follows: (4)

1. Make these foreign reserves equal and sufficient to achieve specific objectives.
2. Work to maximize the return achieved from investing these reserves in low-risk financial instruments that are characterized by a high degree of liquidity and safety.
3. Supporting confidence in aspects of managing the exchange rate of money and trying to support the local currency.
4. Attempting to preserve foreign currency liquidity while limiting exposure to adverse external conditions for the purpose of facing crises.
5. Attempting to create confidence in the markets through understanding that the state has the ability to fulfill its external obligations.

3- Indicators of adequacy of foreign reserves.

There are many approved indicators to measure the adequacy of foreign reserves, which can be referred to as follows: (5)

- 1-The ratio of coverage of reserves to imports.

It was proposed by Trevin in 1947 AD, who believed that the optimal reserve ratio should cover (3) months or (25%) of total imports of goods and services, especially basic commodities.

2-The ratio of foreign reserves to the balance of payments deficit.

The aim of this indicator is to face the possibilities of deficit in the balance of payments, as the foreign reserves are a balance to face the deficit (Buffer Stock) and according to this indicator, the foreign reserves must change at the same rates of expected change in the deficit in the balance of payments, if the deficit curve is heading towards an increase, then These reserves grow equal to the occurrence of the deficit.

The ratio of reserves to short-term external debt.-3

This indicator is based on the percentage of short-term debt remaining until maturity, and this indicator also assumes that the optimal level of reserves in the country should cover short-term foreign debt within the range of (80-100)%, so this indicator was linked to the Asian crises.

4-The percentage of foreign reserves for indirect foreign investment.

The objective of this indicator is to confront unexpected foreign inflows during capital flight. This indicator also assumes that the optimum foreign reserves ratio should cover (30%) of indirect foreign investments.

). The ratio of foreign reserves to the broad money supply (M2-5

This indicator is used to avoid the shortcomings of the aforementioned indicators by focusing on internal cash, as the percentage of foreign reserves depends on domestic liquidity (the broad concept of money) (M2) as an indicator to protect the economy from the financial crises that it may be exposed to, and according to this indicator it is Reserves must cover (40%) of the broad money supply.

The ratio of foreign reserves to total external debt.-6

This indicator is based on the rule that the optimal reserve ratio in any country should be equal to (40%) of the total external debt, and this indicator is used to determine the extent of the country's ability to pay the burden of external debt.

Second: Monetary stability is a conceptual and cognitive framework.

The concept of monetary stability.-1

The term monetary stability refers to the stability of the general levels of exchange rates and the provision of an appropriate interest structure and is one of the pillars of the environment that attracts domestic or foreign investments, meaning that monetary stability is an expression of product prices, interest rates and exchange rates within the framework of free markets, meaning that there is proportionality with the monetary mass And the national product, if the monetary mass increases or decreases without increasing or decreasing the national product, a

state of imbalance will occur in this stability, which constitutes an imbalance force that includes every factor affecting this stability. Monetary stability can be achieved through managing a monetary policy capable of controlling liquidity rates in the local markets and foreign exchange rates while reducing the difference between the official and free exchange rate. To a stable exchange rate for the national currency that is based on scientific foundations that ensure permanent stability according to the actual data specified for the forces of demand and supply. (6)

Indicators and coefficients of achieving monetary stability.-2

Monetary stability indicators mean those phenomena through which the stability of the monetary situation of a particular economy can be judged, while the monetary stability coefficients are the measure of judgment on the degree of monetary stability, and among the most important indicators of monetary stability are: (7)

1-Monetary excess: The amount of monetary excess was based on the quantity theory of modern money, which confirmed that the change in the price level is due to the change in the share of the produced unit of the amount of money. However, long-term price stability is achieved through the optimal size of the amount of money, and this is what Confirmed by (Milton Friedman), and this volume will cancel the rate of change of the effects resulting from the rate of change of the national product as well as the rate of change of the demand for money or the speed of its circulation to maintain the price level at the base period, in the sense that the inflationary forces arise from an excess of money that leads to a high pace of inflation .(8)

A formula has been proposed to calculate the cash excess through the equation:

$$\text{MEXT} = \text{Mt} - \alpha \text{ GDP}$$

Since:

MEXT = the excess amount of money in excess of the optimal level of the quantity of money, Mt = the money supply, α = the average share of the real domestic product unit of the quantity of money at the base year and at a specific price level. GDP = Gross Domestic Product at constant prices.

In the light of this equation, it is possible to calculate (excess money ratio) by dividing the volume of money excess to the gross domestic product according to the following equation:

$$\frac{\text{Mt} - \alpha \text{ GDP}}{\text{GDP}}$$

2-Monetary depth: The monetary depth index is one of the important indicators and is measured by the ratio of the money supply in the broad sense to the gross domestic product (GDP). It shows the penetration of banking and financial services in the economy, that is, it measures the extent to which monetary decisions issued by the monetary authority deepen in financial institutions.

applied side.

First. Description and sleep of variables.

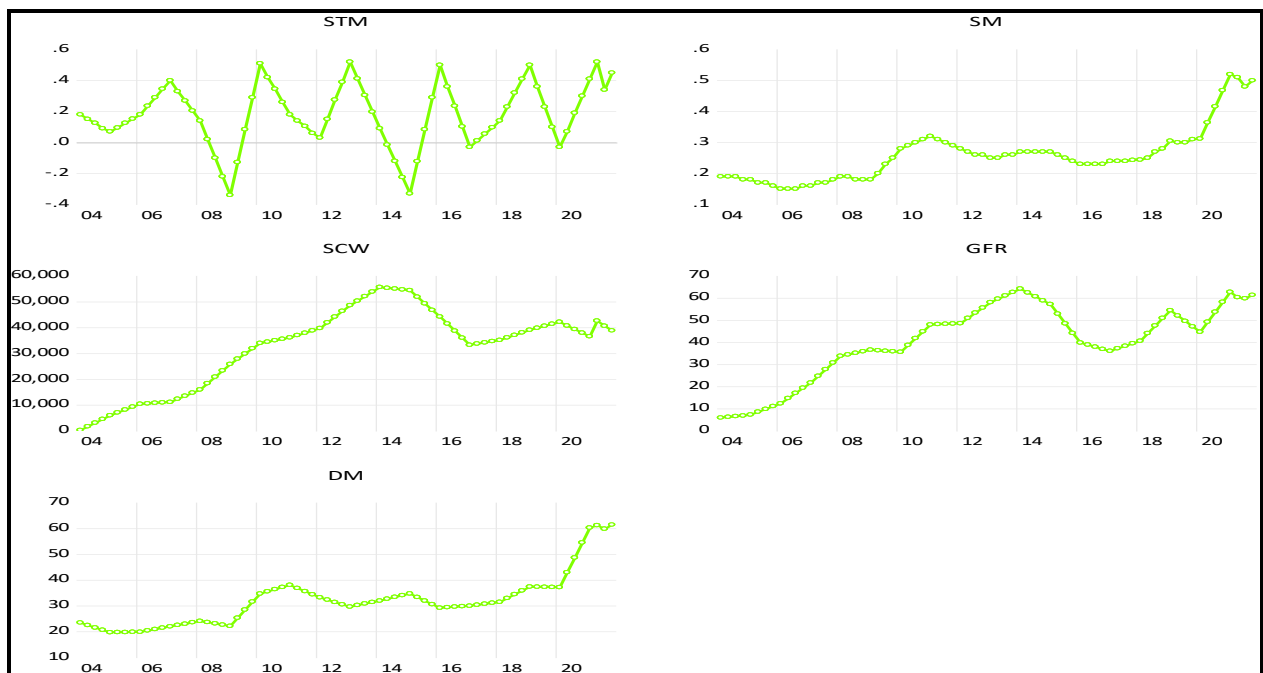
The data of the researched variables were collected from office sources from the Central Bank of Iraq, the Central Statistical Organization and the Ministry of Finance for the period (2004-2021) quarterly data.

1-Foreign reserves.

A- Change in net foreign reserves: Figure (1) presents the historical development of the change in net foreign reserves (GFR) for the period under study. It notes the upward trend for the period 2004-2013, then a decline in this ratio for the years 2014, 2015, 2016, which are the years of the double shock that faced the Iraqi economy and was reflected in the decline in foreign reserves due to the drop in oil prices and the financing of military operations against ISIS. Then it rose and fell again for the years 2019 and 2019. 2020 due to the complex crisis, the drop in global oil prices, the Covid-19 pandemic, and the government's financial crisis. Table 16 shows the statistical characteristics of the said variable. And when testing the stillness of the variable, it was found that it is still in the first difference, i.e. integrated of the first degree (1)I, according to the P-P test statistic.

B- Foreign currency sales to net foreign reserves: There is harmony in the movement of the ratio of currency sales to net reserves SCW with net foreign reserves during the period under study, as it also achieved a continuous rise until 2013 and then decreased in light of the first crisis, and it rose again and decreased in the two years others. Table (2) reflects the descriptive statistics of the variable. The rest of the variable was at the first difference, i.e. (1)I, according to the P-P test.

form (1) Historical development of variables for the period 2004-2021



Source: the results of the statistical program Eviews.12

Table (1) Description of research variables for the period (2004-2021)

| | STM | SM | DM | GFR |
|--------------|-----------|----------|----------|----------|
| Mean | 0.177931 | 0.258639 | 31.89431 | 40.46681 |
| Median | 0.180000 | 0.250000 | 31.31000 | 43.00500 |
| Maximum | 0.520000 | 0.520000 | 61.46000 | 64.25000 |
| Minimum | -0.340000 | 0.150000 | 19.72000 | 5.970000 |
| Std. Dev. | 0.197229 | 0.084974 | 9.844805 | 16.70226 |
| Probability | 0.333282 | 0.000000 | 0.000000 | 0.051999 |
| Observations | 72 | 72 | 72 | 72 |

Source: the results of the statistical program Eviews.12

Table (2) Sleep Test (P-P)

| The result | test statistic | Test format | test type | Variable |
|------------|----------------|----------------------|-----------|------------------------|
| Unstable | -1.6796 | cutter | PP | (GRF) level |
| Unstable | -1.6956 | cutter and direction | PP | |
| Stable | -3.6445 | cutter | PP | GRF)(First difference |
| Stable | -4.4892 | cutter and direction | PP | |
| Unstable | -2.2013 | Cutter | PP | SCW)(level |
| Unstable | -1.8979 | cutter and direction | PP | |
| Stable | -2.9721 | cutter | PP | (SCW)First difference |
| Stable | -3.8559 | cutter and direction | Pp | |
| Unstable | -1.0776 | cutter | PP | SM)(level |
| Unstable | -2.1774 | cutter and direction | Pp | |
| Stable | -3.9395 | cutter | PP | SM) (First difference |
| Stable | -4.2733 | cutter and direction | | |
| Stable | -3.3225 | cutter | PP | (STM) level |
| Stable | -3.3887 | cutter and direction | Pp | |
| Unstable | 0.9119 | cutter | PP | (DM) level |

| | | | | |
|----------|---------|----------------------|----|-------------------------|
| Unstable | -0.7762 | cutter and direction | Pp | |
| Unstable | -1.5301 | cutter | Pp | (DM) First difference |
| Unstable | -2.6966 | cutter and direction | | |
| Stable | -7.4634 | cutter | Pp | DM) (Second difference) |
| Stable | -7.3851 | cutter and direction | | |

Source: the results of the statistical program Eviews.12

2-Monetary excess: The historical development of SM was fluctuating between ups and downs at other times, and this path until 2013 was increasing, then it decreased in some years of the first crisis, then it rose again and continued to rise, reaching its maximum in light of the last crisis. But in general, its value was acceptable and did not rise significantly. Influential in the Iraqi economy, where its highest value was 0.52 - see Table (4) - When testing its stability, it was at the first difference, i.e. integrated of the first degree (I) (1).

1-Monetary Stability Coefficient: The historical development of STM was of a temporal trend and was unstable as it achieved many fluctuations during the period under study with positive and negative signs, but the most general was in the positive direction and as reflected in the figure above. But in all cases it did not approach the correct one and the largest value achieved is the same The value of monetary excess is 0.52, and when testing its stillness, the variable stabilized at the level, i.e. integrated from zero degree, I (0).

2-Monetary Depth: The chart above reflects that DM's time movement was in the general upward direction. In some years, it achieved declines and fluctuations, and its minimum value did not exceed 20, while its highest value was 61 - Table (4) in recent years due to survival The money supply is the same within the economy, with a significant deterioration in the gross domestic product due to the recent crisis. And when testing the degree of its stability, it was at the second difference, i.e. an integral of the second degree, I (2), according to the test used.

Second . profile

Since the variables were integrated at different levels - the first and second difference - so it is not possible to use the Johansen model, which assumes completeness at the first difference, but the Irdel model, which is assumed that integration does not exceed the second degree, so to demonstrate the dynamic relationship between foreign reserves and its implications for indicators of monetary stability in the Iraqi economy We use the Vector Auto Regression (VAR) model, which studies the dynamic effects between foreign reserves (GFR, SCE) on the one hand, and indicators of monetary stability: monetary excess (SM), monetary stability (STM), monetary depth (DM), and the structural vector autoregressive model (VAR).) shall be as follows:

$$\Delta Y_{it} = \alpha_0 + \sum_{i=1}^{p-1} \mu_i \Delta Y_{t-i} + \vartheta Y_{t-1} + BX + U_t$$

This model is characterized by the fact that all its variables are internal or dependent, and in this research it consists of a system of four variables, ie we use foreign reserves in two places, namely GFR and SCW.

Estimation and testing of the first model (GFR, SM, STM, DM).-1

As a first step, we use Granger's causality test to find out the direction of the causal relationship between foreign reserves and indicators of monetary stability. Table (3) shows the results of causality, as it turns out that there is causality in one direction from foreign reserves to monetary depth, and there is no reverse causality, with a probability of less than 5%. As for the direction of causality between foreign reserves and monetary excess, there is a causal relationship that goes from foreign reserves to monetary excess, and there is no relationship in the other direction, statistically significant and with a probability of less than 5%. While the relationship of foreign reserves tends to monetary stability only with a statistically significant probability.

Table (3) Causality test

| Pairwise Granger Causality Tests | | | |
|----------------------------------|-----|-------------|--------|
| Date: 11/23/22 Time: 03:35 | | | |
| Sample: 2004Q1 2021Q4 | | | |
| Lags: 2 | | | |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
| DM does not Granger Cause GFR | 70 | 4.94739 | 0.0268 |
| BFR does not Granger Cause DM | | 1.12240 | 0.3904 |
| SM does not Granger Cause GFR | 70 | 6.27784 | 0.0427 |
| BFR does not Granger Cause SM | | 2.10957 | 0.1692 |
| STM does not Granger Cause GFR | 70 | 7.11312 | 0.0147 |
| BFR does not Granger Cause STM | | 1.40455 | 0.3301 |
| SM does not Granger Cause DM | 70 | 0.92113 | 0.4690 |
| DM does not Granger Cause SM | | 0.78579 | 0.5314 |
| STM does not Granger Cause DM | 70 | 0.44165 | 0.7318 |
| DM does not Granger Cause STM | | 0.72678 | 0.5722 |
| STM does not Granger Cause SM | 70 | 0.16570 | 0.9157 |
| SM does not Granger Cause STM | | 0.30131 | 0.8238 |

Source: the results of the statistical program Eviews.12

Before using the VAR model, we determine the optimal delay or slowdown period by relying on a number of tests: HQ, SC, AIC, FPE.LR.LogL, as shown in Table (4).

Table (4) Optimum time delay tests

| VAR Lag Order Selection Criteria | | | | | | |
|---|-----------|-----------|-----------|------------|------------|------------|
| Endogenous variables: STM SM DM GFR | | | | | | |
| Exogenous variables: C | | | | | | |
| Date: 11/23/22 Time: 03:27 | | | | | | |
| Sample: 2004Q1 2021Q4 | | | | | | |
| Included observations: 66 | | | | | | |
| Lag | LogL | LR | FPE | AIC | SC | HQ |
| 0 | -252.2158 | NA | 0.027671 | 7.764114 | 7.896820 | 7.816552 |
| 1 | 56.88364 | 571.3655 | 3.85e-06 | -1.117686 | -0.454154 | -0.855493 |
| 2 | 131.1988 | 128.3626 | 6.61e-07* | -2.884812 | -1.690455* | -2.412865* |
| 3 | 146.3326 | 24.30576 | 6.88e-07 | -2.858563 | -1.133381 | -2.176861 |
| 4 | 157.3522 | 16.36253 | 8.22e-07 | -2.707644 | -0.451636 | -1.816188 |
| 5 | 173.4364 | 21.93290 | 8.57e-07 | -2.710193 | 0.076640 | -1.608983 |
| 6 | 199.9264 | 32.91184* | 6.67e-07 | -3.028072* | 0.289586 | -1.717108 |
| * indicates lag order selected by the criterion | | | | | | |
| LR: sequential modified LR test statistic (each test at 5% level) | | | | | | |
| FPE: Final prediction error | | | | | | |
| AIC: Akaike information criterion | | | | | | |
| SC: Schwarz information criterion | | | | | | |
| HQ: Hannan-Quinn information criterion | | | | | | |

Source: the results of the statistical program Eviews.12

It is clear that the best time delay, according to the above-mentioned statistical criteria, is two periods of time. Since the data are quarterly, this means that the optimal delay is two seasons of the year.

Conclusions:

1-The causal results showed that there is a one-way relationship between foreign reserves (the change in reserves) and indicators of monetary stability, while the causal direction was the house of foreign reserves (the ratio of foreign currency sales to foreign reserves) in one direction from reserves to monetary excess and monetary depth, and in two directions with stability cash.

2-There is an inverse relationship between foreign reserves and monetary depth and monetary stability and the lack of a relationship with monetary excess in the first model, while the inverse relationship was between foreign reserves and monetary stability and monetary excess and the lack of a relationship with monetary depth. Note that the effect was very small and close to zero. The reason is that the repercussions are indirect.

Recommendations:

1-We should focus on the foreign reserves of the Central Bank of Iraq and increase the reserves in order to contribute to maintaining monetary stability.

2-Spreading banking awareness among members of society so that monetary policy can control the money supply through indicators of monetary stability.

3-The need to formulate a monetary policy that diversifies sources of income and coordinates between monetary and fiscal policy by controlling monetary policy variables.

Sources:

1. Kathryn M.E.Dominguez? M MN & others international Reserves and the Global financial Crisis,National Bureau of Economics Research(NBER)1050 Massachusetts Avenue combridgema,02,38,working paper 173,62,2011,p.5
2. The Central Bank of Iraq, according to the link / <https://cbi.iq/news/view/1507>
3. International Monetary Fund Debt and Resave-Related indicators of External vulnerability, prepared By the policy Department and Reviewing consolation with other Department in consolation With other Departments,2000,p.2
4. International Monetary Fund (2013) , international Reserve and foreign Currency Liquidity . Arabic EdiTON.P.19
5. Kathryn Dominguez, 2009, International Reserves and underd cveloped capital Markets, Research in international Economics, the university of Michigan Discussion paper ,no, 600, p.4
6. Hamad bin Saud Al-Sayyari, Governor of the Saudi Arabian Monetary Agency, The Saudi Arabian System and Financial Markets, June 24, 2004
7. Rahim Hussein, Criticism and Monetary Policy, Dar Al-Manhaj, Jordan, 2010, p. 17
8. Hamoudi Abdel Wahhab, The Impact of Oil Price Changes on Monetary Stability, Algeria, 2021, pg. 15
9. Statistical program. Reviews. 12