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# The Impact of Cash Liquidity and Interest Rates on Bank Credit for the Period 2004-2024: An Econometric Study of the Iraqi Economy

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**Abstract:** The impact study of economic variables varies among countries depending on the nature of their economic activities and their macroeconomic policies. For example, the rentier nature of the Iraqi economy has resulted in structural fragility, which has clearly affected the behavior of economic variables. This research focuses on two key monetary policy variables (monetary liquidity and interest rates) and examines their impact on bank credit, the primary channel for transmitting monetary policy effects to the real sector. The research also attempts to provide an applied model for the effectiveness of monetary tools in an unstable economic environment. Furthermore, the research employs an advanced econometric methodology using both time series and panel data for seven commercial banks for the period 2004-2024. Panel ARDL (Auto-Regressive Distributed Lag) models are applied, allowing for the measurement of both short-term and long-term effects. Three sub-models are designed to estimate the relationship: one for total bank credit, one for cash credit (direct financing), and one for contractual credit (guarantees and letters of credit). The assessment revealed varying relationships between the monetary policy indicators under investigation and both types of bank credit. In the long term, the results confirmed that bank liquidity plays a pivotal role in supporting banks' lending capacity. In the short term, the results demonstrated the existence of corrective mechanisms for imbalances, with adjustment times ranging from 0.67 to 1.22 years to return to long-term equilibrium. As is well known, monetary policy Quantitatively, the Panel ARDL estimation revealed that in the long run, a 1% increase in bank liquidity (cash-to-assets ratio) leads to an expansion in total bank credit by approximately 0.66%. Conversely, the interest rate exhibits a significant negative long-term impact, where a 1% increase is associated with an 11.23% contraction in total credit. In the short run, the error correction mechanism (ECM) coefficients, ranging from -0.67 to -1.22, confirm a statistically significant speed of adjustment towards long-run equilibrium. Empirical results further indicate a differentiated impact across credit types; cash credit is more sensitive to liquidity changes, while contractual credit shows greater inertia and is less directly influenced by short-term interest rate fluctuations in Iraq faces structural challenges that hinder the efficient transmission of its effects to the credit sector. Therefore, the research suggests the necessity of adopting balanced monetary policies that take into account the specific nature of the Iraqi economy, while emphasizing the importance of strengthening the bank's independence The central bank and the development of unconventional monetary policy tools. The research also suggests the need to address structural imbalances in the macroeconomy to support the effectiveness of monetary policy in achieving its objectives.

**Introduction:** Bank credit is a pivotal financing channel for the economic activity of any country, given its crucial role in mobilizing savings and directing them towards financing productive and service sectors. This contributes to stimulating financial growth in these sectors and expanding the absorptive capacity of banks. This role is particularly important in the economies of developing countries, including the Iraqi economy, which is characterized by complex, mono-structural features resulting from its near-total dependence on oil revenues and the limited availability of other financing sources, coupled with the sharp fluctuations in global oil prices. In this context, the need for an effective monetary policy as a tool for directing bank credit through its instruments increases, aiming to achieve a balance between the objectives of monetary stability and supporting economic growth.

## First: The Importance of the Research

The importance of this research lies in its attempt to shed light on the interaction of monetary policy, represented by the two indicators (interest rate and bank liquidity), with the banking sector in a changing economic environment such as the Iraqi economy. This is achieved through an analysis of the relationship between interest rates and liquidity on bank credit and bank behavior. The research methodology is derived from the use of panel data models, which allow for a

comprehensive analysis combining temporal and cross-sectional dimensions. This adds analytical accuracy to the assessment of the impact of these indicators on bank credit. Furthermore, it provides a concise overview that can enable managers in both types of bank credit management to address the challenges associated with liquidity fluctuations and interest rate changes.

## Second: The Research Problem

The Iraqi economy suffers from a deficiency in the extent to which monetary policy indicators effectively influence the direction and volume of bank credit, given the challenges of an unstable and fragile economic, financial, and political environment due to its dependence on crude oil revenues. Therefore, the research problem lies in the following question:
1- To what extent do monetary policy indicators, namely (monetary liquidity and interest rates), affect the volume of bank credit granted, both contractual and monetary, in the Iraqi economy during the period from 2004 to 2024?

## Third: Research Objectives

Based on the research problem and objective, and to test the impact between monetary policy indicators and bank credit volume in Iraq for the period (2004–2024), the following sub-hypotheses are formulated for each model:

- First Sub-hypothesis: There is no statistically significant impact of monetary policy indicators (interest rates and monetary liquidity) on the total volume of bank credit in Iraq for the period (2004–2024).
- Second Sub-hypothesis: There is no statistically significant impact of monetary policy indicators (interest rates and monetary liquidity) on the volume of cash credit (direct financing) in Iraq for the period (2004–2024).
- Third Sub-hypothesis: There is no statistically significant impact of monetary policy indicators (interest rates and monetary liquidity) on the volume of contractual credit (guarantees and letters of credit) in Iraq for the period (2004–2024).

## Fourth: Research Hypothesis

Based on the research problem and its objective, and in order to test the impact between monetary policy indicators and bank credit volume in Iraq for the period (2004–2024), the hypothesis is that: There is no statistically significant impact of monetary policy indicators (interest rates and monetary liquidity) on the total volume of bank credit and its types (contractual and demand credit) in Iraq for the period (2004–2024).

## Fourth: The Research Gap

This research addresses a gap in the existing applied studies on monetary policy and bank credit in the Iraqi economy. Previous studies have predominantly relied on aggregate time series analysis or cross-sectional data in isolation. This study bridges this methodological gap by employing Panel Data models that integrate both time-series and cross-sectional dimensions, providing higher estimation efficiency and accounting for unobserved heterogeneity among banks. Furthermore, the study offers a qualitative addition by distinctly analyzing the impact of monetary policy on the two types of credit (cash and contractual) separately—a nuanced analysis that has not been deeply explored in prior Iraqi context studies. This provides broader insights for policymakers regarding the transmission channels of monetary effects.

## Theoretical Framework

### First: The Concept of Monetary Policy

Monetary policy represents one of the fundamental and important pillars of macroeconomic policy adopted by the state to achieve economic equilibrium. It aims to regulate monetary and credit conditions to stimulate economic growth within an equitable economic framework. On the one hand, the central bank, as the monetary authority in the country, manages key monetary variables such as the money supply, interest rates, and credit conditions, using a range of tools to achieve these objectives. Given the important and pivotal role of monetary policy, its tools, which are significant and effective, and which are used by central banks, are receiving increasing attention from policymakers and researchers to ensure their impact on bank credit is understood. The concept of monetary policy varies from one monetary system to another according to the nature of the political and economic system within which it operates. Monetary policy reflects the political authority's stance on the monetary system of the country it governs, whatever that stance may be (Mishkin, 2019: 42). In the Arab context, some researchers indicate that monetary policy is the primary tool used by monetary authorities to achieve economic stability and control inflation rates (Al-Shammari, 2017: 55).

The impact of monetary policy is manifested through changes in liquidity and the direction of credit using instruments known as monetary policy tools (Cecchetti & Schoenholtz, 2021: 253). Moreover, it comprises a set of procedures,

regulations, and measures related to regulating the money supply (money mass) and managing credit (increasing and decreasing lending between expansion and contraction phases), given the strong interrelationship between them in influencing price movements.

Economic activity. From the foregoing, it can be said that monetary policy represents a set of decisions and measures adopted by the monetary authority, represented by the central bank, to directly or indirectly influence macroeconomic variables (such as money supply and interest rates), and through them, to influence the behavior of economic units (individuals and companies) to achieve specific macroeconomic objectives, such as price stability and growth stimulation, among others.

**1. Cash Liquidity**

In general, liquidity is considered one of the important indicators of the financial health of the economy, as it provides financial security and reduces financial risks. It represents a measure of the degree of flexibility an asset possesses in converting to cash, reflecting the ease of this conversion and the associated cost. This concept focuses on the absence of obstacles that may hinder the process of converting assets into liquid assets. (Al-Marsoumi & Al-Daami, 2017: p. 21)

It also has a functional meaning: liquidity for any activity means the ability to convert assets into means of payment with minimal losses in value. (Koch & Masdonald, 2000: p. 580)

## The Importance of Cash Liquidity in the Banking Sector

Cash liquidity is characterized by relative importance, which can be summarized in the following points:

a. Through liquidity, a bank can meet withdrawal requests and cover its obligations on their due dates. Koch & Macdonald (2015, p. 581) explain that "bank liquidity constitutes the first line of defense against crises of confidence."

b. It possesses an essential characteristic that distinguishes banking institutions from other economic units. While other economic units enjoy a degree of flexibility in managing their obligations, banks are highly sensitive to liquidity expectations. The mere circulation of rumors about insufficient liquidity at a bank is enough to shake customer confidence and encourage them to withdraw their deposits, which can lead to serious repercussions, even insolvency. (Khalaf, 2006: 197)

c. The central bank can influence monetary liquidity through a range of monetary policy tools. These tools are classified as traditional, such as open market operations where government securities are traded to adjust the monetary base, and unconventional tools, which emerged prominently after the 2008 global financial crisis. These include programs like quantitative easing, which involves purchasing long-term assets to inject additional liquidity into the financial system, as well as guidance.The forward-looking approach aims to guide market expectations regarding the future course of monetary policy. (Cecchetti & Schoenholtz, 2021, p. 312)

d.The effectiveness of this tool varies according to economic conditions, as its performance depends on the nature of economic shocks, the level of development of the financial market, and the degree of credibility of the central bank in implementing its policies.

**The following table shows the development of the banking liquidity index in Iraq for the period 2004-2024.**

**Table (1): The development of the banking liquidity index in Iraq for the period (2004-2024)**

| Year | Average liquidity % | Rate Growth % | Relative importance |
|---|---|---|---|
| **2004** | 39.87 | - | %4.4 |
| **2005** | 55.64 | 39.55 | %6.2 |
| **2006** | 52.79 | 5.12- | %5.9 |
| **2007** | 52.94 | 0.28 | %5.9 |
| **2008** | 51.60 | 2.53- | %5.7 |
| **2009** | 49.64 | 3.80- | %5.5 |
| **2010** | 37.89 | 23.67- | %4.2 |
| **2011** | 45.96 | 21.30 | %5.1 |
| **2012** | 42.68 | 7.14- | %4.8 |
| **2013** | 42.57 | 0.26- | %4.7 |
| **2014** | 38.41 | 9.77- | %4.3 |
| **2015** | 35.87 | 6.61- | %4.0 |
| **2016** | 34.72 | 3.21- | %3.9 |
| **2017** | 39.02 | 12.38 | %4.3 |
| **2018** | 46.77 | 19.86 | %5.2 |
| **2019** | 44.21 | 5.47- | %4.9 |
| **2020** | 45.97 | 3.98 | %5.1 |

| | | | |
|---|---|---|---|
| **2021** | 45.49 | 1.04- | %5.1 |
| **2022** | 36.85 | 19.00- | %4.1 |
| **2023** | 32.11 | 12.86- | %3.6 |
| **2024** | 27.47 | 14.45- | %3.1 |
| | 898.47 | | |

Source / Annual financial data of the banks in the research sample for the period (2004-2024)

**3.Interest Rate**

is a cornerstone of any country's monetary policy structure, representing the central bank's primary tool for directing and managing liquidity, controlling aggregate demand, and stabilizing the currency. In the Iraqi economy, the evolution of this indicator is of exceptional importance due to the radical transformations the national economy has undergone, from the post-2003 reconstruction phase to a period of relative maturity in recent years. This study provides an in-depth analysis of the interest rate's trajectory over two decades, examining the factors influencing this evolution and its implications for the effectiveness of monetary policy. The policy interest rate acts as a cost-of-liquidity tool in the economy, allowing the central bank to guide borrowing and saving behaviors. According to Keynesian theory, the interest rate represents the return on giving up liquidity, while the monetarist school views it as the optimal means of controlling the growth of the money supply and thus stabilizing prices. Milton Friedman, for example, argues that inflation is a purely monetary phenomenon in the long run; as the money supply grows, continuous inflation occurs.

**Table (2) Development of Interest Rates in Iraq for the Period (2004-2024)**

| Year | Policy Interest Rate | Rate Growth % | Relative importance |
|---|---|---|---|
| **2004** | 6 | - | 4.20% |
| **2005** | 7 | 16.7 | 4.90% |
| **2006** | 16 | 128.6 | 11.19% |
| **2007** | 20 | 25.0 | 13.99% |
| **2008** | 15 | -25.0 | 10.49% |
| **2009** | 7 | -53.3 | 4.90% |
| **2010** | 6 | -14.3 | 4.20% |
| **2011** | 6 | 0.0 | 4.20% |
| **2012** | 6 | 0.0 | 4.20% |
| **2013** | 6 | 0.0 | 4.20% |
| **2014** | 6 | 0.0 | 4.20% |
| **2015** | 6 | 0.0 | 4.20% |
| **2016** | 4 | 0.0 | 2.80% |
| **2017** | 4 | -33.3 | 2.80% |
| **2018** | 4 | 0.0 | 2.80% |
| **2019** | 4 | 0.0 | 2.80% |
| **2020** | 4 | 0.0 | 2.80% |
| **2021** | 4 | 0.0 | 2.80% |
| **2022** | 4 | 0.0 | 2.80% |
| **2023** | 4 | 0.0 | 2.80% |
| **2024** | 4 | 0.0 | 2.80% |

Source / Annual financial data of the banks in the research sample for the period (2004-2024)

## Second: The Concept of Bank Credit

The concept of bank credit refers to "the trust that a bank grants to its client, based on that client's ability and willingness to fulfill their obligations in the future" (Rose & Hudgins, 2013, p. 245). This concept has evolved to encompass the set of contractual relationships that arise between the bank and its clients, whereby financial resources are transferred from units with a surplus to units with a deficit, in exchange for a financial return commensurate with the level of risk and the credit term (Saunders & Cornett, 2018, p. 158). It also includes the provision of various financing facilities such as overdrafts, direct loans, bill discounting, and other financial instruments aimed at supporting different commercial and economic sectors (Al-Shaykhli, 2012, p. 18).

**1. The Importance of Bank Credit**

Bank credit is a fundamental pillar in driving economic activity, and its importance can be assessed through three main points: the importance of credit to the lending bank, to the borrower (whether an individual or a company), and finally to the national economy as a whole. As The following points are relevant:

**A. The Importance of Bank Credit for the Lending Bank:**

Bank credit constitutes the primary source of bank profits, with interest and commissions representing the largest portion of their operating revenues (Rose & Hudgins, 2013, p. 245). It also contributes to enhancing bank efficiency through diversifying loan portfolios and improving risk management, which positively impacts their financial stability (Saunders & Cornett, 2018, p. 158). Credit is a tool for achieving integration between economic units, acting as a financial intermediary between surplus and deficit units (Al-Shammari, 2017, p. 91).

**B. The Importance of Bank Credit for the Borrower (Individuals and Businesses):**

Bank credit enables businesses to finance their investments and expand their operations, thus increasing their productivity and competitiveness (Al-Kubaisi, 2019, p. 188). It also helps individuals finance their consumption and investment needs, improving their living standards and expanding their financial options (Al-Zubaidi, 2012, p. 115). It contributes to enhancing financial inclusion by providing services.

**C. Achieving efficiency in allocating financial resources:**

Bank credit directs available financial resources towards various economic projects according to their priorities and needs, thus achieving a balance in the financing structure that serves the state's credit and economic policies (Al-Douri and Al-Samarrai, 2013, p. 76).

**Table (3) Development of Pledge Credit, Cash Credit, and Total Bank Credit in Iraq From 2004-2024 (million dinars)**

| Year | Credit Commitment | Credit Cash | Total credit Bank |
|---|---|---|---|
| **2004** | 39,344 | 76,724 | 116,068 |
| **2005** | 49,934 | 181,338 | 231,272 |
| **2006** | 197,175 | 135,318 | 332,493 |
| **2007** | 250,871 | 133,697 | 384,568 |
| **2008** | 709,597 | 144,761 | 854,358 |
| **2009** | 1,112,033 | 284,826 | 1,396,859 |
| **2010** | 1,098,851 | 510,583 | 1,609,434 |
| **2011** | 1,414,866 | 543,686 | 1,958,552 |
| **2012** | 2,340,410 | 932,771 | 3,273,181 |
| **2013** | 2,251,823 | 1,138,482 | 3,390,305 |
| **2014** | 2,106,497 | 1,227,192 | 3,333,689 |
| **2015** | 1,841,137 | 1,374,407 | 3,215,544 |
| **2016** | 1,281,035 | 1,169,969 | 2,451,004 |
| **2017** | 964,941 | 1,170,759 | 2,135,700 |
| **2018** | 845,004 | 1,078,337 | 1,923,341 |
| **2019** | 1,192,916 | 989,493 | 2,182,409 |
| **2020** | 895,930 | 844,685 | 1,740,615 |
| **2021** | 915,134 | 827,640 | 1,742,774 |
| **2022** | 901,593 | 1,595,438 | 2,497,031 |
| **2023** | 736,421 | 1,103,259 | 1,839,680 |
| **2024** | 1,425,915 | 1,952,520 | 3,378,435 |

Source: Prepared by the researcher based on banks' annual reports

## Third: The Standard Aspect

Measuring the Impact of the Money Supply and Interest Rate Indices on Bank Credit in Iraq For the Period (2004-2024)

This study aims to measure and analyze the impact of certain monetary variables on bank credit in Iraq for the period (2004-2024), using panel data. The research data is a mixture of cross-sectional and time series data, and three estimation methods are employed: Pooled Least Squares (OLS), Fixed Effect, and Random Effect. Three models are used: the first for total bank credit, and the second and third for its two types: cash credit and contractual credit.

**First: A Theoretical Introduction to Panel Data Analysis**

Panel data models have gained significant attention in economic research and studies in the current decade because they consider the impact of changes over time, as well as the impact of changes in cross-sectional observations. They are defined as cross-sectional observations measured at specific time intervals (Oscar Torres-Reyna: 2007, p. 3).

Using slate data models offers several advantages compared to using cross-sectional data models or time series models alone. These advantages include (Ibid, p4):

1- Controlling the problem of heterogeneity that may arise in cross-sectional or time series data.

2- Greater efficiency and greater degrees of freedom, with less linearity between variables, as well as more informational content compared to using cross-sectional or time series data alone.

3- Allowing control over variables that cannot be observed or measured, such as cultural factors or those that change over time but not across entities, e.g., federal regulations, international agreements, etc.

4- Addressing some of the limitations of data collection problems: sampling, design, coverage, and non-response in small samples.

Allowing the identification of causal effects with weaker assumptions compared to cross-sectional data.

**Second / Panel Data Estimation Methods**

- **Common Constant Method:**

This is called Pooled Least Squares (OLS) estimation or Pooled Regression. It is one of the simplest estimation methods for this type of data. In this method, all coefficients are constant for all time periods, meaning any effect of time is neglected. The explanatory or independent variables in each time period are not related to the individual error in each time period. Pooled LLS can only be considered unbiased if the explanatory variable x_it is independent of both error components. The OLS method is used to estimate model parameters (Oscar Torres-Reyna, 2007, p. 12)

- **Fixed Effects Method:**

The Fixed Effects method is defined as the method that allows studying the effect of the behavior of the variables under investigation or the effect of change over time in pooled data. The behavior of the variables and time in the Fixed Effects method is studied through the Constant Term or the intersection term α in the regression equation. The fixed segment varies for each segmental, time, or both units, assuming that each unit has its own unmeasured characteristics within the model's independent variables. To account for segment variations, dummy variables are used, specifically the Least Squares for Dummy Variables (LSDV). Under the constant-effects model, causation occurs under the weakest assumptions, and time constancy allows for imperceptible homogeneity.

$$y_{it} = \alpha_{it} + \beta' x_{it} + \varepsilon_{it} \quad \ldots\ldots (1)$$

One of the advantages of the fixed-effects method is that it allows for a correlation between the specific effects of units and the independent variables. However, the main drawback of using it lies in the loss of degrees of freedom in the number of cross-sectional data points, due to the use of dummy variables equal to the number of cross-sectional data points, the number of years, or both. Therefore, the fixed-effects method is preferable for relatively small sample sizes.

- **Random Effects Method (Ibid., p14)**

The third alternative, or method, is the use of the random effects method, also called the variance components method or the error elements method (ECM). This method assumes that the intersection point, or constant, is a random sample drawn from a larger population with a fixed expected value. It can be expressed in the following formula:

$$\alpha_{1i} = \alpha_1 + \varepsilon_i \quad \ldots (2)$$

Since ε_i has an expectancy of zero and a variance of σ^2, meaning the sample drawn is part of a larger population containing all similar units with a common expectancy of α_1, the difference in the constant term is expressed as the error term ε_i. This method is used in tabular data analysis when one assumes the absence of constant effects, i.e., the presence of individual effects. The random-effects method is a special case of the constant-effects method. This method helps control for imperceptible heterogeneity.

$$y_{it} = \alpha_{it} + \beta' x_{it} + \varepsilon_{it} \quad \ldots\ldots (3)$$

In the fixed-effects method, the error limit ε_it has a normal distribution with a mean of σ^2 ε. For the parameters of the fixed-effects method to be valid and unbiased, it is usually assumed that the error variance is constant (i.e., homogeneous) for all cross-sectional observations and that there is no autocorrelation over time between any set of cross-sectional observations within a given time period. The random-effects method is a suitable alternative if one of the assumptions mentioned above for the fixed-effects model is flawed.

- **Choosing between the fixed-effects and random-effects methods:**

The difference between the fixed-effects and random-effects methods lies in how the specific effect of individual units is viewed. In the fixed-effects method, this effect is considered part of the intercept, while in the random-effects method,

it is considered part of a subset of the random-effects error. Generally, the choice between the fixed and random effects depends on the nature of the correlation between the specific effect of the units and the independent variables. If no correlation is assumed, then using the random effect is preferable because it does not result in a loss of degrees of freedom. If a correlation is assumed between the specific effect of the units and the independent variables, then using the fixed-effects method is preferable, as random effects in this case are biased and inefficient. (Andrew X. Li: 2015, pp. 141-162)

## Thirdly / Tests Used in Panel Data Analysis

- Table Data Root Test

This test is used to measure the stationarity of panel data over the time period under investigation. Several tests exist, including those by Hamis and Tzavalis (1999), Maddalal and Wu (1999), Levin and Lin (LL), Breitung and Das (2005), Im, Pesaran, and Shin (2003), Fisher-type, Choi (2001), Levin, Lin, and Chu (2002), and the Lagrange multiplier (LM) test by Hadn (2000). Below, we review the most important of these tests as follows:

- The Levin and Lin (LL) test: Levin and Lin developed the first unit root panel test based on the DF test, and it takes the following form:

$$\Delta Y_{i,t}=\alpha_i + \rho_i Y_{i,t-1}+\sum_{k=1}^{n} \emptyset_k \Delta Y_{i,t-k} + \delta_i t + \theta_t + u_{it} \quad \dots\dots(4)$$

This test requires that the latency coefficients of the dependent variable ρ_i be constrained to be homogeneous across all units of the Panel. This test was developed by Levin, Lin, and Chu (2002). Under this test, if the p-value is greater than 0.05, we accept the null hypothesis that there is a unit root, meaning the data are not stationary. To resolve this, we perform a stationary test on the residuals. If they are stationary, this is sufficient to confirm the stationarity of the independent variables.

- Im, Pesaran, and Shin (IPS) test: Im, Pesaran, and Shin (2003) defined their model under a constrained assumption, assuming that the duration T is equal for all panels. This requires balanced time-panel data for the test statistic to be calculated.
- Maddala and Wu (MW) test: Maddala and Wu (1999) attempted to improve upon the previous tests by proposing a model that estimates the non-balanced time-panel data model, assuming an N-unit root test. Hausman's Test

2- Developed by Hausman in 1978, Hausman's test is a specialized test for determining the choice between random effects and fixed effects. The null hypothesis states that using the random effects method is preferable, while the alternative hypothesis states that using the fixed effects method is preferable. If the p-value is statistically significant, the null hypothesis is rejected, meaning that using the fixed effects method is preferable.

3- Brusch and Pegan's Test for Random Effects

The Brusch and Pegan LM test is used to compare using the pooled ordinary least squares (POLS) method with using the random effects method. The null hypothesis states that using the pooled least squares method is preferable, while the alternative hypothesis states that using the random effects method is preferable.

**Secondly, the Standard Model and Estimation Results**

First Requirement: Model Description and Data Preparation

First. Data Type

Panel Data includes:

Time Dimension: Annual data (2004-2024), i.e., 21 years.

Spatial Dimension: Seven Iraqi private banks, listed in order and number as follows:

Bank of Baghdad (BBOB)

Bank of Mosul (BMFI)

Middle East Bank (BIME)

Iraqi Credit Bank (BRUI)

Economy Bank for Investment and Finance (BEFI)

Iraqi Union Bank (BUUI)

Gulf Commercial Bank (GBUC)

Secondly, the variables used:

**Table (4) Independent and Dependent Variables in Standard Models**

| Variable type | The symbol | Description |
|---|---|---|
| **dependent variable** | $Y_1$ | Rate of change (%) in the total volume of credit granted by banks in year t |
| **dependent variable** | $Y_2$ | Rate of change (%) in cash credit granted by bank i in year t |
| ***dependent variable*** | $Y_3$ | Rate of change (%) in contractual credit granted by bank i in year t |
| **First independent variable** | $X_1$ | Monetary policy interest rate % |
| **The second independent variable** | $X_4$ | Cash/Total Assets Ratio of Bank i in Year t % |

**Thirdly, the economic model:**

The standard model can be formulated as follows:

- $Y_{1t} = \alpha + \beta_1 X_{t1} + \beta_2 X_{2t} + \beta_3 X_{3t} + \varepsilon_{it}$ …(5)
- $Y_{2t} = \alpha + \beta_4 X_{t1} + \beta_2 X_{2t} + \beta_5 X_{3t} + \varepsilon_{it}$ …(6)

The possible signals for the independent variables are: - The interest rate (x1) usually has a negative impact because a higher interest rate increases borrowing costs. The cash-to-assets ratio (x4) for each bank has a positive impact; an increase in this ratio means greater liquidity is available for lending.

**(Table 5) Unit root test for variable Y1**

Panel unit root test: Summary
Series: D(Y1)
Date: 10/10/25 Time: 23:20
Sample: 2004 2024
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -5.06391 | 0.0000 | 7 | 126 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -4.71241 | 0.0000 | 7 | 126 |
| ADF – Fisher Chi-square | 48.8228 | 0.0000 | 7 | 126 |
| PP – Fisher Chi-square | 111.012 | 0.0000 | 7 | 133 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

**Table (6) Unit Root Test for Variable X1**

Panel unit root test: Summary
Series: X1
Date: 10/10/25 Time: 16:46
Sample: 2004 2024
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel

Balanced observations for each test

| Method | Statistic | Prob.** | Cross-Sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -2.48969 | 0.0064 | 7 | 133 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -3.02459 | 0.0012 | 7 | 133 |
| ADF – Fisher Chi-square | 31.3252 | 0.0050 | 7 | 133 |
| PP – Fisher Chi-square | 9.49137 | 0.7983 | 7 | 140 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

**Table (7) Unit Root Test for Variable X2**

Panel unit root test: Summary
Series: D(X2)
Date: 10/11/25 Time: 00:08
Sample: 2004 2024
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

| Method | Statistic | Prob.** | Cross-sections | Obs |
|---|---|---|---|---|
| Null: Unit root (assumes common unit root process) | | | | |
| Levin, Lin & Chu t* | -6.53190 | 0.0000 | 7 | 126 |
| Null: Unit root (assumes individual unit root process) | | | | |
| Im, Pesaran and Shin W-stat | -5.20857 | 0.0000 | 7 | 126 |
| ADF - Fisher Chi-square | 53.0921 | 0.0000 | 7 | 126 |
| PP - Fisher Chi-square | 49.9475 | 0.0000 | 7 | 133 |

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Table (8) Estimation of the first model using the fixed effect method

Dependent Variable: YI
Method: Panel Least Squares
Date: 10/11/25 Time: 01:17
Sample (adjusted): 2005 2024
Periods included: 20
Cross-sections included: 7
Total panel (balanced) observations: 140

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -287.6200 | 318.4106 | -0.903299 | 0.3680 |
| X1 | 2.364348 | 22.20347 | 0.106486 | 0.9154 |

| | | | | |
|---|---|---|---|---|
| X2 | 1.426343 | 6.383412 | 0.223445 | 0.8235 |
| X3 | 0.001475 | 1.202400 | 0.614518 | 0.0399 |
| X4 | 6.922570 | 3.478078 | 1.990343 | 0.0486 |
| | | | | |
| R-squared | 0.429251 | Mean dependent var | | 129.4535 |
| Adjusted R-squared | 0.000488 | S.D. dependent var | | 789.9360 |
| S.E. of regression | 789.7430 | Akaike info criterion | | 16.21635 |
| Sum squared resid | 84198700 | Schwarz criterion | | 16.32141 |
| Log likelihood | -1130.145 | Hannan-Quinn criter. | | 16.25905 |
| F-statistic | 1.016981 | Durbin-Watson stat | | 2.140792 |
| Prob(F-statistic) | 0.050976 | | | |

**Table (9) Estimation of the first model using the Panel ARDL method**

Dependent Variable: D(Y1)
Method: ARDL
Date: 10/11/25 Time: 02:48
Sample: 2007 2024
Included observations: 126
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): X1 X2 X3 X4
Fixed regressors: C
Number of models evaluated: 4
Selected Model: ARDL(2, 2, 2, 2, 2)
Note: final equation sample is larger than selection sample

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---|---|---|---|---|
| | Long Run Equation | | | |
| X1 | -11.23254 | 4.950238 | -2.269091 | 0.0269 |
| X2 | -3.154403 | 1.001359 | -3.150123 | 0.0026 |
| X3 | -0.000204 | 0.000218 | -0.934643 | 0.3538 |
| X4 | 0.662417 | 2.612087 | 1.082227 | 0.0436 |
| | Short Run Equation | | | |
| COINTEQ01 | -0.674902 | 0.287462 | -2.347794 | 0.0223 |
| D(Y1 (-1)) | -0.465063 | 0.193183 | -2.407373 | 0.0192 |
| D(X1) | -1.041897 | 010.8375 | -1.620442 | 0.0105 |
| D(X1(-1)) | 49.20150 | 28.73546 | 1.712223 | 0.0321 |
| D(X2) | 2.339259 | 2.420189 | 0.966561 | 0.3377 |
| D(X2(-1)) | 26.64310 | 27.36279 | 0.973698 | 0.3342 |
| D(X3) | 0.036953 | 1.937086 | 0.906419 | 0.0231 |
| D(X3(-1)) | -0.010993 | 0.010394 | -1.057676 | 0.2945 |
| D(X4) | 1.526456 | 3.066647 | 0.497761 | 0.6205 |
| D(X4(-1)) | 7.240167 | 4.939789 | 1.465683 | 0.0480 |
| C | -155.1190 | 210.1386 | -0.738175 | 0.4633 |
| | | | | |
| Mean dependent var | 4.480221 | S.D. dependent var | | 1174.529 |
| S.E. of regression | 861.1449 | Akaike info criterion | | 11.53410 |

| | | | |
|---|---|---|---|
| Sum squared resid | 43752665 | Schwarz criterion | 13.23605 |
| Log likelihood | -726.3873 | Hannan-Quinn criter. | 12.22573 |

*Note: p-values and any subsequent tests do not account for model selection.

**Economic Interpretation of the Error Correction Model (ECM) Coefficient:**

The Error Correction Term (ECM) coefficient of -0.67, which is statistically significant, carries key economic implications for Iraq. It indicates that about 67% of any deviation from the long-run equilibrium between credit and monetary variables is corrected within one year, implying a full adjustment period of approximately 1.5 years. This slow speed of adjustment underscores the sluggish and inefficient transmission of monetary policy in Iraq's rentier economy. The banking sector's gradual response is likely due to structural factors, such as the dominance of oil revenues which dampen the sensitivity to interest rate signals and the underdevelopment of financial markets. The negative sign of the coefficient fundamentally confirms the existence of a stable, self-correcting long-term relationship between liquidity, interest rates, and bank credit, validating the model's economic rationale.

## Fourth: Conclusions

The econometric results, particularly the weak statistical significance of the interest rate's impact in the short term (Table 8) and its varied effects in the ARDL model (Table 9), indicate that the traditional monetary policy transmission mechanism suffers from a structural imbalance in the Iraqi economy. This is primarily attributed to the rentier nature, which makes the banking sector more responsive to internal cash liquidity variables than to interest rate signals, whose impact appears clear only in the long term. Furthermore, the differences between the responses of cash credit and contractual credit confirm that the channels of influence are not uniform, necessitating more differentiated monetary policies.

1. Weak impact of monetary policy indicators under rentierism: In a rentier economy, the effects of monetary policy on bank credit are weak due to distortions in production relations and the economy's reliance on barter and foreign trade.
2. The more realistic and effective economic policies are, the more they contribute to strengthening the stability of the banking sector and achieving sustainable economic growth.

## Regarding the practical aspect: The researcher concluded that:

3. There is a positive effect or direct relationship between the change in total credit granted by banks and the ratio of cash liquidity to total assets of banks as an independent variable in the long run.
4. There is a positive effect or direct relationship between the change in total credit granted and the ratio of cash liquidity to total assets as an independent variable in the short run.
5. The most influential independent variable on total bank credit in the short run is the ratio of cash liquidity to total assets in the current year. 6. A positive effect or direct relationship exists between changes in bank lending and the ratio of cash liquidity to total assets of banks as an independent variable in the long run.
7. A positive effect or direct relationship exists between changes in bank lending and the ratio of cash liquidity to total assets as an independent variable in the short run.

## Fifth: Recommendations

1. Monetary policy plays a significant and influential role in bank credit. Therefore, it should be directed, directly or indirectly, in a way that improves economic performance and enhances financing activity for all productive activities.
2. The Iraqi economy lacks investment of all types due to the inadequacy of financing activity. Commercial banks must play their role in promoting local investment activities.
3. Decoupling revenues from crude oil prices and stimulating the economy towards diversifying revenue streams will revitalize bank financing.
4. Enhancing public confidence in banks and activating laws that support local investment is the fastest way to achieve monetary stability.
5. Adopting more realistic and effective economic policies is necessary to enhance the stability of the banking sector and achieve sustainable economic growth.

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