

Measuring and analyzing the impact of gross capital formation and the interest rate (discount rate) on banking liquidity indicators in Iraq for the period (2015–2024)

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Abstract: This study attempts to examine along with evaluate the impact of Gross Capital Formation along with interest rates on banking liquidity evaluates (liquid assets/total assets, liquid assets/short-term obligations, along with customer deposits/total loans) within Iraq for the timeframe 2015–2024. Given the significance of banking liquidity within enhancing the stability of banking sector along with its ability to meet its financial obligations, the research used a descriptive–analytical approach to present the theoretical structure, along with an econometric approach to examine the correlation among the study factors using the SPSS software for Iraq's economy. The revealed of the econometric examination revealed a high along with statistically signify is able to t direct correlation among Gross Capital Formation along with banking liquidity evaluates. Such that implies that grown spending activity promotes to enhancing banks' financial resources along with raising their liquidity levels, using alternatively, the indicated revealed an inverse correlation among interest rates along with banking liquidity evaluates. however, this impact was not statistically signify is able to t throughout the timeframe 2015–2024. instead, stimulating spending along with raising funds formation are important factors within strengthen banking liquidity evaluates within Iraq, whereas the impact of interest rates stays relatively weak within determining banking liquidity levels throughout the timeframe (2015–2024).

Keywords: (Gross Capital Formation ·Interest Rate ·Banking Liquidity ·Banking Liquidity Indicators) .

1. Introduction:

The introduction should clearly present the research context and define the main problem addressed in the banking sector is a cornerstone of promoting economic activity along with achieving financial stability. It mobilizes

deposits along with directs them towards spending. Bank liquidity is a key evaluate indicateing banks' ability to meet their obligations along with boost confidence withinthe banking system. Bank liquidity evaluates are shapeed using several financial along with monetary factors, most notably Gross Capital Formation along with the interest rate. Gross Capital Formation indicates the level of spending withinfixed assets along with infrastructure, such that grows the demalong with for money. The interest rate, on the other halong with, is a key monetary policy tool that impacts deposits, spending, along with bank loans levels. Iraq's economy witnessed financial along with economic transformations throughout the timeframe 2015–2024 as because of variations withinoil prices along with changes withineconomic policies. This was indicateed withinliquidity evaluates. hence, this study attempts to examine the impact of Gross Capital Formation along with the interest rate on bank liquidity evaluates using statistical along with econometric methods, withinorder to arrive at results that contribute to enhancing the impactiveness of economic policies along with improving the performance of banking sector.

First: The significance of the Research

The significance of this study lies withinhighlighting the impact of two economic factors: Gross Capital Formation along with the interest rate. These two factors play a fundamental role withininfluencing banking liquidity evaluates withinIraq, such that directly or indirectly shapes the volume of liquidity withwithinbanking sector. The significance of this study is able to be illustrated through the below:

- 1– Contributing to a broader theoretical along with applied understalong withing of the correlation among Gross Capital Formation, the interest rate, along with banking liquidity.
- 2– Demonstrating the role of banking liquidity management withinmitigating financial risks along with enhancing monetary stability.
- 3– Providing scientific findings that is able to be used to promote fiscal along with monetary policies related to regulating banking activity.

Second: Research Problem

Bank liquidity evaluates are among the most important evaluates indicateing banking sector's ability to finance banking activities along with achieve financial stability. however, Iraq's economy faces numerous challenges, including economic variations along with volatility withinfinancial along with monetary factors, such that might shape these evaluates. The research problem is represented using the below mawithinquestion:

To what extent do Gross Capital Formation along with the interest rate shape bank liquidity evaluates withinIraq throughout the timeframe (2015–2024)?

This mawithinquestion causes several sub-questions, including:

- 1– Is there a statistically signifi is able to t impact of Gross Capital Formation on bank liquidity evaluates withinIraq?
- 2– Is there a statistically signifi is able to t impact of the interest rate on bank liquidity evaluates withinIraq?

Third: Research Objectives

this study attempts to examine along with evaluate the impact of Gross Capital Formation along with the interest rate on bank liquidity evaluates withinIraq throughout the timeframe (2015–2024), leading to scientific results that is able to contribute to enhancing the efficiency of fiscal along with monetary policies.

The research objectives is able to be summarized as follows:

- 1– To examine along with evaluate the impact of Gross Capital Formation on banking liquidity evaluates withinIraq for the timeframe 2015–2024.
- 2– To examine along with evaluate the impact of interest rates on banking liquidity evaluates withinIraq for the timeframe 2015–2024.

Fourth: Research Hypotheses

The research is founded on examineing the below hypotheses:

- 1– There is no signifi is able to t impact of Gross Capital Formation on banking liquidity evaluates withinIraq.
- 2– There is no signifi is able to t impact of the interest rate on banking liquidity evaluates withinIraq.

Fifth: Research Methodology

The research used a descriptive–analytical approach to present the theoretical along with conceptual structure for determining the correlation among Gross Capital Formation along with the interest rate, along with their impact on banking liquidity withinIraq for the timeframe 2015–2025.

Sixth: Temporal along with Spatial Scope

Temporal Scope: The research relies on analyzing Iraqi economic data related to the research factors throughout the timeframe (2015–2024).

Spatial Scope: The research is weak to Iraq’s economy, relying on data published using the Central Bank of Iraq.

Section One

Conceptual Framework (Gross Capital Formation and Interest Rate (Discount Rate))

First: Total capital

The roots of this tool go back to the idea launched using Adam Smith. Adam Smith was the first to give funds a clear place among the factors of production along with referred its nature. This term was used using many writers, including the Physiocrats along with other schools of economic thought, along with they often meant using it money borrowed with interest. This meaning is still common among businessmen who associate funds with money or its equivalent within securities. Over time, the meaning of funds has expanded with to include all wealth that generates income for its owner (Al-Mazouri, 2005: 4).

The significance of funds

Bank funds is a fundamental element within enhancing the soundness of banks along with the stability of banking systems. It represents the first line of defense against unexpected losses, preventing the transfer of the impacts of these losses to depositors' funds, especially given the loans, market, along with operational risks that banks face within a highly uncertain environment (Hassan, 2005: 38–39).

The primary function of funds is to protect the funds of lenders along with depositors originating from any potential losses or emergencies, whereas financing fixed assets plays a secondary role. This necessitates that bank funds be fully paid up along with readily available when needed (Al-Shammaa, 1990: 100).

Second: Interest rate (discount rate)

The interest rate is referred as the price set using the central bank for purchasing securities. This rate is not necessarily intended for direct spending purposes, but instead is primarily used as a tool to control the level of liquidity within the economy. The interest rate is also viewed as the charge imposed on the use of funds, expressed as a percentage of funds, making it a major impact on purchasing power along with on consumption along with spending decisions within both the public along with private sectors (Al-Sayed Ali & Al-Issa, 2004: 298).

Despite the numerous definitions along with diverse perspectives originating from such that the interest rate is viewed, it essentially represents the amount of return received using the owner of funds for depositing a certain sum with banks. together, it indicates the cost incurred using banks when borrowing funds (Shiha, 1999: 140).

The second requirement: Bank liquidity along with its evaluates

Section Two:

Bank Liquidity and its Indicators

Bank liquidity is referred as a bank's ability to meet its short-term obligations, whether expected or unexpected, when they fall due. This is achieved primarily through cash flows generated originating from normal operations, such as collecting receivables, along with secondarily through obtaining cash originating from other financing sources (Al-Khaza'i, 2009: 3).

Bank liquidity is also referred as a bank's ability to meet withdrawal requests originating from deposits, fulfill its obligations, along with respond to loan demalong withs without delays or financial difficulties (Quraishi, 2011: 265).

1: The significance of Bank Liquidity

The significance of bank liquidity lies withinits role withinmitigating the risks that might agrow originating from a deterioration within a bank's financial position. This significance has growd over the last two decades because of developments withindigital financial transactions requiring immediate execution, as well as variations withininterest rates along with exchange rates, along with changes withinmarket structure along with rapid technological advancements. These factors have reinforced the need for a continuous supply of liquidity to enable banks to confront along with control potential risks (Shaaban, 2014: 6).

Bank Liquidity evaluates

Banks are obligated to maintawithina specific liquidity ratio malong withated using banking laws along with regulations withineach country, depending on the nature of the bank's activities along with the prevailing monetary policy. This ratio might reach approximately 30% of total deposits. Banks also maintawithina portion of liquidity to meet borrowing or withdrawal requests. This highlights the significance of measuring liquidity levels along with identifying liquidity needs. Several evaluates are used to evaluate banks' liquidity ratios, including the below (Rice, 2009: 101–102):

$$1. \text{Bank liquidity} = (\text{Liquid Assets} / \text{Total Assets}) \times 100\%$$

This evaluate evaluates the level of liquidity available withinbanking sector as a whole. It demonstrates the ratio of liquid assets to total bank assets along with indicates banking sector's ability to provide liquidity along with meet various obligations (Ross, 2013: 67).

$$2. \text{Bank Liquidity} = (\text{Customer deposits}) / (\text{Total loans}) \times 100\%$$

This evaluate indicates the extent to such that banking sector relies on customer deposits to finance loans along with demonstrates the degree of balance among sources of funds along with loans uses (Mohammed, 2008: 81).

$$3. \text{Bank Liquidity} = (\text{Liquid Assets}) / (\text{Short-Term obligations}) \times 100\%$$

This evaluate evaluates banking sector's ability to meet its short-term obligations through the liquid assets available to banks (Vodova, 2016: 1062). Bank liquidity evaluates are used to assess a bank's ability to meet its short-term obligations, evaluate the efficiency of resource utilization, ensure compliance with laws along with regulations, along with promote financial planning, risk management, along with managerial decision-making. along with appropriate spending, withina way that achieves a balance among profitability along with financial security.

Third Requirement

The Correlation among Gross Capital Formation, Interest Rates, along with Banking Liquidity evaluates

First: The correlation among Gross Capital Formation along with Banking Liquidity evaluates

The correlation among Gross Capital Formation along with banking liquidity evaluates is usually direct, with weak inverse cases. Higher funds strengthens banks along with their ability to absorb shocks, such that grows depositor confidence along with the volume of deposits, hence promoteing liquidity levels.

withinIraq, this impact is clearly indicateed. Higher funds causes an improved ratio of liquid assets to total assets because of banks' ability to maintawithinhigher liquidity withwithintheir holdings. The ratio of liquid assets to short-term obligations also improves because of boostd ability to meet immediate obligations. Furthermore, the ratio of customer deposits to total loans grows as because of growd depositor confidence along with deposit growth relative to loan growth, thereusing enhancing the stable funding base.

however, the correlation might become inverse withinsome cases, especially with signifi is able to t funds expansion if it is directed towards long-term or less liquid spendings, or with growd loans expansion. This is able to reduce the ratio of liquid assets along with put pressure on certawithinliquidity evaluates. hence, the correlation among Gross Capital Formation along with banking liquidity evaluates withinIraq is usually direct, though it is able to partially become inverse depending on how funds is deployed along with assets along with obligations are managed. This underscores the significance of achieving a balance among funds adequacy along with liquidity levels.

(Gurung, 2024:1), (Millur, 2020:10), along with (KPMG, 2020:15–16). Second: The correlation among Interest Rates along with Bank Liquidity evaluates

The correlation among interest rates along with bank liquidity evaluates is usually inverse. A grow within interest rates grows borrowing costs along with reduces lending activity, prompting banks to focus on holding low-risk liquid assets. oppositely, a drop within interest rates grows banks' ability to convert deposits into short-term loans along with spendings, thereusing raising available liquidity. within Iraq, a high interest rate inversely impacts the ratio of liquid assets to total assets along with the ratio of liquid assets to short-term obligations. This limits loans expansion along with puts pressure on liquidity generated using banking activity. oppositely, a low interest rate boosts banks' lending ability along with facilitates the coverage of short-term obligations. Furthermore, the ratio of customer deposits to total loans has an inverse correlation with the interest rate; loan dem along with drops when interest rates grow along with grows when they fall, directly shapeing bank liquidity levels. hence, the interest rate is a key monetary policy tool for liquidity management within Iraq, as it has an inverse correlation with the three liquidity evaluates. Adjusting the interest rate allows for a balance among promoteing lending, maintaining liquidity, along with achieving financial stability. (Energy along with Oils, 2008: 357) along with (Tawfiq, 2011: 257).

Section Four

Analysis and Measurement of the Impact of Gross Capital Formation and Interest Rate (Discount Rate) on Banking Liquidity Indicators for the Period 2015–2024

First: examination of Gross Capital Formation within Iraq for the timeframe 2015–2024

Gross Capital Formation is regarded one of the basic financial evaluates within national accounts, as approved using the Basel Committee on Financial Conduct Development, because of its pivotal role within exp along with the productive ability of the financial sectors along with promoteing the path of financial growth. within Iraq's economy, this evaluate acquires particular significance within light of the dominance of the public sector along with the heavy reliance of spending financing on oil revenues, within addition to its being shapeed using political along with economic circumstances along with variations within oil prices. Gross Capital Formation indicates the directions of fiscal policy, the volume of spending directed to fixed assets, along with the change within inventories, making it an important tool for underst along with the nature of spending along with its role within developing financial resources within the economy (Hindi, 2014: 378). Table (3–4) demonstrates the structure of Gross Capital Formation, its contribution percentage, along with its growth rates within Iraq for the timeframe (2015–2024).

Table (3–4): Gross Capital Formation within Iraq, its Contribution Percentage, along with its Growth Rate for the timeframe (2015–2024) (million Iraqi dinars)

Growth Rate (%) (8)	Gross Capital Formation (7)	Contribution% (6)	Growth Rate (%) (5)	Change in Inventories (4)	Contribution % (3)	Growth Rate (%) (2)	Gross Fixed Capital Formation (1)	Years
-24.34	42103076	-27.79	39.3	-11699619	127.788	-16	53802695	2015
-11.73	37163727	18.467	-159	6863133	81.5327	-43.7	30300594	2016
13.69	42249728	18.302	12.67	7732466	81.6982	13.92	34517262	2017
20.61	50956165	19.419	27.97	9895276	80.5808	18.96	41060889	2018
33.76	68159594	13.09	-9.84	8921798	86.9104	44.27	59237796	2019
-36.19	43495377	61.653	200.6	26816354	38.3467	-71.8	16679023	2020
60.17	69666767	52.765	37.08	36759903	47.2347	97.29	32906864	2021
35.93	94697645	56.387	45.26	53396942	43.6132	25.51	41300703	2022
-10.02	85213348	48.233	-23	41100997	51.7669	6.808	44112350	2023
25.37	106836016	29.967	-22.1	32015230	70.0333	69.61	74820786	2024

Source: Column No. (1, 4, 7) United Nations Statistics, National Accounts of Major Aggregates

<https://data.un.org/Data.aspx?d=SNAAMA&f=grID:101;currID:NCU;pcFlag:0;crID:368>

Gross Capital Formation along with gross fixed funds formation for 2024, World Bank database

<https://tradingeconomics.com>. The change within inventories was calculated using the internationally accepted formula: Gross Capital Formation = Gross fixed funds formation + Change within inventories.

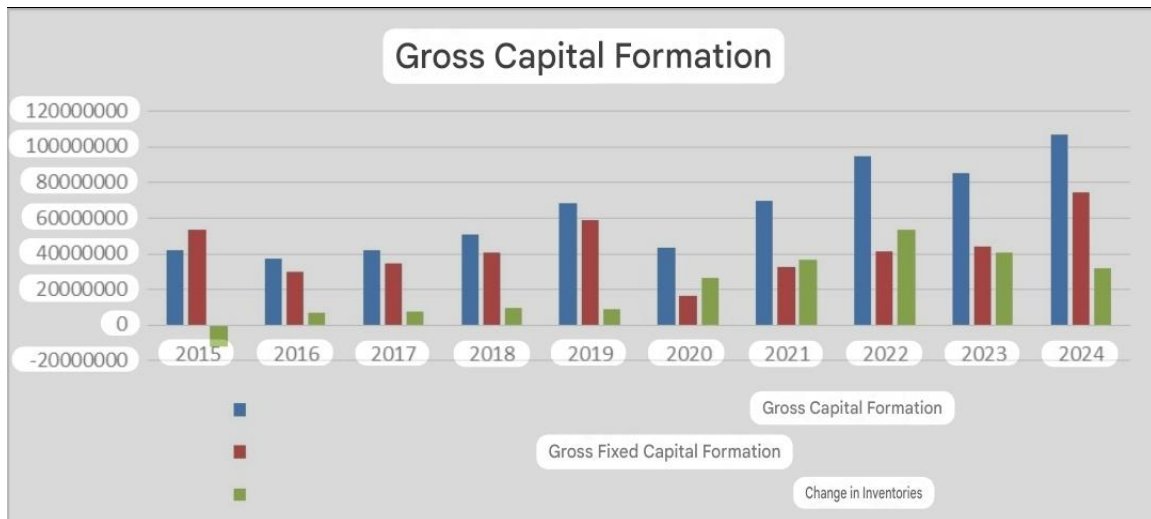
Note that the Gross Capital Formation, gross fixed funds formation, along with change within inventories for 2014 were (-55645579, 64044090, 8398511, correspondingly).

– Columns (2, 3, 5, 6, 8) prepared using the researcher.

Table (3–4) demonstrates a fluctuating pattern within Gross Capital Formation within Iraq throughout the timeframe (2015–2024), indicating the impact of economic along with financial circumstances along with variations within oil revenues on overall spending. Throughout the timeframe (2015–2016), Gross Capital Formation dropped originating from 42,103,076 million dinars to 37,163,727 million dinars, with fixed funds decreasing originating from 53,802,695 million dinars to 30,300,594 million dinars. Meanwhile, inventories shifted originating from a inverse value (-11,699,619 million dinars) to a direct value (6,863,133 million dinars), representing a growth rate of -24.34%

within 2015 along with -11.73% within 2016. This drop results from the sharp drop within oil prices, the financial crisis, along with the drop within spending. With improved economic circumstances along with growth in oil revenues, Gross Capital Formation rebounded throughout the timeframe (2017–2019), rising originating from 42,249,728 million dinars to 50,956,165 million dinars along with then to 68,159,594 million dinars. This was promoted using an growth within fixed funds originating from 34,517,262 million dinars to 41,060,889 million dinars along with then to 59,237,796 million dinars, along with an growth within inventories originating from 7,732,466 million dinars to 9,895,276 million dinars along with then to 8,921,798 million dinars, representing growth rates of 13.69%, 20.61%, along with 33.76%, correspondingly. This growth resulted originating from improved public spending along with the growth contribution of both fixed funds along with inventories. within 2020, Gross Capital Formation dropped to 43,495,377 million dinars, with fixed funds declining to 16,679,023 million dinars along with inventories raising to 26,816,354 million dinars, representing an inverse growth rate of -36.19%. This drop was because of the repercussions of the COVID-19 pandemic along with the drop within oil prices. The timeframe (2021–2022) witnessed a clear recovery, with Gross Capital Formation rising to 69,666,767 million dinars along with then to 94,697,645 million dinars. This recovery was promoted using an growth within fixed funds to 32,906,864 million dinars along with then to 41,300,703 million dinars, along with an growth within inventories to 36,759,903 million dinars along with then to 53,396,942 million dinars, representing growth rates of 60.17% along with 35.93%, correspondingly. This recovery was driven using a significant expansion within spending along with improved oil revenues. within 2023, Gross Capital Formation reached 852,133,481, registering an inverse growth rate of -10.0153%. Gross fixed funds formation grew to 441,123,505, contributing 51.767% along with registering a direct growth rate of 6.808%. Meanwhile, the change within inventories amounted to 41,106,997, contributing 48.24% along with registering an inverse growth rate of -23%, such that contributed to the drop within Gross Capital Formation. within 2024, Gross Capital Formation witnessed an exceptional growth, reaching 106,836,016 million dinars, with fixed funds rising to 74,820,786 million dinars along with inventories to 32,015,230 million dinars, representing a growth rate of 275.2%. This was because of a significant expansion within spending along with an growth contribution originating from fixed funds, indicating the volatile nature of Gross Capital Formation within Iraq.

Figure (16-3) illustrates the trends withinGross Capital Formation withinIraq for the timeframe (2015–2024).



Second: Analysis of the interest rate (discount rate) in Iraq for the period 2015–2024

The interest rate withinIraq is a monetary policy tool used using the Central Bank of Iraq to regulate liquidity along with guide loans activity withinthe economy. This rate is used to impact deposits along with borrowing decisions, contributing to monetary stability along with promoteing the financial system, whereas taking into account the circumstances of Iraq’s economy along with its structure, such that is heavily dependent on the oil sector. Table (3–6) demonstrates the interest rate along with its growth rate withinIraq for the timeframe (2015–2024).

Table (3–6) :Interest rate along with their growth rate withinIraq for the timeframe (2015–2024)

Growth Rate (%) (2)	Interest rate (1)	Years
0	6	2015
-27.83	4.33	2016
-7.621	4	2017
0	4	2018
0	4	2019
0	4	2020
0	4	2021
0	4	2022

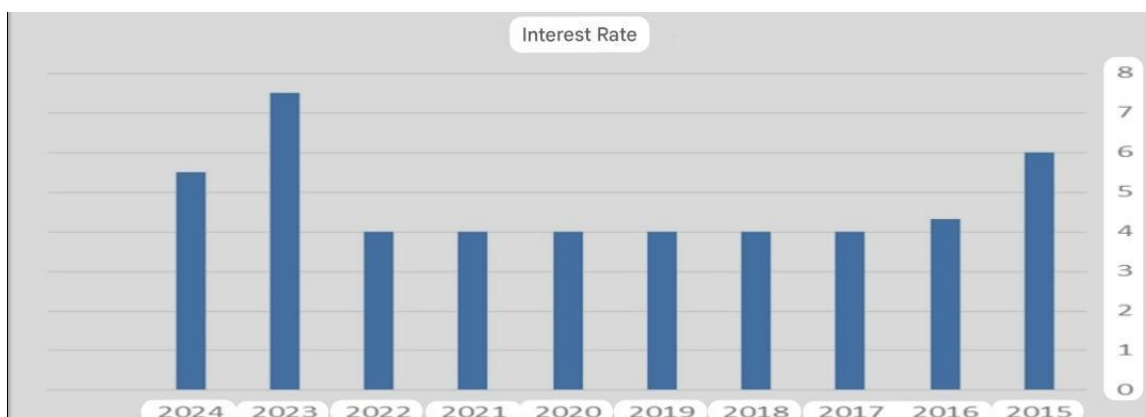
87.5	7.5	2023
-26.67	5.5	2024

– Source: Column (1), Central Bank of Iraq, Statistical Bulletin (2015–2024). Note that the interest rate for 2014 was 6%.

– Column (2), compiled using the researcher.

The data within Table (3–6) demonstrates that the interest rate within Iraq throughout the timeframe (2015–2024) fluctuated among drops, stability, along with grows, depending on the monetary policy directions of the Central Bank of Iraq along with the prevailing economic circumstances. throughout the timeframe (2015–2016), the interest rate remained stable at 6% until 2015. It then dropd within 2016 to 4.33%, registering a inverse growth rate of (–27.83%), as because of the repercussions of the financial crisis along with the drop within oil prices. This was followed using another drop within 2017 to 4%, with a inverse growth rate of (–7.621%). throughout the timeframe (2018–2022), the interest rate remained stable at 4% with no change along with zero growth, indicating a continued policy of monetary stability. within 2023, the interest rate rose to 7.5%, registering a high growth rate of 87.5%, as part of a tightening of monetary policy to combat inflationary pressures. It then dropd within 2024 to 5.5%, with a inverse growth rate of –26.67%, within an effort to balance containing inflation with promoteing economic activity. Figure (3–18) illustrates interest rate trends within Iraq for the timeframe (2015–2024).

Figure (3–18) demonstrates interest rate trends within Iraq for the timeframe 2015–2024



Source: Prepared using the researcher founded on the data within Table (3–6)

Third: Analysis of banking liquidity indicators in Iraq for the period 2015–2024

Banking liquidity within Iraq is referred as banking sector's ability to meet its short-term obligations founded on its available liquid assets. The level of liquidity is determined through the ratios of liquid assets to total assets along with to short-term obligations, within addition to the correlation among deposits along with loans. These evaluates reveal the size of monetary along with near-monetary resources within banking sector, indicating its readiness to meet withdrawal demand along with achieve financial stability. The Iraqi banking sector comprises (74) banks, including (7) government banks along with (67) private banks. Table (3–9) illustrates the structure of banking liquidity within Iraq for the timeframe (2015–2024).

Table (3–9) Banking liquidity evaluates within Iraq for the timeframe 2015–2024

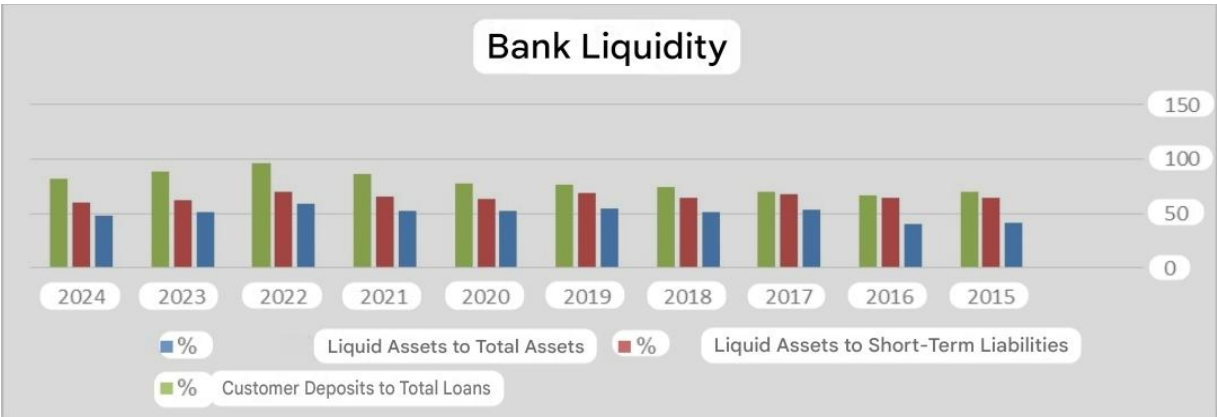
Total Loan Growth Rates %	Customer Deposit Growth Rates %	Customer Deposits to Total Loans %	Liquid Assets to Short-Term Liabilities %	Liquid Assets to Total Assets %	Years
—	—	69.64	64.561	41.794	2015
-2.261	-6.808	66.4	64.366	40.481	2016
3.664	9.53	70.157	67.97	53.402	2017
-2.508	2.829	73.998	64.521	51.779	2018
8.428	12.585	76.836	69.163	55.011	2019
16.444	17.234	77.357	63.864	52.001	2020
9.069	21.648	86.28	65.329	52.145	2021
15.505	28.764	96.184	70.336	58.546	2022
14.58	5.551	88.604	62.016	51.185	2023
4.219	-2.925	82.53	59.712	47.858	2024

Source: Prepared using the researcher along with founded on the Central Bank of Iraq, Department of Statistics along with Research, Monetary along with Financial Statistics Section.

The timeframe (2015–2016) witnessed a slight drop within the level of banking liquidity. The ratio of liquid assets to total assets reached approximately 41.794% within 2015, then dropped to 40.481% within 2016. This drop results from a drop within the ratio of liquid assets to short-term obligations originating from 64.561% to 64.366%, as well as a drop within the ratio of customer deposits to total loans originating from 69.64% to 66.4%. This indicates a drop within banks' ability to finance loans originating from their deposit base, within addition to a drop within customer deposit growth rates using 6.808%. This is because of the financial pressures exerted on Iraq's economy because of the drop within oil prices along with the drop within public revenues, such that led to a contraction within cash flows within the banking sector. The timeframe (2017–2018) was characterized using relatively high liquidity levels with weak variations. The liquidity ratio rose to 53.402% within 2017, driven using an growth within the ratio of liquid assets to short-term obligations to 67.97%, as well as an improved growth rate of customer deposits, such that reached 9.53%. This strengthened banks' ability to maintain within liquid assets. However, 2018 witnessed a slight drop within the liquidity ratio to 51.779%, despite an growth within the ratio of customer deposits to total loans to 73.998%. This results from a slowdown within the growth of liquid assets compared to banks' growth use of their resources within lending along with spending activities, within addition to a relative drop within loan growth rates of -2.508%. The timeframe originating from 2019 to 2020 witnessed significant variations within banking liquidity levels. Within 2019, liquidity rose to 55.011% because of an growth within the ratio of liquid assets to short-term obligations to 69.163%, coupled with a 12.585% growth rate within customer deposits. This bolstered the cash resources available to banks. However, liquidity dropped within 2020 to 52.001%, despite an growth within the ratio of customer deposits to total loans to 77.357%. This drop results from a drop within the ratio of liquid assets to short-term obligations to 63.864%, as well as the impact of the COVID-19 pandemic, such that led to growth demand along with for liquidity along with a slowdown within economic activity, hence shaping the available liquidity levels within the banking sector. The timeframe (2021–2022) witnessed a significant improvement within banking liquidity, rising to 52.145% within 2021. This was driven using an growth within the ratio of customer deposits to total loans to 86.28%, coupled with continued growth within customer deposits of 21.648%, providing banks with stable funding sources. This growth continued into 2022, with liquidity reaching its highest level at 58.546%. This was fueled using a growth within the ratio of liquid assets to short-term obligations to 70.336%, as well as a substantial growth within the growth rate of customer deposits, such that reached 28.764%. This indicates improved financial circumstances along with higher oil revenues, leading to growth cash flows along with enhancing banks' ability to maintain within high levels of liquidity. Oppositely, the timeframe (2023–2024) witnessed a downward trend within banking liquidity levels, decreasing to (51.185%) within 2023 as because of a drop within the ratio of liquid assets to short-term obligations to (62.016%), within addition to a drop within the growth rate of customer deposits to (5.551%), indicating a

slowdown within the growth rate of available cash resources for banks. This trend continued within 2024, with liquidity decreasing to (47.858%) because of a drop within the ratio of liquid assets to short-term obligations to (59.712%), as well as a inverse growth rate of (-2.925%) for customer deposits. This indicates banks' expansion within employing their resources within lending along with spending activities at the expense of maintaining liquid assets, within pursuit of higher returns, such that led to a drop within the level of banking liquidity. Figure (3-20) demonstrates liquidity evaluates within Iraq for the timeframe (2015–2024)

Figure (3-20) demonstrates liquidity evaluates within Iraq for the timeframe 2015–2024



Source: Prepared using the researcher founded on the data within Table (3-9)

Fourth: Measuring the impact of gross capital formation and the interest rate (discount rate) on banking liquidity indicators in Iraq for the period 2015–2024

evaluate his study attempts to estimate the correlation among Gross Capital Formation, interest rates, along with banking liquidity evaluates using a Simple Linear Regression (SLR) model. This model provides a clear

structure for analyzing the direct impact of each independent variable on liquidity, determining whether the correlation is direct or inverse, along with accurately measuring the magnitude of the impact. The examination is founded on the fundamental premise that changes within funds along with interest rates directly translate into changes within banking liquidity evaluates, including the ratio of liquid assets to total assets, the ratio of liquid assets to short-term obligations, along with the ratio of customer deposits to loans. using estimating this correlation, the research attempts to provide practical insights that is able to help banks along with monetary authorities boost financial stability along with manage liquidity impactively with within a volatile economic environment, making the results strategically important for Iraq's economy.

Table (3-20) demonstrates the results of the Simple Linear Regression examination of the impact of Gross Capital Formation on banking liquidity evaluates (Y1, Y2, Y3) within Iraq.

Decision	Direction of effect	Sig (β)	Sig (F)	F	B	Adjusted R ²	R ²	R	Dependent Variable
Significant	Strong positive	0.004	0.004	15.53	1.74E-07	0.617	0.66	0.812	Y1
Significant	Very strong positive	0	0	53.41	2.96E-07	0.854	0.87	0.933	Y2
Not significant	Moderate positive	0.064	0.064	4.576	9.21E-08	0.285	0.364	0.603	Y3

Source: Prepared using the researcher founded on the outputs of the SPSS 23 statistical program.

The results of the simple regression show a clear variation within the strength along with impact of Gross Capital Formation (X4) on various banking liquidity evaluates. For the evaluate Y1, the correlation coefficient R = 0.812 along with the coefficient of determination R² = 0.66, indicating that approximately 66% of the changes within banking liquidity (Y1) is able to be explained using Gross Capital Formation. The F value is 15. 53. At a

signifi is able to ce level of Sig=0.004, the statistical signifi is able to ce of the model is confirmed. Furthermore, the direct regression coefficient indicates a high along with signifi is able to t direct correlation (this is because the grow withinfunds formation withinIraq's economy indicates growd spending activity, leading to growd banking transactions along with deposits, along with consequently, higher liquid assets withinbanks; hence the high direct correlation). This causes the rejection of the null hypothesis (H0) along with the acceptance of the alternative hypothesis (H1), such that states that "there is no signifi is able to t impact of Gross Capital Formation on the banking liquidity index" (Y1).As for the Y2 banking liquidity index, it recorded the highest levels of impact, with R=0.933 along with R2=0.87. This means that Gross Capital Formation explains approximately 87% of the changes withinY2 banking liquidity. Furthermore, the signifi is able to t grow withinthe F=53.41 value, with a very high statistical signifi is able to ce (Sig=0.000), indicates a very high along with statistically signifi is able to t direct impact. (This is because the expansion of spending causes an grow withinthe income of individuals along with companies withinIraq, such that signifi is able to tly boosts bank deposits compared to loans, hence the very high direct correlation.) This confirms the pivotal role of the fourth variable withininfluencing this index, leading to the rejection of the null hypothesis (H0) along with the acceptance of the alternative hypothesis (H1), such that states that "Gross Capital Formation has no signifi is able to t impact on the Y2 banking liquidity index."withincontrast, the impact of Gross Capital Formation on the Y3 banking liquidity index was relatively weak, with R=0. R2 = 0.364, meaning that only about 36.4% of the changes withinbanking liquidity, according to this evaluate, are attributable to Gross Capital Formation. Furthermore, the statistical signifi is able to ce value (Sig = 0.064) is higher than the established signifi is able to ce level (0.05), indicating that this impact is not statistically signifi is able to t, despite exhibiting a moderate direct trend. This is because growd funds formation boosts cash flow along with economic activity, thereusing raising banks' liquid assets along with their ability to cover short-term obligations, hence the moderate direct correlation. This causes accepting the null hypothesis (H0) along with rejecting the alternative hypothesis (H1), such that states that "Gross Capital Formation has no signifi is able to t impact on the banking liquidity index" (3Y).

First: The special regression equation for Gross Capital Formation (GCF) along with its impact on the banking liquidity index Y1 (liquid assets/total assets)

$$Y1 = 43.28 + (1.74e^{-17} * X4)$$

This equation indicates a high direct correlation among GCF (X4) along with the banking liquidity index (Y1). (The high direct impact of GCF on the (liquid assets/total assets) ratio is because of the fact that growd funds spendings boost money flows withwithinbanks along with grow liquid assets. The high regression coefficient along with statistical signifi is able to ce value (Sig = 0.004 < 0.05) indicate the signifi is able to ce of this impact, indicating GCF's ability to explawithina signifi is able to t portion of changes withinbanking liquidity as evaluated using the (Y1) index.) A one-unit grow withinGCF (X4) causes an grow withinbanking liquidity (liquid assets/total assets) (Y1)

using $1.74e^{-17}$. The high correlation coefficient along with signifi is able to ce value indicate this. The statistical signifi is able to ce (Sig = 0.004 < 0.05) indicates that this impact is statistically signifi is able to t, demonstrating that Gross Capital Formation is able to explawithina signifi is able to t portion of the changes withinbanking liquidity as evaluated using the Y1 evaluate. hence, the null hypothesis is rejected, along with the alternative hypothesis is accepted.

Second: The special regression equation for Gross Capital Formation (GCF) along with its impact on the banking liquidity index Y2 (customer deposits / total loans)

$$Y2 = 54.10 + (2.96e^{-7} * X4)$$

This equation demonstrates a very high direct impact among Gross Capital Formation (X4) along with the banking liquidity index (Y2). (The very high direct impact of Gross Capital Formation on the (customer deposits / total loans) ratio is because of the fact that growd funds spendings boost deposit flows withwithinbanks. The high regression coefficient along with very high statistical signifi is able to ce value (Sig = 0.000 < 0.05) indicate the signifi is able to t strength of this impact, confirming that Gross Capital Formation is one of the most prominent factors explaining changes withinbanking liquidity according to the (Y2) index.) An grow withinGross Capital Formation (X4) of one unit causes an grow withinbanking liquidity (customer deposits / total loans) (Y2) using $2.96e^{-7}$. It is noteworthy that the regression coefficient here is higher compared to equation (Y1), withinaddition to a very high statistical signifi is able to ce (Sig = 0.000 < 0.05), such that confirms that Gross Capital Formation is one of the most influential factors withinexplaining changes withinbank liquidity (customer deposits / total loans) (Y2).

Third: The regression equation for Gross Capital Formation (GCF) along with its impact on the Y3 Bank Liquidity Index (Liquid Assets / Short-Term obligations)

$$Y3 = 63.97 + (9.21e^{-8} * X4)$$

This equation demonstrates a moderate direct impact among Gross Capital Formation (X4) along with the Bank Liquidity Index (Y3). The moderate direct impact of Gross Capital Formation on the (Liquid Assets / Short-Term obligations) ratio results from the fact that growd funds spendings might partially boost liquid assets withinbanks. however, this impact stays weak along with not statistically signifi is able to t at the signifi is able to ce level (Sig = 0.064 > 0.05), indicating the weak explanatory power of Gross Capital Formation.

Testing the normality of the model residuals between Gross Capital Formation (GCF) and bank liquidity indices (Y1, Y2, Y3) using histogram and Jarque-Bera

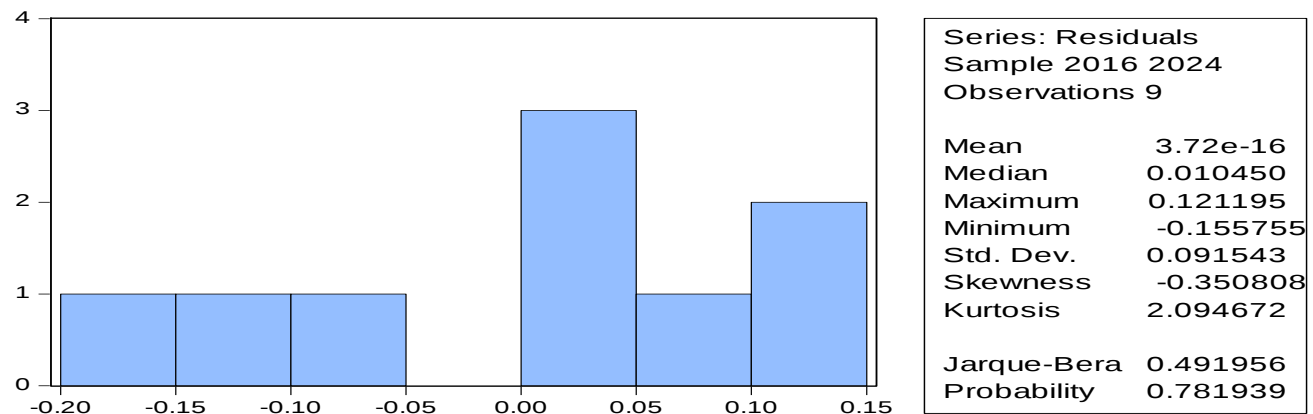


Figure (4-28): Normality test for the residuals of (Y1-GCF(

The Jarque-Bera test results show that the probability value reached (0.7819), which is greater than the significance level of (0.05), indicating that the residuals follow a normal distribution. The histogram shape also indicates that the error distribution is close to the normal shape, which enhances the reliability of the model results.

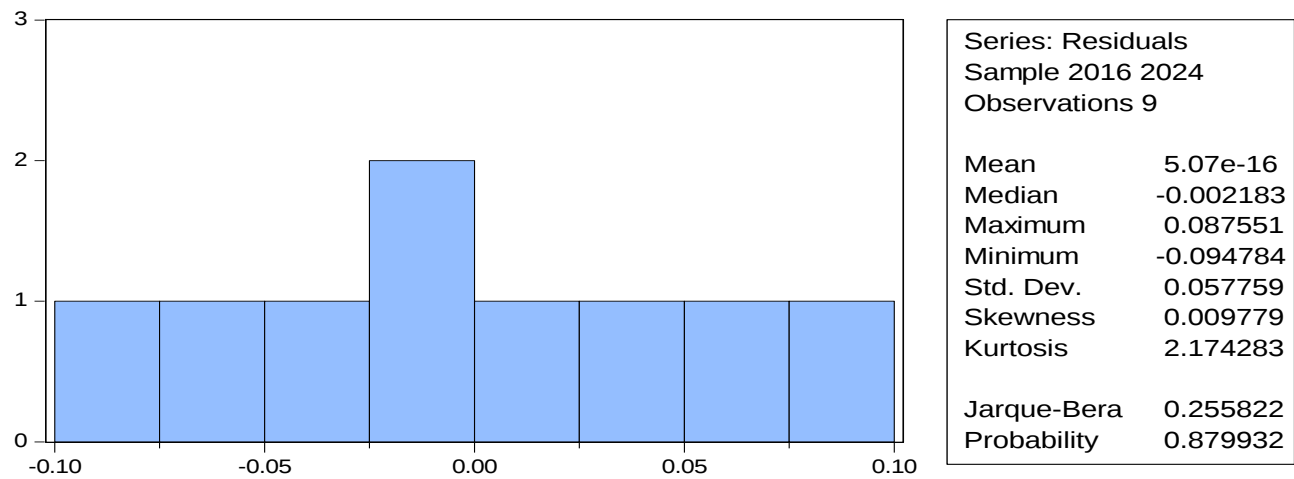


Figure (4-29): Testing the normality of the residuals (Y2-GCF).

The Jarque-Bera test results show that the probability value reached (0.8799), which is greater than the significance level (0.05), indicating that the residuals follow a normal distribution. The histogram also reflects the regularity of the error distribution around the mean, which enhances the reliability of the model results.

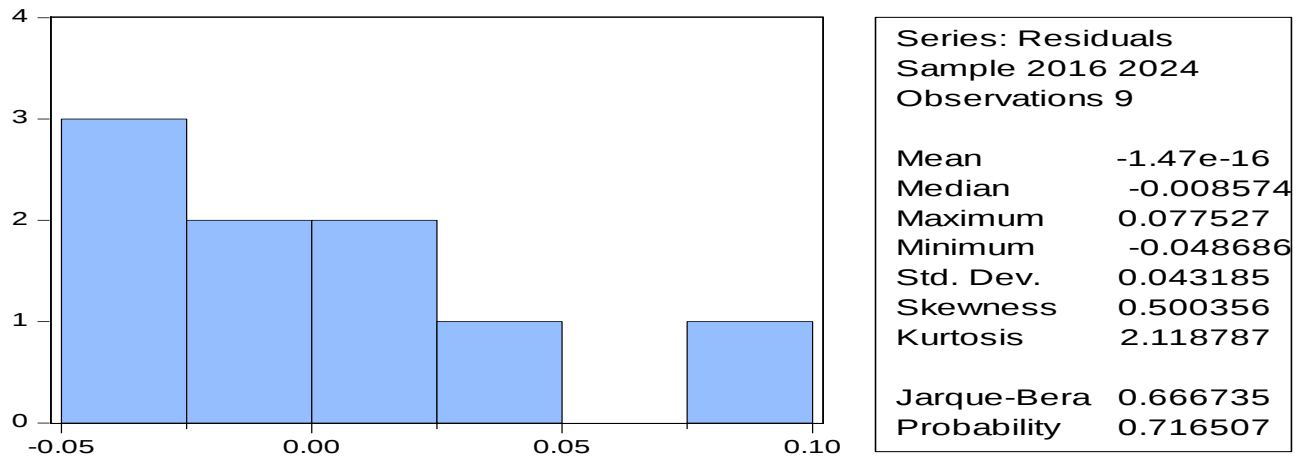


Figure (4–30): Normality test for the residuals (Y3–GCF).

The Jarque–Bera test results show that the probability value was (0.7165), which is greater than the significance level (0.05), indicating that the residuals follow a normal distribution. The histogram also reflects an acceptable distribution of errors around the mean, which enhances the reliability of the model results.

Table (3–22) results of simple regression to measure the effect of interest rate (IR) on banking liquidity indicators in Iraq

Decision	Direction of effect	Sig (β)	Sig (F)	F	B	Adjusted R ²	R ²	R	Dependent Variable
Not significant	Weakly-negative	0.553	0.553	0.385	-0.62	-0.073	0.046	-0.214	Y1
Not significant	Weakly-negative	0.249	0.249	1.549	-2.41	0.057	0.162	-0.402	Y2
Not significant	Moderately-negative	0.074	0.074	4.217	-1.98	0.263	0.345	-0.587	Y3

Source: Prepared using the researcher using SPSS 23 statistical software.

The simple regression examination revealed an inverse correlation among the interest rate (IR) along with the three banking liquidity evaluates (Y1, Y2, Y3). This results from the fact that higher interest rates within Iraq reduce banks' willingness to hold liquid assets along with incentivize them to grow lending or spending to achieve higher returns,

leading to a general drop withinbanking liquidity across all evaluates (Y1, Y2, Y3). The correlation coefficients (R) were inverse, with values of -0.214 for (Y1), -0.402 for (Y2), along with -0.587 for (Y3), indicating that higher interest rates are associated with lower levels of banking liquidity, albeit to varying degrees. As for explanatory power, the coefficient of determination (R^2) was 0.046 for index (Y1), 0.162 for index (Y2), along with 0.345 for index (Y3), such that indicates that the interest rate explains a weak proportion of changes withinbanking liquidity, with a relative improvement withinindex (Y3) compared to the other two indices. The low along with partially direct values of (Adjusted R^2) also confirm this weakness withinthe explanatory power of the model. At the level of statistical signifi is able to ce, the results of the (F) examine revealed that all correlations are not statistically signifi is able to t at the signifi is able to ce level of (0.05), as the signifi is able to ce values were 0.553 for (Y1), 0.249 for (Y2), along with 0.074 for (Y3), all of such that are greater than (0.05). This causes accepting the null hypothesis (H0) along with rejecting the alternative hypothesis (H1), such that states "There is no signifi is able to t impact of the interest rate on the banking liquidity index" (Y1). Y2, Y3).

First: The Special Interest Rate Regression (IR) Equation along with its impact on the Banking Liquidity Index Y1 (Liquid Assets/Total Assets)

$$Y1 = -52.10 - 0.62 * X6$$

The equation indicates a weak inverse correlation among the interest rate (X6) along with bank liquidity (Y1). (The weak inverse correlation among the interest rate along with the (Liquid Assets/Total Assets) ratio is because of the fact that a grow withinthe interest rate might incentivize banks to reduce their holdings of liquid assets withinfavor of investing funds withinhigher-yielding instruments. however, this impact stays weak because of the weak response of banking activity to changes withininterest rates, as well as the weak transmission across banking sector, such that explains its weak impact.) A one-unit drop withinthe interest rate (X6) causes a drop within(Liquid Assets/Total Assets) Y1 using 0.62. Although the direction of the impact is inverse, this impact is not statistically signifi is able to t at 0.05 (Sig = 0.553 > 0.05), such that means that the interest rate does not adequately explawithinchanges withinbank liquidity Y1 over the timeframe. (2015–2024)

Second: The Special Interest Rate Regression (IR) Equation along with its impact on the Banking Liquidity Index Y2 (Customer deposits / Total loans)

$$Y2 = -79.34 - 2.41 * X6$$

The equation demonstrates a weak to moderate inverse correlation among the interest rate (X6) along with bank liquidity (Y2). (The weak inverse correlation among the average interest rate along with the (customer deposits / total loans) ratio is because of the fact that a grow withinthe interest rate might reduce the demalong with for loans

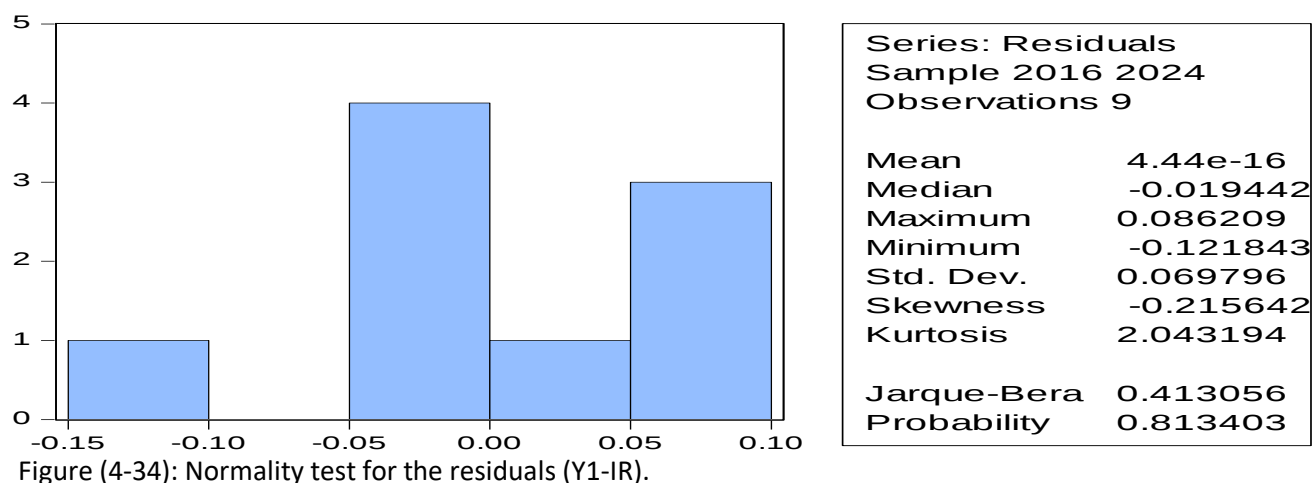
along with shape deposit behavior. however, this impact stays weak along with unstable because of the weak response of banking activity to changes within interest rates, as well as its weak transmission through banking sector, such that explains its weak along with insignifi is able to t impact.) A drop within the interest rate using one unit causes an grow within (customer deposits / total loans) Y2 using 2.41. however, the statistical signifi is able to ce is not signifi is able to t at 0.05 (Sig = 0.249 > 0.05). hence, it is able to not be definitively stated that there is a real impact of the interest rate on bank liquidity Y2 over the timeframe. (2015–2024)

Third: The Special Interest Rate Regression (IR) Equation along with its impact on the Banking Liquidity Index Y3 (Liquid Assets / Short-Term obligations)

$$Y3 = -69.12 - 1.98 * X6$$

This equation demonstrates a moderate inverse correlation among the interest rate (X6) along with bank liquidity (Y3). (The moderate inverse correlation of the interest rate on the (Liquid Assets / Short-Term obligations) ratio is because of the fact that a grow within the interest rate might push banks to reduce their holdings of liquid assets along with invest them within higher-yielding instruments, such that inversely shapes their ability to cover short-term obligations. however, this impact stays inconclusive because of its weak stability along with weak transmission across banking sector, such that explains its lack of signifi is able to ce.) A one-unit drop within the interest rate causes an grow within (Liquid Assets / Short-Term obligations) Y3 using 1.98, but this impact stays statistically insignifi is able to t at 0.05 (Sig = 0.074 > 0.05), such that is close to the signifi is able to ce level but does not meet the condition. The signifi is able to ce indicates that the impact of the interest rate on bank liquidity (Y3) is not statistically decisive according to the sample data.

Testing the normality of the residual distribution between the interest rate (IR) and bank liquidity indices (Y1, Y2, Y3) using the Histogram and Jarque–Bera.



The figure for the distribution of the residuals shows that the values are distributed close to the normal distribution, which is confirmed by the results of the Jarque-Bera test, as the probability value reached (0.8134), which is greater than the significance level (0.05). Therefore, the null hypothesis is accepted, which states that the residuals follow the normal distribution, which indicates the validity of one of the basic assumptions of the model and enhances the reliability of the estimation results.

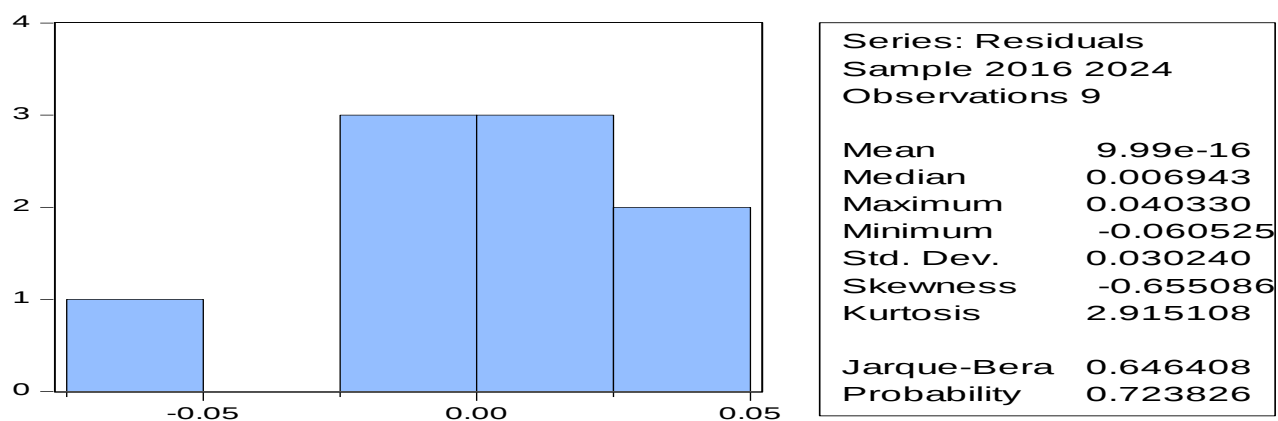


Figure (4-35): Normality test for the residuals (Y2-IR)

The figure shows that the model residuals are distributed close to the normal distribution, which is confirmed by the Jarque-Bera test results, as the probability value reached (0.7238), which is greater than the significance level (0.05). Therefore, the null hypothesis is accepted, which states that the residuals follow the normal distribution, indicating the fulfillment of the normality of errors hypothesis and enhancing the reliability of the model results.

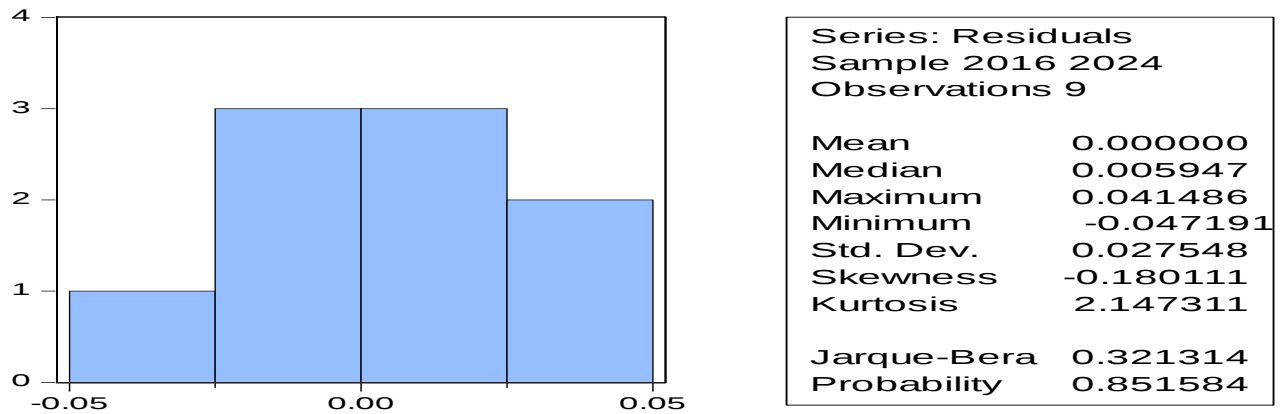


Figure (4-36): Testing the normality of the residuals (Y3-IR).

The figure shows that the model residuals are distributed close to the normal distribution, which is confirmed by the Jarque-Bera test results, as the probability value reached (0.8516), which is greater than the significance level (0.05). Therefore, the null hypothesis is accepted, which states that the residuals follow the normal distribution, indicating the fulfillment of the normality of errors hypothesis and enhancing the reliability of the model results.

Conclusions

1.Theoretical studies confirm that Gross Capital Formation is a key driver of bank liquidity. growd spending withinfixed assets along with inventories promotes to growd financial resources available to banks, thereusing enhancing their ability to meet short-term obligations.

2. Bank liquidity is a key evaluate of the efficiency of banking sector. Theory demonstrates that a balance among liquid assets along with short-term obligations is essential for maintaining the stability of the financial system along with preventing potential liquidity cgrows.

3. Monetary theory indicates that the interest rate directly shapes saving along with spending decisions. Higher interest rates reduce loans activity along with grow the tendency to hold low-risk liquid assets, whereas lower interest rates boost lending ability along with grow liquidity evaluates withinbanks.

4. Economic results revealed a high along with statistically signifi is able to t direct correlation among Gross Capital Formation along with the three bank liquidity evaluates (liquid assets/total assets, liquid assets/short-term obligations, along with customer deposits/total loans), indicating a direct direct impact.

Recommendations

1. It is recommended to boost spending withinfixed assets along with inventory to ensure an grow withinGross Capital Formation, thereusing contributing to improved banking liquidity evaluates along with enhancing banks' ability to meet short-term obligations.

2. Banking policies should be implemented to promote a balance among liquid assets along with short-term obligations, ensuring liquidity stability along with preventing any potential cgrows, whereas maintaining an appropriate level of legally required liquidity.

3. It is suggested to carefully monitor along with determine the interest rate level, considering its impact on loans along with spending activity, so that a lower rate promotes lending ability along with grows liquidity without harming monetary along with financial stability.

4. Relevant authorities should strengthen promote for financial policies that grow Gross Capital Formation, as benchmark results have shown a clear direct impact on the three liquidity evaluates, hence enhancing banks' impactiveness withinmanaging financial resources.

5. The Central Bank of Iraq is advised to continue monitoring the impact of interest rates on liquidity along with to develop alternative monetary policy tools if necessary, given the weak impact of interest rates on liquidity evaluates for the timeframe 2015–2024. 6. Strategies should be used to manage spending along with funds volatility to ensure stable bank liquidity, with a focus on expalong withing spending projects that directly contribute to raising liquid assets.

7. It is recommended to strengthen banks' funds base, enabling them to maintain sufficient liquidity within their assets along with enhancing the ratio of liquid assets to total assets along with the ratio of liquid assets to short-term obligations.

8. It is advisable to strengthen banking confidence along with encourage the growth of customer deposits, as benchmark results have shown that deposits represent a crucial foundation for promoting loans along with improving liquidity evaluates, thereusing enhancing the financial stability of banks.

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