World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

THE EFFECT OF LIQUIDITY ANALYSIS ON THE PERFORMANCE OF BANKS

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Article history:

Received: 20th October 2024
Accepted: 11th November 2024

Abstract:

The impact of liquidity ratios on commercial banks' financial performance is the main topic of the study. Eleven banks, or around 46% of all the commercial banks listed on the Iraqi Stock Exchange, were employed in the research. The time frame that was used was 2010–2023. The focus was on evaluating the link between the legal liquidity ratio and return on equity (ROE), return on assets (ROA), and net interest margin (NIM) using the available software, EViews V 10. Since the fixed effect model is the most suitable for evaluating the link between independent and dependent variables, it was used to analyse the data. The findings show that the legal liquidity ratio and net interest margin (NIM) have a statistically significant negative connection; that is, a higher liquidity ratio will result in a lower profit margin. Additionally, it has been shown that the employment ratio has a negative, non-significant influence that could not always improve the profit margin. It was determined that financial liquidity and employment ratios directly impact banks' financial performance; hence, effective management of these ratios contributes to increased financial efficiency. pertains to this model; as a result, the research suggests that management enhance its liquidity management procedures and policies in order to attain optimum financial performance by preventing negative effects on return brought on by insufficient liquidity...

Keywords: Following Liquidity Analysis, Bank Performance, Statutory Liquidity Ratio, Net Interest Margin (NIM).

The First Axis: The Scientific Methodology of Research and Some Previous Research

First: Research Methodology:

1.1 Research Problem:

Finding the precise amount of liquidity that must be maintained to meet the sector's goals—namely, to guarantee the ability to satisfy customer needs while figuring out how to maintain this liquidity in the area of banking capabilities that can be used to improve the bank's performance levels—is one of the largest challenges facing the banking industry. Thus, the research question is: Do the banks in the study sample have issues managing their liquidity when there is a dearth of liquidity or when swings in liquidity are larger or less than the necessary standard ratios? As a result, the following questions may be used to characterise the research problem:

To what extent does liquidity analysis affect banks' performance?

1.2 Research Objective:

The objectives of the research can be summarized as follows:

1. Measuring and analyzing the liquidity of the studied banks and analyzing their financial performance.
2. Measuring and analyzing the impact of liquidity on bank performance.

1.3 Research Variables:

The variables studied are as follows:

1- Independent variables (X): Bank liquidity indicators.
2- Dependent variables (Y): Financial performance indicators of private banks (profitability ratios).

1.4 Research Hypothesis:

The following sub-hypothesis is the root cause of the primary issue (Bank Liquidity Analysis has no influence on the performance of private banks):

1.4.1 New hypotheses pertaining to this hypothesis may be derived since there is no statistically significant correlation between the cash balance ratio of private banks and financial performance metrics like profitability ratios.

A. The cash ratio (X 1) and return on assets (ROA) (Y 1) do not have a statistically significant connection.

B. The cash ratio (X 1) and deposit yield ROD (Y 2) do not statistically significantly correlate.

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C. The cash ratio (X 1) and return on equity ROE (Y 3) do not statistically significantly correlate.
D.The cash ratio (X 1) and net interest margin (NIM) (Y 4) do not statistically significantly correlate.
E. E. The cash ratio (X 1) and profit margin NPR (Y 5) do not statistically significantly correlate.

1.4. 2 Further hypotheses are formed on the premise that there is no statistically significant association between the legal reserve ratio and the banks' profitability measures, which measure their financial success.
A statistically significant correlation does not exist between the return on assets (Y 1) and the legal reserve ratio (X 2).
B. The legal reserve ratio (X 2) and the deposit yield ROD (Y 2) do not have a statistically significant connection.

C.The legal reserve ratio (X 2) and return on equity (ROE) (Y 3) do not statistically significantly correlate.
D.The net interest margin (NIM (Y 4)) and the legal reserve ratio (X 2) do not have a statistically meaningful connection..
E.The profit rate NPR (Y 5) and the legal reserve ratio (X 2) do not have a statistically significant connection.

1.4.3 New hypotheses may be derived from this hypothesis since there is no statistically significant correlation between the statutory liquidity ratio and private banks' profitability, a measure of financial success.
A. The return on assets (ROA) (J 1) and the legal liquidity ratio (X 3) do not have a statistically significant connection.
B. The return on deposits (ROD) (J 2) and the legal liquidity indicator (X 3) do not have a statistically significant link.
C. The indices of ROE (J 3) and legal liquidity (X 3) do not statistically significantly correlate.
D. The legal liquidity ratio (X 3) and the net interest margin (NIM) (J 4) do not statistically significantly correlate.
E.The forgotten profit rate NPR (J 5) and the legal liquidity ratio (X 3) do not have a statistically significant connection.
1.4.4 It is conceivable to develop a new theory about this because there is no statistically significant correlation between the employment rate and the financial performance indicators (profitability indicators) of private sector banks.
A.The employment rate (X 4) and return on assets, or ROA (Y 1), do not have a statistically significant connection.
B.There is no statistically significant correlation between the return on deposits, or ROD (Y2), and the employment rate (X 4).
C. The return on capital (Y 3) and the employment rate (X 4) do not have a statistically significant connection.
D.The employment rate (X 4) and the net interest margin, or NIM (Y 4), do not have a statistically significant connection.
E.The employment rate (X 4) and the profit rate, NPR (Y5), do not have a statistically significant connection.

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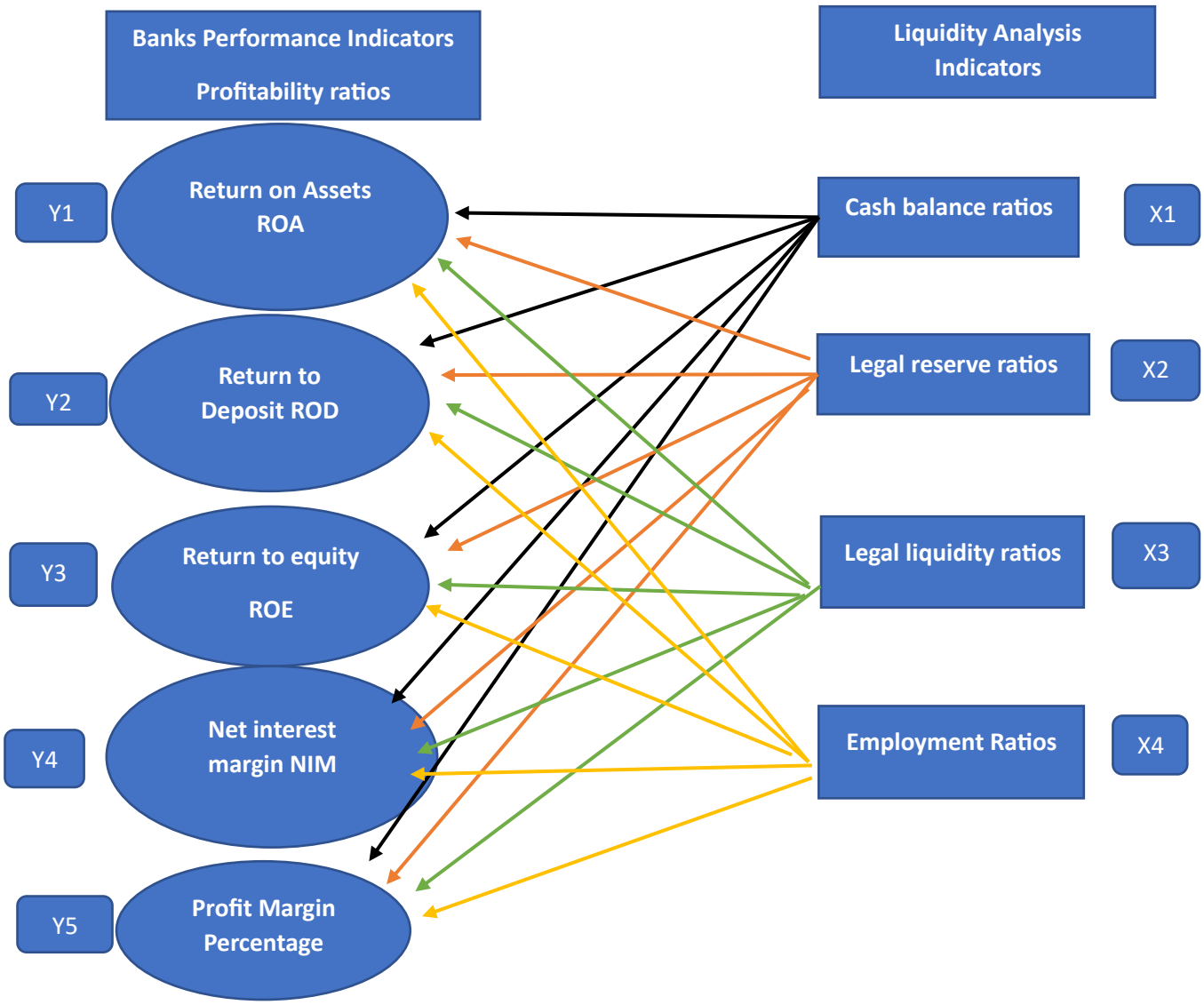
1.5 Research Hypothetical outline:



Virtual chart Figure (1) of the work of the researcher

1.6 Research Importance:

The following documents highlight the importance of research:

1. Private banks that represent the study sample are among the main financial institutions in the economy, as they seek to achieve important vital goals.
2. The ability and efficiency of the management of these private banks in determining the optimal use of available resources, in addition to the balance between liquidity and profitability objectives, as well as its ability to achieve an appropriate margin of safety for the customers of private banks in the study sample.
3. Concentrates on a crucial issue that has a big impact on the financial status and performance of the private banks in the research sample.
4. Communication with the monetary authorities, represented by the Central Bank of Iraq, which is in charge of monitoring private banks and gauging how well the private banks that make up the study sample adhere to regulations, particularly with regard to liquidity ratios and indicators.

1.7 Research Limits:

The limits of the research were as follows:

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1. Time limits: The duration of the study extends over a period of fourteen years from (2010-2023), where the financial data related to those private banks are available.
2. Geographical boundaries: This encompasses 11 private banks from Iraq that are listed on the Iraq Stock Exchange and recognized by the Iraq Securities and Exchange Commission (https://www.isc.gov.iq/index.php?do=list&type=company&market=1). The banks include the National Bank of Iraq, Commercial Bank of Iraq, United Investment Bank, Ashour International Investment Bank, United Bank of Iraq, Iraq Investment Bank, Economic Bank for Investment and Finance, Gulf Commercial Bank, Iraq Middle East Investment Bank, Mansour Investment Bank, and Baghdad Bank.

Second: Previous Researches:

First: Arab Research:

1. Study (Al-Imam and Hassan, 2022)

Research Title	An analysis of the Industrial Bank of Iraq's performance in relation to bank liquidity.
Research Objective	This research aims – - to research how liquidity affects Iraqi Industrial Bank's financial performance and how to monitor and analyse it.
Research Sample	Industrial Bank of Iraq from (2008 - 2016).
Research Methodology	Applied Curriculum.
Conclusions	– The bank's high percentage of dependence on incidental revenues, including (investments and transfers). – Reducing its competence in supporting national industries by granting loans to non-industrial specialists.

2. Study (Al-Hashemi and Al-Rifai, 2022)

Research Title	Assessing the Effect of Liquidity Risk on Bank Safety Level: An Analytical Study of a Sample of Iraq Stock Exchange-Listed Banks.k.
Research Objective	The purpose of this research is to clarify liquidity risk and how it affects the stability of the financial system..
Research Sample	Five commercial banks that were listed between 2016 and 2020 on the Iraq Stock Exchange are the subject of this research.
Research Methodology	Applied Courses.
Conclusions	According to the research, the independent variable (liquidity risk) and the dependent variable (bank safety) have a perfect negative linear connection; for every unit that the former falls, the latter falls by 3.144.

Second: Foreign Researches:

1. Study (Khalid, Rashed, & Hossain, 2019)

Research Title	Liquidity Risk's Effect on Bank Performance: Emerging Market Perspectives
Research Objective	The purpose of this research is to highlight the difficulties that Bangladeshi commercial banks are facing as a result of the acute liquidity crisis..
Research Sample	a thorough examination of Dhaka's thirty-one commercial banks from 2010 to 2017.
Research Methodology	Applied Course.
Conclusions	According to the research, liquidity has no effect, either good or negative. - Impact on Return on Assets (ROA). - Return on Equity (ROE).

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	(in connection with financial performance).

2. Study (Terseer, Henry, & Mkuma, 2020)

Research Title	The Effect of Liquidity Management on Nigerian Banks' Financial Results.
Research Objective	This research investigates the relationship between liquidity management and Nigerian banks' financial performance..
Research Sample	Five banks that were listed between 2010 and 2018 on the Nigerian Stock Exchange are the subject of this research..
Research Methodology	Applied Courses.
Conclusions	According to research, the following metrics demonstrate that liquidity ratios significantly and favourably affect financial performance: - Return on assets (ROA). – - Return on equity (ROE).

The Second Axis: The Theoretical Framework of the Study

First: - Definition of Liquidity:

The ease with which an asset or securities can be turned into cash without having a major impact on their market price is known as liquidity. In other words, liquidity is the speed at which assets can be purchased or sold on the market at a price that accurately reflects their true value. Another name for liquidity is the ability to quickly turn assets into cash without losing value. This makes it possible to complete commitments on schedule and without any delays. According to Hadi and Al-Araji (2023), liquidity is the capacity of an asset to be quickly converted into liquid currency in order to satisfy sudden or urgent commitments. Liquidity is defined as the ability of an asset to be instantly converted into liquid currency in order to meet promptly incurred obligations (Zahir and Mohammed, 2018, p. 43). The ability of a bank to settle with depositors in a short amount of time is another definition of liquidity (Parvin, Chowdhury, Siddiqua, & Ferdous, 2019, p. 7). This phenomenon is known as liquidity and is necessary to maintain uninterrupted regular banking operations.

Second: The Concept of Bank Liquidity:

It is the bank's capacity to fulfil its duties to depositors and other holders of responsibility. When and as needed, the bank ought to be able to make these payments. Furthermore, the capacity of the bank to satisfy cash needs or swiftly and profitably convert its assets into cash is known as bank liquidity (Al-Badran and Dahi, 2015, p.92). Additionally, it is argued that liquidity has a negative effect on bank capital because managers are under more pressure from shareholders to increase profits and receive a larger portion of the wealth; as a result, managers turn short-term liquid assets into long-term illiquid loans and high-return investments (Abbas, lqbal, & Aziz, 2020, p. 3).

Third: The Importance of Bank's Liquidity:

Pointed out (Abdul Razzaq and Ali, 2022, page 393) that bank liquidity is a basic indicator for evaluating the efficiency of the financial performance of banks, and through it enhance trust between the public and banking institutions.
(Al-Dhubhawy and Faraj, 2022, p. 1057) explained the importance of liquidity in the following positives:

1. It must have a strong position in a risk-sensitive financial market and emerge as an entity capable of fulfilling all its financial obligations.
2. Increasing depositors' and borrowers' trust while highlighting the bank's capacity to fulfil all of its commitments.
3. Avoid extra capital expenditures by the bank. The bank avoids borrowing from the central bank..

Fourth: Measures of Efficiency of Bank Liquidity Management: (Abu Hamad and Qaddouri, 2005, pp. 239-242), (Solanki & Aggarwal, 2022, p. 74)

Table (1) Bank Liquidity Indicators

Cash balance ratios	= Cash in the fund + Cash deposited at the central bank + Other current assets/deposits, etc. * 100
Legal reserve ratios	= Cash deposited at the central bank/deposits, etc. * 100
Legal liquidity ratios	= Primary reserves + Secondary reserves/deposits, etc. * 100
Employment ratios	= Loans, advances/deposits, etc. * 100

A- Cash balance ratios: Since withdrawals and deposits are done, affecting the commercial banks' cash balance ratios, by commercial banks, it is very important to know the cash balance and its ratio to its value in banks. This ratio

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represents a criterion for evaluating the bank's liquidity. It can be calculated using the following equation (Al-Araji & Abadi, 2022, p. 611). (AL-Ardah & Al-Okdeh, 2021, p. 219).

Cash balance ratios = cash in the fund + cash at the Central Bank + other liquid balances / deposits and the like * 100

B- Legal reserve ratios: Commercial banks have to maintain a certain percentage of the funds they have access to from the remaining deposits in the Central Bank as a cash credit balance held without interest, this is known as the statutory reserve, considering that this ratio can be changed with the change in the economic situation in the country at that time. A higher ratio means that they are better placed to meet their obligations in times of crisis. (Al-Karawi, 2021, page 247)

Legal Reserve Ratios = Central Bank Cash / Deposits and the Equivalents * 100

This percentage ranges between 20% and 35% according to the directives of central banks in different countries, (Ismail et al., 2019, p. 7) pointed out that the required percentage in Iraq, according to the laws of the Central Bank of Iraq, is (15%) on current and savings deposits, while it is 10% for fixed deposits in dollars and Iraqi dinars.

C- Legal liquidity ratios: This ratio, which is a reflection of primary and secondary reserves and is subject to follow-up and disclosure under the Central Bank of Iraq's rules, is one of the fundamental ratios that the bank must have. The greater the ratio, the more liquid the bank is. (Page 130 of Kazem and Hassan, 2021).

Legal liquidity ratios = primary reserves + secondary reserves / deposits and the like * 100

This figure stands between 30% up to a maximum of 35% in economic systems. In his explanation, (Al-Alaq, et al., 2017, p. 34), the percentage set by the Central Bank of Iraq is (30%).

D- Employment Ratios: This ratio is another measure that illustrates how well the Bank can satisfy its credit demands in terms of advances and loans by using the money it has on hand, which comes from deposits. The bank's capacity to provide loans will be shown by a high ratio. On the other hand, it will also show a reduced capacity to handle the withdrawals that depositors are requesting. (Page 247 of Al-Karawi, 2021). The following formula is used to determine this:

Employment ratios = loans, advances/deposits and the like * 100

Fifth: Performance of Banks:

A- **Financial Performance in Banks**: The assessment of bank performance reflects the capacity of financial institutions to meet their specific objectives by reconciling actual outcomes with established targets. This process aids in recognizing discrepancies and suggesting suitable remedies, thereby improving the bank's efficiency and its capacity to thrive in the competitive banking sector (Yaqouta and Abdelkader, 2021, p. 7). Additionally, Parvin, Chowdhury, Siddiqua, and Ferdous (2019, p. 1) eloquently noted that the sustainability of banks hinges on the enhancement of their performance and efficiency. Furthermore, Irhamni, Auliya, Karya, and Anshori (2022, p. 1546) elaborated that financial performance serves as a measure of a company's or financial institution's ability to effectively and accurately comply with financial and banking regulations. Adherence to applicable rules and their proper implementation are critical components that significantly contribute to achieving exceptional financial performance for these entities..

B- **Measuring the Financial Performance of Banks and its Importance**: These days, evaluating a bank's financial performance is a critical component of determining the effectiveness and profitability of the business. By identifying the good and bad features of a certain time period and analysing the variables that influence them, this performance skill may assist to fix the negative aspects, promote the favourable aspects, and raise future performance levels. One way to sum up the significance of measuring is as follows (Al-Imam and Hassan, 2022, p. 132).

Financial Performance of Banks Through the Following: (Al-Imam and Hassan, 2022, P. 132)

1- Measuring financial performance is a tool to evaluate the success of the institution in achieving its objectives through its continuous efforts, success is a complex measure of effectiveness and efficiency, making it more comprehensive in improving an organization's performance through continued operation and survival.

2- The measurement of financial performance reflects the extent of progress made by the bank towards improvement, through the analysis of the results of the actual performance, this can be done either by balancing results historically between different bank years or by balancing performance with similar banks in the sector.

3- Financial performance measurement provides valuable data for the various administrative levels within the organization, which contributes to planning, control and decision-making based on scientific and objective information, as well as the importance of this data to third parties.

4- Evaluate the effectiveness of commercial banks in exploiting the financial resources of banking activity in order to achieve the highest return at the lowest possible cost.

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5- Measures the effectiveness of banking activity in terms of reducing profitability fluctuations so as to reduce risks to the lowest possible degree.
6- Reveals the balance between the bank's main objectives (profitability and liquidity).
7- To contribute to directing banking supervision activities to suit the financial and economic conditions surrounding the bank in addition to analyzing the strengths and weaknesses of its internal operations.
8- Measuring financial performance reveals the bank's sound financial standing and reflects its standing in the marketplace.
9- Potential or necessary improvements can be identified if good opportunities are unclear.
10- Assess the organization's long-term debt repayment capacity.

Table (2) Financial Performance Indicators (Profitability Ratios) (Al-Sada, Nazim and Saeed, 2008, pp. 124-125), (Abdulrahman and Al-Farsi, 2020, pp. 117-118)

Indicator	calculated method
Return on Assets ROA	= Net Income / Total Assets *100
Return on Deposit ROD	= Net Income / Total Deposits *100
Return on Equity (ROE)	= Net Income / Equity *100
NIM Net Interest Margin	= Net interest income / Total Assets *100
Net Profit Margin Percentage	= Net Profit / Total Assets *100

Return on Assets (ROA): It is "a vital measure of how effectively a bank utilises its assets to generate earnings" (Dinh & Huyen, 2024, p. 127). Therefore, Zaki, 2023, p. 156, views this metric as a gauge of the bank's effectiveness in producing profits from the utilisation of its assets and recommends it in the manner described below.:
Return on Assets: - It is calculated by multiplying the ratio of net income to total assets by 100. ROD, or return on deposits, is: The capacity of bank management to turn a profit in relation to the amounts of deposits they oversee is determined by this metric, which is computed as follows:
Return on Deposits ROD = Net Income / Total Deposits *100
ROE: This ratio reflects the capacity of the company to achieve profits available to its shareholders and, ultimately, is influenced by the size of the company. The higher the debt ratio, the glaringly visible this ratio appears (Obeid, 2023, p. 3). Calculated as follows:
Net income / Equity * 100
Net Interest Margin Nim: Described (Page 116 of Nghiem, Phung, & Pham, 2023) When its ratio value is regarded as a definitive measure of financial indicators, the Net Interest Margin (NIM) is the ratio of net interest income to total income assets. It is determined using the formula below.:
NIM Net Interest Margin = Net Interest Income / Total Assets * 100.
NPR Net Profit Ratio: According to Jankular (2024:188), high and sustainable profitability enhances the integrity and flexibility of the bank, making it more ready and willing to extend credit in loan relationships and therefore contribute toward the stability of the financial system. For this reason, an interest of the private banks' profitability wakes up managers but also financial markets, regulators, supervisors, and monetary authorities, and it is counted according to the following formula.
Net Profit Ratios = net profit / total assets * 100.

Third Axis: The Applied Aspect

First: An explanation of the study's variables:

The study encompassed eleven banks: National Bank of Iraq, Commercial Bank of Iraq, United Bank for Investment, Ashur International Bank for Investment, Union Bank of Iraq, Investment Bank of Iraq, Bank of Economy for Investment and Finance, Gulf Commercial Bank, Middle East Bank of Iraq for Investment, and Mansour Investment Bank. Within this framework, nine variables were evaluated, of which five were classified as approved (dependent) and four were categorized as interpreted (independent). This analysis pertains to Baghdad Bank over the period from 2010 to 2023.
As shown in Table (1), the off-the-shelf software (EViews V10) was used in finding statistical indicators, performing tests and analyzing the impact relationship.

Table (1) An explanation of the study's variables

S.	Variable symbol	Variable name	Characterization
1-	Y1	Return on Assets ROA	Dependent variables
2-	Y2	Return to Deposit ROD	

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3-	Y3	Return to Equity (ROE)	
4-	Y4	NIM Net Interest Margin	
5-	Y5	Profit margin ratios	
6-	X1	Cash balance ratio	Independent variables
7-	X2	Legal Reserve Ratio	
8-	X3	Legal liquidity ratio	
9-	X4	Employment Rate	

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Second: A set of statistical indicators

Table (2) shows some statistical indicators related to the variables of the study

Case Summaries						
Bank	Variables	N	Mean	Std.	Min.	Max.
National Bank of Iraq	Cash balance ratio	14	127.17	58.44	49.65	227.02
	Legal Reserve Ratio	14	1800.53	4269.16	49.65	12108.49
	Legal liquidity ratio	14	21.78	70.47	.47	266.46
	Employment Rate	14	57.89	17.56	20.30	76.96
	Return on Assets ROA	14	1.80	1.73	-1.50-	4.77
	Return on Deposit ROD	14	3.91	4.13	-2.09-	14.51
	Return on Equity ROE	14	723.75	1908.27	-3.07-	6474.35
	Net interest margin NIM	14	106.16	381.29	.56	1430.89
	Profit Margin Percentage	14	1.80	1.73	-1.50-	4.77
Commercial Bank of Iraq	Cash balance ratio	14	141.56	75.24	53.30	372.03
	Legal Reserve Ratio	14	141.56	75.24	53.30	372.03
	Legal liquidity ratio	14	22.98	14.54	7.19	48.17
	Employment Rate	14	6.90	4.21	.45	16.96
	Return on Assets ROA	14	2.93	1.58	1.20	6.50
	Return on Deposit ROD	14	9.11	3.11	4.46	16.53
	Return on Equity ROE	14	5.38	3.59	2.40	14.03
	Net interest margin NIM	14	4.46	1.50	2.33	7.80
	Profit Margin Percentage	14	2.93	1.58	1.20	6.50
United Investment Bank	Cash balance ratio	14	35.26	25.07	3.93	87.61
	Legal Reserve Ratio	14	35.26	25.07	3.93	87.61
	Legal liquidity ratio	14	2529.91	5570.92	.12	15645.97
	Employment Rate	14	152.79	100.27	45.94	363.22
	Return on Assets ROA	14	1.85	3.37	-3.26-	8.01
	Return on Deposit ROD	14	2.99	10.50	-22.90-	21.41
	Return on Equity ROE	14	15.38	34.03	-.68-	98.00
	Net interest margin NIM	14	1295.80	2710.49	.27	7926.59
	Profit Margin Percentage	14	1.85	3.37	-3.26-	8.01
Ashur International Investment Bank	Cash balance ratio	14	83290.56	310862.63	.10	1163350.36
	Legal Reserve Ratio	14	83290.56	310862.63	.10	1163350.36
	Legal liquidity ratio	14	388.51	1429.58	.02	5355.40
	Employment Rate	14	286.69	814.89	.03	3075.37
	Return on Assets ROA	14	2.82	1.72	.48	6.20
	Return on Deposit ROD	14	190.00	690.60	.01	2589.36
	Return on Equity ROE	14	4.89	2.89	1.12	9.75
	Net interest margin NIM	14	1624.04	4115.64	.69	11549.22
	Profit Margin Percentage	14	2.82	1.72	.48	6.20
Union Bank of Iraq	Cash balance ratio	14	5105.69	18837.55	26.78	70554.72
	Legal Reserve Ratio	14	51.06	188.38	.27	705.55
	Legal liquidity ratio	14	4.34	13.15	.03	49.12
	Employment Rate	14	155.91	575.52	.36	2155.50
	Return on Assets ROA	14	1.53	2.53	.01	9.02
	Return on Deposit ROD	14	7.66	13.07	.04	47.36
	Return on Equity ROE	14	2.71	4.27	.02	14.45
	Net interest margin NIM	14	0.03	0.71	-.94-	1.43
	Profit Margin Percentage	14	1.53	2.53	.01	9.02
Iraqi Investment Bank	Cash balance ratio	14	125.35	27.92	81.71	167.90
	Legal Reserve Ratio	14	125.35	27.92	81.71	167.90
	Legal liquidity ratio	14	7.46	3.80	2.37	13.15
	Employment Rate	14	102.18	45.80	47.39	188.58

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	Return on Assets ROA	14	2.31	2.22	.00	6.24
	Return on Deposit ROD	14	4.80	4.47	.01	13.57
	Return on Equity ROE	14	18.25	35.68	.01	103.24
	Net interest margin NIM	14	1.60	1.71	.01	5.49
	Profit Margin Percentage	14	2.31	2.22	.00	6.24
Bank of Economy for Investment and Finance	Cash balance ratio	14	49.42	37.66	14.91	163.16
	Legal Reserve Ratio	14	49.42	37.66	14.91	163.16
	Legal liquidity ratio	14	6.27	13.35	-6.44-	42.21
	Employment Rate	14	102.04	61.25	44.36	269.99
	Return on Assets ROA	14	1.40	1.31	-.27-	4.31
	Return on Deposit ROD	14	5.32	5.98	-1.05-	23.02
	Return on Equity ROE	14	6.78	7.96	-.57-	24.56
	Net interest margin NIM	14	5.67	4.03	1.51	17.91
	Profit Margin Percentage	14	1.40	1.31	-.27-	4.31
Gulf Commercial Bank	Cash balance ratio	14	91.54	33.43	39.96	132.04
	Legal Reserve Ratio	14	91.54	33.43	39.96	132.04
	Legal liquidity ratio	14	5.70	5.16	.80	17.31
	Employment Rate	14	58.44	17.34	18.56	76.85
	Return on Assets ROA	14	1.76	2.60	-.94-	7.26
	Return on Deposit ROD	14	2.97	4.65	-2.46-	11.83
	Return on Equity ROE	14	5.01	7.05	-1.66-	20.70
	Net interest margin NIM	14	4.85	4.68	.00	13.58
	Profit Margin Percentage	14	1.76	2.60	-.94-	7.26
Middle East Bank of Iraq for Investment	Cash balance ratio	14	105.56	23.91	73.19	142.81
	Legal Reserve Ratio	14	105.56	23.91	73.19	142.81
	Legal liquidity ratio	14	6.60	3.39	3.15	15.94
	Employment Rate	14	41.92	17.49	22.01	86.27
	Return on Assets ROA	14	2.80	3.34	-.52-	7.21
	Return on Deposit ROD	14	4.34	5.25	-1.40-	13.07
	Return on Equity ROE	14	11.35	15.01	-1.42-	38.26
	Net interest margin NIM	14	2.85	3.29	-.32-	7.21
	Profit Margin Percentage	14	2.80	3.34	-.52-	7.21
Mansour Investment Bank	Cash balance ratio	14	84.81	32.75	31.56	129.18
	Legal Reserve Ratio	14	84.81	32.75	31.56	129.18
	Legal liquidity ratio	14	4.63	3.34	1.23	11.66
	Employment Rate	14	24.51	14.48	8.93	49.50
	Return on Assets ROA	14	2.31	1.10	1.13	5.05
	Return on Deposit ROD	14	4.05	2.45	1.48	8.55
	Return on Equity ROE	14	7.32	3.63	4.33	18.40
	Net interest margin NIM	14	3.56	1.87	1.18	6.94
	Profit Margin Percentage	14	2.31	1.10	1.13	5.05
Bank of Baghdad	Cash balance ratio	14	83.53	14.22	65.40	104.84
	Legal Reserve Ratio	14	83.53	14.22	65.40	104.84
	Legal liquidity ratio	14	1.70	1.31	-1.52-	3.82
	Employment Rate	14	16.53	6.76	2.89	26.27
	Return on Assets ROA	14	1.75	1.30	.37	5.35
	Return on Deposit ROD	14	2.28	1.62	.53	6.74
	Return on Equity ROE	14	9.73	7.82	.37	31.04
	Net interest margin NIM	14	3.90	1.72	1.22	6.45
	Profit Margin Percentage	14	1.75	1.30	.37	5.35
Total	Cash balance ratio	154	8112.77	93871.99	.10	1163350.36
	Legal Reserve Ratio	154	7805.38	93734.66	.10	1163350.36
	Legal liquidity ratio	154	272.72	1826.42	-6.44-	15645.97

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	Employment Rate	154	91.44	303.74	.03	3075.37
	Return on Assets ROA	154	2.11	2.20	-3.26-	9.02
	Return on Deposit ROD	154	21.58	208.37	-22.90-	2589.36
	Return on Equity ROE	154	73.69	593.47	-3.07-	6474.35
	Net interest margin NIM	154	277.54	1547.35	-.94-	11549.22
	Profit Margin Percentage	154	2.11	2.20	-3.26-	9.02

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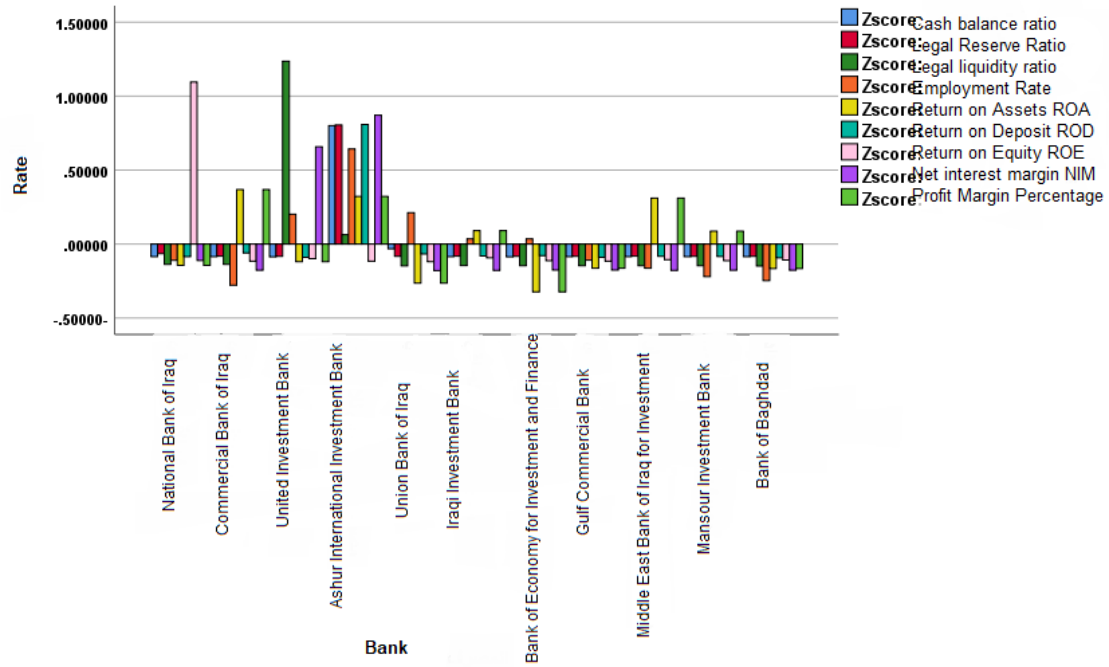

Figure 1 Value of study variables rates in each bank

Third: Examining the Time Series' Stability for the Relevant Variables:

- • Plotting the time series and running the unit root test as follows at this point ensures that the time series of each of the nine variables under investigation are stationar.
- For every variable, plot its time series and run the unit root test.

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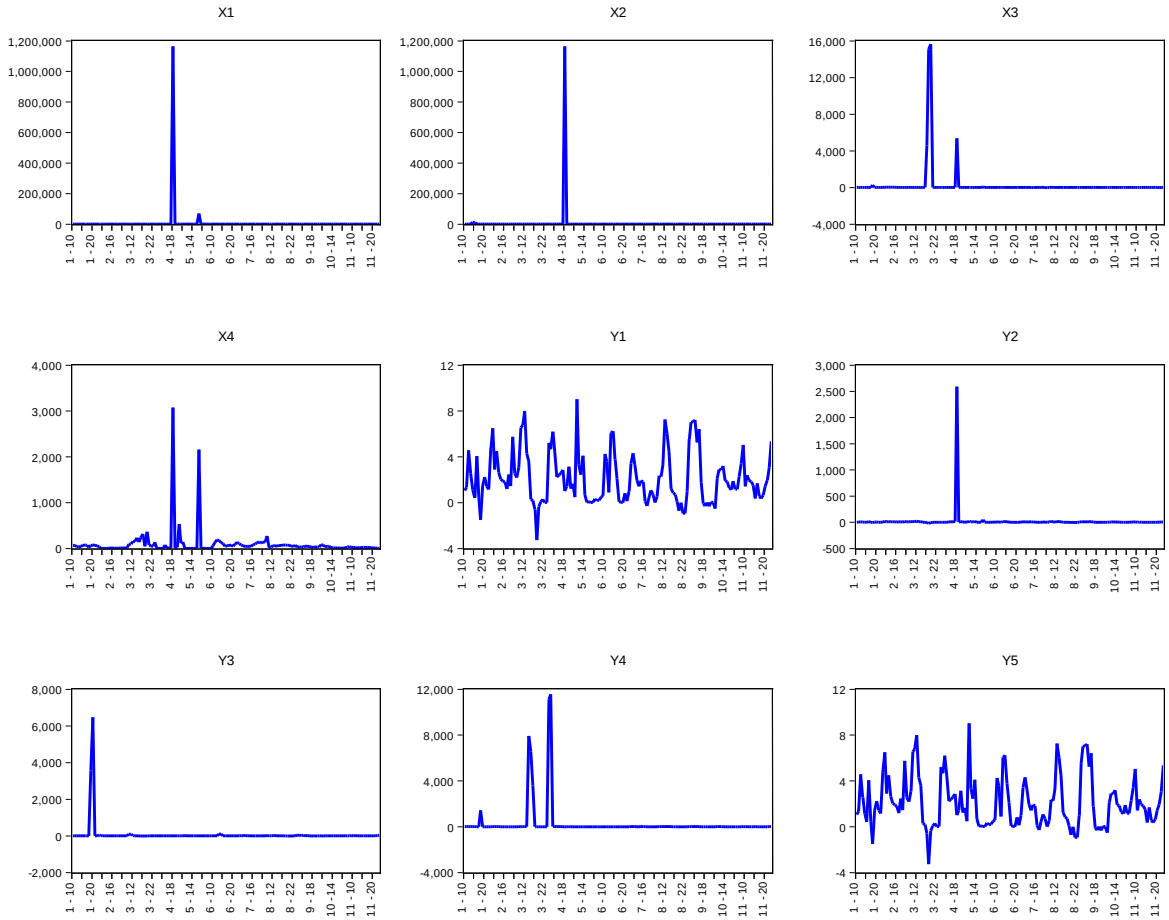

Figure (2) Drawing the time series for each variable in the group of sinks

It is noted from the series drawing for each of the studied variables that all variables are stable because there is no general trend in them, to make sure of this, we conduct the unit root test by taking one of its indicators, which is the [Augmented Dickey - Fuller] index and its corresponding moral value (P - value), as the hypothesis used in the test is.

Null Hypothesis: The Time Series is Unstable.

Alternative Hypothesis: The Time Series is Stable.

If the test indicates that any variable is unstable, we take the first difference and then repeat the stability testing process again to ensure its stable state. The test results are shown in Table (3) below.

Table (3) Unit root examination of variables under study

Table of Unit Root Test Results (ADF)										
The null hypothesis: there is a unit root for the variable.										
At Level										
Y5	Y4	Y3	Y2	Y1	X4	X3	X2	X1		
0.5344	0.3581	0.0010	0.3625	0.5344	0.0127	0.1435	0.0314	0.0314	t-Statistic	With Constant
0.5199	0.0662	0.4846	0.0221	0.5199	0.0168	0.0219	0.0219	0.0219	Prob.	
n0	*	n0	**	n0	**	**	**	**		
0.8555	0.5904	0.0001	0.4939	0.8555	0.0480	0.3746	0.0560	0.0560	t-Statistic	With Constant & Trend
0.2063	0.3746	0.4472	0.0883	0.2063	0.0605	0.0877	0.0876	0.0876	Prob.	
n0	n0	n0	*	n0	*	*	*	*		
0.0650	0.0954	0.0000	0.0567	0.0650	0.4257	0.0868	0.0527	0.0527	t-Statistic	Without Constant & Trend
0.0953	0.0029	0.0704	0.0023	0.0953	0.0025	0.0023	0.0022	0.0022	Prob.	
*	***	*	***	*	***	***	***	***		
At First Difference										

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d(Y5)	d(Y4)	d(Y3)	d(Y2)	d(Y1)	d(X4)	d(X3)	d(X2)	d(X1)		
0.0163	0.0616	0.0001	0.0046	0.0163	0.0001	0.0609	0.0008	0.0008	t-Statistic	With Constant
0.0114	0.0234	0.0087	0.0012	0.0114	0.0149	0.0012	0.0012	0.0012	Prob.	
**	**	***	***	**	**	***	***	***		
0.0356	0.1869	0.0001	0.0203	0.0356	0.0200	0.1680	0.0045	0.0045	t-Statistic	With Constant & Trend
0.0347	0.0161	0.0352	0.0071	0.0347	0.0630	0.0072	0.0072	0.0072	Prob.	
**	**	**	***	**	*	***	***	***		
0.0018	0.0045	0.0013	0.0002	0.0018	0.0000	0.0070	0.0000	0.0000	t-Statistic	Without Constant & Trend
0.0006	0.0025	0.0011	0.0000	0.0006	0.0000	0.0000	0.0000	0.0000	Prob.	
***	***	***	***	***	***	***	***	***		

Notes:

a: (*) Significance at 10%, (**) importance at 5%, (***) importance at 1%, and (no) insignificance

b: Lag Length according to SIC

c: The probability of the null hypothesis being true is derived from MacKinnon's (1996) p-value..

According to the findings presented in Table (3), which employs an Augmented Dickey-Fuller test to assess the stability of the time series, the null hypothesis will be dismissed, leading to the acceptance of the alternative hypothesis—that the time series is stable for all specified variables. The P-value associated with each variable was observed to be below 0.10, suggesting that the variables exhibit stability in the presence of the cutting parameter and direction..

Fourth: Summary of the results of the aggregate effects in the impact models. Pool Effect Model Estimates

Table (4) displays the aggregate effects model's findings for each standard model under study.

P-value	t-statistic	Se(B)	Estimate(β)	Independent variable	Dependent variable
0.5805	0.553837	7.11E-05	3.94E-05	Cash balance ratio	Return on Assets ROA
0.6111	-0.509554	6.59E-05	-3.36E-05	Legal Reserve Ratio	
0.0159	-2.439429	0.000102	-0.000248	Legal liquidity ratio	
0.3352	-0.966854	0.002258	-0.002183	Employment ratio	
Adj. R^2 =0.03, D.W stat= 0.63, S.E. Reg.= 2.16, F-Stat.= 2.37, Pro. (F-Stat.) = 0.054					
0.0000	4.796701	0.000185	0.000887	Cash balance ratio	Return On Deposit ROD
0.0000	7.906986	0.000172	0.001357	Legal Reserve Ratio	
0.0001	-3.958845	0.000264	-0.001047	Legal liquidity ratio	
0.2575	-1.136615	0.005878	-0.006681	Employment ratio	
Adj. R^2 =0.99, D.W stat= 1.10, S.E. Reg.= 5.62, F-Stat.= 52459.5, Pro. (F-Stat.) = 0.000					
0.7845	-0.273996	0.019767	-0.005416	Cash balance ratio	Return On Equity ROE
0.7871	0.270551	0.018338	0.004961	Legal Reserve Ratio	
0.7922	-0.263972	0.028257	-0.007459	Legal liquidity ratio	
0.7953	0.259890	0.628217	0.163267	Employment ratio	

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Adj. R^2 =0.02, D.W stat= 1.25, S.E. Reg.= 601.11, F-Stat.= 0.03, Pro. (F-Stat.) = 0.997					
0.4712	-0.722390	0.051445	-0.037163	Cash balance ratio	Net Interest Margin NIM
0.4784	0.710699	0.047727	0.033919	Legal Reserve Ratio	
0.6471	-0.458664	0.073541	-0.033730	Legal liquidity ratio	
0.4596	0.741399	1.634980	1.212173	Employment ratio	
Adj. R^2 =0.02, D.W stat= 0.65, S.E. Reg.= 1564.4, F-Stat.= 0.168, Pro.(F-Stat.) = 0.95					
0.5805	0.553837	7.11E-05	3.94E-05	Cash balance ratio	Profit Margin Ratio
0.6111	-0.509554	6.59E-05	-3.36E-05	Legal Reserve Ratio	
0.0159	-2.439429	0.000102	-0.000248	Legal liquidity ratio	
0.3352	-0.966854	0.002258	-0.002183	Employment ratio	
Adj. R^2 =0.03, D.W stat= 0.63, S.E. Reg.= 2.16, F-Stat.= 2.37, Pro. (F-Stat.) = 0.054					

The results presented in Table (4) indicate the following:

1. The first model that looks at how the independent variable affects (ROA) is an inconsequential model since the probability value for the estimated value of (F) is (0.054) more than (0.05), and each value of the coefficient of determination is (0.03), which is a weak value.
2. The second model, which looks at how the independent variable affects deposit return ROD, is a significant model because the probability value for the calculated value of (F) is 0.000, which is less than 0.05, and each value of the coefficient of determination is 0.999, which is a high value.
3. The third model, which looks at how the independent variable affects ROE, is negligible for every value of the coefficient of determination (0.02), which is a weak result. The probability value linked to the estimated value of (F) is (0.997), which is higher than 0.05.
4. An insignificant model is the fourth one used to examine the impact of the independent variable on the net interest margin. Its coefficient of determination is (0.02), a weak value, and its probability value is (0.95), which is greater than 0.05 and connected to the computed value of (F).
5. The fifth model, which looks at how the independent variable affects the profit margin, is negligible for each value of the coefficient of determination, which is 0.03—a weak value; additionally, the probability value (0.054) associated with the computed value of (F) is higher than 0.05.

Fifth: An overview of the Hausman test findings comparing the fixed and random models

Hausman Test for Selecting a Random Effect or Fixed Effect Model

Table 5 Comparing random and fixed models

Model	Test Type	Chi-Square	def.	P-value
First	Cross-section random	8.754	4	0.031
Second		9.308	4	0.010
Third		8.798	4	0.021
Fourth		25.473	4	0.000
fifth		10754	4	0.000

Based on the significance of the probability value of the Hausman Test, which all indicated less than (0.05), the findings shown in Table (5) suggest that the fixed limit model is the best model for predicting the effect connection of independent factors in each dependent variable..

Fourth: Summary of the Results of Fixed Effect Model Estimates

Table 6 Summary of the results of the fixed limit model for each studied standard model

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P-value	t-statistic	Se(B)	Estimate(β)	Independent variable	Dependent variable
0.0000	5.942453	1.46E-05	8.68E-05	Cash balance ratio	Return on Assets ROA
0.0000	-5.730606	1.40E-05	-8.02E-05	Legal Reserve Ratio	
0.0000	-6.017476	4.14E-05	-0.000249	Legal liquidity ratio	
0.0000	-7.970901	0.000336	-0.002675	Employment ratio	
Adj. R^2 =0.69, D.W stat= 1.80, S.E. Reg.= 1.01, F-Stat.= 26.29, Pro. (F-Stat.) = 0.000					
0.0000	31.43177	0.151723	4.768930	Cash balance ratio	Return On Deposit ROD
0.0000	17.92421	5.19E-05	0.000931	Legal Reserve Ratio	
0.0000	27.20942	4.82E-05	0.001312	Legal liquidity ratio	
0.0000	-4.606773	0.000253	-0.001166	Employment ratio	
Adj. R^2 =0.99, D.W stat= 1.99, S.E. Reg.= 1.02, F-Stat.= 352163.5, Pro. (F-Stat.) = 0.000					
0.0000	73.45646	1.327180	97.48992	Cash balance ratio	Return On Equity ROE
0.0000	17.28745	0.000795	0.013738	Legal Reserve Ratio	
0.0000	-16.93624	0.000755	-0.012790	Legal liquidity ratio	
0.0439	2.033071	0.001360	0.002765	Employment ratio	
Adj. R^2 =0.76, D.W stat= 1.88, S.E. Reg.= 0.97, F-Stat.= 37.13, Pro. (F-Stat.) = 0.000					
0.0000	30.00476	11.15770	334.7841	Cash balance ratio	Net Interest Margin NIM
0.0000	17.77063	0.001306	0.023200	Legal Reserve Ratio	
0.0000	-15.68086	0.001417	-0.022221	Legal liquidity ratio	
0.7262	-0.350868	0.026595	-0.009331	Employment ratio	
Adj. R^2 =0.79, D.W stat= 1.78, S.E. Reg.= 0.92, F-Stat.= 44.37, Pro. (F-Stat.) = 0.000					
0.0000	5.942453	1.46E-05	8.68E-05	Cash balance ratio	Profit Margin Ratio
0.0000	-5.730606	1.40E-05	-8.02E-05	Legal Reserve Ratio	
0.0000	-6.017476	4.14E-05	-0.000249	Legal liquidity ratio	
0.0000	-7.970901	0.000336	-0.002675	Employment ratio	
Adj. R^2 =0.69, D.W stat= 1.80, S.E. Reg.= 1.01, F-Stat.= 26.29, Pro. (F-Stat.) = 0.000					

The results of Table (6) indicate each of the following:

1. For any value of the coefficient of determination, which is 0.69, the first model that examines the impact of the independent variables in (ROA) is a significant model. The cash balance ratio, legal reserve ratio, legal liquidity ratio, and employment ratio are among the independent factors that account for 69% of the total deposit amount, according to this excellent value. Describe the precise adjustments made to the return on assets (ROA). Other factors not covered by the model account for 31% of the total. Regarding the probability value linked to the

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computed value of (F), it falls below 0.05 at (0.000). This shows that at least one of the independent factors influences ROA. The kind of effect may be listed as follows:

A. The value of the regression coefficient (8.68E-05) has a positive effect association with the cash balance ratio in return on assets (ROA). According to the regression coefficient's p-value of 0.000, which is less than 0.05, this impact is very significant.

B. The values of the regression coefficient, namely (-8.02E-05), (-0.000249), or (-0.002675), show an inverse association with the ratios of legal reserves, legal liquidity, and employment in return on assets (ROA). The p-values for the regression coefficients, which are all (0.000) and less than (0.05), indicate that this impact is extremely significant.

2. For each value of the coefficient of determination of (0.99), which is a good value, the second model that looks at how the independent variables affect (ROD) is a significant model. This means that the independent variables, such as [(cash balance ratio), (legal reserve ratio), (legal liquidity ratio), and (employment ratio)], explain the special change amount of (ROD) (99%), with the remaining percentage being (1%). The probability value associated with the estimated value (F) for additional factors not in the model is 0.000, which is less than 0.05, suggesting that at least one independent variable influences (ROD). The following is a list of the different kinds of effects:

   A. In the deposit return rate ROD, the cash balance ratio, legal reserve ratio, and legal liquidity ratio all have positive correlations with the regression coefficient values, which are 4.768930, 0.0999311, and 0.001312, respectively. This effect is significant according to the regression coefficient's p value, which is 0.000, which is less than 0.05.

   B. The regression coefficient value (-0.001166) exhibits a reverse impact association with the employment rate in the deposit return rate ROD. For the regression coefficient (0.000), this impact is smaller than 0.05.

3. The third model looks at how independent factors affect return on equity. With a coefficient of determination of 0.76, which is a good value, this model is significant. It shows that the independent variables, such as the cash balance ratio, legal reserve ratio, legal liquidity ratio, and employment ratio, account for 76% of the variation in ROE, with the remaining 24% coming from variables not included in the model. There is at least one independent variable that influences (ROE) as long as the probability value linked to the computed value of (F) falls below 0.05, or 0.000. The impact's nature may be enumerated as follows:

   A. There is a clear correlation between the regression coefficient values (97.48992), (0.013738), and (0.002765) and the cash balance ratio, legal reserve ratio, and employment ratio in return on equity ROE. This impact is significant according to the p-values for the regression coefficients, which are 0.000, 0.000, and 0.039, all of which are less than 0.05.

   B. The legal liquidity ratio and return on equity (ROE) have a negative connection, as shown by the regression coefficient's value of -0.012790. The p-value for the regression coefficient (0.000), which is less than 0.05, shows a positive association with this impact.

4. The fourth model looked at how the independent variables affected the NIM margin and was a significant model for each variable. The coefficient of determination (0.76) is a good value, showing that the independent variables, such as the employment rate, cash balance ratio, legal reserve ratio, and legal liquidity ratio, account for 76% of the variation in the NIM margin, with other variables not included in the model accounting for the remaining 24%. 0.000, which is less than 0.05, is the probability value linked to the computed value of (F). This suggests that the Net Interest Margin (NIM) is impacted by at least one of the independent variables, and we can enumerate the following types of impacts:

   A. The regression coefficient values of (334.7841) and (0.023200) for the Cash Balance Ratio, Statutory Reserve Requirement Ratio, and Employment Ratio of (Net Interest Margin NIM) are positively correlated. The p-value, which is less than 0.05 and is 0.000, indicates a significant relationship between this effect and the regression coefficient.

   B. The regression coefficient value, which is -0.022221, has an inverse association with the NIM Spread's Statutory Liquidity Ratio and Employment Ratio. The p-value for the regression coefficient, which is 0.000 and less than 0.05, indicates that this impact is extremely significant.

   C. There is an inverse impact association between the Employment Ratio of Net Interest Margin (NIM) and the regression coefficient value (-0.0093311). The regression coefficient's probability value (0.7262), which is higher than 0.05, indicates that this impact is not significant.

5. The fifth model, which looks at how the independent variable affects the profit rate, is not significant based on the coefficient of determination value (0.03), which is a weak value, and the probability value (0.054), which is higher than 0.05, for the calculated value of (F).

Results and Recommendations

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First: Results:

1- 1- A not-so-strong but negative correlation exists between the interest margins and the employment to total asset, implying that an increase in the employment ratio reduces the interest margin.
2- 2- Negative is the effect of the asset utilization ratio on the interest margin and this relationship is so strong whereby for all other cases it's significant.
3- The impact model of profit margin ratios is not significant, giving rise to inadequacy in the interpretation of independent variables of profit margin changes.
4- The static effects model is the best model to assess the connection between independent and dependent variables, according to the Hausman test.
5- Liquidity and employment policies significantly affect bank performance: hence as far as improving these ratios for better performance, further research to be undertaken..

Second: Recommendations

1- Liquidity management should be improved to minimize the negative impact on net interest margin (NIM) and increase profitability.
2- Develop more efficient recruitment strategies that will improve profit margins and increase the effectiveness of the bank.
3- Recommends the application of a fixed impact model in financial analysis to achieve more accurate estimates of the impact of banking policies on performance.
4- 4- Provide additional resources to develop innovative banking products and services to meet changing market needs and improve profitability.
5- Banks should regularly review statutory reserve ratios and liquidity to ensure that financial performance is stable and sustainable profits are achieved.

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