



#### أثر السيولة على الربحية: دراسة تحليلية لعينة من المصارف التجارية المدرجة في سوق العراق للأوراق المالية للمدة من 2016-2023 مجلة الغرى للعلوم المتصادية والادارية

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روندك شاهين سيف الدين جامعة دهوك، كلية الإدارة والاقتصاد rondik.shahin@uod.ac

#### المستخلص

تبحث هذه الدراسة في تأثير السيولة المصرفية على الربحية في خمسة بنوك تجارية مدرجة في سوق العراق للأوراق المالية خلال الفترة من 2016 إلى 2023. تم قياس الربحية باستخدام العائد على الأصول (ROA) والعائد على حقوق الملكية(ROA) ، نسبة القروض إلى الودائع حقوق الملكية(ROE) ، نسبة القروض إلى الودائع حقوق الملكية(ROE) ، نسبة القروض إلى الودائع (ROE) ، نسبة الودائع إلى الأصول (ROA) ، نسبة القروض إلى الودائع (LDR) ، نسبة الودائع إلى الأصول (DTA) ، الرصيد النقدي (CASH\_BAL) ، نسبة القروض إلى الودائع التحليلي وتستخدم تحليل البيانات اللوحية من خلال برنامج (ROE) تم تطبيق عدة أساليب إحصائية، بما في التحليلي وتستخدم تحليل البيانات اللوحية من خلال برنامج (ROS) تم تطبيق عدة أساليب إحصائية، بما في التحليلي وتستخدم تحليل البيانات اللوحية من خلال برنامج (ROS) تم تطبيق عدة أساليب إحصائية، بما في التحليلي وتستخدم تحليل البيانات اللوحية من خلال برنامج (ROS) تم تطبيق عدة أساليب إحصائية، بما في التحرضية . كشفت النتائج أن نسبة السوحية من خلال برنامج (ROS) له تأثير سلبي على كل من ROA) مع أوزان RUC الماطع العرضية . كشفت النتائج أن نسبة السيولة الجارية (RO) لها تأثير سلبي على كل من ROA وROS، في حين أن والرصيد القروض إلى الودائع (LDR) تؤثر إيجابيا على الربحية، بينما كل من نسبة الودائع إلى الأصول (DTA) والرصيد التعرين المرضية . كشفت النتائج أن نسبة السيولة الجارية (RO) لها تأثير سلبي على كل من سبة الودائع إلى الأصول (DTA) والرصيد النقدي (DTA) وعاره ROA وعاع) لما بناير سلبي . بناء على هذه النتائج، توصي الدراسة بتحسين إدارة السيولة والرصيد النقدي (DTA) لها تأثير سلبي على هذه النتائج، توصي الدراسة بتحسين إدارة السيولة يعتريز والرصيد النقدي (DTA) ولمان المال والربحية، وتعزيز المحافظ الائتمانية مع تقليل مخاطر الائتمان، وضمان والرصيد التوازن بين الاودائع في الأسول (DTA) مع أوزان المالي والرصيد التحقيق التوازن بين الاستقرار المالي والربحية، وتعزيز المحافة الائتمانية مع تقليل مخاطر الائتمان، وضمان والر صيد القوان الودائع في الاستثمار المالي والربحية، وتعزيز المحافة الائتمانية مع مي الدور الحام والرال)، وضمان الاستخدام الفعال للودائع في الاستثمار ال الماني والربحية، ومالي والربحية، وتعزيز المحاف الدراسة محكمة لتحقيق النمو الماليرامى، ولمان العائم ووضا الم





### The Effect of Liquidity on Profitability: An Analytical Study on a sample of Commercial Banks Listed on the Iraq Stock Exchange for the Period 2016-2023

Rondk Shahin Saifadin Duhok University, College Of Administration and Economic <u>rondik.shahin@uod.ac</u>

#### Abstract

This study examines the effect of banking liquidity on profitability in five commercial banks listed on the Iraq Stock Exchange over the period 2016–2023. Profitability is measured using Return on Assets (ROA) and Return on Equity (ROE), while liquidity indicators include the Current Ratio (CR), Loan-to-Deposit Ratio (LDR), Deposit-to-Asset Ratio (DTA), and Cash Balance (CASH\_BAL). The study employs a descriptiveanalytical approach and utilizes panel data analysis through (EViews 10) software. Various statistical techniques are applied, including descriptive statistics, correlation analysis, and the Generalized Least Squares (GLS) model with Cross-Section SUR weights. The findings reveal that CR has a negative impact on both ROA and ROE, LDR positively affects profitability, while DTA and CASH\_BAL exhibit a negative influence. Based on these findings, the study recommends enhancing liquidity management to balance financial stability and profitability, optimizing loan portfolios while mitigating credit risk, and ensuring efficient utilization of deposits in productive investments. The study highlights the critical role of effective liquidity management in enhancing the profitability of commercial banks, underscoring the need for well-structured financial strategies to achieve sustainable growth.

**Key words**: Return on Assets (ROA), Return on Equity (ROE), current ratio(CR), Loanto-Deposit Ratio (LDR), Deposit-to-Asset (DTA), Cash Balance (CASH\_BAL).





#### 1.Introduction

Banks are considered the primary driver of economic life and the engine that fuels banking operations; (a) they represent a fundamental pillar of the economy. Therefore, banks play a vital role through the banking and financial services they provide to society, in addition to their dynamic activities that reflect on the economies of nations and their prosperity. Through these activities, banks aim to achieve a range of objectives, foremost of which is generating profits through the investment of their funds. Hence, banks must manage their transactions according to well-thought-out strategies and policies that balance the requirements of liquidity and profitability.

The topic of liquidity and profitability holds special importance in banking operations. Liquidity is a critical factor in ensuring financial stability, gaining the trust of depositors and clients, and meeting withdrawals and obligations. On the other hand, profitability is one of the primary objectives that banks strive to achieve to ensure their sustainability and efficiency. It is well-known that liquidity and profitability are conflicting goals; therefore, banks exert considerable efforts to strike a balance between these two objectives, ensuring the highest possible profits while maintaining adequate liquidity.

#### **Research Problem**

Liquidity is considered as a keystone element in the banking system needing constant surveillance and analysis. It plays a crucial role in aiding banks in accomplishing these prevailing everyday financial obligations. Nonetheless, for the banking system, it has been recognized that the fine balance between levels of liquidity and profitability seems to be a difficult problem. Over





liquidity may represent a missed opportunity for investments and hurt profitability while under liquidity exposes the banks to the risks of being unable to meet the fr(1finand) altobligations or meet withdrawals in cash requests. The core issue lies in the inherent conflict between these two objectives. Accordingly, the research problem can be formulated as the following question:

#### Does liquidity affect the profitability of commercial banks?

#### 1.2ResearchImportance

One of the key variables directly influencing the continuity and growth of banks is liquidity. The availability of liquidity is of utmost importance for banks since this helps them meet their short-term financial obligations, thus enhancing their financial stability and enabling them to survive in a highly competitive banking environment. Moreover, liquidity management is closely linked with profitability, whereby striking a balance between maintaining adequate levels of liquidity and in search of high-return investment opportunities is one of the biggest challenges facing banks. Therefore, understanding the impact of liquidity on profitability is essential for developing effective strategies that ensure the bank's stability while maintaining sustainable profitability.

#### 1.3Research Hypothesis

To achieve the objectives of the current study, the following hypotheses are proposed:

1.3.1.Hypothesis 1 (H1): There is a statistically significant correlation between banking liquidity and profitability in the commercial banks under study.





1.3.2.Hypothesis 2 (H2): There is a statistically significant effect of banking liquidity on profitability in the commercial banks under study.

#### 1.4ResearchObjeefives (21) مجلد (21)

The purpose of this research is therefore to investigate the impact of banking liquidity on profitability of listed commercial banks on the Iraq Stock Exchange, through analyzing the effect of the liquidity variable as represented by the current ratio, loan-to-deposit ratio, deposit-to-assets ratio, and cash balance on profitability indicators comprising ROA and ROE. The research also tends to test whether there is a significant statistical relationship between these variables and the effect of banking liquidity on profitability in the studied commercial banks.

#### 2.Literature Review

#### 2.1.The concept of liquidity:

The term liquidity is basically a technique which is used by an organization to convert its assets (current) into cash. Whenever a firm/organization needed to meet its financial obligations, it converts its current assets into cash form to pay the due liabilities at maturity date. As and when the bank needed to pay its short-term obligations to its debtors and creditors/suppliers, it must have an ability to satisfy its creditors for this purpose, and this ability is named as "Liquidity" of a bank. This can be defined in simple words as under: A technique or procedure which is adopted by a firm or an organization or any financial institution to convert its assets into to cash for payment of near-term obligation livid upon (Malik et al., 2016:70)

Moreover, liquidity, a crucial financial tool used to immediately get an idea about the financial health of an entity, is the ability to easily convert an asset into cash without incurring a loss to its value against the current market price.





The easier an asset to be turned into cash, the more liquid it is. Cash is the most liquid asset that becomes useful rapidly to pay off debts & short-term liabilities. Usually, primary (importance goes to the liquidity, which helps the smooth continuation of an organization's regular operations by paying its short-term obligations on time, & all these things ensure the survival of the entity(Islam et al,2022:258)

(Agbada & Osuji,2013:223) define bank liquidity as the ability of the bank to maintain sufficient funds to pay for its maturing obligations. It is the bank's ability to immediately meet cash, cheques, other withdrawals obligations and legitimate new loan demand while abiding by existing reserve requirements.

Furthermore, (Acharya,2020:439) describes bank liquidity as the ability of a bank to ensure the availability of funds to meet financial commitments or maturing obligations at a reasonable price at all times. This means that a bank has sufficient money available when needed, particularly to satisfy the withdrawal demands of its customers.

Others define it as the speed or convenience with which assets can be converted into cash. The process of building liquidity, which is attractive to lenders, involves creating assets that can be quickly converted into cash without incurring a loss.( Howells & Bain,2000:8)

#### 2.2Concept of profitability:

Profitability is commonly defined as the ability of an investment to generate a return from its use (Toshniwal, 2016:550). (Zala, 2010:65) highlighted that the term "profitability" combines two elements: profit, which refers to the income generated through business activities over a specific period, and ability, which relates to the bank's capacity to generate profits, as well as the





strength of its operational and financial performance. Together, these concepts define profitability as the capacity of an investment to yield a return from its utilization (25 (1) عدد (21) عدد (21)

Moreover, profitability reflects how effectively a bank generates profits from its operational activities, ensuring its sustainability and continued success (Reschiwati et al., 2020:327). (Ali, 2017:23) further defines profitability as the ability to utilize all available resources within an organization to produce sufficient returns, enabling the business to function effectively. In addition, profitability ratios measure the bank's capability to earn reasonable profits, which in turn demonstrates the quality of its financial operations.

profitability serves as a clear indicator in the banking sector, reflecting not only the bank's competitive position but also the quality of its management, its ability to bear risks, and its capacity to increase capital (Greuning & Bratanovic, 2003:81).

#### 2.3Empirical Literature Review:

2.3.1Bwacha and Xi (2018) discuss the relationship between liquidity and profitability in the banking industry in the post-2008 financial crisis period and hence make a very important contribution to understanding how liquidity management influences banks' financial performance. The paper considers the period between 2008 and 2017 when the banking industry was undergoing serious regulatory changes and issues over liquidity following the global financial crisis. They consider different liquidity proxies, including the LDR( loan-to-deposit ratio), DAR (deposit-to-asset ratio), and CDR( The cash & cash equivalents to deposit ratio) as a proxy of liquidity, while using return on equity and return on assets to assess profitability.





Results show that only DAR significantly explains profitability as represented **by ROELThe study** argues that, with high liquid asset holdings and the resultant **Righ** costs of the posit interest, the liquidity ratios LDR and CDR did not meaningfully influence profitability. This means that the postcrisis banking conditions, marked by conservative liquidity management, weakened the influence of the selected liquidity proxies on profitability. Results from this set of researchers underline the fact that management of liquidity in this period was not triggered only by profitability goals; rather, this was also initiated by regulatory pressures for stability in a volatile postcrisis environment.

2.3.2 Abdulrahman (2020) investigates the effect of liquidity on the profitability of commercial banks in Saudi Arabia within the period of 2010-2019. In the context of descriptive analysis, the paper collected, described, and analyzed data which was gathered from financial statements obtained from trading platforms. The regression analysis through SPSS was taken to review the relationship between liquidity and profitability. From this, the analysis resulted in significant influence from liquidity at the level of (0.05)significance which influence the level of ROE, whereas liquidity does not significantly influence the return on assets with a current ratio(current assets over current liabilities) as its indicator. The study stressed that liquidity should be combined with profitability to avoid financial deficits and recommended that Saudi commercial banks improve their profitability to reflect their ability to generate profits. The study also suggested that banks should establish the right policies to manage liquidity properly and achieve a proper balance between liquidity and profitability. It was also recommended that semi-liquid investments must be retained for the





avoidance of future liquidity crisis and further study can include a wider sample of banks from Saudi Arabia مجلة and further study can include a wider

2.3.3Paul et al (2020) examined the effect of liquidity on profitability within the commercial banking sector of Bangladesh, using data from the period between 2009 and 2018. The authors employed a quantitative analysis using secondary data from 40 commercial banks, observed over 206 bank years. They therefore proposed liquidity indicators like the Loan-to-Deposit Ratio, Deposit-to-Asset Ratio, Cash to Deposit Ratio (Cash and Cash Equivalents /Total Deposits), Liquid-Asset Ratio(Cash and Cash Equivalents/Current liabilities), and Current Ratio(Current Assets / Current Liability), while Return on Equity was the measure of profitability. From the correlation and regression analysis done, they established that LDR, DAR, and CDR significantly influenced profitability as measured by ROE, while LAR and CR did not. The findings of the study, therefore, conclude that liquidity is a vital determinant of profitability in Bangladesh, and for ensuring stability and growth of commercial banks, a trade-off between liquidity and profitability is quite crucial. This research will, therefore, provide useful information to policymakers and bank managers in the pursuit of an optimal liquidity management strategy in a way that will help maximize profitability without jeopardizing financial stability.

2.3.4Islam et al. (2022) analyzed the relationship between liquidity and profitability in the banking sector of Bangladesh. In their research, five commercial banks were randomly selected over a tenure of ten years, starting from 2011 and ending with 2020, for which secondary data was gathered from their annual reports. In the measuring of profitability, ROA was used as the dependent variable, while liquidity was measured using three





independent variables, namely LDR (Loan-to-Deposit Ratio), DAR (Deposit-to-Assets Ratio), and CDR (Cash and Cash Equivalents-to-TotL Deposit). Using OP2S (regression analysis, the findings of the study showed that an increase in these liquidity ratios leads to a corresponding positive increase in ROA, showing a positive relationship between liquidity and profitability. The findings indicate that Bangladeshi commercial banks can have an optimal balance between liquidity and profitability. This research contributes to existing literature by providing empirical evidence from the banking sector of a developing country and is of considerable value to both practitioners and academics in understanding the interrelationship between liquidity management and profitability.

#### 3.Methodology

#### 3.1DataCollection

Data for this study will be collected from secondary sources, specifically the financial statements and annual reports of the selected commercial banks listed in Iraq Stock Exchange, covering a period from 2016 to 2023. These reports are publicly available and provide the necessary financial data.

#### **3.2Population and Sample**

The population for this study consists of commercial banks in Iraq that are listed on the Iraqi Stock Exchange. Due to the availability of financial data, five banks were selected as the sample for this study. These banks are:

Table(1)	Banks'	Name

Banks Name	Stock Symbol
Gulf Commercial Bank	BGUC
Baghdad Bank	BBOB
Trans Iraq Investment Bank	BTRI
Assyria International Investment Bank	BASH
Middle East Iraqi Investment Bank	BIME





Source: Prepared by the researcher

#### مجلة الغري للعلوم المتصفية الفري العلوم المعالي 3.3Variable

### 3.3.1:Liquidity variables (independent variables):

Current Ratio(CR): A liquidity measure that indicates the Bank's ability to pay its short-term obligations(Durrah et al,2016:436). It is calculated as:

## $CR = \frac{Current Assets}{Current Liabilities}$

#### LDR (Loan to Deposit Ratio):

The loan-to-deposit ratio measures the liquidity risk in the banking sector (Steven,2020:2). It is calculated as:

## $LDR \frac{Total Loans}{Total Deposits} * 100$

#### **DTA (Deposit to Asset):**

The deposit to asset ratio measures the proportion of a bank's assets funded by customer deposits. It reflects the bank's reliance on deposits as a funding source and its liquidity position(Chhetri,2023:98), It is calculated as:

### DTA Total Deposits Total Assets

#### CASHBAL (Cash and Cash Equivalents to Current Liabilities):

This ratio indicates the amount of cash or cash equivalents a bank holds in relation to its current liabilities, reflecting liquidity(Fauziah,2024:11). It is calculated as:

# $Cash BAL = \frac{Cash and Cash Equivalents}{Current Liabilities} * 100$

#### **3.3.2Profitability Variables (Dependent variables):**

Return on Assets: ROA is the profit ratio that shows the bank's ability to





make a profit over their whole assets affianced in the banking industry. ROA is the widely used and key ratio of gauging bank's profitability (Yuan,2022:6) and is earled lated as:

$$ROA = \frac{Net \ Income}{Total \ Assets} * 100$$

ROA is one of the major profitability ratios showing the net result from the use of total assets during any specific period. It is usually regarded as one of the most reliable means of measuring profitability. A number of studies have utilized ROA while investigating the effect of liquidity on profitability. (Sathyamoorthi et al.,2018:88)

ROE (Return on Equity): Return on Equity (ROE) measures a bank's profitability relative to the equity held by its shareholders. It indicates how efficiently a company generates profits using shareholders' equity. Essentially, ROE represents the amount of net income returned as a percentage of shareholders' equity and is considered a key financial metric for evaluating a bank's financial performance (IKRAM,2021:11-12). It is calculated as

## $ROE \frac{Net \ income}{Total \ Assets} * 100$

#### 3.4Statistical Techniques

To analyze the effect of liquidity on profitability in Iraqi commercial banks, the study employs a range of statistical techniques to ensure robustness and accuracy in the findings. The following methods are applied :

A-Descriptive Statistics: Provides an overview of the data, including mean, standard deviation, and distribution of key financial variables .

B-Correlation Analysis: Measures the strength and direction of the relationship between liquidity ratios and profitability indicators .





C-Redundant Fixed Effects Test: Determines whether fixed effects are necessary in the panel data model by testing if they significantly improve model fit . 2025 (1) are (21)

D-Hausman Test: Helps decide between the Fixed Effects Model (FEM) and Random Effects Model (REM) by testing for endogeneity in the regressors. E-Panel Cross-Section Heteroskedasticity LR Test: Examines whether heteroskedasticity (variance inconsistency) exists across cross-sections in the panel data.

F-Generalized Least Squares (GLS) Model with Cross-Section SUR Weights: This method is used to estimate the effect of liquidity on profitability while accounting for potential heteroskedasticity and crosssectional dependence among banks. GLS improves the efficiency of the estimates by weighting the observations appropriately, reducing bias, and enhancing statistical power

G-Autocorrelation and Partial Correlation Analysis (GLS - Cross-Section SUR):Tests for serial correlation in residuals, ensuring that the regression results are not biased due to correlated errors .

H-Jarque-Bera Normality Test: Assesses whether the residuals in the model follow a normal distribution, which is crucial for valid statistical inference . These statistical techniques were applied to both dependent variables (ROA and ROE) to ensure the validity, reliability, and robustness of the findings. The collected financial data were analyzed using (EViews 10) software.





The regression equations can be presented as follows: 1. For ROA (Return One Assets); ROAi =  $\beta_0 + \beta_1 CRi + \beta_2 LDRi + \beta_3 DTAi$ +  $\beta_4 CASH-BALi^{2}$  (21) are (21)

2. For ROE (Return on Equity):  $ROEi = \beta_0 + \beta_1 CRi + \beta_2 LDRi + \beta_3 DTAi +$ 

 $\beta_4 \ CASH\text{-}BALi + \varepsilon i$ 

Where:

ROA (Return on Assets) = (Net Income / Total Assets)\*100

ROE (Return on Equity) = (Net Income / Shareholders' Equity)\*100

CR (Current Ratio) = (Current Assets / Current Liabilities)

LDR (Loan to Deposit Ratio) = (Total Loans / Total Deposits)\*100

DTA (Deposit to Asset Ratio) = (Total Deposits / Total Assets).

CASHBAL = (Cash and Cash Equivalents / Current Liabilities)\*100

#### 4-EmpiricalResults:

4.1The financial analysis results of liquidity and profitability ratios for

the banks included in the study sample:

4.1.1The financial analysis results of liquidity:

#### 4.1.1.1Current Ratio (current assets/current liabilities)

Table 2: Current Ratio (current assets/current liabilities) for Banks During

Banks	Gulf Bank	Baghdad Bank	Assyria Bank	Middle East Bank	Trans Iraq Investment	Yearly
Years					Bank	Average
2016	7.579	1.137	2.662	1.414	1.932	2.9448
2017	1.571	1.100	3.158	1.849	5.253	2.5862
2018	1.739	1.035	6.091	1.384	4.927	3.0352
2019	0.039	1.069	6.750	1.548	4.128	2.7068
2020	0.193	0.966	2.008	3.437	3.221	1.9650
2021	0.200	0.768	14.246	6.010	5.350	5.3150
2022	0.756	2.438	5.247	0.184	2.172	2.1594

the Period 2016-2023

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Banks	Gulf Bank	Baghdad Bank	Assyria Bank	Middle East Bank	Trans Iraq Investment	Yearly
Years	ية والادارية	ي للعلوم الاقتصاد	مجلة الغر		Bank	Average
2023	0.015 202	5 (1) <b>0.91</b> ( <b>7</b> 1) <b>1</b>	▶ 8.174	1.360	1.925	2.4782
Average	1.5115	1.1788	6.042	2.1483	3.6135	2.8988

Source: Prepared by the researcher based on Excel outputs

The table(2) examines the current ratio, defined as the current assets divided by current liabilities for five banks from 2016 to 2023, hence reflecting their respective liquidity positions. Overall, the average current ratio across all banks over this period is about (2.899), which means that, on average, the banks have adequate current assets to meet their short-term obligations. However, there is considerable variation among individual banks and years. For example, Gulf bank started with the highest current ratio of (7.579) in 2016 but faces a steep decline to (0.015) by 2023, showing a continuing squeeze in liquidity or rise in liabilities. On the other hand, Assyria bank had the highest average current ratio of (6.042) for the eight years, reaching a peak of (14.246) in 2021, showing a very good liquidity position, but the sharp rise in that year could be an anomaly or a one-time strategic movement. Baghdad banks and Middle East bank have maintained a fairly stable level of ratios at averages of (1.179) and (2.148), respectively, reflecting a good liquidity position. For Trans Investment bank, the trend was downwards from (5.253) in 2017 to 1.925 in 2023, which could indicate a reduced quantum of liquid assets and/or an increase in liabilities.

Yearly observations show the up-and-down nature of the average current ratio. The highest liquidity was observed in 2021, at (5.315), mainly contributed by Assyria bank, while lower averages in 2020 and 2022 at (1.965) and (2.159), respectively, could reflect macroeconomic challenges or certain financial events within the banking sector. These trends emphasize





the importance of balanced liquidity management strategies. Banks with high current ratios such as Assyria bank, do not compromise on financial stability, althoug 1025 ety high that ios may be indicative of underutilized resources that could have been deployed for better profitability. Lower ratios, however, may indicate that some problems in meeting future short-term obligations might place the bank in jeopardy-in the case of Gulf bank in 2023.

### 4.1.1.2 loan-to-deposit ratio (LDR)

Table 3: loan-to-deposit ratio (LDR) for Banks During the Period 2016-

Banks	Calf Darah	Baghdad	Assyria	Middle	Trans Iraq Investment	Average
Years	Guii Bank	Guil Bank Bank Bank		East Bank	Bank	(Year)
2016	74.552	23.561	55.879	51.260	90.800	59.2104
2017	92.811	20.378	53.881	35.978	86.808	57.9712
2018	98.369	20.706	23.733	25.841	89.713	51.6724
2019	85.109	18.673	23.733	40.820	47.796	43.2262
2020	73.439	18.185	28.737	39.141	58.221	43.5446
2021	99.757	15.370	60.657	37.150	90.317	60.6502
2022	84.044	11.249	91.859	94.225	96.877	75.6508
2023	96.314	50.295	94.056	87.683	88.894	83.4484
Average	88.049	22.302	54.067	51.512	81.178	59.422

2023

Source: Prepared by the researcher based on Excel outputs

The table(3) presents the LDR(loan to deposit ratio) for five banks from 2016 through 2023, their yearly averages, and the overall average. The LDR will reflect the share of loans issued relative to deposits and might be indicative of something related to liquidity management and risk-taking behavior. From an overall average in these eight years for all banks, it was (59.422), showing a moderate balance between lending and retention of deposits. Gulf bank had the highest overall average of (88.049), which indicated aggressive





lending that could improve profitability but also raise liquidity risks; Baghdad bankihad the lowest average of (22.302), reflecting its conservative strategy to focus definitivity it esterves.

By the yearly outlook, the average LDR reached the maximum in the year 2023, with an average of (83.448), While 2018 and 2019 present lower averages of (51.672) and (43.226), respectively, during these years credits were approved with more prudence.

Gulf bank had a very high LDR, reaching a peak of (99.757) in 2021, indicating a strong focus on lending but with possible risks in terms of maintaining sufficient liquidity. Baghdad bank had a very low LDR with minimal fluctuation, indicating that it prioritized financial stability over aggressive lending. Assyria bank was highly volatile, as its LDR surged from (23.733) in 2018 to (94.056) in 2023, reflecting a strategic shift toward higher lending activity. Middle East bank had a moderate LDR with an average of (51.512), reflecting balanced lending and liquidity practices. Trans Investment bank had a high average LDR of (81.178), indicating maximum utilization of lending opportunities.

#### 4.1.1.3 Deposit-to-Total-Asset ratio (DTA) for Banks

Table 4: Deposit-to-Total-Asset ratio (DTA) for Banks During the Period

Banks	Gulf Bank	Baghdad Bank	Assyria Bank	Middle East Bonk	Trans Iraq Investment	Yearly
Years				Dalik	Bank	Average
2016	0.533	0.690	0.248	0.397	0.434	0.4604
2017	0.441	0.655	0.236	0.434	0.379	0.429
2018	0.403	0.702	0.379	0.537	0.338	0.4718
2019	0.367	0.707	0.328	0.412	0.545	0.4718
2020	3.539	0.756	0.238	0.412	0.474	1.0838
2021	3.806	0.752	0.255	0.435	0.453	1.1402

2016-2023

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Banks Years	Gulf Bank والادارية	Baghdad Bank لعلوم الاقتصادية	Assyria Bank مجلة الغري	Middle East Bank	Trans Iraq Investment Bank	Yearly Average
2022	0.408	<b>025 ())760</b> (21)	0.349 <del>مجاد</del>	0.318	0.454	0.4578
2023	0.370	0.794	0.343	0.334	0.598	0.4878
Average	1.233	0.727	0.297	0.410	0.459	0.6253

Source: Prepared by the researcher based on Excel outputs

As shown in table (4) different trends and strategies are reflected in the DTA ratio(deposit to total assets ratio) for the five banks of between the years 2016 and 2023. Gulf bank has been pretty volatile, as it reached an all-time high of (3.539) in 2020 and even as high as (3.806) in 2021, pointing to aggressive dependence on deposits those years, most likely due to huge liquidity demand or uncertainty in the economic sector. In contrast, Baghdad, Assyria, Middle East, Trans Investment banks display more stable and moderate ratios. Baghdad bank has consistently shown a high value close to (0.7), indicating that this bank relies heavily on deposits for its funding.

The aggregated averages for the period were headed by Gulf bank with an average of (1.233), far higher compared to the rest of the banks, while Trans Investment bank recorded the lowest at (0.625), thus showing a more diversified funding base. The yearly trends are depicted, with a noticeable spike in the DTA ratios in 2020 and 2021 for most banks, probably due to economic conditions such as increased savings or government liquidity measures during the global COVID-19 crisis. After 2021, the ratio stabilized, indicating a return to normal operations.

# 4.1.1.4 cash and cash equivalents to current liabilities ratio (cash balance ratio)for Banks:

Table 5: cash and cash equivalents to current liabilities ratio (cash balance ratio) for Banks During the Period 2016-2023





Banks	Culf Dark	Baghdad	Assyria	Middle	Trans Iraq Investment	Overall
Years		ي للعلوم المقتص د (21) عدد (1) :	Ank مجله مح	East Bank	Bank	Average
2016	109.700	59.046	102.271	109.241	93.481	94.748
2017	95.742	61.596	108.710	139.657	108.195	102.780
2018	105.936	72.619	105.861	91.958	97.900	94.855
2019	114.712	62.924	102.323	88.749	126.455	99.033
2020	105.529	77.746	95.484	106.788	84.337	93.977
2021	107.447	67.281	109.997	150.349	87.316	104.478
2022	114.971	116.730	94.586	119.810	98.474	108.914
2023	99.832	133.492	109.642	89.778	105.453	107.639
Average	106.734	81.429	103.609	112.041	100.201	100.803

Source: Prepared by the researcher based on Excel outputs

Table(5) shows cash and cash equivalents to current liabilities ratio results and it reflects striking features on liquidity management. Gulf bank holds its position in a relatively stable ratio throughout the years with an average of (106.734), signifying the continued satisfaction of short-term liabilities through cash reserves. The liquidity for Baghdad bank improved significantly from (59.046) in 2016 to (133.492) in 2023, showing improved cash management. Assyria bank has remained relatively stable at about the set norm, with its ratio fluctuating between (94.586) and (109.997), averaging (103.609), about the sector average. Middle East bank has the highest average ratio of (112.041), though quite volatile, reaching its peak in 2021 at (150.349). Trans Investment bank has moderate liquidity, where the ratio ranges from (84.337) to (126.455), with an average of (100.201). The overall average ratio has increased gradually from (94.748) in 2016 to (107.639) in 2023, showing that the liquidity management of the banking

sector is improving over time. The highest average ratio was reached in 2022





at (108.914), indicating that banks were prioritizing higher liquidity during

مجلة الغرى للعلوم الاقتصافية hese uncertain times

#### 4.1.2The financial analysis desults of profitability:

#### 4.1.2.1Return on Assets (ROA) for Banks:

Table 6: Return on Assets (ROA) for Banks During the Period 2016-2023

Banks	Gulf Bank	Baghdad Bank	Assyria Bank	Middle East Bank	Trans Iraq Investment	Voorly Avorago
Years	Guil Ballk	Dank		Dank	Bank	Tearry Average
2016	0.732	1.686	3.851	0.185	0.362	1.363
2017	0.701	0.562	3.587	0.078	0.291	1.044
2018	0.102	0.373	1.013	0.287	1.978	0.751
2019	0.716	0.644	1.424	0.012	0.382	0.636
2020	0.003	1.423	3.118	0.323	0.873	1.148
2021	0.936	0.195	1.242	0.045	0.577	0.599
2022	0.928	0.308	1.654	0.002	1.930	0.964
2023	0.961	0.567	3.296	1.611	0.886	1.464
Average	0.635	0.720	2.398	0.318	0.910	0.996
Overall Avg	-	-	-	-	-	0.996

Source: Prepared by the researcher based on Excel outputs

The data in table (6) reveals significant insights into the performance of the five banks over the eight-year period. Assyria bank is the most profitable among the listed banks, with an average ROA of (2.398), indicating high operational efficiency and proper utilization of assets. Assyria bank peaked in profitability during the years 2016,2017 and 2023, with (3.851),(3.587) and (3.296), respectively, showing sustainability in terms of financial leadership. Middle East bank has the lowest average ROA with (0.318), showing that return generation might have been ineffective or a problem. This significantly improves in 2023 to (1.611), indicating favorable changes in operations or external conditions during that year.





Gulf bank and Baghdad bank have moderate performances, with their average ROAs standing at (0.635) and (0.720), respectively. Gulf bank has wild fluctuations in 2020 for the recovery in subsequent years. Similarly, Baghdad bank peaked in 2020 with (1.423) but showed a downward trend afterward, signaling that something is wrong and may need strategic adjustments. Trans Iraq Investment bank has a consistent mean ROA of (0.910), reflecting general stability in performance, with peak strength in 2022 at (1.930), due to consistent operational policies.

The yearly averages across all banks reflect fluctuating sector-wide profitability. The highest average ROA was in 2023, at (1.464), while the lowest was recorded in 2021, at (0.599). A decline can be seen from 2017 to 2019, reaching the lowest in 2019 at (0.636). This might be an indication of economic or operational challenges during that period. However, the sector indicates a recovery phase from 2020, with steady improvements in profitability through 2023.

#### 4.1.2.2 Return on Equity (ROE) for Banks

Banks	Gulf Bank	Baghdad Bank	Assyria Bank	Middle East Bank	Trans Iraq Investment Bank	Yearly Average
Years						8
2016	1.848	7.158	5.835	4.319	5.444	4.921
2017	1.318	2.211	5.072	0.215	3.688	2.501
2018	0.188	1.557	1.764	0.858	2.368	1.347
2019	1.282	2.667	2.265	0.029	0.496	1.348
2020	0.000	7.255	5.420	0.791	1.112	2.916
2021	1.656	9.698	2.708	0.109	0.820	2.998
2022	1.662	1.520	4.380	0.005	3.116	2.137
2023	1.713	3.288	8.140	4.310	1.350	3.760

Table 7: Return on Equity (ROE) for Banks During the Period 2016-2023





Banks	Gulf Bank	Baghdad Bank	Assyria Bank	Middle East Bank	Trans Iraq Investment Bank	Yearly
Years	صادية والادارية	غري للعلوم الاقت	مجلة ا			Average
Average	<b>1.208</b> <sup>25</sup> (	مجلدو(41)محدد (	4.448	1.330	2.299	2.741

Source: Prepared by the researcher based on Excel outputs

As shown in Table (7) ROE data presents some interesting trends across years and banks. Baghdad bank always topped, with an average ROE of (4.419), backed by outstanding performances in the likes of the year 2020 with (7.255) and the year 2021 with (9.698). Assyria bank had its average ROE at (4.448) and has been very consistent throughout the years, particularly in the years 2016 and 2023, at (5.835) and (8.140), respectively. On the other hand, Middle East bank has the minimum average ROE of (1.330), reflecting difficulties in sustaining profitability, especially with very low values in 2017 and 2019 at (0.215) and (0.029), respectively. Gulf bank and Trans Iraq Investment bank are moderately performing, with averages of (1.208) and (2.299), respectively. Gulf bank has very little fluctuation, while Trans Iraq Investment bank has very inconsistent results, peaking in 2016 at (5.444) but nosediving in the other years.

The ROE averages over the years seem to decline from 2016 at (4.92) to 2018 at (1.347), possibly reflecting unfavorable economic or industry conditions. Improvement begins in 2020 (2.916) and increases through 2023 to (3.760), indicating favorable conditions or best management practices in the latter years. The average ROE across all banks and years is (2.741) with a huge variation across banks and years, which points to the importance of strategic management in securing consistent profitability.

#### 4.2 Statistical Results

#### **4.2.1Descriptive Statistics:**

Table(8) Descriptive Statistics for Financial Variables





	ROA	ROE	CR	LDR	DTA_RATIO	CASH_BAL
Mean	0.996139 ادية والادارية	2.740922	2.898819	59.42178	0.676507	100.8666
Median	0.708 <b>505</b> 5	(1)805953)	₩ <mark>887199</mark>	57.04966	0.434548	103.8877
Maximum	3.851282	9.698306	14.24636	99.75696	5.496635	150.3488
Minimum	0.001822	0.000481	0.015235	11.24865	0.236115	61.59558
Std. Dev.	1.000453	2.436831	2.869698	30.43841	0.955848	19.76047

Source: Prepared by the researcher based on the outputs of the EViews program As shown in table (8) descriptive statistics highlight some important insights that can be deduced from the variables under analysis. ROA (Return on Assets) has averages (0.996), with the high value of (3.851) and a low of (0.002). Such a wide span indicates that not all banks are equally efficient in generating profit from the use of their assets. A standard deviation of (1.000) implies that, though most of the banks reveal mid-range return, some banks either have a very high return or utterly fail regarding their asset usage.

ROE or Return on Equity: The mean of (2.741) and high of (9.698) with a low of (0.0005) is indicative of considerable variation as evidenced by the standard deviation of (2.437). This would, therefore, imply that while some banks are able to generate high returns on equity, others may be facing challenges in generating shareholder value.

Current Ratio (CR), representing the current assets to current liabilities, has a mean value of (2.899) and a standard deviation of (2.870). It reflects the liquidity position of banks. A mean value of more than 2 indicates that the average bank holds more current assets than liabilities, which is good in terms of liquidity and short-term financial health. The range, which is at the minimum (0.015) and at the maximum (14.246), insinuates that while some banks are very liquid-some having large current assets relative to their liabilities-others may have potential liquidity constraints.





LDR, or Loan-to-Deposit Ratio, has an average of (59.42), a high of (99.76), and a low of (11,25). Such wide variation could indicate that some banks have been more aggressive in lending relative to their deposit base, but others have remained conservative. A high value for standard deviation at (30.44) would point to the fact that some banks depend a great deal upon loans as their source of income, while others will tread conservatively.

DTA Ratio deposits to assets ratio is (0.677) and has a standard deviation of (0.956) it depicts that the bank, through deposits, can finance the major chunk of their assets. It infers that on average, the deposit base contributes largely in the balance sheet structure for funding most of their assets; however, variation (ranging between 0.236-5.497) implies divergence regarding the banks structuring balance sheet sheets. Banks with higher DTA ratios would be more reliant on deposits; those with a low ratio could be financing the assets through sources other than deposits.

CASH\_BAL represents an average of (100.87), a high of (150.35), and a low of (61.60). This wide range in cash reserves is indicative that banks manage liquidity differently. The standard deviation of (19.76) shows that while some banks keep a higher cash balance, probably to meet short-term obligations or as a buffer against financial shocks, others hold less cash and may be optimizing their liquidity.

#### 4.2.2Return on assets(ROA) tests:

**4.2.2.1Correlation Analysis:** Correlation Matrix of ROA and Independent Variables

Table(9) Correlation Matrix of ROA and Independent Variables

Covariance Analysis: Ordinary				
Date: 02/03/25 Time: 04:12				
Sample: 2016 2023				





Included observations: 40						
Correlation						
Probability 💐	وم الاقتصادية والإا	بجلة الغريNH	LDR	DTA_RATIO	CASH_BAL	
ROA	<b>2025</b> (1) فلاد (1	<b>بجلد</b> (21				
CR	-0.619192	1				
	0.0001					
LDR	0.663202	0.651037	1			
	0.0030	0.0000				
DTA_RATIO	-0.293656	-0.261553	0.558041	1		
	0.0524	0.0986	0.0002			
CASH_BAL	-0.682339	0.733454	0.898049	0.573202	1	
	0.0000	0.0004	0.0000	0.0001		

**Source:** Prepared by the researcher based on the outputs of the EViews program Table(9) represents the correlation analysis carried out between ROA and the independent variables highlights some interesting relationships. ROA is inversely correlated with CR at (-0.619), which would mean that when the current assets to current liabilities ratio increases, ROA goes down. A positive relationship occurs between ROA and LDR at (0.663), which means higher loan-to-deposit ratios associate with higher ROA. DTA\_RATIO inverse has a weak negative correlation with ROA at –(0.293), which would suggest a slight inverse relationship. Strong negative correlation with CASH\_BAL, (-0.682), indicating that the higher the cash balance ratio, the lower the ROA. These relations are at various levels statistically significant, implying that liquidity, lending practices, and deposit structure are the most relevant variables to determine profitability.

The correlation analysis confirms a statistically significant relationship between banking liquidity and profitability in the commercial banks under study. Specifically, liquidity variables such as CR, LDR, DTA\_RATIO, and CASH\_BAL exhibit meaningful correlations with profitability, supporting the hypothesis.





### 4.2.2.2Redundant Fixed Effects Test Results

Table (10): Redundant Fixed Effects Test Results

Redundant Fixed Effects (21)					
Equation: EQ02					
Test cross-section fixed effects					
Effects Test	Statistic	d.f.	Prob.		
Cross-section F 11.6179 (4,31) 0.0000					
Cross-section Chi-square	36.63696	4	0.0000		

Source: Prepared by the researcher based on the outputs of the EViews program As shown in table(10) the results from the Redundant Fixed Effects Test indicate that the Fixed Effects Model is a better specification than the Pooled OLS model. The Cross-section F-statistic is (11.6179), (p= 0.0000), and the Chi-square statistic is (36.6369), (p = 0.0000), indicating that both are statistically significant, thus rejecting the null hypothesis of redundant individual bank effects. This means that banks are quite different from each other, and these differences need to be controlled for, hence the application of a Fixed Effects Model in this context in order to capture better the variability in the liquidity-profitability relationship.

#### 4.2.2.3Hausman Test Results

#### Table(11) Hausman Test Results

Correlated Random Effects - Hausman Test					
Equation: EQ03					
Test cross-section random effects					
Test SummaryChi-Sq. StatisticChi-Sq. d.f.Prob.					
Cross-section random 46.47158 4 0.					

Source: Prepared by the researcher based on the outputs of the EViews program Table(11) represents the result of the Hausman test and it confirms that the choice of Fixed Effect Model(FEM) as appropriate for this study. Precisely, the Hausman test statistic is (46.4716(, with (p = 0.0000)) it strongly rejects the null hypothesis of zero correlation between individual bank-specific





effects and the explanatory variables. This would, therefore, imply that the estimates from Random Fffects Model(REM) will be biased, and hence FEM is more appropriate<sup>24</sup> aceurate<sup>1</sup> capture the liquidity-profitability nexus.

#### 4.2.2.4 Panel Cross-section Heteroskedasticity LR Test

Panel Cross-section Heteroskedastic	Panel Cross-section Heteroskedasticity LR Test						
Null hypothesis: Residuals are hom	oskedastic						
Equation: UNTITLED							
Specification: ROA CR LDR DTA	_RATIO CASH_BAI	LC					
	Value	df	Probability				
Likelihood ratio	Likelihood ratio 32.49561 5 0.0000						
Value df							
Restricted LogL -53.6874 35							
Unrestricted LogL	-37.4395	35					

Table(12) Panel Cross-section Heteroskedasticity LR Test

Source: Prepared by the researcher based on the outputs of the EViews program

Table(12) represents the result of the Panel Cross-Section Heteroskedasticity Likelihood Ratio Test for heteroskedasticity in the panel data: A likelihood ratio of (32.4956) with (5) degrees of freedom have a p-value of (0.0000), which, at a p-value less than (1%), is statistically significant. This implies that one rejects the null hypothesis (H<sub>0</sub>: Residuals are homoscedastic) by proving that across cross-sections, there exists heteroskedasticity in the variance of residuals.

However, heteroskedasticity usually results in inefficient and biased standard errors and thus poor reliability of statistical inference. Given that the model relies on a Fixed Effects approach, conventional homoskedasticity-consistent tests, such as Breusch-Pagan, are not applicable in this context. Thuse, the following estimation method is chosen in order to address this problem properly: GLS(Generalized Least Squares)estimation with Cross-Section SUR weights.





#### 4.2.2.5Generalized Least Squares (GLS) model with Cross-Section

### SUR weights، روجلة الغري للعلوم الاقتصالية الغري العلوم الاقتصالية الغري العلوم الاقتصالية الغري الغري

Table(13) Generalized Least Squares (GLS) model with Cross-Section

SUR weights results

Dependent Variable: ROA						
Method: Panel EGLS (Cross-section SUR)						
Date: 01/31/25 Time: 01:46						
Sample: 2016 2023						
Periods included: 8						
Cross-sections include	ed: 5					
Total panel (balanced	) observations: 4	0				
Linear estimation afte	er one-step weigh	ting matrix				
Variable	Coefficient	Std. Error	t-Statistic	Prob.		
CR	-0.11237	0.021312	-5.27262	0.0000		
LDR	0.012699	0.002361	5.377821	0.0000		
DTA_RATIO	-0.11472	0.043084	-2.66264	0.0122		
CASH_BAL	-0.00645	0.003008	-2.14494	0.0399		
С	1.295581	0.384732	3.367487	0.002		
Effects Specification						
Cross-section fixed (d	lummy variables)	)				
	Weighted	Statistics				
R-squared	0.921402	Mean depend	lent var	3.364752		
Adjusted R-squared	0.901118	S.D. depende	ent var	5.23825		
S.E. of regression	1.06693	Sum squared	resid	35.28851		
F-statistic	45.4264	45.4264 Durbin-Watson stat 2.3674				
Prob(F-statistic)	0.000000					
Unweighted Statistics						
R-squared	0.641449	Mean depend	lent var	0.996139		
Sum squared resid	13.99616	Durbin-Wats	on stat	2.287305		

**Source:** Prepared by the researcher based on the outputs of the EViews program As shown in table(13) the Generalized Least Squares (GLS) model with Cross-Section SUR weights is remarkably more efficient and precise than the Fixed Effects Model. The R-squared, being very high at (0.9214), explains that (92.14%) variation in ROA is explained by independent





variables once the problem of heteroskedasticity and cross-sectional dependence مجلة الغرى للعلوط المنابية والمعاوية المعاوم

The findings indicate that CR has a statistically significant negative effect on profitability as measured by ROA, which suggests that too much holding of liquidity may be reducing returns. On the other hand, the LDR has a positive and significant relationship with ROA, indicating that the higher utilization of loans improves profitability. It can be observed that the DTA\_RATIO has a negative impact, indicating that a higher deposit base in relation to total assets may reduce profitability due to higher funding costs. The Cash Balance, CASH\_BAL also has a negative impact on ROA, supporting the earlier assertion that too much cash reserves are simply idle and not utilized effectively for profit-generating activities.

The F-statistic is (45.4264, p = 0.0000), which confirms the overall significance of the model, while the Durbin-Watson statistic is (2.3674), indicating very slight concerns about autocorrelation. In light of these results, the GLS model does an excellent job in enhancing the precision and reliability of the estimates by correcting for heteroskedasticity and crosssectional correlation. The findings underscore the relevance of liquidity management in the optimization of bank profitability, with the strategic balance between maintaining liquidity and maximizing returns.

Based on the regression results, the research hypothesis stating that there is a statistically significant effect of liquidity and profitability (ROA) can be confirmed

## 4.2.2.6Autocorrelation and Partial Correlation Results for ROA (GLS - Cross-section SUR)

#### Table(14) Autocorrelation and Partial Correlation of ROA Residuals





Date: 02/03/25						
Sample: 2016 202	23					
Included observa	الغري للعلوم الاقتصادية وا lions: 40	مجلة				
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.* .	.* .	1	-0.182	-0.182	1.4248	0.233
	.* .	2	-0.333	-0.379	6.3316	0.062
	.* .	3	0.071	-0.099	6.5579	0.087
.  *.		4	0.15	0.021	7.6032	0.107
.* .	.* .	5	-0.197	-0.186	9.4587	0.092
	.* .	6	-0.047	-0.093	9.5674	0.144
	.* .	7	0.038	-0.144	9.6419	0.210

**Source**: Prepared by the researcher based on the outputs of the EViews program As shown in table(14) the result of the autocorrelation and partial correlation for residuals of the ROA model indicates that none of the lags considered has significant autocorrelation or serial correlation. The p-values for all lags are above (0.05), confirming independence of residuals taken at different times for the same model. This indicates that the model is well-specified regarding autocorrelation and that the residuals do not have problematic serial dependence. Thus, it supports the model's validity without any problem regarding autocorrelation in residuals



4.2.2.7The Jarque-Bera normality test results for ROA:

Picture(1) the Jarque-Bera normality test results





Picture(1) represents the Jarque-Bera test for the Return on Assets (ROA) model, estimated using GL S1(Gross-section SUR) result and it shows that the residuals in the regression<sup>2</sup>thodel are normally distributed, and thus the statistical inferences based on them are reliable.

The Jarque-Bera statistic is (0.04) with a probability of (0.9795), implying that the p-value is greater than (0.05); hence, the null hypothesis of normality cannot be rejected. This would suggest that residuals do not significantly deviate from normal distribution

#### 4.2.3 Return On Equity Tests:

#### 4.2.3.1Correlation Matrix of ROE and Independent Variables

Covariance Ana	lysis: Ordina				
Date: 02/03/25 Time: 03:34					
Sample: 2016 2	023				
Included observ	ations: 40				
Correlation					
Probability	ROE	CR	LDR	DTA_RATIO	CASH_BAL
ROE	1				
CR	-0.55591	1			
	0.0002				
LDR	0.625529	0.651037	1		
	0.0000	0.0000			
DTA_RATIO	-0.34328	-0.26155	0.558041	1	
	0.0280	0.0986	0.0002		
CASH_BAL	-0.68751	0.733454	0.898049	0.573202	1
	0.0000	0.0000	0.0000	0.0001	

Table(15) Correlation Matrix of ROE and Independent Variables

**Source:** Prepared by the researcher based on the outputs of the EViews program As shown in table(15) the correlation analysis gives a number of important associations of ROE and the independent variables. First, the current ratio of ROE to CR is (-0.556), which shows that a high level of liquidity would decrease profitability. Second, there is a high negative correlation of ROE with Cash Balance, or CASH\_BAL, with a value of (-0.688), suggesting that





high cash reserves compared to liabilities lower the profitability. On the other hand, LDR is positively related to ROE with (0.626) to imply that the higher the lending relative (1) to the posities, the better the profitability. Lastly, DTA\_RATIO also relates negatively with ROE as represented by (-0.343), which shows that higher deposits to assets reduce profitability. These relations are at various levels statistically significant, implying that liquidity, lending practices, and deposit structure are the most relevant variables to determine profitability.

The correlation analysis confirms a statistically significant relationship between banking liquidity and profitability in the commercial banks under study. Specifically, liquidity variables such as CR, LDR, DTA\_RATIO, and CASH\_BAL exhibit meaningful correlations with profitability, supporting the hypothesis.

#### 4.2.3.2Redundant Fixed Effects Test Results for ROE

Redundant Fixed Effects Tests			
Equation: EQ02			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.144243	(4,31)	0.0084
Cross-section Chi-square	17.13447	4	0.0018

Table(16) Redundant Fixed Effects Test Results

Source: Prepared by the researcher based on the outputs of the EViews program As shown in table(16) the results from the Redundant Fixed Effects Test indicate that the Fixed Effects Model is a better specification than the Pooled OLS model. The Cross-section F-statistic is (4.144243), (p= 0.0084), and the Chi-square statistic is (17.13447), (p = 0.0018), indicating that both are statistically significant, thus rejecting the null hypothesis of redundant individual bank effects. This means that banks are quite different from each





other, and these differences need to be controlled for, hence the application of a Fixed Effects. Model in this context in order to capture better the variability in the Repaidity profitability relationship.

#### 4.2.3.3Hausman Test Results for ROE:

Table(17) Hausman Test Results

Correlated Random Effects - Haus			
Equation: EQ02			
Test cross-section random effects			
Test Summary	Prob.		
Cross-section random	16.57697	4	0.0023

Source: Prepared by the researcher based on the outputs of the EViews program

Table(17) represents the result of the Hausman test and it confirms that the choice of Fixed Effect Model(FEM) as appropriate for this study. Precisely, the Hausman test statistic is (16.57697, with p = 0.0023) it strongly rejects the null hypothesis of zero correlation between individual bank-specific effects and the explanatory variables. This would, therefore, imply that the estimates from Random Effects Model(REM) will be biased, and hence FEM is more appropriate to accurately capture the liquidity-profitability nexus.

#### 4.2.3.4Panel Cross-section Heteroskedasticity LR Test for ROE:

Table(18) Panel Cross-section Heteroskedasticity LR Test for ROE

Panel Cross-section Heteroskedasticity LR Test						
Null hypothesis: Residua	als are homoskedastic					
Equation: EQ02						
Specification: ROE CR	LDR DTA_RATIO C	ASH_BAL C				
	Value df Probability					
Likelihood ratio	Likelihood ratio 13.73448 5 0.0174					
LR test summary:						
Value df						
Restricted LogL -87.3884 35						
Unrestricted LogL	-80.5211	35				

Source: Prepared by the researcher based on the outputs of the EViews program





Table(18) represents the result of the Panel Cross-Section Heteroskedasticity Likelihood Ratio Test for heteroskedasticity in the panel data: A likelihood ratio of (13.73448) With (5) degrees of freedom have a p-value of (0.0174), which, at a p-value less than 1%, is statistically significant. This implies that one rejects the null hypothesis (Ho: Residuals are homoscedastic) by proving that across cross-sections, there exists heteroskedasticity in the variance of residuals.

However, heteroskedasticity usually results in inefficient and biased standard errors and thus poor reliability of statistical inference. Given that the model relies on a Fixed Effects approach, conventional homoskedasticity-consistent tests, such as Breusch-Pagan, are not applicable in this context. Thuse, the following estimation method is chosen in order to address this problem properly: GLS(Generalized Least Squares)estimation with Cross-Section SUR weights.

# **4.2.3.5**The regression analysis for ROE Generalized Least Squares (GLS) model with Cross-Section SUR weights method:

Table(19) Generalized Least Squares (GLS) model for ROE with Cross-

Section SUR weights results

Dependent Variable	: ROE			
Method: Panel EGL	S (Cross-section S	SUR)		
Date: 01/31/25 Tir	me: 03:07			
Sample: 2016 2023				
Periods included: 8				
Cross-sections inclu	ided: 5			
Total panel (balance	ed) observations: 4			
Linear estimation at	fter one-step weigh	nting matrix		
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CR	-0.15036	-2.59008	0.0145	
LDR 0.023353 0.011584			2.016017	0.0525
DTA_RATIO	-0.29695	0.099564	-2.98248	0.0055

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CASH DAI	0.02017	0.000128	2 20516	0.0024
CASH_DAL	-0.03017	0.009128 -3.30510		0.0024
C	5.033206	1.297493 3.879177		0.0005
واعداريه	Effects Spe			
Cross-section fixed				
	Weighted	Statistics		
R-squared	0.899186	Mean depend	1.621826	
Adjusted R- squared	0.87317	S.D. depende	2.799435	
S.E. of regression	1.090827	Sum squared	36.88702	
F-statistic	34.56231	Durbin-Wats	1.834099	
Prob(F-statistic)	0.000000			
R-squared	0.471928	Mean depend	2.740922	
Sum squared resid	122.2951	Durbin-Wats	1.706064	

**Source:** Prepared by the researcher based on the outputs of the EViews program Table(19) represents the regression analysis of ROE, using the method of Panel EGLS. The results show that the Current Ratio of CR negatively influences ROE and has a significant value of (0.15036) with a p-value of (0.0145). Therefore, with the increase in liquidity, the profitability decreases. In addition, Deposit to Asset Ratio (DTA\_RATIO) and Cash and Cash Equivalents to Current Liabilities Ratio (CASH\_BAL) show negative and significant impacts on ROE. For these ratios, the corresponding estimated coefficients were (-0.29695) and (-0.03017) respectively, while their corresponding p-values were (0.0055) and (0.0024) respectively.

The negative sign of DTA\_RATIO indicates that the higher the deposits in relation to total assets, the more the profitability may be strained, probably because of the lower yielding asset mixes or higher costs related to deposit liabilities. In the same way, the negative coefficient for the CASH\_BAL ratio signifies that holding a higher proportion of cash and cash equivalents relative to current liabilities reduces profitability. This might be due to the





opportunity cost of holding excess cash instead of investing in higher-return assets or lending opportunities. مجلة الغرى

On the other hand, DR is D

The overall performance of the model is very strong, with an R-squared of (0.8992) and an Adjusted R-squared of (0.8732), showing that about (87.3%) of ROE variation is explained by independent variables. This is supported by the overall significance of the model, with an F-statistic of 34.5623, with a p-value of (0.0000). The Durbin-Watson statistic of (1.8341) does not indicate severe autocorrelation issues.

Overall, the results suggest that liquidity ratios play a significant role in influencing profitability which support the study hypothesis, and addressing heteroskedasticity with GLS improves the model's reliability.

## **4.2.3.6Autocorrelation and Partial Correlation Results for ROE (GLS -Cross-section SUR)**

Date: 02/03/25 Time: 01:17						
Sample: 2016 2023						
Included observations: 40						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.  *.	.  *.	1	0.086	0.086	0.3197	0.572
** .	** .	2	-0.268	-0.278	3.501	0.174
** .	.* .	3	-0.207	-0.167	5.4378	0.142
.* .	.* .	4	-0.108	-0.169	5.9847	0.200
		5	0.058	-0.033	6.1458	0.292
.* .	** .	6	-0.078	-0.219	6.4469	0.375
. .	. .	7	0.017	-0.024	6.4617	0.487

Table(20) Autocorrelation and Partial Correlation of ROE Residuals

Source: Prepared by the researcher based on the outputs of the EViews program





As shown in table(20) the result of the autocorrelation and partial correlation for residuals of the ROE model indicates that none of the lags considered has significant autocorrelation of settial correlation. The p-values for all lags are above (0.05), confirming independence of residuals taken at different times for the same model. This indicates that the model is well-specified regarding autocorrelation and that the residuals do not have problematic serial dependence. Thus, it supports the model's validity without any problem regarding autocorrelation in residuals.



#### 4.2.3.7The Jarque-Bera test results for ROE model:

Picture(2) the Jarque-Bera normality test results

Picture(2) represents Jarque-Bera test for the Return on Equity (ROE) model, estimated using GLS (Cross-section SUR) result and it shows that the residuals in the regression model are approximately normally distributed, and thus the statistical inferences based on them are reliable.

The Jarque-Bera statistic is (2.48) with a probability of (0.2888), implying that the p-value is greater than (0.05), hence, the null hypothesis of normality cannot be rejected. This would suggest that residuals do not significantly deviate from normal distribution.

#### 5. Conclusions and Recommendations:





#### **5.1Conclusions:**

1 .Liquidity management plays a crucial role in determining profitability, the study shows that Repaidity ratios, such as the current ratio (CR) and the loan-to-deposit ratio (LDR), significantly impact the profitability of commercial banks, with liquidity levels directly influencing both return on assets (ROA) and return on equity (ROE).

2 .The findings suggest that a higher current ratio (CR) and higher depositto-asset ratio (DTA) may reduce profitability. This indicates that while liquidity is essential for financial stability, excessively high liquidity may result in underutilization of assets, thus lowering returns.

3 .Positive impact of LDR on profitability which means that a higher loanto-deposit ratio (LDR) tends to increase profitability, as it implies that more funds are being utilized for productive lending activities, thereby enhancing the banks' earnings potential.

4 .Cash balance (CASH\_BAL) also negatively affects profitability, suggesting that banks need to find an optimal balance between maintaining enough liquidity for operations and minimizing the opportunity costs of holding excess cash.

#### 5.2Recommendations

1. Banks should carefully manage their liquidity to avoid excessive levels of cash or deposits that could lead to suboptimal returns. Ensuring an optimal current ratio (CR) and deposit-to-asset ratio (DTA) can help banks maintain financial stability while maximizing profitability.

2 .To improve profitability, banks should focus on increasing their loan-todeposit ratio (LDR) in a controlled manner. By expanding productive





lending activities, banks can improve their earnings potential while managing credit siskieffectively مجلة الغري الغري

3.Banks need to state a balance between maintaining adequate cash reserves for operational needs and minimizing the opportunity cost of holding excessive cash. Efficient cash management can lead to better returns on assets and equity.

4 .Continuous monitoring of key financial ratios, such as ROA, ROE, CR, LDR, and DTA, is essential to assess the financial health of the banks. Regular analysis will allow banks to make timely adjustments in their liquidity and profitability strategies.

5.Banks should invest in advanced technology and data analytics to enhance their ability to manage liquidity and profitability more effectively. Strong risk management frameworks should also be in place to mitigate potential risks associated with lending and liquidity.

6 .Developing a robust financial strategy that aligns liquidity management with profitability goals will ensure sustainable growth. This strategy should be flexible enough to adapt to market fluctuations and changes in the banking environment.

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