



**Tikrit Journal of Administrative
and Economic Sciences**

مجلة تكريت للعلوم الإدارية والاقتصادية

EISSN: 3006-9149

PISSN: 1813-1719



**Measuring and Analyzing the Capital Structure and Its Impact on
Financial Efficiency: An Applied Study on a Sample of Iraqi
Commercial Banks**

**Abdullah Mhaimeed Hawas*^A, Abduljaleel Ismael Othman^A,
Ali Hasani Mohammed^B**

^A College of Administration and Economics/Tikrit University

^B University Presidency/ Tikrit University

Keywords:

Capital Structure, Internal Financing Sources,
Financial Efficiency.

ARTICLE INFO

Article history:

Received	03 Dec. 2025
Received in revised form	04 Jan. 2026
Accepted	07 Jan. 2026
Available online	30 Jun. 2026

© THIS IS AN OPEN ACCESS ARTICLE UNDER
THE CC BY LICENSE

<http://creativecommons.org/licenses/by/4.0/>



***Corresponding author:**

Abdullah Mhaimeed Hawas

College of Administration and
Economics/Tikrit University



Abstract: The present paper aims to evaluate the effect of the capital structure (both internally and externally) on the Financial Efficiency of the Iraqi commercial banks that have been registered with the Iraq Stock Exchange from 2013 through 2021. An analysis of the published financial statements of eight private banks was conducted over this same time frame. Additionally, the annual reports of these banks were reviewed through using SPSS software for analyzing the data, and the Panel Data methodology. The results indicate an evident decrease in the Financial Efficiency of all commercial banks over the course of the study. This decrease can be directly linked to the severe crisis faced by Iraqi banks due to terrorist activity that occurred in 2014, and the COVID-19 pandemic in 2020. These crises severely impact the ability of the banks to realize their desired level of financial performance. Recommendations include that the Financial Efficiency of the Iraqi banks will need to be enhanced based upon the balance achieved between maintaining a conservative capital structure and managing the risk associated with such a structure. Therefore, there is a need to build both internal and external funding options, especially obtaining loans from the Central Bank. It is also important to manage the relationship between the profit earned and the resources used to earn such profits. Internal performance needs to be improved to control the amount of cash available, and improve the indicators of Financial Efficiency to achieve better overall performance and higher profits.

قياس وتحليل هيكل رأس المال وأثره على الكفاءة المالية: دراسة تطبيقية على عينة من البنوك التجارية العراقية

علي حساني محمد
رئاسة الجامعة
جامعة تكريت

عبد الجليل اسماعيل عثمان
كلية الإدارة والاقتصاد
جامعة تكريت

عبد الله محييد حواس
كلية الإدارة والاقتصاد
جامعة تكريت

المستخلص

هدفت الدراسة إلى تحليل تأثير هيكل رأس المال (الداخلي والخارجي) على الكفاءة المالية للبنوك التجارية العراقية المدرجة في بورصة العراق خلال الفترة من 2013 إلى 2021. تم اختيار عينة قصدية مكونة من ثمانية بنوك خاصة، وتم جمع البيانات من القوائم المالية المنشورة والتقارير السنوية لهذه البنوك. وتم تحليل البيانات باستخدام برنامج (SPSS) ومنهجية (بيانات البائل)، وكشفت النتائج عن انخفاض ملحوظ في الكفاءة المالية لجميع البنوك التجارية خلال فترة الدراسة. ويعزى هذا الانخفاض إلى تأثير الأزمات التي واجهتها البنوك العراقية، مثل العمليات الإرهابية في عام 2014 وجائحة كوفيد-19 في عام 2020، مما أثر بشكل كبير على قدرة البنوك على تحقيق الكفاءة المالية المطلوبة، وتتمثل التوصيات الرئيسية في أن تحسين الكفاءة المالية للبنوك العراقية يتطلب تعزيز التوازن بين هيكل رأس المال المحافظ والمخاطر، يجب التركيز على تعزيز مصادر التمويل الداخلية والخارجية على حدٍ سواء، وخاصة القروض من البنك المركزي. بالإضافة إلى ذلك، من الضروري مراقبة العائد مقابل التكلفة وتحسين العلاقة بين الأرباح والموارد المستخدمة. علاوة على ذلك، ضرورة التحكم في مستويات السيولة، وتعزيز مؤشرات الكفاءة المالية لتحسين الأداء الكلي وزيادة الأرباح.

الكلمات المفتاحية: هيكل رأس المال، مصادر التمويل الداخلية، الكفاءة المالية.

1. Introduction

Banks are viewed by all as an essential component of facilitating the performance of economic functions across different countries. The ongoing development of the environment economically; the growth of participation in global financial markets; and the emergence of new financial institutions have given banks and commercial companies the opportunity to access required financing in quantities, at terms, and under conditions that fit their specific requirements. As part of the area of debt management and liability management, obtaining funding sources is a function of identifying and obtaining funding from other financial institutions through a variety of methods including borrowing, offering and selling securities, certificates of deposits, debt securitization, etc. (financing instruments). The purpose of this research is to explore the bank's capital structure and examine how the bank's capital structure affects the bank's financial efficiency, in order to understand better the current status of the commercial banks and to evaluate

their financial condition throughout past time frames. Additionally, this research will seek to estimate their future based on a set of financial indicators and measures that illustrate the operational and financial efficiency of their operations.

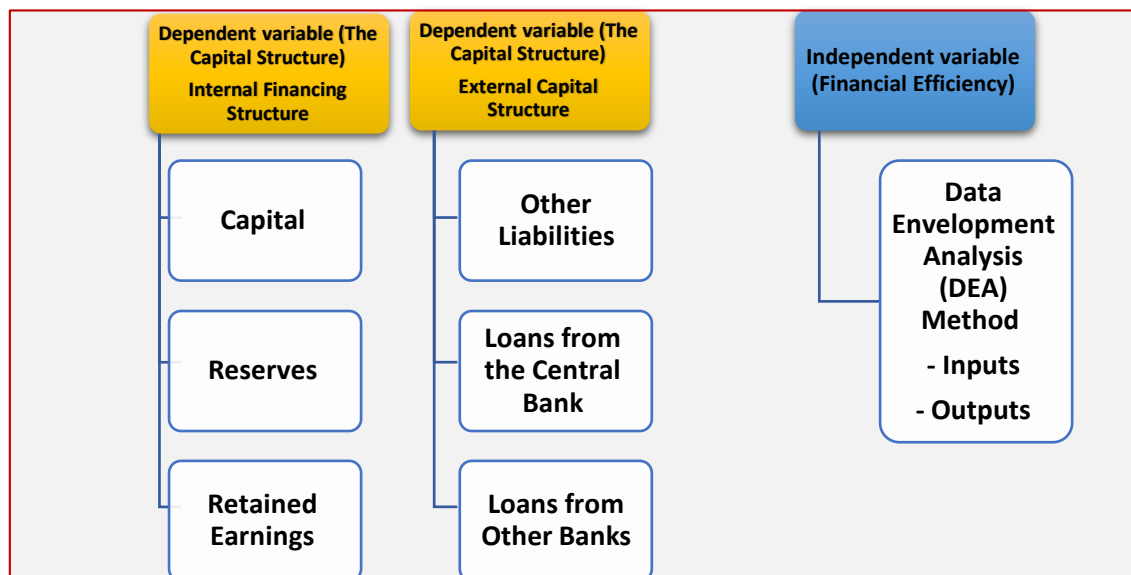
2. **Objectives of the Study:** The purpose of this study is to determine how much commercial banks' capital structures (internal and external funding) influence the Financial efficiency of the commercial banks studied.
3. **Significance of the Study:** The goal of this study is to be able to use data about commercial bank's capital structure to assist in identifying financial problems for the managers of commercial banks, and consequently to increase availability of funds for them. The method used to accomplish the objective of the study will be a financial evaluation with scientific standards and metrics. Furthermore, the study also intends to offer some recommendations that could increase the level of financial efficiency of commercial banks in Iraq and help these banks to better respond to possible financial risks and contribute to the overall financial and economic stability.
4. **Problem of the Study:** The availability and access of internal and external funding is one of the most important factors for commercial banks. The recent history that Iraq has experienced, including extreme political and security instability, as well as the effects of the Covid-19 pandemic from 2012 – 2021, greatly diminished the ability of commercial banks to fulfill their responsibilities as a vital component in the financial system. Therefore, it was not surprising that the challenges experienced by the commercial banks had an impact on the banks' ability to efficiently utilize internal and external funding sources; as such this had a negative effect on both the banks' financial efficiency, as well as the banks' total financial performance. Accordingly, the central problem of the study revolves around the following main question:
 - ❖ Does the internal and external capital structure have a statistically significant impact on the financial efficiency of the commercial banks included in the study?
5. **Hypotheses of the Study:** This study is based on a main hypothesis, which is:
Main Hypothesis: There is a statistically significant impact of the capital structure on the financial efficiency of the commercial banks included in the study.

This main hypothesis branches into the following two sub-hypotheses:

1.First Sub-Hypothesis: There is a statistically significant impact of the internal financing structure on the financial efficiency of the commercial banks included in the study.

2.Second Sub-Hypothesis: There is a statistically significant impact of the external financing structure on the financial efficiency of the commercial banks included in the study.

6. The Hypothetical Framework of the Study



Chapter One: The Theoretical Aspect of the Study

1. The Capital Structure: Commercial institutions have several options to obtain the necessary financing to meet their needs, whether from internal or external sources, and for different time periods, whether short-term or long-term. These sources can be classified according to several criteria, the most prominent of which are classification by source, classification by ownership, and classification by time horizon. (Harsimran Kaur, 2019:10) (Atiyah & Kurdi, 2025: 516)

Financing sources can be classified according to the following criteria:

A.By Source: Financing sources are divided into:

- ❖ **Internal Sources:** These include retained earnings, depreciation reserves, and the sale of assets.
- ❖ **External Sources:** These include loans, bond issuance, and credit facilities provided by suppliers.

B.By Ownership: Sources are classified into:

- ❖ Owner Financing Sources: Such as capital increases and retaining all or part of the profits.
- ❖ Lender Financing Sources: These include loans provided by banks, credit facilities from equipment and machinery suppliers, and financial leasing contracts.

C.By Time Horizon: Sources are divided into:

- ❖ Long-Term Financing
- ❖ Medium-Term Financing
- ❖ Short-Term Financing (Khalaf, 2015:87).

2. Criteria for Selecting Financing Sources: When a company makes decisions regarding the composition of its assets, the financial management evaluates potential financing sources based on a set of fundamental factors, which include the following: (Abu Shaban, 2017: 66)

- A. Size of Financing Needs and Time Frame: The amount of funds required by the company and the time period during which these financial resources will be needed are determined.
- B. Suitability of Financing Sources: The selected financing sources must align with the nature of the uses to be financed to ensure financial efficiency.
- C. Cost of Financing: The cost of available financing should be compared with prevailing market rates and the expected return on investment to ensure economic feasibility.
- D. Repayment schedule & Cash Flow - The Maturity Dates of the Financing and the Timing of Expected Cash flow from the Assets Being Financed Must Be Aligned
- E. Restrictions and Covenants - Borrowing Companies May Be Subject to Restrictions When Using Certain Financing Sources (e.g., Prohibiting Additional Borrowing, Limiting Dividend Distributions; Requiring Maintenance of Certain Financial Ratios During the Term of the Financing). (Ben Sassi and Qureshi, 2011: 80)

After the financial management completes the process of determining the size and type of financing needs, it must decide on the appropriate financing sources and determine the optimal mix of these sources in terms of quantity, type, and origin, while considering the following factors: (Abu Shaban, 2017:77)

- ❖ **Impact of Debt on the Company's Profitability and Value:** Since the primary goal of financial management is to maximize the company's present value, the effect of debt on Financial efficiency must be evaluated.
- ❖ **Appropriate Level of Debt:** Determining the optimal debt ratio that aligns with the company's overall financial position.
- ❖ **Balance Between Financing Sources:** Achieving the optimal balance between short-term and long-term financing sources, as well as equity, in a way that aligns with the nature of the asset structure.

3. The Concept of Financial Efficiency: Technology plays an effective role in supporting management accounting by measuring changes in productivity and promoting continuous improvement over time. The importance of using this technology lies in evaluating the performance of banks, as it facilitates the comparison of efficiency among a large number of them. In addition, it has a number of benchmarks as to how well each bank performs using the output from various mathematical models. Compared to a traditional financial ratio analysis, the most significant advantage of this type of technology is its ability to conduct a completely independent review of each bank's efficiency through combining a variety of financial ratios into a single overall efficiency measurement. (Fatima Zahra, 2017:98). As such, banks can be measured relatively against each other, with a higher efficiency ratio indicating better Financial efficiency than one bank as compared to another bank. (Hussein et al., 2020:460). On the other hand, businesses have been utilizing their financial reports and cash flow analyses for years to compare their Financial efficiency over multiple time frames, and by comparing the fluctuations of operating costs, revenues and net income, they can gain a high degree of accuracy in determining their ability to dynamically create earnings whether by increasing revenue or decreasing expenses, thus creating increased efficiency for both their financial and strategic performance. (Omondi-Ochieng, 2018: 191)

The efficiency of the use of money or resources is how well an organization meets its monetary goals. An organization is said to have high financial efficiency when it achieves its financial goals using the minimum of money. To measure financial efficiency an organization should look for ways to minimize all forms of financial waste. For example, an organization could compare the revenue that it generates to the expenses that it incurs. (Wanke et al., 2020: 460), The efficiency of completing a particular task

with minimal time and effort is one way to define the term efficiency. (Omondi-Ochieng, 2018: 190). Efficiency is defined in economics as the productivity with which an organizations' inputs are converted into outputs. Productivity is generally measured by the number of units produced per dollar spent on labor and materials, therefore if the number of units produced increases per dollar then the productivity has increased, however if the number of units produced decreases per dollar then the productivity has decreased. (Begam, 2020: 12) (Zixue Zhao, 2020: 9).

4. Factors Influencing Financial Efficiency: The main goal of many business organizations today is to be as financially efficient as possible, and in order to do this; they need to consider all of the different internal and external factors that can influence how efficiently an organization uses its capital. If there is no way to determine these factors accurately, it could lead to the inefficient use of capital within an organization and ultimately negatively affect the overall profitability of the organization. Some of the primary factors include (Muiruri & Wepukhulu, 2018: 108):

A. Financing Decisions: Financing decisions are a critical mechanism for allowing organizations to grow positively and therefore contribute to improved financial efficiency.

B. Corporate Governance: Corporate governance provides effective oversight of an organization's actions by giving management and stakeholders accurate information and providing transparent disclosure that protects the financial interests of the stakeholders and increases the efficiency of an organization.

C. Mergers and Acquisitions: As globalization continues to occur and as international markets continue to integrate into one another, mergers and acquisitions have evolved into the primary method for organizations to accomplish multiple objectives and increase their competitive position.

D. Size and Age of the Organization: Small and medium-sized enterprise financing strategies are distinctly different than large and old company financing strategies. Both of these factors are fundamental in explaining why organizations make certain financial decisions (Ayuba et al., 2019: 61).

5. The Concept of Data Envelopment Analysis (DEA): The DEA identifies inputs and outputs using an intermediary model. The intermediary model views banks as financial intermediary institutions. It defines deposits as inputs since the core function of banks is to borrow money from deposits and then loan it to another party. The use of the revenue approach for

identifying a bank's relative efficiency is superior to identifying relative efficiency through either profit measures or cost measures due to the inability to identify production price data in a reliable and transparent manner. (Dick, Yasin, 2016: 17) DEA is defined as a flexible method that can be applied under various economic assumptions about returns to scale. (Samoilenko & Osei-Bryson, 2013: 17) DEA is a non-parametric mathematical programming technique that provides a measure of relative technical efficiency for different decision-making units operating in the same field and performing similar tasks. Efficiency is calculated based on the analysis of multiple inputs and outputs using linear programming. This analysis is also used to evaluate the efficiency of various heterogeneous fields. (Visani et al., 2015:13) (Hussein, 2017:50)

- 6. Application and Measurement of Data Envelopment Analysis:** The DEA (Data Envelopment Analysis) is a method of measuring financial efficiency through an analysis of the relationships between input variables and output variables to assess how effectively the financial resources are being used as efficiently as possible using various financial ratios. (Salamouris & Halkos, 2004:18). Efficiency reflects the best possible relationship between the quantity and cost of input(s) relative to the quantity and cost of the output(s), generated by the production process. In contrast, relative efficiency measures a firm's performance against that of all firms in the same industry that achieve the most efficient results as opposed to measuring a firm's efficiency in isolation. Therefore, this method presents a greater perspective of the degree to which a firm's overall efficiency level is greater than those of their competing firms within the same industry. (Bosnia et al., 2019:7)

Chapter Two: The Practical Aspect of the Study

- A. Study Population and Sample:** the focus is on the banking sector, since it represents an essential factor that drives development of economy in each country; the study population is composed of banks listed at the stock exchange in Iraq, where there are (24) banks; based on this a sample of (8) banks were selected, they are: (Iraqi Investment Bank, Al Mansour Investment Bank, Mosul Development and Investment Bank, National Bank of Iraq, Iraqi Commercial Bank, Trans Iraq Investment Bank, Erbil Bank, and Development and Investment Finance Bank). The study time span is

from 2013 through 2021, for a total of nine (9) years. The selection of the sample was based upon two major criteria:

- 1 .Consistency in Disclosure: Only banks that disclosed their financial statements without break throughout the study duration were included.
2. Data Availability: The presence of available data to measure the study's variables was required.

B. Financial Analysis of the Capital Structure

❖ **Financial Analysis of Internal Financing Sources:** This table shows the average values of the banks' internal capital structure indicators (capital, reserves, and retained earnings) for the banks that were analyzed during the period between 2013 to 2021.

Table (1): Averages of Internal Financing Structure Ratios to Total Assets

Internal sources of financing Years	"Retained earnings"	"Reserves"	"Capital"
2013	0.0336	0.0568	0.4487
2014	0.0285	0.0413	0.5111
2015	0.0207	0.0345	0.5012
2016	0.0167	0.0309	0.4847
2017	0.0156	0.0283	0.4860
2018	0.0094	0.0192	0.4742
2019	0.0083	0.0161	0.4763
2020	0.0135	0.0162	0.4388
2021	0.0119	0.0154	0.3952
"All years"	0.0175	0.0287	0.468

Source: Prepared by the researcher based on the outputs of Eviews-12 software.



Figure (2): Averages of the ratios of internal financing sources to total assets.
Source: Prepared by the researcher based on the outputs of Excel software.

A brief overview of the internal financing options for the sampled banks over a time frame of nine years can be found in Table (1), as well as the respective levels of those options, specifically capital, reserves and retained earnings. The information below represents a specific analysis of that information.

- A. **Capital:** Capital is slightly volatile throughout the years; the maximum was recorded in 2014 at 0.5111 and the minimum was recorded in 2021 at 0.3952. A downward trend of capital from 2014 to 2021 indicates either a decline in the bank's ability to provide internal funding through capital or an increase in reliance on external funding for the bank's financial needs.
- B. **Reserves:** There has been a constant decline in reserve levels from 2013 (0.0568) to 2021 (0.0154). The reduction in reserve levels suggests that the bank uses the reserves to fund their operational requirements and/or distributes the profit reserves created by the bank to shareholders rather than retains them.
- C. **Retained Earnings:** The retained earnings have demonstrated a downward trend each year from 2013 (0.0336) to 2021 (0.0119). This downward trend of retained earnings may indicate that the bank distributes a substantial amount of its profits to shareholders and does not retain them in the business.

D. Overall averages for internal financing sources show that (on average) bank capital was the largest source (0.468), followed by reserves (0.0287) and retained earnings (0.0175). The overall averages suggest that retained earnings and reserves represent less than one percent each of internal financing sources.

E. Internal financing sources are declining in most banks. These declines may reflect either an evolving financing strategy or some other factor. In particular, if internal financing has declined while total assets have grown, this indicates that banks have turned to more frequent use of external financing sources or that they have experienced a rapid growth in total assets that outpaced the growth of internal financing sources. Declines in internal financing may be related to a variety of causes, including increases in investment, decreases in retained earnings, or changes in the banking firm's financing policies. Therefore, banks may want to consider reviewing and revising their financial policies to support higher levels of internal financing or to identify additional opportunities for external financing.

❖ Financial Analysis of External Financing Sources: The following table presents the average values of the external financing structure indicators, which include other liabilities, loans from the central bank, and loans from other banks, during the period from 2013 to 2021 for the banks included in the study sample.

Table (2): Averages of the ratios of external financing sources to total assets

External Sources of financing	Other liabilities	Loans from the central bank	Loans from other banks
Years			
2013	0.0170	0.0350	0.0137
2014	0.0150	0.0231	0.0128
2015	0.022	0.0209	0.0156
2016	0.0170	0.0246	0.0175
2017	0.0101	0.0173	0.01021
2018	0.0140	0.0198	0.0197
2019	0.0100	0.0151	0.0197
2020	0.0130	0.0429	0.0307
2021	0.0140	0.0419	0.0188
"All years"	0.0150	0.0268	0.0174

Source: Prepared by the researcher based on the outputs of Eviews-12 software

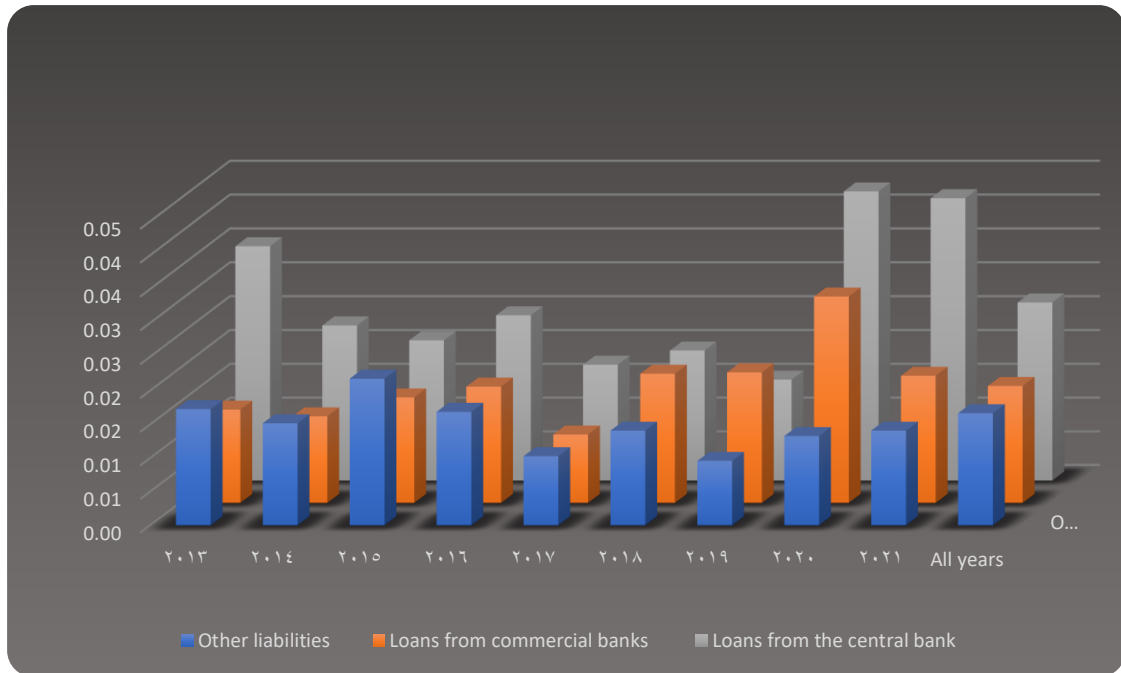


Figure (3): Averages of the indicators of the ratio of external financing sources to total assets

Source: Prepared by the researcher based on the outputs of Excel software.

Table (2) presents the average ratios of external financing sources to total assets over several years, from 2013 to 2021. The data below demonstrates the trends for each of these ratios which illustrate how much banks have been dependent on external funding as opposed to all of their assets.

1. Lending from Other Banks: In 2017, we saw a low ratio (0.0102) representing less of a need for loans from other banks that year. The ratio in 2020 was at the high (0.0306) showing an increase in the amount of interbank lending that year.
2. Lending from the Central Bank: We see a low ratio in 2019 (0.0150) representing less of a need for central bank loans that year. The high in this ratio also occurs in 2020 (0.0428) illustrating the heavy reliance on central bank lending that year.
3. Alternative External Funding: The low ratio in 2019 (0.0096) shows a lower dependency on alternative funding that year. A high in the ratio was seen in 2015 (0.0218) signifying a higher dependency on alternative funding that year.
4. Trend: It appears there are some fluctuations in the trends of the external funding ratios between the years. In 2020, we had a larger spike in the trend

of external funding ratios than in previous years. This could be due to either an economic downturn or a financial crisis causing banks to seek more external funding. Following 2020, it appears the ratios slightly decrease in 2021, perhaps showing some signs of stability returning to the economy.

Financial Efficiency Analysis: The table illustrates the Financial efficiency of commercial banks contained in the research sample for the time interval (2013-2021) via the DEA efficiency measurement calculations.

Table (3): Financial Efficiency Calculated Using the DEA Method

Banks \ Years	2021	2020	2019	2018	2017	2016	2015	2014	2013
Iraqi Investment Bank	49%	46%	57%	100%	100%	64%	62%	67%	92%
Al-Mansour Investment	37%	33%	36%	68%	47%	47%	57%	52%	71%
Mosul Bank for Development and Investment	29%	20%	21%	21%	23%	28%	35%	20%	99%
Al-Ahli Iraqi	73%	53%	37%	29%	37%	61%	52%	60%	20%
The Iraqi Commercial Bank	23%	20%	31%	36%	32%	30%	38%	37%	47%
Iraq Aber Investment	28%	38%	37%	20%	49%	50%	41%	42%	100%
Erbil Investment	20%	20%	22%	27%	20%	20%	40%	37%	100%
Development Bank of Finance and Investment	60%	52%	70%	64%	47%	49%	51%	66%	84%
Number of Efficient Banks	0	0	0	1	1	0	0	0	2
%efficient banks	0%	0%	0%	12%	12%	0%	0%	0%	25%

Source: Prepared by the researcher based on the outputs of Eviews

First: a general trend of declining overall efficiency is noted across the studied years. The percentage of banks achieving full efficiency (100%) peaked in 2013 at 25% (two out of eight banks), then decreased to 12% (one bank) in 2017 and 2018, before falling to 0% in the last three years (2019-2021). This indicates a gradual decline in the sector's ability to achieve maximum operational efficiency in the later period.

Second: the data shows noticeable fluctuations in the efficiency of most banks from year to year, reflecting performance instability. For instance, Mosul Bank for Development and Investment experienced a sharp decline from 99% in 2013 to 3% in 2014, while Al-Ahli Iraqi Bank showed uneven improvement. These fluctuations may reflect the banks' exposure to broader economic conditions or changes in their internal management.

Third: despite the overall downward trend, some banks maintained relatively higher performance than others throughout the period. The Iraqi Investment Bank and the Development Bank of Finance and Investment stand out with performance exceeding the sector's average in most years, suggesting the presence of more robust managerial or operational practices.

Fourth: the results indicate that the operational environment of the Iraqi banking sector in recent years (2019-2021) posed challenges that prevented any bank from achieving full efficiency, compared to earlier years where two or one bank demonstrated that capability, the reason for this is the COVID-19 pandemic.

Hypothesis Testing: The main hypothesis to be tested by the research is that financial structure has an impact on financial efficiency of the banks within the study sample that is statistically significant. The hypothesis will be tested using a fixed effects regression model (FEM). Table 4 illustrates the empirical results obtained from estimating the fixed effects model for the analysis of financial structure with respect to the Financial efficiency of banks included in the study sample over the period 2013-2021.

Table (4): Estimation Results of the Fixed Effects Model for Measuring the Impact of Financial Structure on Financial Efficiency

p-value	t-test	Standard Error	β		Independent variables
0.002	3.19296	0.10849	0.34640	C	Constant
0.408	0.699	0.21172	0.14048	XI ₁	Capital
0.003	2.2232	0.82575	0.24420	XI ₂	Reserves
0.222	1.66657	1.05435	1.65066	XI ₃	Retained Earnings
0.079	-1.6768	1.10749	-1.94561	XE ₂	Other Liabilities
0.035	2.71117	0.75308	1.5788	XE ₃	Loans from the Central Bank
0.018	-1.43207	1.21738	-1.65401	XE ₄	Loans from commercial banks
			%50		R ²
			5.223		F
			0.000		p-value

Source: Prepared by the researcher based on the outputs of Eviews

❖ **Statistically significant variables ($p < 0.05$):**

Reserves (0.003): Strong positive and significant effect. Central Bank loans (0.024): Positive and significant effect. Commercial bank loans (0.018): Negative and significant effect, suggesting that increased borrowing from commercial banks is associated with a decrease in the dependent variable.

❖ **Statistically insignificant variables ($p > 0.05$):**

Capital (0.408): No statistically significant effect, indicating weak association with the dependent variable or potential measurement issues.

Retained earnings (0.222): Statistically uncertain impact.

Model fit statistics: Coefficient of determination ($R^2 = 0.50$): The model explains 50% of the variance in the dependent variable, indicating reasonable explanatory power, though additional variables could improve it.

F-test (5.223*): The Overall Model is Very Statistically Significant. Therefore, the Independent Variables in this model, collectively, are having a Meaningful Impact on the Dependent Variable.

Based on the above, the main hypothesis will be tested by examining its two sub-hypotheses, using the results from the previous table (fixed effects model estimation) as follows:

Testing the First Sub-Hypothesis: The Impact of Internal Financing Structure on the Financial Efficiency of Commercial Banks This study aims to test the first sub-hypothesis, which posits a statistically significant effect of the internal financing structure on the financial efficiency of the commercial banks included in the study. To achieve this, the influence of the sub-dimensions of this hypothesis was analyzed.

Statistical Findings on Capital, Reserves, and Retained Earnings:

Capital Impact (Insignificant):

t-statistic: 0.699 (p-value: $0.408 > 0.05$) No statistically significant effect on financial efficiency, Interpretation: Financial efficiency depends on capital management quality rather than quantity. Some banks maintain large capital bases but demonstrate low efficiency due to poor management.

Reserves Impact (Significantly Positive):

t-statistic: 2.2232 (p-value: $0.003 < 0.05$) Beta coefficient: 0.244 Interpretation: A 1% increase in reserves-to-total assets ratio leads to 24% improvement in financial efficiency, Conclusion: The reserves sub-hypothesis is confirmed

Retained Earnings Impact (Insignificant):

t-statistic: 1.66657 (p-value: 0.222 > 0.05) No statistically significant effect on efficiency, Interpretation: Inefficient utilization of retained earnings in unprofitable investments or lack of proper investment strategies reduces potential efficiency gains. Merely accumulating earnings without strategic deployment doesn't necessarily enhance financial efficiency.

Based on the above, the first sub-hypothesis - stating there is a statistically significant effect of the internal financing structure on the financial efficiency of the studied commercial banks - is partially accepted. Here is an academic English translation of your provided text:

Testing the Second Sub-Hypothesis: The Impact of the Structure of External Financing on the Financial Efficiency of Commercial Banks :

To test this hypothesis, the effect of the sub-dimensions of external financing on the financial efficiency of commercial banks was analyzed.

The results show that the t-statistic for testing whether "Other Liabilities" have an impact on the Financial Efficiency of Commercial Banks was (-1.6768) and the p-Value was (0.079). As the p-value exceeded the level of significance of 10%, it indicates that there is no statistical evidence to suggest that other liabilities have a statistically significant impact on Financial Efficiency. Therefore, as stated in the study, the Sub-Hypothesis cannot be accepted. The reason behind the lack of statistical relationship between "Other Liabilities" and Financial Efficiency is that other liabilities are a representation of future obligations of a bank. A bank which relies heavily on these liabilities to fund their operations or to increase their activities will negatively influence their cash flow generation and ability to pay obligations in timely manner. An additional factor to be considered when evaluating Financial efficiency is the potential increase in liabilities, and consequently financial costs associated therewith; e.g., the cost of capital, interest expenses, etc., that will negatively affect the financial efficiency of a business. Additionally, relative to *the impact of central bank loans*, the t-test statistic was (2.71117) with a corresponding p-value of (0.035), which is less than 5% and therefore statistically significant and positively related to commercial bank financial efficiency. The estimated beta coefficient for central bank loans was (1.5788); which implies a one percent increase in the ratio of central bank loans to total assets of commercial banks increases financial efficiency by approximately 157%,

due to the effective utilization of the proceeds from these loans for the financing of profitable investment projects, and ultimately enhances the financial efficiency of the bank.

Regarding the loan impacts by other banks, t-test values were (-1.4320) and its corresponding p-values were (0.018). Both t-test values were less than 5% significance levels; therefore, we have evidence of a statistically significant negative relationship between the amount of loans from other banks and financial efficiency of commercial banks. The beta coefficient of the variable (loans from other banks / total assets) = (-1.65401); Therefore, when there is an increase of 1 percent of loans from other banks to total assets, it will result in an approximate decline of 165 percent in financial efficiency of those banks. As such, one explanation may include the fact that the use of loans with higher interest increases debt, and thus negatively impacts the bank's financial efficiency; However, if these loans are used as financing options to fund investments that are profitable, they may positively impact financial efficiency.

The second sub-hypothesis which claims an external finance structure has a statistically significant effect on the financial efficiency of the commercial banks in this research, is therefore accepted.

The results of the sub-hypotheses testing for the commercial banks in the sample confirm the main hypothesis of the research. Therefore, the study provides evidence for the influence of both the internal and external financing structures on the financial efficiency of commercial banks. In particular, the results indicate a positive (and statistically significant) relationship between the two.

Conclusions:

1. Although the study shows that there are many challenges for the Iraqi banking system to achieve the goal of increasing financial efficiency, most banks were able to increase their performance to some extent. Therefore, it is necessary to conduct comprehensive structural reforms and to analyze and evaluate all of the relevant policies as a way of enhancing the financial stability of the Iraqi banking system.
2. As previously mentioned, the commercial banks studied here are very different from one another when looking at their internal sources of financing. The largest source of funding comes from capital; next is reserves

and then retained earnings. These final two types of internal financing have decreased over the course of the study.

3. The commercial banks studied have also shown a difference in their reliance upon external funding sources. Loans from the Central Bank were found to be the largest source of external funds for commercial banks with loans from other commercial banks being the second and other liabilities being the third. Each of these measures have fluctuated throughout the time period studied.
4. There was a decrease in the financial efficiency of each of the commercial banks that occurred between 2013 and 2021. The decrease in the financial efficiency of the banks was caused by an inability to achieve financial efficiency as a result of the impacts of the two major crises faced by Iraqi banks. The first was the terrorist operation in Iraq in 2014 which significantly affected the banking industry in Iraq. The second was the COVID-19 pandemic in 2020 that resulted in the inability of banks to achieve sufficient financial efficiency.

Recommendations: On the basis of the results obtained by the researcher, the following recommendations are made:

1. Banking Internal Funding Mechanism: Due to its significance to the long-term financial security of all the banks involved in this study it is necessary to strengthen the banking internal funding mechanism; this internal funding mechanism provides an image of how the bank will be financially positioned going forward to the bank's outside stakeholders; the internal funding mechanism also assists the bank in identifying and managing future risk; the internal funding mechanism also represents a method of opportunity identification and exploitation in both domestic and foreign markets; therefore retaining a reasonable amount of earned profits within the bank is seen as one of the key means of addressing issues associated with the bank's external environment, while also providing the means to capitalize on opportunities existing in the bank's surrounding environment.
2. Banking on Increasing the External Funding Structure: Additionally, it is vital for banks to reinforce their external funding structure with either loans by the Central Bank of Iraq (CBI), loan funds from other commercial banks, or liability financing, etc. The CBI should select the least expensive financing options available with less restrictive conditions; this will ultimately help improve the financial performance, and general performance, of all banks being studied.

3. Achieving Equilibrium Between a Conservative Financing Structure and Financial Risk Management: Improving the Financial efficiency of Iraqi banks requires finding an equilibrium between a conservative funding strategy and managing financial risk. Banks should therefore attempt to increase both their internal and external funding opportunities. In addition to increasing internal and external funding opportunities, the banks should monitor return on investment and improve the profit/resource utilization ratio. To increase profitability and improve performance, it is also necessary to improve the banks' internal performance, control liquidity, and improve their Financial efficiency measures.

References

1. Abu Shaban, W. Z. (2017). The impact of liquidity and investment opportunities on the financial structure: An empirical study on industrial companies listed on the Palestine Stock Exchange [Master's thesis, Islamic University]. Gaza, Palestine.
2. Atiyah, O. S., & Kurdi, I. A. (2025). The effect of non-deposit financing sources on the market value: An applied study of a number of commercial banks listed on the Iraqi Stock Exchange. *Journal of Business Economics for Applied Research*, 7(Conference), 513–529. <https://dx.doi.org/10.37940/BEJAR.2025.7.1.32>
3. Ayuba, H., Bambale, A. J. A., Ibrahim, M. A., & Sulaiman, S. A. (2019). Effects of financial performance, capital structure and firm size on firms' value of insurance companies in Nigeria. *Journal of Finance, Accounting & Management*, 10(1).
4. Begam, N. N. (2020). Evaluation of cash management and its association with financial efficiency a study with special reference with Indian IT industry. *International Journal of Advanced Science and Technology*, 29(6), 1933–1941.
5. Ben Sasi, E., & Qureshi, Y. (2011). *Financial management and financial administration* (2nd ed.). Dar Wael for Publishing and Distribution.
6. Bousnah, M. R., Merabeti, S., & Zlasi, S. (2019, December). Efficiency analysis of cereal production in Algeria using data envelopment analysis (DEA). 7th International Forum.
7. Dick, R., & Sheikh, B. Y. (2016). Financial statement analysis using data envelopment analysis window. *Tishreen University Journal for Research and Scientific Studies*, 38(3).
8. Halkos, G. E., & Salamouris, D. S. (2004). Efficiency measurement of the Greek commercial banks with the use of financial ratios: A data envelopment analysis approach. *Management Accounting Research*, 15(2), 201–224. <https://doi.org/10.1016/j.mar.2004.03.001>
9. Hussein, A. I., Al-Saqqa, Z. H., & Mahmoud, S. M. (2020). Enhancing financial efficiency under (IFRS) standards to reduce financial fragility: An empirical study of crisis reality in Iraq using data envelopment analysis. *Tikrit Journal of Administrative and Economic Sciences*, 16(1).

10. Hussein, M. A. (2017). Integration of the balanced scorecard and data envelopment analysis to evaluate bank performance (An empirical study on a sample of Iraqi banks). *Journal of Commercial Studies and Research*, 1(3).
11. Kaur, H. (2019). Growth trend of non-banking finance companies. *THINK INDIA Journal*, 22(4), 123–145. <http://www.isx-iq.net>
12. Khallaf, D. (2015). *Commercial banks and their role in financing foreign trade: A case study of Al-Falah and Rural Development Bank, Um El Bouaki Agency, during the period 2000-2014* [Master's thesis, University of Um El Bouaki].
13. Muiruri, W. N., & Wepukhulu, J. M. (2018). Effect of financing decisions on financial efficiency of listed companies at the Nairobi Securities Exchange, Kenya. *Journal of International Business, Innovation and Strategic Management*, 2(3).
14. Omondi-Ochieng, P. (2018). US table tennis association: A case study of financial efficiency using effectiveness indicators and efficiency ratios. *Managerial Finance*, 44(2), 189–206. <https://doi.org/10.1108/MF-02-2017-0046>
15. Samoilenko, S., & Osei-Bryson, K.-M. (2013). Using data envelopment analysis (DEA) for monitoring efficiency-based performance of productivity-driven organizations: Design and implementation of a decision support system. *Omega*, 41(1), 131–142. <https://doi.org/10.1016/j.omega.2012.02.006>
16. Visani, F., Barbieri, P., Di Lascio, F. M. L., Raffoni, A., & Vigo, D. (2015). Supplier's total cost of ownership evaluation: A data envelopment analysis approach. *Omega*, 56, 15–25. <https://doi.org/10.1016/j.omega.2015.03.005>
17. Wanke, P., Tsionas, M. G., Chen, Z., & Antunes, J. J. M. (2020). Dynamic network DEA and SFA models for accounting and financial indicators with an analysis of super-efficiency in stochastic frontiers: An efficiency comparison in OECD banking. *International Review of Economics & Finance*, 69, 456–468. <https://doi.org/10.1016/j.iref.2020.06.003>
18. Zahra, N. F. (2017). The impact of corporate governance application on improving the performance of Algerian banks [Doctoral dissertation, Mohamed Khider University – Biskra].
19. Zhao, Z. (2020). Cross-cultural dimensions and financial efficiency: An investigation at macro level. In *Proceedings of the 2020 International Conference on Advances in Economics, Business and Management Research* (pp. 165–170). Atlantis Press. <https://doi.org/10.2991/aebmr.k.200331.036>