

# The Impact of Using Bankometer Model Indicators on Improving the Financial Performance of a Sample of Iraqi Commercial Banks for the Period (2010-2023)

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## ABSTRACT

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The research aims to elucidate the influence of the Bankometer model on commercial banks' performance and to determine which key indicator of the model best enhances these institutions' performance. The statistics application EViews 12 was utilized to track and examine how using the Bankometer model improved the performance of commercial banks.. The study supported the research premise by using the Panel ARDL Model to find a substantial correlation and influence of the Bankometer model indicators on bank performance (ROE) over the short and long term. The Equity to Assets Ratio was the most important measure, reaching 17.4%.

**Keywords:** Bankometer MODEL, Bankometer model indicators, Evaluation of Bank Performance

The finance sector is considered a fundamental component of the economy of every nation, as it is responsible for the effective allocation of available resources, which is essential for development. The framework of monetary policy is now determined by the presence of a robust banking sector. To evaluate banks' overall financial performance, the International Monetary Fund (IMF) has adopted a metric called the Bankometer. This model includes a multitude of variables that evaluate the impact of a wide range of hazards that institutions are exposed to.

## Research Methodology

### First: Research Problem

The banking industry has challenges that need for improved techniques for evaluating and monitoring commercial banks' financial performance. The Iraqi banking sector's current methodologies for evaluating commercial bank performance, such as the PATROL and CAMELS models, predominantly depend on assessments of the existing financial condition, neglecting future outcomes and performance metrics. Consequently, the use of contemporary models reliant on an extensive evaluation of the bank's long-term performance may be deemed appropriate. The primary research topic may be articulated as follows: "Banks' difficulties using the BANKOMETER model's indicators have an effect on the financial performance of the chosen sample banks."

### Second: Research Hypothesis

The study is based on a primary premise asserting that the indicators of the BANKOMETER model significantly influence the financial performance (ROA) of a sample of Iraqi commercial banks.

### Third: Significance of the Research

The significance of the research stems from the following points:

1. Providing a comprehensive evaluation of financial performance using BANKOMETER indicators.

2. Improving the study sample banks' financial performance after the identification of their strengths and shortcomings, which aids management in making strategic and investment decisions..
3. The analysis using the BANKOMETER model helps banks in analyzing their interaction with market trends and enhances their competitiveness.

## Fourth: Research Objectives

1. To present a conceptual overview of the BANKOMETER model provided by the International Monetary Fund (IMF).
2. To gauge how the BANKOMETER model affects commercial banks' financial results.
3. To determine which key BANKOMETER model indicators significantly affect commercial banks' financial performance..

## Fifth: Research Population and Sample

**Research Population:** The Iraq Stock Exchange lists a total of 24 commercial institutions..

**Research Sample:** Five banks were picked from the Iraq Stock Exchange: Baghdad Bank, Gulf Commercial Bank, Trade Bank of Iraq, Mosul for Development and Investment Bank, and Iraqi Credit Bank..

## Sixth: Research Boundaries

**Spatial Boundaries:** This research concentrated on five banks registered on the Iraq Stock Exchange.

**Temporal Boundaries:** During the study period, which spanned from 2010 to 2023, annual data was collected from the reports and financial statements of the listed firms on the Iraq Stock Exchange.

## Seven: Research Variables

Table (1)

Variable symbol	Variable type	variable
Capital To Assets Ratio	<b>independent</b>	CTA
Equity To Assets Ratio	<b>independent</b>	ETA
Capital Adequacy Ratio	<b>independent</b>	CA
Non-Performing Loans To total Loans Ratio	<b>independent</b>	NLTL
Cost To Income Ratio	<b>independent</b>	CI
Loan To Asset Ratio	<b>independent</b>	LA
Return On Assets	<b>Continued</b>	ROA

Source: Prepared by the researcher

## the theoretical side

### :1- The Theoretical Foundations of the BANKOMETER Model

#### Introduction

The Bankometer model is an analytical framework employed in the banking industry to evaluate present and prospective financial performance, as well as to ascertain the degree of financial risks faced by banks. This contributes to improving financial management decisions and internal control. It depends on several financial indicators, such as liquidity, operational income, asset quality, capital adequacy ratio, operating expenditures, non-performing loans, and more metrics.

### 1-1 The Genesis and Evolution of the Bankometer Model

The Bankometer model was initially presented by the International Monetary Fund (IMF) in 2000 (FADHILA and SITORUS, 2022: 541). It comprises a set of financial indicators combined in a linear S-SCORE equation derived from the CAMELS system and the parameters of the CLSA stress test, with adjustments made to the percentages. The Bankometer model is considered a modern system used in evaluating the financial performance of banks. This model aims to develop as a global tool for all banks in assessing their financial performance. The model has been improved to better evaluate financial performance compared to other financial models, as it provides more accurate results using a smaller number of indicators (Al-Bazouni, 2023: 35). The Bankometer model is used to measure weakness in financial institutions using a solvency criterion (S-score) that was developed based on the recommendations of the International Monetary Fund. The Bankometer model was introduced to assess the extent to which each bank is exposed to financial distress. This model consists of six different financial criteria developed through multivariate discriminant analysis. The main objective is to distinguish between a stable bank with a good financial position and a bank experiencing a financial crisis (Fadilah and others, 2024: 133). The Bankometer model has also been defined as a method that boasts the quality of providing maximum accuracy from the fewest number of parameters (SAKARYA and KARAKAS, 2021: 490). The model's benefits and drawbacks are compiled in Table (2).

Table (2)

According to Jana Klaas and Venera Vagizova's article "Tools for assessing and forecasting the financial stability of the commercial bank under conditions of instability" published in Investment Management and Financial

disadvantages	Advantages	model
1- The model primarily focuses on financial risks and may overlook other risks such as reputational or operational risks.	1- The model can be used to predict potential future financial risks, helping banks take preventive measures. 2- The model can be applied quickly to obtain accurate results about the bank. 3- The model combines the assessment of the bank's current and future financial performance	<b>Bankometer</b>

Innovations, issue 4, volume 11, pages 158-159, in 2014,.

### 1-2 The Importance of the Bankometer Model

1. It is used by internal management to assess the current and future financial performance of commercial banks.
2. It assists external entities in assessing the financial performance of individual banks. External parties assess their engagement with the bank based on the outcomes of the Bankometer model.
3. Central banks, creditors, and capital market investors place a high value on the model's capacity to forecast financial risks in banking institutions (Al-Bazouni, 2023: 36).

### 1-3 Indicators of the Bankometer Model.

#### 1. Capital to Total Assets Ratio (CTA)

This ratio signifies the utilization of total assets in capital enhancement. The capital-to-assets ratio evaluates a bank's capital sufficiency relative to its assets. A higher ratio indicates a stronger use of internal and external financing sources for asset investment. The International Monetary Fund stipulates that the capital assets ratio in banks cannot exceed 4% (Katil, 2014: 91). The calculation is performed using the subsequent equation.: (Al-Marsoumi, 2017: 78).

**Capital to Total Assets Ratio**= Paid-up capital/total assets×100%...(1)

#### 2-Equity to Total Assets Ratio (ETA)

The equity ratio assesses the proportion of assets financed by shareholders. The equity to assets ratio must exceed 2% (Yameen and Ali, 2016: 129). It is a crucial metric for assessing the financial performance and long-term profitability of banks. It is computed utilizing the subsequent equation.: (Al-Gamal, 2022: 47).

**Equity to Total Assets Ratio** =  $\text{Equity} / \text{Total Assets} \times 100\% \dots (2)$

### **3-Capital Adequacy Ratio**

The term "capital adequacy" describes the procedures put in place by a bank's leadership to ensure that the capital available to cover potential risks is sufficient in relation to such risks. According to Souria and Thawadi (2019: 94), the capital adequacy ratio may be described as the correlation between a bank's capital and the risks associated with its assets. A bank's ability to weather losses in the credit and securities trading markets may be gauged by looking at its capital adequacy ratio. For banks to be considered adequately capitalized, the standard ratio is higher than 8%. The following equation determines its value.: (Roukaya and Hanan, 2021: 43)

**Capital Adequacy Ratio** =  $\text{Regulatory capital} / \text{risk-weighted assets} \times 100\% \dots (3)$

### **4-Non-performing loans to total loans ratio.**

It is defined as all credit facilities obtained by a client and not repaid on time, which converts the debt from current credit facilities to outstanding balances. Over time, these become non-performing loans (Rumaisar & Al-Lateef, 2015: 534). A high ratio of NPLs means the bank is exposed to a greater risk of not recovering the outstanding loan amounts, while a small ratio means the loans pose low risks to the bank (Mathur, 2022: 227). The following formula is used to compute it: (Al-Attar, 2020: 79).

The ratio of non-performing to total loans is equal to non-performing loans divided by total loans  $\times 100\%$  (4).

### **5-Cost to Income Ratio**

The cost-to-income ratio compares operational expenditures, excluding non-cash items, to operating income. A high ratio indicates a decrease in operating income with an increase in operating expenses for banks. This suggests a weakness in the efficiency of banks in managing their operating expenses, leading to poor performance (AL-bazoni, 2023: 1390). It is computed using the subsequent equation.

**Cost to Income Ratio** =  $\text{Operating expenses} / \text{operating income} \times 100\% \dots (5).$

### **6-Loans to Assets Ratio.**

This ratio calculates the total amount of assets utilized to make loans. A greater ratio indicates that the bank is making more loans, which raises the anticipated earnings. However, it is evident that the associated risk ratio increases with the increase in facilities due to the decrease in liquidity held by the bank (Homssi, 2022: 46). The following formula is used to compute it: (Al-Mutairi, 2022: 52).

**Loans to Assets Ratio** =  $\text{Total Loans} / \text{Total Assets} \times 100\% \dots (6).$

### **1-4-Measurement and Evaluation of Financial Performance**

Financial performance is a bank's overall financial health over a certain period of time. It includes both the purchase and use of funds and is measured by things like capital adequacy, liquidity, debt, commitment fulfillment, and profitability. (Kotane and Mieteue, 2022: 22).

Performance evaluation is described as a series of methods that evaluate a bank's accomplished achievements with its established objectives. This is done to determine the extent to which these results are consistent with the objectives and to assess the level of effectiveness of the bank's performance. It also involves comparing the bank's inputs with its outputs (Beldi and Gaidi, 2021: 727).

Financial performance review is described as an assessment of how well a bank utilizes its financial resources during a designated time, often one fiscal year. It is thus an interim report on the bank's condition in terms of financing operations in the near future (Al-Aboudi and Al-Banna, 2022: 220)

### **1-5: Objectives of Financial Performance Evaluation.**

The evaluation of performance in commercial banks encompasses several objectives, the most significant of which are outlined as follows:

- 1.1. To detect and delineate deficiencies and inadequacies in the operations of commercial banks and do a thorough investigation elucidating their origins, with the objective of formulating requisite remedies, fixing these issues, and preventing future errors..
2. To clarify the extent of the commercial bank's efficiency in optimally utilizing available resources and achieving the maximum possible returns at the lowest possible cost, given the available resources (Kashoud and Bouazza, 2020: 20).
3. To provide a database and information on the performance of the commercial bank to assist in developing future policies, research, and studies to improve its performance patterns and enhance its efficiency.
4. To assess the overall profitability and operational efficiency of the bank and its departments, in order to ascertain the institution's financial stability.
5. To assess the bank's short- and long-term liquidity and ascertain its capacity to pay back obligations (Fatiha, 2023: 255).

#### **1-6: Models for Measuring and Evaluating Financial Performance.**

This research use the Return on Assets (ROA) model to assess bank performance.

This ratio is a prevalent performance metric that delineates the correlation between assets and the profits derived from their use, specifically the link between net profit and the money accessible to management. It checks how much money the management can make from the money it has by measuring the return on each dinar that is put into assets. It reflects the impact of financing activities on profitability and is a commonly used measure for evaluating performance (Zaghoud, 2015: 48). It is one of the most accurate indicators in evaluating a bank's performance and is considered the main criterion for judging the ability and successful performance of the bank's management, as well as its strengths (Ilham, 2015: 69). It is computed using the following equation.

$$\text{Return on Assets (ROA)} = \text{Net income post-tax} / \text{Total assets. (7)}$$

#### **Standard side**

#### **Measuring and Analyzing the Impact of Using Bankometer Model Indicators on Improving the Financial Performance of a Sample of Iraqi Commercial Banks for the Period (2010-2023).**

The statistical program Eviews12 was utilized to illustrate the influence of the independent factors on the dependent variable. The investigation encompassed several data points derived from cross-sections and time series, yielding a total of seventy observations. The model for these data will be constructed using the panel data approach, as it involved studying five banks (Mosul for Development and Investment, Gulf Commercial Bank, Middle East Iraqi Bank for Investment, Baghdad Bank, Iraqi Credit Bank) for the time period from (2010-2023). The data for the research variables were treated on an annual basis.

To build and analyze the empirical model, the following steps will be relied upon:

#### **2-1: Testing the Stationarity of the Time Series for the Research Sample Variables**

Table (3) Results of Time Series Stationarity for the Research Sample Variables.

Table (3)

Time series stationarity results for the research sample variables

The result	Moral value	Statistical value	The result	Moral value	Statistical value	Variable
ADF - Fisher Chi-square At the first difference			ADF - Fisher Chi-square At the level			Test type
Stable	0.0066	24.4046	Unstable	0.9952	2.13397	CTA
	0.0061	24.6188	Unstable	0.9281	4.38959	ETA
Stable	0.0019	27.8270	Unstable	0.9687	3.45313	CA
			Stable	0.0058	24.7693	NLTL
			Stable	0.0213	20.9651	CI
Stable	0.0001	34.9377	Unstable	0.3550	11.0322	LA
Stable	0.0051	25.1061	Unstable	0.3269	20.2607	ROA
ADF - Choi Z-stat			ADF - Choi Z-stat			Test type
Stable	0.0025	-2.81267	Unstable	0.9935	2.48252	CTA
Stable	0.0014	-2.98921	Unstable	0.8847	1.19901	ETA
Stable	0.0078	-1.91351	Unstable	0.9757	1.97206	CA
			Stable	0.0034	-2.71023	NLTL
			Stable	0.0231	-2.01078	CI
Stable	0.0002	-3.50594	Unstable	0.5697	0.17563	LA
Stable	0.0019	-2.89949	Unstable	0.1149	-1.20088	ROA

Source: Prepared by the researcher based on the outputs of the statistical analysis program (Eviews12).

Table (3) demonstrates that the variables (CTA, ETA, CA, LA, ROA) exhibit significance in all unit root tests following the first difference, as the p-values for each test are below the 0.05 significance level. This indicates the absence of a unit root in the data series after the first difference, leading to the conclusion that the series is stationary at this level.

The variable (NLTL,CI) exhibits significant test results for the unit root, as indicated by the ADF-Fisher Chi-square and ADF - Choi Z-stat tests. The p-values for each test are below the statistical significance threshold of 0.05, leading to the conclusion that the series is stationary at the level..

## 2-2: Autoregressive distributed lag model (Panel ARDL Model)

The variables (CTA, ETA, CA, LA, and ROA) are non-stationary at the level and stationary at the first difference, according to the summary of the unit root tests, whereas the variables (NLTL, CI) are only stationary at the level. The outcomes of the experiments outlined above indicate that building a Panel Autoregressive Distributed Lag (ARDL) model is feasible. The optimal model estimation results are shown in Table (4). .

Table (4) Results of the autoregressive distributed lag period model (Panel ARDL Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Long Run Equation				
CTA	0.140357	0.012305	11.40622	0.0000
ETA	0.174689	0.012194	14.32597	0.0000
CA	0.009008	0.000441	20.43610	0.0000
NLTL	-0.000116	4.81E-06	-24.10327	0.0000



CI	-0.000143	8.49E-05	-1.680968	0.0139
LA	0.030763	0.009432	3.261465	0.0029
Short Run Equation				
COINTEQ01	-1.834793	0.570148	-3.218097	0.0033
D(CTA)	0.383982	1.236992	0.310416	0.7585
D(ETA)	-0.547206	1.480275	-0.369665	0.7144
D(CA)	0.051318	0.091724	0.559477	0.5803
D(NLTL)	-0.274213	0.286575	-0.956864	0.3468
D(CI)	0.002897	0.002352	1.232054	0.2282
D(LA)	-0.310232	0.194923	-1.591566	0.1227
Log likelihood	207.6097			

Source: Prepared by the researcher based on the outputs of the statistical analysis program (Eviews12).

Table (4) clearly indicates that the independent variables (CTA, ETA, CA, LA) exert a favorable influence on the Return on Assets (ROA) at the level of the fine banks. Augmenting one or all of these factors will result in an elevation in ROA, indicating a positive correlation, consistent with economic theory. The greatest impact was for the Equity To Assets Ratio variable (ETA), meaning that increasing this ratio by ( 1% ) leads to an increase in ROA by (17.4%), This indicates that banks have a strong capital base, meaning they rely more on their own capital to finance their assets rather than relying on debt, which reduces borrowing interest costs. Consequently hypothesis, which states (there is a significant statistical impact of BANKOMETER model indicators on the return on assets), has been proven correct. As for the variables (NLTL, CI), they showed an inverse relationship with the variable (ROA), which aligns with economic theory This is because a (1%) increase in these ratios leads to a (0.0% )decrease in the return on assets (ROA). This implies that there is no negative impact from non-performing loans and costs on the return on assets.

### 2-3-Choose the optimal model

The results of the experiments on the different Panel ARDL models are presented in Table (5), and from the results of the table it is clear that the optimal model is the ARDL(1, 1, 1, 1, 1, 1) model because it has achieved the lowest values for the ( HQ=-4.661706, BIC=-3.823519 , AIC\*=-5.206553 ) criteria, which are the lowest values among all the criteria for the other models.

Table (5) Results of choosing the optimal model

Model	LogL	AIC*	BIC	HQ	SpecifiCTAtion
1	207.609705	-5.206553	-3.823519	-4.661706	ARDL(1, 1, 1, 1, 1, 1)

### CONCLUSIONS:

1- The BANKOMETER model indicators significantly improved ROA over the long and short terms, according to the standard study findings..

2-The results of the standard analysis showed that the Equity To Assets Ratio variable (ETA) had the largest share in influencing the return on assets (ROA) reaching 17.4%.

3-Evaluating banking performance is comparing the achieved goals with the set goals to discover errors and deviations and work to correct them, as well as diagnosing problems and solving them, and knowing the strengths and weaknesses in the bank.

4-The banks' application of the BANKOMETER model can enhance and improve their performance, in addition to identifying errors and deviations and ways to address them.

### **Recommendations:**

1-Recommendation of the Central Bank to use the BANKOMETER model in supervising the performance of banks, as it is considered one of the modern models used for evaluation and forecasting of financial soundness due to its ability to detect weaknesses and deviations and correct them in a timely manner.

2-In order to improve their banking performance and the efficiency of the control and banking supervision operations conducted by the regulatory and inspection bodies for the monetary authority represented by the Central Bank, Iraqi banks must be interested in the BANKOMETER model indicators..

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