

The financial impact on reducing the threat of bankruptcy: An applied study on bringing about radical change in the Iraqi stock market (2024-2015)

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Abstract. This study explores the impact of financial flexibility, as an independent variable, on mitigating bankruptcy risk, as a dependent variable, in a volatile Iraqi banking environment. The study focuses on a sample of three private commercial banks during the period 2015–2024. It employs a descriptive-analytical approach, using leverage, liquidity, and profitability indicators to express flexibility, and the Z-score model to measure bankruptcy risk. The results indicate that financial flexibility plays a crucial role in enhancing the stability of the banking sector. Banks that balance debt financing with equity demonstrated a greater ability to avoid crises, with liquidity serving as the first line of defense against unforeseen risks. Therefore, the study recommends implementing financial policies that ensure a minimum level of flexibility and adopting the Z-score model as a periodic monitoring tool. It also emphasizes the need to balance safety and profitability requirements to guarantee the sector's sustainability and growth.

Keywords: financial resilience, bankruptcy risk, commercial banks.

1. INTRODUCTION

This study examines financial flexibility as a strategic and imperative necessity for banks to withstand economic shocks and ensure their ability to meet their obligations, focusing on the realities of Iraqi private commercial banks and their competitive and volatile operating environment. The study aims to fill a research gap by analyzing the relationship between resilience indicators (leverage, liquidity) and bankruptcy risk, measured using the Z-score model for banks, in a sample of three banks over the period 2015-2024. The methodology relies on financial and statistical analysis of annual data, not only to monitor the current situation but also to provide a guiding framework for policymakers to adopt flexible financial policies that enhance stakeholder confidence and ensure the comprehensive protection of the Iraqi banking sector.

2. MATERIALS AND METHODS

2.1. THEORETICAL MATERIALS

2.1.1 The problem of the study

The problem lies in the fact that Iraqi private commercial banks operate in a highly volatile environment. They face challenges in adjusting their financial structures to withstand shocks, which weakens their ability to seize investment opportunities and exacerbates the risk of bankruptcy, especially given low liquidity and excessive reliance on debt. In the absence of a systematic framework that balances funding sources and liquidity, there is a need to analyze the impact of financial flexibility (leverage, liquidity) on enhancing financial stability and reducing the likelihood

of bankruptcy using the Z-index model for banks. Main Question: What role does financial flexibility play in mitigating bankruptcy risks in Iraqi private commercial banks?

Sub-Questions:

- 1.What is the prevailing level of financial flexibility in these banks?
- 2.To what extent does this flexibility contribute to avoiding bankruptcy risks?
- 3.Is there a statistically significant relationship between flexibility indicators and bankruptcy risks according to the Z-index model for banks?
- 4.What is the relative importance of the study variables in the banking sector?
- 5.What mechanisms do banks currently adopt to address financial risks?

2.1.2 Objectives of the study

1. To identify the financial resilience indicators used in Iraqi private commercial banks.
2. To analyze the impact of financial resilience on reducing the likelihood of banks facing bankruptcy risks.
3. To evaluate the relationship between leverage and liquidity, as indicators of financial resilience, and the level of bankruptcy risk in banks.
4. To test the ability of financial resilience to reduce bankruptcy risks for Iraqi private commercial banks, by applying the Bank Z-score model to determine how far these banks are from the financial risk zone and to ensure their continuity.

2.1.3 The importance of the study

This study derives its significance from its role in highlighting financial resilience as a strategic tool for mitigating bankruptcy risks in the Iraqi banking sector. This significance is manifested in the following aspects:

1. Providing bank management with a deeper understanding of financial resilience as a tool for managing financial difficulties and seizing available opportunities, thereby reducing the negative impacts of crises on performance.
2. Enhancing bank resilience in a high-risk environment by leveraging financial resilience to prevent crises from escalating and ensuring business continuity.
3. Contributing to identifying the causes of potential bankruptcy and diagnosing indicators of financial deterioration using precise scientific measurements.
4. Making a scientific contribution to financial thought by establishing a practical link between financial resilience and bankruptcy risks, and providing practical recommendations for financial policymakers in Iraq.

2.1.4 Study hypothesis

- 1- The equity multiplier has a statistically significant effect on mitigating bankruptcy risk.
- 2- The liquidity ratio has a statistically significant effect on mitigating bankruptcy risk.

2.1.6 study References:

To cover the theoretical aspect of the study, the researcher relied on diverse Arab and foreign academic sources, including books, scientific journals, theses, and dissertations related to financial resilience and bankruptcy risks. Official reports and publications issued by the Iraq Stock Exchange and other relevant financial bodies were also used to support the applied aspect of the research. The practical financial analysis was based on annual financial data published by the Iraq Stock Exchange, which provided the necessary data to calculate the impact of financial flexibility in

mitigating bankruptcy risks. These sources ensured the reliability and consistency of the data used to achieve the study's objectives.

2.1.7 study Limitations:

Study Population: The study population consists of the (25) Iraqi private commercial banks listed on the Iraq Stock Exchange. This population is the appropriate testing ground for the study model and its hypotheses, based on statistics published by the Central Bank of Iraq.

Study Sample: The study sample consists of (3) Iraqi private commercial banks. The researcher's selection of this sample of banks was based on several justifications, including:

- a. The availability of data required for analysis regarding the sample throughout the study period (2015–2024).
- b. The continued operation and listing of these banks on the Iraq Stock Exchange throughout the ten-year study period (2015–2024).

2.1.8 Previous studies

1. study

(Bancel & Mittoo, 2011)

Study title: (Financial flexibility and the impact of the global financial crisis)

Objective of the study: Gaining insights into how managers perceive and assess financial resilience in dealing with crises. The 2007 World Finance Conference focuses on the sources of financial resilience, the relationship between financial resilience and business resilience, and examining the importance of financial resilience in corporate capital structure decisions.

Study metrics: The study adopted the following measures: (financial leverage, liquidity ratio, and operating ratio).

Study sample: The sample consisted of only (11) companies in the transportation, automotive, newspaper and real estate sectors

Results: The study revealed that companies with high resilience are less affected by crises, while those relying on internal resources are less likely to face liquidity shortages. The study also showed that lower debt levels make it easier for companies to access and use cash assets as a more reliable source of funding.

2. study

(Quaicoo, 2020)

Study title: (Minimising Bank Failures in Ghana Through Effective Regulatory Compliance Monitoring).

Objective of the study: The main objective of the research was to achieve the following goals: to study the current regulatory framework for banks in Ghana, to identify the supervisory framework of the central bank (Bank of Ghana), to determine the soundness of banks prior to bankruptcy, to study the causes of recent bankruptcies in Ghana, and to provide recommendations on an effective regulatory compliance monitoring framework that would reduce bank failures in Ghana.

Study metrics: The probability of bank failure in this study was measured using the CAMELS model by analyzing indicators of capital adequacy, liquidity, asset quality, profitability, management efficiency, and sensitivity to market risks, in order to assess the financial soundness of banks before failure occurs.

Study sample: The study sample consisted of 97 respondents, including individuals with ties to the banking sector, and data were collected from them using questionnaires and semi-structured interviews.

Results: The results and analyses showed that the reasons for the recent bank failures in Ghana are a lack of capital, weak liquidity, a high rate of non-performing loans, poor corporate governance practices, and ineffective oversight by the regulator.

2.2 METHODS

2.2.1 The concept of financial flexibility

Financial flexibility has garnered significant attention from researchers over the past three decades. It is considered one of the most important elements in capital structure decisions. (Islam, 2019:245).

The concept of financial flexibility is a contemporary one that has attracted the attention of many researchers. Growing studies on financial flexibility have begun to explore the impact of cash flow and debt repayment capacity on various banking activities (Alabassi & Yasir, 2020:1590). Financial flexibility refers to a bank's ability to maintain liquidity and provide cash to withstand unexpected fluctuations in the operating environment. In this sense, a bank's ability to access cash under unpredictable and challenging market conditions is crucial for mitigating the risk of failure. It has been observed that banks with strong financial flexibility tend to adopt prudent debt management policies in relation to their financial strategies. A sudden and sharp decline in liquidity, particularly during economic crises, reduces the vulnerability of banks with strong liquidity and robust financial structures to adverse economic developments (Esin, 2015:110).

2.2.2 The importance of financial flexibility

Financial flexibility is of fundamental value to both researchers and managers, and its importance lies in the following (Al-Abbasi, 38:2020):

1. Banks with sufficient financial flexibility are able to survive and outperform other banks without losing investment opportunities.
2. Financial flexibility enhances banks' ability to invest during economic downturns.
3. Financially flexible banks are better equipped to avoid financial failures and insolvency resulting from adverse shocks.
4. During periods when access to external financing is difficult and expensive, the value of financial flexibility increases, as it enables banks to obtain financing more easily.
5. Financial flexibility helps banks restructure their capital, as tangible assets play a crucial role in this process by being used as collateral for loans and to adjust leverage.
6. Banks with high levels of financial flexibility are rated as having a higher performance compared to those with lower levels of financial flexibility.

2.2.3 Measuring financial flexibility

1. Equity multiplier ratio: This ratio measures the extent to which equity contributes to financing the assets of financial institutions and is calculated according to the following equation (Al-Amiri, 2018:51):

$$\text{Equity multiplier} = (\text{Total assets}) / (\text{Net equity}) \times 100\%$$

2. Current Ratio: The current ratio is the most commonly used measure of short-term liquidity because it relates current assets to short-term creditors' claims. While net working capital expresses

this relationship in monetary terms, the current ratio expresses it as a percentage. It is calculated using the following equation (Saleem&Rehman,2011:97):

$$\text{Current ratio} = (\text{Current assets}) / (\text{Current liabilities})$$

2.3.1 The concept of bankruptcy risk

Bankruptcy is the final stage of a company's financial failure. It is a legal procedure resorted to when a company is unable to meet its obligations to its creditors. Bankruptcy may take the form of restructuring aimed at continuing the company's operations, or liquidating its assets and settling its debts according to applicable legal procedures. Bankruptcy is often linked to poor management efficiency in making coherent and integrated financial decisions. The lack of coordination between investment and financing decisions leads to negative outcomes that affect the company's financial position. Furthermore, ignoring the interrelationships between different decisions and failing to link them with the goal of maximizing the company's economic value contributes to exacerbating the financial crisis (Al-Ja'bari, 154:2014).

Bankruptcy can be defined as the inability of institutions to meet their financial obligations or the difficulty institutions face in paying their debts; in other words, it can be defined as a lack of cash flow that leads to an inability to meet financial obligations (Terzi& Üçoğlu,2012:608).

2.3.2 Measuring bankruptcy risk

Since the 1930s, many researchers have focused on conducting studies aimed at identifying reliable indicators for predicting financial bankruptcy. Bankruptcy prediction models differ in their content and the variables they rely on; some depend on quantitative financial indicators and criteria, while others rely on non-financial descriptive criteria (Al-Awishz & Salah, 2025:2392). The z-score has been used as a measure of bank risk. It has become a popular indicator of bank health, its popularity stemming from its inverse relationship to the probability of bank failure that is, the likelihood that a bank's assets will fall below its liabilities. The z-score measures the number of standard deviations by which earned returns must fall before capital is depleted, assuming normal bank returns. A higher z-score indicates a lower upper limit of bankruptcy risk; therefore, a higher z-score means a lower probability of bankruptcy (Čihák& Hesse,2010:7). The Z-index measures the probability of a country's banking system failing. It compares the country's banking system reserves—that is, its capital and returns—to the volatility of those returns. It is defined as follows (Sifrai, 2021:82):

$$Z\text{-score}=(ROA+(Equity/Asset))/(\sigma(ROA))$$

3.APPLIED STUDY

3.1 Research Sample Overview

research sample: the research sample was selected from commercial banks listed on the Iraq stock exchange. the sample comprises a number of commercial banks for which continuous financial data was available throughout the study period (2015-2024). these selected banks represent the banking

sector and were chosen according to a methodology that ensures the consistency and comparability of the financial information.

2.3 Measure And Analyze Financial Flexibility

Financial flexibility is measured through the equity multiplier and the current ratio for the following banks (National Bank of Iraq, Al Mansour Bank and Ashur Bank).

1. Equity Multiplier Analysis

The attached table reflects the evolution of the equity multiples of three major Iraqi banks over a ten-year period. The overall analysis reveals significant differences in the financing policies adopted by each bank. National Bank of Iraq (NBI) leads the list with the highest overall average of 3,881. However, this average masks a state of extreme instability. The bank experienced a dramatic rise, peaking at 10,400 in 2022; this value is indicative of a very high reliance on debt and leverage that year. This was followed by a dramatic and abrupt drop to 0.744 in 2024; this reflects a fundamental change in capital structure or a significant reduction in external liabilities.

In contrast, Al-Mansour Bank presents a model of stability and financial prudence, recording the lowest overall average of 1,663 with the smallest standard deviation of 0.559. This suggests that the bank's policy is primarily based on its own equity and avoids the high risks associated with borrowing. Ashur Bank, with an average of 3,629, ranked in the middle, showing significant fluctuations in performance, particularly recording its lowest value of 0.263 in 2022. This presents an interesting contrast, as Al-Ahli Bank reached its peak in the same year, suggesting that each bank's management reacted very differently to the economic conditions at that time.

Looking at the overall timeline of the three banks, the period between 2021 and 2023 was the most active and leveraged, with the group's overall average peaking at 4,692 in 2023. This upward trend clearly ended in 2024, with a collective decline in indicators; suggesting that the banks adopted more cautious policies or were limited in their ability to expand through borrowing due to regulatory changes and new credit controls. Overall, investing in or transacting with Al Mansour Bank is characterized by security and stability, while the National Bank of Iraq offers high growth opportunities but also involves risks and sharp fluctuations in its financial structure.

2. Turnover ratio analysis

This table reflects the changing financial landscape of the National Bank of Iraq, Al-Mansour Bank, and Ashur Bank over a ten-year period, clearly demonstrating significant differences in their levels of performance and stability. Looking at the overall trend, the National Bank of Iraq stands out as the most volatile bank, recording an extraordinary and unusual rise in 2018, reaching 18,904, far exceeding its levels in other years. This results in a high overall average and the highest standard deviation (5.242), indicating that it experienced significant shocks or changes during this period.

In contrast, Al-Mansour Bank followed a more stable path with an overall average of 2.105. Despite its modest start in the early years, it showed gradual improvement and relative stability in the second half of the decade. Ashur Bank, on the other hand, stands out as a model of absolute stability, recording the lowest standard deviation (0.140). This indicates that its performance remained within a very narrow range without significant upside or downside surprises, and is therefore statistically the least risky bank compared to its peers.

Analyzing the overall time trend, we see that the period between 2015 and 2020 was characterized by sharp fluctuations and significant differences between banks. However, in the last four years (2021 to 2024), there has been a remarkable convergence in performance. The figures have begun

to converge significantly, and annual deviation ratios (SD) have fallen to low levels. This change indicates that the banking sector represented in this sample is moving towards stability and uniformity, perhaps due to the influence of unified monetary policies or general economic conditions, leading to this convergence in results by the end of 2024.

2.3.3 Bankruptcy risk analysis using Z-Score

This table presents a significantly different statistical reading from the previous one. The data here shows higher volatility and risk levels for the National Bank of Iraq, Al-Mansour Bank, and Ashour Bank during the ten-year period from 2015 to 2024. In this analysis, Ashour Bank stands out as the best-performing bank in terms of overall average (20.24), but also recorded the highest volatility and standard deviation (22.128) in 2022 (86.35), marking an unprecedented and large jump; this indicates an extraordinary financial event or sharp growth increase in that year.

Al-Mansour Bank ranked second with an average of (15.35), particularly peaking in 2017 (71.24). That year saw a very high annual standard deviation (29.50) overall for all banks. In comparison, the National Bank of Iraq appears as the most stable and calm bank in this table, with an average of 3.35 and a low standard deviation of 3.105. However, in 2024, the decade ended with a significant increase of 12.22, reaching its highest level of the decade.

Overall, the aggregate data reflects that the banking sector represented in this sample experienced two significant periods of volatility or "outliers": the first in 2017 and the second in 2022. These two years resulted in an increase in overall averages and a widening of the statistical gap between banks. By 2024, a relative state of aggregate stability is observed, with the annual standard deviation falling to 1.55, its historically low level. This indicates that the performance of the three banks became more convergent and consistent at the end of this time series compared to the previous turbulent years.

4.1 CONCLUSIONS

1. The study reveals that the banks examined experienced periods of very sharp fluctuations. Abnormal values (e.g., the sudden rise in Al-Ahli Bank in 2018 and Ashur Bank in 2022) indicate that their performance was not the result of sustainable, natural growth, but rather the consequence of financial shocks or sudden changes in the operating environment.
2. The data shows that the bank with the highest average performance (Ashur Bank) also recorded the highest standard deviation, suggesting that the rise in financial indicators occurred alongside a significant increase in risk and uncertainty.
3. A very wide difference exists between the banks during the years of instability (2017-2022); this indicates differences in their ability to cope with crises or capitalize on opportunities in the Iraqi market.
4. 2024 is considered the most important year of the study, as it shows that all three banks reached a state of "numerical equilibrium"; this demonstrates the maturity of organized monetary policies that reduced individual differences between the banks.
5. The study concluded that relying solely on the "arithmetic mean" to evaluate banks in Iraq can yield misleading results, as high standard deviations demonstrate that the financial reality of each year differs significantly from the overall ten-year average.

4.2 Recommendations

1. We recommend that bank managements (especially those of Ashur and Al-Mansur) develop forecasting models to mitigate sharp performance fluctuations and transform sudden financial jumps into stable, predictable, and consistent growth.



2. We recommend that banks disclose the reasons behind anomalies in their annual reports to ensure these jumps are not perceived as instability, thereby strengthening investor and depositor confidence.
3. We recommend that the Central Bank and regulatory authorities examine and strengthen the factors leading to the convergence of bank performance in 2024, making this stability a foundation for long-term lending and investment projects.
4. To reduce reliance on sectors prone to sharp fluctuations (e.g., foreign exchange trading or remittances), we recommend diversifying banking services and ensuring that the standard deviation of financial performance remains low and acceptable.
5. To ensure a realistic and fair assessment of Iraqi private banks, we recommend that researchers and regulatory bodies use composite indicators (coefficient of variance and risk exposure) instead of relying solely on traditional indicators.

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Figure and tables

Figure (1) Equity Multiplier Data

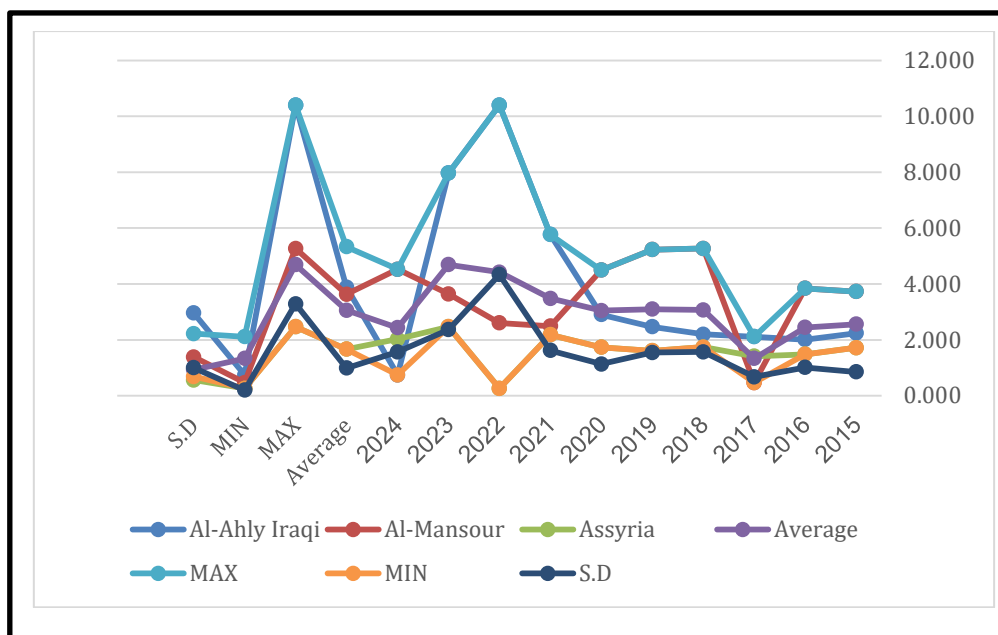


Figure (2) Trading ratio data

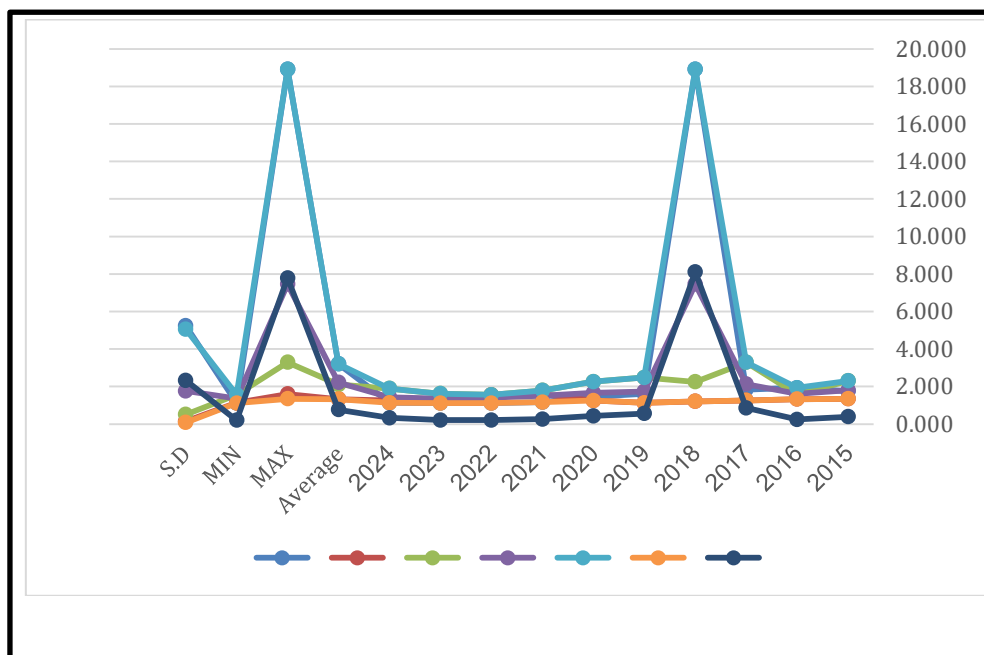


Figure (3) Bankruptcy Risk Data

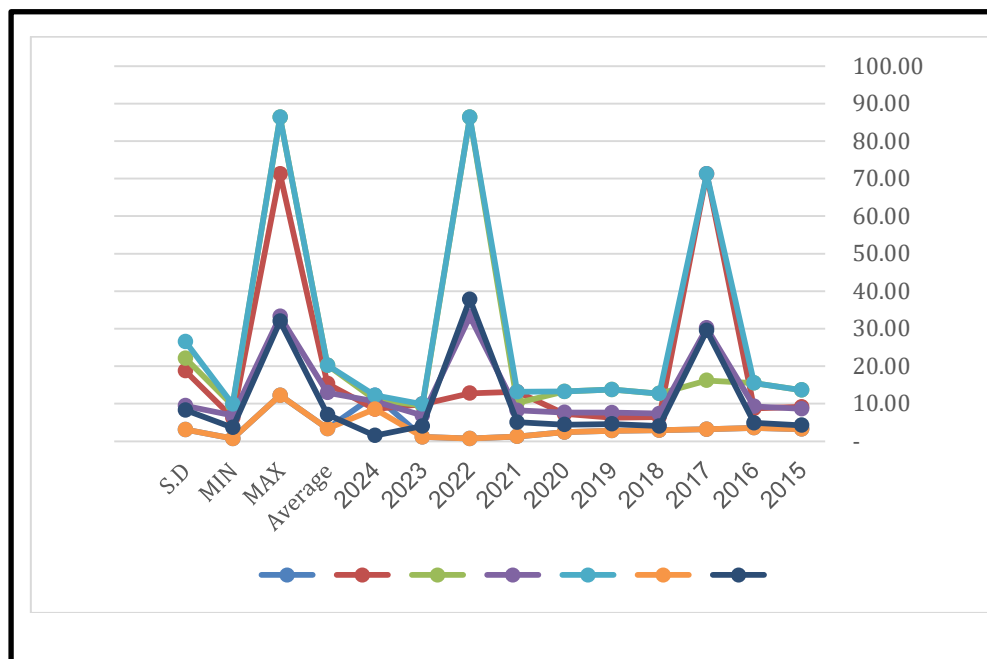


Table (1): Equity Multiplier Data for Banks in the Study Sample (2015-2024)

years	Al-Ahly Iraqi	Al-Mansour	Assyria	Average	MAX	MIN	S.D
2015	2.240	3.729	1.714	2.561	3.729	1.714	0.853
2016	2.011	3.840	1.483	2.445	3.840	1.483	1.010
2017	2.114	0.470	1.412	1.332	2.114	0.470	0.673
2018	2.198	5.269	1.742	3.070	5.269	1.742	1.566
2019	2.466	5.226	1.608	3.100	5.226	1.608	1.544
2020	2.905	4.493	1.733	3.043	4.493	1.733	1.131
2021	5.766	2.492	2.180	3.479	5.766	2.180	1.622
2022	10.400	2.603	0.263	4.422	10.400	0.263	4.334
2023	7.965	3.641	2.470	4.692	7.965	2.470	2.363
2024	0.744	4.525	2.029	2.433	4.525	0.744	1.570
Average	3.881	1.663	3.629	3.058	5.333	1.663	0.991
MAX	10.400	2.470	5.269	4.692	10.400	2.470	3.284
MIN	0.744	0.263	0.470	1.332	2.114	0.263	0.197
S.D	2.961	0.559	1.384	0.933	2.221	0.686	1.000

Table (2): Trading ratio data for banks in the study sample (2015-2024)

years	Al-Ahly Iraqi	Al-Mansour	Assyria	Average	MAX	MIN	S.D
2015	1.755	1.347	2.304	1.802	2.304	1.347	0.392
2016	1.932	1.325	1.587	1.614	1.932	1.325	0.248
2017	1.844	1.257	3.294	2.132	3.294	1.257	0.856
2018	18.904	1.211	2.251	7.455	18.904	1.211	8.107
2019	1.609	1.132	2.485	1.742	2.485	1.132	0.560
2020	1.467	1.256	2.263	1.662	2.263	1.256	0.433
2021	1.167	1.602	1.786	1.518	1.786	1.167	0.259
2022	1.117	1.559	1.563	1.413	1.563	1.117	0.209
2023	1.116	1.340	1.623	1.360	1.623	1.116	0.207
2024	1.131	1.64	1.892	1.429	1.892	1.131	0.332
Average	3.204	2.105	1.329	2.213	3.204	1.329	0.769
MAX	18.904	3.294	1.602	7.455	18.904	1.347	7.788
MIN	1.116	1.563	1.132	1.360	1.563	1.116	0.207
S.D	5.242	0.509	0.140	1.761	5.056	0.082	2.323

Table (3) Z-Score analysis of bankruptcy risks for the period (2015-2024)

Years	Al-Ahly Iraqi	Al-Mansour	Assyria	Average	MAX	MIN	S.D
2015	3.22	9.14	13.65	8.67	13.65	3.22	4.27
2016	3.58	8.72	15.53	9.28	15.53	3.58	4.89
2017	3.18	71.24	16.19	30.21	71.24	3.18	29.50
2018	2.94	6.48	12.71	7.38	12.71	2.94	4.04
2019	2.80	6.28	13.77	7.62	13.77	2.80	4.58
2020	2.44	7.27	13.24	7.65	13.24	2.44	4.42
2021	1.25	13.16	10.25	8.22	13.16	1.25	5.07
2022	0.69	12.79	86.35	33.28	86.35	0.69	37.85
2023	1.15	9.87	9.53	6.85	9.87	1.15	4.03
2024	12.22	8.55	11.18	10.65	12.22	8.55	1.55
Average	3.35	15.35	20.24	12.98	20.24	3.35	7.10
MAX	12.22	71.24	86.35	33.28	86.35	12.22	31.98
MIN	0.69	6.28	9.53	6.85	9.87	0.69	3.65
S.D	3.105	18.763	22.128	9.462	26.560	3.10	8.29