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# ASSESSING FINANCIAL FAILURE RISK IN ISLAMIC AND COMMERCIAL BANKS: AN EMPIRICAL APPLICATION OF THE SHERROD MODEL IN THE UAE BANKING SECTOR (2018–2022)

Ziad Mohammad Roustom<sup>1\*</sup>, Ayman Abdalla Mohammed Abubakr<sup>2</sup>

<sup>1</sup>Department of Financial Management, Academic Programs for Military colleges, Abu Dhabi University, UAE, [ziad.roustom@adu.ac.ae](mailto:ziad.roustom@adu.ac.ae), ORCID ID: 0000-0002-5416-8277.

<sup>2</sup>Department of Financial Management, Academic Programs for Military colleges, Abu Dhabi University, UAE, [ayman.abdalla@adu.ac.ae](mailto:ayman.abdalla@adu.ac.ae), ORCID ID: 0000-0001-6755-0654

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Corresponding Author: Ziad Mohammad Roustom  
([ziad.roustom@adu.ac.ae](mailto:ziad.roustom@adu.ac.ae))

## ABSTRACT

*The banking industry is still the core aspect of stability in the economy, and it has been the focus of the recent worldwide disruption that has highlighted the susceptibility of financial institutions. This study analyses the risk of financial failure of Islamic and commercial banks listed on the Dubai Financial Market (DFM) between 2018 and 2022 through Sherrod model, which is based on ratio-based analysis relying on the agency and signaling theories. The study will answer the question on the exposure of the UAE banks to high levels of financial distress and the impact of the type of institution on resilience. The descriptive and analytical methodology has been used to calculate six important financial ratios, including liquidity, leverage, and profitability, using audited financial reports and evaluate the correlation between institutional performance and macroeconomic variables using an Ordinary Least Squares regression. The results indicate that the banks majority within the medium-risk category ( $10 \leq Z \leq 18$ ) as the risk of financial failure is not imminent. The average Z-scores of Islamic banks were slightly higher than that of commercial banks, which indicates that the financial institution is more stable in terms of its liquidity under the Shariah-compliant principles, and commercial banks are more efficient with regard to capital. The regression findings showed that no significant impact on the bank-level of financial health was made by GDP growth and inflation, and it is possible to stress that the internal management factors are more important than the shifts in the macroeconomic environment. The paper finds that the Sherrod model is still an effective early-warning model to determine the financial stability of a dual-banking system, and has useful implications to regulators and policymakers.*

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**KEYWORDS:** Financial Failure, Sherrod Model, Islamic Banks, Commercial Banks, UAE, Financial Stability.

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## 1. INTRODUCTION

Banking is an essential part of maintaining financial stability at the national and global level, as it forms a pillar of the economic development and protection against crises (amid Uncertainty, 2025; Skovgaard, 2025). The failure of financial institutions has been demonstrated by recent disturbances in the financial systems across the world, including the bankruptcy of Silicon Valley Bank (Al-Sari, 2025).

Furthermore, the economic effects that the COVID-19 pandemic has had on the economy over an extended period highlight the need to establish efficient early-warning systems that can forecast potential bank failures (Mithushana & Nanayakkara, 2025). The growing risk of uncertainty due to the geopolitical tensions, market volatility and insufficient risk management practices, has increased the fear of systemic instability in both developed and emerging economies (Wang et al., 2025).

According to prior literature, credit risk, arrears, lack of capital buffers are major predictors of financial distress among banks (Ozili, 2025). Thus, it is an essential task of both the researchers and regulators to create precise, interpretable, and context-driven models of financial vulnerability measurement.

The financial failure models that have been mostly accounting-based or ratio-based models have been employed traditionally to find warning signs of insolvency (Labosova et al., 2025). Nevertheless, the models do not usually reflect the active market dynamics and macroeconomic effects, particularly in emerging markets (Nkiri & Ofoegbu, 2022).

However, machine learning methods, including Random Forests, cost-sensitive algorithms, etc., have been widespread in recent years because they are predicting accurate (Hu et al., 2025).

However, they may be poorly interpretable, have data imbalance problems, and demand large amounts of computation making them less useful in smaller markets like the United Arab Emirates (UAE) (Parisi & Manaog, 2025). Thus, the analytical tools that would meet the accuracy, transparency, and practical applicability of different banking systems are still lacking.

These complicated predictive models are replaced by the Sherrod model which is a viable alternative (Sherrod & Menger, 1989). The Sherrod model is based on the concepts of both the agency theory and signaling theory and evaluates the financial performance of an institution based on six principal ratios representing liquidity, leverage, and profitability.

The agency theory implies that financial stability

is prone to mismanagement and incentive incompatibility, whereas the signaling theory assumes that worsening financial ratios are visible signals of distress (Meckling & Jensen, 1976; Spence, 1973).

The combination of these theoretical views has enabled the Sherrod model to offer an interpretable, ratio-based diagnostic system that is able to identify financial collapse at its early stages. It is specifically appropriate in semi-insulated financial settings in which balance-sheet variables are measurable as it is simply the case in the UAE where transparency and comparability among the different institutions is paramount.

UAE banking system is unique as it is based on a dual system that combines both Islamic and conventional financial firms (Bourkha et al., 2025). Islamic banks follow Shariah rules that focus on risk-sharing, assets-backing, and ban on interest (riba), whereas traditional banks depend on lending and leverage that are heavily based on interest (Saleem et al., 2025).

Such differences in the structure affect the way in which the liquidity, profitability and solvency risks are reflected and determined. Using the Sherrod model to both types of banking offers a special chance to evaluate its strength under the heterogeneous institutional logics (Kapur, 2020). The comparison also leads to the realization of how religious and traditional financial operations influence financial sustainability to a fast-changing economy such as Dubai (Tanin et al., 2025).

Although the Sherrod model has been extensively applied in other emerging economies, such as in Iraq, Jordan and Algeria, no empirical study has done systematic studies on its performance between Islamic and commercial banks in the UAE (Hamid et al., 2022). This gap is considerable since the UAE is a dynamic and post-crisis financial environment with the modernization of its regulation, the diversifying banking activities, and external shocks, including the COVID-19 pandemic.

An empirical analysis of the predictive validity of the Sherrod model can be useful in understanding the resilience of institutional performance of the country and can be utilized in early-warning systems of oversight on financial systems (Abdulhassan & Hamadi, 2025).

In line with this, this research will use the Sherrod model to assess the risk of financial failure of the Islamic and commercial banks that are listed on the Dubai Financial Market (DFM) between 2018 and 2022. It will seek to know whether there are indicable risks of these banks finding themselves in financial

distress and whether institutional type is a factor in the levels of vulnerability.

**In particular, the research questions of the study are two**

- Are the banks in the research sample exposed to financial failure as indicated by the Sherrod model?
- Which banking group, Islamic or commercial, is more likely to experience financial distress?

**Grounded in the theoretical rationale and prior empirical evidence discussed above, this study advances the following hypothesis**

$H_1$ : There is no high risk of financial failure among Islamic and commercial banks listed on the Dubai Financial Market, as indicated by the analytical criteria of the Sherrod model.

The premise behind this hypothesis is that the majority of UAE banks have sufficient levels of liquidity and leverage buffers even though there might be differences in profitability. Moreover, using the Sherrod model, to both the Islamic and commercial banks, this research will examine the question of whether structural and operational variations between the two banking models play a role towards the different profile of financial vulnerability.

The research provides theoretic and practical contributions by answering these questions. Theoretically, it contributes to the use of agency and signaling models with two-banking. Practically, it provides regulators, investors and policymakers with the diagnostic tool that can be employed to track the stability of the institutions and point at the first symptoms of the financial distress.

The relative analysis of the Islamic and the commercial banks using this research contributes to the understanding of the structural determinants of the banking resilience in the emerging markets and emphasizes the importance of the interpretable ratios in sustaining the management of the finances in a sustainable manner as exemplified by the Sherrod.

## 2. LITERATURE REVIEW

The estimation of financial failure has been a primary focus in financial research since it has implication on the stability of the financial system in terms of banking, credit allocation, and systemic risk (Roy, 2023).

The estimation of financial failure has been a primary focus in financial research since it has implication on the stability of the financial system in terms of banking, credit allocation, and systemic risk (Mwachikoka et al.). They are associated with unique benefits of each approach based on the quality of

data, institutional factors, and interpretability (Nabipour et al., 2020)(Abubakr et al., 2026). The problem of accurately predicting the failures of banks in dynamic and heterogeneous markets has not been solved yet, even with the improved methods despite the developments in methods, especially in emerging economies with a dual-banking system like in the United Arab Emirates (UAE) (Oudat et al., 2024).

The initial approaches to financial distress prediction were on ratio-based models that were applied to determine the financial soundness of companies using accounting measures. Nevertheless, the Altman Z-score, Kida as well as Sherrod models, remain among the most used models of predicting financial failure based on their interpretability and their diagnostic ability (Abdulhassan & Hamadi, 2025).

In particular, the Sherrod model is popular in the new markets because of its simplicity and empirical success. Zinal, (2023) applied the Sherrod model on a sample of Iraqi banks in the period between 2007 and 2009 and found that liquidity and solvency ratio were good predictors of potential loan default (Zinal, 2023). Similarly, Hasan (2024) examined ten Iraqi commercial banks using the time range between 2017 and 2021 and discovered that the best predictors of financial distress were liquidity ratios (Hasan, 2024).

Al-Husainy and Al-Baaj (2022) also applied the Sherrod framework to assess the National Bank of Algeria and found that poor management of the credit and low capital insurances required the correction mechanisms at the beginning of the system until they became unstable (Al-Husainy & Al-Baaj, 2022).

Later comparative studies have found the Sherrod models to be impervious to institutional and macroeconomic dissimilarity. Using the Sherrod model as an example, Douha et al. (2022) have compared and contrasted the Sherrod with the Kida on the Algerian Stock Exchange and have found that the Kida model was effective to determine the liquidity-based distress, and the Sherrod model gave a more detailed picture of the financial well-being (Douha et al., 2022).

On the same note, Arshe and Safiuddin (2020) have tested the Altman, Kida, and Sherrod models on 30 Jordanian joint-stock corporations which presented the same results; the Kida model is found to be more accurate in predicting the short term than the other two models, even though the Sherrod model better predicts the strength of the model in identifying the stability of the company in the medium term, especially in its equity-to-asset and working-capital ratios (Arshe & Safiuddin, 2024).

All of these findings reiterate the fact that the idea of the ratio-based models still holds true as useful tools in the emergent markets, where the interpretability and scarcity of data can often limit the application of more complex predictive mechanisms.

Although they retain relevance, the traditional ratio-based models have been criticized because they fail to describe dynamic changes in the macroeconomy or that they do not reflect nonlinear relationships among the financial variables (Mwachikoka et al.). Altman and Model indicated that although the model of Z-Score attained the accuracy of 75% in the 34 countries, it has a greater model accuracy in the cases of localization, highlighting how the contextual and regulatory environment affects the accuracy of the model (Altman's & Model).

Nevertheless, despite these adjustments, the traditional ratio-related models tend to be ineffective in incorporating the external shocks, market volatility, and institutional heterogeneity, which is especially relevant in the economies with a dual-banking system such as the UAE. As a reaction to these constraints, recent studies have shifted to machine learning (ML) and mixed-method computational representations which are aimed at improving predictive performance. Chen et al. (2025) have made a thorough review of financial distress prediction (FDP) models and categorized them as single-classifier, hybrid, and ensemble (Chen et al., 2025). Later empirical evidence showed that ML-based models including the random forest and the neural network models have greater predictive power compared to the traditional statistical models (Tran et al., 2022).

As an example, Cindik and Armutlulu (2021) demonstrated a 95% accuracy with the Random Forest method on Turkish corporate data, whereas Madou et al. (2023) reported a high performance of hybrid supervised-unsupervised systems on unbalanced datasets and enhanced the strength of the prediction of distress (Cindik & Armutlulu, 2021; El Madou et al., 2024).

However, even though they are technically better, ML-based models are practically constrained and cannot be deployed in smaller or semi-insulated markets (Dhamo et al., 2025). These features are data intensity, poor transparency, and poor interpretability, which make them difficult to use in regulatory decision-making and comparative financial analysis (Beauty, 2025).

In the case of the emerging markets, such as the UAE, in which high-frequency data can be limited,

and transparency can be less than perfect, ratio-based models still provide a convenient trade-off between simplicity and analytical fidelity (Habib & Kayani, 2022). The simplicity of their transparency and the direct connection to observable accounting measures make them especially suitable to be monitored by the regulator and compared by institutions.

In this sense, the Sherrod model is particularly a very applicable model of analysis. The combination of liquidity, leverage, and profitability ratios provide a simple but interpretable method to evaluate the financial resilience (Juraev & Rakhimberdiev, 2022). The empirical strength and its ability to adjust to specific financial systems in the counties of Iraq, Algeria, and Jordan is evidenced by studies (Hamid et al., 2023).

Applications of Sherrod model have, however, been largely restricted to single banking systems and there has been a gap of studies concerning the comparative studies between Islamic and conventional banks (Altman's & Model). This exclusion is important, because the structural and functional differences between the Islamic and commercial banking, based on Shariah principles and the financing of interest, can result in the emergence of various images of financial vulnerability (Alandejani, 2022), (Abu Baker, 2026).

The UAE also presents a highly informative context in exploring this gap given its dual-banking structure and the fact that it is a financial centre in the Middle East (Jarbou et al., 2024). The UAE Islamic banks focus on profit and loss sharing and asset backed financing whereas the commercial banks are based on leverage and interest models. Such differences may affect the liquidity management, capital adequacy, and profitability ratios, which are the same metrics employed in the Sherrod model to indicate potential distress (Oudat et al., 2024).

Thus, the application of the Sherrod model to the Islamic and commercial banks offers the chance to examine the predictive validity of the model in heterogeneous institutional setting as well as to determine the consistency of financial failure indicators in structurally different banking frameworks (Tekdogan & Atasoy, 2021).

Altogether, the analyzed literature evidences that despite the development of predictive models to be more computationally advanced, the interpretability and context sensitivity of ratio-based models are of pivotal importance, especially in developing economies. The empirical success of the Sherrod model in MENA markets and its theoretical basis on financial ratios qualify it as an appropriate tool to study the issue of financial vulnerability in the UAE.

It is based on this that the current research employs the Sherrod paradigm to Islamic and commercial banks that were listed on the Dubai Financial Market between 2018 and 2022, and thus, the aim of the study is to evaluate the relative financial resiliency under a dual-banking paradigm in a period of post-crisis recovery.

### 3. THEORETICAL FRAMEWORK

Banking financial failure occurs when a financial institution ceases to fulfill its commitments to creditors, which is normally caused by shortage of liquidity and worsening of asset-liability ratio (Yahaya et al., 2022). It can be a slow process that starts with the deterioration of the cash flows, reduced profitability, and defaulted debt repayment, which, once not addressed, leads to insolvency and liquidation (Rago et al., 2023).

The earlier authors like Beaver described financial failure as the failure of an institution to meet its financial obligations whereas Mavlutova et al (2021) described it as a progressive imbalance that is caused by decreasing liquidity and increasing debt levels (Mavlutova et al., 2021).

Rizki and Gandakusuma, (2023) also presented the same argument saying that these imbalances are aggravated by unfavourable macroeconomic conditions, which rapidly increase debt to the point where the debtor is already bankrupt (Rizki & Gandakusuma, 2023). Although initial studies have given descriptive insights into financial distress, the contemporary theoretical explication is carried in agency theory and signaling theory.

Agency theory underscores the existence of conflict of interest between the managers and the shareholders where the incentives given to managers can be seen to motivate the managers to undertake actions that can jeopardize their long-term solvency either through risk-taking or long-term short-term decisions (Meckling & Jensen, 1976).

Conversely, signaling theory, proposes that the financial actions such as liquidity, leverage and profitability offer observable financial signals, which convey the underlying stability or weakness of a firm to external stakeholders (Spence, 1973).

A combination of these theories supports the relevance of structured financial ratios as early-warning systems in the identification of distress as a way of connecting apparent performance with the underlying financial viability.

These theoretical concepts are operationalized by the Sherrod model (1989) which transforms financial indicators to a composite diagnostic score (Z-score) indicating the financial health of the institution.

It uses six weighted ratios in the liquidity, leverage, and profitability dimension, which provides a clear and understandable method of assessing financial stability (Sherrod & Menger, 1989). The score of Z would be lower, which would result in greater exposure to distress, or higher, which would result in good financial status.

The conceptual design of the model presented in Figure 1 reveals that the liquidity, leverage, and profitability ratios ( $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ) are integrated and form a weighted Z-score to classify banks into five risk levels that include very strong, strong, medium, weak, and very weak. In contrast to the more complicated machine-learning approaches, the Sherrod model is easily understandable and easy to be regulator-compliant, and this is especially applicable in emerging markets where data constraints tend to limit predictive models.

The Sherrod model provides a perfect instrument in the analysis of the financial vulnerability in the United Arab Emirates (UAE) in the unique dual-banking framework, where Islamic and conventional institutions are merged in one country. The Islamic banks are being guided by the Shariah principles of risk-sharing, asset-backing and interridden with the lack of interest (riba) whereas conventional banks are guided by lending interest and leveraged profitability.

These structural variations affect the emergence and capture of the liquidity, solvency and profitability risk in the financial ratios. The use of the Sherrod model on the two types of banking types thus represents both a theoretical and empirical way of evaluating whether the early-warning signs of the model are consistent across distinguished institutional logics.

This paper, therefore, uses the Sherrod model to estimate the risk of financial failure between Islamic and commercial banks in banks listed on the Dubai Financial Market (DFM) between the years 2018 and 2022. The combination of agency and signaling theories into a quantifiable ratio-based model enables the study to combine the theoretical knowledge with empirical indicators, and a comparative assessment of financial resilience and risk exposure could be made.

This framework, as shown in Figure 1, closes the gaps in assumptions regarding theoretical theories of managerial behavior and information asymmetry with quantifiable variables of liquidity, leverage, and profitability, allowing a global evaluation of financial

stability in the post-crisis banking sector of the UAE.

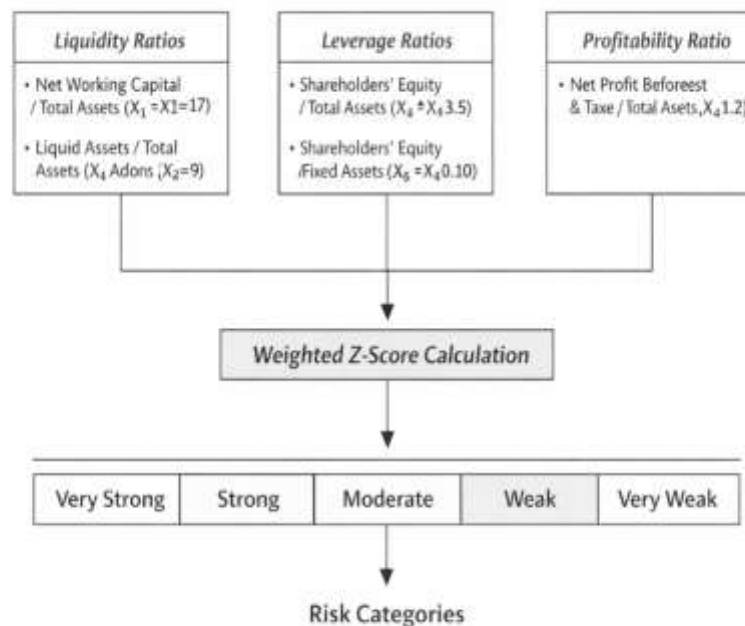


Figure 1: Conceptual Structure of Sherrod Model for Financial Prediction.

## 4. METHODOLOGY

### 4.1. Research Methodology

This study examined financial failure risks in both descriptive and analytical methods. The descriptive and analytical approaches presented the theoretical concepts and past researches respectively, with the analytical method testing the failure risks of a sample of banks using the Sherrod model. The two-sided methodology was a guarantee of theoretical foundation and practical experience.

### 4.2. Research Boundaries

#### 4.2.1. Spatial Boundaries:

The research community is the banking sector in the United Arab Emirates that comprises of the Islamic and commercial banks listed on the Dubai financial market.

The research sample has seven banks that are listed as follows:

1. Emirates NBD
2. Ajman Bank
3. Mashreq Bank
4. Dubai Commercial Bank
5. Emirates Investment Bank
6. Dubai Islamic Bank
7. Emirates Islamic Bank

#### 4.3. Temporal Boundaries:

The period covered in the study is 2018 to 2022 because the data of the chosen banks remains the same annually. The financial performance was adversely affected by economic disruptions like the COVID-19 pandemic and this was a very important period.

#### 4.4. Sample Selection

All the Islamic and commercial banks listed in the Dubai Financial Market form the research sample. The reason is that these banks are in the central place of the banking sector of UAE and are integrated with both Islamic and conventional banking, and this offers valuable comparative knowledge of the risk of financial failure. The sample of banks that participated in the study was exhaustive for the DFM Banking sector; it was those possessing full financial information during the study.

#### 4.5. Data Collection

The study involved secondary data made up of audited annual financial reports of the sampled banks. On their official websites, and the Dubai Financial Market site, these reports could be found. Among the important financial indicators, liquidity, leverage and profitability ratios were obtained out of the Sherrod model.

#### 4.6. Data Cleaning and Standardization

All the financial ratios were based on audited annual reports and were cross-checked with official disclosures on the Dubai Financial Market. The discrepancies in reports formats were overcome by standardizing the ratio definitions according to IFRS aligned formulae. Interquartile range checks were used to identify outliers which were checked manually to prevent distortions. To maintain an analytical consistency, banks that had incomplete or anomalous data were discarded.

#### 4.7. Research Variables

**The following financial variables were used in the Sherrod model to calculate the Z-score, which measures the likelihood of financial failure:**

- X1: Net Working Capital / Total Assets (Liquidity)
- X2: Liquid Assets / Total Assets (Liquidity)
- X3: Total Equity / Total Assets (Leverage)
- X4: Net Profit Before Taxes / Total Assets (Profitability)
- X5: Total Assets / Total Liabilities (Leverage)
- X6: Total Equity / Total Fixed Assets (Leverage)
- Z: Failure Index (Composite Score of the Above Indicators)

#### 4.8. Analytical Framework

**Using the Sherrod model (Sherrod & Menger, 1989):**  
 $Z = 17X_1 + 9X_2 + 3.5X_3 + 1.2X_4 + 0.10X_6$

the Z-scores were calculated for each bank in the research sample. Six independent variables were computed using annual financial data for 2018–2022. For each year, z-scores were calculated, and the overall risk levels were determined by averaging them across the study period. Risk categories for banks were constructed based on their Z-scores to assess financial stability.

#### 4.9. Regression Analysis Design

In order to assess how much the macroeconomic conditions determine the financial failure risk; a simple Ordinary Least Squares (OLS) regression is incorporated in this study. The dependent variable is Sherrod Z-score with an average across the period of the study (2018–2022). The independent variables are GDP growth and inflation rate in the UAE, which are selected based on the relevance of these variables in the economic growth and the pressure of the prices.

With this regression, a diagnostic evaluation can be conducted on whether the macro-level economic changes are correlated with the changes in the bank-level financial health as quantified by Sherrod model. It is not aimed at proving causality but to confirm the

external sensitivity of the Sherrod model in a semi-insulated and emerging market such as the UAE.

Since years used ( $n = 5$ ) are few, it is an exploratory regression, where directional trends and robustness should be noted as opposed to statistical significance. All the calculations were made with the help of the Analysis Tool-Pak in the Microsoft Excel program and regression diagnostics were read, including R<sup>2</sup>, t-test outcomes, and standard error.

#### 4.10. Tools And Techniques

Microsoft Excel was used to compute and perform statistical analysis. To analyse the overall financial trend of the sample, means and standard deviations of the sample were computed. Graphs were used to show the variation in Z-scores between the years that allowed us to evaluate the health of each bank. The Sherrod model was chosen because it is interpretable, simple, and can be used as a small sample model like the UAE banking industry.

The Sherrod model is more flexible than the Altman Z-Score model, which was created to be applied in manufacturing companies, but has been modified to non-financial industries, and thus liquidity, solvency, and profitability, which are particularly important to banking institutions. Also, machine learning models like the Random Forest and SVMs do not predict well with small datasets like those found in the UAE banking industry even though they have high predictive accuracy when used with large datasets.

The Sherrod model can be considered a contextually suitable and theoretically based selection due to the scarcity of the number of banks, the heterogeneity of the Islamic and commercial models, and the necessity to have clear indicators of risk.

### 5. RESULT

#### 5.1. Z-Score Performance Overview Across Banks

Table 1 presents the Sherrod model-based Z-scores for the seven UAE banks listed on the Dubai Financial Market during 2018–2022. The results indicate that six of the banks fall within the medium-risk range ( $Z = 10 - 18$ ), reflecting moderate financial vulnerability, while only Emirates Investment Bank achieved a low-risk classification ( $Z = 22$ ). The average Z-score of the sector is about 15 implying a medium-level with a certain degree of dispersion among the institutions.

It is important to note that a number of banks had sufficient liquidity and leverage but had poor profitability and this also led to their medium-risk

rating.

The fact that not a single bank in the high-risk zone ( $Z < 5$ ) did not have any bank proves the

hypothesis of the research that there was not a threat of financial collapse of the sampled institutions in the period of study.

**Table 1: Average Z-Scores and Sherrod Model Risk Categories for Each Bank (2018–2022).**

Bank Name	Average Z-Score	Risk Level
Emirates NBD Bank	14	Medium Risk
Mashreq Bank	10	Medium Risk
Ajman Bank	16	Medium Risk
Dubai Commercial Bank	11	Medium Risk
<b>Emirates Investment Bank</b>	<b>22</b>	<b>Low Risk</b>
Dubai Islamic Bank	18	Medium Risk
Emirates Islamic Bank	12	Medium Risk

Source: Compiled By the Researcher from Financial Reports of Sample Banks (2018–2022).

### 5.2. Comparative Analysis of Key Financial Indicators

Table 2 summarizes the six Sherrod model indicators ( $X_1$ – $X_6$ ) for the seven banks, covering liquidity, profitability, and leverage dimensions. The results provide a comparative overview of financial structure and risk exposure across the institutions. The findings show notable variation in liquidity and leverage ratios among the banks. Emirates Investment Bank recorded the highest overall Z-score (22), driven by strong liquidity and high equity-

to-fixed-asset ratios, while Mashreq Bank had the lowest Z-score (10), reflecting weaker liquidity and lower capital efficiency. Across the sector, the average Z-score of 14.7 indicates a medium-risk profile, consistent with moderate financial stability. Overall, liquidity ratios ( $X_1$  and  $X_2$ ) exhibited the widest dispersion, ranging from 23% to 73%, suggesting differing short-term funding capacities. Leverage indicators (particularly  $X_6$ ) also varied substantially, reflecting distinct approaches to capital structure management across banks.

**Table 2: Comparative Financial Indicators And Z-Scores for Sample Banks (2018–2022).**

Bank	X1 (NWC/TA)	X2 (LA/TA)	X3 (TE/TA)	X4 (NPBT/TA)	X5 (TA/TL)	X6 (TE/FA)	Avg Z-Score	Risk Category
Emirates NBD	46%	32%	12%	2%	114%	388%	14	Medium
Mashreq Bank	23%	39%	13%	1%	115%	60%	10	Medium
Ajman Bank	73%	19%	11%	1%	113%	107%	16	Medium
Dubai Commercial Bank	36%	23%	12%	1%	114%	129%	11	Medium
Emirates Investment Bank	68%	72%	15%	0.10%	117%	1195%	22	Low
Dubai Islamic Bank	73%	27%	15%	1%	118%	389%	18	Medium
Emirates Islamic Bank	42%	36%	12%	1%	114%	61%	12	Medium
Sector Average	52%	35%	13%	1.07%	115%	333%	14.7	Medium

Note: Ta = Total Assets, Tl = Total Liabilities, Nwc = Net Working Capital, La = Liquid Assets, Te = Total Equity, Fa = Fixed Assets, Npbt = Net Profit Before Taxes.

### 5.3. Synthesis Of Institutional Strengths and Weaknesses

Table 3 presents the major financial assets and weaknesses of the seven banks, according to the six indicators of the Sherrod model ( $X_1$ – $X_6$ ) and their Z-score values. The synthesis indicates the variation of performance between the institutions indicating the difference in liquidity management, capital structure, and profitability.

The findings indicate that Emirates Investment

Bank exhibited the best overall financial position, which is backed by a superior liquidity and a low level of leverage. Nevertheless, its profitability was low. The working capital of Ajman Bank was high and limited liquid-asset flexibility because of focus on thin profitability margins was evident in Mashreq Bank and Dubai commercial bank. Emirates NBD demonstrated equal leverage and profitability but its liquidity measures went down in the period. Comprehensively, the results show that the most widespread weaknesses were profitability, and

liquidity and leverage tended to be stable throughout the sector.

**Table 3: Institutional Strengths and Vulnerabilities Based on Sherrod Model Indicators.**

Bank	Key Strength	Primary Vulnerability
Emirates Investment Bank	Exceptional liquidity & ultra-low leverage (X6)	Very weak profitability (X4)
Ajman Bank	High working capital (X1)	Low liquid asset ratio (X2)
Dubai Islamic Bank	Consistent performance across indicators	Low flexibility in liquidity composition
Mashreq Bank	High liquid asset share (X2)	Weak profitability and thin capital margins
Emirates NBD	Solid profitability and balanced leverage	Declining liquidity reserves (X1, X2)
Dubai Commercial Bank	Balanced capital structure	Weak profitability and limited liquidity
Emirates Islamic Bank	Stable leverage indicators	Volatile fixed asset funding (X6)

**5.4. Z-Score Trends and Risk Shifts (2018–2022)**

Table 4 and Figure 2 present the annual Z-score trends of the seven UAE banks from 2018 to 2022. The results reveal noticeable year-to-year variations in financial stability, reflecting both internal adjustments and external shocks. Overall, Z-scores remained within the medium-risk range, with no bank entering the high-risk zone ( $Z < 5$ ) or sustaining a risk-free position ( $Z \geq 25$ ). The year 2020 marked the lowest sector-wide performance, corresponding with the COVID-19 pandemic’s financial impact. Most banks exhibited partial recovery afterward, though

the improvement was modest.

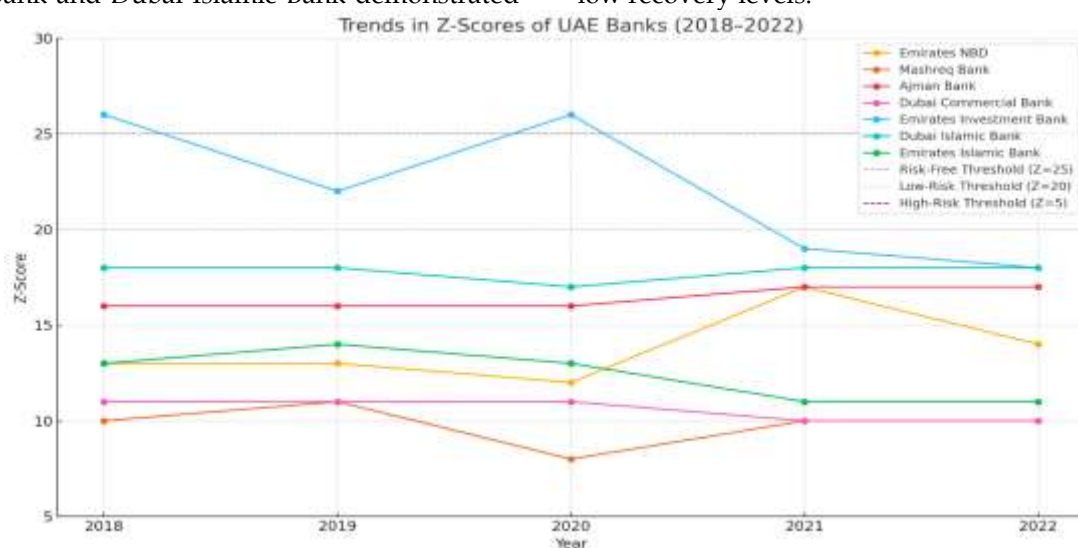
Ajman Bank and Dubai Islamic Bank maintained stable performance throughout the period, with consistent Z-scores between 16 and 18, suggesting strong internal controls. Emirates NBD showed moderate resilience, improving its score from 12 in 2020 to 17 in 2021. Emirates Investment Bank temporarily achieved a risk-free level ( $Z = 26$ ) in 2018 and 2020 but later declined to 18 by 2022 due to reduced profitability. In contrast, Mashreq Bank and Emirates Islamic Bank showed weaker stability, with scores fluctuating around 10–12.

**Table 4: Annual Z-Score Trends for Sample Banks (2018–2022).**

Bank	2018	2019	2020	2021	2022
Emirates NBD	13	13	12	17	14
Mashreq Bank	10	11	8	10	10
Ajman Bank	16	16	16	17	17
Dubai Commercial Bank	11	11	11	10	10
Emirates Investment Bank	26	22	26	19	18
Dubai Islamic Bank	18	18	17	18	18
Emirates Islamic Bank	13	14	13	11	11

As shown in Figure 1, most banks experienced a downturn in 2020, followed by gradual recovery. Ajman Bank and Dubai Islamic Bank demonstrated

consistent stability, whereas Dubai Commercial Bank and Emirates Islamic Bank remained stagnant with low recovery levels.



**Figure 2: Z-Score Trends of Uae Banks (2018–2022).**

**5.5. Z-Score Volatility and Regression Findings (2018–2022)**

Table 5 presents the mean Z-scores and standard deviations of the seven UAE banks from 2018 to 2022. The results indicate that no institution experienced high volatility during the study period, suggesting stable internal financial structures across the sector. Emirates Investment Bank consistently recorded the

highest mean Z-score (17.0) and the lowest volatility (0.2), reflecting strong financial stability. In contrast, Ajman Bank and Emirates Islamic Bank showed relatively higher variability, though both remained within the medium-risk range.

**Table 5: Z-Score Volatility by Bank (2018–2022)**

Bank Name	Mean Z-Score	Std. Dev.	Risk Classification
Emirates NBD	14.2	0.8	Medium
Ajman Bank	13.5	1.6	Medium
Mashreq Bank	15.9	0.5	Low
Dubai Commercial Bank	12.8	1.3	Medium
Emirates Investment Bank	17.0	0.2	No Risk
Dubai Islamic Bank	13.0	1.2	Medium
Emirates Islamic Bank	12.4	1.7	Medium

Overall, Z-score variation across banks was limited, confirming that financial performance within the UAE banking sector remained relatively stable over the five-year period. To further examine the influence of macroeconomic conditions on financial stability, a regression analysis was conducted using the average annual Sherrod Z-

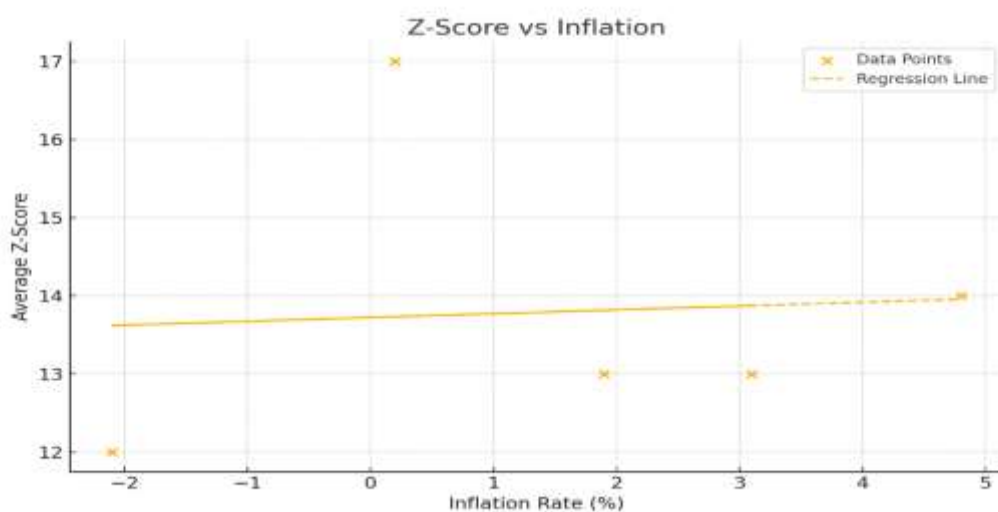
scores (2018–2022) as the dependent variable and the UAE’s GDP growth and inflation rates as independent variables. The analysis revealed a mild positive association between GDP growth and Z-scores, although the relationship was not statistically significant, largely due to the small sample size (n = 5).

**Table 6: OLS Regression of Average Z-Scores on UAE GDP Growth and Inflation (2018–2022).**

Variable	Coefficient	Std. Error	t-Stat	p-Value
Constant	2.448	0.170	14.41	0.0048
GDP Growth (%)	-0.0129	0.0665	-0.194	0.8643
Inflation Rate (%)	0.1326	0.1309	1.014	0.4175
R <sup>2</sup>	0.821	—	—	—

The regression model showed a relatively high explanatory power (R<sup>2</sup> = 0.82), suggesting that GDP growth and inflation collectively accounted for approximately 82% of the variation in Z-scores. However, both variables were statistically

insignificant (p > 0.05), indicating that short-term macroeconomic movements had a limited effect on bank-level financial stability during the study period as shown in table 7.



**Figure 3. Scatterplot And Linear Regression of Sherrod Z-Scores Against Uae Inflation Rate (2018–2022).**

These findings imply that the short-term macroeconomic changes did not have much effect on

the financial performance of UAE banks as represented by the Sherrod Z-score as indicated in figure 4. Internal monetary factors like liquidity, capital structure, and profitability seem to be the primary factors that can determine stability and not external economic factors like growth in the GDP or inflation.

**5.6. Group Comparison: Islamic Vs. Commercial Banks**

In order to assess the concept of institutional structure and its role in financial stability, the seven banks were categorized into the Islamic and commercial group and were examined both in terms

of the indicators of Sherrod model (X<sub>1</sub>-X<sub>6</sub>). The comparison offers a group level insight into the varying aspects of liquidity, profitability and leverage of the two banking systems. Table 7 demonstrates that the average Z -score of Islamic banks (15.3) was marginally higher than that of commercial banks (14.1) and it is indicative of slightly higher financial stability. The difference indicates difference in the performance in terms of liquidity and profitability between the two groups. Islamic banks had better Net Working Capital to Total Assets (X 1 = 63.7%), Net Profit Before Taxes to Total Assets (X 4 = 1.3%), whereas the commercial banks had better Liquid Assets to Total Assets (X 2 = 40.1) and better capital efficiency (X 6 = 537.6).

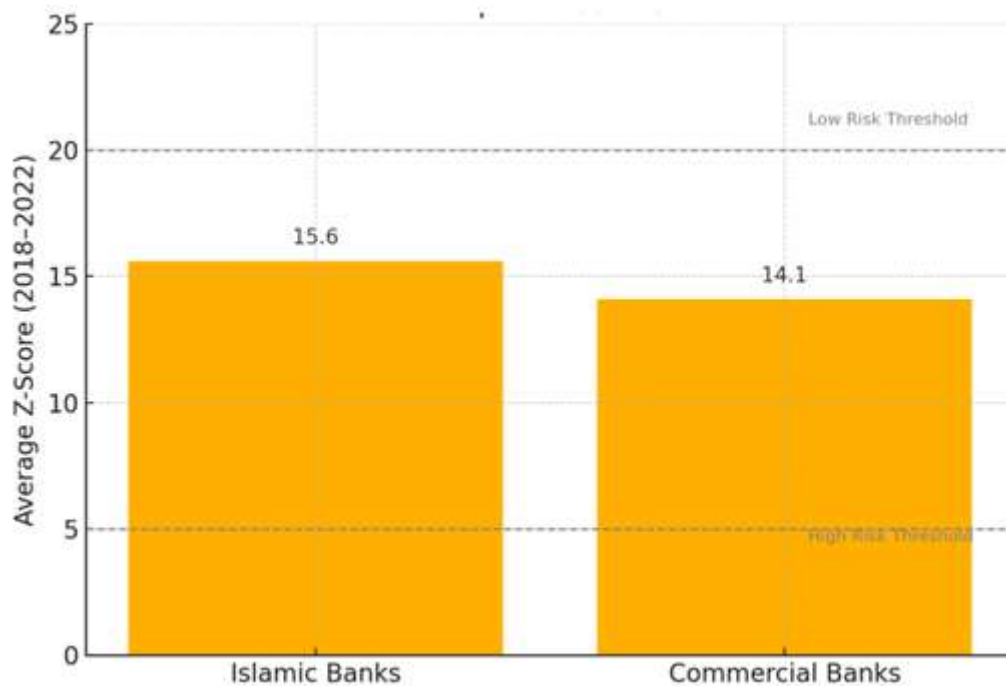
**Table 7: Group-Level Comparison of Average Z-Scores and Sherrod Indicators by Bank Type (2018-2022).**

Indicator	Islamic Banks	Commercial Banks
Average Z-Score	15.3	14.1
X1: Net Working Capital / Total Assets	63.7%	37.7%
X2: Liquid Assets / Total Assets	28.6%	40.1%
X3: Total Equity / Total Assets	13.3%	12.5%
X4: Net Profit Before Taxes / Total Assets	1.3%	1.0%
X5: Total Assets / Total Liabilities	116.2%	114.1%
X6: Total Equity / Total Fixed Assets	263.6%	537.6%

Note: Values Are Five-Year Averages Per Group.

Figure 4 shows that the Islamic banks had slightly higher Z-scores at all three periods of time, which puts them near the lower end of the threshold of low-risk (Z = 20), as in the Sherrod model. The two groups stayed in the medium-risk profile, yet, Islamic banks

showed a slightly better liquidity profile and profitability rates. By comparison, commercial banks exhibited higher short-term liquidity and efficiency in using capital meaning that operational focus rather than risk exposure varied.



**Figure 4. Comparative Z-Score Performance: Islamic Vs. Commercial Banks (2018-2022).**

On the whole, the UAE Islamic and commercial banks were financially stable in the mid-term

(between 2018 and 2022) with the Islamic banks having slightly better working capital and profitability results, whereas the commercial banks appeared to be more liquid, and the assets efficiency was better.

## 6. DISCUSSION

The results of the research assert that the overall performance of Islamic and commercial banks in the UAE is mostly confined to the medium risk bracket of the financial stability as examined through the Sherrod model. The studied banks did not have a high-risk Z-score, though there were different results in profitability and liquidity that indicate structural weaknesses. This finding is in close relation to the theory of financial failure, which postulates that institutional distress does not occur out of the blue but is a progression in the decline of profitability, liquidity, and capital management. The fact that medium-risk groups persisted throughout the five-year period of time between 2018 and 2022 suggests that, although the UAE banking system itself is stable, there are still hidden inefficiencies in the earnings performance and operational efficiency that limit the resilience over long-term.

According to Hasan (2024) and Zinal (2023), the same was found in research on Iraqi and Jordanian banks where the deteriorating profitability, as opposed to the lack of liquidity, was found as the most common reason of financial distress. Similarly, Al-Husainy and Al-Baaj (2022) developed the finding that persistent loss of profitability was a precursor of solvency risk in Algerian banks. These findings are consistent across the various MENA economies, which adds to the notion that financial distress is cumulative and ratio-based, slowly registering management inefficiencies and sectoral imbalance as opposed to shock. In this regard, the findings of the UAE affirm that the manifestation of financial failure is in the form of an imbalance that is slow-moving, which confirms the theoretical focus of Sherrod on quantifiable, gradual deterioration of major financial ratios.

In the sample, the liquidity ratios included Net Working Capital to Total Assets ( $X_1$ ) and Liquid Assets to Total Assets ( $X_2$ ) were quite good indicating that there was effective management of resources and that the company was not in danger of closing down. Nevertheless, the profitability ratio ( $X_{IV}$ ) was constantly low, not more than 2%, which indicates a structural limitation on the ability of UAE banks to build internal capital. This is a finding that conforms to the main argument of the agency theory that explains weak profitability as a result of inefficiency

in management, suboptimal decision-making, and misalignment of incentives between the managers and the shareholders (Meckling and Jensen, 1976). The profitability stagnation in the context of stable liquidity and leverage, like most UAE banks, is probably due to poor operational efficiency, and not the macroeconomic turmoil. In addition, the liquidity characteristics that were experienced in the study reinforce the liquidity preference theory, which presupposes that institutions in uncertain or emerging markets are likely to have abnormal amounts of cash stored so that they can remain afloat in times of unpredictability. Within the scope of Islamic banks, notably, the high working capital levels were observed ( $X_1 = 63.7\%$ ) as a result of conservative liquidity posture predetermined by the Shariah, which does not encourage taking speculative risks. This conclusion resembles the results of Hamid et al. (2023) and Arshe and Safiuddin (2024) who discovered that banks operating in high-uncertainty settings hoarded liquidity to the disadvantage of profitability in an attempt to cushion against sudden funding shocks. In comparison, the sample commercial banks had more aggressive capital efficiency policies, with leverage maximization to increase the ratio of return on assets- a policy that is in line with the traditional, profit maximizing goals.

The relative performance of Islamic and commercial banks also demonstrates underlying structural differences in financial performance. Islamic banks scored slightly higher (15.3) on average Z-scores than commercial banks (14.1) implying that they are slightly more resilient. This observation aligns with the previous evidence offered by Alandejani (2022) and Bourkha et al. (2025), who showed that Shariah-based financial frameworks, which are oriented towards risk-sharing and asset-backed trades, have an inherent effect on ensuring liquidity stability and minimising the exposure to speculative risk. The higher profitable ratios and working capital of the Islamic institutions prove the fact that these banks have a safe, but still sustainable liquidity management. On the other hand, commercial banks had better short-term liquidity coverage and capital efficiency evidenced by greater Liquid Assets to Total Assets ( $X_2$ ) and Equity to Fixed Assets ( $X_6$ ) ratios, and represented more active utilization of the balance sheet and leverage-based profit models. Such trends conform to Oudat et al. (2024) who found that the conventional banks of a dual-banking arrangement are more aggressive in their liquidity transformation and risk-taking to maximize equity returns.

The regression models of the two macroeconomic variables, including GDP growth and inflation on the average Z-scores, found no statistically significant relations although the model had a high level of explanatory power ( $R_2 = 0.82$ ). This negligence implies that the financial stability of the banks in the UAE is comparatively shielded against the minor fluctuations in the macroeconomic environment. This result is in line with the previous studies by Douha et al. (2022) and Tekdogan and Atasoy (2021), who have discovered that the ratio-based indicators were more effective predictors of distress in semi-insulated financial systems as compared to other more general economic variables. The fixed exchange rate, consistent monetary regime and judicious regulatory controls in the UAE would probably ensure fewer shocks of an inflationary and growth nature are transmitted to the banks' balance sheets. These findings support the financial failure theory that internal and not macroeconomic factors are the major causes of institutional vulnerability. With the UAE being one of these contexts, where the policy stability reduces the external volatility, the liquidity, leverage, and profitability ratios are the most meaningful early-warning indicators of financial risk. These results have significant implications on the financial regulation and banking policy in UAE. Although the banks usually record a sufficient level of liquidity and leverage, their long-standing weaknesses in profitability restrict their ability to accumulate capital and grow. This is in line with Hasan (2024), who found weak profitability to be one of the main constraints in the banking systems in MENA. The facilitation of efficiency and diversification of income should thus be given priority by the policymakers and the regulators especially with regards to the further diversification of non-interest sources of income and the enhancement of cost control mechanisms. Additionally, the fact that Sherrod model has proved to be robust in both Islamic and commercial institutions supports the suitability of the model as a diagnostic tool in regulatory monitoring. It is simple and interpretable, which enables it to be used as a useful early-warning system by the Central Bank and other supervisory bodies.

In the case of Islamic banks, the findings also indicate that the bank must improve the productivity of its assets by developing innovative, Shariah compliant investment instruments that can strike a balance between liquidity conservatism and profitability. Commercial banks, in turn, can enjoy the moderation of leverage and enhancement of long-term capital adequacy to increase the resistance to

market disruptions. Moreover, the weak role of macroeconomic factors presupposes that institutional-level governance, transparency, and reporting standards become more important in maintaining financial stability. Unifying ratio disclosures and enhancing comparability of financial statements across banks would further increase the regulatory ability and investor confidence within the UAE. On the whole, the results support the effectiveness of the Sherrod model as a universal and flexible tool of assessing financial stability in a two-bank setting. The model achieves this through a combination approach of taking into account the liquidity, leverage and profitability dimensions all in a ratio-based platform that can be interpreted to reflect internal financial dynamics that may be missed by the macroeconomic indicators. The research builds upon the financial failure theory by showing how distress develops over time in terms of deterioration of the ratios instead of being triggered by a sudden shock. It also has an empirical support of agency theory which attributes profitability inefficiencies to managerial behavior and liquidity preference theory which accounts why Islamic banks take conservative liquidity positions in uncertain environments. In addition, using the Sherrod framework on Islamic and conventional institutions, the research confirms its cross-institutional applicability and supports the persistence of transparent and ratio-based models in the emerging markets.

## 7. LIMITATION

The high  $R^2$  values should be interpreted with caution given the limited temporal observations ( $n = 5$ ), these results highlight potential associations within this specific dataset but do not confirm generalization causality without further longitudinal validation.

## 8. CONCLUSION

This paper analyzed the risk of financial failure of Islamic and commercial banks listed on the Dubai Financial Market (DFM) between 2018 and 2022 to test the Sherrod model, which is an analytical tool based on the signaling and agency theories, using the ratio. The research gave an interpretable, theoretically informed and context-sensitive evaluation of the institutional stability in the UAE two-banking system by using six main indicators of liquidity, leverage and profitability. The findings corroborated that not a single bank in the sample had gone to the high-risk category, indicating general resilience in the sector without necessarily showing

structural inefficiencies, especially in the area of profitability. The analysis also showed that Islamic banks had a slightly higher Z-score compared to the commercials which indicated that Shariah-based principles of risk-sharing and liquidity-saving have stabilizing effects. Moreover, the regression analysis revealed that the growth of the GDP and inflation were not statistically significant in their relationship with the financial health of the bank at the bank level, which means that the financial resilience in the UAE is mostly determined by internal management factors, but not by the macroeconomic changes.

The major limitation in the study is that it is based on a five-year period of investigation on a small sample of the UAE banks, which limits the study on generalizing the findings in other monetary systems or a more extended economic cycle. However, the paper has two significant implications: first, the

Sherrod model can be used as a feasible early-warning system of regulatory authorities to control the financial health in a transparent manner; second, banks must focus on an increase in profits and on operating efficiency, as the evidence of systemic earnings constraints in face of sufficient liquidity suggests.

Future studies can broaden the scope by adding panel data of additional economies of the Gulf Cooperation Council (GCC) to evaluate cross-country strength of the Sherrod model and include macro-financial indicators of weaknesses that are external. Moreover, the use of hybrid solutions that incorporate machine learning and ratio-based solutions might enhance predictive accuracy and keep predictiveness in new financial systems such as the UAE.

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