EXAMINING BANKS' FAILURE IN THE MENA REGION

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Abstract

This paper investigates whether or not banks in the MENA region are susceptible to failures. Two z score models are investigated in predicting the health of ninety banks across ten countries. Using discriminant and regression analysis, one can determine which ratios are statistically significant in predicting the health of the selected banks and which zone they belong to safe, grey, or distressed zone. The study spans the years 2006 to 2016. The goal of this study is to compare two z scores to assess if banks within MENA are subject to failure. According to the findings of this study, the Z score developed by El Ansary may be a better way for emerging economies to measure the indicators that rigger banks' risk level.

1. INTRODUCTION

Bank soundness is and will always be the concern of several parties, noting the stakeholders, customers, creditors, regulatory and supervisory regimes. The damages caused by the collapse of the financial system or even by just the fractures within the banking sector will put them at risk. Such impairments lead to a mistrust in the management and functioning of these financial institutions and accordingly impact banks' soundness. During the last few decades, the banking sector witnessed a foremost alteration in its environment which impacted its safety. Being subject to instability at both the macro and micro level has shaken the solid image of the banking sector. The series of crises, most recently the global financial crisis that occurred from 2008 to 2010, have prompted us to consider which banks may fail. Determining their current position is a must in order to build a more rigid system and to take proactive measures in order to minimize any negative consequences. Therefore, studying the status of the banking sector in the Middle East and North Africa (MENA) provides an accurate assessment of the current status of such financial institutions. Hence, determining the extent to which they are subject to failure is crucial to a wide range of stakeholders.

Financial stability is a prerequisite for the stable political and economic well-being of a country. When financial institutions, financial markets, and financial infrastructures are unwavering, the economy operates at a healthy and dynamic pace. The stability of the first component, financial institutions, is regarded as an important pillar in maintaining and safeguarding a country's business performance (Cihak et al., 2012; Carmona et al. 2019).Without the support of financial institutions, which play the role of facilitators of international transactions, most businesses will be trapped with slowing operations and profitability (Albertazzi et al., 2009). The health status of banks reflects the extent to which banks are at risk of financial problems, and thus have a risk to the country's economy. When banks face financial distress, undesirable business decisions are taken such as downsizing, shutting down, or even exiting the market (Carvalho et al., 2015).

The banking sector constitutes the vital artery of financial institutions for economic growth since it acts as an intermediary between the parties that have a surplus of funds and those who have shortages. Such intermediation makes financial resources accessible to institutions and helps boost the economy. Banks provide cash for individual borrowers, fund the business sector, and offer a rich assortment of financial services. They help governments by providing them with loans, establishing large business ventures, and intervening and assessing the effectiveness of a country's monetary and financial strategies (MacDonald et al., 2006). The banking sector is the bedrock of any nation's economy, and for that reason, the mutual trust between the financial institutions and those involved directly or indirectly with these institutions is the foundation of a strong financial regime. In fact, such trust will boost the economy and create a healthier environment where depositors constitute the financial resources for banks (MacDonald et al., 2006). Hence, there is a need to continuously monitor and assess bank soundness in order to achieve crisis prevention, crisis prediction, and crisis management to minimize the occurrence of future crises, severity and the ramifications (Nur Ozkan-Gunay et al.,).

In light of the crucial role of the banking sector, it is a must to examine the wellbeing of banks. A bank's failure carries several financial and psychological drawbacks on the stakeholders. Furthermore, it carries social costs and reduces economic growth in subsequent years (Cox et al., 2017).Given its severe influence on the health of economies and since regulations have not prevented the occurrence of financial crises, it is important to assess the current health of the banking sector in the MENA region. Developing countries revealed poor performance that is reflected by poor asset quality, inappropriate capital adequacy, operational incompetence and greater probability of dealing with non-performing loans as well as higher levels of liquidity risk (Sahut et al., 2011). It is important to mention that bank failure continues to be among the problematic phenomena in the world. Although this topic received much more attention in developed countries such as the USA and Canada, it received little attention in the emerging economies (Nurazi et al., 2005; Berger et al., 2016). Thus, a gap exists in the literature, which raises the need to conduct research that will fill it. The current research aims to cover this gap. Furthermore, the findings of this study will have significant implications for regulatory bodies, private-sector management, and investors. This study aims to aid in the examination of determinants that may point to banks in jeopardy in order to limit the damages that may result from bank failures. Such detection will be advantageous for at-risk banks because it will allow them to take corrective actions and avoid incidents of the crisis and its side effects (Inam et al., 2019) Therefore, this study aims to investigate of banks within the MENA region are subject to failure throughout the period 2006-2016. This study

includes five sections. Section two covers the literature review, where definitions, causes, consequences, and models adopted to test whether or not banks are subject to failure are projected. Section three includes the research design and methodology adopted. Section four contains the discussion of the results and findings, and finally, section five includes the conclusion.

2. LITERATURE REVIEW

Projecting the finding of bank failure presented in this part where different prediction models adopted to examine the relationship between the dependent and independent variables are examined.

2.1 Defining Bank Failure

The term bank failure is used in order to describe a negative status facing banks. It reveals how fragile the financial institution is since it is either collapsing or on the edge (Le et al., 2018). Banks are in trouble when a bank's loans are defaulted over a period of 90 days or more (Lu et al., 2016; Samad, 2018). Banks with low earnings, low liquidity, or risky asset portfolios are more likely to fail than the other banks (Özel et al., 2014). Nworji et al., (2011) referred to bank failure due to inadequate risk management, corruption of Bank officials and over expansion of Banks. The failure of banks is also associated with a negative net worth or upon banks' inability to proceed with its tasks without exposing itself to some misfortunes which may lead to a negative net worth (Martin, 1977). Altman (1996, p 4) pointed to four terms that are used interchangeably in order to refer to unsuccessful business which are failure, insolvency, default and bankruptcy. "Failure, by economic criteria, means that the realized rate of return on invested capital, with allowances for risk consideration, is significantly and continually lower than prevailing rates on similar investments. Insolvency is a term that depicts negative performance and indicates a chronic rather than a temporary situation of significant lack of liquidity. Therefore, a firm finds itself in a condition when its total liabilities exceed a fair valuation of its total assets (real net worth of the firm is negative). Default, on the other hand, is closely associated with distress and always involves the relationship between a debtor of a company and a creditor. Finally, Bankruptcy is defined as the net worth position of an enterprise".

2.2 Causes of Banks Failure

The causes of the financial failure have been attributed to different factors, such as poor management, scant capital base, poor asset management, poor liability management, fraudulent practices, inexperienced employees, bad corporate governance, and a large portfolio of non-performing assets. These factors have affected banks' performance and stakeholders' trust. Such lack of trust can cause banks' distress and even a failure that will lead to bankruptcy, solvency or merger (Katuka, 2013, p13). The factors contributing to bank failures can also come from unsustainable macroeconomic policies, market failures, regulatory distortions, and government interference in the allocation of capital (Laeven, 2011).

Instability in the banking sector was caused by a lack of proper capital bases, small size, and fragmented banking structures (Nur Ozkan-Gunay et al., 2007), and the dominance of inefficient state banks (Mercan et al., 2000).Banks are exposed to distress due to the operation mode that they adopt in order to complete their main role as to create liquidity and transform risk by financing themselves with highly liquid, low-risk deposits and investing in higher-risk, illiquid assets in the form of loans (Boot et al., 2010).

Additionally Lu and Whidbee (2013) pointed to numerous explanations that contributed to the banks' failure in the United States of America such as brokered deposits (Rossi, 2010), real-estate loans (Blaško et al., 2006; Aubuchon et al. (2010), liquidity funding structure (Lu et al, 2013), audit quality (Jin et al., 2011), loan loss reserves (Ng and Roychowdhury, 2014), non-traditional activities (e.g. investment banking and venture capital, DeYoung et al. (2013) and bank ownership (Berger et al., 2013) played key roles in US bank failures during the crisis. Furthermore, Aubuchon et al. (2010) found that 2007-2009 bank failures highlight local economic conditions.

2.3 Consequences of Bank Failure

The impact of bank failures on the economy is often significant, resulting in higher unemployment rates, closures of many businesses, depreciation of assets, and bankruptcy among borrowers and intermediaries. From an economic perspective, financial instability will have an impact on investment, productivity, growth trends, jobs, and incomes (Claessens et al., 2012). From a social perspective, financial instability increases inequality, poverty, social tension, and political instability. Hence, a financial disturbance will have a major impact on the economy and society with an extended period of recovery requiring economic reforms and attracting new capital (Gardo and Martin, 2010). To protect the country's economy, the financial infrastructure should be strong enough to guarantee smooth operation of market discipline, in addition to the stability of financial institutions. When the financial system is stable, the economy becomes immune to unpredictable and impulsive financial shocks. To achieve such stability, the financial safety of the payment and settlement systems must both function effectively (Karim et al., 2013).

A bank failure significantly affects a wide range of stakeholders, including shareholders, employees, the government, financiers, dealers, creditors, customers, and the whole society. The impacts of a bank's failure are not only limited to the losses of the financial institutions and their insolvencies. The effects spread throughout the economy, resulting in decreased output and an increase in unemployment (Laeven et al., 2013).The changes in the financial market, due to globalization, financial innovation and deregulation, have raised the levels of concern and have necessitated reassessment of the banking sector. Collapses in the banking sector and turbulent environments have led to continuous modifications in the form of supervision and regulations imposed on banks to ensure structures that are better immune to any form of distress (Huang et al., 2012). To improve the regulations, supervision, and risk management within the banking sector, Basel III tends to impose a set of alterations in order to enhance the regulatory framework and ensure a bank's soundness (Gatzert et al., 2012). As a result, banks tend to shift from liability management to asset management where resource volumes are compelled by the accessibility of funding (Allen et al., 2012).

Micro and macro environments consider looking at a scope but through different lenses. The micro level focuses on the financial institutions themselves. Thus, it covers the bank's specific reason for examining and justifying the failure. Thus, such studies rely on several financial ratios, such as those presented in the CAMELS model, in order to evaluate the bank's current status (Martin, 1977, Rahman et al., 2004; Gunsel, 2012).

From the macro level, banks are firmly impacted by constraints that the economy encounters after some time. In fact, the banking sector is profoundly impacted by various macro variables. For example, high loan rate, expanding inflation, unfavourable terms of exchange shocks, decreases in asset prices, and credit expansion are some of the macro levels that affect the proper functioning of the banking sector and therefore affect the financial and economic frameworks (Gunsel, 2012). At the macro level, a financial crisis for a particular country can also have an impact on the international economies with varying impacts on different countries (De Graeve et al, 2008; Creel et al., 2015). The interconnectedness of the economies among countries has gained attention due to the potential impact of one country on the well-being of another country. In other words, globalization and trading among countries can have a contagious impact. For example, financial instability may affect the currency exchange rate and limit the ability of a country to operate international treaties and agreements. As a result, those countries may face objectionable and unwelcome consequences and penalties (Stosic et al., 2016).

At the micro level, financial instability can affect economies differently depending on the stability and strength of a country's financial infrastructure. Depositors get concerned with the types and extent of risks they are exposed to, while regulatory agencies aim to forestall complications that may necessitate their intervention (Martin, 1977). In fact, shareholders are not only interested in issues related to government regulations but also to any modification in the economic environment such as an increase in the cost of borrowing and a decrease in aggregate demand. Such changes may expose companies to some financial distress (Chang et al., 2014).

2.4 Models of Bank Failure

Because of the occurrence of the financial crisis, several studies tried to detect variables that could predict or provide signals of financial failure. In what follows, several bankruptcy forecast models will be reviewed.

Dimitras et al., (1999) tried to reveal or detect the signals that may alert the concerned institutions in order to take corrective actions. The tools used to detect signals of banks' failures are varied. The first empirical method adopted by large banks in the USA used the "five C" method "LAPP" method, and the CAMPARI method (Abbadi et al, 2013). The 5 C's represent character, capacity, capital, collateral, and conditions. These components are tested to assess the financial soundness of potential borrowers. In other words, this framework aims to evaluate the five attributes of the borrower and the status of the credit in order to predict the probability of default and thus the risk of financial loss for the bank, which is the lender (Marques et al., 2013). The "LAPP" method stands for Liquidity, Activity, Profitability and Potential. These pillars aim to assess the corporate credit application rather than the individual borrowers. "CAMPARI" method refers to Character, Ability to pay, Margin, Purpose, Amount, Repayment terms and Insurance (Abbadi et al., 2013). Some scholars have used financial ratios and peer group analysis (Courtis 1978; Altman et al., 1993) comprehensive bank risk assessment systems and statistical econometric models. A wide assortment of statistical techniques is used to test the adequacy of financial ratios utilized in justifying a firm's financial wellbeing. These studies have utilized discriminant and multivariate discriminant analysis (MDA), statistical techniques which incorporate regression analysis and multivariate probit or logit analysis to decide the ratios that most firmly relate to some sign of financial turbulence, typically insolvency, accounting variables, and the financial ratios used by Beaver (1966), Altman (1968), and Zmijewski (1984). Other researchers such as Campbell et al. (2008) combined market variables and accounting variables in their study and they used the market value of assets instead of book value.

Tibshirani (1996) referred to the least absolute shrinkage and selection operator (LASSO) in order to forecast bank failure. LASSO penalized regression coefficients through a shrinkage method and thus provided a sparse variable-set solution. It has been widely used in variable-selection studies (Tibshirani, 1996; Efron et al., 2004) and is a state-of-the-art variable selection tool. LASSO has the same easy interpretability as traditional subset variable selection, but it also has the additional benefits of (1) model selection stability and (2) potential improvement in prediction accuracy.

Another type of model was embraced in order to foretell bank failure. The moral hazard model, or dynamic hazard model, was initially suggested by Shumwat in 2001. Cole et al. (2009) added to the proposed model macroeconomic variables as well.

The logit model was adopted by several researchers. Zaghdoudi, (2013) examined the Tunisian bank for the period of 2002 and 2010 and found that the banks' ability to repay its debt, the coefficient of banking operations, bank profitability per employee and leverage financial ratio have a negative impact on the probability of failure. The multivariate logit technique was also used by Barrell et al. (2010) where they stated in their articles that Demirguc-Kunt and Detragiache in 1998 adopted the same technique in order to find or associate the probabilities of systemic banking crises to a vector of explanatory variables. "The banking crisis dependent variable is defined in terms of observable stresses on a country's banking system, e.g. ratio of non-performing loans to total banking system assets exceeds 10 percent and it occurs in around five percent of all time and country observations in that paper." Demirguc-Kunt et al. (2005) updated the banking crises list to include more years, and more crises. The probit model was also used to justify bank failure during the period of 1982 and 1983 while taking into consideration the financial ratios and bank structure variables (Abrams et al.1987). Additionally, a multiple series of logit regressions are used in order to detect the causes of regulatory intervention while controlling for bank-level characteristics and the economic and regulatory environment (Lu et al, 2016). The logit technique along with discrete survival time analysis was used to predict US bank failure from 1992 till 2012 based on data collected from the Federal Deposit Insurance Corporation (Mayes et al, 2012). Multiple models were tested in addition to the previous one. For example, single-equation panel estimations, which were used along with panel VAR models (Ghosh, 2017) and binary logistic regression model (Baklouti et al., 2016).

Chalermchatvichien et al., (2014) examined the relationship between ownership concentration and capital adequacy of the East Asia countries from 2005 till 2009. Based on ordinary least square (OLS), ownership concentration would have been a substantial predictor of capital stability, according to their findings. Another study inspected the impact of the 2007 financial crisis on Islamic (IBs) and conventional banks (CBs). In fact, (Bourkhis et al., (2013) conducted a regression analysis using the z-score over a sample of sixty-four banks from sixteen countries. They found that there was no significant difference in the effect of the financial crisis on the soundness of IBs and CBs using the Z-score as a measure of bank stability.

Mirzaei et al. (2013) conducted a substantial comparison between Middle Eastern and Eastern European banks from 1999 to 2008, covering 1929 banks. As per their findings, market share, interest rate, capital ratio, and overheads to total assets ratio all have a substantial and negative relationship with the z-score for banks in the Middle East, whereas inflation and bank size are found to be decreasing the z-score and consequently increasing the risk. Market share, interest rate spread, capital ratio, off-balance sheet to total assets, bank age, inflation, and GDP were all found to have a significant and positive impact on the z-score (stability) of Eastern European banks.

The financial performance of the organization and the ability to procure an internal assessment of the banks in terms of strength and weakness are based on CAMELS. This rating system is an international rating system used by regulatory banking authorities to rate financial institutions, according to the six factors represented by its acronym: "Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Sensitivity." It is to be noted that the evaluation of the health status of the banks in the MENA region is based not only on financial measures but also on operational and managerial ones.

2.5 Discriminant Analysis Model of Bank Failure

Predicting an accurate measure of bank distress has and will always be the main concern of stakeholders. El Ansary et al. (2018) conducted a study on a set of Egyptian banks to investigate those subject to distress. This study revealed that the discriminant analysis outperformed the logistic regression model in term of precision.

Most of the past studies relied on constructing financial ratios that comprised the CAMELS elements and used these ratios in discriminant analysis, proportional hazard and logit, or multivariate probit econometric models (Demirgüç-Kunt, 1989). Altman (2013), set up a new model in predicting financial distress of companies by revisiting the Z-Score model (1968) and Zeta (1977) credit risk model. He used financial and economic ratio to analyse corporate financial distress. The prediction uses discriminating function by linear regression model where Z is the overall index and other financial variables to be an independent variable. This research employ the discriminant analysis model to detect banks in distress in the MENA region. The equation applied is

$$Z_i = \beta_0 + \beta_1 CAR_{it} + \beta_2 EAS_{it} + \beta_3 LLP_{it} + \beta_4 NPL_{it} + \beta_5 CTI_{it} + \beta_6 NIT_{it} + \beta_7 ROAA_{it} + \beta_8 LADF_{it} + \beta_9 Deposits_{it} + \beta_{10} Size_{it} + \beta_{11} Country_{it} + \beta_{12} Year_{it} + e$$

where, β_0 Is a constant, (β_1 : β_{12}) are the coefficient of the explanatory variables. i refers to the bank number and t refers the time period.

The explanatory variables:
Dependent variable

ROA is pretax profit to total assets
EQ is equity to total assets
SD ROA is the standard deviation of ROA at time t.

Explanatory variables

Capital
CAR   (Tier 1 + Tier 2 capital) to risk weighted assets
EAS   Equity capital to total asset
Asset quality

LLP   Provisions of loan loss to total loans
NPL   Non-performing loans to total loans
Efficiency
CTA   Cost to income ratio
NIT   Non – interest expenses to average assets
Earning
ROAA   Pre-tax profits to average assets
Liquidity
LADF   Liquid assets to deposits and short term funds
DEPOSIT   Deposits to total assets

As per the results obtained, one can specify which of the CAMELS constituents have a significant relationship with the probability of distress. But for further precision, the modified model of Altman (2017) for manufacturers, non-manufacturer industrials, and developed and emerging market credits was adopted. The model equation is the same as in the emerging market applied in his previous studies, but the cut-off limits are different in order to classify whether banks belong to the safe, grey or distressed zone.

$Z'' = 3.25 + 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$
Cut off limits:
$Z'' > 5.85$ - "Safe" Zone
$4.35 < Z'' < 5.85$- "Grey" Zone
$Z'' < 4.35$ - "Distress" Zone

3. RESEARCH METHOD and HYPOTHESIS

Secondary data was obtained from the Bankfocus Database. A total number of ninety nine banks in the MENA region over a period of eleven years (2006–2016) was included. The ten countries covered consist of Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates. Omitted banks are not included in the research due to unavailability of data. This research employed the discriminant analysis model to detect banks in distress in the MENA region to test for the z-score obtained from el Ansary et al. (2018) then the modified Altman model (1983) was applied. In this model, the financial data of these companies is classified under three distinct groups, namely, the safe zone, the risk zone, and the distressed zone. This approach is justified since it fulfils the modified empirical modelling of Altman (1983) in collaboration with Hotchkiss (2006). Again, the selection of variables (ratios) is justified by their occurrence in the literature and their significance in predicting failure from the study of Altman (1968; 1983).
The research hypothesis of this study:
H.1: There is a significant correlation between z-score as a dependent variable and the study's independent variables

4. EMPIRICAL RESULTS

Table 1 allows for the identification of major variability within countries: The average Z-score of sample countries, for example, is negative 3.297, and there's a huge variation between the minimum z-score of (-5.422) and maximum z-score of (-0.09) score. The same wide range of values can be found for a variety of different variables. All of these disparities stem from the study's inclusion of nations with varying levels of development.

The CAR has a mean of 0.19 and shows a minimum value of 0.006 and a maximum value of 0.798. Whereas ROAA has a negative mean value of 0.518, implying that certain banks have values that are significantly lower than the mean. This indicator presents a minimum value of -134.369. This reflects that some banks within the selected countries are unprofitable. Also, the minimum and maximum values of these indicators illustrate enormous variation across countries incorporated in the study. The other variables (EAS, LLP, NPL, CTI and NIT) have positive means but recorded negative values as minimum values while the maximum values are positive. The remaining variables have positive values.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ZSCORE	1054	-3.297	.812	-5.422	-.09
CAR	656	.19	.072	.006	.798
EAS	1077	.174	.139	-.042	.943
LLP	943	87.278	171.123	-51.1	1359.8
NPL	629	1065.62	2713.73	-345.3	15606
CTI	637	.446	.207	-.771	2.479
NIT	928	1226.683	8098.927	-43.9	72164.391
ROAA	975	-.518	7.862	-134.369	13.812
LADF	730	15.992	131.035	0	1677.583
DEPOSIT	1077	6.944	76.695	0	1438.978
SIZE	1077	3.708	.677	1.121	5.086

Source: Author's Calculation

The correlation matrix reported in Table 2 shows the possible relationship between the variables and determines the strength and direction of a linear relationship between two variables. At first glance, no major problematic cases of correlation were found because a strong connection is only considered for a correlation value that is equal to or greater than 0.7. At first sight, Table 2, indicate that the CAR ratio, EAS, CTI, ROAA, LADF ratio, and Deposits have a positive relationship with the Z-score. The ratio of LLP, NPL and NIT have a negative relationship with the Z-score. ROAA, and log of total assets have an inverse relationship with the Z-score but not significant. So, one can accept the first hypothesis partially as the CAR ratio, LADF ratio, NIT ratio and Deposits are significantly correlated with the Z-score.

Table 2: Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) ZSCORE	1.000										
(2) CAR	0.416	1.000									
(3) EAS	0.412	0.726	1.000								
(4) LLP	-0.316	-0.022	-0.038	1.000							
(5) NPL	-0.001	-0.038	0.021	-0.057	1.000						
(6) CTI	0.064	-0.079	-0.101	-0.123	-0.073	1.000					
(7) NIT	-0.072	-0.123	-0.067	-0.041	0.768	0.035	1.000				
(8) ROAA	0.127	0.095	0.026	-0.015	-0.748	-0.050	-0.964	1.000			
(9) LADF	0.078	-0.048	-0.032	0.034	-0.028	-0.074	-0.008	0.003	1.000		
(10) DEPOSIT	0.137	-0.230	-0.213	-0.196	0.569	-0.068	0.720	-0.539	-0.052	1.000	
(11) SIZE	-0.705	-0.349	-0.332	0.539	0.001	-0.101	0.030	-0.137	0.046	-0.290	1.000

Based on the formula Table 3 shows the percentage distribution of the banks involved in this study under each zone. In Table 2 46% of the banks in the thesis sample are in distress zone. Being under the distress zone is caused by at least one of the following indicators: X1 = (Current Assets - Current Liabilities)/ Total Assets, X2 = Retained Earnings / Total Assets, X3 = Earnings Before Interest and Taxes / Total Assets and /or X4 = Book Value of Equity / Total Liabilities that were defined by Altman. In depth, the most alerting is the X2 Retained Earnings / Total Assets that caused the banks to be in distress zone. The banks in the grey zone represents 33% of the thesis's data. Only 21% of data used are in the safe zone, most of these banks are located in Jordan. Jordan is classified within the safe zone since it was among the first banks to adopt the International Financial Report Standard

(IFRS). The goal of IFRS9 is to improve financial integrity in the banking sector by enhancing provisions relative to the scenario prior to introduction (Novotny-Farkas, 2016). It was also a response to the consequences of the global financial crisis, one of the reasons for its extension being the delay in recognising debt losses, which was one of the reasons for its extension being the delay in acknowledging debt losses because losses were acknowledged when they occurred (Al-Sakini et al., 2021)

Table 3: Banks Distribution as per their z-score Values

	Grey Zone	Distress Zone	Safe Zone
Zscore	4.35>Z>5.85	Z<4.34	Z > 5.86
Number of banks	260	367	170
In Percentage	33%	46%	21%

Under this hypothesis, different indicators were used as indicators for economic growth, political risk, and corporate governance to test the impact of FS on Zscore as per Altman in addition to bank leverage and bank size as control variables. Table 12 includes the regression outcomes of models two and eight distributed over these three columns OLS-2 and FE-2 respectively. The coefficients of estimation are in the first row of each variable, whereas the standard errors are shown in the second row in brackets. The standard error of OLS and FE estimators is based on robust standard errors corrected for potential heteroskedasticity and time-series autocorrelation within each country.

5. CONCLUSION

After testing the same determinants on Zscore by El Ansary and Z by Altman, the results showed that under EF from each category there is a detriment that is significant to Zscore by El Ansari yet this wasn't shown by the Z score of Altman. Moreover, R-squared for the El Ansary model recorded a higher value while it recorded a lower value under Altman. Accordingly, the Z score by El Ansary may be better to consider for emerging economies in order to point to the indicators that riggers banks' risk level. Similarly, as in El-Ansary model, when using discriminant analysis, CAR ratio, LADF ratio, and deposit have significant positive relationships with the probability of distress, but the NIT ratio has a significant negative relationship with the probability of failure. ROAA and log of total assets have a weak but significant inverse relationship with the Z-score.

In terms of failure determinants, the impact of internal variables, whether positive or negative, allows banking regulators to implement methods to improve bank stability. Customers, creditors, regulatory and supervisory regimes, and other stakeholders may benefit from this research because it will allow them to better assess the health of the MENA banking system. As a result, customers may detect the bank's status and select the one that sounds better than the others, thereby reducing any risk to which they may be exposed. By identifying banks at risk, the occurrence of a crisis or its consequences can be avoided. Pointing to banks at risk will enable a healthy bank to purchase some or all of the assets of a failed bank and assume some or all of the failed bank's liabilities. Furthermore, bankers can identify risky banks since this paper addresses the bank's inefficiency and vulnerability, which requires improving the governance and risk management system, injecting liquidity from shareholders or investors, and suspending any of the shareholders' rights, including voting rights, and preventing dividends from being distributed to shareholders.

It should be noted that this study has some limitations. To begin, the research period is brief due to a lack of data availability, spanning only eleven years, from 2006 to 2016. Second, due to a lack of data, the sample used did not cover all of the countries in the MENA region, and the number of banks considered per country investigated varied. Third, this study relies on convenience sampling, which is a further limitation for the current study, especially given that the banks used were not selected based on specific criteria. Future research should consider the limitations of this study when replicating the empirical analysis. In other words, future research may think about incorporating some micro-determinants into their study. A comparative approach may also be used to compare bank failures between Islamic banks and commercial banks, or even banks belonging to the public sector, private sector, foreign, or regional rural banks (RRB).

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