

# Corporate Governance and Banking Stability in the MENA Region

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## Abstract

This study investigates the determinants of banking stability through a comprehensive analysis of various financial and governance factors. Employing a panel regression approach, we examine the impact of key accounting variables, including capital adequacy ratio, return on assets, non-performing loans, bank size, and gross domestic product, as well as governance factors, covering board composition, audit quality, women on board, and the presence of risk committees, on the stability of banks operating in the MENA region between 2009 and 2020. Our findings reveal that most of these variables have a positive impact on banking stability. However, non-performing loans and the presence of independent directors on the board exhibit a negative relationship with banking stability. Therefore, it is found that banks under consideration maintain stability in tandem with good corporate governance practices and economic expansion, thereby positively influencing the MENA banking sector. The study recommends researchers to delve deeper into the complex relationships between these variables and banking stability and suggests that future studies explore additional factors that might impact the stability of banks in the MENA region.

**Keywords:** banking stability, corporate governance, audit quality, board of directors, MENA region, GMM estimations

## 1. Introduction

The relationship between corporate governance and banking stability has captured the attention of scholars in recent years. Corporate governance measures play a crucial role within the financial industry by upholding the stability and dependability of banks. Thus, the need for efficient corporate governance in the banking sector is widely acknowledged as a fundamental element in ensuring the overall well-being and resilience of a bank. The concept of corporate governance involves a variety of elements, such as the composition of the board, the remuneration of executives, the practices employed for managing risks, and the effectiveness of both internal and external audits. Many governance aspects influence the decision-making process, risk-taking behavior, and accountability inside financial institutions (Adams et al., 2010). In comparison to other businesses, banks also face an ethical risk due to the presence of asymmetric information. With incentives to take on excessive risk, major shareholders divert capital away from deposit insurers by choosing riskier investments. Shareholders may engage in collaboration with managers to the detriment of deposit holders through the issuance of high-risk loans. This practice has the potential to increase the occurrence of bad loans, threaten the adequacy of bank capital, and ultimately destabilize banks (Boyd & Smith, 1999). The presence of high audit quality and a robust board has the potential to effectively represent shareholder interests, potentially incentivizing managers to engage in risk-taking behavior that could lead to increased instability within the banking sector.

In light of the 2008 financial crisis, there has been an increased emphasis from regulators and depositors on promoting greater stability and reducing risk within the banking sector. Due to heightened regulatory mandates pertaining to the stability of financial institutions, boards of directors are facing increasing pressure to effectively supervise risk-taking endeavors and uphold the overall stability of banks (Nguyen, 2022). Internal audit plays a crucial role in maintaining financial stability by identifying critical errors, fraud, and issues, and taking corrective action before they negatively impact a company's finances (Badara, 2013). This function enhances governance and the implementation of internal control frameworks, alerting management to progress or delays in

achieving company objectives (Vijayakumar & Nagaraja, 2012). Globally, audit quality ensures accurate financial records for publicly listed companies. The quality of internal audit directly influences financial statement reliability, instilling stakeholder confidence, showcasing effective audit committees, corporate governance, and sound management practices that contribute to financial stability (Enekwe et al., 2020).

Numerous scholars have underscored the presence of a positive association between the quality of audits and the stability of banking institutions (Hazaea et al., 2020; Aliyu et al., 2015; Beasley et al., 2000). The implementation of a proficient audit procedure can effectively detect preliminary indicators and alleviate potential problems, promoting the overall security and stability of the financial institution. According to Barth et al. (2004), the financial performance and risk exposure of banks can be considerably influenced by the economic environment in which they operate. Various macroeconomic factors, including inflation rates, interest rates, currency rates, and general economic growth, can influence the asset quality, liquidity, and profitability of a bank. Within this setting, researchers have conducted investigations into the effects of different governance elements on the stability of the banking sector. For instance, Ho and Wong (2001) support that audit committees characterized by lower size and a greater representation of independent members have a favorable impact on the stability of banks. The role of audit committees has been recognized as a significant factor in promoting the stability of banks. The observed effectiveness can be attributed to the phenomenon of reallocation, resulting in heightened profitability and enhanced motivations for banks to uphold elevated levels of capital ratios. Nevertheless, it is important to note that the correlation between the stability of banks and the efficacy of audit committees is subject to the financial stability of individual banks and the caliber of institutional frameworks inside respective nations (Nguyen, 2022). Regarding the form of audit committees, Nguyen (2019) conducted a study to investigate the relationship between the form of audit committees and the stability of banks. The research underscored the importance of external audit quality in the relationship between audit committee structure and the stability of banks. The effectiveness of audit committee risk oversight can be enhanced by the implementation of high-quality external audits, which may consequently result in greater bank stability. In addition, the research conducted by Li et al., (2020) contributed to the advancement of knowledge regarding the impact of corporate governance elements on the stability of banks. The findings of their study indicate that various factors, including the size of the board, the ages of board members, the financial expertise of board members, and the presence of CEO duality, significantly contribute to enhancing bank stability indicators. Also, the study conducted by Arianti et al., (2021) made a significant scholarly contribution by investigating the influence of key macroeconomic variables, including inflation, currency rates, and interest rates, in conjunction with the bank-specific component of credit, on the magnitude of Non-Performing Loans (NPL) within banking institutions. The findings of their research indicated that variables such as credit, inflation, and interest rates exhibited a notable and positive influence on the long-term non-performing loans (NPL) phenomenon. In the immediate term, the Non-Performing Loan (NPL) was influenced by two variables, namely credit and interest rates.

Consequently, this study aims to investigate various factors influencing banking stability, focusing on the impact of audit quality, board size, the independence of board members, the presence of women on boards, the existence of a risk committee, as well as specific financial indicators including capital adequacy ratio, return on assets, bank size, and non-performing loans. Additionally, the study considers macroeconomic factors, particularly gross domestic product, as an essential element influencing banking stability. By examining these factors collectively, this research seeks to provide a comprehensive analysis of the multifaceted determinants of banking stability, offering insights that can be valuable for financial institutions, regulatory authorities, and policymakers. The novelty of this work is that it employs the Generalized Method of Moments (GMM) in analyzing the link between governance practices and banking stability of MENA banks. This method addresses the issue of unobserved heterogeneity for panel data analysis compared to alternative estimators and it deals with endogeneity concerns by employing one lagged value of endogenous variables as instrumental variables.

This paper is organized as follows. In the following *Section 2*; we consider the related literature and hypothesis formulation. *Section 3* presents the methodology and variables specification; *Section 4* introduces the data set under study; *Section 5* includes the interpretation of empirical results, the model's diagnostic tests and the robustness check. *Section 6* is the conclusions of our study and *Section 7* is the future research recommendations and policy implications.

## **2. Literature Review and Hypotheses Development**

### *2.1 Corporate Governance Practices and Banks' Soundness*

Recently, the focus of theoretical and empirical research has been on the influence of corporate governance

practices on the banking sector in different economies. For instance, Athari (2023) indicate that higher liquidity, profitability, capital reserves, and income diversity are associated with lower credit risk, while inefficiency leads to increased credit risk for BRICS banks. Moreover, increasing vulnerability to financial, economic, and political risks, along with underdeveloped capital markets and rising lending rates, is linked to higher credit risk. Meanwhile, improving governance quality can mitigate the impact of these risks on credit risk. Nguyen (2022) conducts an analysis on the impact of risk governance in augmenting the effectiveness of a bank's risk management practices. The findings indicate that the efficacy of risk management in banks within ASEAN countries is relatively inadequate. Moreover, an examination of the insolvency risk, credit risk, and operational risk management of banks in ASEAN countries, using a dynamic panel models' approach, yields empirical support for the assertion that the governance structure and efficacy of risk governance exhibit a positive association with the effectiveness of risk management in banks. Using a sample of several banks operating in 105 countries between 2009 and 2017, Athari and Irani (2022) find that factors such as capital regulation, market power, and income diversification tend to reduce risk-taking, while credit risk, inefficiency, financial market development, and deposit insurance encourage it. Importantly, the extent and significance of these determinants vary across regions, highlighting the need for region-specific policies. Moreover, using the same sample, Athari (2022) investigates how financial inclusion and domestic political risk affect the stability of the banking sector. The findings demonstrate that reduced political instability contributes to increased stability in the banking sector worldwide, especially in the OECD High-Income region. The study conducted by Ogbeide (2021) investigates the relationship between corporate governance systems and the quality of financial reporting in commercial banks listed in Nigeria. The results indicate that the size of the board and the presence of an audit committee have a negative and statistically significant effect on the financial reporting quality of listed commercial banks in Nigeria. On the other hand, the independence of the board has a significant and positive influence on the financial reporting quality of these banks. Regarding female participation, there was no statistically significant correlation between the presence of female directors and the financial reporting quality of commercial banks listed in Nigeria. Moreover, Bhatia and Gulati (2021) conducted a meta-analysis to investigate the effect of board governance on bank performance. They investigate the impact of board size, CEO duality, outside directors, and female board directors on bank performance. The study found that bank performance has a positive association with larger boards and a significant number of outside and female directors, providing support for the resource-dependence theory. Also, they observed that the moderating variables significantly influence the relationship between board governance and the performance of banks. Furthermore, Abobakr (2017) examined the impact of corporate governance on the performance of banks in Egypt. He examined the correlation between bank performance and specific elements of corporate governance mechanisms, including board size, non-executive directors, CEO duality, board gender diversity, board qualifications, and block holders. Return on assets (ROA) and return on equity (ROE) are commonly employed as indicators to assess the performance of banks. The findings reveal a statistically significant negative correlation, suggesting that the local banks in particular experienced major negative consequences during this period. Additionally, there was no significant impact of non-executive directors, women representation, board qualifications, and block ownership on bank performance. The study conducted by Naimah (2017) investigates the impact of corporate governance on enhancing firm performance. The assessment of corporate governance entails two key components: corporate governance mechanisms and the Corporate Governance Perception Index (CGPI). The findings of this study suggest that there is a negative relationship between board independence and profitability. Additionally, it is observed that audit committee meetings have a positive impact on profitability, while audit quality and corporate governance practices, as measured by the CGPI, also have a positive influence on profitability. On the other hand, leverage and firm size are found to have a negative association with profitability. Battaglia and Gallo (2015) examined the potential relationship between boards of directors and risk management-related corporate governance mechanisms, and the performance of banks during the financial crisis of 2007/2008. The study focuses on a sample of listed banks in China and India. The research reveals that the inclusion of specific variables associated with the risk committee in the analysis renders the standard board's variables generally irrelevant. The findings indicate a positive correlation between the size of the risk committee and the financial performance metrics of return on equity (ROE) and return on assets (ROA) during the period from 2007 to 2011. This suggests that banks with larger risk committees exhibited superior profitability during this time frame. The researchers discovered a negative correlation between market valuation and the size of the risk committee, as well as a positive correlation between market valuation and the frequency of risk committee meetings. Al-Manaseer (2012) examined the influence of various corporate governance dimensions, such as Board Size, Board Composition, Chief Executive Officer (CEO) Status, and Foreign Ownership, on the performance of banks in Jordan. The findings of the study reveal various significant associations between dimensions of

corporate governance and the performance of banks in Jordan. Firstly, a positive correlation has been observed between the quantity of external board members and foreign ownership in relation to the performance of banks. Conversely, the research reveals an adverse correlation between the size of the board and the degree of CEO and chairman role separation in relation to performance. These findings suggest that the presence of larger boards and the consolidation of CEO and chairman roles in Jordanian banks have a negative impact on their performance. Finally, in a study conducted by Mohammed (2012), the author examines the influence of corporate governance on the financial performance of banks in Nigeria. The increased occurrence of bank failure in the last few years has prompted scholarly research on the quality of bank assets and has also underscored the importance of effective governance in attaining banks' objectives. The research utilizes secondary data from the financial reports of nine banks over a span of ten years (2001-2010) using a multiple regression analysis. The findings of the study provide empirical evidence in support of the hypothesis that there is a positive relationship between corporate governance and the performance of banks.

**Hypothesis 1:** There is a significant impact of corporate governance practices on banking stability in the MENA region.

### *2.2 Audit Quality in Banks*

Numerous empirical investigations have explored the concept of audit quality. Madhurangi and Abeygunasekera (2021) investigate the impact of audit committee effectiveness and audit quality on the overall quality of financial reporting within the banking sector of Sri Lanka from 2014 to 2018. The findings indicate that there is no statistically significant relationship between the efficacy of the audit committee, assessed by variables such as composition, meeting frequency, and financial and accounting proficiency, and the standard of financial reporting. When evaluating audit quality, measured by audit fees and the size of the audit firm, there is no statistically significant relationship between audit fees and audit quality. However, a statistically significant correlation exists between the size of audit firms and the quality of financial reporting. Hazaea et al. (2020) investigate the internal audit quality system in Yemen and analyze its impact on the financial performance of Yemeni commercial banks. Criteria include the independence of the internal audit system, adherence to internal audit standards, implementation of governance principles, size of the internal audit system, and frequency of internal audit committee meetings. The findings show that maintaining adherence to internal audit standards, independence of internal auditors, and ensuring quality governance, have a significant impact on the financial performance of banks. On the other hand, the size of internal audit committees and the frequency of their meetings frequently have an insignificantly positive impact on the performance of banks. In addition, Aliyu et al. (2015) conduct a study to examine the impact of audit quality on earnings management within deposit money banks with public listings in Nigeria. Using a correlational research design, the study investigates a sample of ten listed deposit money banks over eight years (2006-2013). The findings suggest that the quality of audits significantly affects the practice of earnings management among deposit money banks in Nigeria. The study also finds that the size of audit firms and the provision of joint audit services have a significant negative impact on the procedure of earnings management among listed banks in Nigeria. Al-Khaddash et al. (2013) investigate the primary factors that significantly impact the overall quality of audits carried out by Jordanian Commercial Banks (JCBs). The study investigates the viewpoints of internal auditors, external auditors, and financial managers. The participants convey the perception that the level of audit quality within the banking industry of Jordan ranges from satisfactory to highly commendable. The results indicate a statistically significant and positive correlation between audit quality and audit efficiency, along with various other factors such as the reputation of the auditing office, auditing fees, the size of the audit firm, and the proficiency of the auditor. Moreover, Omoye and Aronmwan (2013) investigate the relationship between audit firm rotation and audit quality in the Nigerian banking sector. The study utilizes cross-sectional pool data collected from 15 banks over a period of six years, from 2005 to 2011. The researchers employ a binary logit regression model to examine the hypothesis. The findings indicate a significant impact of audit firm rotation on audit quality, but with a negative effect. Therefore, the study suggests that regulatory organizations should explore alternative approaches to address concerns regarding audit quality. Finally, Hoitash et al. (2007) conduct an examination of the relationship between the fees paid to auditors and the quality of audits from 2000 to 2003. The study develops a metric for assessing auditor profitability, employed as a surrogate indicator of auditor independence. Two metrics are utilized to evaluate the quality of audits, including the standard deviation of residuals obtained from regressions that examine the relationship between current accruals and cash flows, as well as the absolute value of performance-adjusted discretionary accruals. A statistically significant negative correlation is observed between total fees and both audit quality proxies across all years.

**Hypothesis 2:** There is a significant impact of audit quality on banking stability in the MENA region.

### 2.3 Corporate Governance, Audit Quality and Banking Stability

Considerable attention is devoted to examining the relationship between corporate governance and audit quality in the context of banking stability. Ho and Wong (2001) posit that the presence of smaller audit committees, comprising a higher proportion of independent members, can potentially contribute to enhancing bank stability. This finding suggests a positive correlation between the effectiveness of audit committees and the stability of banks. Furthermore, it can be argued that the effectiveness of the audit committee plays a crucial role in enhancing bank stability, primarily achieved through the reallocation effect, leading to an increase in profits and providing incentives for banks to maintain higher capital ratios. Additionally, the correlation between the stability of banks and the effectiveness of audit committees is contingent upon the financial stability of individual banks and the level of institutional quality in each respective country (Nguyen, 2022). Furthermore, Nguyen (2019) examines the correlation between the structure of audit committees and the stability of banks in Vietnam, a country in the process of development. The researcher recognizes the significant impact of external audit quality on the interaction between audit committee structure and the stability of banks. The effectiveness of audit committee risk oversight may be enhanced by the presence of high-quality external audits. The findings illustrate the varying impact of audit committee structure on the stability of banks, with empirical evidence suggesting a correlation between the composition of the audit committee and the stability of banks, dependent upon the quality of external audits and the level of bank stability. Li et al. (2020) provide evidence that board size, ages of board members, the financial experience of board members, and CEO duality all have a significant positive effect on bank stability indicators, demonstrating that these corporate governance factors assist in minimizing a bank's potential of going bankrupt. Furthermore, there has been a reversal in the percentage of female directors, audit committee activities, and the educational composition/qualification of directors in banks, having a contrary effect on minimizing risk rather than promoting it. It is determined that the size of the board of directors has a varied impact on the stability of banks. The presence of an audit committee has a negative effect on the stability of banks only in relation to tier 1 capital. There exists a negative relationship between the educational qualifications and directors' compensation of a bank and its credit risk measure. Additionally, there exists a significant correlation between the average age of directors and the stability measures of banks. The correlation between the financial expertise of directors and the proportion of female directors is only associated with the credit risk metric. Conversely, CEO duality exhibits a strong association with both credit risk and tier 1 capital. Therefore, we propose the following hypothesis corresponding to specific corporate governance factors.

**Hypothesis 3:** There is a significant impact of board size, women participation on board, independence of directors, audit quality, and risk committees' presence on the stability of banks operating in the MENA region.

### 2.4 Macroeconomic Dynamics and Banking Stability

The focal point of attention for both central banks and governments consistently remains the realm of macroeconomic activity. This emphasis stems from their pursuit of formulating effective policy measures and gauging their repercussions on the financial sector. Notably, macroeconomic shocks, particularly shifts in exchange rates, prove to be pivotal factors leading to disruptions in the real sector, which, in turn, reverberates throughout the entire banking industry (Basri, 2017). Many previous studies explored the effects of macroeconomic variables on the stability of the banking sector. By examining historical context and empirical evidence, these studies offer valuable insights to further understand the complex interplay between macroeconomic factors and banking stability. Mabkhot and Al-Wesabi (2022) conducted an empirical study aiming to assess the influence of macroeconomic factors on the stability of banks in GCC (Gulf Cooperation Council) countries. The study selected several key macroeconomic factors as focal points for analysis, including GDP growth, inflation rate, exchange rate, the global financial crisis period (2008/2009), oil price fluctuations, and political instability. The research covers the period 2005-2020. The findings highlight several significant outcomes, revealing adverse relationships between the stability of both GCC Islamic and conventional banks and certain macroeconomic factors. Specifically, the inflation rate, the global financial crisis of 2008/2009, and oil price fluctuations negatively impact the financial stability of these banks. However, Islamic banks appear to be less adversely affected by financial crises, oil price changes, inflation rates, and political instability compared to conventional banks. In a study conducted by Chee et al. (2018), the authors examined the influence of macroeconomic factors on the stability of commercial banks in Malaysia, specifically focusing on the pre-crisis (2005-2007) and post-crisis (2009-2011) periods. The research employs secondary data from the monthly financial reports of Malaysian commercial banks. During the pre-crisis period, Chee et al. (2018) find that both the base lending rate (BLR) and the consumer price index (CPI) do not exert a significant impact on the performance of commercial banks. In contrast, the post-crisis period shows that both the BLR and the CPI have a significant impact on the performance of commercial banks during this period. Moreover, Bohachova (2008)

conducted a comprehensive empirical study investigating the intricate relationship between macroeconomic conditions and individual bank risk. The research employed capital adequacy ratios as a broad measure of risk sustainability, and a linear mixed effects model is estimated using a sizable international panel of banks spanning the years 2001-2005. The study first examines the behavior of banks in OECD countries, revealing that during business cycle highs, banks in these countries tend to maintain higher capital ratios. In contrast, a different scenario emerges in non-OECD countries, where periods of robust economic growth are linked to lower capital ratios. This points to a procyclical behavior, indicating that banks accumulate risks more swiftly during favorable economic conditions, and some of these risks manifest as asset quality deteriorates in subsequent recessions. Bohachova (2008) further uncovers that higher inflation rates play a role in influencing banks' capital ratios. It is observed that, in the presence of elevated inflation-induced economic uncertainty, banks tend to adopt a more cautious approach, leading them to restrict credit. This suggests a dynamic relationship between inflation and banking behavior. Arianti et al. (2021) conducted an empirical study on the impact of crucial macroeconomic factors, specifically inflation, exchange rates, and interest rates, along with the bank-specific factor of credit, on the level of NPL in these banks. The estimation results from the Vector Error Correction Model reveal insightful findings. Specifically, three variables (credit, inflation, and interest rates) are identified as having a positive and significant effect on long-term non-performing loans. In the short term, the impact is observed for two variables: credit and interest rates. Notably, the inflation and exchange rate variables exhibit a negative and statistically insignificant effect on bad credit in the short term.

**Hypothesis 4:** There is a significant impact of GDP growth per capita on banking stability in the MENA region.

### 3. Methodology and Variables Definitions

Given the dynamic nature of this study, ordinary least squares or within fixed effects estimations are insufficient as they yield biased and inconsistent estimates (Baltagi, 2005). To address the issue of unobserved heterogeneity in MENA banks, we employ the Generalized Method of Moments (GMM) estimation technique. Introduced by Arellano and Bond (1991) and further developed by Arellano and Bover (1995) and Blundell and Bond (1998), the GMM offers higher efficiency for panel data analysis compared to alternative estimators. This technique effectively deals with endogeneity concerns by employing one lagged value of endogenous variables as instrumental variables. Additionally, it proves to be valuable when examining dynamic panel data models that include the lagged dependent variable as an explanatory factor. Furthermore, GMM can handle heteroscedasticity and autocorrelation between error terms of different time periods in panel data analysis.

In light of the above, we suggest the following three equations connecting banking stability (dependent variable) with bank-specific, macroeconomic, and corporate governance variables:

Model 1:

$$LNZ_{i,t} = \alpha_0 + \alpha_1 LNZ_{i,t-1} + \alpha_2 CAR_{i,t} + \alpha_3 ROA_{i,t} + \alpha_4 NPL_{i,t} + \alpha_5 SIZE_{i,t} + \alpha_6 GDPC_{c,t} + \alpha_7 BSIZE_{i,t} + \alpha_8 IMEB_{i,t} + \alpha_9 AUD_{i,t} + \varepsilon_{i,t}$$

Model 2:

$$LNZ_{i,t} = \alpha_0 + \alpha_1 LNZ_{i,t-1} + \alpha_2 CAR_{i,t} + \alpha_3 ROA_{i,t} + \alpha_4 NPL_{i,t} + \alpha_5 SIZE_{i,t} + \alpha_6 GDPC_{c,t} + \alpha_7 BSIZE_{i,t} + \alpha_8 IMEB_{i,t} + \alpha_9 AUD_{i,t} + \alpha_{10} WOM_{i,t} + \varepsilon_{i,t}$$

Model 3:

$$LNZ_{i,t} = \alpha_0 + \alpha_1 LNZ_{i,t-1} + \alpha_2 CAR_{i,t} + \alpha_3 ROA_{i,t} + \alpha_4 NPL_{i,t} + \alpha_5 SIZE_{i,t} + \alpha_6 GDPC_{c,t} + \alpha_7 BSIZE_{i,t} + \alpha_8 IMEB_{i,t} + \alpha_9 AUD_{i,t} + \alpha_{10} RISC_{i,t} + \varepsilon_{i,t}$$

Table 1 presents all the exploited variables, their definitions, and their sources. Three distinct models have been formulated to investigate the factors influencing banking stability, specifically centered around the natural logarithm of the Z-score of banks (LNZ). *Model 1* encompasses an initial set of explanatory variables, including the one-year lagged dependent variable (LNZ (-1)), capital adequacy ratio (CAR), return on assets (ROA), non-performing loans (NPL), bank size (SIZE), gross domestic product per capita (GDPC), board size (BSIZE), independence of board members (IMEB), and audit quality (AUD). *Model 2* extends the analysis by incorporating an additional variable, the presence of women on boards (WOM), into the existing set of explanatory variables, aiming to evaluate the potential impact of gender diversity in board composition on banking stability. Existing research demonstrates that diverse perspectives and experiences, particularly those brought by women serving on boards, can enhance decision-making and improve risk management. Therefore, the objective of *Model 2* is to explore the potential impact of gender diversity, represented by the (WOM)

variable, on the stability of the banking sector. This extension enables a comprehensive examination of the potential correlation between board gender composition and the natural logarithm of the Z-score of banks (LNZ), providing valuable insights into the relationship between gender diversity and banking stability. *Model 3* further broadens the scope by substituting the variable (WOM) with a variable reflecting the existence of a risk committee on board (RISCOM), intending to assess the role of risk committees in influencing banking stability. This modification is grounded in the acknowledgment of the pivotal role risk committees play in overseeing and mitigating potential risks within financial institutions. The shift in focus allows for a scholarly examination of the impact of gender diversity (WOB) and the existence of a specialized risk committee (RISCOM) on the (LNZ), providing a thorough understanding of the various elements contributing to the stability of the banking sector. Note that in *Models 1, 2, and 3*,  $\varepsilon_{i,t}$  represents a white noise random error with a zero mean and constant variance, assumed to be normally distributed  $\varepsilon_{i,t} \sim iid N(0, \sigma^2)$ .

Table 1. Definition of variables

Variables	Definitions	Sources
<b>Dependent Variable</b>		
Banking stability (LNZ)	Natural logarithm of Z-score that is calculated as $Z - score = \frac{(ROA+CAR/TA)}{\sigma_{ROA}}$ to proxy for banking stability	Orbis Bank Focus. Authors calculation
<b>Bank-specific and macroeconomic explanatory variables</b>		
Capital adequacy ratio (CAR)	Ratio of total equity to total asset	Orbis Bank Focus. Authors calculation
Return on asset (ROA)	Ratio of Profit after tax to total assets	Orbis Bank Focus. Authors calculation
Non-performing loans (NPL)	Ratio of non-performing loans to gross loans	Orbis Bank Focus. Authors calculation
Bank size (SIZE)	Natural logarithm of total assets of a bank	Orbis Bank Focus. Authors calculation
GDPC Growth rate (GDPC)	Annual growth domestic product per capita growth rate	World Bank Financial Indicators
<b>Corporate governance explanatory variables</b>		
Board size (BSIZE)	The total number of directors on the board	Annual Reports
Board independence (IMEB)	The proportion of independent directors on the board	Annual Reports
Audit quality (AUD)	A dummy variable that equals 1 if audit committee exists on board, and 0 otherwise	Annual Reports
Women on board (WOM)	The proportion of women directors on the board	Annual Reports
Risk committee (RISCOM)	A dummy variable that equals 1 if risk committee exists on board, and 0 otherwise	Annual Reports

Source: Orbis Bank and author’s calculation.

#### 4. Data

In this study, a panel data encompassing 188 banks across various MENA countries, including Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, Turkey, and the United Arab Emirates, will be employed. All variables will be considered annually for the period 2009-2020. Data is collected from Orbis Bank Focus and the World Bank databases. The authors used secondary data from the annual reports provided by Orbis Bank Focus to explore elements such as audit quality, board characteristics and financial indicators whereas they used the World Bank database for macroeconomic variables. *Table 2* exhibits the descriptive statistics of the variables used to test the relationship between corporate governance practices and the stability of banks operating in the MENA region. *Table 3* displays the correlation matrix of the dependent variable, bank-specific, corporate governance and macroeconomic explanatory variables. The matrix indicates a moderate correlation among the variables since the values fall below the established threshold of 0.8, confirming the absence of multicollinearity issues. As a result, the multicollinearity of the data does not significantly affect the outcome of our models.

Table 2. Variables descriptive statistics

Variables	Mean	Std. Dev.	Minimum	Maximum	Observation
LNZ	3.2035	0.7377	-2.039	5.1584	1798
CAR	0.1177	0.059	0.0181	0.8161	1798
ROA	0.0112	0.011	-0.1148	0.0899	1798
NPL	0.0386	0.063	0.0000	0.7804	1798
SIZE	15.8393	1.5925	11.9846	23.789	1798
GDPC	0.0039	0.0462	-0.2112	0.0951	1798
BSIZE	9.6791	2.3101	3.0000	18.000	1798
IMEB	0.4658	0.3179	0.0000	2.4000	1798
AUD	0.9338	0.2487	0.0000	1.0000	1798
WOM	0.0891	0.1293	0.0000	1.5000	1798
RISCOM	0.7486	0.4339	0.0000	1.0000	1798

Source: Orbis Bank and author’s calculation.

Table 3. Correlation matrix of the dependent variable, bank-specific, corporate governance and macroeconomic explanatory variables

Variables	LNZ	CAR	ROA	NPL	SIZE	GDPC	BSIZE	IMEB	AUD	WOM	RISCOM
LNZ	1.000										
CAR	0.264	1.000									
ROA	0.295	0.354	1.000								
NPL	-0.200	-0.080	-0.218	1.000							
SIZE	0.191	-0.267	0.092	-0.141	1.000						
GDPC	0.012	-0.005	0.158	0.026	-0.002	1.000					
BSIZE	0.140	-0.253	-0.038	0.010	0.284	0.010	1.000				
IMEB	-0.020	-0.079	-0.036	-0.081	0.213	-0.080	-0.069	1.000			
AUD	0.039	-0.103	-0.071	0.046	0.217	-0.022	0.156	-0.037	1.000		
WOM	0.013	-0.134	-0.070	0.105	0.022	0.094	0.068	0.122	0.052	1.000	
RISCOM	0.025	-0.064	-0.064	-0.021	0.026	-0.221	0.082	-0.044	0.398	-0.103	1.000

Source: Orbis Bank and author’s calculation.

## 5. Empirical Results

### 5.1 Relationship between Financial and Governance Factors and Banking Stability

This section presents an evaluation of three distinct models meticulously designed to capture essential aspects of banking stability in the MENA region between 2009 and 2020. The objective is, not only to pinpoint pertinent factors but also to assess their relative significance and influence on the banking sector. The results of the panel regression analysis conducted using the Generalized Method of Moments (GMM) estimator are presented in *Table 4*. This analysis provides valuable insights into the nuanced dynamics of banking stability, considering the effects of crucial independent variables. The significance and associated coefficients of each variable are discussed below, with specific attention to the adjustments made in Model 2 (including women on board variable, WOM) and Model 3 (incorporating the risk committee variable, RISCOM).

Table 4. The impact of corporate governance practices, bank-specific and macroeconomic variables on banking stability in MENA countries - dependent variable:  $(LNZ_t)$

	Model 1	Model 2	Model 3
Constant	0.4201 (0.0960)	0.3840 (0.0693)	0.3996 (0.1055)
LNZ (-1)	0.5229*** (0.0908)	0.5568*** (0.0682)	0.5328*** (0.0937)
CAR	1.6660*** (0.3118)	1.5593*** (0.2512)	1.6452*** (0.3165)
ROA	2.6272** (1.1325)	2.3878*** (0.8819)	2.5553** (1.1477)
NPL	-0.3691*** (0.1036)	-0.3673*** (0.1018)	-0.3724*** (0.1036)
SIZE	0.0398*** (0.0074)	0.0368*** (0.0063)	0.0393*** (0.0074)
GDPC	0.2869* (0.1680)	0.2143 (0.1806)	0.3211 (0.1975)
BSIZE	0.0276*** (0.0054)	0.0253*** (0.0041)	0.0273*** (0.0055)
IMEB	-0.0171* (0.0097)	-0.0188 (0.0130)	-0.0187** (0.0095)
AUD	0.0251**	0.0261**	0.0325*



WOM	(0.0115)	(0.0135) 0.0982*** (0.0366)	(0.0174)
RISCOM			0.0215** (0.0095)
R-squared	0.874	0.881	0.874
Adjusted R-squared	0.873	0.879	0.873
Prob (Hansen-Sargan Test)	0.894	0.555	0.613
<i>Arellano-Bond Serial Correlation Test</i>			
Prob. AR (1)	0.054	0.050	0.049
Prob. AR (2)	0.708	0.633	0.512
Observations	1346	1346	1346
Number of banks	188	188	188

Note: Standard error in parentheses. \*\*\*, \*\*, \* implies significant at the 1%, 5%, and 10% level respectively.

In the first place, the R-squared values for models 1, 2, and 3 are 0.874, 0.881, and 0.874, respectively. These values suggest that around 87.4%, 88.1%, and 87.4% of the variation in  $(LNZ)$  is explained collectively by the independent variables in the respective models. Regarding model validity, the Jensen probability was calculated, with a Prob(J-statistic) greater than 10% (0.1) in all models, indicating that the selected independent variables in all models jointly contribute to explain banking stability. The AR (1) and AR (2) tests for first-order and second-order autocorrelation show that the conditions for serial correlation (autocorrelation) are met, indicating that all three models do not suffer from the error autocorrelation problem. It is noteworthy that the incorporation of the women on board ( $WOM$ ) and risk committee ( $RISCOM$ ) variables in the second and third models aims to properly assess their influence on the stability of the MENA banking sector. Examining the potential impact of women on board on the relationship between independent factors and banking stability is crucial, considering the attention gender diversity on corporate boards has garnered. The inclusion of risk committee variable in the third model investigates if the presence of a risk committee within a bank's corporate framework influences the overall financial health.

Furthermore, the examination of the one-year lagged dependent variable ( $LNZ_{t-1}$ ) reveals its significant p-value at the 1% level in all models. In Model 1, the coefficient (0.5229) emphasizes the dynamic nature of banking stability, signifying a positive influence of the prior-year's stability on the current year's one. With the introduction of ( $WOM$ ) in Model 2, the coefficient increases to 0.5568. Similarly, in Model 3, incorporating ( $RISCOM$ ) results in a coefficient of 0.5328, suggesting a robust influence of prior stability on current banking stability, even after considering the effects of women on board and risk committee variables.

Regarding bank-specific determinants, the analysis of the capital adequacy ratio ( $CAR$ ) indicates its significant p-value at the 1% level in all models. In Model 1, a one-unit increase in ( $CAR$ ) corresponds to a 1.6660 unit increase in banking stability, and this positive relationship persists in Model 2 (1.5593) and Model 3 (1.6452), demonstrating that the impact of ( $CAR$ ) on banking stability remains consistent after incorporating ( $WOM$ ) and ( $RISCOM$ ). This positive relationship between bank capitalization and banking stability demonstrates that when banks meet capital regulation limits, they typically maintain banking stability and financial health. This result is consistent with the study of Sang (2021). Moreover, examining the impact of banking profitability using the return on assets ratio ( $ROA$ ), has a significant p-value at the 5% level in Model 1 and at the 1% level in Models 2 and 3. In Model 1, a one-unit increase in ( $ROA$ ) leads to a 2.6272 unit increase in banking stability. This positive effect remains evident in Model 2 (2.3878) after including ( $WOM$ ) and in Model 3 (2.5553) after including ( $RISCOM$ ). Contrary to the results of Tan and Anchor (2016) of an adverse relationship between return on assets and stability, our study proposes that the profitability of MENA banks continues to exert a substantial influence on banking stability. Considering non-performing loans ( $NPL$ ), the coefficients of this variable recorded a significant p-value at the 1% level in all models. In Model 1, a one-unit increase in ( $NPL$ ) results in a decrease of 0.3691 units in banking stability, maintaining consistency in Model 2 (0.3673) and Model 3 (0.3724), indicating that the negative relationship between ( $NPL$ ) and banking stability remains unaffected by the inclusion of ( $WOM$ ) and ( $RISCOM$ ). Our study demonstrates a negative effect of non-performing loans on banking stability. This result aligns with the findings of Zhang et al. (2016) who pointed out the risk posed by non-performing loans on increasing lending risk and raised concerns about financial system instability where high NPL ratios indicate poor credit quality, insufficient risk management, or macroeconomic challenges, all of which can erode banks' stability. Additionally, the analysis of bank size ( $SIZE$ ) reveals a significant p-value at the 1% level in all models. In Model 1, a one-unit increase in bank size corresponds to a 0.0398 unit increase in banking stability, with this positive relationship persisting in Model 2 (0.0368) and Model 3 (0.0393), indicating that the impact of bank size on banking stability remains consistent after including ( $WOM$ ) and ( $RISCOM$ ).

These findings align with Adusei's (2015) study proving that large banks can attain significant scale efficiencies, by diminishing the cost per dollar of loans while increasing the number of loans, which in turn, improves their stability, profitability, and overall efficiency.

Furthermore, the overall economic situation of MENA countries shows that rising rates of GDP per capita growth appear to have a positive effect on banking stability. In fact, the gross domestic product per capita (*GDPC*) displays a significant coefficient at the 10% level in Model 1. Thus, a one-unit increase in (*GDPC*) results in a 0.2869 unit increase in banking stability. This positive impact was confirmed by Olokoyo et al. (2019) and Usman and Khan (2012).

In the context of corporate governance factors, the board of directors' size (*BFSIZE*) shows a positive and significant relationship at the 1% level in all models. In Model 1, a one-unit change in board size corresponds to a 0.0276 unit increase in banking stability, and this relationship is also observed in Model 2 (0.0253) and Model 3 (0.0273), indicating that the influence of board size on banking stability remains unaffected by the inclusion of (*WOM*) and (*RISCOM*). Our investigation reveals a noteworthy positive influence of board size on banking stability, consistent with Li et al.'s (2020) research, which identifies a positive impact of board size on bank stability. This positive relationship may be attributed to the broader expertise and diverse perspectives provided by a larger board to a bank's governance and decision-making processes. A diverse board reinforces improved risk assessment, effective oversight, and overall enhanced governance, leading to greater stability. In contrast, Erkins et al. (2012) found no substantial correlation between board structure and stability, highlighting the context-dependent nature of this relationship. This divergence in the results may be explained by bank-specific characteristics or regional differences, which emphasizes the need for contextual considerations in exploring board-stability connections. The independence of members on board (*IMEB*) is statistically significant at the 10% level in Model 1 and at the 5% level in Model 3, with no significance in Model 2. Thus, the significance of (*IMEB*) remains unclear in Model 2, suggesting that the inclusion of women on board (*WOM*) variable may have reduced its effect. The consistency between our results and Battaglia and Gallo's (2017) results stresses, on one hand, the pivotal role of independent directors in influencing bank insolvency, and, on the other hand, the critical importance of board composition in shaping banking stability. Regarding audit quality, (*AUD*) exhibits a positive impact on banking stability with a significant p-value at the 5% level in Models 1 and 2, and at the 10% level in Model 3. In Model 1, a one-unit increase in audit quality leads to a 0.0251 unit increase in banking stability, and this effect persists in Model 2 (0.0261) and Model 3 (0.0325), indicating that the impact of audit quality on banking stability remains consistent after incorporating (*WOM*) and (*RISCOM*). Our findings reveal a significant positive correlation with banking stability, consistent with the study of Dsouza (2021) demonstrating that high-quality audits play a crucial role in providing precise and impartial financial reporting, thereby promoting transparency and trust. The closely intertwined nature of audit quality with regulatory compliance assists banks in meeting standards and fostering a stable financial environment. Furthermore, high-quality audits contribute to improved corporate governance, fostering accountability and transparency, ultimately enhancing banking stability.

Moreover, our study establishes a significant positive correlation between the presence of women on the board (*WOM*) and an enhanced banking stability, consistent with Hoang and Duong (2021) findings, which demonstrated that banks led by female executives exhibited greater profitability and stability. The inclusion of women on boards contributes to more diverse perspectives within decision-making processes, enriching risk assessment and fostering stability. Gender diversity enables a more comprehensive consideration of stakeholder perspectives, thus contributing to trust and stability in the banking sector. Furthermore, our findings regarding the positive relationship between the existence of a risk committee (*RISCOM*) and banking stability closely align with Odubuasi et al. (2021) research, emphasizing the beneficial impact of risk committee expertise on bank performance and stability. Risk committees, equipped with specialized knowledge, effectively identify, evaluate, and mitigate risks, creating a more informed decision-making environment. The cultural impact of risk committees promotes caution and risk awareness throughout the institution, ultimately reducing excessive risk exposure and enhancing stability. The congruence between our study and the research by Odubuasi et al. (2021) underscores the pivotal role of risk committees in maintaining and improving the stability of the banking sector.

### 5.2 Robustness Check

To examine the robustness of our results and offer additional support for the empirical findings, we introduced certain modifications to the variables under consideration. Therefore, the models have been regressed using the same empirical technique, that is, the Generalized Method of moments (GMM), due to having a panel data set. The robustness tests, as presented in Table 5, involved substituting the dependent variable (*Z*-score indicator) with credit risk, quantified by the ratio of non-performing loans to the bank's total assets (NPL). Additionally, three

supplementary measures of the institutional environment were incorporated. The ratio of non-performing loans to total assets (NPL) in the banking sector serves as an indicator of a bank's ability to manage such loans, with NPLs expected to negatively impact profitability, efficiency, and stability. In the realm of corporate governance, when regressing these variables against NPL, inverse relationships are anticipated compared to those obtained when regressed against Z-score. The results align consistently with the patterns highlighted earlier. Overall, it is observed that corporate governance features exhibit a negative association with credit risk. Board size, women's participation on the board, and the presence of risk committees negatively influence the values of non-performing loans, leading to reduced credit risk and thereby contributing to the maintenance of banking stability.

Table 5. The impact of corporate governance practices, bank-specific and macroeconomic variables on banking stability in MENA countries - dependent variable:  $(NPL_t)$

Variables	Model I	Model II	Model III
Constant	0.116*** (0.045)	0.131*** (0.046)	0.104** (0.042)
NPL (-1)	0.504*** (0.130)	0.482*** (0.132)	0.539*** (0.124)
CAR	0.045 (0.078)	0.041 (0.078)	0.031 (0.074)
ROA	-0.887*** (0.325)	-0.917*** (0.333)	-0.870*** (0.301)
SIZE	-0.007*** (0.002)	-0.007*** (0.002)	-0.006*** (0.002)
CE	0.002 (0.008)	0.003 (0.009)	0.002 (0.009)
BSIZE	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
DUAL	0.016* (0.009)	0.019** (0.009)	0.011 (0.009)
WOM	-0.027 (0.019)	-0.039*** (0.015)	-0.028** (0.014)
RISCOM	-0.006 (0.006)	-0.007 (0.006)	-0.005 (0.006)
GDPC	0.147 (0.099)	0.110 (0.093)	0.151 (0.092)
INF	-0.094** (0.041)	-0.097** (0.040)	-0.088** (0.042)
COCR	-0.004** (0.002)		
PST		-0.003 (0.001)	
REQ			-0.008*** (0.002)
R-squared	0.67	0.657	0.69
Prob(Hansen-Sargan Test)	0.282	0.544	0.269
<i>Arellano-Bond Serial Correlation Test</i>			
Prob. AR (1)	0.025	0.032	0.029
Prob. AR (2)	0.339	0.496	0.388
Observations	1640	1640	1640
Number of banks	150	150	150

Note: Standard error in parentheses. \*\*\*, \*\*, \* implies significant at the 1%, 5%, and 10% level respectively.

## 6. Conclusion

Banks, in comparison to other businesses, face ethical risks which are exacerbated by asymmetric information. Major shareholders, driven by incentives, assume excessive risk, which in turn, may divert capital into riskier investments through issuing high-risk loans at the expense of deposit holders. This practice elevates the likelihood of bad loans, poses a threat to bank capital adequacy, and ultimately destabilizes banks (Boyd & Smith, 1999). The aftermath of the 2008 financial crisis has heightened regulatory focus on promoting stability and mitigating risk in the banking sector. Consequently, boards of directors face increased pressure to supervise

risk-taking activities effectively and uphold overall bank stability (Nguyen, 2022). Internal audit assumes a pivotal role in preserving financial stability by identifying critical errors and frauds, and proactively taking corrective action before negatively impacting a company's finances (Badara, 2013). This function contributes to enhanced governance and the implementation of internal control frameworks, keeping management informed about progress or delays in achieving a company's objectives (Vijayakumar & Nagaraja, 2012). On a global scale, audit quality ensures accurate financial records for publicly listed companies, directly influencing the reliability of financial statements. This, in turn, instills stakeholder confidence and highlights effective audit committees, corporate governance, and sound management practices, all contributing to financial stability (Enekwe et al., 2020). Thus, in this study, our main objective was to investigate how particular corporate governance indicators and audit quality influences the stability of the banking sector in the MENA region, considering 188 banks operating over the period 2009-2020. Recognizing the central role of a stable banking industry in economic prosperity, our research aimed to fill geographical gaps in the existing literature, providing contextually relevant insights. Employing a holistic methodology that considered multiple variables simultaneously, we enhanced the understanding of the complex interplay of factors impacting banking stability. The four proposed hypotheses have been validated in our empirical analysis and the findings yield several noteworthy conclusions.

Firstly, the size and composition of a bank's board significantly influence stability by bringing diverse skills and perspectives, enhancing decision-making, and reducing the likelihood of risky behavior. Secondly, a robust capital adequacy standard in MENA banks acts as a financial cushion against unexpected losses and ensures regulatory compliance. Thirdly, banks' profitability contributes to stability by enabling resilience during adverse economic conditions. Fourthly, managing non-performing loans is crucial for maintaining a healthy loan portfolio and securing ongoing financial health. Regarding macroeconomic environment, economic growth positively impacts banking stability by creating opportunities for expansion and increased lending. The size of a bank, when balanced with effective risk management, plays a critical role in stability. In the context of corporate governance, high audit quality fosters transparency and confidence among stakeholders, contributing to overall stability. Similarly, gender diversity in leadership positively impacts stability by bringing varied perspectives and fostering innovation. Lastly, the presence of a specialized risk committee enhances stability by proactively addressing emerging risks and developing robust risk management policies, contributing to long-term resilience in the face of challenges. These conclusions provide valuable insights for policymakers, regulators, and practitioners in fostering banking stability in the dynamic MENA region.

## **7. Recommendations and Policy Implications**

In light of the findings and conclusions drawn from this study, policymakers are presented with several key recommendations to enhance the stability of banking institutions. First, maintaining robust capital ratios is crucial to provide banking institutions with adequate capital protections, thereby weathering financial shocks and fostering confidence among stakeholders. Second, policymakers should emphasize the importance of balancing profitability and stability, given that a higher return on assets should be pursued cautiously to avoid jeopardizing overall stability. Third, managing and reducing non-performing loans is paramount, as high non-performing loans can indicate financial distress, posing a significant threat to bank stability. Fourth, effective regulation in the MENA region, particularly for large banks, is essential, requiring policymakers to stress the importance of implementing stringent risk management practices and regulatory oversight. Fifth, continuous monitoring of economic growth trends is recommended, ensuring that a strong economy supports banking stability without overreliance, which may lead to vulnerabilities during economic downturns. Sixth, policymakers should advocate for diverse and independent boards, recognizing their positive contribution to stability through effective oversight and risk management. Prioritizing high audit quality is essential, as thorough and accurate audits contribute to transparency and trust, reinforcing overall stability. Seventh, policymakers are also encouraged to support research exploring the potential benefits of female leadership in banking, acknowledging the positive impact that women on boards may have on profitability and stability of MENA banks. Finally, policymakers should emphasize the importance of experience within risk committees, highlighting that well-informed and experienced committees can significantly enhance banks' stability.

In terms of future studies, there are several areas that researchers are encouraged to explore to advance the understanding of banking stability and its influencing factors. Firstly, a regional comparative analysis of banking systems in different MENA countries could reveal the impact of diverse regulatory frameworks and economic conditions on banking stability. Utilizing qualitative research methods, such as interviews and case studies, would allow researchers to delve deeper into the human and cultural aspects of banking in the MENA region, providing a more comprehensive understanding of challenges and opportunities. Investigating the impact of

external factors, such as political events, regional conflicts, and global economic conditions, on banking stability would provide insights into how banks navigate these challenges. As technology continues to shape the banking landscape, assessing the impact of fintech and digital transformation on banking stability is of paramount importance. Lastly, investigating the behavior of bank customers, their trust in the banking sector, and the factors influencing their decisions would provide valuable insights into the stability of the banking system.

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### **Authors contributions**

Dr. Jana Badran and Ms. Maria Chamoun were responsible for designing and performing this manuscript. Dr. Jana Badran was responsible for data collection. Ms. Maria Chamoun drafted the manuscript and performed the empirical analysis along with Dr. Jana Badran. All authors read and approved the final manuscript and they both contributed equally to the study.

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