Corporate Governance, Banking Stability and Risk Taking of MENA Banks

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Abstract: The debate on the impact of corporate governance frameworks on bank performance is still ongoing and the large empirical literature on the association between them is still inconclusive. This study exploits a dynamic GMM system on a sample of 150 banks operating in 15 MENA countries between 2009 and 2020. The empirical results show that larger board, lower proportion of external directors, higher gender diversity, CEO-chairperson roles separation, and the existence of a board level risk committee all improve MENA bank financial stability. Similar results have been found for controlling risk-taking by the management. Furthermore, the results show that better institutional quality can indeed promote the positive impact of corporate governance on bank stability. The findings of this study suggest allowing a higher cap on the size of boards of directors. Secondly, the appointment of independent directors should be based on experience and expertise, and the role of independent directors should be promoted. Thirdly, higher gender diversity must be encouraged and maybe even regulated. A separation between CEO and board chair roles is crucial in order to minimise potential conflicts of interest. Based on the empirical findings, the authors recommend certain implications to improve banking stability.

Keywords: Corporate Governance framework. Bank stability. Bank Risk-taking. MENA Region.

1. INTRODUCTION

Corporate governance has become a central topic of the modern financial economics for many decades, as the systems and procedures that govern a firm have indeed a direct impact on its performance and stability. This is particularly true in banking, where the presence of explicit and implicit deposit insurance intensifies incentive problems. In this context, the Agency theory asserts that incentives are an important factor in the decision-making of the various actors within a firm, such as the owners, managers, and employees (Fama, 1980). This theory suggests that the independence of governance structures and frameworks forms the basis for normative recommendations that allow shareholders and regulators to influence management behaviour. Consequently, corporate governance has become widely considered to be a critical factor for a bank's success (Diamond and Rajan, 2009), and banks with prudent corporate governance mechanisms are those that use their available resources more efficiently (Caprio *et al.*, 2007). Love and Rachinsky (2015) states that better corporate governance practices do influence bank performance, efficiency, and riskiness through three main channels: (1) more sound governance reduces both the likelihood and magnitude of related party transactions and proprietary trade practices; (2) better-governed banks reduce their cost of funds; and (3) an improved governance enables more efficient operations.

Banks have specific features that influence and interrelate with corporate governance mechanisms (John *et al.*, 2016). In particular, the existence of possible conflicts of interest between bank shareholders and debtors, the complexity and opacity of banking activities, and banking regulations, make bank governance unique. Banks, like other companies, are aware of governance challenges, but they have unique characteristics that can exacerbate these challenges and reduce the effectiveness of governance mechanisms. De Haan and Vlahu (2016) argue that banks diverge from non-financial companies in terms of (1) capital structure, (2), complexity and opacity of operations, and (3) regulations. Other studies have also pointed in the same direction (*e.g.* Caprio and Levine, 2002; Levine, 2004; Laeven, 2013) and have shown that bank corporate governance mechanisms have special challenges such as high regulation, highly leveraged capitals, information asymmetry, and adverse selection.

In light of its importance, a considerable body of literature examined the impact of corporate governance structures on bank stability and risk exposures. Nonetheless, the performed studies diverge significantly in terms of findings on how corporate governance factors shape bank riskiness, which depends on the studied sample, the covered period, and the adopted methodology. In particular, for the MENA region, where the financial systems are largely dominated by banks, and with specific features prevailing in the banking sectors, *e.g.* high concentration and the spread of Islamic banking, the research conducted on testing the association between corporate governance and risk-taking behaviour is still far from validation. Consequently, this study aims at

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participating in the ongoing debate and research on the impact of board structure on bank financial stability, by studying a unique dataset formed of 150 banks operating in 15 MENA countries, between 2009 and 2020. By applying a dynamic GMM system, the study found that larger board, lower proportion of external directors, higher gender diversity, CEO-chairperson roles separation, and the existence of a board level risk committee all improve MENA bank financial stability. Similar results have been found for controlling risk-taking by the management.

The paper proceeds as follows. Section 2 contains a comprehensive review of the related literature. Section 3 discusses the adopted empirical methodology and variables. In Section 4, the exploited dataset is highlighted. Section 5 contains the empirical results and the analysis of these results. A robustness check and an examination of the impact of interaction between corporate governance and institutional governance on bank stability are performed in Section 6. Finally, the conclusions and policy recommendations are presented in Section 7.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Risk Governance and Banking Risk

While a poor corporate governance framework has numerous consequences, including increased volatility and lower asset quality (Dong et al. 2017), a good governance framework equips banks with management structures that can control risky financial decisions, ultimately leading to an acceptable degree of financial stability (Karamanou and Vafeas 2005). Following the global financial crisis of 2007–2008, bank regulators and policymakers emphasised the need for banks to improve their risk governance and management (Lundqvist, 2015). The post-crisis failure of numerous banks has further intensified the discourse surrounding these institutions' governance frameworks and risk-taking (Kirkpatrick, 2009; Adams and Mehran, 2012). Weak governance practices, particularly the ineffectiveness of boards of directors to act in stakeholders' best interests, have been indeed linked to the poor performance of numerous banks (Aebi et al. 2012), resulting in an emphasis on the need to strengthen bank internal governance frameworks. This is because inadequate risk management and high-risk exposure were major contributing factors to the financial crisis (Berger et al., 2016a). In the following, we highlight the association between the board of directors' structure and bank riskiness according to the literature.

2.1. Board Size

The board of directors acts as a safeguard against managerial inefficiency because of its monitoring and advisory responsibilities (Hermalin and Weisbach, 2003). Banks with stronger supervisory boards are also better at implementing governance mechanisms, which boosts shareholder value, preserves financial stability, and enhances performance (Adams and Mehran, 2012). The board of directors is one of the most significant corporate governance tools that affects bank riskiness (BCBS, 2015). Since the global financial crisis of 2007-2008, bank regulators have been working to develop board-related governance principles in banks due to concerns about the effectiveness of board in internal monitoring role. The main cause of these worries has been the poor board practices in numerous banks and other financial institutions, which have had a serious negative impact on their stability (Fernándes *et al.*, 2018).

The size of the board affects its effectiveness among other things, and research on corporate governance has shown that there is a relationship between board size and risk exposure. The Agency Theory lays the groundwork for this relationship by asserting that agency problems are a significant factor in bank risk decisions (Mester, 1991). In line with this perspective, the agency theory contends that a board functions better with fewer directors (Fama, 1980; Fama and Jensen, 1983). According to this perspective, having a larger board of directors raises agency concerns, which lessens the board's ability to monitor managerial behaviour (Jensen, 1993). This is mainly because of a lack of coordination or poor communication during the decision-making process. Furthermore, a free-riding issue and less flexibility in decision-making may arise from larger boards (Fernández *et al.*, 1997).

The Resource Dependence Theory offers an alternative perspective to the Agency Theory, arguing that larger boards actually possess more highly skilled directors and more resources (Pfeffer and Salancik, 1978). According to this theory, having more board members could broaden and deepen the board's expertise, which would enhance the board's capacity for making decisions and increase the amount of resources available to it (Dalton et al., 1999). Larger boards of directors can also benefit from the diverse backgrounds of their members, which leads to more problem-solving activities and the potential to lessen challenges during the decision-making process (Lee *et al.*, 1999).

The relationship between bank board size and riskiness has been the subject of extensive empirical investigation, but the findings remain ambiguous. For example, banks with larger boards have been found to be riskier, especially during the global financial crisis (Pathan, 2009; Battaglia et al., 2014). Anginer *et al.* (2018) demonstrate that the free-riding issue makes large boards less successful in advancing the interests of shareholders. According to Pathan and Faff (2013) and Karamanou and Vafeas (2005), board size has a detrimental effect on supervision and monitoring efficacy. However, other research (e.g. Akhigbe and Martin, 2008; Faleye and Krishnan, 2017) that looked at the relationship between bank board size and risk-taking found that the two variables were negatively correlated. Larger boards are linked to noticeably lower credit risk, according to Klein (2002) and De Andrés and Vallelado (2008), who also find that larger boards are better at controlling and monitoring as well as risk assessment. Berger *et al.* (2016b) revealed that board size and bank financial stability were found to be positively correlated.

Consequently, we shall test the impact of board of directors' size on MENA banks' stability and risk, and we propose the following hypothesis:

Hypothesis 1 (H1): larger board size has a positive (negative) impact on MENA bank financial stability (risk).

2.2. Board Independence

Non-executive and external directors should be considered independent if they have no connections to the companies they represent, as this could compromise their objectivity when making decisions. Additionally, these directors ought to be crucial in defending and standing up for the interests of all parties involved (Tricker, 2012). In fact, a board with a larger percentage of outside directors is more independent, and safeguards the wealth of the owners against potential conflicts of interest among managers (Shleifer and Vishny, 1997). Advocates of the Agency Theory contend that outside directors are better suited to supervise executive directors than internal ones (Fama and Jensen, 1983), and that outside directors are more experienced and have greater control over management (Dunn, 1987). The idea that outside directors are better at monitoring management decisions than internal directors is further supported by the Resource Dependence theory for a number of reasons: 1) non-executive, independent directors are "self-motivated agents" who are dedicated to enhancing the performance of the company in order to safeguard and enhance their own reputation (Deutsch et al., 2011); 2) The likelihood of conflicts of interest is reduced because independent directors typically do not have professional or social ties to executives (Hermalin and Weisbach, 2003); 3) external directors possess greater connections with external resources that aid in attaining the intended results (Johnson et al., 1996); and 4) the independence of non-executive directors lessens prejudices in the process of making decisions (Dalton et al., 1999).

The Stewardship Theory, on the other hand, offers a different perspective, contending that inside directors are better able to improve the performance of the company than non-executives because they have greater knowledge and insight about the company than outsiders (Fama and Jensen, 1983). Adams (2012) makes the similar claim that it is improbable that independent directors have in-depth understanding of their banks' internal operations. John et al. (2016) note that the complexity and opacity of banking exacerbate the difficulties brought on by outside directors' ignorance about the company's internal operations.

The research on the relationship between bank performance and risk and the makeup of the board has produced conflicting findings. For example, Brickley *et al*. (1994), Subrahmanyan *et al.* (1997), and Nyamongo and Temesgen (2013) demonstrate that improved performance is actually achieved when outside directors make up a sizable portion of the board. On the other hand, director independence is linked to worse bank performance in times of crisis, according to Aebi *et al.* (2012). Independent directors are shown to have a negative impact on bank performance by Pathan and Faff (2013). According to Mollah and Zaman (2015), banks' performance is adversely affected by a larger percentage of independent directors.

Consequently, we shall test the impact of board independence on MENA banks' stability and risk, and we propose the following hypothesis:

Hypothesis 2 (H2): higher board independence has a positive (negative) impact on MENA bank financial stability (risk).

2.3. Chairman-CEO Role Duality

A single individual serving as both the board chairman and the CEO is known as CEO duality. Duality may make it more likely for someone to act opportunistically (Jensen and Meckling, 1976) and gives one person a great deal of power, which makes it harder for the board to control management actions (Jensen, 1993). Giving the CEO this much authority may result in ineffective board supervision and have a detrimental effect on performance (Fama and Jensen, 1983). The Agency Theory suggests separating the roles of the CEO and chairman to improve effective board oversight because it claims that CEO duality may encourage the CEO to steer the board toward the benefit of executive directors, for example by giving it little information about the company (Mahadeo *et al.*, 2012). When a person holds both the chairperson and CEO positions simultaneously, they can use their authority to further their personal agendas. This could lead to banks performing worse and jeopardising their financial stability (Dong *et al.*, 2017).

On the other hand, proponents of CEO duality contend that merging these positions reduces both external and internal ambiguity regarding responsibilities and offers a single path that guides the company toward success (Anderson and Anthony, 1986). According to Donaldson and Davis (1991), having the same individual in these two roles results in stronger control and leadership. Belkhir (2009) adds that duality lowers agency costs and enhances bank performance because it gives one person more authority to successfully accomplish the firm's objectives. The stewardship theory is promoted by Mamatzakis and Bermpei (2015), who contend that the CEO who is also chair the board acts as a good representative for the board, enhancing decision-making and ultimately increasing bank performance.

In the empirical literature, Ujunwa (2012) and Mahadeo et al. (2012) found a negative correlation between CEO duality and business performance. Grove *et al.* (2011) point out that when chairs held CEO positions, US banks underperformed during the time before the global financial crisis. It was demonstrated by Mollah and Zaman (2015) that duality has a negative impact on banks' performance. Dong *et al.* (2017) demonstrated how duality has a detrimental impact on banks' performance, and Sarkar and Sarkar (2018) found a negative correlation between CEO duality and bank performance. On the other hand, CEO duality and performance were found to positively correlate in other studies, e.g. Donaldson and Davis (1991) and Galal (2017). In a similar vein, Pathan (2009) investigates the impact of combining the Chairman and CEO positions and concludes that duality has a detrimental effect on banks' willingness to take risks.

Consequently, we shall test the impact of role duality on MENA banks' stability and risk, and we propose the following hypothesis:

Hypothesis 3 (H3): CEO duality has a negative (positive) impact on MENA bank financial stability (risk).

2.4. Board Gender Diversity

The Resource Dependence theory views gender diversity as a way to improve the calibre of decision-making, with women on boards strengthening corporate legality and forg-

ing stronger ties with the outside world. It also recognises the significance of women's participation at the highest levels in boardrooms and senior management as a vital resource that firms can rely on. In keeping with this perspective, proponents of the Agency Theory contend that since women can make complex decisions and contribute fresh perspectives to the board, they could significantly reduce agency costs (Carter *et al.*, 2003). Zelechowski and Bilimoria (2004), Adams and Ferreira (2009) and Bart and McQueen (2013) assert that female board members are more devoted to their roles and possess superior managerial and decision-making abilities. In addition, women are probably even more industrious and skilled than men, and they are probably even more adept at monitoring senior managers (Dunn, 2012).

Conversely, the theory of Social Psychology puts forth a different perspective, contending that increased gender diversity in boardrooms causes conflicts and makes decision-making a less efficient and time-consuming process (Campbell and Mínguez-Vera, 2008). Additionally, according to Williams and O'Reilly (1998), a homogeneous board of directors is typically less emotionally conflicted and more cooperative.

Contradictory findings have been reported in earlier research on the effect of gender diversity on the board on banking performance and risk. According to Farag and Mallin (2017), having more female board members improves bank stability during crises and they are generally less risk-taking. De Cabo *et al.* (2012) hypothesises that since women are generally more conservative and risk-averse than men, having more women in executive positions on boards is linked to reduced risk-taking and lower bank risk. When examining the relationship between governance and bank performance, Adams and Ferreira (2009) demonstrate that greater gender diversity makes it possible to devote more time to monitoring. Kramaric and Pervan (2016) discovered the opposite, showing a negative correlation between female directors and bank performance. Additionally, Adams and Funk (2012) show that compared to their male counterparts, female directors typically take on greater risks. Berger *et al.* (2014) show that a larger percentage of female board members raises portfolio risk, which is related to the fact that female managers typically have less work experience.

Consequently, we shall test the impact of board gender diversity on MENA banks' stability and risk, and we propose the following hypothesis:

Hypothesis 4 (H4): a higher board gender diversity has a positive (negative) impact on MENA bank financial stability (risk).

2.5. The Existence of a Board Risk Committee

The necessity of putting into practice the best corporate governance guidelines and principles has led to the importance of board committees. A proper risk committee is necessary to ensure bank stability and to better analyse particular risky areas of financial institutions. A bank's risk committee assesses its existing state and projects how applying the best practices in risk management. An independent risk committee has become more prevalent in banks due to the variety of risks they face and their increased exposure to them (Andres and Vallelado, 2008).

Empirically, Brancato *et al.* (2006), Aljughaiman and Salama (2019), and Lee and Hooy (2020) demonstrate that having a risk committee lowers a bank's exposure to risk.

Consequently, we shall test the impact of the existence of an audit committee on MENA banks' stability and risk, and we propose the following hypothesis:

Hypothesis 5 (H5): the existence of a board level audit committee has a positive (negative) impact on MENA bank financial stability (risk).

3. VARIABLE SPECIFICATIONS AND EMPIRICAL METHODOLOGY

3.1 Variable Specifications

3.2.1. Dependent Variable: Bank Stability

This research aims at examining the effect of corporate governance on MENA banks' stability and riskiness. To proxy for bank stability, we follow Laeven and Levine (2009), Saghi-Zedek and Tarazi (2015), and Abid *et al.* (2021), and exploit the natural log of bank Z-score (LNZ). This measure provides assessment for bank stability (and in contrast, fragility) by indicating the number of standard deviations bank returns have to fall below their expected value before the equity is depleted and hence, the bank defaults. The Z-score is computed as follows: $Z - \text{Score} = \frac{\text{ROA}+\text{E/A}}{\sigma\text{ROA}}$

where ROA is return on average assets, E/A is equity-to-asset ratio, and σROA is 3-year rolling standard deviation of ROA.

3.2.2. Independent Variables: Bank Corporate Governance Framework

To proxy for the MENA bank corporate governance structures, we use the following variables. For the board of directors, we follow Grove *et al.* (2011), Shungu *et al.* (2014), Galal (2017), and Gallucci *et al.* (2020) and exploit the number of board members (BSZ). To test the impact of the board independence, we follow Andres and Vallelado (2008), Liang *et al.* (2013), Mollah and Zaman (2015), Sarkar and Sarkar (2018) and Harkin et al. (2020) and exploit the proportion of board independent directors (IMB). Following Kiel and Nicholson (2003), Ujunwa (2012), Arora and Sharma (2016), Harkin *et al.*, (2020), and Abid *et al.* (2021) we exploit the chairperson-CEO role duality (DUA), which is a dummy variable taking the value of 1 if the presence of role duality, zero otherwise. To detect the impact of board gender diversity on bank stability, we adopt, as in Mahadeo *et al.* (2012), Kramaric and Pervan (2016), Ibáñez-Hernández *et al.* (2019), and Lee *et al.* (2023), the percentage of female board members on the board (WOM). Finally, to detect the effect of the existence of board-level risk committees, we borrow from Battaglia and Gallo (2015) and Galletta *et al.* (2021) and exploit a dummy variable taking the value of 1 in the presence of risk committee (RISCOM), zero otherwise.

3.2.3. Control Variables

To complete the model, several control variables will be added. We follow Adams and Mehran (2012), Saheruddina and Soedarmono (2022), and Lee *et al.* (2023) to test the impact of capitalisation on bank stability, and include the equity-to-asset ratio (CAR). To detect the association between bank liquidity and stability, we exploit as in Salim *et al.* (2016) and Dong *et al.* (2017) the liquid-assets-to-total assets ratio (LIQ). The influence of bank profitability on bank stability and riskiness will be examined, and we exploit similarly to Aebi *et al.* (2012) and Harkin *et al.* (2020) the return on asset ratio (ROA). We test the impact of bank market power by adopting as in Risfandy *et al.* (2022) and EL Moussawi and Mansour (2022) and use the Lerner Index (LERN). To assess the impact of bank size on bank financial healthiness, we follow Andres and Vallelado (2008), Aljughaiman and Salama (2019) and Abid *et al.* (2021) and exploit the natural log of total assets. To proxy for the impact of foreign ownership on bank riskiness, we follow Andrieș *et al*. (2018) and Harkin *et al.* (2020) and adopt a dummy variable (FOR), taking the value of 1 for majority foreign ownership, zero otherwise. Following Harkin *et al*. (2020) and Gupta and Sharma (2022), and to test the impact of state ownership on bank stability, we adopt a dummy variable (PUB), taking the value of 1 for majority government ownership, zero otherwise. In order to examine the impact of economic development on bank stability, we follow Aljughaiman and Salama (2019) and Addo *et al.* (2021) and use the GDP annual growth rate (GDPG). Finally, to examine the influence of institutional quality on MENA bank stability, we follow Aljughaiman and Salama (2019) and Addo *et al.* (2021) and include two variables: control of corruption (COCR) and regulatory quality (REQU).

Based on the above, the following equations linking the dependent, independent, and control variables is proposed:

$$LNZ_{it} = \beta_0 + \beta_1 BSZ_{it} + \beta_2 IMB_{it} + \beta_3 DUA_{it} + \beta_4 WOM_{it} + \beta_5 RISCOM_{it} + \beta_6 CAR_{it} + \beta_7 LIQ_{it} + \beta_8 ROA_{it} + \beta_9 LERN_{it} + \beta_{10} SIZE_{it} + \beta_{11} NPL_{it} + \beta_{12} PUB_{it} + \beta_{13} FOR_{it} + \beta_{14} GDPG_{it} + \beta_{15} COCR_{it} + \beta_{16} REQU_{it} + \varepsilon_{it} \quad (1)$$

3.2. Empirical Methodology

To estimate Equations 1 and 2 a system GMM method will be adopted, and specifically, the Blundell and Bond (1998) GMM system. This method allows taking into consideration the correlation between the endogenous variable and the error terms. The econometric validity of the regression models estimated by the system GMM method will be examined using two tests, the Hansen instruments validity test and the Arellano and Bond (1991) error second-order autocorrelation tests. Noting that this methodology has been extensively adopted by the above listed literature, e.g. Dong *et al.* (2017), Andrieș *et al.* (2018), Aljughaiman and Salama (2019), Galletta *et al.* (2021), Abid *et al*. (2021), Gupta *et al*. (2022), and Saheruddin and Soedarmono (2022).

4. DATA

This research exploits a sample of 150 MENA banks operating between 2009 and 2020. The included MENA countries and the number of banks of each country are: Algeria (8 banks), Bahrain (6 banks), Egypt (15 banks), Israel (8 banks), Jordan (10 banks), Kuwait (5 banks), Lebanon (21 banks), Morocco (11 banks), Malta (5 banks), Oman (5 banks), Qatar (4 banks), Saudi Arabia (5 banks), Tunisia (13 banks), Tukey (22 banks), and United Arab Emirates (12 banks).

The – annual – bank data are extracted from Orbis Bank Focus database and from bank annual reports. The macroeconomic and institutional variables are taken from the World Bank database. For a general overview of the data, Table **1** includes some summary statistics of the exploited variables and Table **2** presents their correlation matrix.

Table 1. Variables descriptive statistics.

	Mean	Maximum	Minimum	Std. Dev.
LNZ	3.194	5.159	-2.631	0.764
NPL	0.069	0.844	0.000	0.082
BSZ	9.683	18.000	3.000	2.313
IMB	0.426	0.850	0.100	0.354
DUA		1.000	0.000	
WOM	0.089	1.500	0.000	0.129
RISCOM		1.000	0.000	
CAR	0.118	0.816	-0.042	0.060
LIQ	0.260	0.974	0.009	0.164
ROA	0.011	0.090	-0.115	0.011
LERN	0.605	14.903	-41.853	1.202
SIZE	15.773	19.456	11.357	1.525
PUB		1.000	0.000	
FOR	0.446	1.000	0.000	0.497
GDPC	0.004	0.095	-0.211	0.046
COCR	-0.066	1.567	-1.145	0.630
REQU	0.123	1.431	-1.303	0.595

Note: Authors' calculation. Data from Orbis Bank Focus.

In particular, the correlation matrix shows that LNZ is positively and significantly correlated with BSZ, WOM, and RISCOM, while it is negatively and significantly correlated with IMB and DUA. On the other hand, NPL is negatively and significantly correlated with BSZ, WOM, and RISCOM. While in contrast, it is positively and significantly correlated with both IMB and DUA. Nonetheless, as correlation does not imply necessarily causation, we shall test the type of the relationship between LNZ and NPL on one hand, and the five corporate governance variables on the other hand, in the following section.

Table 2. Variables correlation matrix.

	LNZ	CAR	LIQ	ROA	LER	SIZE	NPL	GDPC	BSZ	WOM	RISCOM	IMB	DUA	COCR	REQU	PUB	FOR
LNZ	1																
CAR	0.284***	1															
LIQ	-0.071***	0.208***	1														
ROA	0.353***	0.354***	0.014	1													
LER	-0.093***	-0.072***	-0.050**	-0.226***	1												
SIZE	0.169***	-0.317***	-0.330***	0.097***	-0.064**	1											
NPL	-0.276***	-0.048**	0.063**	-0.354***	0.105***	-0.270***	1										
GDPC	0.041*	-0.005	-0.076***	0.146***	0.058**	-0.025	-0.144***	1									
BSZ	0.125***	-0.236***	-0.249***	-0.027	-0.049**	0.327***	-0.045*	0.012	1								
WOM	0.007	-0.134***	-0.168***	-0.064**	0.019	0.042*	0.011	0.094***	0.068***	1							
RISCOM	0.027	-0.078***	-0.082***	-0.060**	0.013	0.010	0.074***	-0.223***	0.078***	-0.104***	1						
IMB	0.036	-0.101***	-0.229***	-0.071***	0.006	0.215***	-0.049**	-0.022	0.156***	0.052**	0.396***	1					
DUA	-0.144***	-0.166***	0.099***	-0.074***	0.030	0.047**	0.071***	0.005	-0.060**	0.007	0.060**	0.059**	1				
COCR	0.261***	0.079***	-0.289***	0.088***	0.001	0.237***	-0.140***	0.129***	0.074***	-0.014	-0.008	0.115***	-0.363***	1			
REQU	0.179***	-0.149***	-0.278***	-0.107***	0.050**	0.247***	-0.067**	0.098***	0.199***	0.044*	-0.001	0.151***	-0.359***	0.812***	1		
PUB	0.058**	0.006	-0.004	0.086***	-0.017	0.282***	-0.041*	0.054**	-0.140	-0.079***	-0.113***	0.048**	0.114***	0.175***	0.014	1	
FOR	-0.109***	0.057**	0.083***	-0.044*	0.026	-0.248***	-0.016	0.164***	-0.019	0.039*	0.037	0.009	-0.156***	0.068**	0.062**	-0.229***	1

Notes: Standard errors in parentheses. ***, ** and * denote statistically different from zero at the 1%, 5% and 10% levels respectively.

5. EMPIRICAL RESULTS

The impact of corporate governance framework on the stability of MENA banks is performed using the GMM-system method. Table **3** presents the regression estimates considering the natural log of Z-score as proxy for bank financial stability. Note that we run 10 different regression models to test the impact of different combination of independent and control variables on MENA bank Z-score.

Table 3. The impact of corporate governance variables on banks' stability – dependent variable: LNZ.

	1	2	3	4	5	6	7	8	9	10
C	2.085*** (0.262)	2.019*** (0.244)	2.238*** (0.273)	1.868*** (0.195)	1.928*** (0.250)	1.992*** (0.286)	2.310*** (0.326)	2.372*** (0.300)	2.142*** (0.275)	2.129*** (0.233)
LNZ(-1)	0.177* (0.096)	0.196** (0.096)	0.172** (0.080)	0.194** (0.080)	0.184* (0.096)	0.207* (0.111)	0.074 (0.122)	0.125 (0.105)	0.091 (0.111)	0.178** (0.085)
BSZ	0.030*** (0.005)		0.036*** (0.005)		0.040*** (0.005)	0.043*** (0.007)	0.034*** (0.005)	0.033*** (0.005)	0.032*** (0.005)	
IMB	-0.051** (0.021)	-0.066*** (0.024)	-0.072*** (0.023)	-0.086*** (0.023)		-0.062*** (0.022)		-0.053** (0.022)		-0.079*** (0.025)

DUA	-0.072*** (0.019)		-0.081*** (0.020)	-0.033* (0.017)	-0.002 (0.020)		-0.069*** (0.020)		-0.153*** (0.022)	-0.015 (0.017)
WOM	0.302*** (0.074)	0.304*** (0.073)		0.303*** (0.061)		0.262*** (0.071)	0.377*** (0.076)	0.326*** (0.078)		0.279*** (0.068)
RISCOM	0.082*** (0.017)	0.115*** (0.018)	0.101*** (0.019)	0.125*** (0.018)	0.081*** (0.017)		0.086*** (0.018)		0.123*** (0.020)	
CAR	2.719*** (0.330)	3.146*** (0.387)		2.985*** (0.327)	3.094*** (0.387)				3.242*** (0.435)	3.026*** (0.323)
LIQ	0.133** (0.050)		0.078*** (0.046)		0.205*** (0.046)	0.209*** (0.045)	0.128** (0.055)	0.144*** (0.048)		
ROA	-2.057 (1.646)	-4.038** (1.599)		-2.744* (1.602)	-1.349 (1.417)	-5.056*** (1.659)		-2.166 (1.692)		
LERN	-0.501*** (0.081)			-0.342*** (0.057)	-0.560*** (0.086)		-0.498*** (0.087)	-0.521*** (0.083)		-0.509*** (0.070)
SIZE	0.020*** (0.005)		0.015*** (0.005)	0.18*** (0.005)		0.013*** (0.005)	0.021*** (0.006)		0.020*** (0.005)	
NPL	-0.465*** (0.115)	-0.478*** (0.114)	-0.761*** (0.131)		-0.432*** (0.106)	-0.656*** (0.129)		-0.512*** (0.120)		-0.594*** (0.109)
PUB	0.003 (0.012)	0.055*** (0.014)			3.381* (1.845)			0.155*** (0.044)		0.139*** (0.040)
FOR			-0.140*** (0.019)	-0.123*** (0.015)		-0.482*** (0.075)			-0.569*** (0.123)	-2.492 (1.590)
GDPG	-1.076*** (0.390)	-0.753* (0.408)	-0.818** (0.365)				-0.967** (0.419)	-1.603*** (0.441)		-1.117*** (0.385)
COCR	0.172*** (0.024)		0.209*** (0.026)		0.530* (0.300)		0.189*** (0.029)	0.201*** (0.027)		
REQU		0.234*** (0.033)		0.219*** (0.027)		0.024*** (0.005)			0.245*** (0.036)	0.231*** (0.029)
R-squared	0.747	0.769	0.775	0.798	0.725	0.747	0.700	0.725	0.733	0.735
Prob J-stat	0.998	0.895	0.358	0.269	0.468	0.173	0.978	0.515	0.554	0.554
Prob AR(1)	0.038	0.037	0.038	0.047	0.024	0.024	0.044	0.085	0.025	0.029
Prob AR(2)	0.327	0.575	0.327	0.631	0.571	0.431	0.319	0.731	0.516	0.430
Obs.	1498	1498	1498	1498	1348	1500	1498	1500	1348	1500

Notes: Standard errors in parentheses. ***, ** and * denote statistically different from zero at the 1%, 5% and 10% levels respectively.

Firstly, the results in Table **3** show that the non-significance of the Hansen test value suggesting the validity of the used instruments, and the Arellano and Bond autocorrelation test (AR2) indicates the absence of errors second-order autocorrelation. In addition, the significant values of the one period lagged LNZ confirm the persistence of banking stability and the dynamic nature of the estimated models.

Turning to the impact of the explanatory variables on MENA bank stability, we observe the following results.

Firstly, the size of board of directors (BSZ) captures a positive and statistically significant impact (at the 1% level) on LNZ in every model included in Table **3**, which provides clear support to hypothesis H1, which supposed that board size is positively associated with bank stability. This result is in fact in line with the Resource Dependency Theory, which proposes that larger boards have more resources and more highly skilled directors and that having more board members increases the depth and breadth of expertise, thus helps boosting the board's decision-making capability. Moreover, we note that similar results regarding the type of the relationship between bank board size and Z-score have been found by Klein (2002), De Andrés and Vallelado (2008), Berger *et al.* (2016) and Sarkar and Sarkar (2018).

Secondly, board independence, proxied by the proportion of independent directors, has recorded a negative and statistically significant impact on bank stability in all presented estimations, which leads to rejecting hypothesis H2. Therefore, these findings provide support to the Stewardship Theory, which states that external directors are less knowledgeable and informed about their firms than internal ones and have lower ability to enhance the firm's performance than executives/internal directors. Moreover, these results may prove that independent directors lack sufficient knowledge about the inner working systems of their banks. In the empirical literature, similar results have been obtained by Aebi et al. (2012), Pathan and Faff (2013) and Mollah and Zaman (2015).

Regarding the impact of chairperson-CEO duality, the empirical results reported in Table **3** do show that CEO-chairperson role duality depresses bank financial stability, leading to the non-rejection of H3, where DUA recorded a significant negative influence on LNZ in five out of seven regression models. These findings match those of Grove et al. (2011), Mahadeo et al. (2012), Dong et al. (2017), and Sarkar and Sarkar (2018), and might reveal that role duality increase the possibility for opportunistic behaviour by giving the CEO considerable power and reducing the board's capability to monitor management activities, resulting in inefficiencies in board oversight and eventually, depressing bank performance and risk monitoring. Furthermore, and as stated earlier, the Agency Theory presents theoretical support to this finding, by stating that role duality may encourage the CEO-chairperson to provide the board with limited information about their bank and direct them in the benefit of executive directors.

Fourthly, the board gender diversity, which is represented by the proportion of women on the board, shows to have a constructive impact on MENA bank stability, as WOM is positively associated with LNZ and statistically significant in all models in Table 3. This finding provides support to hypothesis H4 and in line with the Resource Dependency theory, which identifies the importance of women participation in bank boardrooms, and stresses that gender diversity is a means to improve decision-making, minimise agency costs, and bring new insights to the boards. Besides, our results consist with Adams and Ferreira (2009), De Cabo et al. (2012), and Farag and Mallin (2017).

The last corporate governance variable, the presence of risk committee shows to be a major determinant of MENA stability, as RISCOM captured a positive and statistically significant impact on LNZ in each and every estimated model presented in Table 3. Therefore, these results validate hypothesis H5 and suggest that the existence of such board-level committee ensures bank stability and provides better analysis of bank risks, in addition to being in line with the findings of several studies, e.g. Brancato et al. (2006), Lee and Hooy (2020), and Aljughaiman and Salama (2022).

Regarding the set of control variables, we notice the following. Capitalisation level has a significant impact on bank stability, revealing that high capital buffers allow MENA banks to have higher ability to withstand shocks, and eventually, enjoy higher stability. Similarly, higher liquidity buffers provide support to bank stability, and allow them to confront adverse economic and financial conditions, which is shown by the positive and significant association between LIQ and LNZ in all presented models that include LIQ in Table 3.

Profitability (represented by ROA) is shown to be negatively associated with LNZ, and statistically significant in three out of six models. Hence, MENA banks with higher profitability might be those engaged in higher risks, which eventually deteriorate their stability. Market power seem to encourage banks to take on more risk, which is revealed by the negative impact of LERN on LNZ in all models containing this variable in Table **3**. Therefore, banks with higher pricing power may tend to engage in riskier investments and lending activities (i.e. with higher credit risk) in order to obtain higher returns. Larger MENA banks are shown to be more stable than their smaller counterparts, which is shown by the positive relationship between SIZE and LNZ. This could be due to the fact that larger banks have better diversification capabilities and advanced risk management frameworks, allowing them to enjoy higher stability.

Higher credit risk (represented by NPL ratios) depresses MENA bank financial stability, revealing that credit risk is translated into higher fragility. State-owned banks are in general more stable than privately owned ones, as shown by the positive association between LNZ and PUB and statistically significant in four out five estimations. This may suggest that banks that are backed with state ownership have better financial strength and solidity. In contrast, foreign banks seem to have inferior stability standing than local MENA banks, shown by the negative impact captured by FOR on LNZ. Hence, foreign banks operating in the MENA region may have tendency to engage in more risks, relying on the support provided by their parent banks in case of any shocks.

The growth rate of the economy shows to have a negative association with MENA banks stability, which suggests that MENA banks tend to expand their operations and activities during times of high economic growth, and engage in riskier businesses, as default rates during such periods tend to be lower. Finally, the obtained results show that indeed, the governance and institutional framework are major determinants of the stability of banks operating in the MENA region. This reveals that better institutional quality has a considerable impact on bank stability by influencing banking

regulation and supervision and by improving the capacity of government to implement sound policies.

6. ROBUSTNESS CHECKS

After examining the impact of the adopted five corporate governance variables on MENA banks' overall stability, and in order to detect the stability of the results obtained in the previous section, we proceed in this section and we re-examine the effect of these variables on bank's credit risk. The following equation linking the bank risk taking with the set of explanatory and control variables is proposed:

$$NPL_{it} = \beta_0 + \beta_1 BSZ_{it} + \beta_2 IMB_{it} + \beta_3 DUA_{it} + \beta_4 WOM_{it} + \beta_5 RISCOM_{it} + \beta_6 CAR_{it} + \beta_7 LIQ_{it} + \beta_8 ROA_{it} + \beta_9 LERN_{it} + \beta_{10} SIZE_{it} + \beta_{11} PUB_{it} + \beta_{12} FOR_{it} + \beta_{13} GDPG_{it} + \beta_{14} COCR_{it} + \beta_{15} REQU_{it} + \varepsilon_{it} \quad (2)$$

Table **4** presents the regression estimates considering non-performing loan-to-total loan ratio (NPL) as proxy for this risk. Again, we run 10 different regression models to test the impact of different combination of independent and control variables on MENA bank NPL ratios.

Firstly, the results in Table **4** show that the non-significance of the Hansen test value suggesting the validity of the used instruments, and the Arellano and Bond autocorrelation test (AR2) indicates the absence of errors second-order autocorrelation. In addition, the significant values of the one period lagged NPL confirm the persistence of banking risk exposure and the dynamic nature of the estimated models.

As for the impact of the independent variables on MENA bank risk-taking, the results reported in Table **4** are – overall – consistent with those in Table **3**. In particular, we observe that board size is negatively associated with bank NPL in five out of seven estimates, providing additional support to hypothesis H1, and suggesting that larger board of directors have better ability to control bank risk-taking. Secondly, role duality shows to have some positive influence on risk exposures (NPL), weaker than that recorded for LNZ, which provides some additional evidence in favour of hypothesis H3. Thirdly, higher gender diversity has a negative influence on bank risk-taking, as WOM captured a negative sign and significant in five out of seven models, which is in line with the results in Table **3** and providing further support to hypothesis H4. Fourthly, the existence of a risk committee results in a better credit risk control, as RISCOM shows to have a negative effect on NPL, and thus hypothesis H5 is validated again. In contrast of the above, the proportion of independent directors (IMB) does not impact bank riskiness, and thus leads to rejecting hypothesis H2 with regard to the impact of IMB on NPL.

We extend our analysis furthermore in this section and examine the impact of the interaction between the MENA bank corporate structures and the prevailing institutional quality on bank financial stability. This exercise is performed in order to assess if/how the quality of institutions in the MENA region can support the impact of corporate governance in promoting financial stability. To do so, we interact the five corporate governance variables and the two institutional quality variables used in Sections 5 and 6. Table **5** includes the interactions terms of the five corporate governance variables with the control of corruption variable, while Table **6** includes the interactions terms of the five corporate governance variables with the regulatory quality variable.

Table 4. The impact of corporate governance variables on banks' stability – dependent variable: NPL.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
C	-0.006 (0.004)	-0.007* (0.004)	-0.007* (0.004)	-0.007* (0.004)	-0.005 (0.004)	-0.005 (0.004)	-0.005 (0.004)	-0.004 (0.004)	-0.005 (0.004)	0.029*** (0.010)
NPL(-1)	0.976*** (0.040)	0.983*** (0.042)	0.962*** (0.039)	0.965*** (0.041)	0.980*** (0.044)	1.007*** (0.048)	0.968*** (0.041)	0.976*** (0.040)	0.977*** (0.044)	0.473*** (0.113)
BSZ	-0.002** (0.001)		-0.002** (0.001)		-0.008** (0.004)	-0.003** (0.001)	-0.0001 (0.0001)	-0.0002* (0.0001)	-0.0001 (0.0001)	
IMB	0.002 (0.008)	0.005 (0.008)	0.0005 (0.001)	0.002 (0.008)		0.001 (0.001)		0.001 (0.001)		0.0004 (0.001)
DUA	0.002** (0.001)		0.005 (0.006)	0.002** (0.001)	0.001 (0.001)		0.001 (0.001)		0.0003 (0.001)	0.004** (0.002)
WOM	-0.009** (0.004)	-0.010** (0.005)		-0.004** (0.002)		-0.001 (0.002)	-0.004** (0.002)	-0.001 (0.002)		-0.007*** (0.003)
RISKCOM	-0.003** (0.001)	-0.003** (0.001)	-0.006** (0.003)	-0.002 (0.002)	-0.003* (0.002)		-0.0002 (0.001)		-0.0002 (0.001)	

CAR	-0.015*** (0.005)	-0.014*** (0.005)		-0.013** (0.005)	-0.016*** (0.005)				-0.014*** (0.005)	-0.004 (0.007)
LIQ	0.003 (0.002)		0.002 (0.002)		0.002 (0.002)	0.003 (0.003)	0.002 (0.002)	0.002 (0.002)		
ROA	0.275*** (0.079)	0.282*** (0.079)		0.292*** (0.080)	0.233*** (0.067)	0.224*** (0.075)		0.249*** (0.076)		
LERN	0.004** (0.002)			0.004** (0.002)	0.003* (0.001)		0.003* (0.002)	0.002 (0.002)		0.011*** (0.003)
SIZE	0.007 (0.017)		0.008 (0.017)	0.00002 (0.000)		0.001 (0.020)	0.0001 (0.0002)		0.0002 (0.0002)	
PUB	-0.008** (0.004)	-0.001* (0.000)			-0.003** (0.001)			-0.004** (0.002)		-0.002* (0.001)
FOR			0.002 (0.005)	0.002 (0.005)		0.002 (0.002)			0.001 (0.001)	-0.003 (0.002)
GDPG	0.050*** (0.012)	0.052*** (0.012)	0.047*** (0.012)				0.050*** (0.011)	0.049*** (0.010)		0.033** (0.015)
COCR	-0.004 (0.004)		0.0004 (0.000)		0.0005 (0.001)		0.0003 (0.0004)	0.001 (0.0003)		
REQU		0.001 (0.000)		-0.001 (0.000)		0.009 (0.018)			0.001 (0.0004)	-0.001* (0.001)
R-squared	0.880	0.879	0.882	0.883	0.880	0.883	0.880	0.882	0.748	0.748
Prob J-stat.	0.216	0.193	0.211	0.196	0.159	0.317	0.166	0.258	0.247	0.246
Prob AR(1)	0.081	0.063	0.087	0.094	0.045	0.053	0.038	0.067	0.039	0.035
Prob AR(2)	0.335	0.257	0.382	0.225	0.176	0.144	0.564	0.308	0.270	0.192
Obs.	1498	1498	1498	1498	1498	1500	1348	1350	1498	1500

Notes: Standard errors in parentheses. ***, ** and * denote statistically different from zero at the 1%, 5% and 10% levels respectively.

Table 5. The impact of interaction between corporate governance variables and control of corruption on banks' stability – dependent variable: LNZ.

	1	**2**	**3**	**4**	**5**
C	2.542*** (0.337)	2.622*** (0.355)	2.911*** (0.463)	2.521*** (0.254)	2.420*** (0.336)
LNZ(-1)	0.190** (0.092)	0.067 (0.120)	-0.082 (0.167)	0.174** (0.077)	0.197*** (0.074)
BSZ	0.045*** (0.006)				
IMB		-0.103*** (0.024)			
DUA			-0.402*** (0.097)		

WOM				0.327***	
				(0.072)	
RISKCOM					0.084***
					(0.019)
CAR	2.992***		2.976***		2.874***
	(0.398)		(0.469)		(0.392)
LIQ		0.224***	0.162**	0.231***	
		(0.057)	(0.072)	(0.046)	
ROA	-1.256	-3.609*			-5.244**
	(1.854)	(2.025)			(2.244)
LERN	-0.565***			-0.474***	-0.341***
	(0.089)			(0.067)	(0.077)
SIZE		0.029***	0.040***	0.016***	
		(0.006)	(0.009)	(0.004)	
NPL	-0.398***	-0.536***			-0.647***
	(0.115)	(0.128)			(0.137)
GDPG	-1.382***	-1.856***		-1.135***	
	(0.412)	(0.445)		(0.329)	
COCR	0.469***	0.235***	0.202***	0.100***	0.165***
	(0.084)	(0.037)	(0.035)	(0.014)	(0.037)
BSZ*COCR	0.069***				
	(0.011)				
IMB*COCR		-0.034			
		(0.035)			
DUA*COCR			0.786***		
			(0.158)		
WOM*COCR				1.417***	
				(0.158)	
RISKCOM*COCR					0.146***
					(0.034)
R-squared	0.693	0.714	0.590	0.769	0.712
Prob J-stat.	0.736	0.395	0.105	0.220	0.293
Prob AR(1)	0.017	0.043	0.076	0.070	0.034
Prob AR(2)	0.624	0.605	0.433	0.300	0.261
Obs.	1350	1350	1498	1350	1500

Notes: Standard errors in parentheses. ***, ** and * denote statistically different from zero at the 1%, 5% and 10% levels respectively.

Table 6. The impact of interaction between corporate governance variables and regulatory quality on banks' stability – dependent variable: LNZ.

	1	2	3	4	5
C	2.660*** (0.345)	2.383*** (0.273)	2.420*** (0.250)	2.507*** (0.242)	2.242*** (0.266)
LNZ(-1)	0.239** (0.104)	0.146 (0.091)	0.159* (0.083)	0.183** (0.072)	0.160** (0.065)
BSZ	0.029*** (0.005)				
IMB		-0.128*** (0.026)			
DUA			-0.032 (0.022)		
WOM				0.065 (0.068)	
RISKCOM					0.126*** (0.020)
CAR	3.225*** (0.410)		2.896*** (0.305)		2.985*** (0.363)
LIQ		0.234*** (0.049)	0.184*** (0.042)	0.217*** (0.044)	
ROA	-1.125 (2.059)	-2.002 (1.979)			-1.983* (1.025)
LERN	-0.567*** (0.090)			-0.530*** (0.073)	-0.404*** (0.069)
SIZE		0.029*** (0.005)	0.018*** (0.005)	0.013*** (0.004)	
NPL	-0.567*** (0.121)	-0.521*** (0.109)			-0.611*** (0.115)
GDPG	-1.033** (0.411)	-1.069*** (0.384)		-0.426 (0.318)	
REQU	0.217*** (0.056)	0.180*** (0.027)	0.265*** (0.034)	0.156*** (0.021)	0.269*** (0.035)
BSZ*REQU	0.051*** (0.008)				
IMB*REQU		0.150*** (0.040)			

DUA*REQU			0.115** (0.052)		
WOM*REQU				0.948*** (0.113)	
RISKCOM*REQU					0.077*** (0.025)
R-squared	0.684	0.742	0.782	0.781	0.765
Prob J-stat.	0.452	0.559	0.743	0.388	0.363
Prob AR(1)	0.085	0.088	0.029	0.080	0.007
Prob AR(2)	0.842	0.411	0.606	0.421	0.293
Obs.	1350	1350	1498	1500	1500

Notes: Standard errors in parentheses. ***, ** and * denote statistically different from zero at the 1%, 5% and 10% levels respectively.

Interestingly, while IMB recorded a negative influence on LNZ (as shown in Table **3**), the interaction term IMB*COCR does not record this negative significant impact, and IMB*REQU even captured a positive and significant impact. Similarly, while DUA had a negative association with LNZ, the interactions terms DUA*COCR and DUA*REQU are positively associated with bank stability. This suggests also that better regulatory framework can mitigate the possible existence of opportunistic behaviour or inefficiencies in board oversight. Overall, the results in Tables 5 and 6 suggest that better institutional governance is indeed a supporting factor that improves the interconnectedness between better corporate governance framework and MENA bank stability, and can mitigate the existing flaws in the adopted corporate governance structures.

7. CONCLUSION AND POLICY IMPLICATIONS

The debate on the appropriate corporate governance structure necessary to preserve bank stability and control risk-taking has been ongoing since the emergence of the global financial crisis. Policy makers and academics has thoroughly examined how board characteristics and composition shape bank financial healthiness, but no consensus has been reached yet, depending on the studied sample, covered period, and adopted methodology. This study aimed as taking part in this continuous search on the optimum board of directors' structure that pour eventually in alleviating bank fragility and default probability.

The research exploited a sample formed of 150 banks operating in 15 MENA countries between 2009 and 2020. For board structure, it used five variables: board size, board independence, board gender diversity, CEO-chairperson duality, and the presence of a risk committee. By applying a dynamic GMM system, the study found that larger board, lower proportion of external directors, higher gender diversity, CEO-chairperson roles separation, and the existence of a board level risk committee all improve MENA bank financial stability. Similar results have been found for controlling risk-taking by the management.

From regulatory perspective, these findings present several policy recommendations. Firstly, a higher cap on the size of boards may be necessary. Secondly, the appointment of independent directors should be based on experience and expertise not to meet regulatory requirements only, and the role of independent directors must be promoted. Thirdly, higher gender diversity must be encouraged and maybe even regulated. A separation between CEO and board chair roles is crucial in order to minimise potential conflicts of interest. Finally, the establishment of a board risk committee should be also promoted and maybe required by law. Moreover, the results of the interaction between corporate governance and institutional governance shows that better institutional quality is an important factor that can mitigate the repercussions of the existing flaws in the adopted corporate governance frameworks.

Several additional remarks could be indeed extracted from the obtained results. In particular, the results recorded by both capitalisation and liquidity show the significance of banking regulations for the stability of the MENA banks, as both CAP and LIQ have a constructive impact on bank LNZ. This stresses the importance of avoiding any compromise in terms of capital and liquidity requirements. On the other hand, the conclusion obtained for bank market power and size has to be treated carefully. LERN (and ROA) captured a negative impact on LNZ, while in contrast, SIZE captured a positive impact, which might lead to distinguish between the bank size and its pricing power. In fact, having larger size may not necessary push a bank to engage in monopolistic behaviour, thus deteriorating its stability. While a smaller bank that serves a particular segment of the economy or a particular community, may have high pricing power, encouraging it to engage in anticompetitive conduct in order to boost its profitability, which eventually threatens its stability. Nonetheless, we should not ignore another possible explanation for the opposing results of SIZE and LERN is that larger banks with market power (which shown to be an impediment for stability) have more advanced risk management resources in place, in addition to considerable diversification capabilities, which eventually boost their stability. Consequently, it

is crucial for the MENA banking regulatory authorities that encourage bank mergers and acquisitions to carefully examine whether larger bank size (resulting from combining two or more banks together) results indeed in higher or lower stability. Thirdly, for the public ownership in banks, the results show that having government participation in ownership is useful in terms of a following a more conservative banking model, resulting in higher stability and lower risk-taking. This calls for preserving such ownership in MENA banks, while privatisation would not add value in this regard. Finally, improving the regulatory quality and the institutional governance is also crucial for financial stability in the MENA countries, and bank supervisory authorities must work on improving the quality of regulations and push for having better quality of institutions, as this improves financial stability, which eventually pour in economic development and social wellbeing.

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