

Corporate Governance and Operational Performance of Banks in the MENA Region

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Abstract

This article aims to study the impact of corporate governance on the performance of banks operating in the MENA region over the period 2009-2020. The results, obtained using the maximum likelihood method and the system generalized method of moments (system-GMM), show that the size of the board of directors, CEO-chairman role duality, ownership concentration and the presence of remuneration and nomination committees have a significant impact on the performance of banks in MENA countries. In addition, the empirical results revealed that bank size, credit risk, capitalization ratio, economic growth and the quality of the institutional environment are indeed explanatory factors of bank performance. Our findings provide useful information to regulatory authorities to improve the governance mechanisms of banks in the MENA region.

Keywords: corporate governance, banking efficiency, MENA region

1. Introduction

The theoretical and empirical literature on corporate governance is large, nonetheless, bank governance in particular remained limited until the emergence of the 2007-8 international financial crisis, where bank management became under question (Salim et al., 2016; Safiullah and Shamsuddin, 2019; Bhatia and Gulati, 2021; Safiullah, 2021, as the practices of bank governance have been the reason behind the crisis, and the excessive race for financial profitability, initiated by banks, led to excessive risk-taking. The interest in this topic centers on good governance, where bank shareholders try to identify an adequate system of economic control beneficial to all stakeholders. Although corporate governance is constantly the subject of interest of several researchers, the impact of the structure of governance on banking performance has been discussed only recently. King and Levine (1993) and Levine (1998) show that banks play a dominant role in financial systems as engines of economic growth, and banks in most countries are an essential source of financing for businesses.

Our research analyzes the impact of two internal governance mechanisms, represented by board composition and ownership structure, on the productive, economic and financial performance of banks in the MENA region. The empirical literature focuses on the indicators used to measure banking performance (Dong et al., 2017; Herkin et al., 2020; Bhatia and Gulati, 2021; Safiullah, 2021). The first two indicators are based on two ratios to measure performance: return on assets (ROA) and return on equity (ROE). On the other hand, a third indicator uses the productive frontier techniques to measure the performance of banks using cost efficiency. In this aspect, several studies have been performed in various contexts around the world and specifically in developed countries and have significantly contributed to the explanation of the relationship between corporate governance and bank performance (Staikouras et al., 2007; Pathan et al. al., 2007; Salim et al., 2016; Safiullah and Shamsuddin, 2019; Gupta et al., 2022). However, we note that such research is rare in emerging countries and more particularly in the banking sectors of MENA countries (Ghosh, 2018). The objective of this paper is therefore, to study the impact of the determinants of the performance of banks in the MENA region over the period 2009-2020. The interest of the article is threefold. First of all, while the majority of research focuses on the banking sectors of developed countries, our article is specifically interested in studying the impact of banking governance and control variables on the banking sectors of the MENA region. Secondly, to our knowledge, no study has been carried out in this regard within the framework of banks operating in the MENA region. Finally, most research on the impact of governance and specific factors on performance uses traditional indicators based on the ratios method to measure performance, whereas in our study we use the stochastic cost frontier technique to quantify

the performance of banks, which presents the advantage of simultaneously measuring individual distances from the efficiency frontier due to the effect of a certain number of variables governance, the individual behavior of each bank and the environment in which banks operate.

The remaining of the article is as follows. Section 2 highlights the review of the literature on the relationship between corporate governance and bank performance. In section 3, we present the methodology and the selection of variables used in the econometric analysis. Section 4 highlights the dataset. Section 5 presents and analyzes the obtained results. Robustness tests are included in Section 6. Finally, Section 7 includes the conclusion and the policy recommendations.

2. Literature Review

The 2007-8 financial crisis revealed a number of inadequacies in the governance of financial institutions. However, few studies have empirically analyzed the consequences of governance mechanisms on bank performance. By aligning the interests of managers with those of shareholders, governance mechanisms are likely to improve company performance (Jensen and Meckling, 1976). In addition, the board of directors plays a crucial role in the effectiveness of the internal control system (Jensen, 1993). However, the weakness of company's internal control system can cause financial difficulties. Many authors (e.g. Sok-Gee et al., 2016; Salim et al., 2016; Dong et al., 2017; Harkin et al., 2020; Bhatia & Gulati, 2021) have studied the link between corporate governance and performance of banks and confirm that the characteristic variables of governance have a significant impact on the performance of banks.

Certain number of governance variables are measured and compared in our analysis, mainly relating to the characteristics of the board of directors and the internal dimension of governance. In the following, we shed light on these variables and their impact on bank performance, as found by the literature.

2.1 The Size of the Board of Directors

Jensen (1993) argues that a board of a reasonable size (seven to eight members) would be more effective because it would allow better coordination, faster decisions and a reduction in agency costs. Salim et al. (2016) reveal the existence of a positive relationship between the board of directors and the efficiency of banks. On the other hand, Staikouras et al. (2007) and Pathan et al. (2007) found that board size negatively affects bank performance. In the same vein, Dong et al. (2017) show that the size of the board of directors has a negative effect on the cost efficiency and profit efficiency of Asian banks. In contrast, Mishra and Nielsen (2000), Zulkafli and Sumad (2007) and Bektas and Kaymak (2009) do not find a significant effect of the size of the board of directors on the profitability of banks.

2.2 The Role Duality

The separation of management and control functions can also be considered as a determining factor in the performance of banks. Based on the Agency Theory, Jensen (1993) states that the accumulation of functions emphasizes agency costs and weakens the effectiveness of the board of directors and, therefore, reduces firm performance. Empirical studies show that this combination of functions has indeed a negative impact on the effectiveness of the board of directors as well as on the performance of the company (Agrawal and Knoeber, 1996). Similarly, according to the Organizational Theory, multiple roles strengthen the leadership of senior management. Based on this theory, Pi and Timme (1993) and Wang et al. (2012) conclude that in the case of combination of CEO and Chairperson roles, banks become less profitable and less efficient. They explain that the consolidation of control and decision-making functions aggravates conflicts of interest and therefore, weakens the performance of banks. This result is confirmed by Grove et al. (2011), Mollah and Zaman (2015), Dong et al. (2017) and Sarkar and Sarkar (2018) who find that duality negatively affects performance. On the other hand, other studies have shown that duality can have a positive effect on banking performance (e.g. Mamatzakis and Bermpei, 2015; Harkin et al., 2020).

2.3 Gender Diversity and the Presence of Women on the Board of Directors

Several studies have highlighted the impact of gender diversity on boards of directors, essentially by detecting the association between the percentage of women board members and bank performance. The results of such research are mixed. Some studies show that the higher gender diversity has significantly positive relationship with bank performance (Mahadeo et al., 2012; Ryan and Haslam, 2005; Carter et al., 2003; Erhardt et al., 2003; Gulamhussen and Santa, 2015; Dong et al., 2017). In contrast, others find the opposite and show a negative effect of gender diversity on performance (Kramaric and Pervan, 2016; Ahem and Dittmar, 2012; Adams and Ferreira, 2009) or even no significant relationship (Carter et al., 2010; Mamatzakis and Bermpei, 2015; Pletzer et al., 2015).

2.4 The Existence of a Nomination and Remuneration Committee

The nomination and remuneration committee is an internal body formed of non-executive members with a good knowledge of the specificities of the company's activity and have the objectivity and freedom of judgment necessary to carry out their missions. This committee helps the governance body to implement an appropriate incentive and transparent wages policy for the company's senior executives and employees. Laing and Weir (1999) demonstrated that the existence of a remuneration committee positively affects the performance of British firms during the period 1992-1995. Along the same lines, Dalton et al. (1998) showed that the establishment of various committees within the board of directors, such as the remuneration and nomination committee, will improve performance. In contrast, Wei Leong et al. (2015), find a negative and significant impact of the existence of this committee on the return on assets of Malaysian listed companies during the period 2010-2012.

2.5 Ownership Concentration

The concentration of ownership is a guarantee of effective control of management by shareholders (Shleifer and Vishny, 1986; Agrawal and Mandelker, 1990; Bethel and Liebeskind, 1993; Agrawal and Knoeber, 1996). Indeed, shareholders holding a significant proportion of a firm capital have interest in investing in controlling the management of the bank and in limiting the risk of discretionary behavior by managers (García-Herrero et al., 2009; Dong et al. 2014; Bian and Deng, 2017). However, at high levels of concentration, the positive effect of this alignment mechanism diminishes and the high concentration gives rise to another agency conflict between majority and minority shareholders (Villalonga and Amit, 2006). In this regard, García-Herrero et al. (2009) and Lin and Zang (2009) showed that when ownership concentration is high, banks become less efficient and tend to take on more risk. Finally, other studies revealed the existence of a non-significant relationship between ownership concentration and bank performance (Iannotta et al., 2007; Ben Slama and Boulila, 2014).

3. Variables Selection and Empirical Methodology

3.1 Definitions and Measurements of Variables

3.1.1 The Dependent Variable: Bank Performance

Performance can be measured using market indicators that use the stock price (e.g. Market-to-Book Ratio, Price Earnings Ratio, Stock Return, etc.). Unfortunately, market data for the majority of MENA banks are not available. Hence, we resorted to using, following Harkin et al. (2020), accounting data, and in particular, return on assets (ROA) and return on equity (ROE), to measure economic and accounting performance, in addition to cost efficiency to measure the productive performance of banks in MENA countries.

Therefore, we use in this study ROA and ROE, which are considered as the most popular ratios used to measure the operational performance of firms. The return on assets ratio shows the ability of management to acquire deposits at a reasonable cost and invest them in profitable investments (Simpson and Kohers, 2002), while the return on equity ratio expresses the ability of capital invested by shareholders to generate a certain level of profit (Hopkins et al., 1997).

Ratio analysis has the advantage of being very easy to implement. Nonetheless, this method poses a problem insofar as it is based on a single production factor. Concerning the cost efficiency indicator (CE), the use of production frontier techniques, and more precisely the data envelopment analysis (DEA) method resulting from Linear programming – initially developed by Charnes et al. (1978) and developed by Banker et al. (1984) – allows measuring the technical efficiency, the allocative efficiency, and the cost efficiency of the decision-making unit (banks in our case). More precisely, this method measures the efficiency of a bank from an empirical perspective by calculating the difference separating the point representing the values of the observed inputs and outputs relative to a hypothetical point on the production frontier. In this way, we can estimate the degree of efficiency of each bank in relation to this frontier, which determines the best practices. In other words, each bank is referenced in relation to efficient banks and provided with an efficiency score with a value ranging between 0 and 1.

The advantage of the DEA method is that it allows taking into account several inputs to produce several outputs in order to calculate the cost efficiency of banks. Nevertheless, the disadvantage of this method is that the calculated inefficiencies do not have statistical properties. They are obtained with sensitivity to the presence of “classic hazards”, and the sensitivity to measurement errors and outliers, which can, if necessary, serve as “peers” in the calculation and calibration of the performances of the sample.

Other methods can be used to measure bank performance such as the stochastic cost frontier technique. This method allows taking into account the unexplained variations in the data, while imposing a functional form of the production technology, which makes the calculation of cost efficiency somehow sensitive to the technology

adopted (Cobb-Douglas type function, translogarithmic boundary, etc.). The advantage of the stochastic approach is that it allows decomposition of the error term into two components. The first represents the random term, which allows considering measurement errors, specifications and randomness that could affect the production process. The other component represents the effects of technical inefficiency in the production process. These latter terms are assumed by Aigner et al. (1977) interdependent and identically distributed according to an exponential or semi-normal distribution. These distributions have been criticized because they arbitrarily restrict the average of inefficiency effects to zero. Consequently, some economists have proposed other alternative distributions. For instance, Stevenson (1980) suggested a truncated normal distribution, while Greene (1980) proposed a gamma distribution. Battese and Coelli (1995) developed their famous stochastic frontier model, which takes into account the effects of firm-specific and environmental variables on cost inefficiency. In this article, we will use this model to estimate a stochastic cost frontier with cost inefficiency effects.

The production technology is that of a Translog type cost function similar to that adopted by Mester (1996), Berger and Mester (1997) and Maudos et al. (2002) can be formulated as follows:

$$\ln TC_{it} = \ln TC(y_{it}, w_{it}) + v_{it} + u_{it} \quad (1)$$

Where TC_{it} represents the total cost of bank i at time t ; y_{it} denotes a $(1 \times k)$ vector of outputs produced by bank i at time t ; w_{it} represents a $(1 \times k)$ vector of prices of inputs used in the production process by bank i at time t . The terms v_{it} are assumed to be independent and identically distributed according to $N(0, \sigma_v^2)$. The terms u_{it} represents cost inefficiency and are assumed to be independent and distributed according to a normal distribution truncated at zero with a mean μ_{it} and a variance $\sigma_u^2(N(\mu_{it}, \sigma_u^2))$. Under these assumptions, the average of the cost inefficiency, μ_{it} , is expressed as follows: $\mu_{it} = Z_{it}\delta + \varepsilon_{it}$, where Z_{it} is a vector of bank-specific variables expected to influence their cost efficiency, δ is a $(m \times 1)$ vector of unknown parameters to be estimated, and ε_{it} represents the random error terms. Consequently, the stochastic cost function can be written as follows:

$$\begin{aligned} \ln(TC_{it}) = & \alpha_0 + \sum_{i=1}^3 \beta_i \ln(y_{it}) + \sum_{j=1}^3 \eta_j \ln(w_{j,it}) + \frac{1}{2} \sum_{k=1}^3 \sum_{l=1}^3 \phi_{kl} \ln(w_{k,it}) \ln(w_{l,it}) + \\ & \frac{1}{2} \sum_{i=1}^3 \sum_{m=1}^3 \ln(y_{it}) \ln(y_{mt}) + \sum_{k=1}^3 \theta_{ij} \ln(w_{it}) \ln(w_{jt}) + v_{it} + u_{it} \end{aligned} \quad (2)$$

To define the activity of banks in the MENA region, we adopt the intermediation approach proposed by Sealey and Lindley (1977) which, unlike the production approach, assumes that banks transform short-term resources into long-term assets such as loans, using labor, physical capital and financial capital. Based on Berger and Master (1997), Turk-Ariss (2010), and Rakshi and Bardhan (2022), three outputs are used to define the production activity: total earning asset (y_1), other earning asset (y_2) and off-balance sheet activities (y_3). These three outputs are realized from the use of three inputs, namely: interest expenses, personnel expenses, and administrative expenses. The prices of these three inputs are: the price of financial capital measured by the interest expenses to consumer deposits ratio (w_1); the price of the labor factor is approximated by personnel expenses to total assets ratio (w_2); and the price of physical capital measured by administrative expenses to total assets ratio (w_3). Finally, the total cost (TC) is measured by the sum of general expenses and interest expenses.

3.1.2 The Independent Variables: Corporate Governance Variables

In order to determine the impact of governance on the performance of banks in the MENA region, we follow Pathan et al. (2007), Adam and Mehran (2012), Dong et al. (2017), Sarkar and Sarkar (2018), and Bhatia and Gulati (2021) for the selection of governance variables.

3.1.2.1 Board Size (BOS)

Board size is measured by the total number of directors. This variable has been used by Pathan (2007), Dong et al. (2017), and Sarkar and Sarkar (2018).

3.1.2.2 CEO Duality (DUA)

This variable considers whether the positions of CEO and chairman of the board of directors are combined or not. In this study, we use a dummy variable, which takes the value 1 in the case of a combination of the two functions, zero otherwise. This variable has been used by Simpson and Gleason (1999), Adam and Mehran (2012), and

Bhatia Gulati (2021).

3.1.2.3 The Existence of a Nominations and Remuneration Committee (NRC)

The existence of a remuneration and nominations committee is measured by a dummy variable taking the value 1 in case of the presence of such committee, zero otherwise (Agyemang-Mintah, 2016; Harkin et al., 2020).

3.1.2.4 Gender Diversity/the Proportion of Women Board Members (WOM)

Based on Dong et al. (2017), Harkin et al. (2020), and Bhatia and Gulati (2021), we define gender diversity as the proportion of female board members among total number of board members.

3.1.2.5 Ownership Concentration (OWN)

As indicated above, some studies have found a positive impact of the presence of major shareholders on performance, while other research have concluded no relationship between ownership concentration and bank performance. Ownership concentration is measured by the proportion of shares held by the three largest shareholders (Ozili and Uadiale, 2017; Dong et al., 2017; Abid et al., 2021; Gupta et al. 2022).

3.1.3 Specific and Environmental Control Variables

We also introduce in the translogarithmic cost function specific and environmental control factors that may affect the productive performance of banks in the MENA region. These are the following.

3.1.3.1 Bank Size (SIZE)

As in Harkin et al. (2020), Safiullah (2021), we introduce into the estimated specification a variable reflecting the size of the bank assets. This variable, measured by the natural logarithm of asset size, allows verifying the existence of economies of scale in the case of the banking sectors of the MENA region (Akhavain et al., 1997; Azorfa and Santamaria, 2011).

3.1.3.2 Bank Capital Ratio (BCR)

The capital ratio is also adopted to take into account the effect of banking regulations on the performance of banks. Following Lee and Hsieh (2013), Tan and Floros (2013), and Rakshit and Bardhan (2022), we define the capital ratio by the total equity to total assets ratio.

3.1.3.3 Credit Risk (NPL)

Based on Fiordelisi et al. (2011), Phan et al. (2019), and Rakshit and Bardhan (2022), we integrate into the cost frontier a variable reflecting the risk taking by banks in the MENA region. This variable is measured by the ratio of non-performing loans to total loans granted by banks.

3.1.3.4 Macroeconomic and Institutional Variables

Three variables are used in our empirical model to take into account the macroeconomic and institutional environment. Based on Fang et al. (2014), Addo et al. (2021), and EL Moussawi and Mansour (2021), we include the growth rate of the economy (GDPG), the control of corruption variable (COCR) and the quality of regulation variable (REQ).

Table 1. Description of the exploited variables

Variable	Description	Sources
Dependent variables		
Bank cost efficiency (CE)	Estimation d'une fonction de coût de type translog	Orbis Bank Focus - Author's Calculation
Return on Asset (ROA)	Net Income to total asset	Orbis Bank Focus - Author's Calculation
Return on Equity (ROE)	Total equity to net income	Orbis Bank Focus - Author's Calculation
Board governance variables		
Board size (BSZ)	The total number of directors on the board	Bank Annual Reports
Women on board (WOM)	The proportion of female directors on the board	Bank Annual Reports
CEO/Chairman duality (DUA)	A dummy variable taking the value of 1 if the CEO and the chairman of the board is the same person, and 0 otherwise	Bank Annual Reports
The existence of a nomination and remuneration committee (NRC)	A dummy variable taking the value of 1 in the existence of a nomination and remuneration committee, zero otherwise.	Bank Annual Reports
Ownership concentration (OWN)	A dummy variable taking the value of 1 if	Bank Annual Reports

	the biggest shareholder has more than or equal to 3% of total ownership and 0 otherwise				
Capital adequacy ratio (BCR)	Bank and country level characteristics Ratio of total equity to total asset	Orbis	Bank	Focus	- Author's Calculation
Non-performing loans (NPL)	Ratio of non-performing loans to gross loans	Orbis	Bank	Focus	- Author's Calculation
Bank size (SIZE)	Natural logarithm of total assets of a bank	Orbis	Bank	Focus	- Author's Calculation
GDP Growth Rate (GDPG)	Annual GDP growth rate	World Bank Financial Indicators			
Control of corruption (COCR)	Control of corruption index measures the ability of the government and public officials to control corruption in public services, which includes the corruption level between the public administration and citizens, businesses and foreign companies.	World Bank Governance Indicators			
Regulatory quality (REQU)	Regulatory quality captures the quality of the government in formulating and implementing sound policies and regulations to promote private sector development	World Bank Governance Indicators			

3.2 The Empirical Methodology

Following Battese and Coelli (1995), Kumbhakar et al. (2014) and Huljak et al. (2019), we use the Maximum Likelihood method to estimate the parameters of the stochastic frontier model and those relating to the cost inefficiency model, which allows determining the impact of bank governance variables and the other control variables on the performance of banks operating in the MENA region. For robustness tests, we employ the system-GMM technique to determine the relationship between governance and control variables on one hand, and bank performance measured by the ROA and ROE variables.

Nickell (1981) showed that the estimation of a dynamic model on a panel dataset using the Ordinary Least Squares (OLS) and the Least Squares Dummy Variable (LSDV) estimators is biased when N is large and T is fixed because the endogenous variable is correlated with the error term. As Bond (2002) points out, the estimate of the coefficient of the lagged variable is biased upwards for the OLS estimator and downwards for the LSDV estimator. Since Nickell's (1981) article, the econometric literature has developed numerous consistent estimators that use the methods of instrumental variables (Anderson and Hsiao, 1982) and generalized moments (Arellano and Bond, 1991; Blundell and Bond, 1998).

There are two types of GMM estimators for dynamic models on panel dataset, namely: the difference GMM estimator and the system GMM estimator. The first estimates the model in first difference using as instruments the variables in level, while the second estimates a system of equations both in first difference and in level using as instruments in the equations in level, and the first differences of the shifted variables. As shown by Blundell and Bond (1998), when the data are highly persistent and the number of periods is small, the difference GMM estimator provides poor estimates because under these conditions the level-lagged variables constitute weak instruments. Blundell and Bond (1998) show the superiority of the system GMM estimator in this case. Thus, to estimate our model, it is better to adopt a system GMM estimator rather than with a difference GMM estimator due to the specificities of our sample.

4. Data

The objective of the study is to analyze and compare the impact of governance and other control variables on the performance of banks operating in the MENA countries over the period 2009-2020. The used dataset includes 150 commercial banks. The bank level data are extracted from the Orbis Bank Focus database, published by Bureau van Dijk and from banks' annual reports. On the other hand, the macroeconomic variables are obtained from the World Bank database. Table 2 presents some descriptive statistics of the variables included in our study.

Table 2. variables descriptive statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Coef. Of Variation	Observations
SIZE	15.84	15.81	23.79	11.98	1.59	0.10	1789
ROA	0.01	0.01	0.09	-0.11	0.01	0.99	1789
ROE	0.09	0.10	0.66	-4.52	0.18	1.93	1789
BCR	0.12	0.11	0.82	0.02	0.06	0.50	1789
NPL	0.07	0.05	0.56	0.01	0.10	1.43	1789
CEF	0.62	0.62	1.00	0.03	0.24	0.39	1789
BOS	9.68	10.00	18.00	3.00	2.31	0.24	1789
DUA	0.17	0.00	1.00	0.00	0.37	2.24	1789
WOM	0.09	0.08	1.50	0.00	0.13	1.46	1789
OWN	0.74	0.79	1.00	0.05	0.26	0.35	1789
NRC	0.75	1.00	1.00	0.00	0.44	0.58	1789
GDPG	0.04	0.01	0.10	-0.21	0.08	1.99	1789
CORP	-0.37	-0.15	1.57	-1.15	0.63	-1.73	1789
REQ	0.19	0.05	1.43	-1.30	0.40	2.04	1789

Source: Orbis Bank Focus data and author calculation.

5. Empirical Results

The values of the coefficients estimated by the maximum likelihood method of the stochastic cost frontier model are presented in Table 3. Note that we run several regression models in order to test the impact of different combinations of explanatory variables on the dependent variables.

As shown in Table 3, the value of the variance and its level of significance ($P < 0.01$) suggest that the effects of cost inefficiency are largely significant in explaining the level and the variation in the banking costs. Thus, the traditional OLS cost function, without taking into account the explanatory factors, is not the appropriate representation of the data used in the different estimated specifications. These results therefore, indicate that the specific and the environmental variables of banking firms included in the cost inefficiency model together explain the level of cost efficiency observed during the period of the study. In addition, the results show in all presented estimations the absence of dependence of the error terms between the banks in our sample (Pesaran, 2015).

Regarding the impact of the explanatory variables on bank performance, we observe the following. The results show that the negative sign of the coefficient of the size of the board of directors is in line with the predictions of the agency theory supporting the argument that larger boards would possibly create conflicts of interest between directors and shareholders. This presents a greater potential for disagreement and lack of coordination in management decisions (Simpson and Gleason, 1999). Indeed, our results show that increasing the size of the board of directors implies a decline in performance. Consequently, a large board size increases conflicts within the board, which promotes an increase in control costs, and thus deteriorating performance. The result of our study is consistent with Staikouras et al. (2007), Pathan et al. (2007) and Dong et al., (2017).

Table 3. The impact of corporate governance on bank cost efficiency – method: Maximum Likelihood

	1	2	3	4	5	6	7	8	9
Intercept	0.217***	0.204***	0.238***	0.247***	0.213***	0.274***	0.251***	0.249***	0.211***
BOS	-0.008**	-0.008**	-0.007**	-0.007**	-0.008**	-0.011**	-0.007**	-0.006**	-0.008**
WOM	-0.039		-0.028	-0.036	-0.033	-0.019	-0.005		
DUA		-0.007**	-0.009**	-0.009**	-0.003*			-0.005*	-0.007**
NRC		0.052**	0.067**	0.057**	0.061**			0.059**	0.063**
OWN		-0.059**	-0.064***	-0.055***	-0.073***			-0.016	-0.039**
BCR	0.065**	0.049*	0.081**	0.066**	0.047*	0.058*	0.065**	0.065**	0.057*
NPL	-0.037*	-0.019	-0.021*	-0.007	-0.009	0.008	-0.093**	-0.016	-0.087**
SIZE	-0.019**	-0.029**	-0.037***	-0.033***	-0.028**	-0.041***	-0.037***	-0.036***	-0.017*
GDPG	0.091**	0.0715**	0.092***	0.097***	0.115***	0.068**	0.073**	1.015***	0.085***
CORP				0.0057**		0.0049**		0.027**	
REQ					0.0038**		0.0025**		0.0018
σ^2	0.198***	0.145***	0.138***	0.159***	0.162***	0.183***	0.149***	0.145***	0.140***
γ	0.726***	0.602***	0.591***	0.647***	0.642***	0.69***	0.723***	0.598***	0.586***
N ° Obs	1789	1789	1789	1789	1789	1789	1789	1789	1789
Cross-Section Independence Test									
	205.90	204.98	204.78	206.73	205.14	207.07	206.83	206.82	205.35

Notes: ***, **, * denote statistically significant 1%, 5% and 10% levels respectively. t-statistics in parentheses.

We observe that the coefficients of the variable concerning the presence of female directors on the board of directors are negative but insignificant in all the estimated specifications. In other words, the presence of women on boards of directors does not improve nor deteriorate the performance of banks in the MENA region. This result highlights the failures of heterogeneous boards of directors and confirm the results those of Adams and Ferreira (2009) and Harkin et al. (2020), which show that board gender diversity makes their governance practices stricter, but does not have a systematic positive effect on their cost efficiency.

Regarding duality, our results reveal the existence of a negative and significant relationship in all estimated specifications. Thus, this result is in line with those of Pi and Timme (1993), Dong et al. (2017) and Safiullah (2021) and those arising from the agency theory (Jensen, 1993), suggesting that duality amplifies agency costs (specifically, impartiality of control, ambiguity of responsibilities, conflicts of interest, imbalance of power, asymmetry of information, etc.) and weakens the effectiveness of the board of directors and thus reduces efficiency.

As for the presence of a nomination and remuneration committee, the results show a positive and significant impact on the cost efficiency of banks in MENA countries. This result is consistent with Dalton et al. (1998) and Laing and Weir (1999) and indicates that the practice of good governance through the presence of a nomination and remuneration committee improves the cost efficiency of banks, because the presence of an independent nomination and remuneration committee allows implementing appropriate and transparent salary and incentive policy and generates a remuneration package based on profitability (Harkin et al., 2020; Bahatia and Gulati, 2021).

Our results show that the ownership concentration negatively affects the cost efficiency of banks in the MENA countries, which contradicts Jensen and Meckling (1976), Ozili and Uadiale (2017), and Gupta et al. (2022) who show that the greater the share of capital held by managers, the lower the divergence of interests between shareholders and managers will be. Indeed, when the interests of managers coincide firmly with those of shareholders, conflicts and therefore, agency problems is mitigated, and performance is improved. Nonetheless, our results reveal the existence of a negative relationship between ownership concentration and cost efficiency. This result can be explained by the fact that the concentration of shareholding is at the origin of divergence of interests and conflicts between majority shareholders and minority shareholders. Major shareholders, when are also managers, are accused of attributing private benefits at the expense of smaller shareholders. In these circumstances, the shareholding concentration can lead to a phenomenon of entrenchment of the controlling shareholder, detrimental to the performance of the bank (García-Herrero et al., 2008; Lin and Zang, 2009; Dong et al. 2017).

Concerning the specific and environmental control variables, the results of the different specifications show that these variables have a significant effect on cost efficiency. Specifically, bank size captures a negative and significant relationship in all estimated specifications. Thus, our results are consistent with those of Salim et al. (2016) and Rakshit and Bardhan (2022) and can be explained by the fact that production costs are higher in large banks compared to small and medium ones, which translates into pressure on the profitability of large banks and by a reduction in their cost efficiency.

Our results reveal the existence of a positive and significant relationship between the capital ratio and the cost efficiency of banks in MENA countries. This result is consistent with Berger and De Young (1997) and Fiordelisi et al. (2011) and reveals that the increase in capital should lead to a reduction in the incentive of banks to take excessive risks, which contributes to the reduction of non-performing loans and the improvement of bank performance. On the other hand, the results in Table 3 show the existence of a negative relationship between risk and cost efficiency of banks in MENA countries. This result is consistent with several empirical studies (e.g. Dong et al. 2017; Phan et al. 2019) and shows that banks with the highest operating costs also have the lowest level of efficiency and credit losses.

Our results show the existence of a positive association between the growth rate of the economy and the cost efficiency of banks. Thus, the improvement in the economic environment is translated into an improvement in the cost efficiency of banks in the MENA region, and is consistent with the work of Safiullah, and Shamsuddin (2019) and Dong et al. (2017).

Finally, we found out that the institutional quality variables are also relevant as they positively and significantly influence the efficiency of banks in the MENA region. Thus, low levels of corruption, improved transparency and stronger financial regulation and supervision are all factors that positively affecting the performance of banks operating in the MENA region. These results are in line with those of Sok-Gee and Mohd Zaini Abd (2016), Addo et al. (2021) and EL Moussawi and Mansour (2021), and suggest that a deterioration of the institutional environment discourages private investment, which increases costs for banks while increasing

uncertainty about the expected return on investment.

6. Robustness Test

In the following, several tests are performed to verify the stability of our results. We first replace the cost efficiency variable with ROA. The results included in Table 4, and obtained through the GMM-system method are very close to those obtained previously. Indeed, the results revealed the existence of a significant negative relationship between the size of the board of directors, function duality, and concentration of ownership on one hand, and bank performance measured by ROA on the other hand. Conversely, the coefficients associated with the variable WOM are insignificant. Finally, we note that the control variables bank specific and environmental variables are found to be explanatory factors of the performance of banks in MENA countries.

Table 4. The impact of corporate governance on Return on Asset (ROA)

	1	2	3	4	5	6	7
Intercept	0.159***	0.171***	0.155***	0.118***	0.168***	0.142***	0.118***
BOS	-0.005**	-0.003**	-0.006**	-0.09**	-0.005**	-0.009**	-0.005**
WOM	0.022	0.027	-0.019	-0.028			
DUA	-0.07**	-0.07**	-0.07*		-0.05*	-0.028*	-0.013**
NRC	0.059**	0.059**	0.066**		0.048**	0.048**	0.072**
OWN	-0.024**	-0.018**	-0.028**		-0.027**	-0.037	-0.041**
BCR	0.057**	0.044*	0.051*	0.049*	0.053**	0.053**	0.058*
NPL	-0.038**	-0.017	-0.015	-0.029**	-0.085**	-0.023**	-0.074**
SIZE	-0.041***	-0.029**	-0.036**	-0.035***	-0.042***	-0.033***	-0.028*
GDPG	0.046***	0.077***	0.081***	0.057**	0.052**	0.048***	0.075***
COCR		0.028**				0.032**	
REQU			0.041**				0.029**
Hansen Test	0.274	0.328	0.195	0.248	0.316	0.307	0.328
AR2 Test	0.557	0.553	0.483	0.382	0.573	0.621	0.552
Observations	1789	1789	1789	1789	1789	1789	1789
	Cross-Section Independence Test						
	87.94	88.19	88.85	87.48	88.14	88.42	89.31

Notes: ***, **, * denote statistically significant 1%, 5% and 10% levels respectively. t-statistics in parentheses.

Furthermore, we verified the stability of our results by replacing the dependent variable with ROE. Following these modifications, we observed that our results included in Table 5 remain stable. Finally, it is worth noting that the two models estimated by the system-GMM method give satisfactory econometric results. Firstly, the validation of the instruments used is confirmed by the Hansen test since the p-value of the test is greater than the 10% level, which indicates that the null hypothesis of non-correlation of the variables instrumental with the error terms is verified. Consequently, the used instruments are valid and the GMM-system estimator converges. This result is reinforced by the non-rejection of the null hypothesis of absence of a second-order autocorrelation of errors, which is deduced from the p-values of the AR2 test, which are greater than the 10 % level in all regressions performed.

Table 5. The impact of corporate governance on Return on Equity (ROE)

	1	2	3	4	5	6	7
Intercept	0.116***	0.137***	0.115***	0.132***	0.113***	0.157***	0.142***
BOS	-0.03**	-0.04**	-0.04**	-0.07**	-0.06**	-0.03**	-0.06**
WOM	0.006	0.004	-0.021	-0.007			
DUA	-0.054**	-0.062**	-0.051**		-0.029	-0.068**	-0.053**
NRC	0.044**	0.039**	0.071**		0.083**	0.057**	0.069**
OWN	-0.037**	-0.029**	-0.036**		-0.055**	-0.049	-0.051**
BCR	0.066**	0.057*	0.053*	0.068*	0.073**	0.077**	0.062*
NPL	-0.038**	-0.023*	-0.017	-0.029**	-0.048**	-0.048**	-0.034**
SIZE	-0.055**	-0.047**	-0.056**	-0.029**	-0.061***	-0.047**	-0.038*
GDPG	0.013	0.026**	0.033**	0.042**	0.028**	0.039**	0.046**
COCR		0.046**				0.061**	
REQU			0.029**				0.032**
Hansen Test	0.372	0.306	0.358	0.228	0.381	0.276	0.316
AR2 Test	0.417	0.472	0.504	0.467	0.593	0.483	0.447
Observations	1789	1789	1789	1789	1789	1789	1789
	Cross-Section Independence Test						
	75.91	81.17	83.22	77.49	82.32	80.12	78.35

Notes: ***, **, * denote statistically significant 1%, 5% and 10% levels respectively. t-statistics in parentheses.

7. Conclusion

This study aimed to examine the relationship between governance mechanisms and the performance of commercial banks in the MENA region over the period 2009-2020. More precisely, we studied the effect of board characteristics (board size, presence of women on the board, role duality, concentration of ownership, and presence of remuneration and nomination committees) on banking performance measured by cost efficiency, and two economic ratios, namely: ROE and ROA. The obtained results show, in accordance with expectations, that the size of the board and the combination of functions have negative effects on the performance of banks. On the other hand, the impact of the presence of women does not seem to have a significant impact on banking performance. Our results also show that the presence of a nominations and remuneration committee positively affects banking performance. On the other hand, our results revealed the existence of a negative relationship between function duality and bank performance. Finally, it has been found that the specific and environmental variables are indeed explanatory factors that shape the performance of banks in the MENA region.

The results obtained suggest that regulatory authorities must take into account governance mechanisms in the design of regulatory policies. In particular, regulators may maintain a maximum number of board members in order to reduce the lack of cooperation and harmonization among board members. Secondly, the combination of CEO and chairperson roles may be prohibited. Thirdly, a ceiling on the ownership concentration could be also enforced.

Finally, it should be noted that this study has some limitations, which pave the way for future research. In particular, it could be useful to examine the relationship between the governance framework and the stock performance of banks in the MENA region. Secondly, in addition to using ROE and ROA, it could have been useful adopting the net interest margin, which is specific for banking as a profitability measure. Similarly, the usage of adoption of tier 1 common equity-to-total assets could have been more appropriate as this ratio is more specific to banks.

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