

# BENCHMARKING BANKS' BOARD CHARACTERISTICS AND PROFITABILITY IN THE MENA REGION

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## Abstract

**How to cite this paper:** Eldomiaty, T. I., Eid, N., Tarek, N., ElBatrik, D. Y., & Rashwan, M. (2024). Benchmarking banks' board characteristics and profitability in the MENA region. *Corporate Ownership & Control*, 21(3), 59–68.  
<https://doi.org/10.22495/cocv21i3art5>

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**ISSN Online:** 1810-3057

**ISSN Print:** 1727-9232

**Received:** 01.03.2024

**Accepted:** 27.06.2024

**JEL Classification:** G21, G28, G38

**DOI:** 10.22495/cocv21i3art5

This paper examines the significance and robustness of banks' board characteristics and profitability. As far as the design of a board is examined in the literature using qualitative analysis, this paper adds a quantitative analysis to the board design that contributes significantly to bank profitability. Three distinct profitability indicators are examined in order to reach robust outcomes. The paper extends the related studies to develop a quantitative benchmark for the outperformance of bank profitability and board characteristics. The data used in this paper includes 113 rated banks in the Middle East and North Africa (MENA) region during the annual period 2013-2020. The issues of linearity of the data, effects of fixed and random effects, and heteroskedasticity are examined. The cointegration regression is carried out to reach relevant and robust estimates. A discriminant analysis is utilized for benchmarking robust board characteristics and bank profitability. The results of the robustness test show that (a) two robust board characteristics have negative impacts on bank profitability, namely the number of independent directors, and the number of women on the board, (b) the relative weight of the negative impact of women on board is much greater than the negative impact of independent directors, (c) the negative impact of these two characteristics match other related studies in other countries. As far as many other related studies in the literature have examined common board characteristics, this paper contributes to the related literature by examining two issues. The first issue has to do with the robustness of the board characteristics and bank profitability. The second issue has to do with building a benchmark using the robust board characteristics. This benchmark is a practical guide for managing bank profitability.

**Keywords:** Bank Profitability, MENA Region, Board Characteristics, Cointegration Regression, Robustness, Benchmarking

**Authors' individual contribution:** Conceptualization — T.I.E. and D.Y.E.; Methodology — T.I.E.; Software — N.E.; Validation — M.R.; Formal Analysis — T.I.E. and N.T.; Investigation — M.R.; Resources — D.Y.E.; Data Curation — N.T.; Writing — Original Draft — T.I.E. and M.R.; Writing — Review & Editing — T.I.E. and N.E.; Visualization — M.R.; Supervision — T.I.E. and M.R.; Project Administration — T.I.E.

**Declaration of conflicting interests:** The Authors declare that there is no conflict of interest.

## 1. INTRODUCTION

The importance of the role of a board of directors stems from the reality that all members of the board are influencing the management of the banks' assets. The impacts of the board of directors on bank financial performance have become universal. Those impacts are examined across countries and regions due to different banking regulations. Nevertheless, the characteristics of the board of directors have not reached a consensus yet. The least to mention is that research in corporate governance, at large, is still dominated by corporate governance modes. Having this understanding in mind, the authors of this paper take a step forward by offering a methodological treatment to standardize the characteristics of boards of directors in the Middle East and North Africa (MENA) banks. The outcome is to provide a benchmark against which impacts of board structure on bank profitability can be assessed.

This paper aims at fulfilling the objectives that follow.

a) Examine the effects of board characteristics on banks' three profitability measures including return on assets (ROA), return on equity (ROE), and net interest margin (NIM).

b) Examine the robustness of the board characteristics to bank profitability.

c) Develop a benchmark for the board characteristics that contribute to bank profitability significantly.

The fulfilment of those objectives shall provide an answer to the main question that follows.

*RQ: What are the thresholds of bank board characteristics that help improve bank profitability in the MENA region?*

It is worth noting this research question offers an empirical quantification of board characteristics that do not exist in the related literature.

As far as related studies about bank board characteristics in the MENA region have concluded, this paper extends the analysis by offering a methodology to benchmark the board characteristics. This perspective offers a contribution to the current literature in terms of being able to help monitor the effects of board characteristics over time.

The rest of the paper is organized as follows. Section 2 reviews the studies that examine the characteristics of the board of directors. Section 3 discusses the measures of profitability in the banking sector and describes the data, variables, and statistical estimation methods. Section 4 discusses the empirical results. Section 5 concludes.

## 2. LITERATURE REVIEW

Members of the board of directors usually perform significant roles such as employee evaluation and monitoring to mitigate the agency conflict between employees and equity holders (Boussaada & Karmani, 2015). The role of the board of directors has been extensively extended in terms of driving business performance (Kosnik, 1987; Baysinger & Butler, 1985; Dahya & McConnell, 2007; Adams et al., 2010; García-Sánchez et al., 2015; Garcia-Meca et al., 2015). In the banking industry, several studies have emphasized the significance of board structure to bank performance (Nachane et al., 2005; Minton

et al., 2014; Liang et al., 2013; Mateev & Bachvarov, 2021; Mateev et al., 2023).

A number of studies examined the distinction between weak and strong governance (Srivastav & Hagendorff, 2016; Oradi et al., 2020; Lin et al., 2014; Karkowska & Acedański, 2020). In this sense, a robustness check must be impeded. Therefore, this paper extends this understanding through an examination of the impact of the board characteristics on different measures of bank profitability.

### 2.1. The significance of the size of the board

The size of the board has several consequences in terms of the effectiveness and efficiency of achieving the objectives of an organization (Coles et al., 2008). Adams et al. (2010) conclude that larger boards may contain many embedded agency conflicts, especially with the employees. Yermack (1996) reports a negative relation between the size of the board and firm performance using Tobin's Q. That is, the many members of a board may result in worsening the performance of the company (Jensen, 1993). In the banking sector, Isik and Ince (2016) and Belhaj and Mateus (2016) report significant and positive effects of board size on European bank performance and Daadaa (2020) in Tunisian banks. Nevertheless, Bebeji et al. (2015) report a negative and significant relationship between board size and both ROA and ROE in Nigerian banks.

### 2.2. The significance of board activity: Number of board meetings

Usually, board meetings are an institutional arrangement for discussing, and managing corporate affairs (Eldomiaty & Choi, 2006; Eldomiaty et al., 2006). This is the main reason that the number of meetings reflects the extent to which the board cares about business affairs. Vafeas (1999) concludes that boards tend to meet more frequently following unexpected poor performance. Nevertheless, the excessive number of meetings may carry reserve signals. After all, the time a meeting takes is part of working time that could have been utilized in productive activities (Jensen, 1993). Uzun et al. (2004) did not find a significant relation between financial reporting fraud and the meeting frequency of the board.

### 2.3. The significance of chief executive officer/ chairman duality

As far as the chief executive officer (CEO) and chairman duties may overlap, a "duality" exists. That is, if a CEO's boundaries cross to a chairman's duty, a duality exists. Duality might be seen as a benefit to the business as far as one person adopts a focused vision. Nevertheless, it has long been argued by the advocates of the agency theory that duality may lead to excessive power, the ultimate limit is autocracy (Jensen, 1993). Accordingly, calls have been raised for separate roles, this is on one hand. On the other hand, the stewardship and resources dependence theories adopt an opposite view claiming that concentrated governance of a company leads to effective asset utilization (Davis et al., 1997; Isik, 2017).

## 2.4. The significance of board diversity: Women on the board

Carter et al. (2003) and McDonald and Westphal (2013) argue that board diversity and independence are interrelated. That is, usually outside directors, especially with different genders and diversified expertise would raise issues that might be of benefit to the business, given that independent directors may have unrelated expertise. In terms of gender diversity, Burke (2000) and de Cabo et al. (2012) report a significant association between women on board and the number of performance indicators such as sales revenue, assets utilization, number of employees, and profit margins for Canadian firms and European Union (EU) banks respectively. Fondas (2000), Erhardt et al. (2003), and Selby (2000) extend the same conclusion arguing that women are quite cautious when it comes to the details of strategic planning and cost control. The benefits of joining women on the board are extended and illustrated as well in terms of dealing with issues such as diversity in labour and product markets (Bilimoria & Wheeler, 2000; Smith et al., 2005). Mattis (2000) extends the rationale of joining women to the board that women usually reflect the companies' customers' views and the relevant responsiveness to customers' expectations. Belhaj and Mateus (2016) extend this outcome in the banking industry reporting a significant and positive relationship between banks' board gender diversity and performance in European banks. Nevertheless, Issa et al. (2021) conclude that bank financial performance is not affected by gender and educational diversity significantly. Furthermore, Arnaboldi et al. (2020) have reached an overall conclusion that the impact of board diversity on EU bank performance is subject to discrepancy, but this impact is significant during turbulence in business cycles.

## 2.5. The significance of board composition: Number of non-executives

A stream of related studies has argued that a significant element of good governance is to ensure an external audit that usually takes the form of having non-executive directors on the board (Fama, 1980; Fama & Jensen, 1983; Monks & Minow, 2004; Roberts et al., 2005; Zattoni & Cuomo, 2010). Definitely, this argument holds true as far as the non-executive directors possess diversified expertise that offers practical edges to the business of the company. Otherwise, having busy and irrelevant non-executive directors is a waste of time and money (Lorsch & Carter, 2004).

## 2.6. The significance of board composition: Independence

The agency theory offers a rationale for having independent directors on the corporate board arguing that the same benefits of having non-executive directors can be realized. Here, independence is commonly measured as the percentage of inside to outside directors. This argument turns out to be controversial to a certain extent due to the lack of a certain benchmark for this ratio. Sarbanes-Oxley Act (SOX) offered a general

guideline indicating that the number of independent members on the board must be increased (Higgs, 2002). To that extent, heterogeneous board members can act as effective monitors of managers' decisions (Pucheta-Martínez & Gallego-Álvarez, 2020; Aggarwal et al., 2019; Estélyia & Nisar, 2016; Liu et al., 2015; Carter et al., 2010; Bouteska, 2020).

The stewardship theory favours inside directors as they have better knowledge according to their respective job duties (Davis et al., 1997; Baysinger & Hoskisson, 1990; Vance, 1978). Nevertheless, Bebeji et al. (2015) and Byrd and Hickman (1992) report a positive and significant relationship between independent directors and ROA and ROE. An extended controversy on this issue is reported by Belhaj and Mateus (2016) that the relationship between board independence and firm performance is insignificant. Uzun et al. (2004) found that the number of independent directors on the board and its audit committee is negatively related to corporate fraud.

## 2.7. The significance of subcommittees: Audit and remuneration

Recent governance reforms as reported in Higgs's (2002) report have stressed the importance of board committees such as audit, nomination, and remuneration committees as monitoring and control mechanisms (Gerged et al., 2023). Actually, the benefits of formulating subcommittees are the main assumptions of the agency theory as a mechanism to mitigate the potential problems that may arise due to the separation between ownership and control. One of the critical subcommittees is the remuneration and nomination committee which is entitled to a critical role in the improvement of the internal corporate governance system (Lee & Isa, 2015).

## 2.8. The significance of the size of the bank

Athanasoglou et al. (2005) argue that banks the effect of size for banks that have become extremely large could be negative due to bureaucracy. Nevertheless, Akhavein et al. (1997) and Hakimi et al. (2018) find a positive relationship between size and bank profitability. Demircuc-Kunt and Huizinga (1999) argue that the extent to which various financial and legal aspects may have an effect on bank profitability is actually closely linked to firm size.

## 2.9. The significance of bank capital adequacy

In the banking industry, size is conventionally related to capital adequacy. That is, large banks tend to raise less expensive capital and, therefore, appear more profitable (Athanasoglou et al., 2005). Capital ratios are usually linked to bank size. That is, small banks possess relatively less capital than large banks. Indeed, this argument holds true as far as large banks can implement cost-saving strategies.

## 2.10. The significance of bank leverage

The basic idea of employing leverage is that a bank can enjoy a higher rate of ROE capital than that earned by the bank on its total capital. Banks assets

possess a specific nature that would require assets to be provided as collateral security for loans (Lang et al., 1996). Thus, the concept of leverage has a significant bearing on banks' financing decisions. Furthermore, there is a risk inherent in leverage financing that may result in a loss as financing costs exceed the income generated from bank assets, which is commonly referred to as credit risk. The provision for the latter causes a reduction in bank net profits.

**3. METHODOLOGY**

**3.1. Data**

The data includes 113 rated banks (out of a total of 225 banks in the MENA region) where consistent data has been obtained for the period 2013 to 2020. The banks are located in nine MENA countries (Table 2) including Qatar, Kuwait, Saudi Arabia, United Arab Emirates (UAE), Jordan, Lebanon, Morocco, Oman, and Bahrain. Data is obtained from the bank scope database through Bureau van Dijk Electronic Publishing (<https://www.bvdinfo.com/en-gb>) which includes audited financial statements.

**Table 1.** The banks included in the study

Country	Total banks included in the sample	Banks included in the sample (%)
Qatar	6	5%
Kuwait	5	5%
Saudi Arabia	8	7%
UAE	18	16%
Jordan	12	11%
Lebanon	31	27%
Morocco	8	7%
Oman	7	6%
Bahrain	18	16%
Total	113	100.00%

**3.2. Dependent variables: Measures of bank profitability**

The studies in banking have commonly examined two measures of profitability, ROA and ROE (Athanasoglou et al., 2005). The ROE is usually

$$y_{it} = a_i + \sum_{t=1}^n \beta_i x_{it} + \sum_{t=1}^n \beta_i size_{it} + \sum_{t=1}^n \beta_i \lambda_{it} + \sum_{t=1}^n \beta_i \eta_{it} + \epsilon_i \tag{1}$$

where  $y_{it}$  = banks' ROA, ROE and NIM (annual);  $x_{it}$  = independent variables;  $size_{it}$  = dummy binary variables which include classified into small, medium, and large banks based on total assets;  $\lambda_{it}$  = dummy (binary) variables to capture country-

a useful indicator to shareholders about the extent to which the bank management is making enough efforts to meet the capital requirements by Basel Accords (Bowen et al., 1999; Boyd & Gertler, 1993; Albertazzi & Gambacorta, 2009; Berger, 1995). The ROE has also been examined as an indicator of banks' capacity to grow (Frieder & Petty, 1991). The NIM is further examined as a profitability indicator as far as efficient banks are able to control costs successfully (López-Espínosa et al., 2011).

**3.3. Independent variables**

These include board independence, CEO duality, women on board, audit committee, and remuneration committee. In addition, a natural log of total assets and equity ratio is included to capture the effect of bank size and capital adequacy respectively. Table 2 shows the definition and measurement of the dependent and independent variables.

**Table 2.** Measurement of the variables

Variable	Measurements
ROA	Net income/total assets
ROE	Net income/total equity
NIM	Net interest revenue/total earning assets
Board size	Number of board members
Board meetings	Number of board meetings held during the year
Non-executive directors	Number of non-executive directors/total board size
Board independence	Number of independent directors/non-executive directors
CEO duality	If the CEO and chairman are the same person = 1; otherwise = 0
Women on board	If women exist in the board = 1; otherwise = 0
Audit committee	If audit committee exists = 1; otherwise = 0
Remuneration committee	If remuneration committee exists = 1; otherwise = 0
Bank size	Natural log of total assets
Leverage	Capital adequacy ratio

The regression estimation equation takes the form that follows.

specific effects;  $\eta_{it}$  = dummy (binary) variables to capture bank capital adequacy that is classified into small, medium, and large total equity ratios.

The independent variables are examined based on the hypotheses listed in Table 3 that follow.

**Table 3.** The development of testable hypotheses

Variable	Hypotheses
Board size	H1: There is a significant positive relation between board size and bank profitability.
Board meetings	H2: There is a significant positive relationship between board meetings and bank profitability.
Non-executive directors	H3: There is a significant positive relationship between non-executive and bank profitability.
Board independence	H4: There is a significant positive relationship between board independence and bank profitability.
CEO duality	H5: There is a significant negative relationship between CEO duality and bank profitability.
Women on board	H6: There is a significant positive relationship between women on board and bank profitability.
Board committees (audit and remuneration)	H7: There is a significant positive relationship between board committees and bank profitability.

### 3.4. Testing for the significance of bank profitability measures

Needless to say, the above-mentioned three measures of bank profitability must be examined to ensure whether they deliver distinct content about bank profitability. Kruskal and Wallis's (1952) test is used to test whether the differences among the three measures of profitability are significant.

The results of the Kruskal-Wallis test show that the three levels of stock market competitiveness are different (Chi-Square = 482.184989,  $df = 2$ ,  $p$ -value = 0.000). This result ensures that the three measures offer distinct dimensions of bank profitability.

### 3.5. Testing for linearity vs nonlinearity: RESET test

The testing for linearity vs nonlinearity is carried out using the regression equation specification error test (RESET) (Ramsey, 1969; Thursby & Schmidt, 1977; Thursby, 1979; Sapra, 2005; Wooldridge, 2005; Pao & Chih, 2005).

**Table 4.** The results of the RESET test

	Model 1: NIM	Model 2: ROA	Model 3: ROE
F-stat.	0.2509	0.4738	5.5053***

Note: \*\*\* Significant at 1%.

The results reported in Table 4 show that data fits the assumption of linearity, except for the ROE model. Accordingly, the independent variables in model 3 are transformed into cubic form as an approximation to the nonlinear form. It is worth

noting that the cubic form preserves the intrinsic trend of the data.

### 3.6. Testing for fixed and random effects: Hausman test

The Hausman specification test (Hausman, 1978; Hausman & Taylor, 1981) is carried out to determine whether the fixed or random effects model should be estimated.

**Table 5.** The results of the Hausman test

Test period random effect. Test summary	Chi-square statistic (df)
Model 1: Period random (ROA)	11.11 (4)**
Model 2: Period random (ROE)	30.97 (4)***
Model 3: Period random (NIM)	8.78 (4)*

Note: \* Significant at 10%; \*\* Significant at 5%; \*\*\* Significant at 1%.

The results reported in Table 5 show that fixed effect model is relevant.

## 4. RESULTS AND DISCUSSION

The estimation of the variables' coefficients is carried out using cointegration regression. The existence of cointegration implies a valid estimation of long-run coefficients.

The dependent variables are NIM, ROA, and ROE. The estimation method is fully modified least squares (FMOLS). Outliers are detected and removed. Multicollinearity is examined. All variables are associated with VIF < 5. The long-run covariance estimate; Bartlett kernel, Andrews bandwidth = 11.00. The coefficient estimates are adjusted using White heteroskedasticity-consistent standard errors and covariance.

**Table 6.** Cointegration regression

Variable	Coefficients		
	Model 1: ROA	Model 2: ROE	Model 3: NIM
Constant	0.01071 (3.291)***	0.112 (4.676)***	0.021 (4.924)***
<b>Board size</b>			
Board meetings	0.00216 (1.340)	-0.005 (-0.458)	0.008 (3.601)***
Non-executive directors	-0.00143 (-1.800)*	-0.008 (-1.283)	-0.0003 (-0.2942)
Board independence	0.00104 (1.007)	0.018 (2.321)**	-0.004 (-2.709)***
CEO duality	-0.00165 (-2.632)***	-0.008 (-1.608)	-0.005 (-5.430)***
Women on board	-0.00015 (-0.157)	-0.001 (-0.068)	0.006 (4.732)***
Remuneration/compensation committee	-0.00143 (-2.698)***	-0.011 (-2.672)***	0.001 (0.7907)
<b>Country</b>			
Qatar	-0.00054 (-0.720)	-0.007 (-1.162)	-0.001 (-1.436)
Kuwait	0.00318 (2.485)**	0.013 (1.288)	-0.0003 (-0.1717)
Saudi Arabia	-0.00247 (-1.614)	-0.030 (-2.55)**	0.002 (1.074)
UAE	0.00564 (4.477)	0.027 (2.750)***	0.003 (1.926)*
Jordan	0.00336 (3.272)***	0.006 (0.8337)	0.008 (6.223)***
Lebanon	-0.00025 (-0.217)	-0.008 (-0.853)	0.014 (9.054)***
Morocco	0.00064 (0.528)	0.023 (2.526)**	-0.002 (-1.333)
Oman	-0.00138 (-0.990)	-0.015 (-1.376)	-0.008 (-4.114)***
<b>Size effect</b>			
Small-size banks	0.00283 (2.138)**	0.008 (0.792)	0.007 (3.527)***
Large-size banks	-0.00133 (-1.789)*	-0.024 (-4.212)***	-0.004 (-3.944)***
Low equity ratio	0.00003 (0.006)	0.005 (0.902)	-0.0001 (-0.136)
High equity ratio	-0.00969 (-14.280)***	-0.076 (-14.21)***	-0.019 (-20.72)***
N	0.00350 (5.141)***	-0.010 (-1.912)*	0.003 (3.437)***
R <sup>2</sup>	904	904	904
S.E. of regression	0.5362	0.4378	0.7055
F-statistic	0.0053	0.04212	0.0073
Durbin-Watson stat.	33.19***	23.46***	67.446***
	0.8799	0.9741	0.982

Note: \*\*\* Significant at 1%, \*\* Significant at 5%, \* Significant at 10%.

#### 4.1. Criteria of robustness check

As far as distinct measures of bank profitability are examined, usually, an estimate of a coefficient is robust when the trend and significance do not change across different measures. In this paper, the authors argue that a board characteristic is robust as far as it is significant and carries the same trend across at least two measures of profitability. The results in Table 6 show that two board characteristics have robust estimates namely, the number of independent directors and the percentage of *women on board*. The results show that *board independence* has a negative and significant relationship with *ROA* (Davis et al., 1997). Mateev and Bachvarov (2021) state that this characteristic is particularly significant in the Gulf countries (GCC) as far as supervisory authorities enjoy significant independence to the extent that bank management can't be replaced. Baysinger and Hoskisson (1990) argue that inside executives usually acquire detailed and relevant information about the respective business that outsiders may not have.

In terms of the effect of *women on board*, the results show a negative and significant relationship between *ROA* and *ROE*, which is inconsistent with previous studies (Carter et al., 2003; Fondas, 2000; Erhardt et al., 2003; Selby, 2000; Bilimoria & Wheeler, 2000; Smith et al., 2005; Mattis, 2000). It is, then, obvious that the negative impact of *women on board* is quite peculiar to the bank board in the MENA region.

In terms of size, small-size banks have a negative and significant relationship with *ROA*, *ROE*, and *NIM*. This result is opposite to US and European banks (Athanasoglou et al., 2005; Demircuc-Kunt & Huizinga, 1999). That is, large banks in the MENA region are more cost-efficient and profitable.

In terms of bank capital structure, the results show that low-equity ratio banks are associated with a negative and significant effect on *ROE* and *NIM*. These results indicate that banks in the MENA region are more prone to liability financing which affects profitability negatively. This is true as the majority of banks are not listed in the stock market, therefore, liabilities (deposits, interbank loans, loans from central banks, etc.) are viable sources of financing.

#### 4.2. Benchmarking banks' board characteristics and profitability outperformance

This paper contributes to the above-mentioned related studies by developing benchmarks for the robust two characteristics of the board namely,

the independent directors and women on the board. Although efforts for indexing board characteristics are documented in the literature (Li & Wahid, 2018), the idea of benchmarking and indexing didn't have enough attention in the MENA banks. The objective is to examine the effects of the outperformance of the board of directors on bank profitability. The related literature doesn't specify benchmarks for these two characteristics that can be considered a guide to improving bank profitability in the MENA banks. It is worth mentioning the significant efforts that have been evolving to improve the consistency of social variables using Qualitative Comparative Analysis (QCA) in general (Ragin, 2006, 2008) and, specifically, the efforts for monitoring board qualitative characteristics (Brenes et al., 2019; Rodriguez & Torres, 2020; Federo & Parente, 2023). Although QCA utilizes the necessary and/or sufficient conditions associated with low or high board monitoring, the quantitative approach being utilized in this current paper offers the advantage of focusing on the significant elements of banks' boards that enhance a certain outcome which is profitability.

Wagemann et al. (2016) discuss the perils, shortcomings, and how to overcome the shortcomings of QCA. That is, although the qualitative view addresses the willingness to bear the costs associated with board design, the quantitative view offers a mechanism to monitor the changes in the board design that enhance the effectiveness of the board being measured in this paper using bank profitability. In this case, the discriminant analysis (Taffler, 1983; Hair et al., 1995; Manly, 1994) is quite helpful for being able to reach a quantitative model that specifies the numbers of independent directors and *women on board* that contribute significantly to bank profitability. The discriminant analysis offers functions of the variables  $X_1, X_2, \dots, X_p$  that attempt to separate the  $m$  groups with high probability. The simplest approach involves taking a linear combination of the  $X$  variables as follows.

$$Z = a_1X_1 + a_2X_2 + a_pX_p \quad (2)$$

In this form, the  $Z$  reflects group differences as much as possible.

To fulfil this objective, the three bank profitability measures are sorted in ascending order and divided into four quartiles. The first quartile refers to the lowest profitability, and the fourth quartile refers to the highest profitability. The discriminant analysis examines the effects (in terms of significance and trend) of the two robust board characteristics against each profitability measure. The results are reported in Table 7.

Table 7. Benchmarking the robust board characteristics

Board characteristics	Q1 (lowest NIM)	Q4 (highest NIM)	Q1 (lowest ROA)	Q4 (highest ROA)	Q1 (lowest ROE)	Q4 (highest ROE)	Canonical discriminant function coefficients			Relative contribution		
							NIM	ROA	ROE	NIM	ROA	ROE
Number of independent directors	2	11	2	11	2	11	0.904	0.09	0.904	71.5%	8.2%	71.3%
Number of women on board	0	1	0	1	0	1	-0.36	1.01	-0.364	28.5%	91.8%	28.7%
Average profitability	0.225%	4.218%	-0.576%	2.561%	-0.878%	15.649%				100%	100%	100%
Cut-off points	1.81	9.58	0.18	2.019	1.81	9.58						
	$\chi^2 = 1.837$		$\chi^2 = 18.566^{***}$		$\chi^2 = 1.837$							

Note: \*\*\* Significant at 1%.

The authors derived three linear discriminating functions with their Z index (Z model). These functions can help predict bank profitability using the two robust board characteristics. The two groups considered are low and high *NIM*, *ROA*, and *ROE* respectively. The selection algorithm produces significant variables as predictors of grouping. The authors completed this algorithm three times. The first run involved *NIM*, the second involved *ROA*, and the third involved *ROE*. The *ROA* discriminate function is the only significant function at a p-value < 1%. The relative contribution of each characteristic is reached using Mahalanobis distance (D) or the distance between the centroids of the two constituent groups (low-high) accounted for by each variable (Mosteller & Wallace, 1963; Taffler, 1983).

The results in Table 7 show that the only *ROA* discriminant model is significant at a 1% significance level. The coefficients in the *ROA* model show that the positive impact of independent directors on bank *ROA* requires minimum and maximum numbers of two and 11 members respectively. In the Eurozone, Bouteska (2020) has reached a range between seven to ten. This result is documented in non-banking as well for Chinese firms (Huyghebaert & Wang, 2019). Moreover, the existence of independent directors and *women on board* is associated with an increase in bank *ROA* since both coefficients are positive (0.09 and 1.01 respectively). The average improvement in *ROA* reaches up to 2.561%. In terms of the relative contribution of each board characteristic, in the *ROA* model, the number of *women on board* is much more important (91.8%) than the number of independent directors (8.2%).

## 5. CONCLUSION

This paper extends the benefits of using a quantitative approach for enhancing the board characteristics that contribute significantly to bank profitability. Having examined the effects of board characteristics on the profitability of the banking industry in the MENA region, this paper elaborates

on three distinct profitability indicators, namely *NIM*, *ROA*, and *ROE*. The paper concludes that two board characteristics are robust, namely, (a) the number of independent directors and (b) the number of *women on board*. The results show that the effects of these two characteristics are negative on bank profitability. In terms of monitoring the effects of board performance, the results of the discriminant analysis, being employed in this paper for quantifying the board characteristics, show that the negative effect of *women on the board* is much greater than the negative effect of having independent directors on board. Apart from robustness, other characteristics affect banks' profitability positively. These characteristics are *non-executive directors*, *board size*, and *CEO duality*.

These results show that banks in the MENA region have distinct and robust board characteristics that must be taken into consideration when planning to improve profitability. Nevertheless, banks in the MENA region can rely on *board size* and *CEO duality* to improve *ROA*, *ROE*, and *NIM* separately. Furthermore, the characteristics of the board of directors and the effects on bank profitability seem quite universal. The results in the MENA region banking are very similar to other banks in the world. Specifically, compliance with governance codes, board structures and committee meetings has been found associated with positive effects on bank profitability in developed economies (Adams & Mehran, 2012; Salim et al., 2016).

The authors argue that advances in the institutional quality of board characteristics are significantly related to quantitative benchmarking. The latter offers a clear guide to policymaking when considering the regulations that govern board characteristics that contribute to bank profitability effectively. It is worth noting that benchmarking is not equivalent to standardization. That is, the benchmarking of board characteristics is generic and requires ongoing updates based on the link between bank profitability and board characteristics.

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