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The financial impacts of board mechanisms on performance: The case of listed Moroccan banks

Issam El Idrissi[1*], Youssef Alami[2]
Laboratory of Finance, Audit and Management Research, LAREFAG, ENCG, Abdelmalek Essaadi University, Tetouan, Morocco[1,2]
Issammpdl15@gmail.com[1*], *alamiyou@yahoo.fr*[2]

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Abstract

Purpose: The present study examines the impact of corporate governance mechanisms on listed Moroccan banks' financial performance.

Research methodology: This study investigates the relationship between listed banks' governance mechanisms and financial performance in the CSE for six years between 2014-2019. This study employs three performance measures, return on assets, return on equity, and Tobin's Q, to determine bank performance. This research uses the GMM EGLS approach to analyze data. In the first phase of this empirical research, we did use OLS, Fixed Effects, and Radom Effects regressions to show their inefficiency.

Results: Our results portray that most board mechanisms have a negative impact on financial performance. In comparison, the audit committee and nomination & remuneration committee have a positive effect on financial performance.

Limitations: Many qualitative and quantitative factors could influence financial performance and not only the used variables in this paper.

Contribution: This research shows that the dynamic connection between corporate governance and financial performance is robust in the Moroccan banking context. Also, our study has important implications for establishing good corporate governance practices in emerging economies.

Keywords: *Board of directors, Governance mechanisms, Financial performance, Moroccan banks*

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1. Introduction

The plethora of research treating banks as an object of research, their governance model, and their performance measurement makes the banking sector one of the most common literature subjects (Kooli, 2020). Recent studies have examined all banking dimensions because of the surplus of interest added by the current financial crises, and even several researchers were interested in Lehman Brothers' governance mechanisms (Klepczarek, 2017).

In this study, we do not seek to claim originality. However, we have noticed that there are inadequacies in the models explaining the impact of banks' governance mechanisms on financial performance. First of all, we must test them before looking to establish a new empirical model. Another limitation is that academic research on this topic hesitates to deal with real issues that aim to measure the overall bank performance.

On a practical level, in 2020, the S&P Global Ratings has announced that Moroccan Banks are considered stable and distinguished by the quality of their financial assets, which makes them one of the most high-performance banks in North Africa. Similarly, ESMA (2020) confirms that the Moroccan Stock Exchange complies with the MiFID II/MiFIR regulatory framework's post-market transparency requirements. It is necessary to question these stability sources, whether they are due to the country's geopolitical stability or other factors. In other words, we seek to know for sure if the corporate governance mechanisms are the factor behind this observed financial performance.

Each country has its banking system, which is why we are going to treat commercial banks listed in Casablanca Stocks Exchange without detaching them from unlisted Moroccan bank specificities. This research's main objective is to build a solid theoretical base on Morocco's corporate governance to start other future academic projects that will discover this disciplinary field's singularities. Especially since we noticed that most of the theoretical models do not deal with external governance mechanisms issues, regardless of whether they are intentional or not. Finally, it would be interesting to propose an empirical model that measures governance mechanisms' impact on listed Moroccan banks' financial performance.

2. Literature review and hypothesis development

An overview of corporate governance in listed Moroccan banks

The Moroccan regulatory system gives all listed companies the right to choose between two corporate governance configurations (*i.e.*, Board of Directors and Supervisory Board). Four listed banks adopt the classic governance structure, while the rest two banks choose to adopt the Germanic form (*i.e.*, Supervisory Board). For explanatory purposes, the two listed banks that adopt the dual governance structure are dominated by foreign capital investors. These last two have opted for this structure for a long time. The Management Board directs and manages the bank under the control of the Supervisory Board within the limits of the framework set by Law No. 17-95 as amended and supplemented by Law No. 20 -19, Law No. 20-05, Law No. 103-12 relating to credit institutions and similar organizations (*i.e.*, banking Law), and the bank's statutes. It should be known that the bank's regulations make the basic rules of each governance structure.

The interplay between corporate governance and financial performance

The theoretical literature on the relationship between corporate governance & performance has occupied the primary research lines for an extended period. That is why plenty of research has taken the liberty to treat and analyze governance mechanisms' roles in solving organizational and agency problems, which leads to a better performance level (Kooli, 2019). Similarly, recent governance theories highlight the existence of several criteria that can determine a firm's performance (*e.g.*, asymmetric information, incomplete contracts, governance structure). In this paper, we analyze the role of governance in improving performance by studying several board characteristics.
The board of directors is a tool for reducing conflicts and improving performance for stakeholders according to the financial approach of corporate governance theory. In fact, Denis & McConnell (2003) mentioned that the board of directors is the first line of defense against managers' opportunistic behavior.

Researches have tried to explore the role and impact of the board of directors on firms' performance. Even a few authors have argued that this governance mechanism's effectiveness depends on its ability to protect shareholders' interests, in addition to its participation in the creation and development of specific knowledge (Albouy & Aissa, 2009). Finally, studies on board characteristics have generally focused on the board's size, external directors, foreign members, CEO's duality, frequency of board meetings, gender diversity, and other specific characteristics of different attached governance committees.

Board size and performance

Theoretically, a board of directors' large size can guarantee a diversity of skills, experiences, and an extensive business network. For Sardar (2013), institutions with a large panel of directors may benefit from a performance increase, as they can quickly access limited resources. For example, the agency theory stipulates that boards of directors with significant experience are best placed to measure leaders/CEO performance, making it possible to detect management anomalies and enhance any organization's overall performance.

The governance structure has been an active area of research for regulations worldwide, as the law sets the minimum and the maximum number of directors. Thus, agency theory states that the more the board size increases, the more performance decreases. Yermack (1996) finds a negative connection between board size and enterprise value as measured by Tobin's Q. For Jensen (1993), a board of directors with a reasonable size (seven to eight members) would be more effective because it would allow better coordination, faster decisions, and a significant reduction in agency costs.
Along the same lines, but this time in the Moroccan banking context, Sbai & Meghouar (2017) find that the board size negatively impacts listed Moroccan banks' financial performance measured by ROE and ROA.

Therefore, the first hypothesis is stated as:
Hypothesis 1. *There is a negative relationship between board size and the financial performance of listed Moroccan banks.*

CEO's duality and performance
There are two forms of governance bodies in Morocco, either a board of directors that controls the company's activities and its directors and often dominated by the executive directors' presence. Alternatively, a supervisory board with a management board to avoid the CEO's functions accumulation with those of the chairman because it is considered a source of inefficiency and manipulation of other board members. In general, the dualistic structure makes it challenging to identify the board's chairman and the chief executive officer's respective responsibilities in low financial performance. By studying six listed Moroccan banks during 2009-2015, Sbai & Meghouar (2017) found that managers' duality has a significant negative effect on performance measured by the ROE and ROA. In the same context, Belkebir et al., (2018) studied the governance structure of eight Moroccan commercial banks while measuring the financial performance by the ROA during the period between 2007 and 2011. They found that the CEO's duality has a significant negative impact on performance. Their results confirmed those of Jensen (1993). We consider the CEO's duality as an essential factor in conflicts related to managers' supervision. Therefore, it could be a source of inefficiency. Hence the formulation of the second hypothesis of our research:
Hypothesis 2. *There is a negative connection between the CEO's duality and listed Moroccan banks' financial performance.*

Gender diversity and performance
Gender diversity refers to the variety of resources that each member brings to banks' governance. It is a new dimension that aims to improve the traditional vision of governance by bringing more efficiency and effectiveness to corporate governance by using the board's creative potential in enhancing production and value.

By studying a sample of 71 French listed companies, Toé (2014) concluded that gender diversity among the board of directors positively influences a firm's financial performance as measured by Tobin's Q. Nevertheless, it should be pointed out that several studies have found no link between women's presence in board meetings and performance.

Sbai's & Meghouar's (2017) study reveals a negative correlation between performance and women's presence in the Moroccan context. Still, it should be noted that during the period of their study, women's presence was insignificant, with only a maximum of 21.43% and an average of 5%, contrary to the details of our sample with an average of 16%. Therefore, the third hypothesis of our study states that:
Hypothesis 3*. There is a positive relationship between gender diversity and the financial performance of listed Moroccan banks.*

Administrators' independence and performance

According to Bourjade et al. (2016), in most international governance regulations, internal administrators linked to CEOs are considered less inclined to oversee, and possibly oppose, an CEO/Chairman on whom their careers depend. We can define them as directors who have no professional or another direct or indirect connection with the company.

Adams (2012) shows that banks with a higher number of independent directors perform better during the crisis. Some authors (Coles et al., 2008; Khanchel El Mehdi, 2007; Zakaria et al., 2018) assert that independent directors' significant presence improves a company's performance. Likewise, Basuony et al. (2014) found a significant relationship between the independent directors' presence and the financial performance of 50 banks in the Arabian Peninsula in 2011. In fact, for Fama & Jensen (1983), having a large percentage of independent external individuals on the board is a good sign for performance through improvements in decision deliberation and board's experience.

From this theoretical analysis, we can formulate the fourth hypothesis of our research as:

Hypothesis 4. *The independence of directors has a significant positive impact on the financial performance of listed Moroccan banks.*

Foreign directors and performance

We can say that theoretically, this type of directors' presence during board meetings seems like an improvement of the overall skills rate and the total quality of the governance body. This will certainly lead to complete supervision of senior managers' activities because of their objectivity compared to the independent directors from the same local environment. According to Gulamhussen & Guerreiro (2009), the presence of this type of director on banks' boards is seen as a positive sign of governance quality.

Unlike the Moroccan context, Önal (2019) found that foreign directors' presence in European Union banks' boards has a significant positive effect on all studied samples. Some earlier studies confirmed a significant and negative link between foreign directors' proportion on the board and banks' financial performance (Chenini & Jarboui, 2016; Gulamhussen & Guerreiro, 2009; Sbai & Meghouar, 2017).

Thus, we can present the following fifth hypothesis:

Hypothesis 5. *The percentage of foreign directors in listed Moroccan banks' boards deteriorates the financial performance.*

Audit committee and performance

The audit committee's main objective is to ensure that the internal control system and the firm's goals are consistent and aligned to allow risk control. It also provides that financial information intended for the board of directors and the financial markets (*e.g.*, generally shareholders) is reliable and accurate so that the legitimate interests of shareholders, depositors, and other stakeholders are protected. The audit committee (AC) also ensures internal auditors' independence to carry out their duties and achieve their objectives. Along the same lines, Maraghni & Nekhili (2014) confirm that the AC's independence makes it possible to optimize the monitoring and financial reporting process because independent directors encourage high-frequency board meetings that often last longer.

This variable takes the form of several kinds of measures. Sometimes it is measured either by the number of directors inside the audit committee or by the independent auditors actively operating in this committee. In other cases, it is found to be measured by the number of meetings during a year of activity. Even in some scenarios, it is measured by a dichotomous variable.

Belkebir et al. (2018) found a negative effect on banks' performance generated by an audit committee's existence in the Moroccan context. Also, Toumi (2016) finds that the number of audit committee meetings negatively affects German banks' performance. This leads to the conclusion that the high frequency of AC meetings can increase conflicts of interest, which deteriorates the performance level.

Hence, based on the above discussion, we propose the following hypotheses:

Hypothesis 6a. *The audit committee meetings have a negative effect on listed Moroccan banks' performance.*

Hypothesis 6b. *The size of the audit committee has a negative effect on the financial performance of listed Moroccan banks.*
Hypothesis 6c. *Audit committee directors' independence negatively impacts the financial performance of listed Moroccan banks.*

Nomination and remuneration committee and performance
The Nomination and Remuneration Committee (NRC) is an internal instrument composed of non-executive members (*i.e.,* external or independent) who have a solid knowledge of the company's activities and acquire the necessary objectivity and the freedom of judgment for carrying out their missions. According to the Moroccan Code of Good Governance Practices of 2008, this committee's ultimate objective is to help the board establish an appropriate, incentive, and transparent salary policy for senior executives and their employees. The code adds that this committee must meet at least twice a year.

Theoretically, several authors insist on this specialized committee's independence to avoid the executive officers' opportunistic behavior. The CEO can influence the appointment process and remuneration policy in their favor if they are present during NRC's meetings. According to Zraiq & Fadzil (2018), the agency theory supports the NRC's presence, as it ensures that the right skills, talents, and competencies are brought to the organization to maximize shareholder value. Sbai & Meghouar (2017) found that the NRC's presence has a significant positive impact on the six listed Moroccan banks' performance. Moreover, Harymawan et al., (2019) find that NRC's existence is an explanatory factor of enhancing board members' remunerations and reinforcing Indonesian companies' financial performance. Their results corroborated those of Agyemang-Mintah (2015), supporting that the NRC has a positive and significant impact on the financial performance measured by the MVA and ROA of UK financial institutions.
Based on that, this study hypothesizes that:
Hypothesis 7a. *The nomination and remuneration committee meetings have a positive effect on the financial performance of listed Moroccan banks.*
Hypothesis 7b. *The nomination and remuneration committee's size has a positive effect on listed Moroccan banks' financial performance.*
Hypothesis 7c. *NCR directors' independence positively impacts the financial performance of listed Moroccan banks.*

The frequency of board meetings and performance
Unlike other factors explaining the board of directors' effectiveness, the variable representing the board meeting's frequency is rarely treated in corporate governance literature. However, we have found some recent studies that have addressed this issue.

The agency theory states that this factor is so far away from being a performance determinant. Most of the time, meetings are held in routine protocols and not for monitoring business management. On the other hand, Lipton & Lorsch (1992) pointed out that this factor is critical to ensure the effectiveness of the board's tasks. These authors suggest that the length of the meetings is an obstacle to achieve good performance. Therefore, to create value and honor the shareholders' expectations, it is necessary to increase the number of held meetings per year.

Empirically, AlQudah et al. (2019) find that the number of board meetings is negatively correlated with the performance measured by the ROA of 14 banks listed on the Amman Stock Exchange between 2013 and 2017, but their results were not significant. Similarly, Musleh Alsartawi (2019) finds a negative connection between the frequency of board meetings and financial performance measured by the ROA of 46 Islamic banks in the GOLF region covering the period from 2013 to 2016.

Therefore, the final hypothesis can be formulated as follows:

Hypothesis 8. *The frequency of board meetings negatively impacts the financial performance of listed Moroccan banks.*

3. Research methodology

The following section includes the presentation of the data set, details about the data collection process, the definition of used variables and their measurements, and the regression models used to conduct this empirical study.

Sample selection

This study employs annual data on six listed Moroccan banks on Casablanca Stock Exchange (CSE), obtained directly from the yearly reports' documents, financial statements, reference documents of financial operations, the Moroccan Capital Market Authority website, and the official website of the CSE.

These banks' data cover the period between 2014-2019, making our panel data strongly balanced with six sections over six years. There were some limitations to the data collection process owing to some missing reports before 2014 of some banks. The study does not integrate the board's remuneration because banks have no obligation to disclose information about the specific amount of money given to directors. These sets of limitations constitute the key factor in confining our panel data's time frame to cover only the period between 2014-2019.

Operational definitions and measurements of variables

This present study uses three types of variable sets, dependent variables, independent variables, and control variables. For the first type, these are the variables representing different financial performance measures in the banking sector. Analyzing the set of papers used to build the current article's theoretical framework, we can say that most papers tend to use a couple of measures, either a couple of ROA and ROE or a couple of ROA and Tobin's Q. For our study, we choose to use all three measures to improve the accuracy rate and the theoretical and empirical reliability of our results. To judge the impact of corporate governance on financial performance, one measure's results must be identical to the others. This is justified by the recommendations of Jensen & Meckling (1976), who argued that favoring one measure over another has a definite impact on the results.

The second group of variables is called independent variables. In terms of these explanatory variables, we choose to use only the most frequent ones in explaining corporate governance mechanisms' impact on banks' financial performance.

To improve the empirical results' validity and better determine the explanatory variables' influence on the dependent ones, we choose to integrate three control variables. According to Thiétart et al. (2014), including control variables improves the results' external validity. We adhere to the hypothetico-deductive approach that privileges external validity. In our case, the insertion of control variables makes it possible to control better the variables that can influence listed Moroccan banks' financial performance. So, if we are looking to verify the impact of these governance mechanisms on performance, other variables must be considered, namely:

Table 1. Variable definitions

Variable	Symbol	Measure	References	Sign
		Dependent Variables		
Return on Assets	**ROA**	The ratio of average net income to average total assets.	(Belkebir et al., 2018; Bouheni, 2016; Sbai & Meghouar, 2017)	
Return on Equity	**ROE**	The ratio of average net income to average equity.	(Abobakr, 2017; Chenini & Jarboui, 2016; Önal, 2019)	
Tobin's Q	**QTOBIN**	The ratio of the sum of the	(Adams, 2012; Basuony et al., 2014;	

		bank's market capitalization and the market value of its debts to total assets.	Zandi et al., 2020)	
Independent Variables				
Board Size	**SIZE**	The number of directors on the board of directors or supervisory board.	(Adams & Mehran, 2012; Belkebir et al., 2018; Boussaada, 2012; El-Chaarani, 2014; Louizi, 2011)	-
Duality	**DUALITY**	A binary variable takes value 1 if the CEO is the chairman of the governing body and 0 otherwise.	(Belkebir et al., 2018; Chenini & Jarboui, 2016; Louizi, 2011; Sbai & Meghouar, 2017)	-
Board' independence	**INDP**	% of independent directors on the board of directors.	(Coles et al., 2008; Cyprian Onyekwere et al., 2019; Khanchel El Mehdi, 2007; Tony, 2017)	+
Foreign directors	**FOR**	% of foreign directors on the board.	(Jaoua & Ben Mim, 2018; Millar et al., 2005; Sbai & Meghouar, 2017)	+
Gender diversity	**GENDER**	% of women on the board of directors.	(Adams et al., 2010; Sbai & Meghouar, 2017)	-
Frequency of meetings	**MEETINGS**	The total number of board meetings held per year.	(Alhassan et al., 2015; Vishwakarma, 2015; Wang, 2008)	-
Audit committee	**AUDIT**	The total number of permanent directors on the audit committee.	(Armeliyas & Patrisia, 2020; Bataineh & Soumadi, 2020; Belkebir et al., 2018)	-
Nomination and remuneration committee	**NRC**	The total number of permanent directors in the nomination and remuneration committee.	(Lam & Lee, 2012; Louizi, 2011)	+
Independence of the audit committee	**INDP_AUDIT**	% of independent members of the audit committee.	(Alqatamin, 2018; Dakhlallh et al., 2020)	-
Independence of the NRC	**INDP_NRC**	% of independent members of the nomination and remuneration committee.	(Anderson & Reeb, 2003)	+
Audit committee meetings	**M_AUDIT**	The total number of meetings of the audit committee per year.	(Bansal & Sharma, 2016; Kyereboah-Coleman & Biekpe, 2007)	-
NRC meetings	**M_NRC**	The total number of meetings of the nomination and remuneration committee per year.	(Tao & Hutchinson, 2013)	+
Control Variables				
Bank size's	**SIZEBQ**	The natural logarithm of the bank's total assets at the end of each fiscal year.	(Habis, 2017; Louizi, 2011; Sbai & Meghouar, 2017; Warrad & Khaddam, 2020)	
Capital	**KBQ**	The ratio of average equity to average total assets.	(Toumi, 2016)	
Market Capitalization	**CAP**	The natural logarithm of market capitalization at the end of each year.	(Roy, 2017; Wintoki et al., 2012)	

Source: Authors' own.

Model design and data analysis

In this part of the article, we are going to discuss our regression model. First of all, following the literature on corporate governance and financial performance, we find that most of the prior scientific contributions have used the following system:

$$(\text{PERF})_{\text{i,t}} = \alpha_0 + \sum\beta\ (\text{Governance Variables})_{\text{i,t}} + \sum\beta\ (\text{Control variables})_{\text{ i,t}} + \varepsilon_{\text{i,t}}$$

In the equation above, subscript *i* denotes banks (i = 1 … 6), and the subscript *t* defines the years of the study (t= 2014 … 2019).

The first estimation is a static model. However, several recent studies examining the causal relationship between governance mechanisms and corporate performance have found that this topic is subject to an endogeneity problem. Wintoki et al., (2012) confirmed the presence of a dynamic relationship between the board structure and financial performance.

In this regard, Wintoki et al., (2012) emphasize the importance of considering corporate governance's dynamic nature. In their study, the authors mentioned that the board structure is, in part, a function of the negotiation process between the CEO and the board. This negotiation's success is strongly related to the CEO's negotiating ability, which is measured by past performance. Therefore, the board structure should also depend on past performance. Along the same lines, Raheja (2005) states that the past performance will directly impact the functioning of all components of the governance body via the company's informational environment, the expectation of earnings, and the remuneration of independent and non-executive directors.

According to (Alper & Aydoğan, 2017; Munisi & Randøy, 2013), the two models OLS and the fixed effects, cause problems of estimates inconsistency under the assumption of endogeneity presence. Therefore, we imply in this study a dynamic model that suits and apprehends the dynamic nature of the relationship between corporate governance and financial performance.

According to Shao (2019), using the dynamic Generalized Method of Moment GMM can address endogeneity concerns produced by unobserved heterogeneity, simultaneity, and reverse causality.

$$\mathbf{(PERF)_{i,t} = \alpha_0 + \phi(PERF)_{i,t-1} + \sum\beta\ (Governance\ Variables)_{\ i,t} + \sum\beta\ (Control\ Variables)_{\ i,t} + \mu_i + v_t + \varepsilon_{i,t}}$$

Where, α_0 is the constant, ϕ is a proxy for the financial performance of bank (i) in the year (t-1), μ_i represents unobserved bank fixed-effects, v_t represents time-specific effects that are time-variant and common to all banks, such as the inflation rates and interest rates, and finally $\varepsilon_{i,t}$ is the random error term which assumed to be independent and normally distributed. Considering ROA, ROE, and Tobin's Q as financial performance measures, three different dynamic panel regression models are constructed using EViews 10 and Stata 16.

Nguyen et al., (2015) responded to how many lags of the independent variable should be used. They confirmed that one lag per year in financial performance seems sufficient to capture the current financial performance's real historical influence. By including the one-year lagged dependent variable $(\mathrm{PERF})_{i,t-1}$ as an independent variable, the dynamic model can control for possible effects of omitted variables. The variable $(\mathrm{PERF})_{i,t-1}$ can explain various determinants of the performance of the previous year. Finally, it is important to mention that we will treat heteroscedasticity by using the GMM EGLS "cross-section weights" function on EViews 10.

4. Results and discussions

In this present section of this article, we will report regression results, but certainly after exploring our sample's descriptive statistics between 2014 and 2019.

Descriptive analysis

Table 2 presents the descriptive summary statistics of the six Moroccan listed banks between 2014 and 2019. The findings support the idea that female directors are less present in top management in Morocco, with a mean of 12.66% over a total board size mean (median) of 11.11 (11) directors and a maximal value of 33.33% in one of our bank's board in 2018. Considering the country specifics, these results should be convenient because most listed companies do not adopt strategies for promoting and involving women in senior management positions. Referring to Sbai & Meghouar (2017), the percentage of female directors was around 4,99% of Moroccan banks' boards between 2009 – 2015.

All our sample banks were regulatory compliant, with a minimum of 9 directors and a maximum of 14 directors. According to article 89 of Law No. 17-95, which stipulates that the board size should be between 3 to 15 members in the case of listed companies. We find that independent and foreign directors account for, on average, 20.15% and 38.71%, respectively. These percentages are higher than the observed average in other listed companies. On average, the CEO and board chairman roles are combined in 4 banks (66,66% of sample banks).

The mean number of directors in the AC was around four members, while the NRC was limited to three directors. However, these committee meetings were fewer than the global number of board meetings (around five meetings per year). Nevertheless, these committees are characterized by an average level of independent directors, about 30% for the AC and 26,6% for the NRC. On average financial indicators were above their critical ratio of performance. For example, the value of Tobin's Q was more significant than 1, which means that banks have been creating wealth for shareholders between 2014 and 2019.

Table 2. Summary of descriptive statistics

Variable	Obs	Mean	Median	Max	Min	SD
ROA	36	0.0082	0.007772	0.011921	0.00163	0.002293
ROE	36	0.0916	0.088655	0.129365	0.01898	0.02682
QTOBIN	36	1.0465	1.045145	1.115212	0.98876	0.035359
SIZE	36	11.111	11	14	9	1.720096
DUALITY	36	0.6667	1	1	0	0.478091
INDP	36	0.2015	0.2	0.5	0	0.100643
AUDIT	36	3.9444	4	6	3	0.924104
GENDER	36	0.1266	0.111111	0.333333	0	0.107467
FOR	36	0.3871	0.4	0.692308	0	0.242228
NRC	36	3.0278	3	5	2	0.654047
INDP_AUDIT	36	1.1944	1	4	0	0.950772
INDP_NRC	36	0.8056	1	2	0	0.709907
M_AUDIT	36	4.6944	4	10	3	1.508442
M_NRC	36	2.1944	2	5	1	1.166667
MEETINGS	36	5.1944	5	10	3	1.635664
SIZEBQ	36	18.767	18.68601	20.07177	17.5602	0.953107
CAP	36	16.78	16.77345	18.46679	15.1484	1.090619
KBQ	36	0.0919	0.089012	0.13614	0.0597	0.020126

Source: Authors' own.

Table 3 presents the correlation matrix of all critical variables included in the study and their VIF value. Before proceeding with selected models' regressions, an in-depth analysis must be conducted to ensure the chosen variables' adequacy. Indeed, table 3 indicates a high inter-correlation between the two couples of variables (DUALITY & GENDER) and (SIZEBQ & KBQ). Two variables presenting a high correlation level cannot be used simultaneously in the same regression model. Therefore, we intend to exclude DUALITY and SIZEBQ from our group variables. Our point of view is built on Kennedy's (2003) argument that multicollinearity should be considered a serious concern only if the correlation between variables exceeds 0.80.

Table 3. Correlation Matrix

	SIZE	INDP	DUALITY	GENDER	FOR	AUDIT	AU IND DIT P	M_AUDIT	NRC	NR IND C P	M_NRC	MEETING S	QTOBIN	ROA	ROE	SIZEBQ	KBQ	CA P	VIFs
SIZE	1																		*3.06*
INDP	0.396*	1																	*5.45*
DUALITY	-0.127	0.145	1																-
GENDER	0.21	0.0607	-0.611***	1															*3.64*
FOR	0.216	0.0457	-0.800***	0.296	1														*2.24*
AUDIT	0.274	0.780***	0.345*	-0.204	-0.189	1													*5.63*
INDP_AUDIT	0.248	0.774***	0.147	-0.154	0.0148	0.8256***	1												*9.89*
M_AUDIT	-0.24	-0.17	0.330*	-0.317	-0.15	-0.197	-0.336*	1											*1.95*
NRC	0.0988	0.0832	0.0305	-0.263	0.286	-0.0919	-0.009	0.183	1										*2.16*
INDP_NRC	0.510**	0.799***	0.224	0.0107	-0.14	0.767***	0.777***	-0.324	0.0735	1									*7.78*
M_NRC	0.331*	0.173	0.171	-0.322	0.19	0.222	0.197	-0.014	0.442**	0.15	1								*2.06*
MEETINGS	0.0327	0.0894	0.451**	-0.239	-0.163	0.102	-0.025	0.500**	0.208	-0.065	0.159	1							*2.42*
QTOBIN	-0.212	-0.0901	0.746***	-0.698***	-0.414*	0.144	-0.128	0.529***	0.174	-0.086	0.234	0.462**	1						-
ROA	-0.281	-0.292	0.355*	-0.363*	-0.292	-0.155	-0.445**	0.527***	0.0831	-0.291	0.0248	0.294	0.643***	1					-
ROE	-0.305	-0.00474	0.654***	-0.596***	-0.329*	0.176	-0.069	0.467**	0.19	-0.074	0.255	0.397*	0.818***	0.748***	1				-
SIZEBQ	0.187	0.146	0.658***	-0.503**	-0.158	0.124	0.006	0.353*	0.389*	0.066	0.484**	0.597***	0.671***	0.238	0.598***	1			-
KBQ	0.255	-0.285	-0.526***	0.374*	0.188	-0.373*	-0.433**	-0.0256	-0.136	-0.185	-0.226	-0.232	-0.326	0.2	-0.472**	-0.522**	1		*3.01*
CAP	0.16	0.0807	0.699***	-0.559***	-0.225	0.105	-0.072	0.422*	0.367*	0.031	0.465**	0.606***	0.788***	0.392*	0.664***	0.976***	-0.405*	1	*6.19*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As reported in table 3, the correlation between AUDIT and INDP_AUDIT is higher than 0.80, which means that the relation between these variables could be a subject of multicollinearity. After deleting the two first precited variables (*e.g.*, DUALITY & SIZEBQ), we did run the variance inflation factors (VIF) test to detect multicollinearity among independent variables in our regression models. It appears that all of the rest variables are not a subject of this problem because all VIF's values are below 10. According to Chatterjee & Hadi (2012), a VIF value higher than ten is usually considered as an indication of the presence of collinearity problems. The direct results of the VIF test conducted by Stata 16 show that the VIF associated with INDP_AUDIT is 9.89 less than 10. That is why we have decided to maintain this vital variable of our study.

Identically to (Nguyen et al., 2015; Wintoki et al., 2012), the correlation matrix presented in table 4 points out that the correlation between performance variable and its own lagged variable is positive and highly significant at a 0.1% level.

Table 4. Correlation Matrix of lagged dependent variables

	ROE_LAG	ROE	ROA_LAG	ROA	QTOBIN	QTOBIN_LAG
ROE_LAG	1					
ROE	**0.8247*** **	1				
ROA_LAG	0.7487***	0.6076***	1			
ROA	0.4987**	0.7341***	**0.7756*** **	1		
QTOBIN	0.7682***	0.7896***	0.6098***	0.5890***	1	
QTOBIN_LAG	0.8636***	0.8562***	0.6903***	0.5998***	**0.8426*** **	1

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Main results and findings

This section presents an analysis and a discussion of our findings. The regression results of Pooled OLS, random-effects (RE), and fixed-effects (FE) are shown in table 5.

The primary purpose of presenting these methods' outputs is to confirm heteroscedasticity problems within the empirical results. This step is also crucial to justify using the GMM EGLS method to fix the other models' limits.

After adopting Hausman's specification test to identify which model is the best-fitted one for our dataset. We have concluded that the estimations of random effects approach were more consistent for both ROA ($\chi 2 = 0.22$; $p=1$) and ROE ($\chi 2 = 0.43$; $p= 1$), but for Tobin's Q equation, the fixed effects model was the appropriate one to use, because ($\chi 2 = 293.15$; $p=0$). Using the (xttest3) command on Stata 16, we have tested for heteroscedasticity in Tobin's Q regression model. The modified Wald test results for GroupWise heteroskedasticity in the fixed effect regression model drive us to reject the null hypothesis because ($\chi 2 = 44.77$; $p= 0$). Therefore, the fixed effects model suffers from heteroscedasticity issues. In the same line, we have been able to detect heteroscedasticity for both ROA and ROE models, and that is by using the (xtreghet) command on Stata 16. Indeed, the Lagrange Multiplier presents a null p-value pushing us to reject the null hypothesis of panel homoscedasticity for both ROA and ROE estimations.

The GMM EGLS allows us to capture the heterogeneity between our sample banks. After using lagged independent variables as instruments and to lead this study, it is crucial to test for endogeneity. About that, Sargan-Hansen J statistic of overidentification reported in table 6 confirms that the instruments used in the three regressions seem to be valid because there is no correlation between the residuals of the equation and the instruments in any single equation, which means that our regression equations are well-specified. Therefore, the GMM model appears to be well fitted for our estimations.

For the pooled OLS estimator, the coefficients on past bank performance variables (ROA_lag & ROE_lag) are found to be statistically significant at the conventional levels 5% and 10%, respectively.

The empirical results from table 5 support the claim that the past financial performance significantly impacts the current performance. In contrast, the lagged variable of Tobin's Q seems to be insignificant. Nevertheless, for the FE model, QTOBIN_lag becomes significant at the 5% level. Additionally, the board size has turned insignificant adopting the FE approach. This implies that results obtained from the Pooled OLS model are likely to be subject to heterogeneity problems.

Table 5. Regression results

	TOBIN'S Q		**ROA**		**ROE**	
	Pooled OLS	**FE**	**Pooled OLS**	**RE**	**Pooled OLS**	**RE**
Constant	**0.319**	**-0.622****	**0.00265**	**0.00265**	**0.0624**	**0.0624**
	(1.00)	(-2.36)	(0.55)	(0.55)	(1.04)	(1.04)
QTOBIN_lag	**0.316**	**-0.0483**				
	(1.08)	(-0.30)				
ROA_lag			**0.521****	**0.521****		
			(2.23)	(2.23)		
ROE_lag					**0.492***	**0.492****
					(2.05)	(2.05)
SIZE	**-0.00692***	**-0.00405**	**-0.0000838**	**-0.0000838**	**-0.000544**	**-0.000544**
	(-1.99)	(-1.34)	(-0.26)	(-0.26)	(-0.15)	(-0.15)
INDP	**-0.0757**	**-0.0698**	**-0.00544**	**-0.00544**	**-0.0345**	**-0.0345**
	(-0.96)	(-1.33)	(-0.66)	(-0.66)	(-0.37)	(-0.37)
GENDER	**-0.00663**	**-0.00537**	**-0.00380**	**-0.00380**	**-0.0432**	**-0.0432**
	(-0.10)	(-0.12)	(-0.88)	(-0.88)	(-0.85)	(-0.85)
FOR	**0.00934**	**-0.0167**	**0.000727**	**0.000727**	**0.00762**	**0.00762**
	(0.53)	(-0.19)	(0.39)	(0.39)	(0.38)	(0.38)
MEETINGS	**-0.00103**	**-0.00449****	**-0.0000184**	**-0.0000184**	**-0.000324**	**-0.000324**
	(-0.35)	(-2.54)	(-0.06)	(-0.06)	(-0.10)	(-0.10)
AUDIT	**0.00719**	**0.00920**	**0.000690**	**0.000690**	**0.00897**	**0.00897**
	(0.49)	(0.87)	(0.53)	(0.53)	(0.64)	(0.64)
INDP_AUDIT	**0.00509**	**-0.00596**	**-0.000890**	**-0.000890**	**-0.0114**	**-0.0114**
	(0.32)	(-0.50)	(-0.78)	(-0.78)	(-0.92)	(-0.92)
M_AUDIT	**0.00126**	**0.000569**	**0.0000622**	**0.0000622**	**0.00101**	**0.00101**
	(0.44)	(0.35)	(0.24)	(0.24)	(0.36)	(0.36)
NRC	**-0.00546**	**0.00285**	**0.000178**	**0.000178**	**0.00124**	**0.00124**
	(-0.77)	(0.63)	(0.24)	(0.24)	(0.15)	(0.15)
INDP_NRC	**0.00187**	**-0.00953**	**0.000174**	**0.000174**	**0.00109**	**0.00109**
	(0.17)	(-1.30)	(0.16)	(0.16)	(0.09)	(0.09)
M_NRC	**-0.000844**	**-0.000998**	**0.000115**	**0.000115**	**0.000766**	**0.000766**
	(-0.26)	(-0.55)	(0.34)	(0.34)	(0.20)	(0.20)
KBQ	**0.408**	**-0.339**	**0.00932**	**0.00932**	**-0.323**	**-0.323**
	(0.99)	(-0.90)	(0.31)	(0.31)	(-0.89)	(-0.89)
CAP	**0.0255****	**0.108*****	**-**	**-**	**-**	**-**
	(3.94)	(6.92)				
N	**30**	**30**	**30**	**30**	**30**	**30**
R^2	**0.902**	**0.907**	**0.728**		**0.741**	
adj. R^2	**0.810**	**0.731**	**0.508**		**0.531**	
Wald Chi-squared statistic				**42.92*****		**45.86*****
Fisher statistic	**9.83*****	**6.99****	**3.30****		**3.53****	

***t*-Statistic in parentheses (for RE models, it is z Statistic)**

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

Table 6. Dynamic panel regression results using GMM

	Regressions			Predictions	Coefficient's sign	Conclusions
	TOBIN'S (1)	ROA (2)	ROE (3)			
Constant	**-0.728894****	**0.001652**	**0.052135***			
	(-3.869741)	(0.672863)	(1.827836)			
QTOBIN_lag	**0.027336**					
	(0.262598)					
ROA_lag		**0.440764****				
		(4.228071)				
ROE_lag			**0.559325*****			
			(5.040419)			
SIZE	**-0.003910****	**-0.0000825**	**-0.000342**	-	- - -	-
	(-2.464287)	(-0.763156)	(-0.30916)			
INDP	**-0.063411****	**-0.009667****	**-0.078462****	+	- - -	-
	(2.367844)	(-4.156149)	(-3.713108)			
GENDER	**0.012567**	**-0.002938****	**-0.026303***	-	+ - -	-
	(0.545122)	(-2.347176)	(-2.052301)			
FOR	**-0.040958**	**0.002637**	**0.035961**	-	- + +	**0**
	(-0.886495)	(1.231569)	(1.258160)			
MEETINGS	**-0.004347*****	**-0.0000397**	**-0.0000974**	-	- - -	-
	(-5.269050)	(-0.676693)	(-0.190615)			
AUDIT	**0.006605**	**0.001432****	**0.014384*****	-	+ + +	+
	(1.202394)	(4.293778)	(4.474161)			
INDP_AUDIT	**-0.002115**	**-0.001599*****	**-0.019604*****	-	- - -	-
	(-0.319342)	(-5.05775)	(-6.393418)			
M_AUDIT	**0.00000337**	**0.0000944****	**0.001167*****	-	+ + +	+
	(0.00517)	(2.563699)	(5.063148)			
NRC	**0.003929**	**0.000394**	**0.003023***	+	+ + +	+
	(1.747211)	(2.545151)	(2.077647)			
INDP_NRC	**-0.011743****	**-0.000597****	**-0.008294****	+	- - -	-
	(-2.820317)	(-2.470994)	(-3.138117)			
M_NRC	**-0.001379**	**-0.0000736**	**-0.001012**	+	- - -	**0**
	(-1.217257)	(-0.696305)	(-1.104891)			
KBQ	**-0.206918**	**0.009533**	**-0.416206****			
	(-0.959343)	(0.499717)	(-2.616152)			
CAP	**0.10940*****	-	-			
	(10.68361)					
N	**30**	**30**	**30**			
R^2	**0.990584**	**0.990553**	**0.989611**			
adj. R^2	**0.972693**	**0.975095**	**0.972611**			
J-Statistic	**26.68792****	**23.66161****	**24.73768****			
Durbin-Watson-stat (Unweighted)	**2.175445**	**1.786736**	**2.099957**			
Number of Instruments	**30**	**29**	**29**			
Hansen-J test of over-identification (*p-value*)	**0.6396**	**0.7454**	**0.6917**			

***t*-Statistic in parentheses**
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$

The results of the estimates are robust, which confirms the relevance of our findings. The negative sign associated with the coefficient of banks' board size confirms the agency theory's aims, stating that large boards of directors may face problems and agency conflicts challenging to overcome. Indeed, a board of directors that exceeds nine directors is considered large (Albouy & Aissa, 2009). The multitude of directors offers tremendous experience, diversity, and quality to the board through knowledge sharing and practical participation in strategy development and leadership control. However, this composition's effectiveness is conditioned by meeting duration, which is often short and full of administrative tasks, which deteriorates each director's quality of intervention. Thus, this presents a more significant potential for disagreement among board members regarding management choices adoption (Simpson & Gleason, 1999). Our results show that reducing board size implies a substantial increase in performance. In other words, the more the size of a bank's board increases, the more it records low levels of financial performance. It should be mentioned that the average board size has increased significantly during the period of our study between 2014 and 2019. This can be explained either by the volume of directors' fees, which weighs on the banks' financial resources because of the high number of present directors, or the control costs increase due to the poor negotiation and management climate discussion over board meetings. So, we can validate our first hypothesis, which highlights the negative impact of board size on Moroccan banks' performance. Our results are consistent with (Cyprian Onyekwere et al., 2019; Eisenberg et al., 1998; Jensen, 1993; Sbai & Meghouar, 2017; Yermack, 1996) and contradict those of other authors (Adams, 2012; Belkebir et al., 2018; Chenini & Jarboui, 2016).

Our findings provide a comprehensive investigation of the interplay between board independence and financial performance. It appears that the empirical evidence states that the percentage of independent directors seems to have a significant negative effect on all the three performance measures at a five percent level of confidence. These results corroborated those of (Abobakr, 2017; Louizi, 2011). The first explanation is that the banks choose to appoint independent directors only to signal that the insiders act for the good of the shareholders' interests. It should be noted that bank statutes in our sample mention that specialized committees such as the audit committee and the NRC must be chaired by an independent director. The second explanation and which seems to make sense for this situation is that the outsiders may be poorly informed or do not have enough experience in the banking field, which can negatively impact the financial performance because of the sensitivity of their functions within the governance committees. Hence, we have to reject the fourth hypothesis of our conceptual model.

Following our proposal, the gender variable seems to impact financial performance measured by ROE & ROA negatively. Simultaneously, the first equation (Tobin's Q) shows a positive but insignificant impact of this variable. This phenomenon could be explained by the low presence of women on boards, with only one woman as the average for our sample, knowing that the standard of the total number of assigned directors on board is 11. This can prevent them from affecting decisions and strategy development. Recently, the women's presence has become significant, with an average of 17.18% in 2019 against only 8.48% in 2014, which shows the potential that a future study can show the powerful impact of gender diversity on Moroccan banks performance.

Contrary to what we expected, the foreign directors' presence is not significant at any conventional level of confidence, making the rejection of the fifth hypothesis inevitable. Sbai & Meghouar (2017) confirmed a negative association between this pair of variables in the same Moroccan context. They argued that foreign administrators are weakly present on the directors' board and are poorly informed about management, and find it challenging to adapt to the local banking context. Indeed, the percentage of this type of directors has increased significantly, from 34.3% in 2014 to 40.06% in 2019, with an average of 4 foreign directors during the period of our study. This shows the significant weight of this category of directors in the decision-making process. We can say that banks have overcome the problems of adaptability and transparency and that the strong presence, even sometimes the dominance of this type of directors improves the total skills and the quality of the board, which implies an increase in financial performance. Another explanation is that such directors' presence is seen as a positive sign by the financial markets (Gulamhussen & Guerreiro, 2009). Our results corroborated those (Millar et al., 2005; Önal, 2019; Oxelheim & Randøy, 2003). Nevertheless, we cannot confirm the relevance of the impact because the estimations were insignificant.

As for the frequency of board meetings, our results show that it has a significant negative impact on the three financial performance measures. This confirms the contributions of agency theory, which argues that this factor is not a performance determinant because most of the time, meetings occur in routine protocols and not to monitor business management. Besides, four of the six studied banks have a classic governance structure, which leads in many situations to the appearance of manipulations that weaken bank executives' supervision by the board, despite a high proportion of institutional administrators (representatives of financial institutions and pension funds). Our results are identical to those of (Gambo et al., 2018; Johl et al., 2015). Also, they are contradictory with (Akbar et al., 2019; Alhassan et al., 2015; Tayseer Alshaboul & Ahmad Abu Zraiq, 2020; Vishwakarma, 2015). Therefore, we partially accept the eighth hypothesis, which states that board meetings' frequency negatively impacts Moroccan listed banks' financial performance.

Theoretically, the AC is an instrument that serves to improve governance structure's quality and banks' financial information through monitoring internal control and risk management systems by often competent independent directors who encourage frequent and prolonged committee meetings. Empirically, we cannot support our hypothesis 6b because it seems that the number of permanent directors associated with the AC has a positive impact on financial proxies, especially on the ROE and ROA. These results follow some recent studies (Armeliyas & Patrisia, 2020; Bataineh & Soumadi, 2020; Dakhlallh et al., 2020). This could be justified by referring to the resource dependency theory, which suggests that the audit committee's performance increases as its size rises. A bigger size implies more expertise and abilities.

The findings on the interplay between AC meetings and financial proxies lead to rejecting our hypothesis 6a. Thus, we have to admit a positive connection at an elementary level of confidence between these two sets of variables. According to Stewart & Munro (2007), the perfect number of audit committee meetings per year falls between two and six, which is consistent with our dataset with a mean of 4,6944 and a median of 4 sessions per year. The same authors have confirmed that AC diligence has been operationalized as the number of committee meetings in prior studies. For DeZoort et al., (2002), audit committee diligence is that factor needed to achieve committee effectiveness. The empirical results of our estimates suggest that an active committee is more able to contribute to financial performance. We can argue that the more often a committee meets, the more likely it should be able to carry out its duties by eliminating any source of reporting misstatements, fraudulent reporting and amplifying earnings management.

Meanwhile, we have detected that this committee's independence negatively impacts bank performance proxies, especially the ROA and ROE. Hence, we accept our sixth hypothesis 6c confirming a negative association between the two previously cited sets of variables. That can be justified by the observed lack of independent directors at the board's scale and not just in the audit committee. However, we can also say that maybe independent directors' missions in other firms and banks could be the source of the problem, considering that they have a full schedule. According to Khosa (2017), independent board directors' ineffectiveness could hamper the audit committee's effectiveness. Since we have noticed that the percentage of the independent directors on the governance board is negatively associated with performance, it is not surprising to find the same results for the AC and NRC.

The empirical results suggest that NRC has a positive effect on performance but only a significant impact on ROE's estimators (β=0.003023; p=0.0619). Theoretically, the presence of an independent NRC is supposed to improve the bank's profitability ratio by setting an appropriate salary policy. Unlike the other variables in our model, this specific committee's parameters are not frequently treated. All these parameters experienced a significant increase, more precisely the variable that measures independence within this committee. Empirical results indicate vital signs for only two sub-variables of the three used to represent this committee (*i.e.,* INDP_ NRC and NRC).

The reason behind NRC's positive impact on financial performance could be the outcome of an excellent salary policy that minimizes the bank's charges. Also, recruiting competent profiles can potentially increase operational profitability. Our empirical study confirms the agency theory's aims, which argues that NRC's presence ensures that the firms or banks contract qualified talents, skills, and competencies in our case to create shareholders' value. These results are identical to those of (Ahmad & Abu Zraiq, 2018; Sbai & Meghouar, 2017). Hence, we accept hypothesis 7b.

Regarding the impact of independent directors in the NRC, regression results negatively affect all three financial performance measures. As we already have discussed, committees' independence is highly associated with the board's independence. Therefore, we reject our hypothesis 7c and accept a negative connection between independent directors inside NRC and financial performance.

Finally, we reject hypothesis 7a, because there is no significant effect between NRC meetings and bank performance. Thus, we cannot consider NRC's meetings as a financial performance determinant in Moroccan listed banks.

5. Conclusion

This study aimed to examine the dynamic effects of the board's characteristics on the financial performance of Moroccan listed Banks between the period 2014-2019. Theoretically, we have used several theories to conduct the current analysis. We have adopted the point of view of agency theory, resource-based view theory, and other organizational theories to formulate the principal hypothesis that we have tested in the empirical section of this paper.

This research document shows that the dynamic connection between corporate governance and financial performance is robust in the Moroccan banking context. This is maybe due to the well-developed regulations supported by the frequent interventions of the Central Bank. By analyzing a dynamic panel of six banks during 2014-2019, we have been able to find that the theoretical contributions of agency theory are highly present in the Moroccan context. The negative impact of size, meetings, and director's independence is consistent with the agency theory's aims. The high number of meetings is the direct result of board missions' multiplicity, passing from negotiating and issuing all loans with or without mortgages or other guarantees on corporate assets to establishing the bank's vision.

Moreover, the director's independence seems to impact the contributions of the AC and NRC negatively. All this confirms that the factor of independence cannot be a bank's financial performance determinant in any case because it increases the board's size in a first-order, which leads to the aggravation of conflicts of interests between all participants. Secondly, the NRC's independent directors are not sufficiently competent on a practical level because of the poor understanding of banks' local environment. This could be explained by the fact that they are often of foreign origin. Finally, we can say that independent directors' presence legitimizes the adoption of Bank Al-Maghrib's recommendations to transmit to the financial markets a signal on the solidity of the banks' governance structure.

On the other hand, our study has important implications for establishing good corporate governance practices in emerging economies, principally after detecting the positive impact of the AC and NRC on financial performance. Furthermore, gender diversity should be a serious topic to regulatory authorities as soon as possible to promote their contributions and extend the diversity of competencies, board’s skills, and resources.

This research on corporate governance in the banking sector points out many financial determinants of performance that could be used more effectively to enhance a bank’s global performance. Also, this paper might be the key to start a real investigation by authorities on the board’s independence and size.

Limitation and study forward

There are a few limitations in this study that call for future research. First, since all our data were collected manually from reports and websites, there is a possibility of bias or mistake that could potentially mislead the study and causes false conclusions. It should be noted that we have checked our panel data four times to avoid this common problem. Furthermore, many factors could influence the financial performance and not only the used variables in this paper. Theoretically, our study still needs more qualitative variables such as directors’ remuneration and motivation, the board’s decision-making process, and finally test the financial effect of the risk committee’s existence.

Owing to these limitations, future research needs to include more variables, and it would be wise to use some qualitative variables to moderate governance mechanisms' effects on performance. Secondly, the conceptual model that we have empirically developed in the Moroccan context should be tested in other emerging economies, especially in the MENA Region. Hence, another study must see the light of day to test our paper's findings after the COVID-19 health crisis.

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