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Demand for Audit Quality in Newly Privatized Firms in MENA region: Role of Internal Corporate Governance Mechanisms Audit[1]

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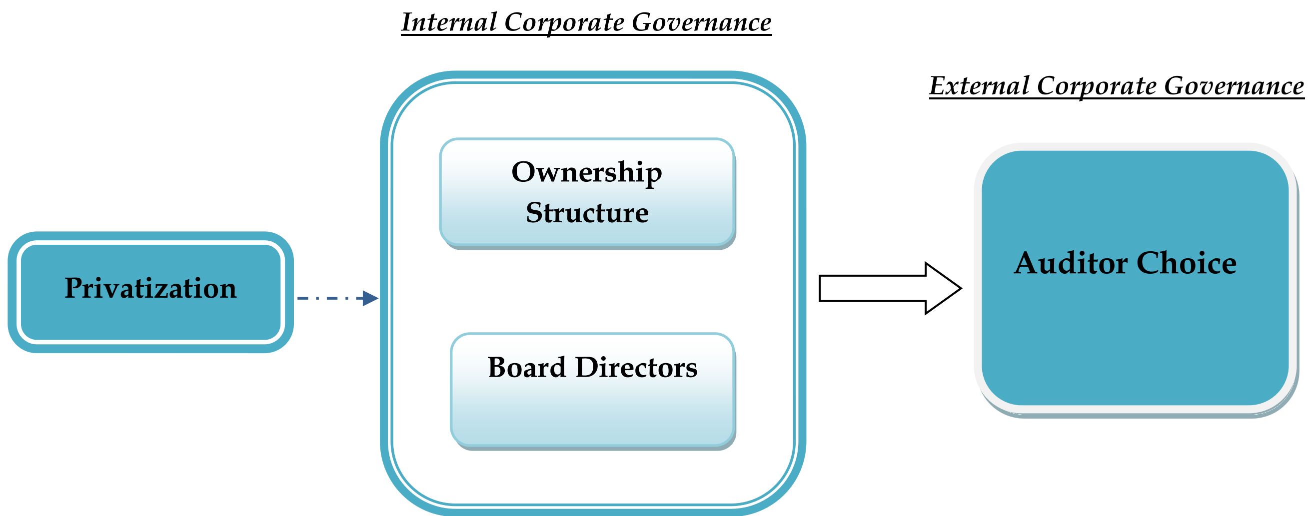
Graphical Abstract



Highlights

- We examine the link between corporate governance and auditor choice in MENA.
- The demand of high audit quality differs according to ownership identity.
- The change in the board composition following privatization affects auditor choice.
- Internal and external governance mechanisms act as substitutes.
- Internal governance is more effective in countries with weak investor protection.

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Abstract: This paper examines whether post-privatization internal governance mechanisms act in a complementary or substitutable fashion in determining auditor choice of newly privatized firms in the Middle East and North Africa region. We find that foreign ownership and board size are positively related to appointing a BigN auditor, while government ownership, board independence and CEO duality show a negative correlation. Moreover, we find that the effectiveness of the board of directors acts as a substitute to the effectiveness of ownership structure in choosing a BigN auditor. Our results suggest that better governance provide a better financial reporting quality of privatized firms.

Keywords: Auditor choice; Privatization; Internal governance mechanisms; MENA region

1. Introduction

This study extends the literature on audit quality (e.g., Guedhami, Pittman and Saffar (2009), and Wang, Wong and Xia (2008)) by examining the link between firms' internal corporate governance mechanisms and their auditor choice decisions particularly in the context of privatized firms. More specifically, we exploit the changes that privatization trigger within internal corporate governance mechanisms to examine whether their assessments of financial reporting credibility have changed for a sample of newly privatized firms (NPFs) from the MENA region. Furthermore, the switch from state to private ownership, which is accompanied by severe information asymmetry problems (Denis and McConnell (2003) and Dyck (2001)), also constitutes a unique setting for investigating how the auditor choice is related to internal corporate governance. Most audit quality research focuses on one aspect of internal corporate governance, typically either ownership structure or board structure (Guedhami et al, 2009). We posit that it is opportune to examine the effect of several corporate governance mechanisms on the demand of audit quality and the relation between these mechanisms, rather than focusing on one particular aspect of corporate governance, since they could either substitute or complement each other. Accordingly, we attempt to examine whether board structure and ownership structure act in a complementary or substitutable fashion in determining auditor choice. Although a few studies have provided some evidence for other developing countries (e.g., Bliss et al. (2007), Fan et al. (2005)), in this paper we are particularly interested in drawing some implications from the privatization experience of MENA region, which remains an under researched area. This region is unique for the specificity of its privatization process. First, privatization in MENA region is usually prescribed by the donor agencies and international financial institutions such as the World Bank or the International Monetary Fund. Second, the process is characterized by a slow progression compared to other developing countries such as Latin America or Asia (Ben Naceur et al., 2007). This may be explained by the fact that stock

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markets of the region are in an embryonic stage of development and generally lag behind other developing countries in terms of level of development indicators (Ben Naceur et al., 2009). Finally, most governments divest only partially over time and are reluctant to relinquish ownership completely (e.g., Bortolotti and Faccio (2009) and Boubakri et al. (2011)).[2] Unlike typical shareholders, governments tend to pursue political objectives that rarely coincide with profit maximization.[3] Moreover, part of the relinquished stake by the state is transferred to foreign owners (e.g., Boubakri et al. (2013)). Foreign owners have the financial resources, managerial know-how, and corporate governance expertise, which give them advantage over other owners in monitoring managers' actions (Frydman et al. (1999)). Furthermore, foreign owners maintain, for reputational reasons, strict control of managers' actions (Dyck (2001)). Within this structure, the roles and relationship between shareholders, board and audit quality tend to be overlapping and unclear. The MENA countries hence constitute a unique setting in which we examine the link between internal corporate governance mechanisms and auditor choice. We attempt to answer the following questions: Does internal corporate governance mechanism associated with privatization affect firms' auditor choice decisions? Does the effectiveness of board structure and ownership structure act as complements or substitutes on auditor choice decision?

Using a sample of newly privatized firms (NPFs) from MENA region, we find strong and robust evidence that board size is positively related to appointing a Big N auditor while the number of outside board members and CEO duality are negatively related to appointing a Big 4 auditor. Furthermore, we find evidence suggesting that the effectiveness of the board of directors act as a substitute to the effectiveness of the ownership structure in determining the decision to appoint a high-quality auditor.

Our findings add to the literature in several ways. First, we extend the literature that examines the role of internal corporate governance mechanisms in determining the quality of accounting information (e.g., Davidson et al., 2005; and Cornett et al., 2009) by examining how the drastic changes in internal corporate governance mechanisms associated with privatization, affect the decision to appoint a Big N auditor in MENA region, which is

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[2] The main reason behind partial privatizations and government control observed in privatized firms is that full privatization is costly. In fact, fully privatization is associated with a loss of the influence on the firm's decisions and hence on the country's overall direction (Boubakri, et al., 2013) for the government. Additionally, full privatization has distributional effects, since it "involves a transfer of wealth from insiders of state-owned enterprises (such as employees) to outsiders, especially shareholders" (Bortolotti and Pinotti, 2008, p. 335).

[3] For instance, governments may seek to maintain a high level of employment and promote regional development by locating production in politically desirable rather than economically attractive regions (Dewenter and Malatesta, 2001; Megginson and Netter, 2001).

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characterized by an institutional setting clearly different from other countries and regions that have been the focus of previous corporate governance studies. Second, we add to the literature on the impact of post-privatization internal corporate governance on corporate performance (e.g., Garcia and Gomez (2007), and Omran (2009)) by focusing on auditor choice. Furthermore, we add to the literature on the determinants of audit quality (e.g., Guedhami et al, (2009)) by examining corporate governance as a system in NPFs rather than focusing on one particular aspect of corporate governance. Finally, we contribute to the literature on post-privatization ownership structure (e.g., Guedhami et al. (2009), Ben-Nasr and Cosset (2014), and D'Souza et al. (2005)) by examining how it affects the relationship between board structure and auditor choice. Particularly, our paper extends Guedhami et al. (2009) by (i) examining the role of the ownership structure and board structure in determining audit quality, (ii) studying these mechanisms as a system, and (iii) examining if these mechanisms act as complements or substitutes on auditor choice decision.

The rest of this paper is organized as follows. Section 2 explores the characteristics of corporate governance in MENA countries. Section 3 reviews prior studies and develops our research hypotheses. Section 3 describes data and methodology used in this study and reports the main empirical findings and additional empirical tests. Section 4 concludes our study.

2. Corporate governance in the MENA region

The governance landscape in the MENA region is generally characterized by: extreme ownership concentrations; a large number of family businesses; with control normally situated in the hands of founders or their descendents; the strong presence of the state; and relatively weak investor protection and minority rights. According to Omran et al. (2008), the corporate governance systems in this region share several similarities with other developing economies, notably the underdeveloped nature of the financial markets. The MENA capital markets are perceived for a long period as less developed than the Asian or Latin American emerging markets (Henry and Springborg, 2004). It is well known that firms in this region continue to face a relatively weak institutional environments, inefficient judicial system, heavy bureaucracy or corrupt political institutions.

Since the 1990s, most of MENA countries governments have undertaken large steps towards privatizing businesses as part of the structural adjustment programs of the International Monetary Fund (IMF) and World Bank in order to raise revenue, improve economic efficiency of the newly privatized firms, and develop their national stock market. The privatization process in the MENA region is far from being complete and has been progressing more slowly than in other developing countries, such as in Latin American and Asia (Nheri, 2014). The first wave of privatizations focused almost exclusively on profit-making enterprises in the tourism, transport, food and construction material sectors. This process slowed down and stalled in 2002, before rebounding from 2003 to reach a peak in 2005. This might be due to the fact that many countries in the region are severely inhibited

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by environmental weaknesses in their efforts to privatize, namely embryonic capital markets, scarce financial resources, a weak private sector, and less than prudent regulations (Ben Naceur et al. 2007).

Privatization is usually interpreted as a discrete event that often leads to a drastic change in the ownership structure (Boubakri et al., 2005). As documented in Guedhami et al. (2009), this change in ownership is one of the potential sources that affect the firms' auditor choice decisions. Moreover, Dyck (2001) notes that the auditor's reputational intermediary role is essential to good corporate governance in privatized firms. In other direction, some studies suggest that firms have more incentive to engage Big Four auditors to improve firm-level governance in countries with relatively weak countries-level institutions (Fan and Wong, 2005; Choi et al., 2008). Against this backdrop, privatization provides an opportune testing ground for isolating the importance of accounting transparency determinants to economic outcomes. It seems worthwhile to analyze whether auditor choice varies systematically with post privatization corporate governance in MENA region. **3. Literature Review and Hypothesis Development**

2.1. Board Size

The literature on corporate governance suggests that the board's effectiveness may be affected by the number of directors sitting on the board. The nature of this relationship remains, however, controversial in both theoretical and empirical studies. There is an argument supporting the idea of smaller boards. Agency theory argues that smaller boards provide a better controlling function than larger boards. Smaller board has been found to be more cohesive (Shaw, 1981), and may be able to make decisions faster than larger boards (Priem (1990)). Jensen (1993) argues that coordination and communication problems outweigh the advantages of having more members. According to Hermalin and Weisbach (2003), when a board becomes too big, agency problems may increase, as some directors may tag along as free-riders. The auditor devotes more time and effort to his control mission, which leads to higher audit quality. This requires a positive relationship between board size and the choice of auditor quality. Consistent with the argument above, Cai (2007) investigates the influence of corporate governance structure on audit quality and provides evidence that firms with larger board sizes appoint a higher audit quality. Lin and Liu (2009) analyze the corporate governance structure in the China audit market and show that firms with smaller boards are less likely to hire a Top 10 (high-quality) auditor. Similarly, Hamid and Abdullah (2012), using a sample of government-linked companies and non-government-

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linked companies listed on the Bursa Malaysia show that audit fees are positively related to board size. Another argument in favor of increasing board size is based on the resource dependency theory: a large number of members on the board bring a variety of knowledge and more ability to manage the capital resource of the firms (Pfeffer, 1972). Moreover, larger boards join their expertise to make optimal decisions for the benefit of the firm. Pearce and Zahra (1992) suggest that large board size improves its monitoring capacity and performance. In addition, larger boards may be more likely to have independent directors with corporate and financial expertise (Xie et al., 2003). Hence, larger boards intentionally require less audit quality. For example, Elsewhere et al. (1999) state that large boards are associated with low audit quality. Recently, Gana and Lajmi (2011) testify to the influence of board characteristics on external audit quality in the Belgian audit market and report a similar conclusion. Given this discussion, our hypothesis on the impact of board size on auditor choice is not directional and states:

H_1: The audit quality of privatized firms is related to board size.

2.2. Board Independence

Although several studies have examined the determinants of audit quality, the relationship between independent directors and audit quality is only now beginning to receive extensive research attention. Whether independent directors have any effect on audit quality and, how they influence external audit quality remains however, unclear. Corporate governance literature provides at least two main arguments, based on the substitution theory and the signaling theory, and lead to different expectations (Wu, 2012). The substitution theory suggests that firms with good internal corporate governance are more likely to reduce agency costs, to reduce control risk and hence to ensure higher quality reporting, which enables a reduction in audit risk and quality. As a consequence, effective board directors result in less external audit quality. Consistent with this theory, a set of papers documents a negative relation between independent directors and audit quality. For example, Gul et al. (1998) testify to the influence of agency costs proxies on audit fees and report that the proportion of independent directors on the board is negatively associated with external audit quality. Tsui et al. (2001) find that independent directors provide better control and governance environment and lead to lower audit quality. Similarly, Li and Wang (2006) analyze the role played by board of directors' characteristics and point to a significant negative relationship between the number of independent directors and audit quality. Using

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a framework of corporate governance, Wu (2012) investigates the China audit market and provides evidence to show that the negative relationship between corporate governance and audit quality is affected by corporate growth.

Under the signaling theory, managers have incentives to signal high-level corporate governance to current and potential stakeholders, by engaging high quality auditors. In other words, firms with strong corporate governance demand additional assurance from auditors and then appoint a higher audit quality to accounting firms. Other empirical studies suggest and document a positive relationship between independent boards and audit quality. For example, O'Sullivan (2000) investigates the influence of governance mechanisms on audit quality and provides evidence to show that independent directors encourage the engagement of higher audit quality to promote investor confidence in the financial statements. Using a sample of property-liability insurers, Beasley and Petroni (2001) argue that boards with a higher percentage of outside directors will demand a high-quality auditor to ensure more effective monitoring of corporate management. Similarly, Carcello et al. (2002), Ireland and Lennox (2002), Abbott et al. (2003) and Yatim et al. (2006) propose and find a positive relation between independent directors and audit quality, which suggests that the demand for strong corporate governance induces a firms to appoint a better quality of auditors. This discussion leads to the following hypothesis.

H_2: The audit quality of privatized firms is related to the proportion of outside directors on the board.

2.3. CEO Duality

The duality of the board implies that the same person holds both the chairmanship and CEO functions. The perception of how CEO duality influences a firm's audit quality decisions varies at both the theoretical and empirical level, with the evidence reflecting mixed findings. On the theoretical level, two main theories, the agency and stewardship theories, have been used to explain the relation between CEO duality and audit quality. From the agency theory perspective, splitting the roles of CEO and board chair facilitates more effective monitoring and control of the CEO, and reduces agency costs in large organizations (Fama and Jensen, 1983). The combined role of chairman and chief executive officer appears then as a sign of a dominant CEO and is perceived as an obstacle to monitoring managerial opportunism, emphasizing the need for effective governance to secure shareholders' welfare. This suggests that the auditor needs to make more control effort and subsequently requires higher fees,

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results in high quality (Fama and Jensen, 1983). In contrast, the stewardship theory argues that the board chair position should be in one hand because executives can act as stewards, thus encouraging a CEO to better serve the firm and its shareholders (e.g., David et al., 1997).

The conflicting predictions from these two theories are mirrored in the available evidence. Supporting the conflict-of-interest argument, some scholars believe that CEO duality impairs corporate governance and indicates that shareholders tend to appoint a higher quality of audit when one single person wears the hats of both the CEO and chairman of the board (Peel and Clatworthy, 2001; Ashbaugh and Warfield, 2003). They argue that duality structure can lead to sub-optimal decisions, frauds and managerial opportunism, and hence increasing the likelihood of shareholders to deepen external control mechanism and so to hire highly external audit quality. On the empirical front, Tsui et al. (2001) find evidence from Hong Kong firms that CEO duality decreases the reliability of accounting information and leads to greater audit fees. In American context, Krishnan and Visvanathan (2009) document that separating the CEO-Chair positions reduces the risk of failure of corporate mechanisms, and so reduce the demand of high audit quality. Ismail et al. (2011) investigate the relationship between corporate governance mechanisms and the quality of the earnings after the implementation of the Malaysian Code of Corporate Governance in 2001. Their results suggest that the presence of CEO duality on the board is associated with higher audit fees and that this positive relationship is significantly weakened when the company has a higher proportion of independent directors in the audit committee. Recently, Makni et al (2012) investigate the Tunisian audit market, and also find a positive relationship between the CEO duality and appointing a high audit quality.

On the contrary, in line with stewardship theory, others studies suggest that firms with dual structure demand a lower quality of external auditors (Yatim et al., 2006, Lin and Liu, 2009a,b). They argue that since firms with combined functions are better informed, they may therefore make better and faster decisions. For example, Lin and Liu (2009a) analyze the impact of internal corporate governance mechanisms on auditor switching decisions of Chinese firms, and find that firms with CEO duality are more likely to switch to a smaller auditor. In the same context, Lin and Liu (2009b) investigate the determinants of auditor choice and report also that firms with CEO duality are less likely to engage higher-quality audit firms. Given this discussion, our third hypothesis states:

H_3: the audit quality of privatized firms is associated significantly to CEO duality.

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2.4. State ownership

Following privatization, the government continues to hold substantial shareholdings in privatized firms. However, to protect their political interest, government owners may prefer hiring auditors who are more conducive to rendering financial statements less informative about underlying firm performance. In fact, Keloharju et al. (2008) argue that privatizing governments rely on these securities to achieve political objectives and to maximize their private benefits of control. Moreover, Faccio (2007) and Claessens et al. (2008) hold that political connections afford firms access to cheap loans. Consistent with this, Wang et al. (2008) argue that SOEs are more likely to appoint a lower-quality auditor because they are able to raise capital through these connections without having to shrink information asymmetry.

Empirical research indicates that the demand for high audit quality is negatively associated with the extent of state ownership. Aksu et al. (2007) examine the impact of firms' characteristics on auditor choice for 52 firms listed in Istanbul Stock Exchange. They find a negative relationship between the level of public shareholders and appointing a Big 5 auditor. Guedhami et al. (2009) reach a similar conclusion in the context of privatization. Using a sample of 176 newly privatized firms in 21 developing and 11 developed countries over the period 1980-2002, they show privatized firms become less likely to engage a Big N auditor with extent of state ownership. Therefore, we expect that the proportion of shares held by government to be negatively related to audit quality.

H_4: the audit quality of privatized firms is negatively related to state ownership.

2.5. Foreign investors

In contrast with government owners, foreign investors tend to appoint a Big N auditor to preserve their interests. The demand for high quality auditor is perceived as a demand for good governance. Kang and Stulz (1997) documented that foreign investment in Japanese stocks is concentrated in the largest firms. This result is explained by the informational disadvantage and political risk that foreign investors have about small firms than local investors. Moreover, Doidge et al. (2009) and Leuz et al. (2009) and Ahn et al. (2006) stipulate that foreign investors avoid investing in poorly governed firms especially those that suffered from high information asymmetry. Extant research considers the presence of foreign shareholders in privatized firms as a guarantee for better governance (Boycko et al., 1996; Dyck, 2001; and Boubakri et al., 2007). This result

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was later confirmed by Velury and Kane (2004) and Chou et al. (2011) which state that the presence of foreign investors is positively correlated with the demand for high audit quality. Similarly, Azibi et al. (2009) investigate audit quality choice after the Enron scandal. Using a sample of 144 firms listed on the SBF 250 between 2000 and 2007, they find that firms with higher proportions of stake held by foreign investors affect positively the probability of hiring the Big 4. Recently, Johl and Khan (2011) examine the role of family and foreign control on audit fees in 500 Australian private firms. They document that foreign private firms pay higher audit fees than their local counterparts in order to reduce agency costs. Donghun et al. (2011) report similar results for Korean firms. Using audit fees and audit hours as a proxy for audit quality, they find that firms with high level of foreign shareholder ownership are more likely to engage high audit quality. Similarly, Shan (2012) uses audit fees as dependent variable to test the effect of internal governance mechanisms on audit quality. His findings suggest that audit fees have a positive association with foreign ownership and infer that higher audit quality is associated with foreign ownership. Thus, we expect to observe a positive association between the level of foreign ownership and audit quality.

H_5: the audit quality of privatized firms is positively related to foreign ownership.

2.6. Effectiveness of Corporate Governance Mechanisms as a System

We propose to extend our analysis of the impact of internal governance mechanisms on auditor choice by examining the effect of governance as a system that combines the board and ownership characteristics into scores and interaction terms. Ownership structure and board structure can act as complements. Indeed, the effectiveness of the board structure may depend on ownership structure (Desender, 2009). Specifically, board structure will be associated with better monitoring of management's actions only if it is accompanied with a strong ownership structure (e.g., the government relinquished control and foreigners have a large stake in the company). Given that, the effectiveness of board structure can reinforce the effectiveness of ownership structure in choosing a high-quality auditor. Another point of view suggests that board and ownership structures may act as substitutes. In other words, board structure may act as a substitute for weak ownership structure (e.g., the government still controls the company and foreigners have only a small stake in the company). Therefore, we expect that the interaction between the effectiveness of the board structure and

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ownership structure is associated with the demand of high audit quality. We present our fourth hypothesis as follows:

H_6: the effectiveness of the board structure in determining auditor choice is likely to depend on ownership structure.

3. Data and Descriptive Statistics

3.1 Sample

To examine the impact of internal corporate governance mechanisms on audit quality, we compile a sample of 83 firms privatized in MENA region over the period 1987-2010. We use Boubakri et al. (2005)'s sample, Ben-Naceur et al. (2007)'s sample, and Omran (2009)'s sample. We updated these samples using the World Bank's privatization database.[4]

Table 1 provides some descriptive statistics of the 83 privatized firms considered in this study from five countries in the MENA region (i.e., Egypt, Jordan, Morocco, Tunisia and Turkey). As we can observe, 56.63% of our sample firms are from Egypt, 8.44% are from Jordan, 6.02% are from Morocco, 15.66% are from Tunisia, and 13.25% are from Turkey. We also observe that our sample is diversified across Campbell's (1996) industries, with 25.3% in basic industries, 24.1% in Food/tobacco, 16.87% in construction, and 9.64% in consumer durables. Moreover, we observe that 73.49% of our sample firms were privatized through shares issue, while 26.51% were privatized through private sale. Finally, we observe that 61.44% of our privatization transactions occurred during the 1995-1997 period compared to 16.87% occurred during the 1989-1993 period.

[4] http://data.worldbank.org/data-catalog/privatization-database.

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TABLE 1

Description of the Sample of Newly Privatized Firms

Distribution of Privatizations

Panel A : By year

Year	Number	Percentage
1989	1	1.21
1990	5	6.02
1991	5	6.02
1992	1	1.21
1993	2	2.41
1995	10	12.04
1996	27	32.53
1997	14	16.86
1998	4	4.82
1999	5	6.02
2000	1	1.21
2001	1	1.21
2002	1	1.21
2004	1	1.21
2006	2	2.41
2007	3	3.61
Total	83	100

Panel B : By country

Country	Number	Percentage
Egypt	47	56.63
Jordan	7	8.44
Morocco	5	6.02
Tunisia	13	15.66
Turkey	11	13.25
Total	83	100

Panel C : By industry

Industry	Number	Percentage
Basic industries	21	25.30
Consumer durables	8	9.64
Construction	14	16.87
Food/tabacco	20	24.10
Petroleum	4	4.82
Transportation	3	3.61
Services	1	1.21
Textiles/trade	7	8.43
Utilities	2	2.41
Capital goods	3	3.61
Total	83	100

Panel D : By privatization Method

Method	Number	Percentage
Share issue privatization (SIP)	61	73.49
Private sale (PS)	22	26.51
Total	83	100

This table provides some descriptive statistics for the sample of 83 privatized firms used in this study. We report the distribution of privatization in the countries included in the sample by year, country, industry, and privatization method.

3.2 Regression Variables and Descriptive Statistics

*3.2.1 Auditor Choice***.** Table 2 shows that on average 12% (10) of the 83 firms chose a Big N before privatization against 26.9% (22) afterward, indicating an improvement of the audit quality after privatization, which is consistent with prior research (e.g., Guedhami et al., 2009). We also observe that 12 out of 73 (16.44%) firms switched to a Big N auditor after privatization. Furthermore, we note that none of the 10 firms with a Big N before privatization downgraded to a non- Big N afterward. Finally, none of our sample firms changed auditor during the pre-privatization period.

3.2.2 Board of Directors. Table 2 also reports descriptive statistics for the board of directors' variables (i.e., the proportion of outside directors, CEO duality, and board size). As

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we can observe, privatization is not associate with a marked change in board size (BS). Indeed, board size is on average 8 board members ranging from 2 to 15 members. However, privatization is associated with a marked change in CEO duality (DUAL) (i.e., the separation between the CEO and chairman positions). As we can observe, the percentage of firms with dual CEOs declined from 78.9% before privatization to 57% afterward. Finally, we do not observe an increase in the number of outside directors (OUTS) after privatization. These figures suggest that privatization is associated with a change in CEO duality.

3.2.3 Ownership Variables. State and foreign owners determine the decision of hiring a Big N auditor in NPFs (Guedhami et al. (2009)). Given that, we control for government and foreign ownership. As we can observe in Table 2, government ownership declined sharply after privatization. Indeed, average (median) government ownership (GOV) decreased from 89.0% (100%) before privatization to 38.8% (39.0%) after privatization. We also observe that the average (median) foreign ownership (FOR) increased from 0.4% (0.0%) before privatization to 10.5% (2.5%) afterward, indicating that a part of the relinquished state ownership is absorbed by foreign shareholders.

3.2.4 Control Variables. To isolate the role that internal corporate governance mechanisms play, we include comprehensive set of potential determinants of auditor choice decision according to prior research (e.g., Choi and Wong, 2007, Wang et al., 2008; Guedhami et al., 2009; and Lin and Liu, 2009). First, we include firm size (SIZE) measured as the natural logarithm of total sales in US$ and asset structure (INV), measured as the ratio of inventory to total assets to proxy for audit complexity, which determines auditor effort, hence auditor choice (e.g., Simunic and Stein, 1987; Francis et al., 1999; and Hope et al., 2008). Second, we include leverage (LEV) coded as the ratio of long-term debt to total assets as a proxy for the firm's default risk, which may affect the litigation risk of auditors, hence determine auditor choice (e.g., Pierre and Anderson, 1984; and Hope et al., 2008). Third, we include the ratio of net income over total assets (ROA) and growth calculated as the firm's annual sales growth rate (GROWTH) to control for firm profitability, which determine auditor choice (e.g., .Choi and Wong, 2007; and Wang et al., 2008; among others). Fourth, we control for the following macroeconomic variables, in line with Choi and Wang (2007) and Guedhami et al. (2007): (i) the level of economic development, using the natural logarithm of GDP per capita (LGDPC) and (ii) the country's foreign direct investment (FDI), using the ratio of foreign direct investment over GDP.

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TABLE 2

Descriptive Statistics for the Explanatory Variables

	Mean	Median	Std. Deviation	Min.	Max.
Panel A : Before privatization					
BIG N	0.120	0.000	0.325	0.000	1.000
BS	8.171	9.000	2.151	5.000	15.000
OUTS	0.670	0.666	0.170	0.143	0.933
DUAL	0.789	1.000	0.408	0.000	1.000
GOV	0.890	1.000	0.237	0.084	1.000
FOR	0.004	0.000	0.036	0.000	0.317
SIZE	11.677	11.696	2.437	1.467	20.651
LGGDP	7.101	6.924	0.418	6.564	7.946
LEV	0.518	0.246	0.814	0.000	4.940
ROA	0.077	0.067	0.084	-0.352	0.395
LAWORD	3.741	4.000	0.849	2.000	5.917
RISKOFEXP	5.099	5.000	1.379	2.000	8.000
GROWTH	0.222	0.114	0.433	-0.492	2.337
INV	0.238	0.220	0.150	0.000	0.711
FDI	2.199	1.058	3.468	0.045	23.537
Panel B : After privatization					
BIG N	0.269	0.000	0.444	0.000	1.000
BS	8.219	9.000	2.102	5.000	13.000
OUTS	0.698	0.714	0.166	0.143	0.923
DUAL	0.570	1.000	0.496	0.000	1.000
GOV	0.388	0.390	0.282	0.000	0.974
FOR	0.105	0.025	0.192	0.000	1.000
SIZE	12.177	12.013	2.741	1.831	24.573
LGGDP	7.431	7.218	0.376	6.976	8.425
LEV	0.347	0.172	0.558	0.000	4.630
ROA	0.083	0.079	0.096	-0.301	0.433
LAWORD	4.213	4.000	0.647	2.000	6.000
RISKOFEXP	3.619	3.000	1.537	2.000	7.833
GROWTH	0.182	0.061	0.917	-0.842	12.466
INV	0.216	0.185	0.151	0.000	0.791
FDI	1.981	1.174	2.923	0.007	22.651
Panel C : Total sample period					
BIG N	0.198	0.000	0.398	0.000	1.000
BS	8.191	9.000	2.128	5.000	15.000
OUTS	0.683	0.714	0.171	0.142	0.933
DUAL	0.667	1.000	0.471	0.000	1.000
GOV	0.613	0.671	0.354	0.000	1.000
FOR	0.059	0.000	0.150	0.000	1.000
SIZE	11.945	11.903	2.592	1.466	24.573
LGGDP	7.271	7.169	0.429	6.564	8.425
LEV	0.426	0.209	0.683	0.000	4.940
ROA	0.082	0.075	0.088	-0.352	0.463
LAWORD	3.977	4.000	0.812	2.000	6.000
RISKOFEXP	4.569	5.000	1.940	2.000	12.000
GROWTH	0.184	0.078	0.707	-0.842	12.465
INV	0.227	0.206	0.149	0.000	0.791
FDI	2.119	1.135	3.341	0.006	23.537

Notes: this table presents descriptive statistics for the regression variables used in the hypotheses test to examine the impact of internal corporate governance mechanisms on auditor choice decision for a sample of 83 privatized firms from MENA region. Panel A and B present the descriptive statistics for the period before and after privatization, respectively. Panel C covers the full 7-year sample period.

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Fifth, we control the following country-level institutional variables, in line with Bae and Groyal (2009): (i) the risk of expropriation (RISKOFEXP) index from ICRG, which ranges from 0 to 10, with a higher score indicating lower risk of expropriation and confiscation by the government and (ii) the law and order index (LAWORD) from ICRG, measuring the strength and impartiality of the legal system, which ranges from 0 to 6, with higher scores indicating sound political institutions and a strong court system. Finally, we include industry dummies representing Campbell (1996)'s 12 industries to control for industry fixed-effects.

4. Empirical Results

4.1 Univariate Results.

We perform univariate tests to investigate the impact of internal corporate governance mechanisms on the decision to hire a Big N auditor. Table 3 reports the results of our mean and median comparisons of our regression variables between the Big N and non-Big N sub-samples. As we note, the average of OUTS is significantly higher at the 1% level for the sub-sample of firms with a Big N auditor and suggests that firms with more outside directors are more likely to hire a Big N auditor. We also observe that the average of DUAL is significantly lower at the 1% level for the sub-sample of firms with a Big N auditor. This finding is also consistent with H_3 and suggests that firms with CEO duality are less likely to hire a Big N auditor. However, the average of BS is not significantly for the sub-sample of firms with a Big N auditor, failing to provide a support for H1. In summary, our univariate results provide a preliminary evidence for the conjecture that firms that appoint a Big N auditor are characterized by less dual functions and more outside directors present in their board.

Table 3 also provides a comparison of mean value of government and foreign ownership between the Big N and non- Big N sub-samples. As we can see, the average of GOV is significantly lower at the 1% level for the sub-sample of firms with a Big N auditor. We also observe that the average of FOR is significantly higher at the 1% level for the sub-sample of firms with a Big N auditor. These findings are consistent with our predictions and with the findings of prior research (e.g., Guedhami et al., 2009) and suggests that firms with higher (lower) state (foreign) ownership are less (more) likely to hire a Big N auditor.

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TABLE 3
Univariate tests by Auditor Choice

	Column 1		Column 2		Column 3		
Sample restriction	*BIG N = 0* *(N=435)*		*BIG N = 1* *(N=108)*				
Variables							
Continuous :	*Mean*	*Std. Dev.*	*Mean*	*Std. Dev.*	*Diff.*	*T-Statistics*	*z-statistics*
BS	8.055	2.108	8.821	2.119	-0.766	-3.207***	-2.317**
OUTS	0.662	0.176	0.783	0.103	-0.120	-6.447***	-6.128***
GOV	0.662	0.342	0.416	0.334	0.246	6.712***	6.669***
FOR	0.037	0.104	0.149	0.245	-0.112	-7.281***	-4.620***
SIZE	*11.813*	2.142	12.513	3.951	-0.700	-2.442**	-2.019**
LGDP	7.214	0.411	7.502	0.427	-0.289	-6.496***	-6.074***
LEV	0.466	0.733	0.261	0.368	0.205	2.740***	-2.403**
ROA	0.077	0.081	0.106	0.114	-0.028	-2.927***	-2.680***
LAWORD	3.947	0.734	4.100	1.068	-0.759	-1.761*	-2.436*
RISKOFEXP	4.499	1.846	4.853	2.268	-0.766	-1.699*	-1.876*
GROWTH	0.155	0.399	0.303	1.357	-0.148	-1.808*	-0.172
INV	0.233	0.149	0.206	0.151	0.027	1.550	1.862*
FDI	1.970	2.877	2.728	4.750	-0.759	-2.121**	3.151***
Discrete	%		%				
DUAL	30.51		11.5				

Notes: This table reports measures of central tendency for all explanatory variables for the Big N and non-Big N subsamples. The full sample includes 83 privatized firms from MENA regions. All variables are measured over the entire 7-year sample period that spans the 3 years before privatization, the privatization year, and the initial 3 years afterward. The superscripts asterisks ***, **, and * denote statistical significance at the 1%, 5% and 10% levels, respectively. Definitions and data sources for the variables are outlined in the Appendix.

4.2 Multivariate Results

To examine the impact of internal corporate governance mechanisms on audit choice decisions, we estimate several specifications of the following model:

$$\mathbf{BIGN_{it} = \alpha_0 + \beta_1 BS_{it} + \beta_2 OUTS_{it} + \beta_3 DUAL_{it} + \beta_4 GOV_{it} + \beta_5 FOR_{it} + \beta_6\ CONTROLS + \varepsilon_{it}} \quad (1)$$

where BIGN is a dummy variable equal to one for firms with Big N auditors, and zero otherwise; BS is the number of members in the board; OUTS is the proportion of outside directors in the board; DUAL is a dummy variable equal to one if the chief executive officer and the chairman of the board are the same person and zero otherwise; GOV is the percentage of share held by the government, FOR is the percentage of share held by the foreign investors, CONTROLS is a set of firm- and country-specific control variables. Our focus in this analysis is on the coefficients β1, β2, and β3, which measures the sensitivity of internal corporate governance mechanisms to auditor identity.

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Our data are panel in nature, which spans 7 years surrounding privatization (i.e., from 3 years before privatization to 3 years afterward, including the privatization year), allows us to control for unobserved firm-specific effects and to accommodate the correlated omitted variables that plagues political economy research (Claessens et al., 2008 and Guedhami et al., 2009). We use the Hausman test to determine the nature of individual effects. The findings show that there are random effects. One possible explanation that fixed effects models cannot estimate for many privatized firms the coefficients of Big N and DUAL variables that remain invariant over the sample period. Given that, we use random effects regressions.

Regarding potential problems related to multicollinearity, we have calculated the Pearson correlation coefficient, reported in Panel A of Table 4, and Variance Inflation Factors (VIF), reported in Panel B of Table 4, for independent variables. As we can observe in Panel A, the coefficient of correlation between the regression variables are low, except the correlation coefficient between BS and OUTS (-0.63) as well as between OUTS and LGGDP (0.53). A VIF should not exceed 5 (Hutcheson and Sofroniou (1999)). Our results show that the highest VIF is 3.21, indicating that there is no problem of multicollinearity among the variables.

TABLE 4

Collinearity Diagnostics

Panel A: Pearson matrix														
	BS	OUTS	DUAL	GOV	FOREIGN	SIZE	LGDP	LEV	ROA	LAWORDER	RISKOFEXP	GROWTH	INV	FDI
BS	1.00													
OUTS	-0.63*	1.00												
DUAL	-0.09	-0.42*	1.00											
GOV	-0.14*	-0.34*	0.30*	1.00										
FOREIGN	0.11*	0.15*	-0.08	-0.44*	1.00									
SIZE	-0.16*	-0.07	-0.17*	0.04	-0.07	1.00								
LGDP	0.26*	0.53*	-0.42*	-0.38*	0.14*	0.00	1.00							
LEV	0.06	-0.11*	0.10	-0.20*	-0.10	-0.13*	-0.16*	1.00						
ROA	-0.04	-0.09	0.10	-0.23*	0.10	0.17*	0.00	-0.32*	1.00					
LAWORD	-0.27*	0.08	0.08	-0.10	0.09	-0.20*	0.11*	-0.03*	-0.14**	1.00				
RISKOFEXP	-0.08	0.12*	-0.06	0.16*	-0.19*	0.37*	-0.06	-0.05	0.24*	-0.37*	1.00			
GROWTH	-0.03	0.11	-0.12*	-0.05	0.00	0.30*	0.14*	-0.05	0.24*	-0.15*	0.21*	1.00		
INV	-0.16*	-0.10	0.04	0.07	-0.11	0.11	-0.31*	-0.12*	0.02	-0.02	-0.12*	-0.06	1.00	
FDI	-0.29*	0.13*	0.12	-0.05	0.17*	-0.43*	0.30*	0.00	-0.05	0.07	-0.33*	-0.05	-0.29*	1.00
Panel B: VIF Diagnostic														
VIF	2.42	3.21	1.47	1.79	1.37	1.86	2.09	1.47	1.48	1.39	1.69	1.25	1.28	2.09

This table reports Pearson pairwise correlation and VIF between the regression variables for a sample of 83 firms privatized in the MENA region between 1987 and 2010. The superscript asterisk* indicates statistical significance at the 1% level.

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4.2.1 Main results. Table 5 reports random-effect results for the multivariate analysis of corporate governance mechanisms and auditor choice for the period of seven years around privatization (i.e., from three years before privatization to three years afterward, including the privatization year). Given the binary nature of our dependent variable, BIGN, we estimate equation (1) using a logit Model. In all models, we control for firm- and country-level determinants of auditor choice. Industry dummy variables are also included in all models. As we can observe, the pseudo R-square of 25.04, $p<0.001$, and a Chi-square of 128.5, 141.04, and 134.89 from Models 1, 2, and 3, respectively, the regression models are statistically significant and can differentiate the NPFs choosing Big N auditors from those choosing no-Big N auditors. All of the models in Table 5 display greater explanatory power relative to previous studies (e.g., Guedhami et al., 2009) strengthening that the privatization context is opportune for our tests[5].

In Model (1), we only include ownership structure variables as well as our control variables. The results largely confirm the findings of previous studies. More precisely, we find that the coefficient for GOV is negatively significant at the 1% level, suggesting that NPFs with higher government ownership are less likely to engage a Big N auditor, in line with evidence in Guedhami et al. (2009). We also report a positive and significant coefficient for FOR, supporting the conjecture that foreign investors are more likely to choose a Big N auditor (Guedhami et al. (2009)) to preserve their interests. Turning to the control variables, we report several significant results which are consistent with our predictions. Specifically, we report a negative and highly significant coefficient for INV. We also report a positive and significant coefficient at the 1% level for LGDP, corroborating the findings of prior research (e.g.,Choi and Wong, 2007; Guedhami and al., 2009).

In Model (2), we add the board characteristics variables to the variables included in Model (1). We find a positive and significant coefficient at the 1% level for BS, consistent with H_1 and suggesting that firms with larger board are more likely to appoint a Big N auditor in order to reduce agency problems. We also report a negative and significant coefficient for OUTS, consistent with H_2 and in line with Karaibrahimoglu (2013). This result suggests that NPFs having more outside directors in their board are less likely to appoint a Big N auditor, supporting therefore the substitution theory that independent board may be

[5]The models in Table 5 exhibits strong classificatory power, as evidence by the concordant percentage that ranging from 76.14% to 81.19% confirming thereby the specification validity of the models for our purposes.

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an effective monitoring mechanism to improve financial reporting quality and thus may substitute the demand of high audit quality. Furthermore, we report a negative and significant coefficient at the 1% level for DUAL, consistent with H_3 and suggesting that NPFs in which the CEO also holds the position of the chairman of the board are less likely to hire a high-quality auditor (Big N). As for the ownership variables, the coefficient for GOV (FOR) remains negative (positive) and significant, corroborating our earlier findings. Regarding the control variables, we report a positive and highly significant coefficient for SIZE, supporting the conjecture that larger firms are more likely to appoint a Big N auditor.

In Model (3), we control for country-level corporate governance using LAWORD and RISKOFEXP. We find that the coefficients for LAWORD and RISKOFEXP are not significant, failing to support the conjecture that strong country-level corporate governance is associated with a higher probability to appoint a BIG N auditor.

In Model (4), we extend our previous analysis by focusing on the impact of internal corporate governance on auditor choice after privatization. Specifically, this analysis allows us to examine whether privatization rectifies any distortions in auditor choice that Guedhami et al. (2009) and Wang et al. (2008) emphasize. The results show that the coefficient for DUAL is negative and significant at the 1% level, implying that the adverse effect of dual board structure on auditor choice persists after privatization. However, we find that the coefficients for OUTS and BS are no longer significant, consistent with descriptive statistics, suggesting that CEO duality is more important to determine post-privatization auditor choice than board size and board independence.

As for the ownership structure, we find that the coefficient for GOV remains negative and significant at the 1% level, corroborating our earlier findings. Similarly, we find that the coefficient for FOR loads positive and significant at 1% level, again supporting our earlier findings.

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TABLE 5

Internal Corporate Governance Mechanisms and Auditor Choice Decision

	Prediction	(1)	(2)	(3)	(4)
Panel A : full sample analysis					
Intercept	?	−155.77***	−164.31***	−323.56***	−69.04***
		(−6.37)	(−5.47)	(−10.17)	(−3.99)
BS	+		1.78***	53.76*	−0.22
			(2.87)	(1.70)	(−0.38)
OUTS	+/-		−18.97*	−53.76**	10.82
			(−1.84)	(−2.22)	(0.90)
DUAL	+/-		−6.38***	−14.084***	−5.76***
			(−2.72)	(−4.08)	(−2.61)
GOV	-	−15.00***	−9.58**	−11.76**	−15.07***
		(−4.29)	(−2.12)	(−2.43)	(−4.33)
FOREIGN	+	13.20*	28.21***	22.19***	24.28***
		(1.75)	(4.34)	(3.37)	(4.08)
SIZE	+	0.55	0.98**	1.14	−00.82
		(1.05)	(1.92)	(1.42)	(−1.43)
LGDP	+	18.10***	17.51***	37.43***	8.55***
		(5.16)	(4.59)	(8.86)	(3.45)
LEV	-	−0.16	−1.17	−2.30	
		(−0.09)	(−0.74)	(−0.68)	
ROA	+	14.07	10.72	32.82	
		(0.48)	(0.88)	(1.23)	
LAWORD	+			1.25	
				(0.64)	
RISKOFEXP	+			0.68	
				(0.89)	
GROWTH	+	0.26	−0.23	−1.56	
		(0.10)	(−0.09)	(−0.47)	
INV	+	−17.61**	−17.60**	−27.26**	10.73*
		(−2.19)	(−2.36)	(−2.37)	(1.66)
FDI	+	−1.05***	−0.85***	−1.83***	−1.52***
		(−3.71)	(−3.38)	(−5.82)	(−3.99)
Industry effects		*YES*	*YES*	*YES*	YES
Chi-square for model		128.15	141.04	377.36	118.64
P-value		0.00	0.00	0.00	0.00
Percent Concordant (%)		77.72	80.93	81.19	76.14
Pseudo-R^2		19.92	26.25	26.41	25.57
N		388	388	388	264

Notes: Panel A presents random effects logit estimation results obtained by regressing the quality of auditor on ownership structure, board directors and control variables. The full sample includes 83 firms privatized in 5 countries from the MENA region between 1987 and 2010. The results are reported for a period of 7 years i.e., from the 3 years before privatization, the privatization year, and the initial 3 years afterward, except for Model 4, which examines data for the post-privatization period.. The *z*-statistic is shown below each estimate. The superscript asterisks ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively. Descriptions and data sources for the variables are outlined in Appendix A.

4.2.2. Additional analysis: Impact of internal corporate mechanisms on auditor switching

We extend our main analysis by examining whether changes in NPFs' internal corporate governance mechanisms affect their auditor switch decisions to a Big N auditor. It

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is important to mention that some of our sample firms switched to a Big N auditor after privatization. Specifically, among the 73 firms with non-Big N auditors before privatization, 10 firms upgraded to a high-quality auditor after privatization.

The results of the random-effects logit regression of a dummy variable equal to one (1) if a firm upgrades to a Big N auditor after privatization (AUDITOR SWITCH), on the change government ownership (Δ GOV), the change in foreign ownership (Δ FOR), a dummy variable that takes one (1) if a firm changes its board of directors composition after privatization in terms of the proportion of independent directors or CEO changes, and zero (0) otherwise (CHANG) and control variables are reported in Table 6.

TABLE 6

Additional Test: Impact of internal corporate mechanisms on auditor switching

	(1)	(2)	(3)	(4)
Intercept	-34.32***	-43.90***	-29.40	-48.77
	(-3.35)	(-3.51)	(-2.61)	(-2.46)
CHANG	2.94***			2.28**
	(3.07)			(2.03)
Δ GOV		-6.02***		-4.24**
		(-3.14)		(-2.02)
Δ FOR			5.02	3.70
			(1.53)	(0.90)
LGDP	2.45*	3.45**	1.68	3.94
	(1.85)	(2.17)	(1.53)	(1.64)
ΔLGDP	14.00***	17.04***	20.22***	17.69**
	(3.10)	(3.25)	(3.28)	(2.32)
INV	10.87***	7.91**	7.91**	10.92***
	(3.50)	(2.56)	(2.54)	(3.37)
ΔINV	-6.07	-5.99	-2.60	-6.43*
	(-1.58)	(-1.56)	(-0.63)	(-1.70)
FDI	0.14	0.05	0.00	0.11
	(0.97)	(0.39)	(0.03)	(0.63)
ΔFDI	-0.04	0.21	-0.02	0.25
	(-0.18)	(0.84)	(-0.10)	(0.31)
Industry effects	YES	YES	YES	YES
Chi-square for model	32.44	29.99	20.00	27.02
P-value	0.00	0.00	0.00	0.00
Percent Concordant (%)	77.78	74.60	79.37	79.37
Pseudo-R^2	10.92	13.37	15.20	23.86
N	63	63	63	63

Notes: This table reports the results of the logit analysis of the impact of the changes in internal corporate governance mechanisms following privatization on auditor switches. The full sample includes 83 firms privatized in 5 countries from the MENA region between 1987 and 2010. Where **AUDITOR SWITCH** is a dummy variable equal to one when firm *i* switches to a Big N auditor after privatization, and zero otherwise**;** Δ GOV is the change in the percentage of share in firm *i* held by the government, Δ **FOR** is the change in the percentage of share held in firm *i* by foreign investors, **CHANG** is a dummy variable that takes one if the firm *i* changes its board of directors in the post-privatization period and zero otherwise**, CONTROLS** is a set of firm- and country-specific control variables. The superscript asterisks ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively. Descriptions and data sources for the variables are outlined in Appendix A.

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In Model (1), we include CHANG along with the control variables. We find that CHANG loads positive and significant at the 1% level, suggesting that firms with better board composition following privatization results in a demand for a high-quality auditor. In Model (2), we include Δ GOV along with the control variables. We find that Δ GOV loads negative and significant at the 1% level, suggesting that firms that reduce their state ownership after privatization are more likely to appoint a big N auditor. In Model (3), we include Δ FOR along with the control variables. We find that the coefficient for Δ FOR is positive and significant, suggesting that firms in which foreign ownership increases after privatization are more likely to appoint a Big N auditor. To gauge the relative importance of board structure changes versus ownership structure changes in determining auditor switch, we include in Model (4) CHANG, Δ GOV, Δ FOR and the control variables. We find that CHANG continue to load positive and significant, suggesting that board structure changes remain important even after controlling for the changes in the ownership structure.

4.2.3. Effectiveness of Corporate Governance as a System

In what follows, we propose to extend our analysis of the impact of internal governance mechanisms on auditor choice by examining in this step the effect of governance as a system. We use a governance score instead of separately using internal governance variables. Specifically, we combine board characteristics and ownership structure into scores (SCORE_BOARD; SCORE_OWNERS), and interaction terms (SCORE_BOARD*SCORE_OWNERS) in the empirical model in line with Abbott et al. (2000) and Smaili and Labelle (2009), and examine whether corporate governance system may affect auditor choice decision. SCORE_BOARD is equal to three (3) when the percentage of outsiders is greater than 50%, the position of CEO is separated from the position of chairman of the board, and board size is between 9 and 15. SCORE_BOARD is equal to one (1) if the percentage of outsiders is lower than 50%, the CEO is also the chairman of the board, and board size is lower than 9. Finally, SCORE_BOARD is equal to two (2) in all other cases.

In addition, we develop an ownership structure score (SCORE_OWNERS). SCORE_OWNERS is equal to three (3) when the government relinquishes control after privatization (i.e., residual state ownership after privatization is lower than 50%) and foreign owners become a controlling shareholder after privatization (i.e., foreign ownership is greater than 10%). Score_OWNERS is equal to two (2) when the government maintains control after privatization (i.e., residual state ownership after privatization is greater than

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50%) and foreign owners are not controlling shareholders after privatization (i.e., foreign ownership is lower than 10%). Finally, this score is equal to (2) in all other cases.

We introduce also an interaction term (SCORE_BOARD*SCORE_OWNERS) in empirical model to examine the presumed synergy or interdependence between the board of directors and ownership structure and how its impact auditor choice decision.

To examine the joint effect of board structure and ownership structure on auditor choice, we estimate specifications of the following model:

$$\mathbf{BIGN_{it} = \alpha_0 + \beta_1 SCORE_BOARD_{it} + \beta_2 SCORE_OWNERS_{it} + \beta_3\ CONTROLS + \varepsilon_{it}} \quad (2)$$

The results are reported in Table 7. In Model (1), we include SCORE_BOARD, SCORE_OWNERS, and SCORE_BOARD*SCORE_OWNERS along with our control variables. We find that SCORE_BOARD is positive and significant at the 1% level, implying that firms with a higher governance score are more likely to appoint a Big N auditor. We also find that the coefficient for SCORE_OWNERS is positive and significant at the 1% level, implying that privatized firms are more likely to engage a Big N auditor when the government surrenders control and the stake held by foreign investor is greater than 10%, which supports the findings of previous research (Guedhami et al., 2009). Furthermore, we find that the coefficient for SCORE_BOARD* SCORE_OWNERS is negative and significant at the 1% level, consistent with H_6 and suggesting that the effectiveness of board director can substitute the effectiveness of ownership structure in choosing a high-quality auditor (Big N).

In Model (2), we include SCORE_BOARD, SCORE_OWNERS, SCORE_BOARD*SCORE_OWNERS and LAWORD along with our control variables. We find that SCORE_BOARD*LAWORD is negative and highly significant, suggesting that board structure and legal investor protection act as substitutes in determining auditor choice. Specifically, internal governance mechanisms are more effective in NPFs from countries with weak legal investor protection. We also still report a negative and significant coefficient at the 1% level, again consistent with H_6.

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TABLE 7

Effectiveness of corporate governance mechanisms as a system

	Prediction	*(1)*	*(2)*
Intercept	?	−127.83***	−471.45***
		(−6.06)	(−7.68)
SCORE_BOARD	+	12.10***	76.38***
		(2.78)	(3.79)
BOARD*LAWORD	?		−8.59**
			(−2.26)
SCORE_OWNERS	+	20.99***	66.12***
		(3.11)	(5.37)
SCORE_BOARD* SCORE_OWNERS	+/-	−6.96***	−21.87***
		(−2.61)	(−4.51)
SIZE	+	0.12	−0.84
		(0.54)	(−1.27)
LGDP	+	8.97***	33.21***
		(4.16)	(8.31)
LEV	-	0.94	0.80
		(1.07)	(0.41)
ROA	+	14.66*	6.51
		(1.69)	(0.39)
RISKOFEXP	+	0.16	0.62
		(0.57)	(1.02)
LAWORD	+	1.45	19.88**
		(1.38)	(2.28)
GROWTH	+	−0.27	−0.09
		(−0.17)	(0.02)
INV	+	−4.71	−21.10
		(−0.89)	(−2.03)
FDI	+	−0.44*	−0.99**
		(−2.71)	(−2.78)
Industry effects		*YES*	*YES*
Chi-square for model		63.15	226.12
P-value		0.00	0.00
Percent Concordant (%)		78.61	79.12
Pseudo-R^2		23.54	24.39
N		388	388

Notes: Panel A presents random effects logit estimation results obtained by regressing the quality of auditor on ownership structure, board directors and control variables. The full sample includes 83 firms privatized in 5 countries from the MENA region between 1987 and 2010. The results are reported for a period of 7 years i.e., from the 3 years before privatization, the privatization year, and the initial 3 years afterward. The *z*-statistic is shown below each estimate. The superscript asterisks ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels respectively. Descriptions and data sources for the variables are outlined in Appendix A.

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APPENDIX

Variables, Definitions, and Predicted sign

Type	Coding	Definition	Measure	Predicted signs
Dependent Variable				
	BIGN	Audit quality	Dummy variable equal to one for firms with Big Four auditors	
Independent Variables				
H1	**BS**	Board size	The number of members in the board	+/-
H2	**OUTS**	Outside directors	the proportion of outside directors in the board	+/-
H3	**DUAL**	Duality	dummy variable equal to one if the chief executive officer and the chairman of the board are the same person and zero otherwise	+/-
H4	**GOV**	Government ownership	The percentage of shares held by the government	-
H5	**FOR**	Foreign ownership	The percentage of shares held by the foreign investors	+
H6	**SCORE_BOARD**	Effectiveness of board structure	This score takes the value of: (3), when the percentage of outsiders is greater than 50%; when the position of CEO is separated from the position of chairman of the board; and when board size is between 9 and 15. (1), if the percentage of outsiders is lower than 50%; if the CEO is also the chairman of the board; and if the board size is lower than 9. (2) in all other cases.	+
	SCORE_OWNERS	Effectiveness of ownership structure	This score takes the value of: (3), when the residual state ownership stake following privatization is lower than 50%; and the share of capital held by foreign shareholders is greater than 50%. (1), if the residual state ownership stake following privatization is greater than 50%; and the share held by foreign shareholders is lower than 50%. (2) in all other cases.	+
Control Variables				
	SIZE	Firm size	Natural logarithm of total sales	+
	LEV	Leverage	Long-term debt/ Total assets	-
	INV	Inventories	inventories/Total Assets	+
	ROA	Return on assets	Net income/ Total Assets	+
	GROWTH	Growth sales	Sales growth in the past year	+
	LGGDP	Gross Domestic Product	The natural logarithm of the country's GDP per capita	+
	FDI	Foreign direct investment	FDI/GDP	+
	LAWORD	The law and order in the country.	The ICRG assessment of both the strength and impartiality of the legal system (law component) and popular observance of the law (order component). Scale from 0 to 6, with higher scores indicating sound political institutions and a strong court system.	-
	RISKOFEXP	Risk of expropriation	Assessment of the "risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down" due to "budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities." This variable is recoded to vary between 0 to 10 with higher scores indicating greater risk of expropriation.	+

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