

BOARD STRUCTURE AND THE INFORMATIVENESS OF RISK DISCLOSURE:

EVIDENCE FROM MENA EMERGING MARKETS

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ABSTRACT

We examine whether board characteristics affect firms' decision to voluntarily disclose informative information about their risk profiles. We base our study on data from 320 listed firms in nine MENA emerging markets (789 observations) over the period from 2007 to 2009. Our study offers significant contributions to the growing risk disclosure literature. It provides new empirical evidence that information driven by some board characteristics affects the perceived relevance of narrative risk information. Our findings suggest that the composition of the board and its size enhance the informativeness of risk disclosure as it allows investors to better predict future earnings growth. A further finding is that a CEO/Chairperson duality does not impact the way investors trust risk disclosures.

INTRODUCTION

A significant body of research suggests that effective governance structure significantly influences disclosure quality and leads to greater corporate transparency (Dechow et al., 1996; Shleifer and Vishny, 1997 and Beekes and Brown, 2006). The link between governance mechanisms and the quality of accounting information is based on the view that corporate governance influences the reliability of firm disclosure through its influence over management activities, their opportunistic behavior and the integrity of the financial reporting process (Watts and Zimmerman, 1986). Actually, the separation of ownership and control leads to agency conflicts between corporate managers and shareholders (Jensen and Meckling, 1976). Insiders and controlling shareholders- better informed about corporate opportunities and uncertainties- have greater incentives to expropriate wealth from minority investors and to withhold private information from outsiders (Shleifer and Vishny, 1997). Such an opportunistic behavior should be reduced when corporate governance becomes more effective. Effective governance policies should alleviate the moral hazard (hidden action) and the adverse selection (hidden information) problems resulting from a severe information gap between managers, shareholders and potential investors (Bushman et al., 2004). It is established indeed, that implemented governance policies and the amount of information disclosed are at the board's discretion. A greater accountability and a rich information environment are as such, at the heart of better structured boards. This information might be useful for investors seeking to reduce the information uncertainty by enabling them to anticipate corporate prospects. It should also build a trustworthy relationship between a company and the business community (e.g. financial analysts, creditors...), help investors in making informed investment decisions and improve the market liquidity by reducing the cost of capital. Nevertheless, in the absence of strong boards' monitoring on managerial behavior, managers could mislead outsiders by providing accounting information which does not portray the true underlying risks and rewards of the business. Accordingly, the 'informativeness' of corporate disclosures and their ultimate effect on share prices

may differ considerably depending on the effectiveness of internal governance mechanisms and on the ways the information is prepared, conveyed and used (Hossain and Reaz, 2007).

Recent trends in the accounting literature examined how corporate governance characteristics influence firms' decision to reveal sensitive information such as risk disclosure in both high and low regulated environments. Studies like Abdallah et al, (2015), Abraham and Cox, (2007), Allini et al., (2016), Elshandidy and Neri, (2015) and Lajili, (2009) suggest in particular, that it is the well-structured board of directors (size, composition, diversity...) itself that could outweigh the entrenchment incentives of the manager and constrains him to adopt the best risk disclosure policy. Such evidence remains, though, limited on how board structure influences the extent of risk disclosure and little is known about how it might influence investors' reliance on risk information. Recent studies on the usefulness of risk disclosure indicate indeed that investors tend to impound such information into their pricing decision. Such practice affects either their risk perceptions (e.g. Bao and Datta, 2014; Kravet and Muslu, 2013) or improves the market liquidity and reduces the information asymmetry (e.g. Miihkinen, 2013 and Campbell et al., 2014). This should result in an accurate assessment of the firm's future performance.

Despite the growing literature, little attention has been paid to distinguish mandatory from voluntary risk disclosure in either observing how effective governance influences the amount of risk disclosure or in how risk reporting of well governed firms impacts on market indicators (Elshandidy and Neri, 2015). It is theorized indeed, that these two forms of disclosure have different incentives and distinct observed usefulness (Jorgensen and Kirschenheiter, 2012). Moumen et al (2015) is a notable exception. They show that voluntary risk disclosure helps investors impound future earnings news into stock returns, yet such informativeness is moderated by the presence of proprietary costs. Accordingly, albeit the distinct facets of the relationship between corporate governance and risk disclosure policy that can be and indeed have been investigated, we focus on an area that has not been fully researched so far. We investigate whether and if so, how the monitoring function of the

board of directors impacts the credibility of the firms' risk disclosure, causing more/less voluntary risk information to be impounded into stock prices. In particular, we examine how board size, board composition in non-executive directors and duality of leadership (CEO/Chairman) position interact with voluntary risk disclosure to influence investors' ability to anticipate future earnings growth. We refer to voluntary risk information as any information about risk that appears in the narrative sections of annual reports other than those required by the international financial reporting standards (IFRS).

Building on prior market based accounting literature (Lundholm and Myers, 2002; Athanasakou and Hussainey, 2014; Moumen et al, 2015; and Muslu et al., 2014) we define risk disclosure informativeness as the extent to which risk reporting reduces market uncertainty about corporate business and conveys information about its future prospects to outside investors. Informative risk disclosure should, consequently, help investors form better expectations about future earnings and impound more firm-specific information into share prices.

Our study contributes then to the recent literature on risk disclosure by providing insights into the potential benefits of the voluntary risk reporting practice of well governed firms to market participants. On the one hand, while corporate governance is a considerably researched topic in the accounting literature, its impact (Cohen et al., 2004) on the informativeness of accounting information in general and risk disclosure in particular remains as far as we know under scrutinized. Wang and Hussainey (2013), in a closely related study, show that governance-driven voluntary disclosures of forward-looking statements enhance the share price informativeness about future earnings. Yet several important questions remain unanswered. Specifically, we still have no knowledge of which firm-specific governance mechanisms matter for risk disclosure informativeness. Unlike Wang and Hussainey (2013), we believe that not all aspects of monitoring mechanisms may enhance informed trading by ensuring the production of informative risk disclosure. Moreover, considering a single country context (UK) does not confirm the robustness of

the evidence not only across multiple developed markets but also among emerging markets. Yu (2011) argues that the impact of firm-specific governance on gathering and trading private information can vary with the degree of investors' protection offered by country-level governance. Elshandidy et al. (2014) suggest also that international differences in voluntary risk reporting practices depend on the country's legal system and its cultural values. On the other hand, recent studies address risk reporting in developed countries with established risk reporting legislations and little is known about developing countries, such as Middle Eastern and North African (henceforth called MENA) emerging economies. In such context, risk reporting regulation is still limited to the financial risk factor and thus most risk disclosure is provided on a voluntary basis. Moumen et al (2015) call besides, for more evidence on the informational properties of risk disclosure in MENA emerging markets. A contradiction between the newly introduced governance policies and the prevalent accounting values (secrecy and conservatism) within the region is quite obvious.

So far, despite their growing importance, stock markets in the MENA region have been widely ignored by international investors and academic research until the early 2000s (Bley, 2011). This is mainly due to imposed restrictions on foreign stock ownership, the lack of common accounting standards and the limited corporate governance and transparency. Furthermore, unlike developed capital markets (e.g. NYSE, LSE, TSE), MENA emerging markets are characterized by heterogeneous size, trading activity and informational efficiency, which are basically caused by market depth and corporate governance factors (Ben Othman and Zeghal, 2010). Our study provides interesting evidence which is inconsistent with the observation that stock prices fail to reflect all available information due to some market imperfections. We show that risk information associated

with good board characteristics (large size and high proportion of non-executive directors) enhance the market's ability to anticipate future earnings growth.

BACKGROUND

The Middle East and North Africa (MENA) region has many elements- be they legal, economic, financial or cultural- that offer a favorable context for an analysis linking corporate disclosure quality to their evolving governance characteristics. MENA countries follow a mixed legal system, where the body of law is a combination of several legal traditions, including the Islamic Sharia, French civil law and English common law. As former British and French colonies (except for Turkey), they inherited their business milieu and accounting values from mother legal countries. Major institutions regarding financial markets, investors' protection and the accounting systems were therefore established following the Western models, although some specific features make them an interesting fieldwork (Turk Ariss, 2009). Actually, the cultural context in MENA countries is characterized by a preference for secrecy and uncertainty avoidance, which is encouraged by a weak regulation, deficient law enforcement and the absence of non-compliance costs (Al-Akra et al., 2009; Al-Omari, 2010; Samaha and Dahawy, 2011).

The prevalent accounting system is rather leaning towards statutory control, uniformity, conservatism and secrecy whereby corporate disclosure and the average of investors' protection are lower than common law countries (Ben Othman and Zeghal, 2008).

In recent decades, most MENA countries experienced financial restructuring initiatives that aimed to develop their stock exchanges and to comply with international recommendations on matters such as investment regulation and governance codes of best practices. This dynamism was steered by a desire to foster the economic diversification in the region. The development of private sector activities and the improvement of economic freedom and property rights were a priority for policymakers. On the one hand, the exploitation of abundant oil resources in Gulf Cooperation Council (GCC) countries created new opportunities for investment and for raising savings (Baydoun

et al, 2013). As a result, a significant flow of funds into the financial sector led to calls for raising standards of corporate accountability and for governance reforms, which slowly gained traction on the political agenda (Koldertsova, 2011). On the other hand, countries with scarce petrochemical resources engaged in financial reforms to attract foreign investment and to raise considerable funds for large scale infrastructure projects. Consequently, policymakers were prompted to rebuild their capital markets' institutional and legal frameworks. This was expected to promote efficient governance codes, improve investors' protection and enact new financial disclosure requirements that converge with international standards (McNally, 2011).

In spite of this common economic reform trajectory, the MENA region stock markets have achieved differing degrees of development. Turkey, Israel, UAE, and Egypt are perceived as fast emerging markets and in some respect moving closer to the standards of developed countries. Kuwait, Lebanon, Tunisia, and Morocco are still considered as frontier markets (Rejichi et al, 2014). Market capitalization in the Middle East and North Africa (MENA) countries rose from 244\$ billion in 2002 to more than \$1,153\$ billion in 2012 which represents 40.36 % of MENA's GDP and about 2.17% of world market capitalization (World Development Indicators, WDI 2012). By the end of 2012, Jordan and Qatar show the most important markets capitalization in the MENA region with approximately 87.3 % of GDP and 66.5 % of GDP while the United Arab of Emirates (UAE) stock market seems to be the least developed (18.25% of GDP).

Saudi Arabia and Turkey security markets, followed by the Israeli market, have conversely the highest market trading value while the Tunisian market is among the smallest for most performance indicators, including market capitalization (19.64 % of GDP), and market trading value (2.76 % of GDP). Measured by the number of listed companies, Israel's (532), Turkey's (405) and Jordan's

(243) markets have the highest number of listed firms in the region while Qatar and Bahrain have the smallest with respectively 42 and 43 listed companies.

We provide further details about market capitalization, market trading values, the number of listed firm for MENA emerging markets in Table 1.

Insert Table 1 About Here

Considering the notable development of MENA stock exchanges, there were a growing focus on better implementation of laws and regulations. Governments and private sector participants have been striving to improve governance standards and much has been achieved in a relatively short time period. So far, most MENA countries issued governance codes for listed companies and the issues now relate to implementation of those codes, particularly in the areas of disclosure, risk management and board practices. Recall that the 2006 financial crash in the region was particularly linked to capital market uncertainty and the inadequacy of information held by a plethora of investors in relation to their investments. Therefore, regional authorities devoted considerable efforts to enhance the financial literacy of investors and to improve the information flow to the investing public (McNally, 2011). Corporate governance reform in MENA can't be seen then as investor driven since much of the burden of ensuring proper implementation falls on the regional regulators. The incurred benefits have been indeed seen by listed firms in terms of better strategic decision making and voluntary regulatory compliance rather than being associated with an access to lower cost of capital. It follows that while all governance codes should have been benchmarked against international best practices, they have been customized to work in the local environment.¹ MENA companies are still characterized by a high ownership concentration (mainly family or state-owned) and a limited protection of minority shareholders. There is also no call for separating the

chair of the board and the chief executive officer (CEO) positions which is likely to impede the board independence (Turki and Ben Sedrine, 2012).

Accordingly, the differences in ownership structures, the regulatory frameworks, and the nature of agency issues within MENA emerging markets compared to developed ones present an interesting fieldwork for evaluating the empirical outcomes of such reforms on risk disclosure policy of better governed firms.

RELEVANT LITERATURE REVIEW

Risk disclosure literature emerged in the last decade as a response to corporate's move towards extensive non-financial and forward-looking disclosures. The trend of dissatisfaction with the shortcomings of historical financial information and the new disclosure standards on business exposures triggered interests in risk reporting attributes, incentives and their informativeness. Unfortunately, the evidence on how informative this practice has been is mixed, though researchers addressed the usefulness of risk disclosures through mainly the lenses of investors' risk perception. Early evidence like Schrand, (1997) and Rajgopal, (1999) focused narrowly on quantitative disclosures on matters such as market risks and found that such practice is associated with lower stock price sensitivity and trading volume. Conversely, recent studies such as Kothari et al. (2009), Kravet and Muslu, (2013) and Campbell et al, (2014) showed that qualitative risk information (including market risk) is associated with higher stock return volatility and trading volume, increased dispersion of earnings forecasts and lower bid-ask spreads following the filing date. These conflicting results impede a firm conclusion about risk disclosure informativeness. They suggest a revival of interest in the topic, especially when most of these evidences are based on mandated risk factors in the US context. Additionally, it is unclear how incrementally useful were these risk measures to investors, particularly in a rich information environment where equivalent information may be available to the market from sources other than financial statements or MD&A sections. Furthermore, as we are aware of recent debate (Ashbaugh-Skaife et al. 2006; Hou et al. 2006) on

whether firm-specific return variation measures noise trading or information trading, one should be cautious when interpreting and relying on these findings. Accordingly, to avoid potential distortion to our conclusions due to such empirical choices and following Athanasakou and Hussainey, (2014) and Muslu et al., (2014) we rely on the future earnings response coefficients in assessing the informational properties of risk disclosure of well-governed firms. Recall that such proxy is a widely-used measure of how much accounting information reveals news about future earnings that investors impound into stock prices (Yu, 2011).

The literature on how corporate governance (CG) mechanisms shape the informativeness of risk disclosure is, as far as we know, scarce despite the growing studies -mostly in developed countries- suggesting that corporate governance and risk disclosure are interrelated (Abraham and Cox, 2007; Elzahar and Hussainey, 2012; Lajili, 2009; Ntim et al., 2013; Oliveira et al., 2011). This considerably limits our understanding of how CG mechanisms might promote or impede the informational properties of risk reporting. Moreover, although academic interest in risk disclosure has substantially evolved recently, a comprehensive theoretical framework for examining corporate incentives for engaging in it and assessing its usefulness is yet to emerge (Ntim et al, 2013, Rajab and Handley Schachler, 2009). Following the theoretical work of Grossman and Stiglitz (1980), we suggest that better CG mechanisms enhance the cost–benefit trade-off for information-based trading and thus promote the efficient incorporation of risk information into stock prices. This is based on the belief that an effective corporate governance system ensures better stewardship of companies. This should lead to the provision of credible risk information and reduce investors’ uncertainty about future earnings. However, not all aspects of corporate governance mechanisms may matter for informed trading and accordingly improve investors’ reliance on risk disclosure. It follows that several hypotheses are developed based on the agency theory to identify and link specific elements of governance to risk disclosure informativeness. Past studies (Abraham and Cox, 2007; Allini et al, 2016; Barakat and Hussainey, 2013; Elshandidy et al, 2013; Elzahar and Hussainey, 2012; Lajili,

2009) identified some governance attributes that can affect corporate risk disclosure. This study draws from this, the corporate governance (Beekes and Brown, 2006; Habib, 2008; Bozec and Bozec, 2012), the voluntary disclosure (Eng and Mak, 2003; Gul and Leung, 2004; Cheng and Courtenay, 2006) and the share price informativeness (Ferreira et al, 2011; Yu, 2011) literature, to investigate how informative are risk disclosures made by better governed firms in the MENA emerging markets. Distinct from most prior studies, we explore how firm-level CG quality in the form of board characteristics (i.e. Board size, non-executive directors, and board leadership structure) influences the amount of future earnings news impounded into stock prices.

RESEARCH HYPOTHESES

Board Size

Corporate governance literature links the effectiveness of boards' monitoring role to their size. On the one hand, it is argued that a small board lacks sufficient expertise and may suffer from chief executive officer (CEO) dominance. This impairs the board's ability to meet corporate governance responsibilities and involves high agency costs (Bassett et al. 2007).

On the other hand, the agency theory and the resource dependence theory suggest that large boards enjoy wide expertise and more diversified knowledge which results in more effective monitoring role. It should also motivate managers to maximize firm value instead of pursuing personal objectives, especially in corporations with a higher ownership concentration, and where insider shareholders are well represented on the boards (Linsley et al., 2006). It follows that an effective managerial monitoring by large and experimented boards can ensure reliable and regular information made available to the public, including risk information and performance (Bozec and Bozec, 2012). In particular, those with financial and accounting backgrounds, should be more motivated to screen their efforts in risk management and to signal this information to shareholders (Elzahar and Hussainey, 2012). The empirical evidence on the association between board size and risk disclosure is inconclusive. Some studies (Elzahar and Hussainey, 2012) find

no relationship between board size and risk reporting while others find a positive association (Elshandidy and Neri, 2015; Elshandidy et al, 2013; Mokhtar and Mellett, 2013; Ntim et al., 2013). This reflects the increase of board members' awareness regarding their duties to enhance corporate disclosure. Large board size is likely to increase the diversity of the members' expertise and guarantees a high level of compliance with the accountability paradigm. Based on these arguments and congruent with the agency theory, we formulate the following hypothesis:

H1: The informativeness of voluntary risk disclosure with respect to future earnings is stronger for firms with a large board size.

Board Composition

Board composition is also emphasized as an important corporate governance mechanism in the accounting literature. Abraham and Cox (2007) argue that the board of directors includes a mix of inside and outside directors with variant tendencies toward disclosure. On the one hand, inside directors are full time corporate employees and occupy an executive position within the firm. They lack sufficient incentives regarding enhanced corporate disclosure because of their stewardship within the firm and their behavior may be open to more scrutiny (Abraham and Cox, 2007). On the other hand, outside non-executive directors are expected to provide independent advice to executive directors. They are believed to play a crucial role in monitoring managers' performance and limiting their opportunism which may lead to reduced agency conflicts between managers and owners (e.g., Fama, 1980; Fama and Jensen, 1983).

Because they aim to signal their competence to other potential employers and to maintain their reputational capital, non-executive directors are expected to be more effective in fulfilling shareholders' preference for accountability and transparency. Therefore more relevant disclosure is expected if they are actually carrying out their greater control and monitoring of managerial decisions. Their dominance would provide more power to force managers to disclose more private information (Eng and Mak, 2003). Empirically, the association between board composition and

disclosure is controversial. Some studies find a positive association between independent directors in the board and the level or the quality of corporate voluntary disclosure (Boesso and Kumar, 2007; Chen and Jaggi, 2000; Forker, 1992; Gul and Leung, 2004; Cheng and Courtenay, 2006; Samaha et al. 2015; Wang and Hussainey, 2013) while others end to an insignificant relationship between the two variables (Deumes and Knechel, 2008; Ho and Wong, 2001). Focusing on risk reporting, Abraham and Cox (2007) show that despite the benefits (knowledge, specific expertise...) dependent non-executive directors may bring to the firm, they do not promote risk disclosure. Conversely, independent directors are important in making risk information publicly known to investors. Elshandidy et al. (2013), Lajili, (2009), Ntim et al, (2013) and Oliveira et al, (2011) corroborate this evidence while Allini et al (2016) and Elzahar and Hussainey (2012) did not confirm such association.

Based on the above arguments and consistent with the agency theory, we postulate that:

H2: The informativeness of voluntary risk disclosure with respect to future earnings is stronger for firms with high proportion of non-executive directors.

CEO/Chairman Duality

Board leadership structure is also considered as an important corporate governance mechanism. The CEO/Chairman duality occurs if the chief executive officer (CEO) holds the chairman position of the board at the same time resulting in a unitary leadership structure. According to the agency theory, concentration of decision-making power due to the unitary leadership structure can significantly reduce the monitoring function of the board. Fama and Jensen (1983) suggest that this combination of positions signals the absence of separation of decision management and decision control may erode board independence and facilitate managers' opportunistic behavior. Therefore,

it is posited that for the board to be effective, it is important to separate the CEO and chairman positions.

Forker (1992) suggests that duality may be detrimental to the quality of disclosure. Actually, the dominant personalities may resist some governance and control mechanisms such as audit committee and non-executive directors, which may place pressure on the board and impair their governance role regarding disclosure policies. Ho and Wong, (2001) believe that separating the CEO and the board chairman position should support transparency and adequate corporate disclosure by deterring managers from withholding unfavorable information. Empirical studies provide mixed results. Some studies report a negative association between role duality and corporate voluntary disclosure (Forker, 1992; Gul and Leung, 2004; Khelif et al., 2014; Wang and Hussainey, 2013). Other studies find an insignificant association between CEO duality and the extent of informative voluntary disclosure (Cheng and Courtenay, 2006; Ho and Wong, 2001; Sarikhani and Ebrahimi, 2011). Within the risk disclosure literature, most recent studies (Elzahar and Hussainey, 2012; Elshandidy et al, 2013; Mokhtar and Mellet, 2013; Ntim et al, 2013) find no significant relationship between role duality and voluntary risk reporting.

Based on the arguments above and consistent with the agency theory, we formulate our last hypothesis as follows:

H3: The informativeness of voluntary risk disclosure with respect to future earnings is weaker for firms with CEO/Chairman duality.

METHODOLOGY

Sample Selection and Data Collection

This paper examines the extent to which the informativeness of voluntary risk disclosure differs between strongly and weakly monitored firms for a sample of companies listed in a number of Middle Eastern and North African (MENA) emerging markets. As far as we know, the countries studied have not been examined extensively, despite the growing importance of the region with

respect to commerce and foreign direct investment. MENA stock markets are good examples of newly emerging capital markets of significant interest to world investors and policymakers, after the massive privatization and adjustment plans introduced in the region. These markets have recently come under scrutiny of international organizations such as World Bank, International Monetary fund and Standard & Poor's which played a vital role in stimulating investment.

Transparency is not particularly part of the culture in the region. However, companies are improving their disclosure practices in response to pressures from the regulators. International financial reporting standards (IFRS) are in fact required in Bahrain, Kuwait, Oman, Qatar, and UAE. Other MENA countries such as Tunisia, Morocco, Saudi Arabia, Israel are converging to IFRS (Pacter report, 2014) to attract international investors and to enhance corporate disclosure.

The original sample covered twelve MENA emerging markets, however, we applied some filtering rules to ensure data availability and sample homogeneity.² Mainly, we dropped Israel from our initial sample because in this country firms are dually listed and provide annual reports in conformity with the SEC requirements (10-K form).³ Bahrain and Qatar were also dropped because their capital markets include mostly financial and investment corporations and due to severe issues of data availability. Our final sample comprises companies from nine MENA countries, including Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia, Tunisia, Turkey and UAE that are periodically listed from 2007 to 2012 in their stock exchanges. The choice of this period of analysis is triggered by the steady growth in GDP per capita in the region during these recent years as well as the dynamism in their stock markets with a considerable increase in market capitalization and total value traded.

The firms included in our sample, had to satisfy three conditions: First, it had to belong to a non-financial sector. Financial firms such as banks, insurance firms and investment firms were excluded because their reports are not comparable to those of non-financial firms. Second, this study focuses on annual reports and no other media of financial communications such as interim reports.

Third, the non-financial firm, had to have at least one annual report, from 2007-2009. We chose 2009 as the end year for the study because the level of corporate risk disclosure is linked to share price anticipation of earnings and accounting and return data are required for at least three years ahead (Year 2012). The initial number of available annual reports varies from year to year. For example, the total number of firms in 2007 is 328. This number increases in 2008 to 335 firms. Then it is reduced to 327 firms in 2009. See Table 2 for the sample composition by country.

Insert Table 2 About Here

We matched the selected companies with the Thomson one database codes from which we gathered financial information such as stock prices, earnings per share and assets growth. Some firms have no Thomson one code. Thus, they have no accounting and return data. These firms were excluded from the selected sample. In the second stage we collected governance variables with respect to board characteristics from Thomson one database as well as corporate annual reports and we dropped other firms from our sample because of some missing information. Before we perform the regression analysis, outliers are censored to avoid any undue influence of extreme observations. Outliers are defined in this study as the top and bottom 1% of observations for the distribution of any of the regression variables. After these series of sample-filtering steps the sample is reduced from 990 to 789 observations. The resulting panel includes 320 companies. The average number of annual reports per company is about 2.5.

Research Design

Measuring Voluntary Risk Disclosure

Accounting literature relied on the content analysis method as a main approach to measure the extent of corporate risk disclosure (e.g., Abraham and Cox, 2007; Amran et al. 2009; Beretta and Bozzolan, 2004; Dobler et al, 2011; Linsley and Shrivs, 2006; Elzahar and Hussainey, 2012). The coding method can be computer-aided (Allini et al, 2016; Elshandidy et al, 2013; Kothari et al., 2009; Kravet and Muslu, 2013) or human coded (Abraham and Cox, 2007; Beretta & Bozzolan,

2004; Elzahar and Hussainey, 2012; Linsley and Shrides, 2006; Moumen et al, 2015). Either method may employ the word, sentence or lines as the unit of analysis. Alini et al, (2016), Elzahar and Hussainey, (2012), Elshandidy et al, (2013) and Muslu et al. (2013) use the sentence as the unit of analysis.

Others (Deumes and Knechel, 2008; Dobler et al, 2011; Miihkinen, 2012) refer to disclosure indices and the number of items to assess the level of risk disclosure.

Our study adopts the manual method and uses the sentence as the text unit but may be distinguished from the previous research in many respects. First, we opt for the manual approach to ensure a better judgment of words and phrases meaning within a context, especially as we deal with data in different languages.⁴ Second, we measure the level of voluntary risk disclosures as opposed to bad or good news (Kothari et al., 2009) or forward-looking information (Muslu et al., 2013). Third, as in Kothari et al. (2009), we count the number of risk related sentences in all the narrative sections of annual report rather than restricting the search to one specific section (e.g., Management and Discussion Analysis (MD&A): Muslu et al., 2013) or to a different vehicle of financial information (e.g. Interim reports: Elzahar and Hussainey, 2012) . The following sub-sections discuss the steps involved.

Manual Content Analysis Steps

Following Linsley and Shrides (2006), we adopt a broad definition of risk to capture any risk-related sentence in corporate annual reports. We code risk disclosures every sentence that informs the reader about “any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted or may impact upon the company, as well as the management of any such opportunity, prospect, hazard, harm, threat, or exposure”. We consider, therefore, risk disclosures any information provided in annual reports that outlines the firms' risks and opportunities and their expected economic impact on future performance. It encompasses forward-looking information,

information that explains the source of uncertainty surrounding the firm's future outcomes and historical and forward-looking information about the management of such risks.

Since categorical and thematic distinctions are required in content analysis approach, we refer furthermore, to Linsley and Shrivs (2006) grid as a coding instrument. We retain five categories of risk information and we drop the financial risk category. Most MENA emerging markets adopted the international financial reporting standards (IFRS) and are providing the mandatory information about their market risk (Currency, liquidity and credit risks).

The disclosure index (Appendix A) reflects five categories of voluntary risk information whereby 32 items were identified.

Consistent with Linsley and Shrivs (2006) and Elzahar and Hussainey (2012), we had to adhere to some decision rules. First, because the definition of risk is broad, disclosures had to be explicitly mentioned and not merely implied. Moreover, we coded risk disclosure sentence any disclosure that is repeated each time it is discussed. Any sentence with more than one possible classification was classified into the category most emphasized within the sentence. We then generated an aggregated score for risk disclosure for each firm by counting the number of risk-related sentences in corporate annual reports.

Reliability of Risk Disclosure Scores

We check the reliability and validity of the risk disclosure scores in two stages. To ensure reproducibility, we used one single coder to perform content analysis. Then, to increase confidence that the interpretation of a written document corresponds to objective reality, we used an experienced researcher familiar with the technique of content analysis to code, independently, a sub sample of 5 firms. The sub samples were selected randomly from the yearly pool of observations from 2007 to 2009 for a total of 15 observations. Before we began the study, we discussed risk disclosure and research objective with the coder to familiarize him with relevant literature. Additionally, we provided the coder with a set of rules to replicate the pretest coding and in the

process; we clarified and refined the rules as needed. As the coder and the researcher independently coded the initial sample, we used tests of inter rater reliability to check for consistency in coding, a proxy for accuracy. Consistent with Krippendorff (2010), we relied on Krippendorff's alpha test, which is considered to be the most appropriate test of inter rater reliability. The test generated a Kalpha of 0.889, a satisfactory level of inter-rater reliability for this intra-class agreement coefficient. It is customary to require Kalpha= 0.80 as the cut off point for a good reliability test, with a minimum of 0.67.

Regression Model Specification

We follow the recent trend in the accounting literature (e.g. Athanasakou and Hussainey, 2014; Lundholm and Myers, 2002; Moumen et al, 2015; Muslu et al., 2014) to assess the effect of corporate governance on risk disclosure informativeness. We refer to Collins et al. (1994) regression model (FERC) to assess the amount of revealed future earnings news impounded into current stock returns.

Collins et al (1994) applied the following specification:

$$R_t = b_0 + b_1X_t + \sum_{k=1}^N b_{k+1}X_{t+k} + \sum_{k=1}^N b_{k+N+1}R_{t+k} + b_{2N+2}EP_{t-1} + b_{2N+3}AG_t \quad (1)$$

where: R_t : stock return for year t,

$R_{t+1}, R_{t+2}, R_{t+3}$: stock returns for year t+1, t+2, t+3 respectively,

$X_t, X_{t+1}, X_{t+2}, X_{t+3}$: are defined as the earnings change for year t, t+1, t+2, and t+3 respectively,

AG_t : is the growth rate of the total book value of assets for period t,

EP_{t-1} : is the period t-1's earnings over price at the start of period t.

Consistent with Lundholm and Myers (2002) we interact all right-hand side variables in Collins et al (1994) regression model with risk disclosure (RD) variable and all corporate governance variables (Gov_i) each one a part so that we detect the simultaneous effect of these

explanatory variables on the association between stock return and future earnings. Using three-way interaction terms will help us assess the effect of CG mechanisms on the information properties of risk disclosure in a single step. This is because estimating FERC model in non US countries is challenging since in smaller capital markets, the number of firms within each industry might be

insufficient to run the FERC regression analysis in 2 steps (Yu, 2011). This yields to the following regression model:

$$\begin{aligned}
 R_t = & b_0 + b_1 X_t + \sum_{k=1}^3 b_{k+1} X_{t+k} + \sum_{k=1}^3 b_{k+4} R_{t+k} + b_8 EP_{t-1} + b_9 AG_t + b_{10} RD_{i,t} + b_{11} [RD_{i,t} * X_t] + \\
 & \sum_{k=1}^3 b_{k+11} [RD_{i,t} * X_{t+k}] + \sum_{k=1}^3 b_{k+14} [RD_{i,t} * R_{t+k}] + b_{18} [RD_{i,t} * EP_{t-1}] + b_{19} [RD_{i,t} * AG_t] + \\
 & b_{20} Gov_i + b_{21} [Gov_i * X_t] + \sum_{k=1}^3 b_{k+21} [Gov_i * X_{t+k}] + \sum_{k=1}^3 b_{k+24} [Gov_i * R_{t+k}] + b_{28} [Gov_i * EP_{t-1}] + \\
 & b_{29} [Gov_i * AG_t] + b_{30} [Gov_i * RD_{i,t} * X_t] + \sum_{k=1}^3 b_{k+30} [Gov_i * RD_{i,t} * X_{t+k}] + \\
 & \sum_{k=1}^3 b_{k+33} [Gov_i * RD_{i,t} * R_{t+k}] + b_{37} [Gov_i * RD_{i,t} * EP_{t-1}] + b_{38} [Gov_i * RD_{i,t} * AG_t] + e. \quad (2)
 \end{aligned}$$

where: R_t = stock return for year t is the buy-and-hold returns from six months before the financial year-end to six months after the financial year-end,

X_t = earnings change per share deflated by the share price at the start of the return window for period t,

$X_{t+1}, X_{t+2}, X_{t+3}$ = the earnings change per share for year t+1, t+2, t+3 respectively deflated by the price at the start of the return window for period t,

$R_{t+1}, R_{t+2}, R_{t+3}$ = stock return for year t+1, t+2, t+3 are calculated as buy-and-hold returns for the 12-month period,

AG_t = the growth rate of total book value of assets for period t,

EP_{t-1} = period t-1's earnings over price six months after the financial year-end of period t-1,

RD = risk disclosure defined as the natural logarithm of the number of risk-related sentences, respectively, for operation risk, empowerment risk, information processing and technology risk, integrity risk and strategic risk,

Gov_i = corporate governance vector including:

- Board size variable (BS) = the number of directors sitting on the board at the end of each year. This measure is consistent with Abdel-Fattah et al. (2008) and Elzahar and Hussainey (2012).
- Board composition (NED) = the proportion of non-executive directors relative to the Board size consistent with Abraham and Cox (2007); Elshandidy et al (2013); and Elzahar and Hussainey (2012).
- The CEO/Chairman role duality (Dual) = a dummy variable that we defined as 1 if CEO is the Chairman and 0 otherwise.

The controlling variables include the following:

- Financial leverage = the book value of equity scaled by total liabilities (consistent with Elshandidy et al (2013),
- Firm size = the natural logarithm of corporate net sales (turnover) congruent with Abraham and Cox (2007) and Linsley and Shrivs (2006),
- Profitability = the natural logarithm of the return on equity (ROE) which is defined as the [Net profit after tax/Shareholders funds] *100% in accordance with Elshandidy et al (2013) and Elzahar and Hussainey (2012),
- Industry sector = a dummy variable defined as 1 if the firm is classified into one of the nine broadly defined industry sectors and 0 otherwise.

DESCRIPTIVE STATISTICS

We provide in Table 3 summary statistics for our samples with observations coming from the year 2007 to 2009. The mean current return ranges between 2.9 and 3 percent. The mean current earnings per share change varies between 0.5 and 0.9 percent of the price. The aggregated mean of future earnings change is respectively 0.23 and 0.5 percent of the price for the three period ahead t+1, t+2 and t+3. These statistics suggest a decline in future performance in t+1, t+2 and t+3 compared to the performance of the current period. We find also a lower mean future return with

respect to $t+1$ periods compared to current return. There is a reverse and an increase in the mean stock returns for period $t+2$ and $t+3$ (compared to $t+1$) which indicate changes in corporate performance over the sample time period. As additionally reported in Table 3, the mean of corporate asset growth rate extends from 12.2 to 12.7 percent and the standard deviation is about 0.17 suggesting that there is little variation in the asset growth rate among our sample firms. The level of risk disclosure is on average 27 sentences and the standard deviation is on average 21.3 reflecting a fairly low disclosure score over our period of analysis as well as considerable dispersion among our sample firms. With respect to board characteristics, board size (BS) ranges from 2 members of directors to 23 members of directors with a mean of 8.20 and a standard deviation of 2.42. Board composition in non-executive (outside) directors ranges from 0 to 100 percent with an average of 68.10 percent. This refers to a relatively good level of board independence in listed MENA companies. The CEO/chairman role duality exists among 29.78 percent of our sample firms. 70.22 percent of observations opted for a separate position which is likely to foster board monitoring role.

Insert Table 3 About Here

Table 3 reports the summary statistics for the sample firms using data pooled across the three year sample period. The earnings per share measure is a Reuters' fundamentals item, calculated by dividing 'earnings for ordinary-full tax' by the number of shares outstanding. X_t , X_{t+1} , X_{t+2} and X_{t+3} are defined as earnings change deflated by price. Both current and future earnings changes are deflated by the price at the start of the return window for period t . R_t , R_{t+1} , R_{t+2} and R_{t+3} are calculated as buy-and-hold returns (inclusive of dividends) over a 12-month period, starting six months after the end of the previous financial year. EP_{t-1} is defined as period $t-1$'s earnings over price six months after the financial year-end of period $t-1$. AG_t is the growth rate of the total book value of assets for period t . RD is the total number of risk related sentences. Unlogged values are reported. In subsequent regressions the natural logarithm is used. BS is the number of directors sitting on the board at the end of each year. NED is the proportion of non-executive directors relative to the Board

size. Financial leverage Lev is defined as book value of equity scaled by total liabilities. Size is measured by corporate revenues. Profit is measured by the Return on Equity (ROE). Likewise, unlogged values are reported and in subsequent regressions the natural logarithm is used.

Table 4 presents pairwise Pearson correlations for all regression variables. Correlations are estimated using pooled data across the three-year sample period. The correlation between current Returns (R_t) and current earnings growth (X_t) is strong and significant at the 1% level suggesting that current earnings are perceived as value relevant. The correlation between R_t and X_{t+1} is weaker, but still significant at the 1 % level. The correlations between current returns R_t and future earnings change for $t+2$ and $t+3$ (X_{t+2} and X_{t+3}) are not significant. These results may provide evidence of prices leading earnings by only one period. Current return is also correlated with future returns of period $t+1$ while R_t is uncorrelated with R_{t+2} and R_{t+3} . Future returns (R_{t+1} , R_{t+2} and R_{t+3}) are significantly correlated with future earnings growth (X_{t+1} , X_{t+2} and X_{t+3}), consistent with Collins et al. (1994). These correlations indicate that future returns should not influence the results except through their role as a proxy for the measurement error in future earnings. We notice a significant and negative correlation between current earnings (X_t) and future earnings growth for 3 periods of analysis. Similarly, X_{t+1} is significantly and negatively related to X_{t+2} and X_{t+3} . This may suggest potential multicollinearity problems within the independent variables. The variable inflation factor (VIF) did not raise a serious collinearity problem among the explanatory variables. The mean VIF is about 1.12 and the computed VIF for each predictor variable is largely under 5. AG_t and Ep_{t-1} seem to be also good error measurement proxies. The theory indicates that an errors-in-variables proxy should be highly correlated with the measurement error but uncorrelated with the dependent variable.

Insert Table 4 About Here

This is the case for these two control variables. As reported in Table 3, the correlation coefficients between R_t on the one hand and AG_t as well as Ep_{t-1} on the other hand are insignificant.

Risk disclosure level is positively and significantly associated with current stock returns at the level of 10%. This may suggest that corporate risk disclosure activity in MENA emerging markets is induced by stock price performance. Lundholm and Myers (2002) find in the same way a positive and significant correlation between current returns and the disclosure score.

With respect to board characteristics, pairwise testing in Table 3 shows that board size (BS) is positively related to the earnings of period $t-1$. In contrast, there is negative correlation between BS and current and future earnings growth for $t+2$'s period at the levels of 5%. These univariate results may indicate that the larger is corporate board size the smaller is firms' current and future earnings changes. Board size seems to be likewise negatively associated with the amount of non-executive directors sitting on the board. This shows that large sized board in our sample includes a low amount of non-executive directors. Non-executive directors (NED) are positively associated with the future returns for $t+2$'s period, though it is negatively correlated with future earnings growth for the same period. This suggests that firms with high proportion of independent members on board have higher future returns despite the lower earnings growth for $t+2$. In contrast, firms with high number of independent directors have more important future earnings change for $t+3$. As for the CEO/Chairman role duality, it is negatively correlated with future returns (R_{t+1} , R_{t+3}) and the proportion of NED showing that firms with role duality exhibit lower stock performance and involve less proportion of outside directors.

Table 4 also presents Pearson correlations for all regression variables using pooled data across the three year sample period. The earnings per share measure is a Reuters' fundamental item, calculated by dividing 'earnings for ordinary-full tax' by the number of shares outstanding. X_t , X_{t+1} , X_{t+2} and X_{t+3} are defined as earnings change deflated by price. Both current and future earnings changes are deflated by the price at the start of the return window for period t . R_t , R_{t+1} , R_{t+2} and R_{t+3} are calculated as buy-and-hold returns (inclusive of dividends) over a 12-month period, starting six months after the end of the previous financial year. EP_{t-1} is defined as period $t-1$'s earnings over

price six months after the financial year-end of period $t-1$. AG_t is the growth rate of the total book value of assets for period t . RD is the natural logarithm of the total number of risk related sentences. BS is the number of directors sitting on the board at the end of each year. NED is the proportion of non-executive directors relative to the Board size. $Dual$ is defined as 1 if CEO is the Chairman and 0 otherwise.

EMPIRICAL RESULTS AND ROBUSTNESS CHECKS

We basically address three corporate board characteristics. We hypothesized that the amount of non-executive directors, board size and the CEO/Chairman duality may impact (increase/decrease) the informativeness of risk disclosure with respect to future earnings. We provide coefficients estimates based on pooled OLS regression.

Board Size and Informativeness of Voluntary Risk Disclosure

Table 5 presents OLS regression results for pooled data. The dependent variable is current period return, R_t , R_{t+1} , R_{t+2} and R_{t+3} are calculated as buy-and-hold returns (inclusive of dividends) over a 12-month period, starting six months after the end of the previous financial year. X_t , X_{t+1} , X_{t+2} and X_{t+3} are defined as earnings change deflated by price. Both current and future earnings changes are deflated by the price at the start of the return window for period t . EP_{t-1} is defined as period $t-1$'s earnings over price six months after the financial year-end of period $t-1$. AG_t is the growth rate of the total book value of assets for period t . RD is the natural logarithm of the total number of risk related sentences. BS is the number of directors sitting on the board at the end of each year. Financial leverage, firm size and profitability are control variables (their regression estimates are not tabulated).

Insert Table 5 About Here

Table 5 provides multiple regression estimates for our first hypothesis which examine the effect of board size on risk disclosure informativeness. The coefficients on $RD * \sum_{k=1}^3 X_{t+k}$ exhibit a negative sign and are mostly insignificant except for the interaction term $RD * X_{t+3}$ which are significantly

different from zero at the levels of 5% and 1%. These findings indicate that risk information which are not driven by the number of board directors appear to reduce the share price forecast of future earnings.

Estimates of primary interest are given by the coefficients on the interaction terms $BS*RD*\sum_{k=1}^3 X_{t+k}$. Consistent with our prior expectation, results revealed a positive effect of risk disclosure driven by board size on the market's forecast of future earnings growth for three years ahead. Such results indicate that firms with large board size are more likely to disclose significantly useful voluntary information about corporate opportunities and risks. Investors seem to trust risk information conveyed by firms with a large board size as it reflects a diverse expertise and it may guarantee a higher level of compliance with the accountability paradigm. These findings, therefore, support our first hypothesis and suggest that investors place weight on risk disclosure of better-governed companies within the scrutinized context. Actually, most companies of the MENA region follow the Anglo-Saxon model of one tier board structure. Their boards' size is generally between seven and eleven with some cases where boards can reach 17 or even more. This relatively wide structure seems to drive investors' reliance on risk disclosure in assessing corporate future prospects, especially that ownership concentration is the absolute norm within the region. As executive directors and non-executive directors operate together in one organizational layer, conflicts of interest are likely to be reduced and investors seem to consider their monitoring activity as efficient. It is worth mentioning that our results are consistent with Wang and Hussainey (2013) who showed

that large board size is associated with more informative disclosure about future earnings in corporate annual reports.

On the contrary, they are inconsistent with Ferreira et al. (2011) and Yu (2011) who did not find evidence that stock prices are more informative about future earnings growth in firms with a large board size.

Non-Executive Directors and Informativeness of Voluntary Risk Disclosure

Table 6 presents OLS regression results for pooled data. The dependent variable is current period return, R_t . R_t , R_{t+1} , R_{t+2} and R_{t+3} are calculated as buy-and-hold returns (inclusive of dividends) over a 12-month period, starting six months after the end of the previous financial year. X_t , X_{t+1} , X_{t+2} and X_{t+3} are defined as earnings change deflated by price. Both current and future earnings changes are deflated by the price at the start of the return window for period t . EP_{t-1} is defined as period $t-1$'s earnings over price six months after the financial year-end of period $t-1$. AG_t is the growth rate of the total book value of assets for period t . RD is the natural logarithm of the total number of risk related sentences. NED is the proportion of non-executive directors relative to the board size. Financial leverage, firm size and profitability are control variables (their regression estimates are not tabulated).

Insert Table 6 About Here

Table 6 covers main regression findings for our second hypothesis regarding estimates of the impact of the proportion of non-executive directors sitting on the board and the informativeness of risk disclosure. Risk disclosure does not seem to be informative about future earnings. The coefficients on the interaction terms $RD * \sum_{k=1}^3 X_{t+k}$ are, though positive (except for $RD * X_{t+1}$), insignificant. The coefficient on $RD * R_{t+1}$ is positive and significant at the levels of 10% and 5%, mainly when controlling for financial leverage and firm size. The partial F-test of the joint

significance of $RD \cdot X_{t+1}$ and $RD \cdot R_{t+1}$ is only significant in the specification model that controls for corporate size at the level of 10%.

The coefficients of interest are $NED \cdot RD \cdot \sum_{k=1}^3 X_{t+k}$. These terms emphasize how the amount of non-executive directors influences the informativeness of voluntary risk information. In support of our second hypothesis, the coefficients on the interaction term $NED \cdot RD \cdot X_{t+1}$ are significantly positive at the levels of 1% and 5%. Our findings suggest that outside directors sitting on the board enhance the value relevance of risk disclosure. Their interactions impact positively risk disclosure informativeness about future earnings for one year ahead. There is no evidence of such impact for $t+2$ and $t+3$ periods. Accordingly, a high number of non-executive directors provides investors with assurance over annual report narratives. They are believed to be more influential in terms of the board decision making and particularly in enhancing the quality of corporate voluntary disclosure. Risk reporting is considered hence as a credible source of information for investors to predict future earnings growth. These findings highlight that risk disclosure informativeness is somehow the outcome of the recent corporate governance reforms within the region despite the soft approaches to their enforcement. Our sample firms seem to comply with the existing codes which have been focusing on the promotion of a majority of non-executive directors' structure in boards. This had favorable implications on the performance of boards and their willingness to issue informative risk disclosures voluntarily. It is noteworthy that our results are consistent with Wang and Hussainey (2013). They showed that higher proportions of non-executive directors are more likely to disclose relevant information related to future earnings, suggesting that greater financial reporting expertise exists on such boards.

Our findings are inconsistent with Yu (2011) who indicates that the information about expected future earnings does not appear to be effectively incorporated into the stock price for firms with optimal board structure (e.g. Board independence, board size, role duality). The insignificant

association suggests that the quality of the board is a form of internal oversight that does not urge managers to offer information on a voluntary basis.

CEO/Chairman Duality and Informativeness of Risk Disclosure

Table 7 also presents OLS regression results for pooled data. The dependent variable is current period return, R_t . R_t , R_{t+1} , R_{t+2} and R_{t+3} are calculated as buy-and-hold returns (inclusive of dividends) over a 12-month period, starting six months after the end of the previous financial year. X_t , X_{t+1} , X_{t+2} and X_{t+3} are defined as earnings change deflated by price. Both current and future earnings changes are deflated by the price at the start of the return window for period t . EP_{t-1} is defined as period $t-1$'s earnings over price six months after the financial year-end of period $t-1$. AG_t is the growth rate of the total book value of assets for period t . RD is the natural logarithm of the total number of risk related sentences. $Dual$ is a dummy variable defined as 1 if CEO is the Chairman and 0 otherwise. Financial leverage, firm size and profitability are control variables (their regression estimates are not tabulated).

Insert Table 7 About Here

Table 7 summarizes main findings regarding our third hypothesis testing. We predicted a weaker impact of CEO/Chairman duality on voluntary risk disclosure informativeness. There is evidence on risk disclosure informativeness with respect to future earnings of period $t+1$ given the significant coefficients on $RD * X_{t+1}$. The coefficients on the interaction term $RD * R_{t+3}$ are likewise positive and significant at the levels of 5% and 10%. The joint significance test for the slope coefficients on $RD * X_{t+3}$ and $RD * R_{t+3}$ yielded also a significant F statistic at the level of 5%. These findings suggest that risk reporting activity which is not related to the presence of the CEO/chairperson duality is informative about future earnings growth.

The incremental impact of the role duality on the informativeness of risk disclosure is given by the coefficients on interacted variables $DUAL * RD * \sum_{K=1}^3 X_{t+K}$. Findings rejected our third hypothesis in that the coefficients of the interaction terms are insignificant in all the specifications

even though they exhibit the predicted sign. There is hence no evidence that risk disclosure driven by role duality is less informative about future earnings. Risk reporting related to role duality impacts negatively the credibility of current earnings at the level of 1%. Firms with the same person occupying the roles of chairman and CEO have then significant credibility problems with their financial reports and in particular with information about corporate risk. The stock market places lower credibility on such information, presumably because the CEO/chairperson is likely to compromise the board independence and to seek private interests. Thereby, this situation can lead to conflicts of interest that encompass the accounting system and the voluntary release of useful information. Our results are in line with Yu (2011) findings, which indicate that there is no effect of the board leadership structure (as examined through board quality index) on the earnings' information content of stock prices. They are also consistent with some recent voluntary and risk disclosure literature such as Cheng and Courtenay (2006), Elshandidy et al (2013), Elzahar and Hussainey (2012) and Mokhtar and Mellet (2013) which did not find evidence that role duality is a potential threat to disclosure quality. These results in turn support neither the agency theory nor the signaling theory.

Robustness Checks

Endogenous Nature of Corporate Governance Choice

and Informativeness of Risk Information

Recent academic research addressed an important question of whether good corporate governance has a first order effect on some outcome variables (e.g. firm performance, firm valuation, financial reporting quality, share price informativeness). According to Beyer et al. (2010), given the endogenous nature of the corporate information environment, corporate governance, and

some observed outcomes, it is hard to recognize the exact impact that one mechanism would have on another one.

Our main concern arises from the potential endogeneity problem between risk disclosure informativeness and firm-level governance structure. The causality might run from risk disclosure informativeness to corporate governance improvement. Moreover, other omitted firm characteristics could impact both voluntary risk disclosure informativeness and corporate governance. For example, Durnev et al. (2004) suggest that information conveyed by share prices can affect firm governance mechanisms as it signals to the capital markets on the need to react when management decisions are inadequate. More informative disclosure can serve as a disciplining means in that it enhances external monitoring mechanisms (shareholder lawsuits, institutional investor pressure and the market for corporate control) as well as the internal monitoring role of the board (Ferreira et al. 2011). If governance structure regressors are inferred to be endogenously determined, failure to incorporate exogenous determinants of the association between share price informativeness and corporate governance choices will result in correlated omitted variables problem. Standard OLS regression will provide inconsistent parameters due to the correlated omitted variables' problem. The common econometric solution to endogeneity issue is the use of instrumental variables' specification procedure. Instrumental variables should be associated with endogenous regressors but unrelated to the error term in the structural equation (Habib and Azim 2008). Larker et al (2007) argue that while this approach is theoretically strong, in practice, it is difficult to find an instrumental variable that is correlated with assignment to treatment level but not the outcome. Larcker and Rusticus (2010) showed that OLS estimates provide better parameter estimates than two-stage least square approach if the chosen instrumental variables do not conform to the standard definition of instrumental variables.

The selection of adequate instruments in our study is challenging because we use multiple endogenous variables as measures of corporate governance, that is, board size, board composition

and role duality. In addition, since our board structure data have mostly no time variation, there is no appropriate way to address the issue of causality directly. To address the potential endogeneity in our study, we follow the Larcker and Rusticus (2010) and Frank (2000) alternative approach. Their method involves assessing how large the endogeneity issue (unmodeled variable) has to be to change the OLS coefficient estimates and, in particular, how large it has to be to make the coefficients statistically insignificant. Unlike the instrumental variable approach that is meant to reduce bias in the coefficient estimates, Frank (2000) and Frank et al. (2008) method is used to assess the sensitivity of a coefficient and its standard error to the inclusion of a confounding variable. They specified a minimum threshold necessary for an omitted confounding variable to invalidate the significant results of a variable of interest in an ordinary least square regression model. Frank (2000) offered an improvement over previous applications of sensitivity analysis. He suggests that for a confounding variable to impact the statistical inference, it should be correlated with both the independent variable and the dependent variable (controlling for the other variables).

For the purpose of our sensitivity test, we calculate the impact of the confounding variables on the significant coefficients of two endogenous independent variables with respect board characteristics (BS and NED). While, by definition, we do not have access to the unobserved and unmodeled variable, we do have other control variables: financial leverage ratio, firm size and profitability. We are able, therefore, to calculate the impact of the inclusion of each control variable on the significant coefficient on the interaction terms $NED*RD*X_{t+1}$ and $BS*RD*X_{t+3}$. Likewise, the impact of each control variable is the product of the partial correlation between the endogenous board characteristics' measures and the control variables and the correlation between the dependent variable (R_t) and the control variable (taking out partially the effects of the other control variables). Frank et al. (2013) suggest that for a valid inference, the impact of a confounding variable should

not exceed the estimated impact threshold (ITCV), otherwise the coefficients on the explanatory endogenous variables would be considered as fragile.

Table 8 reports the results of our sensitivity analysis. The threshold value of the proportion of non-executive directors is 0.0364. This suggests that the correlation between the dependent variable (R_t) and the endogenous independent variable ($NED*RD*X_{t+1}$) with the unobserved confounding variable each only need to be about 0.190 ($\sqrt{0.0364}$) for the OLS result to be overturned. Given that our control variables are interacted with predictors in the augmented Collins et al (1994) regression of current returns on future earnings, we follow Frank (2000) approach in addressing the specific case of multiple confounds. Frank (2000) used the square root of the multiple correlation between x and cv ($r(x,cv)$) and the square root of the multiple correlation between y and cv ($r(y,cv)$) to assess the impact of confounding variables. It is worth noting that in our case $r(y,cv)$ and $r(x,cv)$ are the r^2 statistics from the regressions of current returns and the predictor of interest on controlling variables.⁵ Firm size (0.21) and corporate profitability (0.175) have the largest impact on our regression coefficients. Indeed, the impact of financial leverage, firm size and corporate profitability are respectively 58 percent, 476 percent and 382 percent of the ITCV for the interacted variable $NED*RD*X_{t+1}$. These results suggest that these control variables are important covariates to be included in the model, although comparable covariates, in and of themselves, would not alter the inference with regard to the variable of interest. Accordingly, our statistic inference with respect to the joint effect of the proportion of non-executive directors and risk disclosure on share price anticipation of future earnings is robust to the problem of omitted variable.

Insert Table 8 About Here

The threshold single value for Board size (BS) is about 0.0345 suggesting each of the relevant correlations needs to be about 0.185 ($\sqrt{0.0345}$) for the OLS result to be overturned. Similarly, firm size (0.227) and profitability (0.167) exhibit the largest impact on our OLS regression coefficients. Moreover, the impact of financial leverage, firm size and corporate profitability are 135 percent,

558 percent and 386 percent respectively of the ITCV for the interacted predictor $BS*RD*X_{t+3}$. These control variables are therefore important covariates and have to be included in the model, although comparable covariates, in and of themselves, would not alter the inference with regard to the variable of interest. Accordingly, our statistic inference with respect to the joint effect of the board size and risk disclosure on share price anticipation of future earnings is robust to the problem of unmodeled variables.

These findings cleared, then the concern with regard to causal inference in our pooled OLS regression and confirmed that the estimated coefficients are valid as we controlled for the observed strong covariate.

For the two endogenous independent variables, an impact statistic is calculated (ITCV) indicating the minimum impact of an unobserved variable that is needed to render the coefficient statistically insignificant. The ITCV is defined as the product of the correlation between the endogenous independent variables (BC1 and BC2) and the unmodeled variable and the correlation between the dependent variable (current stock returns) and the control variables (partialling out the effect of the other control variables). The sign of the impact measure indicates how the inclusion of the control variable affects the coefficient for the endogenous independent variables (BC1 and BC2) respectively. The impact results also help in assessing the likelihood that such an unmodeled variable exists. The sign of the impact score indicates how the inclusion of each control variable affects the coefficient of each endogenous independent variable. A positive impact score indicates that inclusion of the control variables makes the coefficient on the endogenous independent variable more positive or less negative. A negative impact score has the opposite effect. Impact/ITCV is the reliability of the control variable.

CONCLUSION

This study aims to test whether boards' structure influences the informativeness of narrative risk disclosure in annual reports for a sample of MENA emerging markets. We define the

informativeness of risk disclosure as the extent to which voluntary risk information improves the amount of future earnings news impounded into share prices. Our main hypotheses predict that risk disclosures' informativeness might be positively influenced by the size and the composition of the board of directors and negatively impacted by role duality. Our empirical findings are based on large samples of annual reports electronically available for roughly 320 non-financial firms listed in nine MENA emerging markets. We generate our estimates from a pooled OLS regression whereby we control for the cross-sectional effects of some determinants of voluntary disclosure as well as the earnings response coefficients such as financial leverage, firm size, profitability and industry sector.

We find that good board structure (large size and high proportion of non-executive directors) enhances risk disclosure informativeness about future earnings. Investors believe that board diversity increases members' expertise, eliminates environmental uncertainties and enhances the richness of information environment. Market participants also think that non-executive directors can restrain the managerial self-serving behavior and ensure useful risk reporting in anticipating future earnings growth. Regarding board leadership, role duality does not impact risk disclosure informativeness with respect to future earnings. Investors tend to question the credibility of voluntary risk information and perceive current earnings as less value relevant for firms characterized by the presence of a dominant person.

Although this study is one of the pioneering researches that investigate the impact of boards' structure on the informativeness of risk disclosure, it still suffers from some caveats. Given that the corporate governance definition of good best practices is still ambiguous and unresolved (Brickley and Zimmerman, 2010), the internal governance measures might suffer from measurement bias. As risk reporting is still a fertile area not only for empirical but also for conceptual and analytical research, we think that there are other dependent variables that could be investigated in future research. In particular, internal audit environment (audit committee composition, meeting frequency, etc....), corporate ownership structure and the presence of

litigation costs may also have differing effects on the perceived relevance of risk disclosure. Finally, cross-country differences in risk reporting informativeness within MENA emerging markets are uncovered by this study. Future research may fill this gap and empirically examine some country-level governance factors that explain these differences.

APPENDIX A

Risk Disclosure Categories Adopted From Linsley and Shrive (2006)

Risk Disclosure Category/Items

Operations Risk

- Customer Satisfaction
- Product Development
- Efficiency And Performance
- Sourcing
- Stock Obsolescence And Shrinkage
- Product And Service Failure
- Environmental
- Health And Safety
- Brand Name Erosion

Empowerment Risk

- Leadership And Management
- Outsourcing
- Performance Incentives
- Change Readiness
- Communications

Information Processing And Technology Risk

- Integrity
- Access
- Availability
- Infrastructure

Integrity Risk

- Management And Employee Fraud
- Illegal Acts
- Reputation

Strategic Risk

- Environmental Scan
- Industry
- Business Portfolio
- Competitors
- Pricing
- Valuation
- Planning
- Life Cycle
- Performance Measurement
- Regulatory

NOTES

1. Recent surveys (OECD, 2014; 2012) highlighted that the MENA region lacks best corporate governance practices compared to the OECD's governance principles and to the implemented mechanisms in developed countries.

2. We decided to focus on the emerging markets in the MENA region since it is argued that investors' pressure and demand for additional corporate disclosure are positively related to the level of capital market development. Financial markets are one of the key factors in a country's economic development given their critical roles in the process of mobilizing savings, funding investment opportunities and optimal resource allocation among the different economic sectors.

3. Israel is the only country in the region that follows the common law legal system.

4. An advantage of the manual approach over a computer-aided content analysis is that, though time consuming, it enables the differentiation between voluntary and mandatory statements, the identification of topics or themes associated with voluntary risk disclosures and their scoring separately. Annual reports are available in Arabic, French or English language depending on which country the sample firms are listed.

5. In comparing the ITCV to the distribution of impact scores for the control variables, we implicitly assume that the confounding variable is similarly correlated with the other control variables.

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Table 1
Descriptive Statistics for MENA Emerging Market Firms

Panel A: Market Capitalisation of Listed Companies (% of GDP)						
Country	2007	2008	2009	2010	2011	2012
Bahrain	129.46	82.36	73.82	79.45	59.05	52.23
Egypt	106.75	52.74	47.59	37.68	20.62	22.07
Israel	133.78	62.85	88.19	93.62	56.10	57.71
Jordan	240.88	163.14	133.78	116.79	94.25	87.26
Kuwait	164.03	72.71	90.58	103.64	65.48	55.78
KSA	123.83	47.39	74.28	67.08	50.61	50.87
Morocco	100.36	73.97	69.20	76.18	60.56	54.88
Oman	54.79	24.48	35.75	34.56	29.02	26.33
Qatar	119.79	66.19	89.83	98.77	73.85	66.53
Tunisia	13.76	14.20	20.98	24.04	21.02	19.64
Turkey	44.28	16.14	36.73	41.94	26.04	39.14
UAE	46.95	21.81	31.63	26.94	20.52	18.25

Panel B: Stocks Traded Total Value (% of GDP)						
Country	2007	2008	2009	2010	2011	2012
Bahrain	7.48	11.50	3.73	1.11	0.95	1.002
Egypt	40.68	42.77	27.94	16.95	9.31	7.67
Israel	64.21	51.02	42.75	57.26	40.83	26.18
Jordan	101.85	127.46	57.28	35.74	13.94	9.011
Kuwait	105.29	83.28	66.03	36.22	13.89	13.21
KSA	163.43	100.94	78.53	38.57	43.76	70.09
Morocco	34.93	24.67	32.35	11.84	6.37	3.65
Oman	12.90	13.79	12.05	5.83	3.79	3.46
Qatar	37.53	41.82	26.08	14.63	13.62	8.06
Tunisia	1.67	3.33	2.89	3.82	2.43	2.76
Turkey	46.72	32.82	39.62	57.65	53.39	44.17
UAE	58.29	45.92	25.91	9.59	4.55	4.73

Panel C: Number of Domestic Listed Companies						
Country	2007	2008	2009	2010	2011	2012
Bahrain	43	45	49	44	44	43
Egypt	435	373	305	213	231	234
Israel	654	642	622	613	576	532
Jordan	245	262	272	277	247	243
Kuwait	181	202	207	215	206	189
KSA	111	127	135	146	150	158
Morocco	74	77	78	73	75	76
Oman	120	122	120	119	123	124
Qatar	40	42	48	43	42	42
Tunisia	50	49	52	56	57	59
Turkey	319	317	315	337	362	405
UAE	90	96	95	101	104	102

Source: WDI, the World Bank, 2012

Table 2

Sample Composition by Country

Country	Observations
Egypt	66
Jordan	124
Kuwait	58
Morocco	48
Oman	143
Saudi Arabia	86
Tunisia	53
Turkey	145
UAE	<u>66</u>
Total	<u>789</u>

Table 3
Summary Descriptive Statistics

Panel A: Continuous Variables (Pooled Data for N = 789)							
Variable	Mean	Std Dev	Min	25%	Median	75%	Max
Rt	0.030	0.527	-0.921	-0.342	-0.047	0.312	1.815
Xt	0.009	0.111	-0.310	-0.016	0.002	0.025	0.659
Xt+1	0.004	0.114	-0.521	-0.018	0.000	0.021	0.566
Xt+2	0.005	0.103	-0.441	-0.016	0.000	0.022	0.507
Xt+3	0.006	0.086	-0.401	-0.010	0	0.018	0.426
Rt+1	0.062	0.609	-0.943	-0.329	-0.061	0.299	0.878
Rt+2	0.154	0.565	-0.860	-0.171	0.024	0.304	0.851
Rt+3	0.084	0.474	-0.816	-0.181	0	0.252	0.558
AGt	0.122	0.173	-0.090	-0.014	0.081	0.223	0.470
Ept-1	0.90	1.374	-0.01	0.04	0.19	1.08	4.17
RD	27.343	21.255	1	13	22	35	145
BS	8.209	2.426	2	7	8	9	23
NED	68.108	23.643	0	50	70	87.5	100
Lev	52.412	76.679	-0.078	3.753	25.673	70.857	456.497
Size (M\$)	658.017	1,936.599	5.48	21.75	117.015	422.37	25,101.77
Profit	26.792	151.942	0.05	7.25	14.44	25.59	98.729
Panel B: Dummy Variable (Longitudinal Data for N =789)							
Variable	Frequency	Percent	Cum.				
DUAL							
0	554	70.22	70.22				
1	235	29.78	100.00				

Dual is defined as 1 if CEO is the Chairman and 0 otherwise.

Table 4

Pearson Correlations (Pooled Data)

Variable	R _t	X _t	X _{t+1}	X _{t+2}	X _{t+3}	R _{t+1}	R _{t+2}	R _{t+3}	EP _{t-1}	AG _t	RD	BS	NED	Dual
R _t	1.000													
X _t	0.134***	1.000												
p-value	0.000													
X _{t+1}	0.097***	-0.287***	1.000											
p-value	0.006	0.000												
X _{t+2}	0.008	0.017	-0.203***	1.000										
p-value	0.820	0.632	0.000											
X _{t+3}	-0.018	-0.105***	-0.058*	-0.219***	1.000									
p-value	0.603	0.003	0.098	0.000										
R _{t+1}	-0.223***	-0.019	0.195***	0.111***	-0.099***	1.000								
p-value	0.000	0.586	0.000	0.001	0.005									
R _{t+2}	0.010	0.071**	-0.014	0.083**	0.056	-0.150***	1.000							
p-value	0.776	0.045	0.687	0.019	0.114	0.000								
R _{t+3}	0.014	0.036	-0.026	0.141***	-0.019	0.032	0.037	1.000						
p-value	0.682	0.305	0.461	0.000	0.576	0.368	0.289							
EP _{t-1}	-0.017	-0.036	-0.012	-0.036	-0.021	-0.038	-0.052	-0.085**	1.000					
p-value	0.618	0.306	0.730	0.300	0.548	0.279	0.138	0.016						
AG _t	-0.036	0.007	0.006	0.041	-0.007	-0.000	0.061*	-0.012	-0.013	1.000				
p-value	0.312	0.839	0.866	0.247	0.833	0.979	0.086	0.731	0.709					
RD	0.064*	-0.003	-0.005	0.021	0.003	0.078**	-0.083**	0.003	0.144***	-0.024	1.000			
p-value	0.071	0.922	0.869	0.543	0.920	0.028	0.018	0.931	0.000	0.488				
BS	-0.030	-0.086**	-0.051	-0.071**	-0.023	-0.082*	-0.098***	-0.019	0.182***	-0.047	0.050	1.000		
p-value	0.385	0.015	0.151	0.044	0.519	0.020	0.005	0.585	0.000	0.178	0.156			
NED	0.041	0.026	0.028	-0.069*	0.102***	0.056	0.061*	0.026	-0.122***	-0.024	-0.010	-0.136***	1.000	
p-value	0.241	0.465	0.433	0.051	0.003	0.111	0.083	0.449	0.000	0.498	0.762	0.000		
Dual	0.015	-0.031	0.025	0.007	-0.033	-0.074**	-0.045	-0.070**	0.187***	-0.010	-0.009	0.014	-0.274***	1.000
p-value	0.672	0.372	0.476	0.837	0.346	0.037	0.203	0.047	0.000	0.765	0.794	0.680	0.000	

*, **, *** significant at the 0.10, 0.05, and 0.01 level, respectively (two-tailed).

Table 5
Effect of Board Size on Informativeness of Voluntary Risk Disclosure
(N = 789)

Variable	Financial						
	Exp. Sign	Leverage		Firm Size		Profitability	
		Coeff.	p-Value	Coeff.	p-Value	Coeff.	p-Value
Intercept	(?)	-0.093	0.373	-0.088	0.398	-0.154	0.160
X _t	(+)	-4.297	0.260	-4.892	0.191	-6.449*	0.096
X _{t+1}	(+)	5.231	0.200	4.270	0.292	7.549*	0.072
X _{t+2}	(+)	3.750	0.351	4.350	0.275	5.209	0.193
X _{t+3}	(+)	10.780**	0.013	9.423**	0.032	13.063***	0.004
R _{t+1}	(-)	0.128	0.806	0.162	0.755	0.078	0.881
R _{t+2}	(-)	-0.543	0.223	-0.404	0.368	-0.889*	0.065
R _{t+3}	(-)	0.104	0.877	-0.083	0.901	0.179	0.791
AG _t	(-)	-0.130	0.321	-0.057	0.655	-0.021	0.86
Ep _{t-1}	(+)	0.032	0.383	0.027	0.462	0.038	0.291
RD	(?)	0.081***	0.001	0.079***	0.002	0.071***	0.005
RD*X _t	(?)	1.837	0.119	1.952*	0.090	2.430**	0.037
RD*X _{t+1}	(+)	-1.266	0.339	-1.106	0.404	-1.717	0.207
RD*X _{t+2}	(+)	-1.185	0.362	-1.620	0.211	-1.611	0.213
RD*X _{t+3}	(+)	-3.475**	0.015	-3.106**	0.032	-3.941***	0.007
RD*R _{t+1}	(?)	-0.143	0.375	-0.128	0.424	-0.131	0.413
RD*R _{t+2}	(?)	0.123	0.408	0.132	0.373	0.200	0.183
RD*R _{t+3}	(?)	-0.047	0.824	-0.009	0.966	-0.057	0.789
RD*AG _t	(?)	0.047	0.348	0.025	0.606	0.010	0.825
RD*Ep _{t-1}	(?)	-0.008	0.356	-0.007	0.430	-0.010	0.285
BS	(?)	-0.014*	0.096	-0.014	0.102	-0.013	0.110
BS*X _t	(?)	0.274	0.538	0.304	0.485	0.573	0.197
BS*X _{t+1}	(?)	-0.802	0.117	-0.681	0.179	-0.965*	0.063
BS*X _{t+2}	(?)	-0.494	0.326	-0.564	0.257	-0.619	0.214
BS*X _{t+3}	(?)	-1.451***	0.006	-1.297**	0.015	-1.662***	0.002
BS*R _{t+1}	(?)	-0.043	0.482	-0.044	0.467	-0.039	0.519
BS*R _{t+2}	(?)	0.101*	0.088	0.091	0.125	0.134**	0.029
BS*R _{t+3}	(?)	-0.040	0.612	-0.020	0.791	-0.038	0.628
BS*AG _t	(?)	0.019	0.271	0.014	0.393	0.007	0.651
BS*Ep _{t-1}	(?)	-0.002	0.413	-0.001	0.511	-0.002	0.309
BS*RD*X _t	(?)	-0.106	0.434	-0.126	0.340	-0.183	0.171
BS*RD*X _{t+1}	(+)	0.244	0.142	0.216	0.194	0.289*	0.091
BS*RD*X _{t+2}	(+)	0.174	0.282	0.198	0.216	0.226	0.160
BS*RD*X _{t+3}	(+)	0.480***	0.006	0.440**	0.012	0.534***	0.002
BS*RD*R _{t+1}	(?)	0.017	0.355	0.017	0.366	0.016	0.399
BS*RD*R _{t+2}	(?)	-0.027	0.166	-0.024	0.220	-0.038*	0.056
BS*RD*R _{t+3}	(?)	0.016	0.523	0.009	0.694	0.014	0.568
BS*RD*AG _t	(?)	-0.007	0.302	-0.005	0.391	-0.003	0.641
BS*RD*EP _{t-1}	(?)	0.000	0.404	0.000	0.478	0.000	0.288
Adj R ²		9.89%		10.11%		10.90%	

*, **, *** significant at the 0.10, 0.05, and 0.01 level, respectively (two-tailed).

Table 6
Effect of Non-Executive Directors on Informativeness of Risk Disclosure
(N = 789)

Variable	Financial						
	Exp.	Leverage		Firm Size		Profitability	
		Sign	Coeff.	p-Value	Coeff.	p-Value	Coeff.
Intercept	(?)	-0.278***	0.004	-0.285***	0.004	-0.323***	0.001
X _t	(+)	-1.309	0.153	-1.187	0.199	-1.308	0.156
X _{t+1}	(+)	0.888	0.315	0.633	0.473	0.543	0.558
X _{t+2}	(+)	0.119	0.899	0.127	0.891	0.196	0.832
X _{t+3}	(+)	-0.741	0.482	-0.363	0.729	-0.527	0.618
R _{t+1}	(-)	-0.381**	0.023	-0.404**	0.016	-0.386**	0.022
R _{t+2}	(-)	0.320*	0.061	0.242	0.153	0.217	0.202
R _{t+3}	(-)	-0.017	0.952	-0.123	0.543	-0.020	0.927
AG _t	(-)	0.067	0.112	0.034	0.465	0.062	0.129
Ep _{t-1}	(+)	0.007	0.289	0.005	0.532	0.005	0.498
RD	(?)	0.066***	0.006	0.070***	0.004	0.064***	0.008
RD*X _t	(?)	0.355	0.340	0.091	0.814	0.440	0.279
RD*X _{t+1}	(+)	-0.287	0.407	-0.471	0.202	-0.128	0.731
RD*X _{t+2}	(+)	0.424	0.219	0.189	0.607	0.411	0.247
RD*X _{t+3}	(+)	0.470	0.258	0.294	0.513	0.447	0.291
RD*R _{t+1}	(?)	0.097*	0.094	0.137**	0.027	0.102	0.105
RD*R _{t+2}	(?)	-0.087	0.166	-0.026	0.685	-0.104	0.117
RD*R _{t+3}	(?)	0.031	0.754	0.025	0.757	0.022	0.793
RD*AG _t	(?)	-0.027	0.150	-0.014	0.409	-0.034	0.173
RD*Ep _{t-1}	(?)	-0.001	0.386	-0.001	0.561	-0.000	0.667
NED	(?)	0.001*	0.051	0.001**	0.046	0.001**	0.047
NED*X _t	(?)	0.001	0.765	-0.008*	0.069	0.003	0.502
NED*X _{t+1}	(?)	-0.010***	0.000	-0.011***	0.000	-0.006	0.207
NED*X _{t+2}	(?)	-0.003	0.346	-0.004	0.134	-0.003	0.433
NED*X _{t+3}	(?)	-0.001	0.651	-0.003	0.244	0.000	0.944
NED*R _{t+1}	(?)	0.001	0.140	0.002*	0.070	0.001	0.158
NED*R _{t+2}	(?)	-0.002	0.104	-0.000	0.558	-0.003*	0.051
NED*R _{t+3}	(?)	-0.003	0.328	-0.002	0.186	-0.003	0.157
NED*AG _t	(?)	-0.000	0.146	-0.000	0.462	-0.000	0.354
NED*Ep _{t-1}	(?)	-0.000	0.518	0.000	0.651	0.000	0.448
NED*RD*X _t	(?)	0.005*	0.066	0.008***	0.008	0.004	0.191
NED*RD*X _{t+1}	(+)	0.009***	0.002	0.010***	0.001	0.007**	0.029
NED*RD*X _{t+2}	(+)	-0.004	0.168	-0.003	0.316	-0.004	0.161
NED*RD*X _{t+3}	(+)	-0.000	0.821	0.000	0.853	-0.001	0.747
NED*RD*R _{t+1}	(?)	-0.001**	0.024	-0.001***	0.009	-0.001**	0.040
NED*RD*R _{t+2}	(?)	0.000	0.608	-0.000	0.892	0.000	0.372
NED*RD*R _{t+3}	(?)	0.000	0.521	0.000	0.403	0.000	0.409
NED*RD*AG _t	(?)	0.000	0.342	0.000	0.689	0.000	0.360
NED*RD*EP _{t-1}	(?)	0.000	0.909	-0.000	0.593	-0.000	0.476
Adj R ²		12.72%		12.49%		12.12%	

*, **, *** significant at the 0.10, 0.05, and 0.01 level, respectively (two-tailed).

Table 7
Effect of Role Duality on Informativeness of Voluntary Risk Disclosure
(N = 789)

Variable	Financial						
	Exp.	Leverage		Firm Size		Profitability	
		Sign	Coeff.	p-Value	Coeff.	p-Value	Coeff.
Intercept	(?)	-0.158**	0.041	-0.173**	0.028	-0.213***	0.010
X _t	(+)	-3.871***	0.000	-3.773***	0.001	-3.485***	0.002
X _{t+1}	(+)	-1.412	0.287	1.603	0.220	-0.768	0.556
X _{t+2}	(+)	-1.179	0.347	-0.555	0.661	-0.854	0.512
X _{t+3}	(+)	-1.764	0.162	-1.692	0.189	-1.317	0.323
R _{t+1}	(-)	-0.240	0.156	-0.187	0.276	-0.259	0.130
R _{t+2}	(-)	0.128	0.389	0.214	0.168	0.067	0.676
R _{t+3}	(-)	-0.467**	0.029	-0.414*	0.051	-0.387*	0.066
AG _t	(-)	0.015	0.512	0.057	0.163	0.043	0.179
Ep _{t-1}	(+)	0.000	0.966	0.004	0.837	0.000	0.976
RD	(?)	0.061**	0.013	0.066***	0.008	0.054**	0.027
RD*X _t	(?)	1.608***	0.000	1.492***	0.000	1.624***	0.000
RD*X _{t+1}	(+)	0.759*	0.070	0.793*	0.068	0.775*	0.058
RD*X _{t+2}	(+)	0.473	0.233	0.091	0.835	0.442	0.265
RD*X _{t+3}	(+)	0.633	0.111	0.691	0.121	0.593	0.137
RD*R _{t+1}	(?)	0.005	0.915	0.005	0.915	0.004	0.926
RD*R _{t+2}	(?)	-0.048	0.335	-0.018	0.724	-0.049	0.322
RD*R _{t+3}	(?)	0.176**	0.015	0.139*	0.058	0.161**	0.026
RD*AG _t	(?)	-0.006	0.442	-0.018	0.133	-0.014	0.131
RD*Ep _{t-1}	(?)	-0.000	0.982	-0.001	0.754	-0.000	0.938
DUAL	(?)	0.026	0.551	0.024	0.572	0.023	0.589
DUAL*X _t	(?)	5.327***	0.004	4.320**	0.016	6.065***	0.001
DUAL*X _{t+1}	(?)	0.626	0.733	1.568	0.415	1.109	0.533
DUAL*X _{t+2}	(?)	1.525	0.393	0.224	0.906	1.166	0.513
DUAL*X _{t+3}	(?)	0.943	0.662	1.783	0.440	0.820	0.695
DUAL*R _{t+1}	(?)	0.045	0.869	-0.036	0.896	0.039	0.884
DUAL*R _{t+2}	(?)	0.128	0.644	0.066	0.813	0.071	0.796
DUAL*R _{t+3}	(?)	0.623*	0.099	0.401	0.293	0.704*	0.060
DUAL*AG _t	(?)	-0.010	0.867	-0.013	0.811	-0.027	0.630
DUAL*Ep _{t-1}	(?)	0.007	0.733	0.001	0.951	0.004	0.842
DUAL*RD*X _t	(?)	-1.961***	0.001	-1.717***	0.003	-2.215***	0.000
DUAL*RD*X _{t+1}	(-)	-0.345	0.588	-0.637	0.335	-0.510	0.415
DUAL*RD*X _{t+2}	(-)	-0.273	0.652	0.172	0.788	-0.126	0.834
DUAL*RD*X _{t+3}	(-)	-0.437	0.564	-0.719	0.368	-0.467	0.529
DUAL*RD*R _{t+1}	(?)	-0.019	0.827	0.011	0.903	-0.017	0.842
DUAL*RD*R _{t+2}	(?)	-0.050	0.583	-0.049	0.595	-0.033	0.711
DUAL*RD*R _{t+3}	(?)	-0.239	0.051	-0.165	0.178	-0.256**	0.034
DUAL*RD*AG _t	(?)	0.002	0.906	0.001	0.923	0.006	0.730
DUAL*RD*EP _{t-1}	(?)	-0.003	0.567	-0.001	0.794	-0.002	0.693
Adj R ²		10.39%		10.66%		11.44%	

*, **, *** significant at the 0.10, 0.05, and 0.01 level, respectively (two-tailed).

Table 8
Impact of Unmodeled Variables

Ordinary Regression	Least Squares	Endogenous	Financial	Firm Size	Profitability
		Variables	Leverage		
		Coeff.	Coeff.	Coeff.	Coeff.
Constant			-	-	-0.323***
			0.278***	0.285***	
BC1: NED*RD*X _{t+1}			0.009***	0.010***	0.007**
BC2: BS*RD*X _{t+3}			0.480***	0.440**	0.534***
Impact thresholds (BC1)		0.0364			
Impact thresholds (BC2)		0.0345			
Impact of control (BC1)			0.057	0.21	0.175
Reliability (Impact/ITCV)			1.58	5.76	4.82
Impact of control (BC2)			0.081	0.227	0.167
Reliability (Impact/ITCV)			2.35	6.58	4.86

*, **, *** significant at the 0.10, 0.05, and 0.01 level, respectively (two-tailed).