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The relationship between board committees and corporate risk disclosure in Saudi listed companies

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ABSTRACT

Corporate governance literature acknowledges the important role of the existence and structure of the standing board committees, such as the audit, nomination, and compensation committees, in enhancing board effectiveness and thus corporate disclosure. Previous empirical studies on the relationship between corporate governance mechanisms and corporate risk disclosure (CRD) practices have mostly focused on board characteristics as key drivers of CRD. However, less attention has been paid to the potential role of board sub-committees on the level of CRD. To the best of the researchers' knowledge, no prior research has examined the relationship between board committees and the level of CRD. Therefore, this study investigates the association between the existence and structure of board committees, such as the audit, nomination, and compensation committees and the level of CRD in Saudi listed companies. The study employs ordinary least squares and panel data analyses of the annual reports of Saudi listed companies for the years 2008-2011. The results show a positive influence of the presence and size of the nomination and compensation committee and meeting frequency of audit committee on CRD. However, no evidence on the impact of audit committee size, nomination and compensation committee independence, and meeting frequency. The current study contributes to filling the gap in the literature by investigating the role of further aspects of corporate governance on CRD. This study confirms the adoption of a coherent theoretical framework using a combination of disclosure theories to better explain the phenomenon of CRD and its determinants in Saudi Arabia. The study has important implications including provide vital input to policy makers, regulatory authorities, and practitioners in Saudi capital market and GCC markets and other emerging markets to improve CRD practices, optimize the structure of board committees, and enhance corporate governance effectiveness.

1. Introduction

Despite the remarkable importance and benefits of CRD to mitigate agency conflicts, information asymmetry, and cost of capital; in addition to increase stakeholders' confidence and the company value, evidence refers that CRD studies are still relatively limited (Dobler et al., 2011; Habtoor et al., 2018), and the quantity and quality of CRD remains inadequate to meet the increased needs of interested parties (Abraham and Cox, 2007; Linsley and Shrives, 2006; Mokhtar and Mellett, 2013; Oliveira et al., 2011).

As a result, accounting standard-setters, regulatory agencies, and professional bodies around the world have taken steps to enhance risk reporting practices and narrow the quality gap in CRD. Most of the corporate governance codes require companies to disclose risk-related information as being an integral part of best practice of corporate governance. The provision of adequate and timely information regarding the company's strategies, activities, and key risks and the way in which these risks are managed is an important element of corporate governance and a key function of the

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board of directors and its sub-committees (OECD, 1999; 2004).

Effective boards to mitigate agency conflicts and enhance transparency depend on their standing committees. However, in a concentrated ownership environment like Saudi Arabia, the cultural and social norms are embedded within Saudi society. Thus, family and tribalism relations could negatively affect the effectiveness of corporate governance, in general, and board of directors, in particular. Therefore, the Saudi Corporate Governance Regulations (SCGRs) acknowledge the important role of board committees, and require companies' boards to establish audit committee, nomination committee, and compensation committee to enhance corporate governance effectiveness, internal control, and disclosure.

Disclosure quality is associated with effective boards (Karamanou and Vafeas, 2005). The effectiveness of the board of directors to mitigate agency conflicts arising from the information asymmetry depends on its composition and the presence and structure of its sub-committees. The importance of board committees such as audit committee, nomination committee, and compensation committee is to ensure that qualified candidates are elected to the board with diversified backgrounds, and competitive compensation packages are designed to enhance board quality and effectiveness in mitigating information asymmetry and agency conflicts through monitoring and enforcing company management to disclose valuable information to users (Vafeas, 1999).

Most of risk disclosure research has basically focused on firm-specific characteristics (e.g., firm size, leverage, industry type, profitability), and less attention has been paid to corporate governance mechanisms (e.g., board size, independence, CEO duality, the presence of audit committee), and ownership structure (e.g., institutional ownership and managerial ownership) as determinants of CRD. However, there is a lack of knowledge about the impact of other determinants on CRD practices, such as audit committee characteristics, including audit committee size, independence, and meeting frequency.

Furthermore, there is no empirical research has been conducted to investigate the potential role the presence of nomination and compensation committees and their characteristics, such as size, independence, meeting frequency on CRD.

Therefore, this study aims to fill the gap in risk literature by investigating the impact of the presence and characteristics of board committees, such as audit committee, nomination committee, and compensation committee on the level of CRD in Saudi Arabia.

Saudi Arabia is the focus of this study due to the following reasons. First, this study is motivated by the call made by Habbash et al. (2016), Al-Maghzom et al. (2016a; 2016b), Habtoor et al. (2017; 2018) and Habtoor and Ahmad (2017) for more research on governance and risk reporting practices in Saudi Arabia to improve transparency and enhance awareness of CRD. Evidence indicates that corporate governance and CRD practices are still relatively new topics in the Saudi business environment (Alamri, 2014).

Second, In February 2006, the Saudi financial market crashed and lost more than 50% of its power when the Saudi price index dropped to 404 in 2006 compared to 878 in 2005 (Zaher, 2007). In the wake of the Saudi stock market crisis, and to restore investor confidence (Alamri, 2014), the Saudi capital market authority (CMA) issued the SCGRs under Act No. 1-212 in November 2006 (CMA, 2006). The SCGRs include basic rules and standards to regulate the listed companies in the financial market and to ensure adherence to best corporate governance practices that protect the rights of all shareholders. In this regard, the SCGRs emphasize the role of board committees, such as audit, nomination, and compensation committee, as the main pillars to enhance the board effectiveness and thus ensure best practices of governance and disclosure. These procedures, among other things, should elevate the financial reporting practice and, thereby, improve the quality of corporate disclosure, including risk reporting. However, further empirical research on the effectiveness of SCGRs, in general, and board committees, in particular, on CRD would help to evaluate the current practices of corporate governance and disclosure in Saudi Arabia.

Third, the SCGRs were formulated to mitigate agency conflicts between managers and shareholders through enhancing transparency and accountability of the board and its committees (Al Kahtani, 2013; Alkhtani, 2010; WB, 2009). This is particularly important within the Saudi business environment due to the high level of ownership concentration in Saudi listed companies and strong impact of social and cultural factors on governance and transparency. This refers to the possible existence of both types of agency conflicts. Besides the potential conflicts between managers and shareholders, Saudi large and controlling shareholders, particularly block holder and family owners, may act opportunistically to expropriate the rights of small shareholders by using their power and prestige to hire board members who are affiliated and loyal to them. Thus, it is in the interests of such controlling shareholders to adopt weak forms of corporate governance systems and provide less disclosure to avoid strict monitoring by minority shareholders. The evidence indicates that the boards of directors of Saudi companies are dominated by controlling shareholders who sometimes employ their friends, relatives, or loyalists as board members (Alamri, 2014; Albassam, 2014; Al Kahtani, 2013). Thus, it is rare to find a clear separation between ownership and management or a real independence among the board members.

Therefore, in a concentrated ownership environment and dominance of controlling shareholders, the existence of effective board committees concerned with ensuring that qualified members are elected to the board and competitive compensation packages are designed to enhance board effectiveness is essential to curb management and controlling shareholders from threatening the minority rights through disrupting or weakening governance mechanisms and transparency. Yet, there is lack of empirical evidence on the actual role of board committees in mitigating information asymmetry and agency conflicts through enhancing CRD, which is the focus of this study.

Fourth, the Saudi Vision 2030 adopts an open economic philosophy based on the market economy and liberalization of trade to mitigate agency conflicts and attract domestic and foreign funds. Accordingly, further empirical research on corporate governance and disclosure, in general, and on CRD and its determinants, in particular, would be considered as a response to enhance the Saudi vision, since risk disclosure increases transparency, enhance investors' confidence, and obtain external funds at a lower cost of capital.

2. Corporate governance and institutional setting in Saudi Arabia

The presence of corporate governance in Saudi Arabia dates back to 1931, when the Commercial Business Regulation was issued. However, the latest evolution in corporate governance in Saudi Arabia was represented by the issuance of the SCGRs by the CMA (2006). An important area of interest by the SCGRs is related to the establishment of board committees. In order to strengthen the internal control function and enhance the disclosure quality, Article 14: "Audit Committee" of the SCGRs, which was made mandatory for listed companies from 2009, requires the board of directors to set up a committee to be named the "Audit Committee" with at least three members, including a specialist in financial and accounting matters, and none of them to be an executive board member. Furthermore, the presence of specific and explicit policies, standards and procedures, for nominating and remunerating the board members and top management is essential, especially, in a country with a concentrated ownership, such as Saudi Arabia and a dominance of controlling shareholders on corporate boards. Therefore, Article 15: "Nomination and Remuneration Committee" of the SCGRs became mandatory for listed companies from the beginning of 2011. This article states that the board of directors should form a committee to be named the "Nomination and Remuneration Committee" to carry out the responsibility of nominating board members, and remunerating board members and top management to ensure truly independent and effective boards.

In Saudi Arabia, the cultural and social norms are embedded within Saudi society. Thus, family and tribalism relations could affect corporate governance, in general, and the effectiveness of board of directors, in particular. According to Alamri (2014), the dominance of tribal and social loyalties and cultural norms such as social status, prestige, kinship, personal relationships and favoritism influence corporate governance practices, board structure and board decisions. For example, controlling shareholders and other board members prefer to bring or elect friends and relatives into their boards based on trust and loyalty, rather than qualification, arising from their social networks being regarded as important social norms and values in Saudi society. Despite the response to the requirements of independent members on board and board committees, there is a lack of real independence among directors in practice (Alamri, 2014). Thus, it is difficult to verify the independent nature of the board member in Saudi companies (Al Kahtani, 2013).

This situation has made it necessary to enhance the procedures of the selection and evaluation of independent board member in Saudi companies. Nomination and compensation committees would play a vital role in a concentrated ownership environment with a dominance of controlling shareholders to protect minority interests through maintaining their voting rights to advocate a nominee, and designing appropriate remuneration packages to align the interests of management and shareholders (Conyon and Peck 1998; Jensen, 1993; Laksmana, 2008). Therefore, the SCGRs pay great attention to this matter when require each listed company to establish an effective nomination and compensation committees to ensure that qualified and skilled candidates are nominated to the board with appropriate compensation packages to improve board quality.

3. Literature review and hypotheses development

Effective boards to mitigate agency conflicts and enhance transparency are the main expected outcome of sound corporate governance systems. On the other hand, corporate disclosure quality is an indicator of effective corporate governance system, in general, and board effectiveness, in particular (Karamanou and Vafeas, 2005). However, board effectiveness relies on the quality of its standing committees. Therefore, capital market authorities and corporate governance laws and regulations acknowledge the important role of the standing board committees, such as the audit, nomination, and compensation committees, in enhancing corporate governance, control, and disclosure. Furthermore, corporate governance and corporate disclosure literature highlight the significant role of the existence and structure of board committees on board effectiveness and transparency.

For example, Li et al. (2012) investigated the relationship between audit committee characteristics and intellectual capital disclosure of 100 UK listed companies. They find that intellectual capital disclosure is positively associated with audit committee characteristics such as the size and meeting frequency. However, they find no impact of audit committee independence and financial experience on intellectual capital disclosure. Likewise, Li et al. (2008), Persons (2009) and Gantyowati and Nugraheni (2014) found a positive association between audit committee size and meeting frequency, and corporate disclosure. On the other hand, O'Sullivan et al. (2008) investigated the relationship between corporate governance mechanisms and the disclosure of forward-looking information in the annual report of the largest 200 Australian listed companies. The researcher proposes that the presence and quality of board committees, as peroxided by the existence of audit, nomination and compensation committees and the independence of audit and compensation committee, would enhance the level of the disclosure of forward-looking information. The empirical results are in line with the study perspective, indicating a positive impact of the presence of nomination and compensation committees and the independent members of the compensation committee on the disclosure of forward-looking information.

Furthermore, Cerbioni and Parbonetti (2007) examined the impact of corporate governance attributes on voluntary intellectual capital disclosure in a sample of 54 European biotechnology companies. Corporate governance variables involved in the model of the study are bored size, independence, and leadership, in addition to the board structure (i.e. composition of the audit, nominating and compensation committees). Cerbioni and Parbonetti (2007) assumed that independent members on nomination, audit, and compensation committees could make the decision control process over the top management team more effective and thus affecting the extent and nature of disclosure. The results confirm the study hypotheses and indicate that board structure improve readability of the annual reports.

Similarly, Chobpichien (2008) investigated whether the board quality dimensions and ownership structure impact the voluntary disclosure in the annual reports of 317 non-financial listed companies in Thailand. One dimension of board quality is the quality of leadership structure of remuneration committee (measured by the committee's chairman is an independent director) and the quality of the composition of remuneration committee (measured by the majority of non-executive directors on the committee). The results reveal that independent non-executive director who is the chairman of remuneration committee, and the proportion of non-executive directors on remuneration committee, are key determinants of voluntary disclosure.

In addition, Laksmana (2008) focused on whether the level of disclosure on compensation practices is influenced by certain board and compensation committee characteristics, such as board and compensation committee independence, CEO power over the director nomination process, time commitment of directors (board/compensation committee busy status), board and compensation committee diligence, and board and compensation committee size. Using a sample of companies in non-regulated industries listed on the Standard and Poor's (S&P) 500, the main results show that the size and meeting frequency of the board and compensation committee are positively associated with the transparency of board disclosure practices. Moreover, the results indicate that boards with the power to act independently of top management provide more disclosure.

The study by Allegrini and Greco (2013) examined the relationship between corporate governance mechanisms and the level of disclosure in the annual reports of Italian non-financial listed companies. The researchers argue that the existence of nomination and compensation committees can contribute to sound governance and effective boards as a monitoring tool to control top management. Accordingly, they propose a positive relationship between the audit, nomination and compensation committees, composed by a majority of independent directors, and the level of voluntary disclosure. However, the result does not support the hypothesis, indicating an insignificant association between the two variables.

In sum, the existence of effective audit, nomination, and compensation committees would improve the board efficiency towards higher disclosure quality. This motivates the current study to extend corporate disclosure literature concerning the role of the presence and characteristics of audit, nomination, and compensation committees on CRD practices in Saudi Arabia.

3.1. Audit committee size

Agency theory suggests that audit committee is a key internal mechanism to monitor and control management behaviour and decisions regarding information preparation and disclosure. Furthermore, the size of the audit committee is considered to be a fundamental element of audit committee and board effectiveness in monitoring management conduct in terms of reporting processes and disclosure quality (Hidalgo et al., 2011). Larger audit committees are more likely to uncover and settle potential problems in the financial reporting process. Therefore, the BRC (1999) indicates the importance of the increased number of directors on the audit committee and the time allocated for the consideration of matters relevant to the functions of the audit committee.

Moreover, resource dependence theory suggests that large audit committees are more likely to provide more skills, expertise, experience and diverse views to detect and solve potential problems in the financial reporting process. In addition, higher number of audit committee members is more likely to represent multiple and diverse groups of stakeholders, which may compel the company management to provide more disclosure, including risk related information, to meet the different and varied information needs (stakeholder theory), and, thus, gain the satisfaction of society and approval of its existence and activities (legitimacy theory).

Empirical evidence on the relationship between audit committee size and disclosure generally supports the theoretical perspective. For example, Felo et al. (2003) found that audit committee size is positively related to the quality of financial reporting. Persons (2009) found a positive relationship between the size of audit committee and earlier ethics disclosure. The study of Li et al. (2008) showed that firms with larger audit committees tend to provide greater intellectual capital disclosure. However, other studies fail to find a significant relationship between audit committee size and disclosure (Akhtaruddin et al., 2009; Hidalgo et al., 2011; Mangena and Pike, 2005). Based on the theoretical perspective and empirical evidence, it can be hypothesized that:

H1: There is a positive relationship between audit committee size and CRD.

3.2. Frequency of audit committee meetings

Agency theory argues that effective audit committees are important governance mechanism to mitigate agency conflicts through enhancing transparency and disclosure quality. An active audit committee should allocate sufficient time for meeting and reviewing the major issues related to monitoring and evaluating management behavior and decisions regarding information processing and disclosure. Therefore, Waterhouse (1993) suggested that audit committees hold at least three or four meetings a year in addition to the extraordinary meetings when necessary to effectively discharge their duties.

Empirical evidence is in line with the theoretical perspective. For instance, Koh et al. (2007) found that active audit committees are important governance mechanisms for enhancing financial reporting. Abbott et al. (2004) demonstrated that firms with audit committees that hold more than three meetings yearly have fewer occurrences of financial reporting restatements. Additionally, O'Sullivan et al. (2008) found a positive relationship between audit quality measured by meeting frequency of audit committee and disclosure of forward-looking information. Furthermore, Allegrini and Greco (2013) and Gantyowati and Nugraheni (2014) documented a positive impact of audit committee meeting frequency on voluntary disclosure. Accordingly, it can be hypothesized that:

H2: The frequency of audit committee meetings is positively associated with CRD.

3.3. The presence of nomination and compensation committee

According to the agency theory, board committees, such as audit, nomination, and compensation committee, are created to perform specific functions in the decision-making and control processes (Fama and Jensen, 1983).

Regarding the nomination of board members, Jensen (1993) contended that powerful CEOs usually dominate the nomination process and will prefer to nominate candidates that are loyal to them in order to avoid the intensity of board monitoring and enhance information asymmetry to impede outsiders from making informed decisions. However, the presence of the nomination committee contributes effectively in the process of the selection of candidates by delegating the task of nomination to a group (rather than a single person), who are independent of the executive management and strong enough to make independent recommendations (Ruigrok et al., 2006). Being a useful mechanism to overcome the shortcomings in the process of the selection of board members, nomination committee is an essential step towards improving board effectiveness and thus disclosure quality.

The empirical findings are mostly consistent with the theoretical views. The study of Ruigrok et al. (2006) showed that boards in companies with nomination committees are more likely to have a higher level of independence, foreign, and nationality diversity. Vafeas (1999) found that the forming of a nomination committee relates to board quality through the positive influence on the degree of independence among outside board members. Moreover, O'Sullivan et al. (2008) found that the presence of nomination committee is positively related to the disclosure of forward-looking information.

With respect to compensation committee, Talha et al. (2009) and Menon and Williams (1994) indicated that the primary purpose of having standing committees at the board level, such as, audit, nomination, and compensation, is to enhance the effectiveness of the board of directors. The establishment of compensation committee is a vital tool to serve the decision-making process of the board of directors and mitigate the conflict of interests between managers and shareholders (Singh and Harianto, 1989). The presence of compensation committee would enhance governance quality and transparency by positively influencing the board monitoring role on executive management (Allegrini and Greco, 2013; Forker, 1992). Allegrini and Greco (2013) argued that the presence of compensation committee is more likely to affect positively the level of voluntary disclosure. Furthermore, O'Sullivan et al. (2008) found that companies with compensation committees disclose more forward-looking information in the annual reports. More specifically, Cerbioni and Parbonetti (2007) found that the presence of a compensation committee strongly influences the quantity of information disclosed, and enhances the quality of disclosure by improving the readability of the annual report.

In a developing country, such as Saudi Arabia with a concentrated ownership and dominance of controlling shareholders in Saudi listed companies, the existence of an effective committee concerned with ensuring the independence and competence of board members is essential to curb management and controlling shareholders from threatening the minority rights through disrupting or weakening governance mechanisms and transparency.

With regard to the regulatory environment in Saudi Arabia, the SCGRs delegate all functions and responsibilities regarding nominating board members, and remunerating management and board members to one board committee, which is the "nomination and compensation committee". Therefore, the Saudi regulatory environment will be taken into account in developing a hypothesis to reflect the impact of the presence of nomination and compensation committees on CRD. This hypothesis is also formulated in line with theoretical perspective and empirical evidence as follows:

H3: The presence of nomination and compensation committee is positively related to CRD.

3.4. Nomination and compensationcommittee size

The size of nominationand compensation committees could affect disclosure level in one of two competing ways.

First, agency theory suggests that the ability of board committees to perform their monitoring role and protect shareholder's rights depends on their structure and size (Laksmana, 2008; Vafeas, 1999; Younas et al., 2011). Risk disclosure is an agency tool to mitigate information asymmetry and align the interests of managers to those of shareholders. Moreover, resource dependence theory suggests that increasing members on nomination committees will provide more expertise, experience, skills, and diverse views to better deal with the issues related to the identification and selection of board members, as well as the increase of the degree of the committee independence from management. Thus, nomination committees with a larger number of directors are more likely to perform their duties effectively and hence serve the board effectiveness, which in turn enhance disclosure quality. Similarly, larger compensation committees are more likely to have higher experience and skills to better perform duties related to proposing and designing contracts and compensation packages that encourage both the executive management and board of directors to act in line with shareholders' interests, and provide adequate disclosure, including risk-related information.

In keeping with the first perspective, Younas et al. (2011) indicated that higher outside directors and larger board committees would alleviate the conflict of interests among the board members and enhance the monitoring role of these committees. Further, Laksmana (2008) found a positive relationship between the size of compensation committee and the transparency of compensation practice.

Second, the organizational behavior research suggests that productivity is negatively associated with the size of the working groups (Hackman, 1990). This implies that larger nomination and compensation committees are more likely to become less effective in performing their tasks because of the coordination and communication issues (Laksmana, 2008). However, although this assumption may be applicable for board size as a single block, it may not be for such committees for two reasons: First, the main board committees usually comprise a relatively limited number of members compared to their significant responsibilities. Second, the SCGRs require the board of directors of Saudi listed companies to delegate all functions and responsibilities related to nominate board members, as well as to remunerate executive managers and board members to one board committee, namely, the nomination and compensation committee. As the SCGRs do not mention the size of this committee, it often consists of a relatively limited number of members (three members on average). Therefore, it is unlikely that the size of the nomination and compensation committee would negatively affect the board effectiveness and thus the level of disclosure. In contrast, a hypothesis which is in line with the Saudi regulatory environment and consistent with theoretical perspective and empirical evidence to reflect the influence of the size of nomination and compensation committees on CRD can be presented as follows:

H4: There is a positive relationship between nomination and compensation committee size, and CRD.

3.5. Independent members on nomination and compensation committee

Board effectiveness is affected by the composition of the nomination and compensation committees. Agency theory suggests that independent members on the nomination committee is required to ensure the selection of qualified board members with enough independence and power to protect the interests of shareholders and prevent management from exploiting the shareholders' rights. Likewise, independent directors on the compensation committee would better protect shareholder's rights through proposing appropriate incentive packages that ensure compatibility of the interests among the management and shareholders.

Similarly, resource dependence theory assumes that having independent members on the nomination and compensation committees would result in higher skills and experience and better communication with the external environment, which enhances the committee effectiveness in performing its functions to meet the expectations of stakeholders (stakeholder theory) and society (legitimacy theory).

Considering CRD is an indicator of board and board committees' effectiveness (O'Sullivan et al., 2008; Ntim et al., 2013; Dominguez and Gamez, 2014), the sound selection of board members by an independent and qualified committee, in addition to set appropriate packages to better align the interests of managers with shareholders would enhance the board effectiveness in terms of monitoring and transparency.

Corporate disclosure literature confirms the significant role of independent board committees on board effectiveness and transparency. For instance, Vafeas (1999) argued that the nomination and selection of new directors who are expected to monitor management and promote board effectiveness is a vital decision in the control function. Therefore, it should be carried out by decision makers (nomination committee members) who themselves are independent of the management, both in spirit and in appearance. Vafeas (1999) reported a positive relationship between nomination committees comprised entirely of independent directors and boards composed of fewer affiliated directors and more directorship posts.

The findings of Uzun et al. (2004) showed that no-fraud companies had a significantly higher percentage of outside directors on nomination committee compared to fraud companies, which had a significantly higher percentage of grey outside or affiliated directors. Cerbioni and Parbonetti (2007) indicated that board structure (measured by a dummy variable of one if the nomination, compensation, and audit committees are made up by a majority of independent directors, and 0 otherwise) helps to improve the overall readability of companies annual reports. Laksmana (2008) found a positive relationship between board and compensation committee independence, and the quality of the financial reporting process. Furthermore, Beekes and Brown (2006) demonstrated that the independence of the chairman and the members of the board and its main committees are related to more informative disclosures. This is supported by the result of O'Sullivan et al. (2008) who found that the presence of the nomination committee and the independence of compensation committee are positively related to the disclosure of forward-looking information. Furthermore, Abdullah et al. (2010) examined the role of corporate governance on the nature of financial restatements and find that nomination committees of the companies that restated are less independent. Allegrini and Greco (2013) posited that the level of voluntary disclosure is positively related to compensation committees that comprise a majority of independent directors. However, they fail to find a significant relationship.

Based on the theoretical perspectives and prior empirical research related to the association between the composition of nomination and compensation committees and corporate disclosure, this study assumes that higher proportion of independent directors on the nomination and compensation committee would enhance the board quality and effectiveness towards higher level of disclosure, including risk-related information. Thus, a hypothesis can be formulated as follows:

H5: There is a positive relationship between the proportion of independent members of nomination and compensation committee, and CRD.

3.6. Meeting frequency of nomination and compensation committee

Meeting frequency is an indicator of the diligence and keenness of board committees in performing their responsibilities. The findings of Vafeas (1999) suggested that the meeting frequency of board committees is an important dimension of board operations, which could lead to board effectiveness and improve financial reporting quality (Laksmana, 2008; Uzun et al., 2004).

Nomination committees that meet more frequently are more likely to be better informed and diligent in discharging their responsibilities. Where higher number of meetings of the nomination committee would provide more time and effort to investigate and discuss issues related to determining and assessing the independence and qualifications of candidates for the board membership. In addition to evaluate the board performance and make the required recommendations to improve its effectiveness. Thus, it can be concluded that nomination committees that meet more frequently are likely to positively influence the board effectiveness towards higher level of disclosure, including risk-related information.

With regard to the compensation committee, devoted considerable time and effort by committee members and meet more frequently would lead to better committee performance and effectiveness in carrying out its key functions including proposing, designing, and evaluating compensation packages that encourage both the executive management and board of directors to work in accordance with shareholder interests and meet their needs for information, including risk-related information, to make informed decisions.

Empirically, Laksmana (2008) found that meeting frequency of compensation committees is positively related to the transparency of board disclosure practices. However, Uzun et al. (2004) failed to find a significant association between meeting frequency of both the nomination committee and compensation committee and the likelihood of fraud.

Following the expectations of the impact of meeting frequency of nomination and compensation committees on CRD, a hypothesis is formulated in line with the Saudi regulatory environment as follows:

H6: There is a positive relationship between the meeting frequency of nomination and compensation committee and CRD.

Furthermore, and to control for potential omitted variable bias (Gujarati and Porter, 2003; Wooldridge,

2010) and to rule out alternative explanations for the mean results (Singh et al., 1986), this study includes an extensive number of control variables, including board characteristics (i.e., board independence, board size, board meeting frequency) and firm-specific characteristics (i.e., firm size, leverage, audit firm size), and ownership structure such as ownership concentration. There is extensive theoretical and empirical literature that suggests these variables can affect CRD (Alsaeed, 2006; Abraham and Cox, 2007; Ismail and Rahman, 2011; Allegrini and Greco, 2013; Ntim et al., 2013; Elshandidy and Neri, 2015; Allini et al., 2016; Al-Maghzom et al., 2016a; Alotaibi and Hussainey, 2016; Habtoor et al., 2017; 2018).

4. Research methodology

4.1. Sample selection and data collection

The initial sample of this study comprises 558 company annual reports of companies listed on the Saudi Stock Exchange (Tadawul) over the period of 200-2011. Table 1 summarizes the sample selection. Out of the 558 company year observations, 153 for financial companies are excluded from the sample because they are subjected to different risk disclosure regulations (Linsley and Shrives, 2006; Ntim et al., 2013; Elshandidy and Neri, 2015).

Table 1: Summary of the sample selection

Sample details	2008	2009	2010	2011	Total observations
Total of listed companies	127	135	146	150	558
Financial companies	(32)	(37)	(42)	(42)	(153)
Non-financial companies	95	98	104	108	405
Companies with incomplete data	(32)	(24)	(19)	(23)	(98)
Final sample analyzed	63	74	85	85	307

Furthermore, 98 observations for non-financial companies are also dropped from the sample due to the unavailability or incomplete data for independent and control variables. Consequently, the final sample size analyzed in this study comprises of 307 non-financial company-year observations.

Annual reports are chosen in this study as they are considered the main source of reliable information for investors and other interested parties (Beattie et al., 2004; Donnelly and Mulcahy, 2008; Ntim et al., 2013; Elshandidy and Neri, 2015).

The sample of the study is chosen for three reasons. First, 2008 is the second year of establishment of the SCGRs and the selection of any fiscal year before 2008 would lead to a significant reduction in the sample size due to the lack of data of some variables. Second, the sample ends in 2011 because it is the first year of the application of Article 15 of SCGRs: Nomination and Remuneration Committee which became mandatory from the beginning of 2011for listed companies to establish committees for nomination and compensation purposes. As a result, more details on these committees' characteristics became available in the companies' annual reports in 2011 to be investigated by this study. Third, this sample fulfill the requirement of using panel data analysis which controls for individual heterogeneity, mitigates multicollinearity problems and the undesirable effects resulting from the use of a relatively small sample size, in addition to provide more informative data (Hsiao, 2014; Baltagi, 2008).

Data on CRD is collected manually from the annual reports of Saudi companies downloaded from Tadawul or from the website of sample companies. Data on board committees and control variables is collected manually from the annual reports of the selected sample and Data Stream as well.

4.2. Definition of variables and model specification

This study classifies variables into three main categories with full definitions presented in Table 2. Firstly, and to test hypotheses, the dependent variable is the level of CRD, which measures the quantity of CRD in terms of the number of risk-related sentences per annual report.

To measure CRD, this study applies content analysis, a method of analysis which has been employed by prior risk disclosure studies (Linsley and Shrives, 2006; Rajab and Schachler, 2009; Mokhtar and Mellett, 2013; Zhang et al., 2013; Abdallah et al., 2015; Elshandidy and Neri, 2015; Habtoor et al., 2018). Risk-related sentence is used as a unit of analysis to code risk-related disclosures as it is more likely to provide complete, reliable and meaningful data for further analysis (Milne and Adler, 1999).

In order to identify, classify and code risk-related sentences, this study adopts the broad risk disclosure definition of Linsley and Shrives (2006).

"Sentences are to be coded as risk disclosures if the reader is informed of any opportunity or prospect or of any hazard, danger, harm, threat or exposure that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure".

To cade risk-related information disclosed in the annual reports, this study adopts the model of risk disclosure crafted by Habtoor et al. (2018) (refer to Appendix A), which was built based on an extensive review of the risk-related regulations and previous studies on risk classification as well as taking into account the Saudi regulatory environment in which the sample companies operates, including laws, standards, and governance regulations.

Secondly, and to examine the main hypotheses (H1 to H6) related to independent variables (board committees), data is collected on the existence of board committees and their characteristics.

Finally, and to control for potential omitted variable bias (Gujarati and Porter, 2003; Wooldridge, 2010) and to rule out alternative explanations for the mean results (Singh et al., 1986), this study includes an extensive number of control variables, including board characteristics (i.e., board independence, board size, board meeting frequency) and firm-specific characteristics (i.e., firm size, leverage, audit firm size), and ownership structure such as ownership concentration. There is extensive theoretical and empirical literature that suggests these variables can affect CRD (Alsaeed, 2006; Abraham and Cox, 2007; Ismail and Rahman, 2011; Allegrini and Greco, 2013; Ntim et al., 2013; Elshandidy and Neri, 2015; Allini et al., 2016; Al-Maghzom et al., 2016a; Alotaibi and Hussainey, 2016; Habtoor et al., 2017; 2018).

Table 2: Definition and measurement of variables

Abbreviated name	Full name	Description / Measurement
	Dependent variable	
CRD	Corporate risk disclosure	Number of risk-related sentences per annual report.
	Independent variable (board committees)	
AUDS	Audit committee size	Number of directors on the audit committee.
AUDM	Meeting frequency of audit committee	Number of meetings held by audit committee per year.
NOM&COM	The presence of nomination and compensation committee	Dummy variable of 1 if the committee exists, and 0 otherwise.
NOM&COMS	Nomination and compensation committee size	Number of directors on the nomination committee.
NOM&COMIND	Nomination and compensation committee independence	Proportion of independent members on the nomination committee.
NOM&COMM	Meeting frequency of nomination and compensation committee	Number of meetings held by the nomination committee per year.
	Control variables (board characteristics, ownership structure, firm characteristics)	
BS	Board size	Number of directors on the board of directors.
BIND	Board independence	Proportion of independent directors on the board.
BM	Board meeting frequency	Number of meetings held by the board of directors per year.
OWNCON	Ownership concentration	The percentage of company shares held by large shareholders who hold 5% and above of company shares.
FSIZE	Firm size	Total assets.
AUDFSIZE	Audit firm size	Dummy variable of 1 if the company is audited by the Big 4 audit firms, and 0 otherwise.

4.3. Data analysis

4.3.1. Panel data analysis

Compared to cross-sectional or time-series techniques, panel data analysis controls for individual heterogeneity, mitigates multicollinearity problems and the undesirable effects resulting from the use of a relatively small sample size, in addition to provide more informative data (Baltagi, 2008; Hsiao, 2014). Using STATA statistical software, panel data analysis is applied in this study to examine the influence of audit committee characteristics, the presence of nomination and compensation committee, and control variables on CRD for 307 company-observations from 2008 to 2011.

The panel data set in this study is unbalanced because the data contains some entities that have not been observed in all time periods due to the lack of data.

Based on the results of Breusch and Pagan Lagrangian multiplier test, Hausman test, Modified Wald statistic test, and Wooldridge test, fixed effects regression model clustered at the firm level is developed and employed by this study as it controls for endogeneity and produces a robust estimator to cross-sectional heteroscedasticity and within-panel correlation (Rogers, 1994).

Regression model 1: Assuming all the hypothesized relationships are linear, the fixed effects regression model to be estimated is as follows:

$$CRD_{it}= \beta_0+ \beta_1 AUDS_{it}+ \beta_2 AUDM_{it}+ \beta_3 NOM\&COM_{it}+ \beta_4 BS_{it}+ \beta_5 BIND_{it}+ \beta_6 BM_{it}+ \beta_7 OWNCON_{it}+ \beta_8 FSIZE_{it}+ \beta_9 AUDFSIZE_{it}+ \varepsilon_{it.}$$

Where the variables are defined as follows: Corporate risk disclosure CRD; audit committee size AUDS; audit committee independence AUDIND; meeting frequency of audit committee AUDM; the presence of nomination and compensation committee NOM&COMC; board size BS; board independence BIND; board meeting frequency BM; ownership concentration OWNCON; firm size FSIZE; audit firm size AUDFSIZE; error term ε.

4.3.2. Cross-sectional analysis

The second regression model is developed using the Ordinary Least Squares (OLS) method for cross-sectional analysis to examine the influence of the characteristics of nomination and compensation committee, in addition to control variables on CRD of 85 listed companies for the last year (2011). Restricting the analysis of the nomination and compensation committee characteristics to the cross-sectional analysis for the last year of the sample is due to the lack of data about the committee characteristics for the panel data analysis over the period of 2008-2010. By the beginning of 2011 and in response to the CMA requirements that made Article 15 of SCGRs: Nomination and Remuneration Committee mandatory for listed companies, all companies' boards in the sample had committees for nomination and compensation purposes. As a result, more details on such committee's characteristics became available in the companies' annual reports to be examined by this study.

Regression model 2: Assuming all the hypothesized relationships are linear, the OLS regression model to be estimated is as follows.

$$CRD= \beta_0+ \beta_1\ NOM\&COMS+ \beta_2\ NOM\&COMIND+ \beta_3\ NOM\&COMM+ \beta_4 BS+ \beta_5 BIND+ \beta_6 BM+ \beta_7 OWNCON+ \beta_8 FSIZE+ \beta_9 AUDFSIZE+ \varepsilon.$$

where the variables are defined as follows: Corporate risk disclosure CRD; nomination and compensation committee size NOM&COMS; nomination and compensation committee independence NOM&COMIND; meeting frequency of nomination and compensation committee NOM&COMM; board size BS; board independence BIND; board meeting frequency BM; ownership concentration OWNCON; firm size FSIZE; audit firm size AUDFSIZE; error term ε.

Prior to the analysis, the main assumptions of multiple regression such as outliers, normality, linearity, multicollinearity, heteroscedasticity, and autocorrelation, have been checked, and then corrected or controlled. Tests of normality for dependent and continuous independent and control variables suggest non-symmetrical distribution. Thus, all continuous variables are transformed into normal scores based on the Van der Waerden approach as it transforms actual observations to their equivalent values on normal distribution (Cooke, 1998). Multicollinearity is checked using Pearson correlation matrix and Variance inflation factor (VIF) and the results indicate no severe multicollinearity problem as shown in Tables 3 to 6 respectively.

Table 3: Pearson correlation matrix for variables involved in model 1

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) CRD	1.000									
(2) AUDS	0.212**	1.000								
(3) AUDM	0.167**	0.126*	1.000							
(4) NOM&COMS	0.157**	-0.048	0.072	1.000						
(5) BS	0.346**	0.213**	0.098	0.039	1.000					
(6) BIND	-0.173**	0.047	0.011	-0.113*	-0.065	1.000				
(7) N BM	0.224**	0.150**	0.348**	0.113*	0.045	-0.058	1.000			
(8) OWNCON	0.318**	0.069	0.141*	0.140*	0.130*	-0.451**	0.214**	1.000		
(9) FSIZE	0.493**	0.208**	0.092	0.000	0.420**	-0.295**	0.160**	0.442**	1.000	
(10) AUDFSIZE	0.461**	0.039	-0.066	0.063	0.270**	-0.185**	0.008	0.435**	0.445**	1.000

Note: *, ** significant at the 0.05 and 0.01 levels (2-tailed) respectively

5. Empirical results and discussion

5.1. Descriptive statistics

Table 7 shows the descriptive statistics of the level of CRD (dependent variable). The results indicate that the level of CRD varies largely among companies and ranges from a minimum of 22 sentences to a maximum of 282 sentences with a mean of 84.97 sentences per annual report and standard deviation of 44.451. Furthermore, the results reveal an improvement in the level of CRD over time with a mean of 75.44 sentences in 2008 to 95.76 sentences in 2011.

Furthermore, Table 8 summarizes the descriptive statistics of the independent and control variables which indicates significant variations in the sample and thus mitigating the possibility of sample selection bias.

Table 4: Variance inflation factor (VIF) and tolerance tests for model 1

VARIBLE	VIF	1/VIF
OWNCON	1.70	0.587
FSIZE	1.68	0.594
AUDFSIZE	1.46	0.687
BIND	1.31	0.762
BS	1.28	0.779
BM	1.21	0.826
AUDM	1.19	0.842
AUDS	1.11	0.902
NOM&COM	1.05	0.954
Mean VIF	1.33	

Table 5: Pearson correlation matrix for variables involved in model 2

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) CRD	1.000									
(2) NOM&COMS	0.369**	1.000								
(3) NOM&COMIND	-0.052	-0.169	1.000							
(4) NOM&COMM	0.108	-0.013	-0.007	1.000						
(5) BS	0.317**	0.252*	-0.118	-0.080	1.000					
(6) BIND	-0.189	-0.299**	0.392**	-0.179	-0.231*	1.000				
(7) BM	0.168	0.221*	-0.047	0.196	-0.038	-0.084	1.000			
(8) OWNCON	0.299**	0.231*	-0.269*	0.348**	0.183	-0.454**	0.087	1.000		
(9) FSIZE	0.509**	0.382**	-0.084	0.076	0.432**	-0.327**	0.047	0.475**	1.000	
(10) AUDFSIZE	0.406**	0.177	-0.122	0.005	0.149	-0.152	0.047	0.377**	0.405**	1.000

Note: *, ** significant at the 0.05 and 0.01 levels (2-tailed) respectively

5.2. Multivariate analysis

Table 9 summarizes the results of the panel data (fixed effects) and cross-sectional (OLS) analyses. Model 1 of Table 9 shows the results of the firm fixed effects regression analysis on the influence of audit committee characteristics, the presence of nomination and compensation committee, and control variables on CRD for 307 company-observations over four years. The model is highly significant (F= 14.58, p< 0.0000), which confirms the fitness of the model in predicting the outcome of variables. The R^2 within is 0.3263, which reflects the explanatory power of the model and indicates that independent and control variables included in the model explain 32.63% of the variation of in the level of CRD.

Table 6: Variance inflation factor (VIF) and tolerance tests for model 2

VARIABLE	VIF	1/VIF
OWNCON	1.82	0.549
FSIZE	1.80	0.555
BIND	1.51	0.664
NOM&COMS	1.31	0.762
AUDFSIZE	1.29	0.774
BS	1.29	0.776
NOM&COMM	1.26	0.796
NOM&COMIND	1.24	0.806
BM	1.11	0.903
Mean VIF	1.40	

Table 7: Descriptive statistics of the level of CRD (dependent variable)

Variables	N	Min	Max	Mean	Std.Dev.	Skew.	Kurt.
Total number of CRD Sentences	307	22	282	84.97	44.451	1.253	1.837
General Risk Information	307	0	53	8.78	8.219	2.299	7.366
Accounting Policies	307	4	68	24.52	13.243	1.017	0.64
Financial Instruments	307	0	21	3.15	4.052	1.501	2.59
Derivatives Hedging	307	0	25	3.4	5.471	2.055	3.49
Segment Information	307	0	43	6.92	8.448	1.602	3.058
Operational Risk	307	2	126	24.83	17.961	1.776	4.258
Financial Risk	307	0	57	13.02	9.545	1.05	2.201

Table 8: Descriptive statistics of independent and control variables

Variables	N	Min	Max	Mean	Std. Dev.	Skew.	Kurt.
AUDS	307	2	5	3.283	.537	.737	3.496
AUDM	307	0	21	4.772	2.806	1.718	9.326
NOM&COM	307	0	1	.86	.348	-2.074	5.302
NOM&COMS	85	2	6	3.447	.732	1.283	4.089
NOM&COMIND	85	0	1	.507	.275	-.039	2.437
NOM&COMM	85	0	9	2.435	1.816	1.618	6.181
BS	307	4	12	8.156	1.498	.106	3
BIND	307	0	1	.505	.203	.423	2.596
BM	307	1	19	5.121	2.234	1.847	9.118
OWNCON	307	0	.97	.395	.226	.06	1.852
FSIZE	307	97182	332783648	13014026	41195766.24	5.707	38.184
AUDFSIZE	307	0	1	.678	.468	-.76	1.577

Model 2 of Table 9 presents the results of the OLS regression analysis on the influence of the characteristics of nomination and compensation committee, and control variables on CRD for 85 listed companies for the last year (2011). The model is highly significant (F= 4.90, p< 0.0000), with adjusted R^2 of 0.2948, indicating that nomination and compensation committee characteristics and control variables could explain about 30% of the variance in the level of CRD.

Where the variables are defined as follows: Corporate risk disclosure CRD; audit committee size AUDS; meeting frequency of audit committee AUDM; the presence of nomination and compensation committee NOM&COMC; nomination and compensation committee size NOM&COMS; nomination and compensation committee independence NOM&COMIND; meeting frequency of nomination committee NOM&COMM; board size BS; board independence BIND; board meeting frequency BM; ownership concentration OWNCON; firm size FSIZE; audit firm size AUDFSIZE.

The result indicates an insignificant influence of audit committee size AUDS on CRD. This result is inconsistent with most of disclosure theories and empirical evidence.

The insignificant impact of audit committee size on CRD can be explained using a perspective derived from organizational behavior research (Hackman, 1990; Jensen, 1993). When audit committee becomes larger, the productivity losses arise as a result of poorer communication and the delay in the decision-making process, which makes it lose its power as a united group to convince management for more risk-related information.

However, the average number of audit committee members of Saudi listed companies is 3.28 members. This size is considered relatively small compared to five members and six members for an effective audit committee suggested by Andersen (1998) and the NACD (2000), respectively. Thus, the productivity losses related to large working groups may not be adequate to explain the poor role of audit committee size in this study. Instead, the lack of clear and detailed guidelines about the monitoring function of audit committee (Al-Abbas, 2009), and the poor experience and inadequate training for audit committee members (Habbash and Al-Moataz, 2013), in addition to the lack of awareness of the importance of board sub-committees among stakeholders (Albassam, 2014) may be the main reasons for the ineffective role of audit committee size on CRD.

Table 9: Regression result of the panel data (firm fixed effects) and cross-sectional (OLS) analyses

Variables	Predicted sign	Model 1 Firm Fixed Effects		Model 2 OLS	
		Coefficient	t-statistic	Coefficient	t-statistic
Constant		0.016	3.86***	0.114	1.84*
Independent Variables: Board Committees Characteristics					
AUDS	+	0.054	1.02		
AUDM	+	0.120	2.89***		
NOM&COM	+	0.121	3.51***		
NOM&COMS	+			0.230	1.70*
NOM&COMIND	+			0.049	0.38
NOM&COMM	+			0.102	0.87
Control Variables: Board Characteristics					
BS		-0.246	-3.71***	0.137	1.29
BIND		0.031	0.70	0.037	0.28
BM		0.089	1.90*	0.096	1.00
Control Variables: Ownership Structure					
OWNCON		-0.101	-1.00	-0.012	-0.10
Control Variables: Firm-specific Characteristics					
FSIZE		0.962	3.80***	0.274	2.37**
AUDFSIZE		0.318	3.33***	0.348	2.36**
F- value			14.59***		4.90***
R^2 within/ Adjusted R2			0.326		0.295
N			307		85

***, **, * Significant at 1%, 5%, and 10% levels, respectively

Empirically, this result is inconsistent with previous evidence (Felo et al., 2003; Hidalgo et al., 2011; Li et al., 2008; Persons, 2009) that document a positive relationship between audit committee size and corporate disclosure. However, the result is in line with other disclosure studies (Akhtaruddin et al., 2009; Elzahar and Hussainey, 2012; Mangena and Pike, 2005; Taliyang and Jusop, 2011) that find an insignificant association between the two variables. In the context of Saudi Arabia, this result is inconsistent with that reported by Al-Moataz and Hussainey (2012) who found a positive influence of audit committee size on the level of corporate governance voluntary disclosure. This can also be interpreted as Saudi audit committees perhaps lacking of qualified members regarding risk management and sources of uncertainty to persuade management to disclose such information publicly.

For the meeting frequency of audit committee AUDM, the results support hypothesis and show a significant positive impact of the frequency of audit committee meetings on CRD, indicating that audit committees that meet more frequently disclose higher risk-related information.

Although the SCGRs did not mention the minimum number of meetings that should be held by audit committees per year, this study highlights the importance of the meeting frequency of the audit committee as an indicator of audit committee diligence in reviewing major issues related to monitoring and evaluating management behavior and decisions regarding information processing and disclosure. The positive impact of higher meeting frequency on CRD is enhanced by the result from the descriptive statistics that show that audit committees meet around five times per year. This average number is considered higher than the minimum requirements suggested by Waterhouse (1993), which may contribute significantly to the formation of such relationship.

This result is consistent with previous studies, such as Abbott et al. (2004) who found a positive relationship between audit committees that meet more than three times per year and the quality of the preparation of financial reporting. O'Sullivan et al. (2008) found that the frequency of audit committee meetings is positively related to the disclosure of forward-looking information, respectively.

Regarding the presence of nomination and compensation committee NOM&COMC, the results confirm the theoretical perspective and show that Saudi companies with nomination and compensation committees are more likely to disclose more risk information. The findings of this study support the requirements of the SCGRs and highlight the importance of the establishment of such committees to enhance the effectiveness of corporate boards and thus disclosure quality.

The result of the current study is consistent with the previous evidence on the positive influence of the existence of the nomination and compensation committees on board effectiveness and corporate disclosure (O'Sullivan et al., 2008; Cerbioni and Parbonetti, 2007; Vafeas, 1999; Ruigrok et al., 2006). However, this result is inconsistent with that found by Allegrini and Greco (2013) who found an insignificant impact of the nomination committee and compensation committee on voluntary disclosure.

The positive impact of the size of nomination and compensation committee NOM&COMS on CRD suggests that Saudi companies with larger nomination and compensation committees provide higher risk-related disclosures. This result supports the theoretical perspective of disclosure theories such as resource dependency theory and stakeholder theory. By contrast, this finding contradicts the hypothesis of the productivity losses related to working groups that proposes an adverse relationship between the size of the working group and its productivity and effectiveness. However, the productivity losses hypothesis may not be applicable to such committee because its size is relatively low (3.45 members) against its considerable responsibilities of nominating board members and remunerating the board and top management. Although the SCGRs do not specify the size of this committee, this study highlights the positive role of the size on CRD.

Empirically, the result is consistent with the evidence of Laksmana (2008) that compensation committee size is positively related to transparency.

Regarding the relationship between nomination and compensation committee independence NOM&COMIND and CRD, the result reveals an insignificant association. This result is inconsistent with the theoretical perspectives (e.g., agency theory, resource dependence theory, stakeholder theory) and researchers' arguments (Allegrini and Greco, 2013; Jensen, 1993; Ruigrok et al., 2006; Vafeas, 1999) and hypothesis developed. The result also contradicts prior empirical evidence (Beekes and Brown, 2006; Cerbioni and Parbonetti, 2007; Chobpichien, 2008; Laksmana, 2008; O'Sullivan et al., 2008; Uzun et al., 2004). However, this finding is consistent with Allegrini and Greco (2013) who found an insignificant relationship between nomination and compensation committee independence and voluntary disclosure.

The insignificant impact of independent members on this committee could be driven by the influence of insider members or executive directors who serve as members on the nomination and compensation committee or even act as the head of the committee. Vafeas (1999) argued that the composition of the nomination committee can be considered as an indicator of board quality. More independent committee members are likely to select more independent directors with sufficient qualifications at the expense of executive and affiliated directors. In contrast, inside directors who serve on the nomination committee could be less inclined to assign directors who are independent from management (Ruigrok et al., 2006). This may be the case in Saudi Arabia, where some nomination and compensation committees are headed by the CEO, not to mention the executive members on the committee.

Furthermore, the poor role of nomination and compensation committee independence on CRD could also be attributed to the influence of controlling shareholders, especially family owners and institutional investors, on the selection process of board members as they hold a significant amount of Saudi companies' shares and have a negative impact on CRD. Despite independent board members of Saudi listed companies reflects the complies of good governance practice, they may actually reflect the controlling shareholder's preferences who will adopt a weak and ineffective governance structure by assigning less independent members to the nomination and compensation committee and the board as a whole (Hu et al., 2010; Setia-Atmaja et al., 2009).

Therefore, this result makes it imperative for the concerned authorities to exert further efforts to ensure true independence of the board from insiders (management) and outsiders (controlling shareholders).

For meeting frequency of nomination and compensation committee NOM&COMM, the results reveal an insignificant relationship between the number of meetings of the nomination and compensation committee and CRD. This result is inconsistent with the expectation that dedicating more time by committee members would help the committee to discharge its complicated and mixed duties effectively, which in turn enhances the effectiveness of the board regarding monitoring and disclosure.

Empirically, this result is inconsistent with Laksmana (2008) who found a positive influence of meeting frequency of the compensation committee on the compensation disclosure practice.

The insignificant result could be attributed to the indirect relationship between the meeting frequency of the nomination and compensation committee and CRD. Contrary to the disclosure issues that are usually raised and discussed extensively as a main duty through the board and audit committee meetings, the nomination and compensation committee members spend their meeting time focusing on how to improve the board and audit committee effectiveness and thus enhance the monitoring function and disclosure quality.

For the control variables, the results are almost in line with previous evidence. For instance, board meeting frequency, firm size and audit firm size are associated with higher level of CRD (Al-Maghzom et al., 2016a; Albassam and Ntim, 2017; Habtoor and Ahmmad, 2017), whereas board size has a negative influence on CRD (Habtoor and Ahmmad, 2017). However, no influence of board independence and ownership concentration on CRD (Alsaeed, 2006; Elshandidy and Neri, 2015; Buckby et al., 2015).

6. Conclusion

To the best of the researchers' knowledge, this study is the first to investigate the relationship between the existence and structure of board committees (e.g., audit, nomination, and compensation committees) and the level of CRD in Saudi Arabia. The study employs ordinary least squares OLS and panel data analyses of the annual reports of Saudi non-financial listed companies. The empirical results show that the presence and size of the nomination and compensation committee, and meeting frequency of audit committee play a significant positive role in the decision to provide higher risk disclosure. In contrast, the study fails to find an association between audit committee size, nomination and compensation committee independence, and meeting frequency.

This study has a number of implications. First, the study extends corporate governance and risk disclosure literature by providing critical information and empirical evidence on the role of the existence and characteristics of nomination and compensation committees on CRD.

Second, the study provides vital input to policy makers, regulatory authorities, and practitioners in Saudi capital market to optimize the structure of board committees, enhance corporate governance effectiveness, and improve CRD practices. The results suggest that the audit committee and nomination and compensation committee need to be enhanced. Audit committee size does not influence CRD and the threshold of the committee size proposed by the SCGRs is also not effective (results not reported). Furthermore, the SCGRs do not mention the committee meetings, despite their importance in enhancing the committee effectiveness. Therefore, the SCGRs may need to be improved to strengthen the monitoring role of the audit committee and enhance its competence.

On the other hand, the results highlight the absence of the role of independent members of nomination and compensation committee and board of directors on CRD. The influence of executive directors as members on the committee, in addition to the effect of controlling shareholders, especially family owners and institutional investors, on the selection process of board members are the main possible reasons for this deficiency. This finding makes it imperative for the relevant authorities to exert further efforts to ensure true independence of the board and its committees from insiders (management) and outsiders (controlling shareholders). This requires imposing more control over companies to comply with the best practice of corporate governance, including fully committed to the definition of independent board members proposed by the SCGRs.

Third, while this study provides important evidence, the limitations and the opportunity for further research associated with this study are as follows. As this study depends on annual reports to examine CRD, using other channels of corporate disclosure, such as interim reports and companies websites could be potential avenues for future research to strengthen the results of this study. Moreover, the current study examines the impact of board committees on CRD. However, investigating the consequences of CRD on areas, such as the cost of capital and firm value in Saudi context would provide considerable evidence on the awareness of the importance of risk information by Saudi companies and investors in making decisions.

Furthermore, at the beginning, this study considers the existence and independence of audit committee as important determinants of CRD to be examined. However, the result from data collection reveals that all companies have audit committees comprise of independent members.

In addition, due to the lack of data, this study examines the influence of the presence and characteristics of nomination and compensation committee on CRD for the last year of the study. However, further research may use a longitudinal study to re-examines this issue. Future research may also investigate the potential moderating role of nomination and compensation committee on the relationship between board effectiveness and CRD.

Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

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