

Board Quality and Risk Disclosure: Evidence from Saudi Arabian Publicly Listed Companies

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Abstract This paper investigates the effect of the board quality on risk reporting in specific social and cultural context of Saudi Arabia for a sample of 423 company-year observations over the period 2015-2018. The paper utilizes a comprehensive risk reporting index and self-constructed index of board quality to measure the main variables. Using pooled OLS regression models, our results suggest that there is a positive and significant relationship between the quality of the board of directors and risk reporting in Saudi non-financial firms. In addition, this finding is consistent with the disaggregation of the risk disclosure index into mandatory versus voluntary risk disclosures and the disclosure of financial and non-financial risk disclosures. Such findings suggest that the quality of the board of directors helps to eliminate information asymmetry and agency costs. Finally, the findings of this study can prove to be of great value to market regulators in their attempts to improve the corporate governance in Saudi Arabia and can be extended to include other countries in the MENA region.

Keywords: Board quality, risk reporting, Saudi Arabia, non-financial companies

1. Introduction

The wake of the global financial crisis has contributed to increasing interest in corporate governance practices in stock markets. Poor corporate governance, inefficient risk management and lack of risk disclosures were blamed as the root of the 1997 financial crisis in East Asia and the 2001 financial crisis [1] and later the 2007-2008 global financial crisis [2]. Inadequate transparency of business operations, in particular risk management, has increased the concern of stakeholders [3]. This has increased the demand of stakeholders for more transparency [4, 5].

The board of directors is the internal governance structure responsible for steering a firm in the right strategic direction, such as risk disclosure practices. The quality of the board is effective in oversight role on risk disclosure [6, 7]. The board also performs oversight functions to the management on behalf of shareholders, which in turn reduce agency costs and align the interests of the managers and shareholders [8, 9]. From agency theory framework, board of directors is one crucial method used by companies to resolve conflicts either between managers and shareholders or among [10]. Therefore, the continuation and success of the firms requires appointing an effective board of directors who could provide sufficient risk information and protect shareholders' interests. This statement highlights the importance of board quality in conflict resolution. Quality of board of directors may help to pay proper attention about the interest of all shareholders,

as they are anticipated to monitor the managers and majority shareholders in order to protect the minority shareholders' interests.

While there is an expanding interest in research on risk reporting in developing countries, most risk reporting literature in these countries has focused heavily on financial firms [11-13]. Studies conducted on risk reporting in non-financial companies are restricted, such as [14-20], there is far-less study have examined the association between combination of these characteristics and risk reporting. Therefore, this study seeks to investigate the association between board quality and the level of risk disclosure in non-financial Saudi firms to widen the literature on risk reporting by filling out the information gap. This study differs from previous studies since previous studies examined the influence of each characteristics of the board on risk reporting, while this study examines the relationship between board quality based on a self-constructed index and risk reporting. Our board Index is therefore an objective indicator of the quality of the board of directors.

The Saudi Arabian stock market provides an optimal environment to investigate the association between board quality and risk disclosure for a number of reasons. First, Saudi Arabia is at the heart of the Arab and Muslim worlds. Second, Saudi Arabia is a core member of the Organization of the Petroleum Exporting Countries (OPEC), which has the second largest oil reserves in the world after Venezuela. Third, Saudi Arabia has recently experienced rapid socio-economic development. Saudi Arabia has developed policies and strategies for achieving Saudi vision 2030 to become a worldwide investment powerhouse, such as diversifying its economy and moving away from oil as the main economic commodity which in turn has boosted the economy and attracted foreign investors to the country. Finally, Saudi Arabia has recently increased awareness of corporate governance as it re-issues corporate governance regulations that highlight the important role of the board in risk reporting. Consequently, providing insight into this country's corporate governance practices and their impacts on the transparency will help attract more investors and strengthen the country's economy.

In this research study, a hand-collected sample of 423 firm-year observations of publicly listed non-financial firms in Saudi stock market over the period from 2015 to 2018 was used. To assess the influence of board quality on risk disclosure, a comprehensive risk disclosure index and board quality index were used. Accordingly, through the development of a regression model, it was found that there is a positive and significant relationship between the quality of the board and risk reporting of Saudi non-financial firms. Furthermore, we obtained consistent results after disaggregated the risk reporting index into mandatory

versus voluntary risk disclosures and financial versus non-financial risk disclosures.

The rest of this paper is structured as follows. Second section will provide a review of relevant literature and hypothesis development. Third section will describe the design and measurements of the research; while in fourth section, the results of this study are discussed. Lastly, fifth section offers the conclusion of conducted research.

2. Literature Review

Risk Reporting

In [21] addresses risk reporting by covering both good and bad information on the firm's uncertainties. He defined risk disclosure as "the financial statements inclusion of information about managers' estimates, judgments, reliance on market-based accounting policies such as impairment, derivative hedging, financial instruments, and fair value as well as the disclosure of concentrated operations, non-financial information about corporations' plans, recruiting strategy, and other operational, economic, political and financial risks." (Hassan 2009, p. 669). In the light of this definition mentioned above, it can be stated that risk reporting is a process of reporting information on potential risks, either positive or negative, financial or non-financial, related to backward-looking risk information or forward-looking risk information.

The role of risk disclosure to reduce the asymmetrical information as well as agency costs is proven by many scholars [22]. They propose the risk reporting's beneficial impact in reducing the uncertainty of investors that could help to assess firm performance in the future. Improving the risk information made available to stockholders benefits them in financing decisions and investment decisions. [23] discuss the significance of risk disclosure in terms of its ability to reduce agency and information asymmetry problems that exist between managers and stakeholders. Thus, there is a high possibility to achieve the decrease of agency problem through a reduction in information asymmetry between managers and stakeholders, and consequently boost the firm's overall performance. Basically, identification of risks and opportunities protects the company from unexpected consequences and creates value for its stakeholders [24]. In addition, firms might also be interested in the disclosure of risk information to enable more effective communication with influential stakeholders, as well as gain more support from investors and stakeholders to achieve the identified goals [25].

[26] imply that firms with increased systematic, financing and risk-adjusted return risks are more likely to disclose more risk information. This would help to reduce monitoring costs and, in addition, reduce cost of capital [27]. Consequently, those companies that fail to deliver high level of risk reporting will deal with the increase in capital cost due to an increased rate of return by shareholders. Therefore, transparency of risk information would minimise the investors' uncertainty and consequently they would reduce the cost of equity capital [28]. Nevertheless, [29] remind that disclosures alone will not generate transparency unless the information is appropriate. Consequence, transparency can achieve better corporate governance as the market disciplines firms with unacceptable risk levels (Linsley & Shrivs, 2005). Risk reporting therefore provides companies with many

advantages, such as minimizing uncertainty, enhancing performance, reducing cost of equity capital, and increasing stakeholder trust.

The Quality of the Board and Risk Reporting

As a governing body of a corporation, the board of directors manages the business and affairs of the corporation. Usually, the board's main responsibility is to make major business and policy decisions and appoint and give powers to its officers to exercise the duties on behalf of the board. In other words, the role of the board to maintain corporate governance and oversee risk management of the corporation and deliver the feedback to the shareholders (Moumen, Othman & Hussainey, 2016). The empirical studies identify certain structural characteristics (e.g., board size, board independence, interlocking directors, and board meetings) that are able to measure the business effectiveness of the board of directors (e.g., Alsheikh et al., 2020, Habtoor & Ahmad, 2017, AlMaghzom et al., 2016). The effective and well-organized operations of board can enhance the informativity of risk reporting (Moumen et al., 2016).

The board size or the number of members in the board of directors is one of the key determinants of risk disclosure practices (AlMaghzom et al., 2016). Elshandidy & Neri (2015) support the idea larger boards are more effective in decreasing actual agency costs due to their ability to align potential conflicts of interest between insiders and outsiders. Further, the board's combined experience and expertise will increase with a large number of directors, and hence the need for information disclosure will increase (Akhtaruddin et al., 2009). Based on prior studies, the relationship between board size and risk reporting is primarily significant and of a positive nature (e.g., Ntim et al., 2013; Saggat & Singh, 2017). However, AlMaghzom et al., (2016), & Habtoor & Ahmad (2017) found a negative relationship between board size and risk disclosure.

Another major determinant of the risk reporting is represented by independent directors who perform neither management nor business or ownership role. Their functions are marked by the responsibility to protect the company's reputation for professional integrity (Allini et al., 2016). In terms of reporting and disclosure practices, there is a need for independent directors on the board in order to monitor the actions of other executive directors. The increase in the number of independent directors leads to increase the level of monitoring role of the board of directors and, hence reduces the management's chance of withholding information for their own benefit (Akhtaruddin et al., 2009). Oliveira et al. (2011) found the proportion of independent directors to board is positively and significantly related to the risk reporting, implying that the companies are more likely to provide more risk information if their boards of directors have more independent members. Likewise, Barakat and Hussainey (2013) and Probahudono et al. (2013) observed a positive and significant association between board independence and the extent of risk disclosures. These results contribute to the current understanding of the usefulness of the threshold of board independence as one of the important determinants of risk reporting. Nevertheless, [30] found that board independence has no significant impact on risk reporting. The insignificant effect of board independence on the risk reporting has been further approved by [31-34].

Interlocking directors have more knowledge, skills, and experience that help to reduce the agency costs [35]. Hence, interlocking directors may help to enhance the monitoring function of the board [36-38] found that interlocking directors positively impact the risk reporting in the GCC companies. However, [39] found interlocking directors had no impact on risk disclosure. Another board characteristic that can be considered as one of the critical determinants of risk disclosures is frequency of board meeting. [40] indicated a significant positive association between board meeting frequency and risk reporting. The outcome highlights the significant role of board meetings and their frequency, which can raise the board's performance within risk reporting practices. Furthermore, [41] found that the higher the frequency of the board meetings, the better quality of the disclosure. This shows that firms with frequent meetings are increasing the effective mechanism of corporate governance. In this context, a higher frequency of meetings leads in a more effective monitoring mechanism to enhance management's decision on disclosure, and, in turn, minimizes information asymmetry [42]. However, the study of [43] indicated an insignificant relationship between board meetings and risk disclosure.

Based on the above sections, the agency theory tends to relate to the significance of the board characteristics (i.e., namely, board size, board independence, interlocking directors and board meetings) as risk reporting determinants. Further, combining these characteristics can be representing the effectiveness and the quality of the board of directors as these characteristics act in a complementary manner. Thus, the efficiency of the board's monitoring function through these characteristics may enhance risk disclosure level and, in turn, reduce information asymmetries as well as agency conflicts [44]. In the context of this research, we argue that the quality of the board plays an essential role in risk reporting. We conjecture that when board characteristics that improve the board quality increase, the level of risk reporting increases. Thus, the following hypothesis was developed:

H: There is a positive relationship between board quality and risk reporting.

3. Research Design

Sample Selection and Data

In this study, our sample consisted of 109 of Saudi non-financial listed firms for the period from 2015 to 2018. The financial companies, such as banks, insurance, and financial services companies, were excluded from this study since they are subject to different corporate governance regulations which might impact the analysis. Moreover, financial firms have different capital structure. Data on risk reporting, firm governance characteristics and audit quality were manually taken out from the annual reports of the sampled firms for the period of study. With regards to the data on firm characteristics, such as size and beta, these data were collected from Datastream database.

Table 1 presents the sample selection for this study. This table shows that initially there were 452 firm-year observations for the non-financial firms. Of these firm-year observations, 29 were excluded due to unavailable annual report or missing data. This yields a final sample size of 423 firm-year observations.

Table 1: Sample Selection

Number of observation available for non-financial firms in UAE	452
Less:	
Firm-year with unavailable annual report and missing data in control variables	(29)
Total firm-year observations	423

Dependent Variable

Risk disclosure (RD) is the dependent variable for this research which represents the level of risk reporting among Saudi listed companies. The RD index used in this research is that developed by [45]. The index was developed from prior academic studies [24, 33], and risk-related accounting standards (i.e., IFRS 7: Financial Instruments Disclosures). The RD index is constructed based on the main risk categories (i.e., mandatory risk disclosures vs voluntary risk disclosures, and financial risk disclosures vs non-financial risk disclosures). The unweighted RD index was categorized into 10 primary categories and 33 sub-items, each item is assigned 1 if it is disclosed, otherwise 0.

Independent Variable and Control Variables

The independent variable in this study is the quality of the board of directors (BoardQ). This study follows the steps of previous studies [26, 30] and captures the characteristics of the board of directors as a whole based on index in order to measure the quality of the board of directors. The unweighted index of the board quality is a composite measure, summing up the value of the four dichotomous characteristics, i.e., a dummy variable taking value 1 if the board characteristic equals or more than median value and 0 otherwise. The four board characteristics that have been included in the index are the board size, board independence, interlocking directors and board meetings. The BoardQ score is calculated on the basis of the following:

$$BoardQ = \frac{Total\ actual\ BoardQ\ score}{Total\ maximum\ BoardQ\ score}$$

This study included five control variables, namely, audit quality (AQ), firm size (Size), profitability (ROE), leverage (Lev), and company-level risk (Beta). Prior studies have proved the significant effects of these variables on RD; audit quality [6], firm size [17], profitability [14], leverage [5], and the firm's risk factor [15]. The variables of this study and their measurements are shown in Table 2.

Table 2: Measurements of Variables

Variable	Measurement
RD	The level of risk reporting based on index
BoardQ	Board quality based on index, which covers board size, board independent directors, interlocking directors, and board meetings.
AQ	A dummy variable of 1 if the firm is audited by one of the Big Four auditors, 0 otherwise.
Size	The natural logarithm of total assets
ROE	Net profit scaled by total equity.
Lev	The total debt scaled over total assets.

Beta	Systematic risk which is calculated over 12 months by regressing the share price against the respective market index
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Statistical Model

The relationship between the quality of the board of directors (independent variable) and the risk reporting (dependent variable) is determined through the following model:

$$RD = \beta_0 + \beta_1 \text{BoardQ}_{it} + \beta_2 \text{AQ}_{it} + \beta_3 \text{Size}_{it} + \beta_4 \text{ROE}_{it} + \beta_5 \text{Lev}_{it} + \beta_6 \text{Beta}_{it} + \text{Year}_{it} + \text{IND}_{it} + \varepsilon_{it}$$

4. Results and Discussion

Descriptive Statistics

Table 3 describes the basic characteristic of the considering variables that included in the regression model. Table 3 indicates the mean values for risk disclosure index (RD) is 0.697 with a standard deviation of 0.151. This indicates that, on average, 69.7% of the level of risk disclosure is disclosed. This finding shows an improvement in the level of risk reporting among Saudi companies compared to the previous study done by [17]. This finding indicates that there is an improvement in the risk reporting practices in Saudi companies as a result of compliance with recent corporate governance regulations. At the same time,

TABLE 3: Descriptive Statistics

Variable	N	Mean	S.D	Min	Max
RD	423	0.697	0.151	0.272	0.969
BoardQ	423	0.544	0.264	0	1
Control variables					
AQ	423	0.449	0.498	0	1
Size	423	20.213	1.548	15.445	25.542
ROE	423	0.055	0.188	-1.911	0.584
Lev	423	0.231	0.191	0	0.714
Beta	423	1.099	0.280	0.431	1.819

Pearson Correlation Coefficients

We examined the Pearson Correlation between our variables over the four-year period. From Table 4, it is evident that there is a positive and significant correlation between board quality and the risk reporting at level 1%. This means that as the board quality increases, the risk reporting increases. Moreover, it was found that the audit quality, firm size and the leverage have significant positive correlations with risk reporting. These results are consistent

TABLE 4: Pearson Correlation Matrix between Variables

	1	2	3	4	5	6	7
1-RD	1						
2-BoardQ	0.248***	1					
3-AQ	0.157***	0.094**	1				
4- Size	0.356***	0.203***	0.444***	1			
5-ROE	0.057	0.011	0.258***	0.245***	1		
6- Lev	0.193***	0.071	0.123***	0.409***	-0.197***	1	
7-Beta	0.006	-0.093*	-0.165***	-0.160***	-0.331***	0.246***	1

the results show that there is a high variation in the RD practices of the Saudi firms as the minimum index value was 0.272 versus a maximum of 0.969, which is similar to the results obtained by [4] for GCC companies and [16] for the Saudi banks.

In terms of the independent variable, the mean value of the board quality was 54.4% with some firms having 0 quality of the board. However, the maximum value of board quality indicates that some of the firms in our sample had board quality up to 100%. Audit Quality represented by the big four audit firms (AQ) has a relatively lower mean of 44.9% compared to prior studies that done in the GCC financial firms [5]. With regard to firm characteristics, the descriptive statistics show that the mean (standard deviation) values for Size, ROE, Lev and Beta are 20.213 (1.548), 0.055 (0.188), 0.231(0.191) and 1.099 (0.319), respectively. This indicates that the sample companies' profitability is very low, with an average of 0.055 and some companies have realized losses. Moreover, the average leverage ratio was 0.231, indicating a low level of leverage for the sample companies. Based on the level of risk, the sample companies have higher levels with an average of 1,099 compared to a market. Table 3 demonstrates the diversity of our sample companies due to the dispersion of control variables.

with the findings of [7], respectively. On the other hand, profitability and beta have no significant relationship with the risk reporting. Table 4 reports that the highest correlation was between audit quality and firm size at 0.444. The second highest correlation was between firm size and leverage at 0.409. Overall, the correlation coefficients in our results are less than 0.7; hence they are not a concern. Therefore, multicollinearity is not an issue in the regression procedure.

In order to test our hypothesis and to handle the bias of omitted variables, pooled OLS regression is used as the main test in this study. Table 5 shows the results of the different regression models performed. In model 1, we test the impact of board quality on the risk reporting. As hypothesized, there is a significant and positive impact of board quality on the risk reporting at the 1% significance level with coefficients of 0.0683. This result suggests that the quality of the board plays a vital role in controlling the opportunistic behavior of management by means of effective monitoring and control mechanisms that reduce

the information asymmetry and agency costs. This result is in line with agency theory and the findings of [9, 12] in term of board size; [18, 20] in term of board independence; [22] in term of interlocking directors, and [33] in term of board meetings. Therefore, the result supports our hypothesis. Moreover, the firm size and beta have significant positive impacts on risk reporting. The result of firm size is consistent with the findings of [2, 11], while beta result contradicts the findings of [6, 19].

TABLE 5: Regression Results

Regression Models	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable	RD	MRD	VRD	FRD	NFRD
BoardQ	0.0683***	0.0432**	0.0826**	0.0443**	0.0820**
	2.68	2.19	2.19	2.09	2.18
AQ	0.0181	0.0334***	0.0094	0.0488***	0.0006
	1.31	3.64	0.46	4.79	0.03
Size	0.0315***	0.0095**	0.0441***	0.0137***	0.0416***
	5.90	2.14	5.29	2.79	4.98
ROE	0.0340	-0.0332	0.0724	-0.0371	0.0746
	0.61	-1.37	0.91	-1.10	0.99
Lev	0.0456	0.0869***	0.0220	0.1151***	0.0058
	1.06	3.14	0.35	3.72	0.09
Beta	0.0634**	0.0067	0.0958**	0.0049	0.0968**
	2.35	0.37	2.45	0.25	2.52
Year Control	Yes	Yes	Yes	Yes	Yes
Industry Control	Yes	Yes	Yes	Yes	Yes
Constant	-0.0587	0.5350***	-0.3980**	0.3520***	-0.2934
	-0.48	5.06	-2.10	2.99	-1.54
N	423	423	423	423	423
R-squared	0.334	0.264	0.285	0.379	0.259
Adjusted R-squared	0.308	0.235	0.256	0.355	0.230

Notes: RD is the level of risk reporting based on index; MRD is the level of mandatory risk reporting based on index; VRD is the level of voluntary risk reporting based on index; FRD is the level of financial risk reporting based on index; NFRD is the level of non-financial risk reporting based on index; BoardQ represents board quality based on index (which covers board size, board independent directors, interlocking directors, and board meetings); AQ is a dummy variable that takes on the value of 1 if the firm is audited by one of the Big Four auditors, 0 otherwise; Size is the natural logarithm of total assets; ROE is net profit scaled by total assets; Lev is the total debt scaled over total assets; and beta represents systematic risk which is calculated over 12 months by regressing the share price against the respective market index.

In order to confirm the robustness of the result, we re-estimate the multiple regression analysis for the initial model by examining the relationships between the board quality and the different types of risk disclosures; namely: mandatory versus voluntary and financial versus non-financial. The results of the regression analysis show that there is a positive and significant relationship between the board quality and the level of mandatory, voluntary, financial, and non-financial risk reporting at $p < 0.05$. These results imply that the extent of mandatory, voluntary, financial, and non-financial risk reporting increase as the quality of the board increases. These findings regarding different types of risk reporting are consistent with the main deduction from this research study (Model 1). Accordingly,

these findings support the hypothesis developed in this study as board quality helps to enhance the level of different types of risk reporting which in turn reduce the investors uncertainty.

5. Conclusions

Using self-constructed index of board quality and a comprehensive RD index, we developed pooled OLS regression model to test the influence of board quality on the risk reporting of the publicly traded non-financial companies in Saudi Arabia over the period from 2015–2018. The result indicates that the quality of the board of directors has a positive and significant effect on the extent of risk reporting. In addition, the decomposition of the risk reporting index into various risk reporting types demonstrates the robustness of the results.

This research therefore contributes significantly to the literature, as it is the first study to examine the relationship between the impact of board quality on risk reporting of the publicly traded non-financial firms in Saudi Arabia. This adds value to the literature on risk reporting and corporate governance mechanisms as it provides insight into the most significant determinants of risk reporting, which is the quality of board of directors. The finding reported in this research is also beneficial for regulators of the capital market because our finding indicates that the quality of the board of directors adds value to the companies and helps to improve their transparency. This conclusion might be used by regulators

to put in place some regulations in order to enhance the confidence of the investors and potential investors, especially foreign ones, in the Saudi stock market and the Saudi economy as a whole and attract more investments.

As with all the research studies, and despite the contributions made by the study outlined in this research, this study has some limitations that provide opportunities for future research. First, the sample used for this study consists of Saudi non-financial listed companies only; hence, this research could be studied extensively and in compliance with its regulatory framework. By expanding the study to financial firms and/or the geographical and economic boundary such as GCC region, it may provide a comprehensive knowledge of the phenomenon of risk reporting. Thus, studies that will be focused on other sectors or on broader boundary economic will help in understanding the full picture of the determinants of the level of risk disclosure as well as the effectiveness of corporate governance mechanisms. Furthermore, it will help to unveil any similarities between the companies in those countries and those in Saudi Arabia. Moreover, this study only investigated the relationship between board quality and risk reporting for the period between 2015 to 2018. Therefore, future studies may investigate this relationship for more than four years in order to have a wider time frame to ensure the consistency of the findings.

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