

## Institutional Investors, Risk Management and Audit Committees Influence on Non-Financial Risk Disclosure

*(Pengaruh Institusi Pelabur, Jawatankuasa Pengurusan Risiko dan Audit Ke Atas Pendedahan Maklumat Risiko Bukan Kewangan)*

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### ABSTRACT

*This study examines the complementary or substitution role of audit committee independence (ACInd), risk management committee (RMC) and institutional investors on non-financial risk disclosure (NFRD). While the existing literature provides inconclusive evidence on the individual influences of various monitoring mechanisms on NFRD, it is necessary to examine whether their combined monitoring roles are present as many monitoring mechanisms coexist within an organisation. This study examined a sample of 864 Bursa Malaysia companies from 2016 to 2018. The Delphi technique is used to finalise NFRD items. This study performed regression and simple slope tests to examine the complementary and substitutive role of ACInd, RMC and institutional investors. The findings show that RMC is substitutive to ACInd towards NFRD. This demonstrates that RMC has the expertise and potential to lessen any information asymmetry, making it the most reliable monitoring mechanism. These findings indicate the significance of establishing a standalone RMC among Malaysian companies to supervise the NFRD reporting.*

*Keywords: Complementary and substitutes framework; institutional investors; non-financial risk disclosure; risk management and audit committees.*

### ABSTRAK

*Kajian ini mengkaji peranan pelengkap atau pengganti jawatankuasa audit bebas (ACInd), jawatankuasa pengurusan risiko (RMC), dan pelabur institusi ke atas pendedahan risiko bukan kewangan (NFRD). Walaupun kajian lalu telah menunjukkan bukti yang tidak konsisten berkenaan pengaruh pelbagai mekanisme pemantauan secara individu ke atas NFRD, adalah perlu untuk memeriksa kewujudan gabungan mekanisme pemantauan secara bersama disebabkan banyak mekanisme pemantauan berada bersama dalam organisasi. Kajian ini menguji 864 sampel syarikat tersenarai di Bursa Malaysia dari 2016 hingga 2018. Teknik Delphi digunakan untuk memuktamadkan item-item NFRD. Ujian regresi dan kecerunan telah dilakukan bagi memeriksa peranan pelengkap dan pengganti ACInd, RMC dan pelabur institusi. Dapatan kajian menunjukkan RMC adalah pengganti kepada ACInd ke atas NFRD. Ini menunjukkan RMC mempunyai kepakaran dan berpotensi mengurangkan masalah jurang maklumat dan menjadikannya mekanisme pemantauan yang paling dipercayai. Penemuan ini menunjukkan kepentingan penubuhan RMC tersendiri dalam kalangan syarikat Malaysia untuk menyelia pelaporan NFRD.*

*Kata kunci: Kerangka kerja kesan pelengkap dan pengganti; pelabur institusi; pendedahan maklumat risiko bukan kewangan; jawatankuasa pengurusan risiko dan audit.*

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### INTRODUCTION

Stock market scandals result from poor risk disclosure and a lack of effective monitoring mechanisms (Khandelwal et al. 2020). On the other hand, fast-changing economic, political, and technological environments lead to high complexity in the business environment (Woods et al. 2017). Consequently, business organisations face various challenges in the face of such volatility. These situations

have led companies to implement and strengthen risk management practices. However, such information, particularly corporate non-financial risk, needs to be disclosed to reduce information asymmetry (Cheung et al. 2010; Jensen & Meckling 1976). Companies must provide highly informative corporate risk disclosures to communicate their quality to stakeholders (Khandelwal et al. 2020). However, the level of disclosure is low or inadequate (Jamil et al. 2020; Tirado-Beltrán et al. 2020,

Abraham & Shrives 2014). Businesses opt not to disclose such information, particularly in developing nations like Malaysia. Non-financial risk disclosure (NFRD) is voluntary under Paragraph 9.1 of the Malaysian Code of Corporate Governance 2017 (MCCG 2017).

Additionally, listed companies are not required to follow any guidelines for non-financial risk information. This circumstance demonstrates the need for an investigation into what should be disclosed from the stakeholders' perspective because different objectives and preferences among the players are the primary sources of conflict (Katan & Mat Nor 2015). Hence this study introduced an NFRD index derived from the Delphi technique. The monitoring mechanism is considered a significant driver of corporate risk disclosure. Although monitoring mechanisms supervise the agents to benefit the stakeholders, prior studies provide inconsistent findings on the role of individual monitoring mechanisms in reducing the information asymmetry related to the NFRD (Hassan et al. 2017; Yoshikawa et al. 2014; Rediker & Seth 1995). While some researchers (Abdullah et al. 2017; Al-Hadi et al. 2016) report a positive effect of effective monitoring mechanism processes on risk disclosure, a negative association was observed by Khandelwal et al. (2020), Nahar et al. (2020), and Agyei-Mensah and Buerterey (2019). The current study extends the above by investigating the monitoring roles of RMC, ACInd, and institutional ownership towards NFRD using the "complement vs substitutes" framework, which can address inconclusive findings from previous studies on NFRD.

Following Oh et al. (2016), this study uses the marginal effect concept to explain the complementary or substitution of monitoring mechanisms. A single monitoring mechanism can increase marginal effects on organisational outcomes (Hoskisson et al. 2009). Alternatively, the substitutive approach holds that a single monitoring mechanism can lower the marginal effect on any organisational outcome (Ward et al. 2009). As a result, optimum outcomes do not necessitate using several monitoring mechanisms. Drawing on this concept and agency theory, the NFRD will be affected by the different categories of monitoring mechanisms.

The rest of the paper is organised as follows. The second section reviewed previous research and followed by hypotheses development. Section four discusses the research methodology, followed by research findings in section five. Section six concludes the paper.

## LITERATURE REVIEW

### RISK DISCLOSURE

Ruin (2009) defines risk as a condition or event impeding an organisation's goals. Linsley and Shrives (2006) describe risk information as information that reveals opportunities, prospects, threats, or damage. Financial

and non-financial risks are the two types of corporate risk identified by previous research (Mohd Ariffin et al. 2021). Credit risk, liquidity risk and market risk are the three categories of financial risk (Linsley & Shrives 2006). Non-financial risks include operational, empowerment, technology, information processing, integrity, strategy, and research and development risks (Tan et al. 2017; Miihkinen 2012). Studies on corporate risk disclosure have found inconsistent findings (Dominguez & Gamez 2014; Semper & Beltran 2014; Ntim et al. 2013), which may be due to risk disclosure being considered in each jurisdiction. Evaluating risk disclosure quality helps identify risk disclosure elements.

### MONITORING MECHANISM AND RISK DISCLOSURE

Corporate risk disclosure is also significantly influenced by monitoring mechanisms where several researchers have examined such a relationship (Nahar et al. 2020; Agyei-Mensah & Buerterey 2019; Achmad et al. 2017). MCCG (2017) proposes that both the audit and risk management committees are responsible for assisting the board in risk management by supervising corporate activities. However, findings on the link between monitoring mechanisms are mixed. Nahar et al. (2020) and Ibrahim et al. (2019) observed that risk management committees (RMC) and audit independence favourably improve risk disclosure, respectively. However, audit committee independence (Nahar et al. 2020) and RMC (Darussamin et al. 2018) are unrelated to risk disclosure.

Institutional investors also play a crucial role in corporate reporting oversight (Katan & Mat Nor 2015) as they are more prominent, highly motivated, and information-hungry than individual investors (Gao et al. 2019). Their restrictions and operating environment influence their diverse investing orientations and conduct (Sahut & Gharbi 2010). This view is consistent with Hao's (2014) that institutional investors are a heterogeneous group with distinct investment objectives and strategies (Yan & Zhang 2009). Unlike individual investors, institutional investors can actively scrutinise managers' decisions. Pressure-resistant institutional investors (RESISTANT) and pressure-sensitive institutional investors (SENSITIVE) are among the features they exhibit (Ferreira & Matos 2008). RESISTANT investors, such as mutual fund managers and investment advisers, have more control over the company's management and no business ties to the portfolio company. They are immune to the pressure to concur with management decisions since they have no competing interests (Abdul Wahab et al. 2007). SENSITIVE investors, such as bank trusts and insurance companies, pay more attention to commercial ties. Ferreira and Matos (2008) anticipate SENSITIVE to be more loyal to business management and hold shares without criticism. The literature on the relationship between institutional investors' ownership and corporate risk disclosure also reveals mixed results. For instance, Ibrahim et al. (2019) found the relationship

between the two variables to be insignificant, while Agyei-Mensah and Buerterey (2019) and Carmona et al. (2016) indicate that institutional investors do have a positive influence on the reporting of a company's risk.

Most studies investigating the relationship between monitoring mechanisms and risk disclosure (Agyei-Mensah & Buerterey 2019; Salem et al. 2019; Jia et al. 2019; Ibrahim et al. 2019) have concentrated on the 'independent' effects of monitoring mechanisms. Misangyi and Acharya (2014) hypothesised that numerous monitoring interactions might influence a firm's performance. While the agency theory proposes that an effective monitoring mechanism leads to higher risk disclosure and reduces information asymmetry, it is unclear whether these monitoring mechanisms interact and have the same consequences. Since each monitoring mechanism has distinct responsibilities and aims in Malaysia, it leads this study to investigate the complementary and substitutive effects that may result from each monitoring mechanism's different roles and objectives within the Malaysian context.

#### THE CONCEPT OF MONITORING MECHANISM AS A BUNDLE

The results of prior studies on the 'independent' effects of a monitoring mechanism on risk disclosure are mixed. Previous studies assumed that each monitoring mechanism depends on the others and that there were no possible complement or substitution effects on risk disclosure. This assumption results in inconclusive findings. A complete explanation of the role of the monitoring mechanism and the factors influencing risk disclosure is a must. However, monitoring mechanisms should not be assessed individually to be effective, as collective decision-making strengthens the process. Therefore, the current study employs the concept of a monitoring mechanism as a bundle introduced by Rediker and Seth (1995). The concept refers to a collection of monitoring mechanisms that interact with one another and subsequently complement or substitute through a collection of related practices. Depending on the situation, many monitoring mechanisms might work jointly or independently. Not all monitoring mechanisms are the same, even if they all aim to reduce agency costs (Oh et al. 2016). For example, even if a standalone RMC and an independent AC function as monitoring mechanisms are established, their strategic implications are somewhat different. Using their knowledge and expertise in risk management, the RMC assists the board of directors in gathering relevant, accurate, and timely risk information (Karamanou & Vafeas 2005).

On the other hand, the AC has limited power to oversee corporate risk due to the overwhelming amount of work it has to do (Brown et al. 2009). Additionally, institutional ownership plays different roles depending on the circumstances, such as the resources available to them and their relationship with the company they invest in. For example, since they have no business link with

the company they invest in, RESISTANT ownership has a more significant influence over the company's management decisions than the other types of ownership. However, conflict of interest with management may arise in the case of SENSITIVE ownership because of the business relationship between them (Ferreira & Matos 2008). Because many monitoring mechanisms coexist within an organisation, they collectively constitute the monitoring mechanism environment context (Yoshikawa et al. 2014). Following this assumption, this current study proposes that only certain combinations of monitoring mechanisms are effective. Moreover, this study predicts that the performance or outcomes of every organisation depend on the success of a set of governance mechanisms (Aguilera et al. 2008).

#### HYPOTHESES DEVELOPMENT

##### INTERNAL MONITORING: RISK MANAGEMENT COMMITTEE AND AUDIT COMMITTEE INDEPENDENCE

To efficiently manage a company's risk, boards of directors establish RMC and AC oversee risk management. The RMC gives professional insight into risk management decision-making, enabling members to acquire important risk information and make accurate and effective risk management decisions that will benefit the business (Karamanou & Vafeas 2005). Due to the financial knowledge of the AC's members, risk oversight is routinely entrusted to the AC in many companies. However, due to the complexity of the multiple threats that modern companies confront and the immense responsibility that the AC bears for the financial reporting process (Field et al. 2013), the AC members may not have sufficient time, expertise, or resources to examine the firm's real risks and vulnerabilities. Despite this, Ibrahim et al. (2019) demonstrated that a significant proportion of audit independence (ACInd) benefits the company's risk disclosure.

Ibrahim et al. (2019) and Jia et al. (2019) found that monitoring by RMC and AC positively impacted risk disclosure which indicates that if a solid internal control mechanism leads the management to report more risk information faced by the companies to reduce conflict of interest, a standalone RMC and a higher proportion of AC independence can encourage the management to disclose more comprehensive risk information. However, Abdullah et al. (2017) found that RMCs and ACs do not significantly influence and negatively impact risk disclosure. The results indicated that if risk disclosure is not in the stakeholder interest, establishing a standalone RMC and a higher proportion of audit independence would not force the management to disclose more risk information. Hence, establishing RMC in a firm and a significant proportion of ACInd may have complementary impacts on the disclosure of risk information. On the other hand, the substitutive

viewpoint argues that, even if the proportion of ACInd is reduced, there is no significant decrease in risk reporting as AC members are not as competent as the RMC in handling and evaluating the company's risk. Hence, the first hypothesis is as follows:

- H<sub>1a</sub> Risk Management Committee and Audit Committee complement each other to influence non-financial risk disclosure
- H<sub>1b</sub> Risk Management Committee and Audit Committee substitute each other to influence non-financial risk disclosure

#### EXTERNAL MONITORING: INSTITUTIONAL INVESTORS

According to Abraham and Cox (2007), ownership structure affects the monitoring role's effectiveness. The ownership structure holds management accountable for all daily company decisions, including reporting (Muniandy & Ali 2012). A good ownership structure can benefit all stakeholders by lowering agency and equity costs (Faysal et al. 2020). As a result, choosing organisations with solid ownership structures reduces the risk of loss and uncertainty (Ducassy & Guyot 2017). Since institutional investors are more efficient than individual investors in overseeing a company's management actions (Hill & Snell 1988), they can influence management to achieve corporate goals (Pound 1988). RESISTANT investors with no business relationship with the company can force management to reconsider unwise decisions. As a result, they are more likely to monitor the management decisions concerning its operation (Schepker & Oh 2013) since these involvements do not jeopardise their investment relationship.

On the contrary, institutional investors vulnerable to pressure are less likely to be cautious than RESISTANT due to their business relationship with the firm (Schepker & Oh 2013). Due to uncertainties such as the management ending business partnerships, if they try to extract more risk information to meet the shareholders' needs, SENSITIVE investors may be more likely to side with the managers. Unlike RESISTANT investors, SENSITIVE investors are less cautious since they do business with the invested company. Their devotion and support for management decisions grow over time, increasing the conflict of interest between the two sides (Ferreira & Matos 2008). From the substitutive view, a higher proportion of RESISTANT and a lower proportion of SENSITIVE results in a higher level of NFRD. This is because RESISTANT can influence management decisions and force the managers to disclose more NFRD. Therefore, the second hypothesis is as follows:

- H<sub>2</sub> RESISTANT and SENSITIVE ownership substitute each other to influence non-financial risk disclosure

## METHODOLOGY

### SAMPLING

The sample for this study includes 800 companies listed in Bursa Malaysia. Following Abdullah et al. (2017), the target sample size is 50% of the overall population, as the study employs the content analysis method. The systematic random sampling method is used, which entails selecting a sample from a larger population based on a random beginning point but with a fixed periodic interval known as the sampling interval. It is computed by dividing the population size by the desired sample size. As a result, the sampling interval is 2 (800 / 400), which means we selected every second data point in the population to create the sample. 52 finance and banking companies were excluded as they are subject to distinct legal requirements (Darussamin et al. 2018), leading to 748 listed companies.

The sampling selection process (50% of 748) led to 374 samples. Further, 71 delisted firms were excluded, which led to 303 firms. Hence, the final observation from 2016 to 2018 is 909 firm-year. Nevertheless, 45 outliers data were excluded, which leaves 864 clean data. The year 2016, until 2018 was selected since MCG (2017), was reviewed in 2017.

### MEASUREMENT OF VARIABLES

*Dependent Variables* The dependent variable for this study is the level of NFRD, which is measured based on the NFRD index. The categories of NFRD's index (Appendix A) are identified within the three rounds of the Delphi Technique. The technique involves multiple rounds of discussion until a group of experts agrees on the results. The experts may re-examine their views each round and add new ideas or suggestions to developing the index (Coy & Dixon 2004). Eleven experts shortlisted non-financial risk disclosure items from six important categories. Overall, there are 29 non-financial risk factors, divided into six categories: operation (6 items), empowerment (1 item), technology and information processing (5 items), integrity (6 items), strategy (9 items) and damage risk (2 items).

The NFRD index was used to determine the level of NFRD in the annual reports. The content analysis of the sample firms' annual reports was conducted within the four narrative sections, i.e. the Chairman's Statement, Management Discussion and Analysis, Operations Review, and Sustainability Reports. Following Aqyei-Mensah and Buertey (2019), this study determines the level of NFRD based on the presence or absence of NFRD index components. A score of "1" is assigned for the presence and "0" otherwise. The scores are summed to create a final score of NFRD. Hence, the lowest

score is 0, and the highest is 29. A total risk score is the unweighted sum of all NFRD items. Accordingly, the level of NFRD is measured using Equation 1, and the maximum NFRDI is 1.

$$NFRDI = \frac{\text{Actual Score of NFRD}}{\text{Maximum Score of NFRD}} \quad (\text{Equation 1})$$

Where,

NFRDI = Non-financial risk disclosure index.

NFRD = Non-financial risk disclosure

Appendix B presents an example of the NFRD scoring. The scoring procedure involves revealing the risk conditions that firms are exposed to and reporting actions to mitigate those risks. All of the coding processes were completed by one of the authors. Hence, another coder was appointed to ensure the reliability and validity of the data obtained. The encoding method was repeated for three months following the initial encoding for a sub-sample. This procedure has generated a Cronbach's alpha of 0.8234 (Krippendorff 2019), indicating that the coding procedure has reached internal consistency.

*Independent Variables* Table 1 presents definitions and measurements of all the variables used in the study. There are four independent variables: ACInd, RMC, RESISTANT and SENSITIVE. All raw data were collected from the company's annual report and Thompson datastream.

*Control Variables* Seven control variables that affect the NFRD are board size, board independence, board diversity, board duality, risk management framework, size, and leverage, as they may influence voluntary risk disclosure. These board characteristics were obtained from the annual reports, and firm characteristics were collected through Thompson Datastream.

The above discussions form the main model to test the hypotheses.

$$\begin{aligned} NFRD_{it} = & \alpha_1 RESISTANT_{it} + \alpha_2 SENSITIVE_{it} \\ & + \alpha_3 ACInd_{it} + \alpha_4 RMC_{it} \\ & + \alpha_5 BODSize_{it} + \alpha_6 BODInd_{it} \\ & + \alpha_7 BODDiv_{it} + \alpha_8 Duality_{it} \\ & + \alpha_9 RMF_{it} + \alpha_{10} LnSize_{it} \\ & + \alpha_{11} LEV_{it} + \varepsilon \end{aligned} \quad (\text{Model 1})$$

Models 2 and 3 are developed to test the interaction effect of monitoring mechanisms (the independent variables) on the NFRD.

$$\begin{aligned} NFRD_{it} = & \beta_1 ACInd_{it} + \beta_2 RMC_{it} \\ & + \beta_3 ACInd * RMC_{it} \\ & + \beta_4 RESISTANT_{it} \\ & + \beta_5 SENSITIVE_{it} + \beta_6 BODSize_{it} \quad (\text{Model 2}) \\ & + \beta_7 BODInd_{it} + \beta_8 BODDiv_{it} \\ & + \beta_9 Duality_{it} + \beta_{10} RMF_{it} \\ & + \beta_{11} LnSize_{it} + \beta_{12} LEV_{it} + \varepsilon \end{aligned}$$

$$\begin{aligned} NFRD_{it} = & \alpha_1 RESISTANT_{it} + \alpha_2 SENSITIVE_{it} \\ & + \alpha_3 RESISTANT * SENSITIVE_{it} \\ & + \alpha_4 ACInd_{it} + \alpha_5 RMC_{it} + \\ & \alpha_6 BODSize_{it} + \alpha_7 BODInd_{it} \quad (\text{Model 3}) \\ & + \alpha_8 BODDiv_{it} + \alpha_9 Duality_{it} \\ & + \alpha_{10} RMF_{it} + \alpha_{11} LnSize_{it} \\ & + \alpha_{12} LEV_{it} + \varepsilon \end{aligned}$$

After establishing the interactions, consistent with Oh et al. (2016), the complementary or substitutes effects of monitoring roles on NFRD can be tested by examining the marginal benefit of one variable on NFRD depending on the levels of the other variable. Consistent with Oh et al. (2016), the following formulas in Table 2 govern the assessment of complements and substitutes.

Independent variables are represented by X and Y, with H and L denoting high and low utilisation levels, respectively. Any match's value gain is represented by an increasing positive value of function f. For example, f (X, Y) represents RMC (X) and ACInd (Y). So, X H denotes a high level of RMC, whereas Y H denotes a high level of ACInd. The marginal gain between the existence and non-existence of a standalone RMC should be greater when operating under conditions with a higher proportion of ACInd. However, if RMC and ACInd interact as substitutes, the marginal gain between having one and not having one should be greater when ACInd is lower. Empirically, a comparison of these conditions is conducted by creating interaction terms and comparing the marginal returns (slope analysis) Oh et al. (2016).

## RESULTS

### DESCRIPTIVE ANALYSIS AND CORRELATIONS

Table 3 reports that the mean score for NFRD is 0.2906 (29.06%), which indicates that the level of NFRD disclosure among Malaysian companies is low. The

TABLE 1. Variables definition and measurement

Variables	Symbol	Measurement
<i>Dependent</i>		
Non-financial Risk Disclosure	NFRD <sub>it</sub>	NFRDI score based on equation (1)
<i>Independent</i>		
Audit Committee Independence	ACInd <sub>it</sub>	Dummy variable “1” for 100% percentage of independent directors in the audit committee size and “0” for otherwise
Risk Management Committee	RMC	Dummy variable “1” for the presence of standalone RMC and “0” for otherwise
Pressure-Resistant Institutional Investors	RESISTANT	Percentage of shares held by mutual fund managers and investment advisers
Pressure-Sensitive Institutional Investors	SENSITIVE	Percentage of shares held by bank trusts, insurance companies, and other institutions
<i>Control</i>		
Board Size	BODSize	Number of board members
Board Independence	BODInd	Number of non-executive directors divided by the board size
Board Diversity	BODDiv	Percentage of female directors divided by the board size
CEO Duality	DUALITY	Dummy variable “1” for the presence of duality role and “0” for separation role
Risk Management Framework	RMF	Dummy variable “1” for the establishment of RMF and “0” for otherwise
Firm Size	LnSize	Natural log of the total assets
Leverage	LEV	Total debt to total assets ratio
<i>i</i>		company
<i>t</i>		year

TABLE 2. Assessment of complements and substitutes

Condition	Formula
Complementary	$f(X_{-H}, Y_{-H}) - f(X_L, Y_H) > f(X_H, Y_L) - f(X_L, Y_{-L})$
Substitutive	$f(X_{-H}, Y_{-H}) - f(X_{-L}, Y_{-H}) > f(X_{-H}, Y_{-L}) - f(X_{-L}, Y, L)$

TABLE 3. Descriptive statistics for continuous variables

	N	Mean	Median	SD	Minimum	Maximum	Skewness	Kurtosis
<i>Dependent Variables</i>								
NFRD	864	0.2906	0.2857	0.1172	0	0.5925	0.8036	0.1501
<i>Independent Variables</i>								
RESISTANT	864	0.0269	0.0020	0.0475	0	0.3110	0.0000	0.0000
SENSITIVE	864	0.0138	0.0000	0.0271	0	0.2700	0.0000	0.0000
<i>Control Variables</i>								
BODSize	864	7.2557	7	1.7502	4	14	0.0000	0.2297
BODInd	864	0.5045	0.5000	0.1271	0.2000	0.8889	0.0003	0.0253
BODDiv	864	0.1282	0.1250	0.1250	0	0.5714	0.0000	0.0129
LNSize	864	5.7749	5.704	0.6258	4.2178	7.9704	0.0000	0.0003
LEV	864	0.3837	0.3802	0.1996	0.0101	0.8919	0.0105	0.0000

maximum score recorded was 59.35%, indicating that almost half of the non-financial risk information was not readily available to the stakeholders. Table 2 also indicates that, on average, the number of RESISTANT and SENSITIVE institutional investors is low, where 2.69% and 1.38%, respectively, were recorded among 864 firm-years. A wide variation for control variables was also observed in this study. Table 2 indicates that the mean number of BODSize is seven (7) and ranges from 4 to 14 members. On average, half of the board are independent directors (0.5045), and the average ratio of female directors is 12.82%, which is still far from 30%, as expected by the government. The average firm has 38.37% of leverage, and the median for leverage is 38.02%, with a standard deviation of 0.19. The value indicates that the study sample consists of reasonably geared firms.

Table 4 reports the descriptive statistics for the dependent variable categories. Table 3 indicates that none of the NFRD categories is above the average. The highest score (40.28%) was related to empowerment, and the lowest was related to IT processing (3.33%). The findings are similar to Oliveira et al. (2018). The low disclosure indicates that Malaysian companies must consider the stakeholders' expectations of the relevant non-financial risk information in their disclosure practices, and failure to do so will increase the information asymmetry among managers and stakeholders. Table 3 indicates that some Malaysian companies disclosed all risk information related to empowerment, damage, and hazard. Some companies provide significant information on operating, IT processing, integrity and strategy risks.

Table 5 presents the descriptive statistics for independent and control variables. Panel A indicates that

67% and 53% of the observations appoint an independent audit committee and a standalone RMC. Panel B indicates that CEO duality is present in 36.57% of observations. At the same time, 40.74% of observations have established their own RMF.

Table 6 presents the Pearson correlation coefficients among the independent variables. Table 5 indicates that multicollinearity is not an issue as none of the variables correlates above 0.90 (Tabachnick & Fidell 2007). The *Variance Inflation Factors* (VIF) test also indicates that all variables are free from multicollinearity problems.

Table 7 presents the results of the complement versus substitute test using a random effect method. Generally, the models are statistically significant and fit with *p-value* = 0.000, AdjR<sup>2</sup> above 0.17. Panel A indicates that ACInd, RMC and SENSITIVE are not significantly related to NFRD in all models. However, this study provides consistent evidence that RESISTANT is positive and significantly related to NFRD in all models, at *p* < 0.01. This finding indicates that RESISTANT values the role of NFRD in decision making, as they focus more on long-term engagement.

Panel B presents results for hypotheses 1 and 2, which test the interaction effects among ACInd, RMC, RESISTANT and SENSITIVE on NFRD. Panel B indicates that the interaction between ACInd and RMC (Model 2) negatively significant (*r* = -0.0371) at *p* < 0.05. This finding indicates that one of the variables reduces the positive effects of another variable in influencing the NFRD. The effect indicates the substitution monitoring role between ACInd and RMC in influencing NFRD.

Simple slope analysis was performed to identify the dominance variable affecting the other variable. Figure 1 presents a slope diagram which indicates that the

TABLE 4. Descriptive statistics for NFRD category

NFRD Category	Mean	Min	Max
Operating	0.2851	0	0.8333
Empowerment	0.4028	0	1
Information and Technology Processing	0.0333	0	0.8
Integrity	0.1055	0	0.6667
Strategy	0.2311	0	0.7778
Damage and Hazard	0.0798	0	1

TABLE 5. Descriptive Statistics for Dichotomous Variables

	N	Frequency		Percentage	
		1	0	1	0
<i>Panel A</i>					
ACInd	864	582	282	67.36	32.64
RMC	864	466	398	53.94	46.06
<i>Panel B</i>					
Duality	864	316	548	36.57	63.43
RMF	864	352	512	40.74	59.26

TABLE 6. Pearson Correlation NFRD Pooled Data (N=864)

	1	2	3	4	5	6	7	8	9	10	11	12
NFRDI (1)	1.0000											
BODSize (2)	0.1251***	1.0000										
BODInd (3)	0.0346	-0.3306***	1.0000									
BODdiv (4)	0.0504	0.0170	-0.0772**	1.0000								
Duality (5)	0.1457***	-0.0955***	0.0638*	0.0800**	1.0000							
RMF (6)	0.2879***	0.1155***	0.0225	0.0162	0.1529***	1.0000						
LnSize (7)	0.2814***	0.4106***	-0.0539	0.1136***	-0.0211	0.2872***	1.0000					
LEV (8)	0.0405	0.1126***	0.0181	-0.0212	-0.0085	0.0851**	0.4033***	1.0000				
RESISTANT (9)	0.2459***	0.2528***	-0.0124	0.1033***	-0.0462	0.1865***	0.3959***	0.0094	1.0000			
SENSITIVE (10)	0.1825***	0.1429***	0.1226***	0.0925***	-0.0456	0.2193***	0.3562***	0.0256	0.4020***	1.0000		
ACInd (11)	-0.0392	-0.0212	0.2979***	-0.1012***	0.0417	-0.1010***	-0.0193	0.0389	0.0158	-0.0224	1.0000	
RMC (12)	0.0667*	0.1593***	-0.0369	-0.0153	0.0461	0.0999***	0.2141***	0.0871**	0.0522	0.1269***	0.0302	1.0000



relationship between ACInd and NFRD was significant when a standalone RMC was established (simple slope = -0.0274,  $p < 0.05$ ). However, it was not significant when the RMC was not present (simple slope = 0.0088,  $p =$  not significant). These results suggest that additional monitoring by the ACInd during the presence of RMC in monitoring NFRD reporting does not increase the marginal gain for the extent of NFRD. Therefore, the complementary hypothesis (H1a) is not supported; instead, the substitute hypothesis (H1b) is supported. This result is in line with Ibrahim et al. (2019) and Jia et al. (2019). Consistent with the agency theory, RMC provides expert advice on making risk management decisions, allowing members to access significant risk information and make good decisions about risk management that will help the whole organisation

(Karamanou & Vafeas 2005). This also shows that the companies have robust internal control systems that can get the management to report more risk information, reducing conflicts of interest.

Model 3 Table 6 presents findings related to H2. Model 3 shows that the interaction between SENSITIVE and RESISTANT is negative but not significantly related to NFRD ( $r = -2.7460$ ,  $p =$  not significant). This finding indicates that even when one of the variables reduces the positive effects of another variable, the monitoring role of any two of the institutional investors fails to influence NFRD. Hence, H2 is not supported. This result contradicts the assumptions by Schepker & Oh (2013) that RESISTANT investors with no business relationship with the company should be able to monitor management decisions regarding its operation effectively. One of the

TABLE 7. Complementary and substitutive results (N-864)

	Model 1	Model 2	Model 3
<i>Panel A: Independent Variables</i>			
ACInd	-0.0106 (-1.10)	0.0090 (0.63)	-0.0105 (-1.09)
RMC	-0.0009 (-0.10)	0.02389 (1.54)	-0.0005 (-0.06)
RESISTANT	0.3248*** (3.48)	0.3351*** (3.56)	0.3957*** (3.68)
SENSITIVE	0.0852 (0.57)	0.0754 (0.49)	0.2595 (1.32)
<i>Panel B: Interaction Variables</i>			
ACInd x RMC		-0.0371** (-2.05)	
RESISTANT x SENSITIVE			-2.7460 (-1.40)
<i>Panel C: Control Variables</i>			
BODSize	0.0016 (0.59)	0.0018 (0.64)	0.0016 (0.57)
BODInd	0.0470 (1.28)	0.0422 (1.14)	0.0491 (1.34)
BODDiv	-0.0099 (-0.27)	-0.0141 (-0.38)	-0.0102 (-0.27)
Duality	-0.0038 (-0.33)	-0.0037 (-0.32)	-0.0034 (-0.30)
RMF	0.0368*** (3.75)	0.0354*** (3.66)	0.0367*** (3.73)
LnSize	0.0364*** (3.98)	0.0364*** (4.00)	0.0355*** (3.90)
LEV	-0.0355 (-1.35)	-0.0352 (-1.35)	-0.0349 (-1.34)
Const	0.0198	0.0081	0.0742
R2	0.1785	0.1839	0.1848
Adj. R2	0.1659	0.1704	0.1704

likely explanations is that RESISTANT investors in Malaysia hold relatively few shares. The descriptive study reveals that RESISTANT's maximum shareholding is only 31.1%. This may be why RESISTANT, which has a long-term commitment, cannot significantly contribute to NFRD. The overall results inconsistent with previous studies might be due to the "straight" NFRD index used to identify NFRD. Unlike the current study, previous research developed the NFRD based on national accounting standards.

Panel C Table 4 indicates that the establishment of RMF and the company's size (LnSize) display a consistent relationship with the NFRD. Both control variables are positively and significantly related to NFRD. The results indicate that large companies tend to disclose NFRD since they have more resources to invest

in NFRD. The establishment of RMF is also associated with large companies, as these companies have the resources to develop the RMF, so they might tend to disclose NFRD in their annual report.

#### ADDITIONAL ANALYSIS

Since LnSize shows a significant relationship with NFRD, an additional analysis was performed to check the role of company size on the above findings. We separate our sample into large and small companies. The values "1" is assigned to samples that exceeded the median for data size and "0" that do not meet this criterion. Table 8 reports additional analysis on complementary and substitutive effects. Panel B Table 7 presents results for the interaction effects among AcInd, RMC,

TABLE 8. Complementary and substitutive results: Big and small Companies

	Big Companies (N=431)	Small Companies (N=433)
<i>Panel A: Independent Variables</i>		
ACInd	0.0318 (1.49)	-0.0057 (-0.31)
RMC	0.0282 (1.28)	0.0274 (1.25)
RESISTANT	0.4323*** (3.14)	0.3237** (2.07)
SENSITIVE	0.4305 (1.54)	-0.3366 (-1.26)
<i>Panel B: Interaction Variables</i>		
ACInd x RMC	-0.0501** (-2.03)	-0.0411 (-1.54)
RESISTANT x SENSITIVE	-3.4421 (-1.44)	-5.8765* (-1.74)
<i>Panel C: Control Variables</i>		
BODSize	0.0010 (0.29)	0.0042 (1.03)
BODInd	0.0058 (0.11)	0.0614 (1.24)
BODDiv	-0.0207 (-0.37)	-0.0293 (-0.60)
Duality	-0.0033 (-0.16)	-0.0024 (-0.17)
RMF	0.0366*** (2.77)	0.0330** (2.32)
LnSize	0.0656*** (4.00)	-0.0121 (-0.57)
LEV	-0.0305 (-0.87)	-0.0326 (-0.91)
Const	-0.1713	0.2524
R2	0.2440	0.1146
Adj. R2	0.2167	0.0827

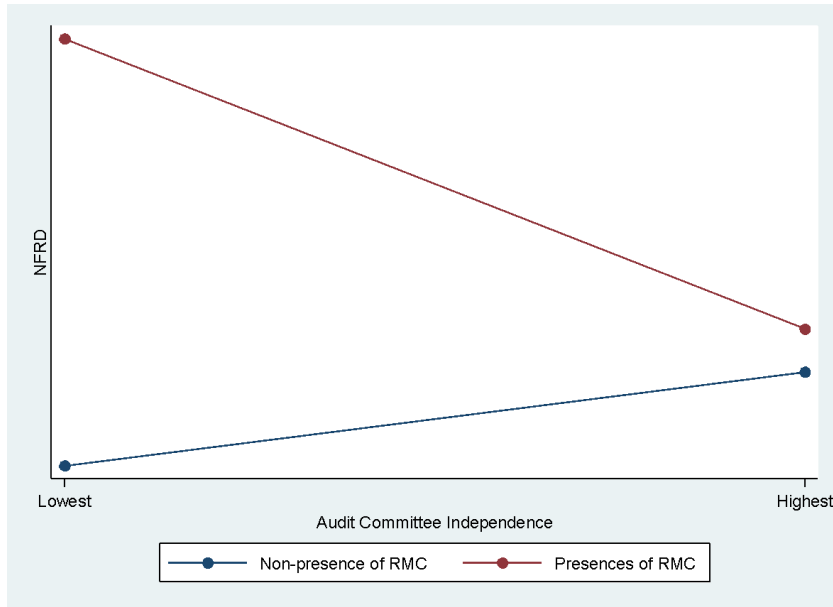


FIGURE 1. Substitutive effect of RMC and ACInd on NFRD

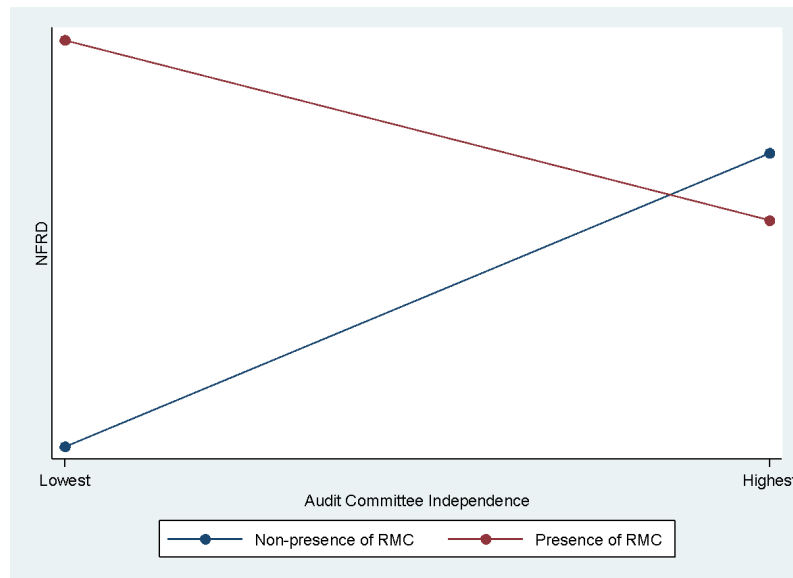


FIGURE 2. Additional analysis: Substitutive effects of ACInd and RMC in big companies

RESISTANT and SENSITIVE on NFRD for large and small companies. Column 2 Panel B indicates that the interaction between ACInd x RMC in large companies is negatively and significantly related to NFRD ( $r = -0.0501$ ,  $p < 0.05$ ). This finding indicates that one of the variables reduces another variable's positive effects, indicating the substitution monitoring role between ACInd and RMC in influencing NFRD.

Consistent with Table 7, a simple slope analysis was performed, as shown in Figure 2. The analysis indicates that the relationship between ACInd and NFRD was significant when big companies established a standalone RMC (simple slope =  $-0.0601$ ,  $p < 0.05$ ).

However, it was not significant when RMC did not exist (simple slope =  $0.0228$ ,  $p = \text{not significant}$ ). These results are similar in Model 2 Table 7. However, there were no significant interactions between ACInd and RMC in the small companies. This result suggests that RMC in large organisations can be relied upon to supervise NFRD. This finding also suggests that large corporations have ample resources and would thus employ risk experts to monitor NFRD reporting, which should be sufficient to understand other stakeholders. Large companies often raise internal monitoring pressure as they grow to make it more effective since they should always meet stakeholders' risk knowledge.

Panel B Table 7 also reveals that the interaction between RESISTANT x SENSITIVE is negative and significant ( $r = -5.8765$ ,  $p < 0.10$ ) in small companies. This finding indicates that RESISTANT reduces the positive effects of SENSITIVE, hence indicating the substitution monitoring role between RESISTANT and SENSITIVE in influencing NFRD. However, there are no significant interactions between RESISTANT and SENSITIVE in the big companies.

These findings further explain why Model 3 in Table 6 were not statistically significant. It appears that RESISTANT in small companies contributes significantly to NFRD monitoring, and this may be because RESISTANT is more concerned with its holdings in small enterprises than in large ones. The additional analysis indicates company's size influence a complement or a substitute role of monitoring mechanisms.

#### THEORETICAL IMPLICATION

The findings align with the concept of the monitoring mechanism as a bundle introduced by Redikar and Seth (1995). Results on the relationship between internal and external monitoring mechanisms on the NFRD reporting enhance the current understanding of corporate governance's literature. In line with agency theory, RMC is the most crucial organisational monitoring mechanism among listed companies in Malaysia in reducing information asymmetry. The findings of this study undoubtedly support the underlying assumption.

#### MANAGERIAL IMPLICATION

This research adds to our current understanding of the monitoring role and NFRD literature, including the ability to re-evaluate the monitoring mechanism's independence concept. This study also supports using "bundle strategies" rather than a single strategy to enhance the degree of NFRD. RMC was demonstrated to be the most reliable monitoring mechanism. This finding should encourage companies to appoint RMC members who are knowledgeable about the risk to ensure that annual reports meet the information needs of stakeholders. Whether or not more independent directors represent the AC, the findings show that establishing RMC improves NFRD reporting, potentially reducing any information asymmetry. As a result, the board of directors or other authorities should better understand why having standalone RMC in companies is beneficial to the NFRD. According to the agency theory, RMC, because of their knowledge in the risk field, is expected to monitor the managers' decisions in reporting NFRD. In the long run, this would result in fewer conflicts of interest. The qualities of the RMCs have a considerable impact on how effectively they perform their monitoring role.

#### CONCLUSIONS

Prior studies have achieved inconclusive evidence on the individual influences of various monitoring mechanisms on NFRD, which drove this study to investigate whether such monitoring mechanisms that coexist in Malaysia's listed companies work efficiently as a complement or substitute. Specifically, this study investigates whether RMC, AcInd and two categories of institutional investors (i.e., RESISTANT and SENSITIVE) complement or substitute one another. The results support agency theory by providing empirical evidence that RMC shows the potential to play an influential internal monitoring role. Thus, the management will be encouraged to disclose more non-financial risks. It is also believed that non-financial companies should establish a standalone RMC, as encouraged by the MCCG 2017, to increase transparency. From the relationship of institutional investors with the company (RESISTANT or SENSITIVE), this study found that neither role influences NFRD. A further investigation was made, and this study finds that the company's size plays a significant influence in determining the effectiveness of the monitoring mechanism's position as a substitute.

This study adds to the theoretical and practical aspects of monitoring mechanisms and risk disclosure. Theoretically, this study examines how monitoring mechanisms interact with each other to influence non-financial risk disclosure. From a practical standpoint, this study adequately describes how monitoring mechanisms should be established to improve risk reporting to stakeholders. The findings revealed that RMC is a better monitoring mechanism for improving risk disclosure and achieving complete and reliable risk disclosure.

There are several limitations in this study. First, this study measured the extent of non-financial risk disclosure in the annual companies reports regardless of the disclosure types, whether positive or negative. Second, this study measures institutional investors based on the business relationship with the company (i.e. resistant or sensitive). Third, this study has only focused on two internal monitoring mechanisms, and future studies may examine other committees' complementary and substitutive effects. Future studies may also need to address this limitation by separating the types of non-financial risk disclosure (i.e. positive and negative). Future studies may also look into other heterogeneity of institutional investors, such as background (i.e. local and foreign) and trading pattern (i.e. transient and dedicated).

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APPENDIX A

Categories and Items of Non-financial Risk Disclosure Index

Category of Non-financial risk	Items of Non-financial Risk Disclosure
Operations	1. Compliance on operations regulation 2. Environmental impact 3. Health and safety issues 4. Key person dependence risk 5. Product and service failure 6. Price fluctuations of the factors of production
Empowerment	7. Governance, leadership and management
Technology and Information Processing	8. Accessibility by unauthorised personnel 9. Availability of information 10. Cybercrime 11. Infrastructure 12. System's security/safety
Integrity	13. Conflict of interest 14. Governance of subsidiaries companies 15. Management and employee illegal's act 16. Market manipulation activities 17. Reputation / Misleading information 18. Whistleblowing policy
Strategy	19. Business portfolio changes 20. Changes in management team 21. Changes in technological development 22. Economical changes 23. Industry specific changes 24. Market areas 25. Market competition 26. Political changes 27. Regulatory changes
Damage and Hazard	28. Natural disasters/terrorism 29. Significant illegal actions

## APPENDIX B

## Example Scoring of Non-financial Risk Disclosure

No.	Risk Category	Risk Items	Score	NFRDI
1.	Operating	Compliance on operations regulation	1	
		Environmental impact	1	
		Health and safety issues	1	
		Key person dependence risk	0	
		Product and service failure	0	
		Price fluctuations of the factors of production	1	4
2.	Empowerment	Governance, leadership and management	1	1
3.	Information processing and technology	Accessibility by unauthorised personnel	0	
		Availability of information	1	
		Cybercrime	1	
		Infrastructure	0	
4.	Integrity	System's security/safety	0	2
		Conflict of interest	0	
		Governance of subsidiaries companies	1	
		Management and employee illegal's act	1	
		Market manipulation activities	0	
		Reputation / Misleading information	0	
		Whistleblowing policy	0	2
5.	Strategy	Business portfolio changes	1	
		Changes in management team	1	
		Changes in technological development	0	
		Economical changes	1	
		Industry specific changes	0	
		Market areas	0	
		Market competition	0	
		Political changes	0	
		Regulatory changes	1	4
		6.	Damage and Hazard	Natural disasters/terrorism
Significant illegal actions	0			1
Total			14	14/29 = 48.3