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Mediating Effects of Remuneration on Earnings Management and Firm Equity Value

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ABSTRACT

This study examines the potential mediating effects of executive remuneration on the relationship between prior-year earnings management and firm equity value. The occurrence of financial scandals in Malaysia has been associated with earnings management, which entails opportunistic manipulation of a firm's earnings by managers. Managers who are driven by opportunism, engage in earnings management through the manipulation of discretionary accruals (known as accrual-based earnings management method (AEM)) or real activities (known as real earnings management method (REM)) to attain personal wealth maximisation. This is because when executive remuneration is linked to firm performance, managers are incentivised to manage earnings to boost firm performance with the aim to maximise their performance-based remuneration. Thus, through executive remuneration, earnings management may affect firm equity value. However, empirical evidence on the mediating effects of executive remuneration on earnings management and firm equity value is generally scarce. Therefore, using 601 non-financial firms listed on Bursa Malaysia's Main Market from 2013 to 2017, this study finds significant mediation of executive remuneration on the relationship between both earnings management methods and firm equity value in a different manner. This implies that the mediating effects of executive remuneration lies on the methods of earnings management. This paper, thus, provides insights to financial reporting and corporate governance regulators, and key management personnel of Malaysian public listed firms on the importance of executive remuneration on equity valuation of earnings management. This paper also methodologically contributes to literature by establishing mediation model within the earnings management area.

Keywords: Accrual-based earnings management; real earnings management; executive remuneration; firm equity value; mediator; Malaysia

INTRODUCTION

In this paper, we examine potential mediating effects of executive remuneration on the relationship between prior-year earnings management and firm equity value. Due to the widespread occurrence of financial scandals, the increased scrutiny by stakeholders and regulators on the quality, credibility and transparency of financial statements is motivated by the general assumption that earnings management affects the ability of accounting information presented in financial statements to reflect firm equity value. In line with agency theory (Jensen & Meckling 1976), managers are driven to manage earnings opportunistically to enhance firm equity value and drive executive remuneration, which is debatable as an effective governance mechanism (Ghasemi & Ab Razak 2020; Neokleous 2015). Despite this awareness, managers' rent-expropriation motives are not fading away but are instead gaining traction due to different methods of earnings management used to manage earnings (Khalil & Simon 2014; Efendi, Srivastava & Swanson 2007). While the first method, accrual-based earnings management (AEM), reflects managers' earnings management through discretionary accruals, the second method, real earnings management (REM), involves manipulation of firm's operating, investing, and financing activities' structure and timing.

The issue of AEM and REM is still prevalent today and continues to create long-standing concern amongst key stakeholders due to the flexibility accorded by the accounting standards and the existence of managerial opportunism, especially since performance-based executive remuneration is becoming more popular in Malaysia. However, the empirical evidence on variations of mediating effects of executive remuneration on earnings management and firm equity value between both methods is yet to be conclusively found as current literature tend to focus more on current year earnings management (Oz & Yelkenci 2018) that restricts the analysis of mediating effects of executive remuneration from being conducted. By analysing prior-year earnings management, the investigation on the mediating effects of executive remuneration is possible as performance-based executive remuneration is dependent on prior-year firm performance. Furthermore, Embong and Hosseini (2018) elucidate that the failure to factor prior-

year earnings management into their earnings forecasts will mislead securities analysts and result in inaccurate earnings forecast in the current year and future years. Therefore, this study examines the mediating effects of executive remuneration on both prior-year AEM and REM, and firm equity value with the aim to have insights on variations of mediating effects between both methods.

Managers are motivated to manage earnings due to performance-linked remuneration to boost firm equity value especially when specific performance targets are required to be achieved or maintained before the managers can enjoy the fruits of their labour. Furthermore, information asymmetry between managers and shareholders provides further advantage for the managers to pursue earnings management (Chowdhury, Mollah, & Al Farooque 2018; Mohd Suffian, Mohd Sanusi, & Mastuki 2015; Chaney & Lewis 1995). This brings to question the possibility whether earnings, which are managed in the prior year, affect current year's executive remuneration when executive remuneration is linked to firm equity value. This also raises the question about the impact of current year's executive remuneration on firm equity value when current year's executive remuneration is driven by prior-year earnings management. Extensive research on earnings management and firm equity value have been done in countries such as the United Kingdom, China and the United States but there is limited research on the mediating role of corporate governance mechanisms on the relationship between prior-year earnings management and firm equity value, particularly in the Malaysian setting.

The findings of this study exhibit that executive remuneration significantly mediates the relationship between both methods of earnings management (AEM and REM) and firm equity value in a distinct manner. While prior-year AEM is valued positively by shareholders, prior-year REM is discounted by shareholders in their valuation. The variance is also captured through the different mediating effects of executive remuneration on prior-year AEM, prior-year REM and firm equity value of which executive remuneration fully mediates shareholders' valuation of prior-year AEM while in terms of prior-year REM, executive remuneration only mediates the relationship partially.

This study, thus, makes knowledge and theoretical contributions to earnings management and corporate governance literature that encompass, among others, AEM, REM and executive remuneration. This is because the findings of this study provide new and original insights that extend the current understanding of the relationship between earnings management, corporate governance in the context of executive remuneration, and firm equity value within an emerging economy like Malaysia. This study, therefore, contributes to the agency theory by providing further empirical evidence to support the contention that conflicts of interest resulting from Type I and Type-II agency problems are still prevalent within Malaysian public listed firms due to high ownership concentration and high information asymmetry within the public listed firms. This study also contributes to the positive accounting theory through findings that support the notion that managers' accounting choices are driven by opportunism to enhance executive remuneration. Secondly, this study also makes methodological contribution by examining the relationship between prior-year earnings management and firm equity value with executive remuneration as a mediator. Thirdly, this study contributes to practical and policy implications by providing insights to financial reporting and governance regulators on limiting the discretion accorded to managers, such as executive directors, in the process of preparing financial statements, through the review of existing principles-based accounting standards. Finally, this study provides insights to key management personnel of public listed firms to reduce information asymmetry that is prevalent within Malaysian public listed firms while enhancing the effectiveness of executive remuneration as an internal corporate governance mechanism.

The paper is structured as follows: Section 2 discusses earnings management, executive remuneration and the Malaysian corporate scenario. Section 3 reviews the literature and discusses the hypotheses development. Next, the research design is explained in Section 4. The results are discussed in Section 5. Subsequently, Section 6 discusses further tests and finally, the paper is concluded in Section 7.

EARNINGS MANAGEMENT, EXECUTIVE REMUNERATION AND THE MALAYSIAN CORPORATE SCENARIO

Malaysia has been the focus of the world due to series of local and global financial scandals that has tarnished the country's image. The latest financial news on the local front has disclosed infamous earnings management practices by several investment companies, including the Armed Forces Fund and Lembaga Tabung Haji, which resulted in 75 to 79 percent inflated earnings (The Malaysian Reserve 2019; The Edge Markets 2018). Moreover, in April 2007, it was discovered that Transmile Berhad had grossly overstated its reported earnings using AEM for FYE2005 and FYE2006 to hide the company's losses during both years (The Edge Markets 2020). On the other hand, Shayan-Nia, Sinnadurai, Mohd-Sanusi and Hermawan (2017) state that public listed firms in Malaysia tend to engage in upwards REM to bloat earnings and shareholders' equity to avoid being tagged as a financially distressed firm under *Bursa*

Malaysia's PN17 status. Thus, financial reporting quality in corporate Malaysia is believed to be compromised due to the opportunistic behaviour of managers, such as executive directors, who seek to convert firms' wealth into personal wealth. Hence, given the seriousness of the infamous financial scandals, and the national and international interest it has garnered, Malaysia is found as a suitable setting for this study.

Further, earnings management has also been linked with executive remuneration and in fact, the remuneration in Malaysia is on the rise as firms are found to increasingly switch from fixed salaries to performance-linked incentives and long-term remuneration to reward their executive directors (The Star Online 2014). This is in line with the revision of the *Malaysian Code on Corporate Governance 2017*, i.e., *Practice 7.1, 7.2 and Step Up to Practice 7.3*, which prescribe that directors' remuneration must be appropriately linked to firm strategy and firm performance to enhance returns to shareholders, to strengthen corporate governance quality and to increase public's confidence level on the firm (MCCG 2017). This paper, thus, focuses on executive remuneration because there is an incessant debate in the world of academia as to whether executive directors manipulate earnings for opportunistic reasons to enhance their personal wealth or for informative reasons to convey private information to investors through signalling. The recent *Corporate Governance Monitor 2019* states that 81 percent of Chief Executive Officers (CEOs) of the top 100 Malaysian public listed firms received RM10 million or lesser in 2018 with the highest CEO remuneration being RM168 million (Securities Commission 2019). The exorbitant amount of remuneration that is paid to the executive directors, such as the CEO, continues to be a bone of contention in corporate Malaysia.

Despite this, there is a general dearth of studies that examine the relationship between prior-year earnings management and firm equity value within Malaysian public listed firms with executive remuneration as the potential mediator. This paper does not focus on executive remuneration as a potential moderator because moderating effect is impractical to be examined in this study, which focuses on prior-year earnings management. Hence, in prior-year earnings management setting, the strength of lagged earnings management is limitedly explained by current year's executive remuneration because it is impossible for current year's executive remuneration to affect prior-year earnings management. Hence, this study focuses on the mediating effects of executive remuneration on the relationship between prior-year earnings management and firm equity value. This study seeks to contribute to existing literature by investigating the extent to which executive remuneration in the current year significantly affects the relationship between prior-year earnings management and firm equity value. This study also aims to examine whether the potential mediating effects of executive remuneration differ between the different methods of earnings management.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

EARNINGS MANAGEMENT, EXECUTIVE REMUNERATION AND FIRM EQUITY VALUE

Earnings management is underpinned by positive accounting theory through which managers' accounting choices are claimed to be driven by opportunistic behaviour (Watts & Zimmerman 1978). In the managers' attempts to fulfil their personal interests, the self-driven behaviour impinges shareholders' interest, leading to conflicts of interest between the managers and shareholders. This is in line with agency theory where managers are presumed to pursue their personal interest at the expense of shareholders' interest (Jensen & Meckling 1976), among others, through earnings management, which causes discrepancies between a firm's actual financial performance and reported financial performance. Extant literature in the area has established two effective earnings management methods, i.e., AEM and REM, through which managers attempt to bias the firm's financial statements through the use of accruals or real activities, respectively (Li 2019; Alhadab & Clacher 2018; Healy, Serafeim, Srinivasan & Yu 2014; Schipper 1989).

AEM employs discretionary accruals to manage earnings to shift earnings from the current period to the future period and *vice-versa* with the intention to mislead market participants about the firm's true economic performance (Li 2019; Gao, Cong, & Evans 2015; Dechow, Sloan, & Sweeney 1995; Jones 1991). Hence, AEM is driven by opportunism whereby managers manage earnings to line their own pockets by maximising executive remuneration. Managers are assumed to opportunistically increase prior-year's reported earnings through the choice of accounting methods that provide alternatives to recognition and measurement of financial statements' items. This in turn works in favour of the managers' intended outcome to meet or beat analysts' prediction of earnings in affecting firm equity value (Dakhlallah, Rashid, Wan Abdullah & Qawazeh 2020; Abbas & Ayub 2019).

REM, on the other hand, involves managing earnings through manipulation of timing and structuring of a firm's operating, investing, and financing activities. Hence, managers alter real activities by opportunistically manipulating the timing and structuring of discretionary expenses to manage earnings (Li 2019; Brown, Chen, & Kennedy 2017) as the managers exert control over recognition of actual expenditure and revenue (Lemma, Negash, Mlilo, & Lulseged 2018; Enomoto, Kimura, & Yamaguchi 2015). Similar to AEM, REM has also been argued to

affect firm equity value in the managers' attempt to achieve positive earnings growth and to avoid negative earnings in the financial statements (Ferentinou & Anagnostopoulou 2016; Graham, Harvey, & Rajgopal 2005). Compared to others, firms that engage in REM report relatively better financial performance in the period subsequent to the period in which REM was conducted (Gunny 2010).

As the world moves towards performance-based remuneration to increase the effectiveness of firm governance (Wang 2019; Collins, Lindop, Thomas, Abdou & Opong 2017), market participants may have discounted managerial opportunism in managing earnings through AEM and REM to boost firm performance in the managers' attempt to increase executive remuneration in subsequent periods as managers are privy to insider information compared to shareholders. This implies managers' motivation to engage in manipulative actions that will boost firm equity value in the short-term at the expense of long-term shareholder value (Laux & Laux 2009) and in turn will enhance their remuneration. This also suggests the possibility that current year's executive remuneration could mediate the relationship between prior-year earnings management and firm equity value due to the impact of earnings management on the reported earnings number, which can then affect executive remuneration that is linked to firm equity value.

However, empirical evidence on the mediating effects of executive remuneration on equity valuation of earnings management is limited as literature tends to focus on the direct effect of earnings management on executive remuneration, and earnings management and firm equity value (Russon & Bansal 2016; Cheng & Warfield 2005). Previous studies are also found to incline more towards current year's earnings management, which restricts the analysis of the role of executive remuneration on the relationship between earnings management and firm equity value. Therefore, analysing the impact of prior-year AEM on firm equity value through current year's executive remuneration allows this study to estimate the mediating effects of executive remuneration on the equity valuation of prior-year AEM. Using discretionary accruals, AEM provides managers with the opportunity to manage earnings through the choice of accounting policies (Cohen & Zarowin 2010; Healy 1985). Earnings that were successfully managed by the managers will subsequently be used to assess the managers' performance, i.e., in terms of executive remuneration, which will be reflected in the post-AEM period. The remuneration includes shares and shares options that are linked to firm equity value (Core & Guay 2002). The performance-based remuneration in turn can affect firm equity value through, firstly, managers' action in exercising the options, and secondly, through signals to shareholders when there are sudden movements of shares in the market due to the exercise of options. Therefore, it is hypothesised that executive remuneration mediates the relationship between prior-year AEM, and firm equity value as follows:

H₁: Executive remuneration significantly mediates the relationship between prior-year accrual-based earnings management and firm equity value.

Compared to AEM, REM is tougher to be detected as REM is easily hidden behind a firm's economic activities and is less confined by the prescriptions of accounting standards (Irani & Oesch 2016). Among the real activities that are commonly manipulated by managers in REM are research and development costs, production costs and marketing costs (Hamza & Kortas 2018). As the activities are difficult to be detected, shareholders can be uncertain in their valuation. This is in line with mixed findings by previous studies in establishing the relationship between REM and firm equity value (Gunny 2010; Roychowdhury 2006). Positively, prior-year REM can be value-enhancing as shareholders react favourably towards managers' attempt to achieve positive earnings growth and to avoid negative earnings in the financial statements (Ferentinou & Anagnostopoulou 2016; Roychowdhury 2006; Graham et al. 2005). In contrast, shareholders may discount prior-year REM in their valuation due to the adverse impact of REM on expected cash inflows in future periods (Nam, Park, & Arthurs 2014). Similar to AEM, REM results in overstated/understated earnings, which is consistent with managers' opportunistic behaviour to achieve their personal interests. Hence, managers are incentivised to boost firm equity value in the short-term by manipulating accounting numbers unbeknownst to outside investors who will rely on the signalling from the reported figures to detect the managers' opportunistic behaviour (Ferentinou & Anagnostopoulou 2016; Nam et al. 2014).

Therefore, prior-year REM is expected to affect the deemed performance achieved by the managers, who will in turn be rewarded in the form of executive remuneration, including shares and share options, that are linked to firm equity value. This implies managers' motivation to maximise their personal wealth by increasing reported earnings in the short-term to facilitate their remuneration or to further reduce reported earnings in the short-term to increase reported earnings in the subsequent periods during which the managers' share options are exercised after the share options' vesting period is over. Thus, there exists a possibility of mediating effects of current year's executive remuneration on the relationship between prior-year REM and firm equity value due to the impact of REM on the earnings number that affects executive remuneration and subsequently, firm equity value. Therefore, it is hypothesised that executive remuneration mediates the relationship between prior-year REM and firm equity value as follows:

H₂: Executive remuneration significantly mediates the relationship between prior-year real earnings management and firm equity value.

Given the distinct nature of AEM and REM, it is expected that the valuation of earnings management varies between the two earnings management methods. These differences are contributed by the costs, constraints and timing of each of these methods in achieving the desired earnings target (Abernathy, Beyer & Rapley 2014). The primary difference is that AEM occurs in the third quarter of each financial period when managers choose the 'appropriate' accounting methods during the preparation of financial statements that can impact reported earnings whereas REM occurs during the financial period to meet a specific earnings target through the manipulation of real activities that occur on a daily basis. Therefore, it is hypothesised that there is a significant difference of the mediating effects of executive remuneration on the relationship between prior-year AEM and firm equity value, and prior-year REM and firm equity value, as follows:

H₃: Executive remuneration's mediating effects on the relationship between prior-year earnings management and firm equity value is significantly different between accrual-based earnings management and real earnings management.

RESEARCH DESIGN

MEASUREMENT OF PRIOR-YEAR AEM

We define prior-year AEM using discretionary accruals (DACC). Following Dechow et al. (1995), we measure DACC as residual of the Modified Jones Model as in equation (1):

$$\frac{TACC_{t-1}}{TA_{t-2}} = \alpha_1 \left(\frac{1}{TA_{t-2}} \right) + \alpha_2 \left(\frac{\Delta S_REV_{t-1} - \Delta T_REC_{t-1}}{TA_{t-2}} \right) + \alpha_3 \left(\frac{TPPE_{t-1}}{TA_{t-2}} \right) + e_t \quad (1)$$

where $TACC_{t-1}$ is prior-year total accruals derived by deducting cash flow from operations from the total of net income before extraordinary items, discontinued operations and depreciation expense. ΔS_REV_{t-1} is prior-year change in sales revenue from period $t-2$ to period $t-1$ and ΔT_REC_{t-1} is prior-year change in trade receivables. $TPPE_{t-1}$ is prior-year gross property, plant and equipment. All measurements are scaled using total assets in period $t-2$ (TA_{t-2}).

MEASUREMENT OF PRIOR-YEAR REM

As REM reflects earnings manipulation through revenue, discretionary expenses and production costs, we measure REM following Roychowdhury (2006) by using abnormal cash flow from operations, abnormal discretionary expenses and abnormal production costs at industry level as in equation (2):¹

$$REM_{t-1} = (AB_CF_{t-1} * -1) + AB_PROD_{t-1} - (AB_DEXP_{t-1} * -1) \quad (2)$$

where REM is real earnings management, AB_CF is abnormal cash flow from operations estimated using residual of equation (3), AB_PROD is abnormal production costs estimated using residual of equation (4) and AB_DEXP is abnormal discretionary expenses estimated using residual of equation (5). While AB_CF and AB_DEXP are multiplied with negative one to indicate the likelihood that firms are reducing discretionary expenses to manage reported earnings if the residuals are high, AB_PROD is actual value of the residual from the estimation of abnormal cash flow from operations as a high residual value has the likelihood to indicate inflated production costs in the managers' attempts to reduce costs of goods sold (Li, 2019; Cohen, Dey, & Lys, 2008).

AB_CF is determined by regressing normal cash flow from operations as a linear function of sales and change in sales in the prior-year as in equation (3):

$$\frac{CF_{t-1}}{TA_{t-2}} = \alpha_1 \left(\frac{1}{TA_{t-2}} \right) + \alpha_2 \left(\frac{S_REV_{t-1}}{TA_{t-2}} \right) + \alpha_3 \left(\frac{\Delta S_REV_{t-1}}{TA_{t-2}} \right) + e_t \quad (3)$$

where CF_{t-1} is prior-year cash flow from operations and S_REV_{t-1} is prior-year sales.

AB_PROD is determined by regressing normal production costs as a linear function of sales and change in sales in the prior-year as in equation (4):

$$\frac{PROD_{t-1}}{TA_{t-2}} = \alpha_1 \left(\frac{1}{TA_{t-2}} \right) + \alpha_2 \left(\frac{S_REV_{t-1}}{TA_{t-2}} \right) + \alpha_3 \left(\frac{\Delta S_REV_{t-1}}{TA_{t-2}} \right) + \alpha_4 \left(\frac{\Delta S_REV_{t-2}}{TA_{t-2}} \right) + e_t \quad (4)$$

where $PROD_{t-1}$ is prior-year production costs and $\Delta SALES_REV_{t-2}$ is change in previous year's sales from period $t-3$ to period $t-2$.

AB_DEXP is determined by regressing normal discretionary expenses, which are expressed as a function of lagged sales:

$$\frac{DEXP_{t-1}}{TA_{t-2}} = \alpha_1 \left(\frac{1}{TA_{t-2}} \right) + \alpha_2 \left(\frac{S_REV_{t-2}}{TA_{t-2}} \right) + e_t \quad (5)$$

where $DEXP_{t-1}$ is prior-year discretionary expenses, comprising R&D costs, advertising costs, and selling, general and administrative expenses. S_REV_{t-2} is sales for period $t-2$.

MEASUREMENT OF EXECUTIVE REMUNERATION

We define executive remuneration following Bergstresser and Philippon (2006) as the ratio of one percentage point increase in firm equity value on number of shares and share options owned by executive directors ($ONEPCT_t$) over total executive remuneration. We employ this definition of executive remuneration as opposed to other definitions found in literature (Reddy, Abidin & You 2015; Oxelheim & Clarkson 2014) because this definition matches out-of-the-money share options and firm equity value by considering share options that are granted in the current financial period, granted in previous financial periods and yet to be exercised, and can be exercised in the current financial period (Core & Guay 2002; Bergstresser & Philippon 2006). This is because share options that are deep in the money are very sensitive to changes in market value of equity whilst share options that are out of the money are less sensitive to market value of equity changes (Core & Guay 2002). Thus, the measurement of executive remuneration is as in equation (6):

$$EREM_t = \left(\frac{ONEPCT_t}{ONEPCT_t + SALARY_t + BONUS_t} \right) \quad (6)$$

where $EREM_t$ is executive remuneration, $SALARY_t$ is executive directors' salary, $BONUS_t$ is executive directors' bonus and $ONEPCT_t$ is the ratio of one percentage point increase in firm equity value on number of shares and share options owned by executive directors, measured using equation (7):

$$ONEPCT_t = 0.01 * PRICE_t * (NUMSHARES_t + NUMOPTS_t) \quad (7)$$

where $PRICE_t$ is firm equity value, $NUMSHARES_t$ is number of shares held by executive directors and $NUMOPTS_t$ is number of options held by executive directors.

REGRESSION MODELS

The direct relationships between prior-year AEM and prior-year REM with firm equity value are estimated by regressing the earnings management methods, respectively, on firm equity value while controlling for firm-specific characteristics as in Model (1):

$$MVE_{it+3} = \alpha_0 + \alpha_j \sum_{j=1}^2 EMGT_{it-1} + \alpha_k \sum_{k=3}^{17} FSC_{it} + \varepsilon_{it} \quad (\text{Model 1})$$

where MVE_{it+3} is equity value of firm i three months after the financial year-end. This is to reflect shareholders' response to financial information released by the firms (Naimah 2012). $EMGT_{it-1}$ is prior-year earnings management, which is estimated for each AEM and REM, respectively. FSC_{it} is firm-specific characteristics of firm i in period t that are found by literature to affect firm equity value, comprising book value of equity (BVE), pre-tax earnings (PTI), dividend pay-out ($DIVD$), leverage (LEV), family ownership ($FOWN$), industry type (IND) and year dummy (Hakami, Rahmat, Yaacob & Mohd. Salleh 2020; Abdul Wahab, Collins, Mohd Adnan, & Tye 2018; Ohlson 1995).

In examining the mediating effects of $EREM$, this study combines Baron and Kenny's (1986), and Zhao, Lynch and Chen's (2010) approaches to establish robust mediation statistics between prior-year earnings management and firm equity value, both with and without mediation. In addition, we also estimate the indirect effects using the Sobel-Goodman test to allow for the assessment of significance (Sobel 1982).² We firstly estimate the direct relationship between $EREM$, and prior-year AEM and prior-year REM, respectively using Model (2):

$$EREM_{it} = \alpha_0 + \alpha_j \sum_{j=1}^2 EMGT_{it-1} + \alpha_k \sum_{k=3}^{17} FSC_{it} + \varepsilon_{it} \quad (\text{Model 2})$$

To test the mediating effects of $EREM$, we further estimate the relationship between prior-year earnings management and firm equity value while having $EREM$ as the posited mediator in Model (3):

$$MVE_{it+3} = \alpha_0 + c' \alpha_j \sum_{j=1}^2 EMGT_{it-1} + b \alpha_3 EREM_{it} + \alpha_4 \sum_{k=3}^{18} FSC_{it} + \varepsilon_{it} \quad (\text{Model 3})$$

where c' is the overall indirect effect of prior-year AEM and prior-year REM, respectively, on firm equity value while controlling for $EREM$. b is the direct effect of $EREM$ on firm equity value. The variable measurements are summarised in Table 1.

TABLE 1. Variable Measurements

Variable	Description	Measurement
Independent variables:		
AEM	Prior-year AEM	Equation (1)
REM	Prior-year REM	Equation (2)
Dependent variable:		
$MVE_{it+3\text{months}}$	Firm equity value	Market value of equity three months after the financial year-end
Mediator variable:		
$EREM$	Executive remuneration	Equation (6)
Control variables:		
PTI	Earnings	Pre-tax earnings/ BVE_{t-1}
BVE	Book value of equity	Current year book value of equity/ BVE_{t-1}
LEV	Leverage	Total liabilities/Total assets
DIVD	Dividend pay-out	Dividend per share/Earnings per share
FOWN	Family ownership	Percentage of shares held by at least one family member on the board of directors
IND	Industry type	Coded 1 for each specific industry classification, 0 for otherwise
YEAR	Year	Coded as 1 for each year, 0 for otherwise

SAMPLE AND DATA

The sample of this study is 603 non-financial firms (3,015 firm-years) listed on the Main Market of *Bursa Malaysia* from 2013 until 2017. Year 2013 is to reflect the full period of the *Malaysian Accounting Standards Board (MASB)* compliance while 2017 is to reflect the most current available data at the point of data collection. Firms with change of accounting year-end are filtered from the sample to ensure consistencies in reporting period. Similarly, firms with incomplete annual report are excluded to control for consistency in financial reporting. In line with prior literature, firms with negative book value of equity are excluded from the sample due to the difficulties in interpreting negative book value of equity arising from the assumption that shareholders cannot be attributed with negative value (Brown, Lajbcygier & Li 2008; Vassalou & Xing 2004). Table 2 presents the sample reconciliation.

TABLE 2. Sample Reconciliation

Details	n
Non-financial public listed firms on Main Market of <i>Bursa Malaysia</i> (listed throughout 2013-2017)	692
Change in financial year-end	(17)
Missing annual report	(58)
Firms with negative book value of equity	(14)
Initial sample	603
Firm-year (5 years)	3,015

The data of this study is drawn from both electronic database and annual reports. The financial and market data are collected from *Refinitiv Eikon Datastream* database. Data related to governance and ownership are hand-collected from annual reports. Data on industry classification is obtained from *Bursa Malaysia*'s 'Sector Classification' section.

DESCRIPTIVE STATISTICS

Prior to the multivariate analyses, the data was screened for outliers using studentized residual (Hair, Black, Babin, & Anderson 2019). Two firms are identified as outliers and excluded from the multivariate analyses resulting in the final sample of 601 firms (3,005 firm-years).³ Table 3 presents the descriptive statistics. Average prior-year AEM differs from average prior-year REM in terms of the magnitude's signs of which prior-year REM is conducted in upwards manner and, in contrast, prior-year AEM is in downwards pattern.⁴ This indicates variations of impact on earnings depending on the methods of earnings management carried by the firms.

The sample, on average, is profitable firms with positive mean of PTI and the firms are also, on average, dividend-paying firms. With the average of 16 percent family ownership, the firms can be concluded as having a mixture of family owners and non-family owners. In terms of *EREM*, the managers earned 86 percent increase in remuneration from shares and share options over total remuneration due to an increase in firm equity value. This indicates a significant amount of benefits earned by managers through shares and share options across the period.

TABLE 3. Descriptive Statistics

n=3005	Mean	Minimum	Maximum	Standard Deviation
MVE_{t+3} (RM'million)	1797.8770	6.2900	87600.0000	6550.5050
PTI_t (RM'million)	117.0000	-2290.0000	8150.0000	484.0000
BVE_t (RM'million)	1070.0000	2.9950	57100.0000	3460.0000
TA_t (RM'million)	2330.0000	0.0000	142000.0000	8380.0000
MVE_{t+3}/BVE_{t-1}	0.0018	0.0000	0.1632	0.0050
AEM_{t-1}	-0.0185	-2.4044	0.1804	0.0538
REM_{t-1}	0.7014	-0.0913	14.7833	0.5966
PTI_t/BVE_{t-1}	0.1032	-3.2645	8.1898	0.2971
BVE_t/BVE_{t-1}	1.0976	0.0928	22.3210	0.5183
LEV_t	37.0100	0.0000	93.7192	19.1416
$DIVID_t$	21.6307	0.0000	99.9100	25.5759
$FOWN_t$	15.8344	0.0000	84.5932	23.2657
$EREM_t$	0.8614	0.0000	1.0000	0.3431

RESULTS AND DISCUSSION

The data and estimation models of this study are subsequently tested for multicollinearity and heteroscedasticity to assess the extent to which the conditions and assumptions of the analyses are satisfied. The correlation matrices in

Table 4 show that all correlation coefficients are lesser than 0.90, signifying no initial indication of substantial collinearity between the independent variables.

TABLE 4. Pearson Correlation Matrix

n=3005	MVE _{t+3}	AEM	REM	PTI	BVE	LEV	DIVD	FOWN
MVE _{t+3}	1.0000							
AEM	-0.0623*	1.0000						
REM	0.1658	-0.4210	1.0000					
PTI	0.8116	-0.0826*	0.2254	1.0000				
BVE	0.3467	0.0190**	0.0313**	0.3162	1.0000			
LEV	0.1147	-0.0764*	0.1516	0.0559*	-0.0054***	1.0000		
DIVD	0.2267	-0.1128	0.1529	0.3224	0.0009***	-0.1284	1.0000	
FOWN	-0.0581*	-0.0107**	-0.0129**	0.0041***	-0.0145**	-0.0921*	0.0755*	1.0000

***, ** and * indicate significance level at 1%, 5% and 10%, respectively.

We next employ the variance-decomposition proportions analysis to ascertain the presence of multicollinearity. The analysis confirms that multicollinearity is insignificant as the condition indices (CI) are below 30 (Belsley, Kuh, & Welsch 1980).⁵ In addition, the data is also tested for heteroscedasticity. The Breusch-Pagan and White statistics for both estimation models suggest a significant level of heteroscedasticity as the chi-squared values are significant at $p < 0.01$. Thus, the models are estimated using the cross-section clustered Eicker-White robust standard errors (Cameron & Trivedi 2005). We also test the models for bias of estimation specification using Hausman test. The results indicate significant difference between random- and fixed-effects.⁶ Therefore, this study estimates the models using fixed-effects.

Table 5 presents the regression results of Models 1, 2 and 3. The results of the estimation models that test the direct relationship between firm equity value, and prior-year AEM (Column 2) and prior-year REM (Column 3) exhibit that prior-year AEM is valued differently than prior-year REM. Interestingly, while prior-year AEM significantly increases firm equity value ($p < 0.01$), prior-year REM, on the other hand, significantly decreases firm equity value ($p < 0.01$). The results are consistent with Mostafa (2017) who finds a positive relationship between AEM and firm performance. Shareholders increasingly value prior-year AEM as they are under the impression that the earnings-managed firms have met or exceeded securities analysts' expectations. In addition, as earnings and accruals are priced by the market (Olsen & Zaman 2013; Sloan 1996), shareholders react favourably to the news that the firms' ability to generate earnings will grow in the future albeit the positive earnings prospects being a result of managers shifting prior-period's earnings to future periods. Compared to prior-year AEM, prior-year REM is valued negatively by shareholders due to the impact of actions taken by managers to increase earnings on current and future cash flows (Abernathy et al., 2014; Roychowdhury, 2006). For example, if marketing costs are reduced or "postponed" in the prior-year through the manipulation of selling expenses to increase prior-year's reported earnings, firm equity value in the current year may decline due to the possible loss in current year's revenue and earnings as a result of marketing activities that were reduced or "postponed" to future years. However, firms face dire consequences when it is eventually brought to light that REM was conducted to manage earnings, among others, to avoid earnings decreases, to meet or beat securities analysts' earnings benchmarks or to avoid violation of debt covenants. This is consistent with Dechow and Skinner (2000) who state that market participants "punish" firms that reveal extreme forms of earnings management, and Lo, Ramos, and Rogo (2017) who claim that upwards REM reflects firms' intention to meet or beat prior-year earnings.

The results from the mediation analyses are presented in Columns 4 and 5 of Table 5 for prior-year AEM, and in Columns 6 and 7 of Table 5 for prior-year REM. The results indicate full mediation of executive remuneration on the relationship between prior-year AEM and firm equity value. In contrast, in terms of REM, there is partial mediation of executive remuneration on the relationship between prior-year REM and firm equity value. The results support H₁ and H₂, which suggest that executive remuneration mediates the relationship between prior-year AEM and firm equity value, and prior-year REM and firm equity value. The different mediating effects on prior-year AEM and prior-year REM lies on the inclusivity of the direct and indirect effects of the mediation. *EREM* exhibits "indirect only mediation" on prior-year AEM and firm equity value while there is "competitive mediation" of *EREM* on prior-year REM and firm equity value, i.e., direct versus indirect relationships. This implies shareholders' complete ignorance

of prior-year AEM in their equity valuation as they tend to become fixated with *EREM*, which results in the perception that prior-year AEM is irrelevant in pricing firm's shares. This concurs with Chu and Song (2012) and Yunus, Smith, and Ismail (2010), who find that managers are motivated to engage in AEM to increase their *EREM* in environments with severe information asymmetry, such as Malaysia, when *EREM* is closely linked to share price in the short-term. The results confirm that managers engage in higher levels of AEM when their remuneration is highly sensitive to firm equity value and share options as accruals are not reflected in current cash flows (Bergstresser & Philippon, 2006). On the contrary, shareholders perceive prior-year REM as relevant along with *EREM* in their equity valuation in the current year because *EREM*, which includes shares and share options, is sensitive to changes in firm equity value. Simultaneously, prior-year REM is also weighted directly in shareholders' valuation because of the impact of prior-year REM on future cash flows (Abernathy et al. 2014), which reflects the firms' long-term sustainability. Thus, shareholders are found to value prior-year REM both directly without *EREM* and indirectly through *EREM*.

In testing the differences of mediating effects of *EREM* on prior-year AEM and firm equity value, and prior-year REM and firm equity value, we employ univariate test to investigate the significant difference of coefficients between both earnings management methods. The difference is significant at $p < 0.01$ with a chi-squared value of 241.83. The results support H_3 in hypothesising that there is a significant difference in the mediating effects of *EREM* between market valuations of both earnings management methods. This suggests that earnings management methods matter in *EREM*'s indirect effects on shareholders' equity valuation.

In terms of firm-specific characteristics, *PTI*, *BVE* and *LEV* are robust in their positive effects on firm equity value. This is consistent with Ohlson (1995) who states that shareholders respond positively to pre-tax earnings and book value of equity as both items are value relevant. Due to its results in portraying a favourable financial performance and financial position to market participants (Mohd Suffian et al., 2015), leverage is also robust in positively impacting firm equity value. In contradiction with signalling theory (DeAngelo, DeAngelo, & Skinner, 1996), *DIVID* is not significantly valued by shareholders during equity valuation. This could be due to the doubt that dividend pay-out has the ability to reflect firms' future profitability (Grullon, Michaely, Benartzi, & Thaler, 2005). *FOWN*, on the other hand, is valued negatively by shareholders, particularly in the context of *EREM* mediation on the relationship between prior-year REM and firm equity value. This could be due to the entrenchment effects of controlling family shareholders who are more interested in enhancing family members' personal wealth as opposed to focusing on the enhancement of firm equity value (Jong & Ho, 2018).

In summary, this study finds *EREM* significantly mediates the relationship between prior-year AEM and firm equity value, and prior-year REM and firm equity value, respectively. The results suggest that shareholders value earnings management differently depending on the method of earnings management used. The findings also provide insights that financial reporting and corporate governance are simultaneously valued by shareholders during equity valuation.

FURTHER TESTS

In testing the robustness of the results presented in Table 5, we evaluate the sensitivity of the results upon estimation specification by re-estimating the models using random effects. The results for prior-year AEM are qualitatively similar with the initial results, which depicts that prior-year AEM is significantly and positively related to firm equity value at $p < 0.01$. However, prior-year REM is no longer significant at $p > 0.10$ when the model is re-estimated using random effects.⁷ This suggests that the initial results of REM are sensitive to the specification.

This study, following Garg (2018), measures AEM using signed value of discretionary accruals. As there are also literature that measure AEM using absolute values of discretionary accruals (Abdul Jalil & Abdul Rahman 2010; Cohen et al. 2008), we re-estimate the mediation models using absolute values of AEM to test the combined effects of income-increasing or income-decreasing earnings management (Alzoubi 2016; Al-Rassas & Kamardin 2015; Cohen et al. 2008; Klein 2002). The re-estimation values of AEM indicate qualitatively similar results with the results using signed values of AEM presented in Table 5, which shows that prior-year AEM is significantly related to firm equity value at $p < 0.05$.⁸ This suggests that the mediating effects of *EREM* on prior-year AEM and firm equity value are robust across signed and absolute values of AEM.

TABLE 5. Regression Results

Column 1	2	3	4	5	6	7
	Model 1	Model 1	Model 2	Model 3	Model 2	Model 3
			Direct Effect	Indirect Effect	Direct Effect	Indirect Effect
	DV=MVE _{t+3 months} /BVE _{t-1}	DV=MVE _{t+3 months} /BVE _{t-1}	DV=EREM _t	DV=MVE _{t+3 months} /BVE _{t-1}	DV=EREM _t	DV=MVE _{t+3 months} /BVE _{t-1}
DACC	0.0026 (4.40)***		0.3406 (2.97)***	0.0011 (1.14)		
AB_RM		-0.0004 (-4.07)***			-0.0228 (-1.95)*	-0.0004 (-4.32)***
EREM				-0.0001 (-6.27)***		-0.001 (-6.40)***
PTI	0.0068 (1.74)*	0.0133 (67.28)***	-0.1277 (-5.55)***	0.0131 (66.96)***	-0.123 (-5.24)***	0.0132 (66.81)***
BVE	0.0019 (2.64)***	0.0010 (9.31)***	0.0161 (-1.31)	0.0010 (9.55)***	0.0169 -1.37	0.0001 (9.53)***
LEV	0.0001 (3.80)***	0.0001 (8.03)***	-0.0003 (-0.88)	0.0001 (7.22)***	-0.0003 (-0.78)	0.0001 (7.99)***
DIVD	-0.0001 -0.23	-0.0001 (-0.23)	0.0005 (-1.79)*	-0.0001 (-1.31)	0.0005 (1.78)*	-0.0001 (-1.01)
FOWN	-0.0001 -1.53	-0.0001 (-3.79)***	0.0037 (13.91)***	-0.0001 (-1.97)**	0.0037 (13.84)***	-0.0001 (-2.13)**
Constant	-0.0020 (-2.80)***	-0.0007 (-1.98)**	0.8526 (10.36)***	-0.0008 (-1.20)	0.8001 (18.64)***	-0.0001 -0.18
Industry dummy	Yes	Yes	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	61.28%	68.83%	8.98%	69.09%	8.88%	69.25%
n	3005	3005	3005	3005	3005	3005
F-statistic	234.33***	329.4***	14.01***	302.92***	14.40***	319.87***
Breusch-Pagan	565.84***	565.27***				
White	465.29***	474.14***				
Indirect effect				-0.0003 (-2.6855)***		0.0001 (1.8672)*

Figures in parentheses represent cross-section adjusted t-statistics.

***, ** and * indicate significance at 1%, 5% and 10%, respectively.

CONCLUSIONS

This study examines the mediating role of executive remuneration on the relationship between prior-year earnings management and firm equity value for AEM and REM, respectively. To confirm the variations of mediating effects according to the methods, this study also tests the difference of the effects between both methods. Using 601 non-financial *Bursa Malaysia*-listed firms, this study finds executive remuneration fully mediates the relationship between prior-year AEM and firm equity value but partially mediates the relationship between prior-year REM and firm equity value. The mediating effects also are found significantly different between AEM and REM. This suggests that shareholders are more fixated on executive remuneration in assessing AEM on the grounds that managers manage earnings to fulfil their personal interests. On the contrary, shareholders assess REM directly without executive remuneration and indirectly through executive remuneration during their equity valuation.

This study contributes to methodology in two ways. First, by positing executive remuneration as the hypothesised mediator, this study provides evidence that mediation is possible in valuation of earnings management context. Second, this study employs Sobel-Goodman test, and combines Zhao's (2010), and Baron and Kenny's (1986) approaches to mediation in the mediation analyses. This allows for measurement of indirect effects under robust assumptions of direct effects between earnings management methods and firm equity value with and without the mediator. In terms of literature, this study provides further evidence that executive remuneration is not only affecting firm equity value directly but also indirectly, particularly, in the context of earnings management. This study also provides evidence that earnings that are managed in previous years matter to shareholders in their equity valuation. Authorities can benefit from this study through the insights that executive remuneration can signal earnings management, which can then affect shareholders' value.

As this study focuses on Malaysian listed firms, the findings may be limited to be generalised to other settings. Future research may consider replicating this study to confirm whether the evidence drawn by this study is robust across different institutional environments. Future studies may also compare the mediating effects of executive remuneration on shareholders' valuation of prior-year earnings management across various codes on corporate governance across countries and versions to confirm the effectiveness of the governance rules in the mediation context.

NOTES

1. Minimum of 15 industry-year observations are required in line with prior literature (Roychowdhury, 2006).
2. Sobel-Goodman's measures provide probability statistics to establish the confidence interval in the hypothesis testing, which provide unbiased interpretation in complementing Baron and Kenny (1986).
3. Outliers are defined as observations with studentised residual $>|2|$ (Hair et al., 2019).
4. While upwards earnings management results in increase of earnings, downwards earnings management leads to decrease of earnings.
5. For prior-year AEM, the CI is 7.80 and for prior-year REM, the CI is 8.31.
6. For prior-year AEM, the chi-squared is 79.23 ($p < 0.01$) and for prior-year REM, the chi-squared is 96.11 ($p < 0.01$).
7. Coefficients of prior-year AEM and REM using random effects are 0.0023 ($p < 0.01$) and -0.0003 ($p > 0.10$) respectively. In the interest of word-economy, the results are not tabulated but are available from authors upon request.
8. Qualitatively similar to the initial results, the coefficient of prior-year AEM (with mediator) is 0.00033 ($p < 0.05$). The detailed results are available from authors upon request.

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