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Article

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Real earnings management and capital structure: Does environmental, social and governance (ESG) performance matter?

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Abstract: This paper examines the impact of real earnings management (REM) on the capital structure of listed firms across ASEAN countries using the fixed effects panel data estimator for the period 2014–2019. Prior literature has focused primarily on aggregate real earnings management, overlooking the disaggregated sources of EM from real activities. It also investigates the role of environmental, social, and governance (ESG) performance on the impact of REM on leverage. We find that REM has a significant positive effect on leverage. It also finds that REM sourced from abnormal production costs and abnormal discretionary expenses have positive impacts on leverage. In contrast, abnormal cash flows from operating activities do not significantly influence leverage. On the role of ESG performance, we find that REM significantly and positively affects leverage in firms with low ESG performance and across ESG pillar scores. However, REM does not affect leverage in high- ESG performing firms, except for the governance pillar score. This suggests that ASEAN firms exhibit weak corporate governance as sustainable behaviours may not reduce the agency cost of debt. Our results are robust to a battery of tests. Our results have implications for the stakeholder theory in that it attenuates the agency costs of earnings manipulations.

Subjects: Corporate Finance; Financial Management; Corporate Governance; Corporate Social Responsibility

Keywords: capital structure; real earnings management; ESG performance; agency theory; stakeholder theory

1. Introduction

Managers manipulate current period earnings in order to meet the objectives of outside investors and analysts, which is always at the expense of future period earnings (Graham et al., 2005; Kim & Sohn, 2013; Stein, 1989). Thus, managers manipulate stock prices and other performance indicators and are motivated by incentives for inflating current period earnings. Kim and Sohn (2013) noted that current period earnings are manipulated following the gaps and the discretionary accrual options under the Generally Accepted Accounting Principles (GAAP) but such accrual-based earnings management does not directly impact cash flows. Similarly, managers engage in earnings management by distorting real activities and altering the scale and timing of real activities (e.g., investment, production, sales, and even financing activities) in a bid to meet the earnings target (Roychowdhury, 2006). For instance, firms may distort real activities by accelerating production timing, cutting or deferring discretionary expenditure occurrence. Roychowdhury (2006) submits that managers engage in REM when real operating activities deviate from normal business activities with the goal to manage current period earnings. While accrual

earnings management has been extensively linked to leverage (An et al., 2016; Anagnostopoulou & Tsekrekos, 2017; Campa, 2019; Lazzem & Jilani, 2018), we do not know much about the REM and how its components influence the financing structure of firms.

The influence of REM on leverage is mixed for several reasons. First, accruals earnings management sourced from discretionary accrual decisions in GAAP are easier to know but REM seems to be difficult for outside investors and analysts to understand (Kim & Sohn, 2013). Second, while accruals earnings management influences the number of accounting accruals, REM directly impacts current and future cash flows. Moreover, REM from real activities is less addressed by GAAP, suggesting that even in the presence of corporate governance, key stakeholders such as the board, auditors and regulators may experience difficulty in monitoring and scrutinizing real activities. Therefore, the extent to which REM influences the capital structure of the firms would require an empirical investigation.

Prior literature on REM can be grouped into three streams. First, theorists look into how REM affect financial performance including stock performance (Ding et al., 2018; Griffin et al., 2021; Huang & Ho, 2020; Taylor & Xu, 2010). Second, scholars that link REM with corporate finance decisions (Elleuch Hamza & Kortas, 2019; Ge & Kim, 2014; Kim & Sohn, 2013), and third, studies that examine the role of corporate governance mechanisms in attenuating the impact of REM of financial performance and financing decisions (Putri & Sujana, 2018; Shahzad et al., 2017; Tulcanaza-Prieto et al., 2020). We observe two major research gaps in these studies. The first gap addresses the fact that while these studies examine the impact of REM on financing decisions, most studies fail to establish how the sources of REM from real activities such as production, discretionary expenses, and cash flows impact leverage decisions in firms. Second, we observed mixed findings on the role of corporate governance mechanisms in the nexus between REM and leverage. For instance, while some authors find that audit committees attenuate REM's impact on leverage, others reveal that it further increases leverage. These differences may be due largely to the fact that the direct consequences of REM on current period and future period cash flows are less subjected to the monitoring role of the board of directors (Kim & Sohn, 2013). This suggests that the agency power of board monitoring is weak to address earnings manipulations from real activities especially in weaker informational environments and in firms with higher private benefits to insiders (Man & Wong, 2013). Buttressing this claim, Bekiris and Doukakis (2011) establish that corporate governance mechanisms do not limit downwards but upwards earnings management. Jaggi et al. (2009) also support that corporate governance may not curtail REM practices since internal monitors (the board, and audit committee), and external investors find it difficult to detect REM.

This study examines the unexplored questions on whether REM components impact a firm's leverage decision, a key factor in determining shareholders' financial risks. Our goal is to revalidate in a new context, whether leverage increases with the level of aggregate real earnings management. To further explain the mixed findings in REM literature on capital structure decisions, we disaggregated REM and tested (i) whether REM from abnormal cash flows from operating activities impacts leverage, (ii) whether REM from abnormal production costs impacts leverage, and (iii) whether REM from abnormal cash flows from discretionary expenses (e.g., advertising and selling, general and administrative expenses) impacts leverage. Theoretically, the agency theory has partly explained the link between REM and leverage, which calls for more theories (Hussain et al., 2018). In light of this, we integrate the agency theory with the stakeholder theory to further test whether ESG performance matters for the relationship between REM and leverage.

Using yearly panel data regressions of REM on leverage, and other main determinants of leverage (See, Titman & Wessels, 1988), for the period 2014–2019, we find that aggregate REM increases leverage. This finding suggests that firms engaging in REM practices have more access to debt financing. Interestingly, we find that REM originating from abnormal production costs and discretionary expenses increases leverage while REM from operating cash flows reduces leverage. Another issue we addressed is whether the level of ESG performance (High vs. Low) matters in the relationship between REM and leverage. Thus, we divide our samples into high vs. low ESG performing firms, high vs. low environmental performing firms, high vs. low social performing firms, and high vs. low governance performing firms. We

find that REM significantly increases leverage only in firms with low ESG performance, low environmental performance, low social performance, and low governance performance. This suggests that high ESG performance can erode the effect of REM on leverage. Although REM increases leverage in high governance performing firms, it suggests that corporate governance is weak to attenuate REM practices. We further find that the negative effect of REM from abnormal operating cash flows on leverage is known to exist in low-sustainable firms.

The contribution of this study is three-fold. First, our paper advances the literature on REM, and it is among the first to disaggregate REM components and explore their influence on leverage decisions in firms. Previous studies have paid much attention to the association between REM and cost of capital (Ge & Kim, 2014; Kim & Sohn, 2013), and between AEM and leverage (See, Lazzem & Jilani, 2018), meanwhile, leverage and cost of capital are inversely related. However, we pay attention to REM and leverage as our results are relevant to a large group of stakeholders than only a category of investors that are particular about resource allocation decisions. Thus, our study considers the financial risk to be borne by shareholders. Our results show implications that the firm's manager's decision to increase debt is not just a function of some firm-level characteristics (profitability, firm size, tangibility, non-debt tax sheet, and market-to-book value), and managerial averse behaviour (See Adeneye & Chu, 2020) but a firm's managerial incompetency in real business activities. Second, unlike past studies that have used corporate governance mechanisms to attenuate REM impact on leverage (e.g., Tulcanaza-Prieto et al., 2020) and that have generated mixed findings, especially in weaker informational environments, we provide better sustainable mechanisms (i.e., ESG performance) to attenuate REM impact. Our findings suggest that REM significantly impact leverage in firms with low sustainable behaviours. This suggests that firms practising sustainability with increased ESG performance are less to suffer from the manager's incompetence in real business activities as sustainability dominates most activities of the firm.

Our findings have some implications. The evidence of REM having positive effects on leverage for abnormal production costs, and abnormal discretionary expenses suggests that policymakers should ensure that the production process and all related costs of production are efficiently managed and automated to reduce unduly scaling in production. In essence, they should ensure sustainable practices in real business activities. Therefore, shareholders and other stakeholders may suffer less from the agency cost of debts as firms embrace sustainability practices. Stakeholders would seem to benefit more from this REM reduction sustainable mechanism in comparison to corporate governance where internal monitors are themselves perpetrators of REM following their managerial incompetency, thus, defeating the monitoring role of directors.

The paper is organized as follows: Section one introduces the background issues on REM and leverage. Section two discusses the literature review and hypotheses development. Section three presents the research methodology. Section four presents the data analysis and results while section five concludes the study.

2. Literature review and hypotheses development

2.1. Theoretical underpinnings

The seminal work of Modigliani and Miller (1958) advances the assumption of the irrelevancy of financial decisions, in perfect conditions of the capital market. This capital structure irrelevance proposition led to serious debate and controversy among academicians and has stimulated subsequently theoretical developments on companies' financing decisions. Several capital structure theories which consider capital market imperfections have been developed including, the pecking order theory (Myers, 1984; Myers & Majluf, 1984), the agency theory (Jensen & Meckling, 1976), and the stakeholder theory (Freeman, 1984).

2.1.1. Pecking order theory

The pecking order theory, introduced by Myers (1984) and Myers and Majluf (1984), postulates that managers, confronted with higher information asymmetry, choose a specific hierarchical financing strategy by prioritizing internal financing sources, issuing debt secondly and opting finally for equity.

2.1.2. Agency theory

The agency theory, introduced by Jensen and Meckling (1976), seeks to explain the behaviour of different parties involved in firms' funding decisions and to analyze the effect of such behaviours on capital structure. It starts from the assumption that there is a divergence of interests between managers/ shareholders and between creditors/ managers and shareholders. Benefiting from more access to information, managers tend to pursue their interests at the expense of the major assigned goal of shareholders' wealth maximization. One way to attenuate such conflict of interest and the resulting agency costs is by issuing debt. Indebtedness is considered a strategy to supervise, discipline managers and constrain their opportunistic practices (Jensen, 1986). However, issuing debt may generate new agency conflicts and induce higher agency costs. Thus, trading off the benefits against the agency costs of debt could determine the optimal capital structure (Jensen & Meckling, 1976).

2.1.3. Stakeholder theory

The stakeholder theory starts from the assumption that firms would not only consider short-term profits but also the long-term goals of stakeholders (Freeman, 1984). It argues that when it comes to making capital structure decisions firms would consider the preference of st1984akeholders other than shareholders and bondholders (Titman, 1984).

2.2. Hypotheses development

Earnings management has been widely known as a managerial intervention in financial reporting to maximize private gain (Healy & Wahlen, 1999; Schipper, 1989). It is perceived as a typical example of the principal-agent problem, in which managers (agents), benefiting from easier access to information, may choose to not act in the better interests of shareholders (principal) and pursue their utilities (Jensen & Meckling, 1976). Accordingly, managers could engage in manipulative practices by involving accounting choices (accrual earnings management) and/or undertaking operational, investment or financial decisions that deviate from optimal business practices (real earnings management; Schipper, 1989; Walker, 2013). Prior studies (Cohen & Zarowin, 2010; Kothari et al., 2016) suggest that managers prefer REM over AEM because the former is less easily detectable by external stakeholders even though it induces higher costs and negative effects on future firm performance (Abernathy et al., 2014; Cohen et al., 2008; Cohen & Zarowin, 2010; Eldenburg et al., 2011; Graham et al., 2005; Kothari et al., 2016; Roychowdhury, 2006).

Theoretical background on capital structure perceives adverse selection problems as a key determinant of firms' financing behaviour. Previous studies have attempted to provide empirical evidence on the association between the extent of EM and debt contracting decisions and the results were mixed. One strand of research (Ghouma, 2017; Kim et al., 2020) argues that lenders are more likely to charge the higher cost of debt to firms engaging in earnings manipulating practices due to the induced agency problems and information asymmetry issues. Specifically, Kim et al. (2020) examine the association between REM and the cost of debt using an international sample and report that the extent of REM is positively associated with the cost of debt capital. Another line of research (Demirtas & Rodgers Cornaggia, 2013; Orazalin & Akhmetzhanov, 2019) supports the managerial opportunistic perspective derived from the agency theory and considers that managers could manage earnings to draw a sound image of firms' financial performance to benefit from a reduced cost of debt. In addition, Ajay and Madhumathi (2015) postulate that firms tend to use higher levels of leverage as the extent of earnings management increases. Besides, Okyere et al. (2021) conclude, based on a sample of non-financial firms from sub-Saharan African countries, that earnings management induces less equity financing and higher debt financing. In a recent study, Dang et al. (2021) provide evidence consistent with the pecking order theory suggesting that firms indulging in higher earnings management practices exhibit greater leverage

ratios. Furthermore, following the agency theory, indebtedness is considered a governance tool which plays a disciplining role in limiting managerial opportunistic behaviour. For instance, An et al. (2016) report that earnings management is positively correlated with firms' financial leverage suggesting that earnings management reflects moral hazard conflicts between managers and investors, and that debt has a disciplining function to mitigate the agency cost of free cash flow.

While most of these studies focus on the relationship between accrual earnings management and leverage, empirical evidence on the association with REM remains scarce. We support the managerial opportunistic perspective derived from the agency theory and assume that managers are more likely to engage in REM, perceived as less detectable practices, to get access to more debt financing. Our first hypothesis is as follows:

H1: *There is a positive association between the extent of REM and financial leverage.*

In pursuit of long-term sustainability goals, managers are increasingly involving environmental, social and governance activities in their strategies. Many theories have been identified in the literature to explain firms' sustainability motives including legitimacy theory, stakeholder theory and agency theory. The former states that firms indulge in sustainable practices to maintain their legitimacy among various stakeholders, defend their reputation and achieve long-term survival (O'donovan, 2002). Consistent with the long-term perspective derived from the stakeholder theory, managers could be more concerned with the interests of all stakeholders rather than the short-term shareholders' utilities (Freeman, 1984). Engaging in ESG practices could be one strategy to gain trust and ensure communication between stakeholders (Escrig-Olmedo et al., 2019). However, the agency theory advances that ESG engagement could be sometimes perceived as a disguise of managerial misconduct and a tool to hide manipulative practices (Velayutham, 2018).

A recent line of research provides empirical evidence on the role of ESG performance in driving debt contracting and pricing decisions. For example, Eliwa et al. (2021) argue, in line with the legitimacy theory, that lending institutions reward ESG performance by pricing the lower cost of debt to firms with stronger ESG performance. Jang et al. (2020) demonstrate that the higher the ESG scores, the lower the cost of debt financing for bond issuers. In addition, Aslan et al. (2021) postulate, using a sample of 902 US publicly listed firms over the period from 2002 to 2017, that firms with high ESG performance have a lower probability of corporate credit default.

Consistent with the agency theory, it is assumed that adverse selection may appear between lenders (principals) and the managers/shareholders (agents) as the latter hold more private information about firm performance (Gerwanski, 2020). As a response, lenders could introduce debt covenants and restrictions, leading to higher agency costs and debt pricing consequently (Muttakin et al., 2020). By providing detailed information about their sustainable activities, companies can reduce information asymmetry and agency costs and may benefit, therefore, from a reduced cost of debt (Bryl & Fijałkowska, 2020; La Rosa et al., 2018).

Given that, we assume that firms performing higher sustainable practices have more debt financing and have no incentives to engage in costly REM practices to benefit from additional resources. Meanwhile, firms that engage less in ESG performance often try to attract public attention to their performance and long-term survival. However, given the scarcity of non-financial information, stakeholders become more vigilant about managerial practices. Thus, under the adverse selection problems and the risk of being scrutinized, managers caring less about ESG practices are more likely to indulge in hidden manipulative practices through REM to get access to debt capital. Accordingly, we formulate hypothesis H2 as below:

H2: *The positive association between REM and financial leverage is more pronounced in firms with less sustainable practices.*

3. Data and methodology

3.1. Sample selection

We focus on non-financial firms listed on the main stock exchanges from five ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, and Thailand). The study focused on listed firms in ASEAN countries. The ASEAN member states are increasingly oriented to ESG standards and opportunities across corporate boards to pursue sustainable activities relating to green building developments, social impact, and transparency. Recently, it has been recognized that ESG adoption in ASEAN member states has generated positive publicity, enhanced reputation, increased shareholder value, and increased access to new capital access opportunities. Meanwhile, about 79% of firms in the Asia-Pacific region had significantly increased their ESG investment following the presence of Covid-19 (Morgan Stanley Capital International (MSCI) (2021). Therefore, we focus on five ASEAN stock exchanges with firms that have adequate data on ESG performance. Vietnam, out of the six ASEAN countries with the most developed stock exchanges, was excluded due to large missing data on ESG performance. However, little is known about how the sustainability practices of ASEAN firms attenuate real earnings management in influencing leverage decisions.

The analysis covers the period 2014–2019. We focus on this sample period because some listed firms were dead and delisted due to the Covid-19 pandemic. As such, financial information of those firms was not available for the year 2020. So, to ensure that the cross-sectional firms are sampled across the years, we used data spanning from 2014 to 2019. The sample selection follows some exclusion/inclusion criteria The main inclusion criteria were based on the availability of the ESG and its pillar scores data. That is, we identify firms that disclose voluntarily ESG related activities. As part of our exclusion criteria, we exclude financial firms and firms from unit trusts are excluded from this study due to unique regulations, different accounting standards, different accruals behaviour, and to make our results comparable with prior studies (Anagnostopoulou & Tsekrekos, 2017; Zamri et al., 2013). Newly listed firms are excluded due to inadequate data to estimate real earnings management. The final dataset consists of a balanced panel of 116 non-financial ASEAN firms. Table 1 presents the sample distribution by country and industry. Hence, this study collects and performs a firm-level data analysis of ASEAN-listed firms across non-financial industries (communication services, consumer discretionary, consumer staples, energy, health care, industrials, information technology, materials, real estate, and utilities).

3.2. Research design

Traditionally, a wide range of research (Frank & Goyal, 2009; Titman & Wessels, 1988) uses firms' specific characteristics to explain leverage level and identify profitability, market to book value, tangibility, firm size, and non-debt tax shield as core factors of capital structure. We included these control variables to avoid omitted variable bias and to ensure that the real variables to explain the variations in leverage are included in the sample. Although past studies have included other determinants such as growth opportunities (See Gul, 1999), however, we posit that this may result in a multicollinearity problem. For instance, Gul (1999) provided three measures of growth opportunities using market-to-book assets, market-to-book equity, and earnings price ratio. This suggests that Gul (1999) posit MTB as a measure of growth opportunities and not as a separate measure. As such we focus on the main determinants of leverage with theoretical backings following the studies of Frank and Goyal (2009) and Titman and Wessels (1988). Our use of

Table 1. Sample distribution by country

Variable	No. of firms
Malaysia	35
Singapore	32
Indonesia	20
Philippines	15
Thailand	14

panel data analysis follows similar studies on leverage determinants (Alkhatib, 2012; Chen et al., 2021). We use the fixed-effect regressions of real earnings management on leverage, core determinants, controls, the year dummies, the country dummies, and the industry dummies for the 2014–2019 panel data. Thus, the estimation model applied in this study is as follows.

$$Levearge_{i,t} = \beta_1 Real\_EM_{i,t} + \beta_2 MTB_{i,t} + \beta_3 PROF_{i,t} + \beta_4 TANG_{i,t} + \beta_5 FSIZE_{i,t} + \beta_6 NDTS_{i,t} + \beta_7 Dummies_{i,t} + \varepsilon_{i,t}$$

Where Real_EM is the real earnings management, MTB is the market-to-book value, PROF is profitability, TANG is tangibility, FSIZE is the firm size, and NDTS is non-debt tax shields. The model controls for a number of dummies including year dummies, industry dummies, and country dummies. Year dummies are variables for sample years. Each year's dummy variable is equal to one if the performance observation refers to the corresponding year and zero otherwise. The D2014 dummy variable has been dropped to avoid collinearity in the data and dummy trap.

Industry dummies are included since Jõeveer (2006) find them to explain most of the variations in leverage, consistent under measures of leverage in transition countries. The industry dummies also serve as additional control variables to check the robustness of our results. Consequently, the inclusion of industry dummies does not produce materially different results.

Country dummies could help capture the effect of individual countries' local financial markets since we pooled firms from different countries, and we run a pooled regression of firm-specific factors. As such, it is important to consider the country dummies in model specifications. Meanwhile, the estimates of all country dummies are equal to the intercepts. The importance of country dummies shows that the time-invariant part of leverage is important. Each country dummy variable is equal to one if the firm location is that of the corresponding country and zero otherwise. Country dummy variables are D_MALAY (Malaysia), D_INDO (Indonesia), D_SING (Singapore), D_THAI (Thailand), and D_PHIL (Philippines). The D_PHIL dummy variable has been dropped to avoid collinearity in the data and dummy trap. The country dummy variables should capture any difference in the institutional framework, the degree of competition, the accounting standards, etc., among the five ASEAN countries. This is important for at least two reasons: First, apparently, a change in domestic macroeconomic variables and/or financial institutions can change a firm's financial structure. Second, the outcomes of the use of country dummies can be a potential solution in the analysis of country-specific influences on leverage, in which case each country should serve as a particular observation in the analysis.

In line with H1, we predict a positive association between the extent of REM and financial leverage. This prediction is tested by applying the fixed effect model to the whole sample using the aggregate real earnings management model and consecutively its three disaggregate components.

Motivated by the REM model of Roychowdhury (2006), we measure real-based earnings management using the abnormal level of cash flows from operating activities (Real EM_CFO), the abnormal level of production costs (Real EM_PROD), and the abnormal level of discretionary expenses (Real EM_SGA). The abnormality of each component is reflected by the residual from each regression. As suggested by Cohen et al. (2008), we construct an aggregated measure of real earnings management, by adding up standardised abnormal cash flows from operating activities, standardised abnormal production costs, and standardised abnormal discretionary expenses.

Concerning abnormal cash flows from operating activities, the firm can manipulate earnings by discounting the sales price and/or offering more flexible credit terms in an aggressive manner (Roychowdhury, 2006). These activities lead to an increase in sales volume and to an abnormal decrease in cash flows from operations. The normal operating cash flow is expressed as a linear function of sales and change in sales during the same period (Roychowdhury, 2006). The abnormal level is calculated by subtracting the normal CFO, obtained using estimated coefficients of the Real EM_CFO model as depicted in Table 2.

Moreover, regarding abnormal production costs, firms manipulate production costs to manage earnings upward by increasing the level of production (Roychowdhury, 2006). The production costs are defined as the sum of costs of goods sold and changes in inventory during the period, (Cohen et al., 2008; Roychowdhury, 2006). The abnormal level of costs is measured as the difference between actual production costs and the expected level for every company-year (Cohen et al., 2008). See Real EM_PROD in Table 2.

Third, firms also manipulate earnings upward by aggressively reducing discretionary expenses. Discretionary expenses are calculated by adding research and development expenses, advertising and selling, general, and administrative expenses. Following Cohen et al. (2008) and Roychowdhury (2006), we estimate the normal level of discretionary expenses, and we calculate abnormal discretionary expenses by deducting the normal discretionary expenses from the actual discretionary expenses using estimated coefficients. Abnormal discretionary expenditure corresponds to the residual from the Real EM_SGA model. Details of the variable measurements are presented in Table 2.

In H2 we predict that in firms with less sustainable practices, the positive association between the extent of REM and financial leverage is more pronounced. To test this conjecture, we split subsequently our main sample into two groups representing high and low: ESG performance, environmental performance, social performance, and governance performance. As the aggregate ESG score and the individual pillar scores are continuous variables, we rely on the median values of each ESG variable to divide the sample into two groups. ESG score has a median of 48.3585. Firms with high (low) ESG performance are those who have higher (lower) ESG score than the median. The same logic is applied to split the sample according to each pillar score. We then estimate the effect of real earnings management on book leverage in firms with high and low: ESG score, environmental score, social score, and governance score.

4. Results

4.1. Descriptive statistics

Table 3 presents the results for the descriptive statistics. The range of ESG performance is from 0% and 100%. The mean (median) values for the ESG score and its pillar scores are 46.4434(48.3585) for ESG score, 40.8310(41.2145) for environmental pillar score, 49.1383(49.4553) for social pillar score, 48.4237(49.9686) for governance pillar score. These sustainability values indicate that ASEAN firms have not achieved good ESG results because their mean values are lower than the 70%. The distribution of all sustainability scores is skewed to the left because their median values are higher than their mean values. In addition, the mean (median) values of the book leverage are 1.5410 (1.1438). Tangibility and NDTS have mean values of 0.6351and 0.0404, respectively. On average, the average sample firm has a profitability ratio proxied by return on assets of 5.587%,

Table 4 provides the Pearson correlation matrix for ESG performance and the determinants of leverage. Book leverage correlates positively with aggregate REM and its disaggregate components which are REM from CFO, REM from SGA and REM from PROD. Consistent with our assumptions, these correlation coefficients show that there is a positive association between REM and leverage. Concerning the control determinants variables of leverage, the matrix reveals that MTB, profitability, Tangibility, firm size, and NTDS are positively correlated with book leverage. Overall, our results reveal no case of multicollinearity issues because all reported correlations are below 0.8. Hence, our regression estimates are valid and reliable.

Table 5 shows that higher REM is associated with higher leverage (Column 1), which is in line with An et al. (2016) and consistent with the predictions of the agency theory and our hypothesis H1 that high leverage tends to result in earnings management especially when the firm approaches the violation of the debt agreement. Jensen (1986) claims that managers are obliged to settle the interest and principal payment of debt agreements, supporting the agency theory assumptions. Thus, managers may be involved in real earnings manipulations to avoid higher

Table 2. Variables measurements

Variable name	Proxy	Database sources
Real earnings management (Real_EM)	The aggregate of real EM_CFO, real EM_SGA, and real EM_PROD	
Real EM components:		
Abnormal cash flows from operating activities (Real EM_CFO)[1]	$\frac{CFO_{it}}{A_{it-1}} = \alpha_i\left(\frac{1}{A_{it-1}}\right) + \beta_{1i}\left(\frac{Sales_{it}}{A_{it-1}}\right) + \beta_{2i}\left(\frac{\Delta Sales_{it}}{A_{it-1}}\right) + \varepsilon_{it}$	The authors' computation is based on data collected from DataStream
Abnormal discretionary expenses (Real EM_SGA)	$\frac{DiscExp_{it}}{A_{it-1}} = \alpha_i\left(\frac{1}{A_{it-1}}\right) + \beta_{1i}\left(\frac{Sales_{it}}{A_{it-1}}\right) + \varepsilon_{it}$	The authors' computation is based on data collected from DataStream
Abnormal production costs (Real EM_PROD)	$\frac{Prod_{it}}{A_{it-1}} = \alpha_i\left(\frac{1}{A_{it-1}}\right) + \beta_{1i}\left(\frac{Sales_{it}}{A_{it-1}}\right) + \beta_{2i}\left(\frac{\Delta Sales_{it}}{A_{it-1}}\right) + \beta_{3i}\left(\frac{\Delta Sales_{it-1}}{A_{it-1}}\right) + \varepsilon_{it}$	The authors' computation is based on data collected from DataStream
Book leverage (LEV)	Total debt to total book value of asset	Refinitiv Eikon Database
Leverage determinants:		
Market-to-book ratio	The ratio of market value to book value	Refinitiv Eikon Database
Profitability	The ratio of earnings before interest and taxes to the total book value of assets	Refinitiv Eikon Database
Tangibility	The proportion of net property, plant, and equipment to the total book value of assets	Refinitiv Eikon Database
Firm size	The logarithm of the total book value of assets	Refinitiv Eikon Database
Non-debt tax shields	The ratio of accumulated depreciation on the total book value of assets	Refinitiv Eikon Database
ESG Performance:		
ESG Score	ESG score	Refinitiv Eikon Database
Environmental performance	Environmental pillar score	Refinitiv Eikon Database
Social performance	Social pillar score	Refinitiv Eikon Database
Governance performance	Governance pillar score	Refinitiv Eikon Database

Table 3. Descriptive statistics

Variables	Obs	Mean	Median	Std.	Min.	Max.
ESG score	812	46.4434	48.3585	19.7494	3.0682	88.3957
Environmental pillar score	812	40.8310	41.2145	23.9770	0.0000	93.9838
Social pillar score	812	49.1383	49.4553	23.4654	2.6603	97.3238
Governance pillar score	812	48.4237	49.9686	22.7863	0.9226	95.4817
REM (aggregate)	809	0.6677	0.5035	0.5454	−0.0353	3.7683
REM from CFO	812	0.0000	−0.0049	0.0757	−0.2661	0.4706
REM from SGA	812	0.0000	−0.0069	0.0808	−0.2985	0.4541
REM from PROD	808	0.0000	−0.0002	0.2254	−1.3232	1.0024
Book leverage	812	1.5410	1.1438	2.2950	−17.2401	28.1531
Market-to-book value	806	2.2524	1.6178	1.6411	0.6690	5.9022
Profitability	807	5.5870	4.2800	6.9484	−12.4000	62.1000
Tangibility	812	0.6351	0.5927	0.4536	0.0000	2.4890
Firm size	812	8.5693	8.6370	1.1624	5.2857	11.4828
Non-debt tax shields	797	0.0404	0.0196	0.0470	0.0016	0.1503

interest payments and obtain more debts at a lower cost of capital. By disaggregating REM into its sources, we find that REM positively affects leverage through abnormal discretionary expenses (Column 3), and abnormal production costs (Column 4) but the abnormal cash flows from operating activities (Columns 2) do not have a statistically significant impact on corporate leverage. Across the core determinants of leverage or control variables, market-to-book value, profitability, firm size, and NDTS significantly affect leverage as found in past studies (Titman & Wessels, 1988). Overall, the aggregate proxy of REM and its components resulting from the abnormal discretionary expenses and the abnormal production costs are associated with a higher leverage level. These results suggest that firms could manage earnings by increasing the level of production and/or aggressively reducing discretionary expenses to get more access to debt financing.

Tables 6-VIII depict the findings of REM on leverage when ESG performance is considered. As presented in Table 6, we find that higher leverage is associated with higher REM in low ESG performing firms, firms with low environmental performance, low social performance, and low governance performance. These results confirm our second hypothesis and suggest that firms engaging less in ESG practices are more likely to indulge in hidden manipulative practices through REM to get access to debt capital. The results support the stakeholder theory which states that firms engage less in earnings manipulations by performing more sustainable activities. The results are in line with Aslan et al. (2021) that firms with high ESG performance have a low tendency to engage in real earnings management practices and a lower probability of corporate credit default.

Unlike aggregate REM which increases leverage in firms with low sustainable performance, we find contrasting results for the disaggregate proxies of REM. Specifically, we first analyse the role of ESG performance in influencing the relationship between the disaggregate proxies of REM sourced from absolute cash flows from operating activities and leverage. We show that REM sourced from cash flow from operations reduces leverage across low ESG and low ESG pillars (See, Table 7). However, it significantly increases leverage in higher ESG and social-performing firms. While a positive relationship has been documented in prior studies (Wasimullah & Abbass , 2010;

Table 4. Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. ESG score	1													
2. Environmental pillar score	0.8601	1												
3. Social pillar score	0.9197	0.7654	1											
4. Governance pillar score	0.7032	0.3817	0.4751	1										
5. REM	−0.0180	0.0330	0.0166	−0.1143	1									
6. REM from CFO	0.1289	0.0801	0.1228	0.1269	0.1205	1								
7. REM from SGA	0.0231	0.0068	0.0285	0.0419	0.1846	0.2602	1							
8. REM from PROD	−0.0410	−0.0579	−0.0368	0.0146	0.3855	−0.1316	−0.0084	1						
9. Book leverage	0.0132	0.0522	0.0232	−0.0975	0.1241	0.0946	0.1356	0.0181	1					
10. Market-to-book value	−0.0104	−0.0530	−0.0151	0.0432	0.5414	0.3828	0.3061	0.0943	0.2407	1				
11. Profitability	0.1247	0.0662	0.1136	0.1127	0.4175	0.6477	0.1883	−0.1465	0.1292	0.6289	1			
12. Tangibility	0.2618	0.1599	0.2805	0.1585	0.0994	0.0965	0.0055	−0.0128	0.1962	0.1239	0.0688	1		
13. Firm size	0.0368	0.1423	0.0245	−0.0614	−0.2657	−0.0614	−0.1283	−0.1839	0.0868	−0.3642	−0.3591	−0.0388	1	
14. Non-debt tax shields	−0.0039	0.0078	0.0521	−0.1276	0.2175	0.0053	0.0144	−0.0784	0.1542	0.1995	0.1404	0.2946	−0.0690	1

Table 5. REM and leverage

	(1)	(2)	(3)	(4)
	REMAGG	**CFO**	**SGA**	**PROD**
Real earnings management	0.3355***			
	(0.0000)			
REM from CFO		−0.6509		
		(0.1202)		
REM from SGA			0.9096***	
			(0.0074)	
REM from PROD				0.3177***
				(0.0077)
MTB	0.1038***	0.1619***	0.1316***	0.1470***
	(0.0001)	(0.0000)	(0.0000)	(0.0000)
Profitability	−0.0769*	−0.0328	−0.0414	−0.0398
	(0.0580)	(0.4530)	(0.3141)	(0.3344)
Tangibility	0.0232	0.0514	0.0251	0.0255
	(0.7823)	(0.5529)	(0.7675)	(0.7638)
Firm size	0.1790***	0.1748***	0.1742***	0.1870***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
NDTS	1.6244***	1.9627***	2.0389***	2.1671***
	(0.0086)	(0.0016)	(0.0010)	(0.0005)
Constant	−1.4606***	−1.5784***	−1.4115***	−1.5783***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Observations	745	745	745	744
R-squared	.4453	.4295	.4332	.4332
Adj R^2	.426	.4096	.4135	.4135
F-stat	23.0836	21.6498	21.9839	21.9546
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes

*p-values are in parentheses. *** p < .01, ** p < .05, * p < .1*

Jelinek, 2007), the literature is not conclusive on the effect of REM on leverage. Our findings further clarify the debate on the mixed results through the role of ESG performance.

Our findings in Table 8 show that ESG performance and its pillars have a significant role in influencing the relationship between REM sourced from abnormal selling and distribution expenses and leverage. Particularly, we find that firms engaging in low sustainable performance practices have more incentives to manipulate earnings by reducing aggressively their discretionary expenses to benefit from higher debt. However, the relationship is insignificant for high ESG performing firms. This suggests that firms with a low level of ESG performance increase their debt capacity following their real earnings manipulations from discretionary expenses.

Unlike abnormal cash flows from operating activities, we find that when firms manipulate real earnings from abnormal production costs, they experience positive impacts on leverage for low-performing firms (See, Table 9). We explain this finding by the fact that low sustainable performing firms may increase their production level to benefit from higher leverage access.

Table 6. REM and leverage—the role of ESG performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG performance		Environmental pillar score		Social pillar score		Governance pillar score	
	HIGH ESG	LOW ESG	HIGH ENV	LOW ENV	HIGH SOCIAL	LOW SOCIAL	HIGH GOV	LOW GOV
Real EM	0.0760	0.4970***	0.0799	0.4255***	0.1244	0.4109***	0.2108**	0.6105***
	(0.3607)	(0.0000)	(0.3455)	(0.0000)	(0.1779)	(0.0001)	(.0271)	(0.0000)
MTB	0.2744***	−0.0337	0.2777***	0.0315	0.2373***	0.0244	0.1826***	−0.0304
	(0.0000)	(0.4554)	(0.0000)	(0.4228)	(0.0000)	(0.5245)	(0.0000)	(0.4896)
Profitability	−0.2415***	0.0309	−0.2821***	0.0116	−0.2575***	0.0689	−0.1429***	−0.0049
	(0.0000)	(0.6270)	(0.0000)	(0.8326)	(0.0000)	(0.2213)	(0.0025)	(0.9449)
Tangibility	−0.2508***	0.2310	−0.3857***	0.4634***	−0.1466	0.4150***	−0.1262	−0.0222
	(0.0069)	(0.1917)	(0.0004)	(0.0006)	(0.1708)	(0.0021)	(0.1494)	(0.8907)
Firm size	0.1161***	0.1955***	0.1285***	0.2305***	0.0973**	0.2288***	0.2608***	0.1058**
	(0.0026)	(0.0000)	(0.0021)	(0.0000)	(0.0233)	(0.0000)	(0.0000)	(0.0120)
NDTS	0.5069	3.9052***	0.5831	2.9159***	1.0043	3.2057***	0.9849	3.2529***
	(0.4365)	(0.0007)	(0.4230)	(0.0018)	(0.1693)	(0.0013)	(0.1497)	(0.0026)
Constant	−0.4457	−2.1914***	0.0014	−2.5315***	−0.1895	−2.8328***	−2.0720***	−0.1474
	(0.2504)	(0.0000)	(0.9976)	(0.0000)	(0.6480)	(0.0000)	(0.0000)	(0.7777)
Observations	370	375	364	381	359	386	380	365
R-squared	.5798	.4729	.5534	.5536	.5158	.5472	.6029	.4719
Adj R^2	.5506	.4352	.5218	.5222	.481	.5158	.5748	.433
F-stat	19.8383	12.5255	17.506	17.6096	14.8271	17.4038	21.4973	12.1172
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*p-values are in parentheses. *** p < .01, ** p < .05, * p < .1*

Table 7. REM (Cash flows from operating activities) and leverage—the role of ESG performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG performance		Environmental pillar score		Social pillar score		Governance pillar score	
	HIGH ESG	LOW ESG	HIGH ENV	LOW ENV	HIGH SOCIAL	LOW SOCIAL	HIGH GOV	LOW GOV
REM from CFO	1.0516**	−4.0766***	0.5658	−2.5578***	1.1679**	−3.2776***	0.0507	−1.5919**
	(0.0263)	(0.0000)	(0.2705)	(0.0000)	(0.0314)	(0.0000)	(0.9215)	(0.0294)
MTB	0.2692***	0.0735*	0.2821***	0.1343***	0.2350***	0.1059***	0.1989***	0.1100***
	(0.0000)	(0.0582)	(0.0000)	(0.0001)	(0.0000)	(0.0013)	(0.0000)	(0.0069)
Profitability	−0.2844***	0.1804***	−0.3027***	0.0927	−0.3053***	0.1846***	−0.1266**	0.0770
	(0.0000)	(0.0054)	(0.0000)	(0.1008)	(0.0000)	(0.0012)	(0.0125)	(0.3021)
Tangibility	−0.2902***	0.2273	−0.4003***	0.5812***	−0.1948*	0.4826***	−0.1147	0.0013
	(0.0021)	(0.1906)	(0.0003)	(0.0000)	(0.0759)	(0.0003)	(0.2039)	(0.9942)
Firm size	0.1055***	0.2260***	0.1257***	0.2521***	0.0803*	0.2472***	0.2511***	0.1255***
	(0.0057)	(0.0000)	(0.0026)	(0.0000)	(0.0591)	(0.0000)	(0.0000)	(0.0046)
NDTS	0.5889	5.2711***	0.5452	3.2076***	1.2106*	4.3094***	1.1527*	3.5695***
	(0.3631)	(0.0000)	(0.4538)	(0.0005)	(0.0972)	(0.0000)	(0.0922)	(0.0015)
Constant	−0.1726	−3.2144***	0.1258	−3.2364***	0.1852	−3.5808***	−1.9586***	−0.8053
	(0.6660)	(0.0000)	(0.7864)	(0.0000)	(0.6697)	(0.0000)	(0.0000)	(0.1500)
Observations	370	375	364	381	359	386	380	365
R-squared	.5848	.4895	.5539	.5534	.5199	.5561	.5974	.423
Adj R^2	.5559	.453	.5223	.5219	.4854	.5253	.5689	.3805
F-stat	20.2481	13.3867	17.5363	17.5947	15.0706	18.0407	21.0087	9.942
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*p-values are in parentheses. *** p < .01, ** p < .05, * p < .1*

Table 8. REM (Selling and distribution expenses) and leverage—the role of ESG performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG performance		Environmental pillar score		Social pillar score		Governance pillar score	
	HIGH ESG	LOW ESG	HIGH ENV	LOW ENV	HIGH SOCIAL	LOW SOCIAL	HIGH GOV	LOW GOV
REM from SGA	0.1068	0.9189*	0.0618	1.4909***	0.1645	0.8421*	0.2377	1.7550***
	(0.8140)	(0.0847)	(0.8967)	(0.0013)	(0.7607)	(0.0577)	(0.6006)	(0.0005)
MTB	0.2807***	0.0409	0.2860***	0.0680*	0.2485***	0.0799**	0.1949***	0.0533
	(0.0000)	(0.3299)	(0.0000)	(0.0665)	(0.0000)	(0.0249)	(0.0000)	(0.2033)
Profitability	−0.2338***	0.0949	−0.2742***	0.0803	−0.2495***	0.1297**	−0.1220***	0.0690
	(0.0000)	(0.1446)	(0.0000)	(0.1581)	(0.0000)	(0.0234)	(0.0096)	(0.3424)
Tangibility	−0.2442***	0.1902	−0.3809***	0.4950***	−0.1393	0.4626***	−0.1160	−0.0121
	(0.0083)	(0.2938)	(0.0005)	(0.0003)	(0.1941)	(0.0008)	(0.1882)	(0.9427)
Firm size	0.1134***	0.1977***	0.1262***	0.2159***	0.0910**	0.2281***	0.2526***	0.1162***
	(0.0032)	(0.0000)	(0.0027)	(0.0000)	(0.0336)	(0.0000)	(0.0000)	(0.0076)
NDTS	0.5776	4.0639***	0.6108	2.8576***	1.1302	3.1083***	1.1817*	3.2732***
	(0.3940)	(0.0009)	(0.4295)	(0.0027)	(0.1389)	(0.0029)	(0.0850)	(0.0034)
Constant	−0.4268	−2.4223***	0.0185	−2.4601***	−0.1261	−3.0432***	−1.9705***	−0.3673
	(0.2713)	(0.0000)	(0.9677)	(0.0000)	(0.7603)	(0.0000)	(0.0000)	(0.4947)
Observations	370	375	364	381	359	386	380	365
R-squared	.5789	.4495	.5523	.5455	.5133	.5319	.5977	.4355
Adj R^2	.5496	.4101	.5206	.5135	.4784	.4994	.5693	.3938
F-stat	19.7609	11.401	17.4245	17.0458	14.679	16.3655	21.035	10.4594
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*p-values are in parentheses. *** p < .01, ** p < .05, * p < .1*

Table 9. REM (Production Cost) and leverage—the role of ESG performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ESG performance		Environmental pillar score		Social pillar score		Governance pillar score	
	HIGH ESG	LOW ESG	HIGH ENV	LOW ENV	HIGH SOCIAL	LOW SOCIAL	HIGH GOV	LOW GOV
REM from PROD	-0.0108	1.0502***	-0.0446	0.9955***	-0.0520	0.8885***	0.1740	0.9766***
	(0.9366)	(0.0000)	(0.7493)	(0.0000)	(0.7376)	(0.0000)	(0.2855)	(0.0000)
MTB	0.2827***	0.0164	0.2876***	0.0806**	0.2515***	0.0648*	0.2023***	0.0354
	(0.0000)	(0.6838)	(0.0000)	(0.0179)	(0.0000)	(0.0560)	(0.0000)	(0.3861)
Profitability	-0.2353***	0.0529	-0.2783***	0.0128	-0.2545***	0.0875	-0.1194**	0.0923
	(0.0000)	(0.3982)	(0.0000)	(0.8129)	(0.0000)	(0.1136)	(0.0112)	(0.1971)
Tangibility	-0.2431***	0.2434	-0.3757***	0.5323***	-0.1342	0.4710***	-0.1153	-0.0008
	(0.0089)	(0.1675)	(0.0005)	(0.0001)	(0.2121)	(0.0005)	(0.1908)	(0.9963)
Firm size	0.1120***	0.2529***	0.1229***	0.2865***	0.087**	0.2871***	0.2511***	0.1855***
	(0.0040)	(0.0000)	(0.0039)	(0.0000)	(0.0456)	(0.0000)	(0.0000)	(0.0000)
NDTS	0.5227	5.0398***	0.5276	3.9110***	1.0122	3.9839***	1.2503*	4.548***
	(0.4330)	(0.0000)	(0.4787)	(0.0000)	(0.1755)	(0.0001)	(0.0703)	(0.0000)
Constant	-0.4165	-2.8463***	0.0456	-3.0889***	-0.0955	-3.4558***	-1.9830***	-1.0849**
	(0.2871)	(0.0000)	(0.9212)	(0.0000)	(0.8201)	(0.0000)	(0.0000)	(0.0440)
Observations	370	374	364	380	359	385	379	365
R-squared	.5788	.4794	.5524	.5645	.5134	.5538	.5986	.4576
Adj R^2	.5495	.442	.5207	.5338	.4784	.5227	.5702	.4176
F-stat	19.7561	12.8191	17.4324	18.3568	14.6807	17.8226	21.0596	11.44
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*p-values are in parentheses. *** p < .01, ** p < .05, * p < .1*

Table 10. Alternative measures of real earnings management and leverage

	(1)	(2)	(3)
	CFOPROD	**SGAPROD**	**SGACFO**
aggCFOPROD	0.2663**		
	(0.0261)		
aggSGAPROD		0.3981***	
		(0.0005)	
aggSGACFO			0.2439
			(0.3154)
MTB	0.1457***	0.1345***	0.1465***
	(0.0000)	(0.0000)	(0.0000)
Profitability	−0.0524	−0.0288	−0.0616
	(0.2001)	(0.4863)	(0.1351)
Tangibility	0.0155	0.0246	0.0165
	(0.8555)	(0.7716)	(0.8477)
Firm size	0.1837***	0.1915***	0.1720***
	(0.0000)	(0.0000)	(0.0000)
NDTS	2.1524***	2.2300***	2.0208***
	(0.0006)	(0.0003)	(0.0012)
Constant	−1.5072***	−1.5913***	−1.3962***
	(0.0000)	(0.0000)	(0.0000)
Observations	744	744	745
R-squared	.4316	.4372	.4284
Adj R^2	.4118	.4176	.4085
F-stat	21.8035	22.3066	21.5512
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
Country Dummies	Yes	Yes	Yes

5. Robustness test

Our findings are constrained to a battery of further tests to confirm the consistency of our results. First, we use an alternative measure of real earnings management and test whether using different measurements of REM affects leverage level. Second, we address the Ramsey Test to detect omitted variable bias.

5.1. Alternative measures of real earnings management and leverage

As suggested in prior studies (Cohen & Zarowin, 2010; Zang, 2012), we use a combination of measures of REM to test whether firms could engage simultaneously in different real earnings management practices to influence their leverage. For instance, Cohen and Zarowin (2010) contend that aggregate REM should be not a combination of the three sources of REM proposed by Roychowdhury (2006). Thus, we make a combination of two sources of REM at a time (i.e., abnormal cash flows from operations plus abnormal production cost, abnormal SGA plus abnormal production cost, and abnormal SGA plus abnormal cash flows from operations). According to the results provided in Table 10, we show that firms engaging REM sourced from abnormal operating activities and abnormal production costs at the same time have a higher level of leverage. The result remains consistent for firms engaging in abnormal discretionary expenses and production costs. In contrast, we find that the simultaneous effect of both abnormal discretionary expenses and operating activities is not associated with leverage level.

Table 11. Omitted variable bias (Ramsey test)

Models	F-stats	Prob. (F-stats)
aggCFOPROD	0.650	0.5810
aggSGACFO	0.360	0.7797
aggSGAPROD	0.910	0.4380
aggrREM	1.120	0.3415

5.2. Endogeneity—Omitted variable bias

We use the Ramsey test (Ramsey, 1969) to detect misspecification errors across our regression models. Based on the p-values depicted in Table 11, we note that there are no omitted variables bias in our main model estimations of REM effects on leverage.

6. Conclusion

This paper examines the relationship between REM and leverage across 5 ASEAN countries during the 2014–2019 period. We conjecture that the change in capital structure patterns is strongly related to the manipulations of real activities by altering the scale and timing of real activities to meet the earnings target. Our intuition is that extensive studies are required in the REM domain since it is difficult to detect by internal and external monitors. Thus, we posit that mere study of REM at the aggregate level would not avail stakeholders to know the real sources of earnings management and how it can be addressed. Since there is considerable evidence that corporate governance may not attenuate REM (See, Cohen & Zarowin, 2010; Jaggi et al., 2009) and the mixed findings in this context (Demirtas & Rodgers Cornaggia, 2013; Ghouma, 2017; Kim et al., 2020; Orazalin & Akhmetzhanov, 2019; Tulcanaza-Prieto et al., 2020), we propose a sustainable mechanism that not only address the governance aspects of firms' sustainable practices but also the environmental and social aspects.

We first investigate the aggregate REM using the model of Roychowdhury (2006) on leverage, and also establish the influence of the three sources of REM on leverage. We find that aggregate REM, REM sourced from abnormal production costs, and abnormal discretionary expenses positively increase leverage. Interestingly, we find that the coefficient of REM sourced from abnormal discretionary expenses is approximately three times the coefficient of abnormal production costs, suggesting that firms tend to manipulate discretionary expenses more than production costs (Ge & Kim, 2014bb). Although we document that REM sourced from cash flows from operating activities negatively impacts leverage, however, it is insignificant.

We also explore whether the degree of ESG performance matters for the relationship between REM and leverage. The observed results of ESG performance provide strong support for the integration of the agency theory and stakeholder theory in studying the link between REM and leverage (Escrig-Olmedo et al., 2019; Freeman, 1984; Hussain et al., 2018; O'donovan, 2002; Velayutham, 2018). We find that the impact of REM on leverage is insignificant in High ESG performing firms but significant in firms with Low ESG performance, suggesting that REM-intensive firms are characterized by low sustainable practices and subsequently lower future cash flows (Chouaibi & Zouari, 2022; Kim & Sohn, 2013). Our findings support that the individual agency theory and stakeholder theory partly explain leverage decisions in firms. Thus, our results have investment signals and portfolio choices to outside directors that firms performing low on ESG practices and activities would misappropriate cash flows, indicating that expected future cash flows be lower. Therefore, REM-intensive firms may lose capital if they fail to invest more in sustainable projects and activities (Kim & Sohn, 2013).

Our study is also not free from limitations as in prior studies (Anagnostopoulou & Tsekrekos, 2017; Tulcanaza-Prieto et al., 2020; Zamri et al., 2013). We focus more on the REM impact on

leverage decisions. We, however, did not test the extent to which REM affect the speed of adjustments in firms. Since firms follow target leverage, the manipulation in real activities may affect the speed at which firms' debt levels revert to their target position. Future studies can explore this gap and establish whether firms revert to their target leverage slowly or quickly when managers are incompetent in dealing with real activities. Future studies can also explore the role of ESG performance on the speed of adjustment in the presence of REM intensity.

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Note
1. CFO represents cash flow from operations for firm i - in year t, A is total assets, Sales is net sales and ΔSales is the difference between net sales in year t and year t-1. DiscExp is the discretionary expenses in year t, defined as the sum of research and development, advertising and selling, general and administrative expenses.

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