Corporate Debt, Accrual, and Real Earnings Management: A Non-Linear Relation Across Asian Emerging Economies (AEE)

Aneela Khan
Department of Management Sciences, IQRA University (Islamabad Campus) 05 Khayaban-E-Johar, H-9 Islamabad (Pakistan)
aneelakhan25781@iqraisb.edu.pk

Muhammad Khan (Corresponding Author)
Department of Social Sciences, IQRA University (Islamabad Campus) 05 Khayaban-E-Johar, H-9 Islamabad (Pakistan)
khann.muhammad@gmail.com
&

Muhammad Usman Hashmi
Computer Science Department, Bahria University, E-8 Islamabad
muhashmi.buic@bahria.edu.pk

Abstract

This study provides empirical evidence on non-linear relation between Corporate Debt and Earnings Management (EM) across nine Asian Emerging Economies (AEE). Two widely used and accepted EM techniques are employed i.e. accrual-based earnings management (AEM) and real activities-based earnings management (REM). In order to investigate debt-EM nexus in AEE institutional settings, data of 6,128 non-financial listed firms with 60,880 firm-year observations are used from the period of 2000 to 2021. Our results, based on fixed-effects and system-GMM models, report that firms use REM in low-debt zones and AEM at higher levels of debt. The non-linear debt-AEM nexus has a U-shaped pattern whereas debt–REM reveals an inverted U-shaped relation. In sum, results show that managers exercise REM in low debt regimes and prefer to increase AEM *activities at high debt level in order to avoid debt covenant violation. REM is although difficult to detect by market participants but it is still considered costly for high-debt firms since these firms have high interest and principal obligations that absorb free cash flows and leave nothing for managers for their substandard spending. The findings of the study have significant implications for investors, managers, policymakers and practitioners.*

Keywords: Corporate debt; AEM and REM; Non-linear relation.

JEL Classifications : C23; G11; G32.

Introduction

In the recent accounting and finance literature, the phenomenon of earnings management (EM) has been widely debated among researchers and policymakers around the world. Several accounting scandals and corporate bankruptcies in the past provide evidence of the use of EM by firms (Draief & Chouaya, 2022). EM is the process of selecting such accounting policies and procedures that alter corporate revenue to show increased profit reported on company's financial statements (Darmawan et al., 2019). EM practices aid executives to meet analysis expectations (Gunny, 2010) evading losses on contractual agreements, or, in some cases, to fulfill their interests (Cheng & Warfield, 2005). Prior research Roychowdhury (2006); Zang (2012) asserts that there are two principal ways to manage earnings. Managers can exercise EM either by accruals earnings management (AEM) that is using the flexibility in accounting principles and estimating accruals (DeFond & Jiambalvo 1994; Healy; 1985) or by real earnings management (REM) that is altering the time and the structure of firms' operating activities. One of the important points of distinction between these two strategies is that AEM have no direct cash flow consequences where-as REM affect the cash flows of the firms. Moreover, subsequent researches (Cohen & Zarowin, 2010; Vakilifard & Mortazavi, 2016) has documented that the preference for one

strategy over the other differs between firms according to their goals and the relative costs of each form. The financial literature enumerates a set of motivations to push managers toward one or both EM strategies. One of the most relevant decisions that affect EM is debt policy.

This topic has become more relevant for Asian Emerging Economies (AEE) because of their economic growth, reformed markets, and immersion in the world economy (Hoskisson et al., 2000). Besides, firms operating in emerging economies are still questioned for their financial reporting quality and reliability (Li et al., 2014). It is also of great concern for regulatory bodies since it may threaten foreign investments and corporate partnerships in these markets (Chen et al., 2007).

The existing finance literature specifies debt to be one of the important determining variables of EM. Despite its abundance, the empirical evidence on the relation between debt and EM is mixed and inconclusive. The empirical literature generally reports two opposing views on the debt–EM relation (Cheng & Liu, 2008; Costa et al., 2018; Ghosh & Moon, 2010; Trung et al., 2020; Valipour & Moradbeygi, 2011). One view assumes a negative impact of debt on EM in the spirit of the debt control hypothesis by Jensen, (1986). This view argues that the use of debt reduces the level of EM in the firm (Poretti et al., 2020) because debt acts as a disciplinary mechanism at the firm level that monitors the information disclosed by firm managers. In other words, creditors enhance their monitoring activities to ensure the fulfillment of debt covenant requirements. The opposing view, however, hypothesizes a positive impact of debt on the EM activities of firms in the spirit of debt covenant hypothesis by Watts and Zimmerman (1986). When debt level exceeds a certain limit, an increase in debt triggers more EM practices in the firm due to factors like pressure from debt providers, risk of high financial distress cost, and risk of violation of debt covenant that leads managers to indulge into EM activities (Lazzem & Jilani, 2018; Thanh et al., 2020). In view of these conflicting evidences, Costa et al. (2018) note that the relation between debt and EM could possibly be non-linear.

Following these developments, a recent line of research has been conducted on the non-linear relation between debt and EM (Cheng & Liu, 2008; Ghosh & Moon, 2010; Valipour & Moradbeygi, 2011; Wang & Lin, 2013; Costa et al., 2018; Trung et al., 2020). However, all these studies use AEM as a proxy for EM. The only study that discussed the impact of financial leverage on AEM and REM is by Khanh and Thu (2019) but they considered a single Asian market to track the non-linear relation between the debt and EM. Our study extends this literature to a large sample of 9 Asian Emerging Economies (AEE) over the period 2000 to 2021. An interesting element of the trade-off between AEM and REM is also discussed in our study which was ignored by Khanh and Thu (2019). By doing this, our study contributes to the existing literature in several ways. First, although the existing literature provides evidence on the behavior of the AEM, these studies overlook the behavior of REM at different debt levels. Most of the researchers provide evidence of a non-linear relation between debt and AEM. This study hypothesizes that debt could influence both AEM and REM in a non-linear way. Second, this study simultaneously investigates AEM and REM in association with debt because firms may use AEM and REM as a substitution for each other (Zang, 2012). Third, this study is based on a large sample of 9 AEE to investigate this relation. Most of the studies on debt and EM have considered developed stock markets like the United States and Europe (Ghosh & Moon, 2010; Anagnostopoulou & Tsekrekos, 2017). To the best of our knowledge, a very limited number of studies can be found on the selected AEE. The existing studies on AEE mostly consider only one Asian emerging market and hence leave scope for a panel data investigation. It is worth mentioning that corporate debt in AEE firms has increased significantly after the global financial crisis and some Asian economies have weak investor protection as well as poor enforcement of creditors' rights (La Porta et al., 1998). Therefore, it is essential for firms operating in emerging economies to determine the debt levels to map the managers' behavior and avoid bankruptcy risk.

The remaining of our study is structured as follows. Section 2 presents a literature review and hypothesis development. Section 3 focuses on research design and methodology. Section 4 presents and discusses our main results. Finally, section 5 offers conclusions along with some important policy implications.

Literature Review

The existing literature on the relation between debt and EM brings competing empirical outcomes on the subject. This literature can be divided into two streams based on their underlying hypotheses about the effects of debt on EM. These include the 'debt control hypothesis' and the 'debt covenant hypothesis'. Here, This study briefly explain both these hypotheses and report some selected studies testing the empirical validity of both these hypotheses across different countries.

Debt Control Hypothesis

According to the corporate finance and governance literature, debt is recognized as an important tool for solving agency problems. As per the agency theory perspective, debt imposes monitoring checks on managers and hence limits managerial discretion and non-optimal investment policy use. Several studies including Jensen and Meckling (1976); Jensen (1986) argue that debt behaves as a disciplinary mechanism at the firm level because it enhances the monitoring activities as well as lending restrictions of debt providers on managers, thus reducing earnings management activities in the firm. This is named 'the debt control hypothesis'. Jelinek, (2007) empirically tests the debt control hypothesis by examining the impact of leverage on EM across five years period for the firms-level data available on Compustat. The sample consists of firms that undergo an increase in leverage and a control group of highly leveraged firms. The result suggests that increased leverage reduces the EM in the firm.

Researchers employ varying EM techniques to confirm the results with existing literature or theories. Rodríguez-Pérez and van Hemmen (2010) examine the nature of the relation between debt and AEM for non-financial listed Spanish firms. The study found that increased debt level leads to a reduction in AEM activities in the case of less diversified – more transparent firms and vice versa. The study by Alsharairi and Salama (2012) posits that creditors play an imperative monitoring role in enhancing the credibility of financial reports as well as restricting the discretions of managers before any special event like mergers and acquisitions. In support of the same argument, Anggraeni and Wardhani (2017) investigate leverage concerning REM and the moderating role of International Financial Reporting Standards (IFRS) convergence for 6 Asian countries. The study finds no relation between leverage and REM for developing countries whereas, for developed economies, leverage curtails REM under the positive influence of IFRS. Recently, Phuong et al. (2020) examine short-term as well as long-term debts in association with earnings quality. The findings confirm the debt control hypothesis, particularly for long-term obligations.

Debt Covenant Hypothesis

On the other hand, debt also serves as the main reason for employing EM activities by firm's managers. According to the debt covenant hypothesis of positive accounting theory Watts and Zimmerman (1986), debt-driven EM can be expected for two motives. First, different earnings management strategies allow for acquiring more debt and negotiating at the cost of debt. Second, when debt level exceeds certain limits, it involves debt agreements and hence EM practices help managers to avoid debt covenant violations. To test the empirical validity of this argument, Franz et al. (2013) examined the EM behavior of the US firms approaching the violation of debt agreement as well as the ones not closer to this debt agreement violation. The findings of the study report that firms nearer to violation of debt agreement are engaged in high levels of AEM, REM, and, total earnings management as compared to firms far from this violation. Lazzem and Jilani (2018) and Campa (2019) test the same relation for their selected samples of French firms. The results of both these studies confirm firms' involvement in EM activities when the debt levels exceed certain limits. Khanh and Thu (2019) take the sample of Vietnamese firms to investigate the impact of leverage on AEM and REM. Their findings report that overall leverage increases AEM practices in the firms to avoid debt covenant violation, nevertheless, highly leveraged firms prefer REM. Pittman and Zhao (2020) describe the association between debt covenant restriction and financial misreporting under the moderating role of auditor monitoring. The results provide

evidence that debt covenant restriction increases the fudging of financial statements. Moreover, this positive association between covenant constraints and misreporting is weaken when the auditor has more experience with debt covenants, has greater bargaining power over the client, or faces greater litigation risk. Dyreng et al. (2022) examined the tradeoff between EMs (both AEM and REM) and debt covenant violation as well as its impact on future accounting and stock market performance. The findings reveal that the EM practices held for avoiding debt covenant violations are in the best interest of shareholders. Heise (2021) reports a significant positive relation between AEM and leverage for whole sample of listed Germen firms as well as for highly leveraged firms whereas the REM model provides mixed results.

Non-linear relation between Debt and Earnings Management (EM)

Given the dual role of debt in determining firms' EM activities, some authors argue that the nature of the debt–EM relation could be non-linear. To this end Kate Jelinek (2007) reports that leverage changes and leverage levels have different impacts on EM activities in the firm. For example, firms with low debt levels have lower EM practices due to several reasons. First, managers may have fewer incentives to manage earnings and hence they report high-quality earnings. Second, low debt in firms has low financial distress costs that leave the managers with very little or no incentive to perform EM (Thanh et al., 2020). Third, managers want to report high-quality earnings to reduce the cost of debt (Ghosh & Moon, 2010). However, when the debt level of firm exceeds a certain threshold level, managers become more inclined towards manipulating the earnings to lower the borrowing cost or to avoid the risk of debt covenant violation (Thanh et al., 2020). The empirical testing of this non-linear relation between debt and EM brings mixed outcomes. To illustrate, the studies by Cheng and Liu (2008); Costa et al. (2018); Ghosh and Moon (2010); Trung et al. (2020); Valipour and Moradbeygi (2011); Wang and Lin (2013) find a U-shaped pattern of debt–AEM relation for their sample economies. This shows that at the beginning when the debt level increases from negligible levels, AEM reduces. However, when debt levels are considerably high, managers opt for high AEM practices. Mendoza et al. (2020) provide evidence that leverage and short-term debt have a non-linear impact on EM practices for Latin American firms. To the best of our knowledge, a very limited number of studies test the impact of different debt levels on AEM and REM together. For instance, Vang and Tran (2021) analyzed both AEM and REM concerning short-term debts. The results demonstrate a U-shaped relation between debt and AEM and an inverted U-shaped relation between debt and REM, consistent with the financial distress hypothesis. It indicates managers prefer REM at low debt levels and exercise AEM at high debt levels. Based upon the above discussion of debt control and debt covenant hypotheses as well as the theoretical possibility of a non-linear relation, this study argues that the impact of debt on AEM and REM could be non-linear.

H1a: There exists a non-linear relation between debt and AEM.
H1b: There exists a non-linear relation between debt and REM.

At low debt levels, managers are less likely to involve in AEM as predicted by the 'control hypothesis' of the agency theory (Jensen, 1986). Creditors pre-commit high-quality information because of lower borrowing costs or lower financial distress costs. Thus, managers have a very limited incentive to mask the true performance of the firm through accounting discretions (Ghosh & Moon, 2010). So they prefer REM instead of AEM at low debt levels (Vang & Tran, 2021). Accordingly, when the level of debt exceeds certain limits, an increase in debt level leads to an increase in AEM in the firm (Thanh et al., 2020). In high debt zones, both increased borrowing costs and the high cost of violating debt agreements increase managers' incentives to manipulate accruals to avoid debt covenant violation (Watts and Zimmerman, 1990). Though REM is difficult to detect as compared to AEM, it is a costly activity for financially distressed firms (Zang, 2012). High obligations of interest and loan repayment absorb the free cash flows as well as lending restrictions from creditors along with restricting managers' ability to perform non-optimal investments (Jensen, 1986). Hence, it becomes difficult for firms to exercise REM for firms working at high debt levels (Anggraeni & Wardhani, 2017).

Based on the above discussion, it can be deduced that at low levels of debt, managers may use less AEM and more REM. By contrast, in high debt level regimes, managers would possibly prefer AEM over REM. Therefore, it is hypothesized that

H2a: The relations between debt and AEM reveal a U-shaped pattern for the AEE.
H2b: The relation between debt and REM reveal an inverted U-shaped pattern for the AEE.

Another point of concern has been highlighted by Zang (2012) that how managers trade off these two strategies based on the fact that whether the costs that managers bear for manipulating accruals affect their decisions about REM. Based on the large sample, he found that managers' trade-off decisions are influenced by the costs and timing of earnings management activities. This study also undertakes the methodology followed by Zang (2012) concerning the analysis of tradeoffs among EM strategies for the firms belongs to AEE.

Data and Research Methodology

For investigating the non-linear relation between debt and EM, this study has constructed unbalanced panel data set for the sample of nine AEE reported on MSCI emerging market index. The sample economies include Pakistan, China, Indonesia, India, South Korea, Malaysia, Philippines, Taiwan, and Thailand. It is worth mentioning that the empirical testing of the non-linear relation between debt structure and EM has been rarely conducted for the AEE.

Table 1: Sample economies and number of firms

Country	Number of firms
China	1660
India	832
Indonesia	466
Malaysia	591
Pakistan	325
Philippines	125
South Korea	750
Taiwan	843
Thailand	536
Total	6128

This study used secondary data. The sample includes all non-financial industry-firms available on the Thompson Reuters data stream, listed on the respective stock exchanges of the AEE during the period 2000-2021. This sample period is selected on the basis of data availability and it is also covering the current and latest scenario. Following (Berger & Ofek, 1995), financial firms, insurance firms, and utility firms are excluded from the sample as they operate under different regulatory regimes. Another reason of excluding financial firms is that these firms have greater leverage and have high sensitivity to financial risk (FAMA & FRENCH, 1992). Furthermore, all firm-year observations on any variable used in regression with missing data are removed from the sample, this actually eradicate the firm/id of that particular year from the data. The final sample consists of 6128 firms with 60880 firm-year observations.

While estimating the impact of debt on EM, an important task is to calculate the proxies of our dependent and independent variables. Concerning our dependent variable, there are multiple ways of estimating EM but this study relies upon two widely accepted methods, namely, Accrual Based Earnings Management (AEM) and Real Activity Based Earnings Management (REM). EM environment may only be fully comprehended by evaluating the use of both AEM and REM since managers aiming to manipulate earnings may use both EM techniques

concurrently (Fields et al., 2001). Prior researches provide evidences that firms substitute or complement these two EM techniques to manage earnings (Anagnostopoulou & Tsekrekos, 2017; Draief & Chouaya, 2022; Khanh & Thu, 2019; Naz & Sheikh, 2023)

Accrual-Based Earnings Management (AEM)

The proxy of AEM is discretionary accruals (DACC). To estimate DACC, we use Modified Jones Model proposed by (Dechow et al., (2015). The calculation of AEM using this model involves four steps. In the first step, we calculate the value of Total Accruals (TACC) using the following formula:

$$TACC_{it} = \Delta CA_{it} - \Delta CASH - \Delta CL_{it} + \Delta DCL_{it} - DEP_{it} \quad (1)$$

for i = 1,….,N and t = 1,…, T, where N and T denote the cross-sectional and time-dimension of the panel, respectively. The dependent variable, $TACC_{it}$ represents total accruals, ΔCA_{it} captures the change in current assets, $\Delta CASH_{it}$ represents the change in cash and cash equivalents, ΔCL_{it} shows the change in current liabilities, ΔDCL_{it} is for the change in debt in current liabilities and, lastly, DEP_{it} is depreciation and amortization expenses.

The second step is to estimate the following regression equation for total accruals (TACC):

$$\frac{TACC_{it}}{A_{t-1}} = a_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{(\Delta R_{it} - \Delta AR_{it})}{A_{t-1}} + \beta_3 \frac{PPE_{it}}{A_{t-1}} + \varepsilon_{it} \quad (2)$$

The DACC are the residuals ε_{it} of equation 2.

where A_{t-1} is lagged value of total assets, ΔR_{it} is the change in revenue, ΔAR_{it} is the change in accounts receivables and PPE_{it} is property, plant, and equipment.

This study has employed the absolute value of discretionary accruals AEM. Our choice of absolute value comes from the fact that the hypotheses under investigation are not intended to predict any direction of EM (Cohen et al., 2008; Cheng & Liu, 2008; Wang & Lin, 2013; Khanh & Thu, 2019; Awuye & Aubert, 2022).

Real Activity-Based Earnings Management (REM)

The second method to estimate EM is real activity-based earnings management (REM). Following the literature, this study is implementing 'The Roychowdhury Model' for estimating REM (see Roychowdhury, 2006). Our selected model has three main components: abnormal cash flow from operations (AB_CFO), abnormal production cost (AB_PROD), and abnormal discretionary expenditures (AB_DISEXP). The three components of Roychowdhury (2006) models of REM are as follow:

i. Abnormal cash flow from operations (AB_CFO)

$$\frac{CFO_{it}}{A_{t-1}} = a_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{sales_{it}}{A_{t-1}} + \beta_3 \frac{\Delta sales_{it}}{A_{t-1}} + \varepsilon_{it} \quad (3)$$

Where CFO_{it} represents cash flow from operating activities, A_{t-1} is the lagged value of the firm's total assets, $sales_{it}$ is the current period sales and $\Delta sales_{it}$ is the change in the current period sales.

ii. Abnormal production cost (AB_PROD)

$$\frac{Prod_{it}}{A_{t-1}} = a_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{sales_{it}}{A_{t-1}} + \beta_3 \frac{\Delta sales_{it}}{A_{t-1}} + \beta_4 \frac{\Delta sales_{it-1}}{A_{t-1}} + \varepsilon_{it} \quad (4)$$

Where $Prod_{it}$ shows production cost consisting of the cost of goods sold along with the change in inventory (CGS + ΔINV) during the period and $\Delta sales_{it-1}$ is the change in sales during the previous period.

iii. Abnormal discretionary expenses (SG&A and R&D): (AB_DISEXP)

$$\frac{discexp_{it}}{A_{t-1}} = a_0 + \beta_1 \frac{1}{A_{t-1}} + \beta_2 \frac{sales_{it-1}}{A_{t-1}} + \varepsilon_{it} \quad (5)$$

Here, $discexp_{it}$ is representing Discretionary Expenses (Sum of selling, general & administration expenses (SG&A), and research and development expenses (R&D)). Following the study by (Cohen & Zarowin, 2010),AB_CFO and AB_DISEXP are multiplied by a negative one to ensure uniformity. Real manipulating activities are indicated by the value of these REM matrices.[1]

Table 2: REM MATRIX

REM1	AB_CFO(-1) + AB_DISEXP(-1)
REM2	AB_PROD + AB_DISEXP(-1)
REM3	AB_CFO(-1) + AB_PROD + AB_EXP(-1)

Our main variable of interest, debt, is measured using two indicators; total financial debts and total liabilities. Total financial debts include all the interest bearing loans whereas total liabilities include all the financial obligations of the company that involve interest bearing as well as non-interest bearing payables. The control variables of this study include firm size, cost of debt, volatility of cash flows, volatility of sales, operating cycle, and revenue growth (Costa et al., 2018; Dechow & Dichev, 2002; Ghosh & Moon, 2010; Thanh et al., 2020). Regarding the trade-off between AEM and REM, we follow Zang (2012) and add the unexpected real earnings management (UNREM) when discretionary accruals are the dependent variable in equation 8 mentioned in section 3.3. so the new econometric model to test the trade-between AEM and REM is represented through equation 10 (section 3.3). The UNREM is calculated as the estimated residuals from equation 9 (given in the section 3.3) when the comprehensive measure of REM3 is the dependent variable.

Table 3: Data and Measurement:

Variables	Symbol	Measurement
Total financial debt	TFD	Ratio of total financial debts to total assets
Total liabilities	TLD	Ratio of total liabilities to total assets
Firm size	SIZE	Logarithm of total assets
Cost of Debt	COST	Interest expense to total financial debt
Volatility of Cash Flows	SD_CFO	Standard Deviation of operating cashflows / Average Total assets
Volatility of Sales	SD_SALES	Standard Deviation of Sales / Average Total assets
Operating Cycle	OC	Logarithm (Accounts receivable outstanding + Inventory Outstanding) where *Accounts receivable outstanding* = 360 / (sales/accounts receivable) *Inventory outstanding* = 360 / (Cost of goods sold / inventory)
Revenue Growth	RG	Logarithm of Firm revenue or sales
Unexpected REM	UNREM	Estimated residuals of equation 10 (see section 3.3 Econometric models) where REM3 is the dependent variable

[1] For more details regarding the calculation of these variables, see (Cohen et al, 2008); (Zang, 2012); (Alhadab & Nguyen, 2018); (Jiang et al., 2018) (Khanh & Thu, 2019).

Econometric Models

Using all these variables, our econometric models take the following form:

$$DACC_{it} = \beta_0 + \beta_1 Debt_{it} + \beta_2 Debt^2{}_{it} + \beta_3 SIZE_{it} + \beta_4 COST_{it} + \beta_5 SdCFO_{it} + \beta_6 SdSALES_{it} + \beta_7 OC_{it} + \beta_8 RG_{it} + f_i + y_t + \varepsilon_{it} \quad (8)$$

$$REM_{it} = \beta_0 + \beta_1 Debt_{it} + \beta_2 Debt^2{}_{it} + \beta_3 SIZE_{it} + \beta_4 COST_{it} + \beta_5 SdCFO_{it} + \beta_6 SdSALES_{it} + \beta_7 OC_{it} + \beta_8 RG_{it} + f_i + y_t + \varepsilon_{it} \quad (9)$$

$$DACC_{it} = \beta_0 + \beta_1 Debt_{it} + \beta_2 Debt^2{}_{it} + \beta_3 UNREM_{it} + \beta_4 SIZE_{it} + \beta_5 COST_{it} + \beta_6 SdCFO_{it} + \beta_7 SdSALES_{it} + \beta_8 OC_{it} + \beta_9 RG_{it} + f_i + y_t + \varepsilon_{it} \quad (10)$$

Research Method

To analyze the impact of corporate debt on EM for the firms listed on stock markets of AEE, descriptive statistics, correlation and regression analysis are conducted. At first, the study employs few diagnostic tests like multicollinearity, Heteroskedasticity, autocorrelation, and endogeneity. Fixed effect model is used to generate the regression estimates. This study also employs a two-step-system GMM approach to address the possible endogeneity caused by the omission of important variables or the two-way relation between the dependent and independent variables (Roodman, 2009; Santana et al., 2019). System GMM is used for the estimation of dynamic models, with p values of autocorrelation tests and Hansen test provided to make sure that the results are valid for statistical interpretation.

Results and Discussion

Table 4 reports the summary statistics of earnings management variables, debt ratio, and other control variables. The mean values of both AEM and REM are close to zero which indicates the correct model estimations. Consistent with several studies, our paper incorporates the absolute value of discretionary accruals (AEM residuals) to predict the magnitude of EM (Awuye & Aubert, 2022; Cohen et al., 2008; Lemma et al., 2012; Lazzem & Jilani, 2018; Li, 2019; Maurice et al., 2020; Mendoza et al., 2020; Saenz Gonzalez & Garcia-Meca, 2014). Hence our hypothesis doesn't require the prediction of EM direction. The mean value of AEM is 9.3% of total assets with a standard deviation of 0.11, illustrating that on average firms deviate around 9.3% from their optimal accrual level.

Table 4: Descriptive Statistics for the sample over the period of 2000 to 2021

Variable	Obs	Mean	Std. Dev.	Min	Max
AEM	54750	0.093	0.109	0.000	4.242
AB_CFO	54750	-0.001	0.084	-0.164	0.165
AB_PROD	48801	0.003	0.126	-0.285	0.221
AB_DISEXP	48801	0.005	0.099	-0.259	0.112
REM1	48801	0.005	0.132	-0.423	0.276
REM2	48801	0.007	0.198	-0.544	0.333
REM3	48801	0.007	0.239	-0.709	0.497
TFD	60879	0.249	0.203	0.000	1.735
TLD	60879	0.473	0.250	0.023	2.753
SIZE	60879	16.43	3.000	10.34	25.25
COST	56368	0.066	0.102	0.000	1.870
SD_CFO	53923	0.054	0.050	0.001	0.545
SD_SALES	53923	0.122	0.140	0.001	1.481
OC	60857	5.078	0.719	2.944	9.112
RG	60870	0.263	2.221	-0.994	73.10

Note: Zang (2012) has confirmed that the measures of earnings management can have different number of observations.

The average value of sales manipulation (AB_CFO) is -0.1% of total assets whereas the values for production cost (AB_PROD) and discretionary expenses (AB_DISEXP) variables are 0.3% and 0.5% of total assets,

respectively. Likewise, REM1 lies between -0.42 to 0.27 with a mean value of 0.005, whereas REM2 ranges from 0.54 to 0.33 and, REM3 ranges from -0.71 to 0.49 with a similar mean value of 0.7%. The average values of AEM and REM indicate more use of accrual-based earnings management than real earnings management for our sample economies. The total financial debt ratio (TFD) of firms has a mean value of around 25% of total assets whereas the value of total liabilities (TLD) is approximately 47%. These average values are similar to that of (Thanh et al., 2020) and (Maurice et al., 2020) for their respective sample economies. The variations between the values of debt indicate high use of financial debt and liabilities. The interest expense as a percentage of financial debt (COST) has an average value of 6.6%. The value of SIZE is 16.4, which is relatively high but with low variation, as shown by its standard deviation. Concerning the other control variables, the average value of sales volatility is 12.2% whereas cash flow volatility has a mean value of 5.4%. Lastly, the mean of the transformed logarithmic value of the operating cycle is 5.08 with a standard deviation of 0.72.

Table 5: Correlations matrix

Variable	AEM	REM1	REM2	REM3	TFD	TLD	SIZE	COST	SD_CFO	SD_SALES	OC	RG
AEM	1.000											
REM1	-0.034	1.000										
REM2	-0.033	0.844	1.000									
REM3	-0.014	0.929	0.944	1.000								
TFD	0.007	0.268	0.196	0.237	1.000							
TLD	0.067	0.172	0.131	0.190	0.780	1.000						
SIZE	-0.112	-0.054	-0.009	-0.016	0.136	0.159	1.000					
COST	0.063	-0.034	-0.057	-0.057	-0.154	-0.056	-0.030	1.000				
SD_CFO	0.242	0.027	0.028	0.055	0.025	0.093	-0.126	0.096	1.000			
SD_SALES	0.211	0.047	0.062	0.115	0.039	0.145	-0.073	0.088	0.367	1.000		
OC	0.074	0.121	0.001	0.039	0.013	-0.023	-0.225	-0.003	0.042	-0.191	1.000	
RG	0.094	-0.027	-0.006	-0.005	0.001	0.024	0.011	0.015	0.061	0.083	-0.079	1.000

Table 5 reports the correlation matrix of our selected variables. A negative correlation is found between AEM and all three proxies of REM, indicating the use of AEM or REM as a substitute in the firms. It is worth mentioning that both techniques are not employed simultaneously by the firms. Next, all three proxies of REM are positively correlated with each other (Quang V & Van, 2021). This implies that firms use these REM measures altogether in a very flexible way. A high correlation value between the measures of REM is mechanical and is due to the use of all REM components in constructing REM proxies. AEM and REM are positively correlated with both proxies of debt (TFD and TLD), indicating a high association of these variables with debt. A high correlation between TFD and TLD is obvious because the former is derived from the latter. Finally, size is negatively correlated with all the EM measures.

Table 6: Non-linear relation between Debt and Accrual Based Earnings Management AEM

Dependent Variable: ***AEM***	TFD		TLD		TFD		*TLD*	
	(1) FE	(2) SYS GMM	(3) FE	(4) SYS GMM	(5) FE	(6) SYS GMM	(7) FE	(8) SYS GMM
$AEM_{(t-1)}$	N/A	0.359*** (0.079)	N/A	0.720** (0.041)	N/A	0.164*** (0.038)	N/A	0.759*** (0.118)
DEBT	-0.036*** (0.010)	-0.283** (0.139)	-0.016* (0.009)	-0.057* (0.032)	-0.020*** (0.006)	-0.164** (0.079)	0.002 (0.666)	-0.065* (0.036)
$DEBT^2$	0.049*** (0.011)	0.300** (0.151)	0.026*** (0.006)	0.031* (0.018)	0.038*** (0.000)	-0.125** (0.054)	0.018*** (0.000)	0.038* (0.023)
SIZE	0.003** (0.001)	-0.009 (0.065)	0.003** (0.001)	-0.006 (0.008)	0.002 (0.126)	-0.060** (0.028)	0.001 (0.216)	0.004 (0.008)
COST	0.009 (0.007)	0.054 (0.106)	0.013** (0.007)	0.090 (0.074)	0.013*** (0.008)	-0.061 (0.077)	0.016** (0.001)	-0.006 (0.008)
SD_CFO	0.302*** (0.015)	0.717*** (0.249)	0.302*** (0.015)	0.095*** (0.083)	0.310*** (0.000)	0.807*** (0.218)	0.310*** (0.000)	0.042 (0.094)
SD_SALES	0.110*** (0.007)	0.048 (0.093)	0.109*** (0.007)	0.101*** (0.022)	0.097*** (0.000)	0.026 (0.127)	0.096*** (0.000)	0.102*** (0.026)
OC	0.005** (0.002)	0.011 (0.033)	0.004** (0.002)	0.005** (0.011)	0.005** (0.002)	0.072* (0.038)	0.006** (0.002)	0.010 (0.009)
RG	0.011*** (0.002)	0.008 (0.030)	0.011*** (0.002)	0.020*** (0.004)	0.013*** (0.002)	0.050** (0.023)	0.013*** (0.002)	0.008 (0.019)
UNREM3	N/A	N/A	N/A	N/A	-0.020*** (0.000)	0.100 (0.063)	-0.021*** (0.000)	-0.003 (0.007)
Constant	0.004 (0.025)	2.229 (7.131)	0.004 (0.024)	0.038 (0.174)	-0.002 (0.94)	-0.851 (4.511)	-0.003 (0.86)	-0.113 (0.177)
AR1	N/A	0.073	N/A	0.046	N/A	0.000	N/A	0.035
AR2	N/A	0.180	N/A	0.162	N/A	0.289	N/A	0.162
Hansen (p value)	N/A	0.705	N/A	0.316	N/A	0.431	N/A	0.168
Observations	50,036	36,738	50,036	36738	44,781	36,738	44,781	36,738
No of firms	5,757	4612	5,757	4612	5405	4,828	5405	4,828

Table 7: Non-linear relation between Debt and Real Earnings Management REM.

Dependent Variable: REM	REM 1 TFD		REM1 TLD		REM2 TFD		REM2 TLD		REM3 TFD		REM3 TLD	
	(1) FE	(2) SYS GMM	(3) FE	(4) SYS GMM	(5) FE	(6) SYS GMM	(7) FE	(8) SYS GMM	(9) FE	(10) SYS GMM	(11) FE	(12) SYS GMM
$REM_{(t-1)}$	N/A	0.102* (0.151)	N/A	0.306*** (0.116)	N/A	0.162 (0.112)	N/A	0.478* (0.284)	N/A	0.240* (0.127)	N/A	0.361** (0.150)

DEBT	0.185***	0.739**	0.071***	0.405**	0.121***	1.168***	0.068***	1.243*	0.296***	1.893***	0.178***	2.120***
	(0.012)	(0.334)	(0.009)	(0.159)	(0.017)	(0.332)	(0.013)	(0.688)	(0.022)	(0.580)	(0.017)	(0.549)
$DEBT^2$	-0.087***	-0.549***	-0.025***	-0.199*	-0.054**	-0.609*	-0.017**	-0.533*	-0.140***	-1.422**	-0.054***	-0.641**
	(0.013)	(0.341)	(0.005)	(0.115)	(0.022)	(0.362)	(0.007)	(0.155)	(0.026)	(0.697)	(0.009)	(0.265)
SIZE	0.003*	0.256***	0.007***	0.061*	0.015***	0.163***	0.017***	0.130	0.010***	0.245**	0.013***	0.083
	(0.002)	(0.056)	(0.002)	(0.035)	(0.003)	(0.055)	(0.003)	(0.241)	(0.003)	(0.090)	(0.003)	(0.106)
COST	-0.017***	-0.045*	-0.043***	-0.224*	-0.017**	0.058*	-0.032***	-0.146*	-0.039***	0.200**	-0.073***	0.076
	(0.006)	(0.124)	(0.006)	(0.163)	(0.007)	(0.142)	(0.007)	(0.203)	(0.010)	(0.191)	(0.010)	(0.190)
SD_CFO	-0.106***	-0.165	-0.112***	-0.623	-0.068***	-0.108	-0.072***	-2.809**	-0.136***	-0.161	-0.147***	-0.220
	(0.016)	(0.637)	(0.016)	(0.391)	(0.019)	(0.144)	(0.020)	(1.368)	(0.027)	(0.145)	(0.027)	(0.220)
SD_SALES	-0.003*	0.469**	-0.003*	0.313*	0.002*	0.114***	0.002	0.407	0.024**	0.194***	0.023**	0.069**
	(0.006)	(0.210)	(0.006)	(0.162)	(0.007)	(0.037)	(0.007)	(0.363)	(0.010)	(0.048)	(0.010)	(0.341)
OC	0.022***	-0.118	0.026***	-0.088*	0.016***	-0.239***	0.018***	-0273	0.025***	-0.142	0.030***	-0.172
	(0.002)	(0.089)	(0.002)	(0.046)	(0.003)	(0.067)	(0.003)	(0.169)	(0.004)	(0.087)	(0.004)	(0.108)
RG	-0.010***	-0.076	-0.010***	-0.039	-0.009***	-0.080**	-0.009***	-0.093	-0.010***	-0.073	-0.011***	0.029
	(0.003)	(0.054)	(0.003)	(0.025)	(0.002)	(0.033)	(0.002)	(0.065)	(0.003)	(0.049)	(0.003)	(0.063)
Constant	-0.193***	-4.958	-0.250***	-1.425	-0.341***	3.856	-0.378***	-9.070	-0.350***	-1.591	-0.435***	-1.041
	(0.030)	(7.630)	(0.029)	(1.644)	(0.044)	(13.156)	(0.044)	(4.465)	(0.054)	(14.165)	(0.054)	(3.000)
AR1	N/A	0.006	N/A	0.000	N/A	0.000	N/A	0.004	N/A	0.000	N/A	0.000
AR2	N/A	0.107	N/A	0.215	N/A	0.413	N/A	0.435	N/A	0.107	N/A	0.162
Hansen (p value)	N/A	0.368	N/A	0.108	N/A	0.151	N/A	0.132	N/A	0.192	N/A	0.192
Observations	44,781	39,220	44,781	39,178	44,781	35,803	44,781	35,699	44,781	35,685	44,781	35,803
No of Firms	5,405	4,971	5,405	4,968	5,405	4,781	5,405	4,782	5,405	4,781	5,405	4,781

Note: Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1.

Table 8: Non-linear relation between Debt and three components of Real Earnings Management (REM)

Dependent Variable: REM	AB_CFO TFD		AB_CFO TLD		AB_PROD TFD		AB_PROD TLD		AB_DISEXP TFD		AB_DISEXP TLD	
	(1) FE	(2) SYS GMM	(3) FE	(4) SYS GMM	(5) FE	(6) SYS GMM	(7) FE	(8) SYS GMM	(9) FE	(10) SYS GMM	(11) FE	(12) SYS GMM
$REM_{(t-1)}$	N/A	0.202** (0.096)	N/A	0.240* (0.137)	N/A	0.360** (0.155)	N/A	0.280** (0.135)	N/A	0.790*** (0.102)	N/A	0.493*** (0.105)
DEBT	0.168*** (0.007)	1.290*** (0.256)	0.097*** (0.006)	1.026*** (0.223)	0.111*** (0.012)	0.726** (0.354)	0.106*** **(0.009)**	0.834** (0.343)	0.010*** (0.003)	0.319* (0.166)	-0.039*** (0.006)	0.600** (0.264)
$DEBT^2$	-0.083*** (0.007)	-1.079*** (0.296)	-0.032*** (0.003)	-0.216** (0.107)	-0.053*** (0.015)	-0.744* (0.449)	-0.029*** (0.005)	-0.259* (0.156)	-0.001 (0.003)	-0.416* (0.215)	0.012*** (0.004)	-0.247** (0.109)
SIZE	-0.005*** (0.001)	-0.135*** (0.035)	-0.002** (0.001)	-0.016 (0.039)	0.006*** (0.002)	0.146** (0.061)	0.007*** (0.002)	0.047 (0.067)	0.009*** (0.001)	0.043* (0.022)	0.010*** (0.001)	0.039 (0.039)
COST	-0.025*** (0.005)	0.189** (0.089)	-0.045*** (0.005)	0.209* (0.114)	-0.022*** (0.006)	-0.399** (0.196)	-0.030*** (0.006)	0.030 (0.104)	0.005** (0.002)	0.021 (0.082)	-0.002 (0.003)	0.058 (0.064)
SD_CFO	-0.069*** (0.012)	-0.139* (0.083)	-0.075*** (0.013)	-0.175 (0.350)	-0.031** (0.015)	0.127 (0.248)	-0.036** (0.015)	-0.196 (0.349)	-0.037*** (0.005)	-0.188 (0.288)	-0.037*** (0.009)	-0.616** (0.262)
SD_SALES	0.024*** (0.004)	0.074* (0.030)	0.023*** (0.004)	0.063 (0.131)	0.027*** (0.006)	0.197 (0.137)	0.026*** (0.006)	0.277** (0.131)	-0.025*** (0.002)	0.178 (0.141)	-0.024*** (0.004)	0.037 (0.030)
OC	0.010*** (0.001)	0.087** (0.038)	0.012*** (0.001)	0.048 (0.050)	0.003* (0.002)	-0.138** (0.058)	0.005** (0.002)	0.040 (0.027)	0.013*** (0.001)	-0.015 (0.019)	0.014*** (0.002)	-0.086** (0.039)
RG	-0.001 (0.001)	0.020 (0.024)	-0.002 (0.001)	0.003 (0.030)	-0.000 (0.001)	-0.049 (0.034)	-0.001 (0.001)	0.020 (0.020)	-0.009*** (0.000)	-0.008 (0.015)	-0.009*** (0.002)	0.024 (0.023)
Constant	-0.027 (0.018)	7.023 (5.147)	-0.074*** (0.018)	-2.438 (2.295)	-0.157*** (0.030)	0.822 (6.619)	-0.184*** (0.030)	-0.988 (2.807)	-0.184*** (0.009)	0.164 (2.179)	-0.194*** (0.022)	-1.302 (4.401)
AR1	N/A	0.000	N/A	0.092	N/A	0.000	N/A	0.000	N/A	0.008	N/A	0.000
AR2	N/A	0.398	N/A	0.607	N/A	0.125	N/A	0.280	N/A	0.219	N/A	0.225
Hansen (pvalue)	N/A	0.439	N/A	0.544	N/A	0.303	N/A	0.111	N/A	0.195	N/A	0.546
Observations	50,036	39,220	50,036	39,178	44,781	35,803	44,781	35,685	44,781	39,178	44,781	43945
No of Firms	5,757	4,971	5,757	4,968	5,405	4781	5,405	4,781	5,405	4,968	5,405	5391

Note: Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1.

Table 6 reports the results of panel fixed effect (FE) and two-step system-GMM models for the selected economies. The Hausman specification test statistic is statistically significant at the level of 0.01 (Hausman Prob>chi2 = 0.0000). Hence, the model is estimated using the fixed-effect hypothesis. The relation between debt and AEM is analyzed using two proxies of the debt variable. Specifications 1 and 2 present the impact of

total financial debt (TFD) on AEM whereas the next two specifications (3 and 4) present the impact of total liabilities (TLD) on AEM. As our hypothesized relation between debt and EM is nonlinear, we also include square terms of the debt variables in all the models. Model 1 and 3 report the results of the FE model using TFD and TLD as debt proxies, respectively. These results provide evidence of a nonlinear relation between debt and AEM. More specifically, the findings report a negative and statistically significant coefficient of debt, indicating that debt reduces the AEM in its low regimes. Here debt acts as a control mechanism that involves external monitoring by the creditors (VAKILIFARD & MORTAZAVI, 2016). However, the square term of the debt variable has a positive and statistically significant coefficient in both models, confirming the fact that a higher level of debt increases AEM. All the control variables have a significant and positive impact on EM for both TFD and TLD. Briefly, this suggests that big firms with increased sales volatility, CFO volatility, and cost of debt have stronger EM for both debt measures. Likewise, the significant and positive coefficients of OC and RG variables show that the firm may attain growth in revenue by exercising more EM practices. These results are consistent with previous empirical work including Ghosh and Moon (2010); Mendoza et al. (2020) and Thanh et al. (2020).

To account for the endogeneity problem between debt and earning management, the study tests the same relation using system-GMM models. To this end, specifications 2 and 4 of Table 6 report the results using both the measures of debt. Both of these models include the lagged value of EM ($AEM_{(t-1)}$) as a control variable to represent the dynamic behavior of EM. A positive and significant value of lagged dependent variable specifies the impact on past EM over current EM practices. Consistent with our results of the FE models, the findings provide evidence of the existence of a non-linear U-shaped relation between debt and EM. To illustrate, the negative and significant coefficient of the TFD variable in specification 3 shows that an increase in TFD by 1% leads to a decrease in EM practices by 0.283% whereas under a high debt regime (squared term) EM practices increase by 0.3%. Indeed, at low debt levels, the cost of borrowing and the probability of debt covenant violation are considerably low, therefore, managers have very little or no incentive to manipulate earnings. However, when the debt level exceeds certain limits, the risk and cost of debt covenant violation become high. To avoid debt covenant violation, managers prefer to manipulate earnings rather than presenting the true economic performance of the company (Watts & Zimmerman, 1986). For TFD, only CFO volatility is showing a significant positive estimate indicating that firms with high CFO volatility engage in high EM practices. However, when TLD serves our dependent variable, all the control variables including CFO volatility, sales volatility, OC, and RG have a significant positive impact on EM.

Another important finding of Table 6 is the presence of a tradeoff between AEM and REM that has been established by the inclusion of the UNREM3 variable (specifications 5–8). To analyze this trade-off between these techniques, we rely upon the estimation methodology of (Zang, 2012). The results of the FE model support the presence of managers' trade-offs between AEM and REM for the sample economies. Consistent with the findings by Zang (2012), the coefficient estimate on UNREM3 is negative and significant, indicating that managers of highly levered firms rely more on the use of AEM whereas REM turns out to be unexpectedly low during the year and vice versa. For instance, managers use more AEM as compared to REM for highly indebted firms primarily because of the cost and benefits associated with particular EM techniques under such circumstances. Effectively, REM is very costly for firms with higher debt levels as the respective firms are already under the pressure due to high interest and principal payments. Hence AEM becomes a preferred choice by the managers for reporting the desired results.

Table 7 reports FE and system-GMM results using REM as our variable of interest. As mentioned earlier, REM1 is the sum of abnormal cash flows from operating activities and abnormal discretionary expenses, REM2 is the sum of abnormal production cost and abnormal discretionary expenses and REM3 is the sum of all the three components of REM, following Roychowdhury (2006) model. One major difference from the AEM model results is that in both FE and system-GMM models, the outcomes reveal an inverted U-shaped relation between

debt and REM. The positive coefficients of the debt variable indicate that more debt will lead to high use of REM in the low debt zone. However, beyond a certain limit, more debt will lead to poor REM, as shown by the negative sign of $DEBT^2$ coefficients. This is because higher obligations are generated due to higher leverage for making the payment of interest and principal amounts to the creditor. Thus, managers are left with a very limited cash flow for non-optimal spending. Hence fewer cash flows are available to the firm for non-optimal spending which further limits the ability of the manager to practice REM (Zang, 2012).

Concerning the control variables under FE and system-GMM models, a significant positive value of the size variable indicates that big-size firms have stronger EM. The coefficient estimates of the cost variable are negative and significant suggesting that an increase in the cost of debt reduces the REM activities by the firms. This is because of the unavailability of free cash flow for non-optimal spending. High leverage in the firm increases the interest payment or cost of debt. These results show the effects of debt on overall REM, however, in our robustness analysis, we also report the individual components of REM. This has been done to compare our results with the previous studies including Anagnostopoulou & Tsekrekos (2017); Tulcanaza-Prieto et al. (2020); Zamri et al. (2013) who rely upon individual REM measures. The results of our REM components are reported in Table 8. The overall results support our main findings of a nonlinear inverted U-shaped relation between debt and all the individual components of REM.

Conclusions

The results of this study conclude the existence of a U-shaped relation between debt and AEM Cheng and Liu (2008); Costa et al. (2018); Ghosh and Moon (2010); Thanh et al. (2020); Trung et al. (2020); Valipour & Moradbeygi (2011); Wang & Lin (2013) supporting debt control hypothesis at low debt regime and debt covenant hypothesis at high debt regime. On the other side, an inverted U-shaped relation is found between debt and REM, similar to the findings of (Vang & Tran, 2021). Managers exercise REM in low to medium-debt regimes, but when the debt levels become considerably high, managers prefer to increase AEM activities to avoid debt covenant violation and, to meet the earnings targets. REM is although difficult to detect by market participants still considered costly for high-debt firms since these firms–have high interest and principal obligations that absorb free cash flows and leave nothing for managers for their non-optimal spending. To further confirm these outcomes, we also estimate a tradeoff and its results also support the argument that at a high debt level, managers exercise more AEM activities than REM.

These results have some important implications for policymakers and practitioners of the sample economies. For instance, these results can help creditors or financial agents while designing such debt covenant to protect their investments. Our findings on regime dependency between debt and EM provide direction to the creditors to include the compensation or premium for the risk related to EM. Our results can also support the investors to assess the EM behavior of firms in the AEE region in making better investment decisions by differentiating companies based on their capital structure. Policy-makers can also get insights from this research concerning the flow of information, credit policy, and disclosure of financial information to control the EM by firms. Researchers who are interested in cross-country analysis can use the same sample of AEE to study EM practices in association with many firm-specific/country-specific factors like asset pricing, mergers, acquisitions, etc. For regulators, these results are important for designing policies aimed at strengthening institutional and financial development.

Our study relies upon the utilization of the debt square term to capture the non-linear relation between debt and EM. The study can be extended while considering some more sophisticated panel threshold models such as the dynamic threshold model by Kremer et al. (2013) which gives endogenously determined threshold levels of debt and separately calculates the coefficients of low and high debt regimes. Several other proxies of AEM have also been used by the recent line of research. It may be worthwhile to compare the relation between different proxies of AEM and debt. Lastly, the selected AEE also has institutional diversity in terms of legal origin, laws

of investor protection, and degree of legal enforcement (La Porta et al., 1998). This relation is also influenced by these country-level institutional features (An et al., 2016). Studying this non-linear relation between debt and EM under different institutional regimes of AEE also presents a promising avenue for future research.

References

Alhadab, M., & Nguyen, T. (2018). Corporate diversification and accrual and real earnings management: A non-linear relationship. *Review of Accounting and Finance*, *17*(2), 198–214. https://doi.org/10.1108/RAF-06-2016-0098

Alsharairi, M., & Salama, A. (2012). Does High Leverage Impact Earnings Management? Evidence from Non-Cash Mergers and Acquisitions. *Journal of Financial and Economic Practice*, *7*(1), 17–33.

An, Z., Li, D., & Yu, J. (2016). Earnings management, capital structure, and the role of institutional environments. *Journal of Banking and Finance*, *68*, 131–152. https://doi.org/10.10 16/j.jbankfin.2016.02.007

Anagnostopoulou, S. C., & Tsekrekos, A. E. (2017). The effect of financial leverage on real and accrual-based earnings management. *Accounting and Business Research*, *47*(2), 191–236. https://doi.org/10.1080/00014788.2016.1204217

Anggraeni, M. D., & Wardhani, R. (2017). The effect of leverage and IFRS convergence on earnings management through real activities manipulation in Asia. *Asian Journal of Business and Accounting*, *10*(1), 87–125.

Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of Financial Economics*, *37*(1), 39–65.

Campa, D. (2019). Earnings management strategies during financial difficulties: A comparison between listed and unlisted French companies. *Research in International Business and Finance*, *50*(July), 457–471. https://doi.org/10.1016/j.ribaf.2019.07.001

Chen, K. Y., Elder, R. J., & Hsieh, Y.-M. (2007). Corporate Governance and Earnings Management: The Implications of Corporate Governance Best-Practice Principles for Taiwanese Listed Companies. *Journal of Contemporary Accounting & Economics*, *3*(2), 73–105. https://doi.org/10.1016/s1815-5669(10)70024-2

Cheng, Q., & Warfield, T. D. (2005). Equity incentives and earnings management. *Accounting Review*, *80*(2), 441–476.

Cheng, Y. S., & Liu, Y. P. (2008). Does a change in debt structure matter in earnings management? - The application of nonlinear panel threshold test. *Economics Bulletin*, *13*(4), 1–10.

Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, *50*(1), 2–19. https://doi.org/10.1016 /j.jacceco.2010.01.002

Costa, C. M., Matte, A. M., & Monte-mor, D. S. (2018). *Indebtedness and accounting choices : the nonlinear relation between debt and earnings quality*. *51*, 1–16.

Dechow, P. M., Sloan, R. G., Sweeney, A. P., & Sloan, R. G. (2015). Detecting Earnings Management. *Asian Financial Statement Analysis*, *70*(2), 73–105. https://doi.org/10.1002/9781119204763.ch4

Draief, S., & Chouaya, A. (2022). The effect of debt maturity structure on earnings management strategies. *Managerial Finance*, *48*(7), 985–1006. https://doi.org/10.1108/MF-07-2021-0314

Dyreng, S. D., Hillegeist, S. A., & Penalva, F. (2022). Earnings Management to Avoid Debt Covenant Violations and Future Performance. *European Accounting Review*, *31*(2), 311–343. https://doi.org/10. 10 80/09638180.2020.1826337

FAMA, E. F., & FRENCH, K. R. (1992). The Cross-Section of Expected Stock Returns. *The Journal of Finance*, *47*(2), 427–465. https://doi.org/10.1111/j.1540-6261.1992.tb04398.x

Franz, D. R., HassabElnaby, H. R., & Lobo, G. J. (2013). Impact of Proximity to Debt Covenant Violation on Earnings Management. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2195351

Ghosh, A., & Moon, D. (2010). Corporate debt financing and earnings quality. *Journal of Business Finance and*

Accounting, *37*(5–6), 538–559. https://doi.org/10.1111/j.1468-5957.2010.02194.x

Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research*, *27*(3), 855–888. https://doi.org/10.1111/j.1911-3846.2010.01029.x

Heise, T. R. (2021). *Earnings Management and Leverage in Germany*. *January*.

Hoskisson, R. E., Eden, L., Lau, C. M., & Wright, M. (2000). Strategy in Emerging Economies Author (s): Robert E . Hoskisson, R. E., Eden, L., Lau, C. M., & Wright, M. (2000). Strategy in Emerging Economies Author (s): Robert E . Hoskisson , Lorraine Eden , Chung Ming Lau and Mike Wright Published by : Academy . *Academy of Management Journal*, *43*(3), 249–267.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow , Corporate Finance , and Takeovers Author (s): Michael C . Jensen Source : The American Economic Review , Vol . 76 , No . 2 , Papers and Proceedings of the Ninety-Eighth Annual Meeting of the American Economic Association. *The American Economic Review*, *76*(2), 323–329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Joulrnal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.4159/978 0674274051-006

Jiang, H., Habib, A., & Wang, S. (2018). Real Earnings Management, Institutional Environment, and Future Operating Performance: An International Study. *International Journal of Accounting*, *53*(1), 33–53. https://doi.org/10.1016/j.intacc.2018.02.004

Kate Jelinek. (2007). The Effect of Leverage Increase on Earnings Management. In *Journal of Business & Economic Studies* (Vol. 12).

Khanh, M. T. H., & Thu, A. P. (2019). The effect of financial leverage on real and accrual-based earnings management in vietnamese firms. *Economics and Sociology*, *12*(4), 285–298. https://doi.org/10. 14254/2071-789X.2019/12-4/18

Kremer, S., Bick, A., & Nautz, D. (2013). Inflation and growth: New evidence from a dynamic panel threshold analysis. *Empirical Economics*, *44*(2), 861–878. https://doi.org/10.1007/s00181-012-0553-9

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and Finance. *Journal of Political Economy*, *106*(6), 1113–1155.

Lazzem, S., & Jilani, F. (2018). The impact of leverage on accrual-based earnings management: The case of listed French firms. *Research in International Business and Finance*, *44*, 350–358. https://doi. org/10.1016/j.ribaf.2017.07.103

Li, S., Park, S. H., & Bao, R. S. (2014). How much can we trust the financial report?Earnings management in emerging economies. *International Journal of Emerging Markets*, *9*(1), 33–53. https://doi.org/10.11 08/IJoEM-09-2013-0144

Maurice, Y., Mard, Y., & Séverin, É. (2020). The effect of earnings management on debt maturity: An international study. *Comptabilite Controle Audit*, *26*(2), 125–156. https://doi.org/10.3917/cca.262.0125

Muñoz Mendoza, J. A., Sepúlveda Yelpo, S. M., Velosos Ramos, C. L., & Delgado Fuentealba, C. L. (2020). Effects of capital structure and institutional–financial characteristics on earnings management practices: Evidence from Latin American firms. *International Journal of Emerging Markets*, *16*(3), 580–603. https://doi.org/10.1108/IJOEM-03-2019-0239

Naz, A., & Sheikh, N. A. (2023). Capital structure and earnings management: evidence from Pakistan. *International Journal of Accounting and Information Management*, *31*(1), 128–147. https://doi.org/10. 1108/IJAIM-08-2022-0163

Phuong, N. T. T., Hung, D. N., Van, V. T. T., & Xuan, N. T. (2020). Effect of debt structure on earnings quality of energy businesses in vietnam. *International Journal of Energy Economics and Policy*, *10*(3), 396–401. https://doi.org/10.32479/ijeep.9110

Pittman, J., & Zhao, Y. (2020). Debt Covenant Restriction, Financial Misreporting, and Auditor Monitoring*. *Contemporary Accounting Research*, *37*(4), 2145–2185. https://doi.org/10.1111/1911-3846.12579

Poretti, C., Schatt, A., & Jérôme, T. (2020). Impact of leverage on financial information quality: International evidence from the hospitality industry. *Journal of Hospitality Financial Management*, *28*(1). https://doi.org/10.7275/bp3n-mw53

Rodríguez-Pérez, G., & van Hemmen, S. (2010). Debt, diversification and earnings management. *Journal of Accounting and Public Policy*, *29*(2), 138–159. https://doi.org/10.1016/j.jaccpubpol.2009.10.005

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*(3), 335–370. https://doi.org/10.1016/j.jacceco.2006.01.002

Thanh, S. D., Canh, N. P., & Ha, N. T. T. (2020). Debt structure and earnings management: A non-linear analysis from an emerging economy. *Finance Research Letters*, *35*(May), 1–9. https://doi.org /10.1016/j.frl.2019.08.031

Trung, T. Q., Liem, N. T., & Thuy, C. T. M. (2020). The impact of short-term debt on accruals-based earnings management–evidence from Vietnam. *Cogent Economics and Finance*, *8*(1). https://doi.org/10.10 80/23322039.2020.1767851

Tulcanaza-Prieto, A. B., Lee, Y., & Koo, J. H. (2020). Effect of leverage on real earnings management: Evidence from Korea. *Sustainability (Switzerland)*, *12*(6). https://doi.org/10.3390/su12062232

VAKILIFARD, H., & MORTAZAVI, M. S. S. (2016). The Impact of Financial Leverage on Accrual-Based and Real Earnings Management. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *6*(2), 53–60. https://doi.org/10.6007/ijarafms/v6-i2/2039

Valipour, H., & Moradbeygi, M. (2011). Corporate Debt Financing And Earnings Quality. *Journal of Business Finance and Accounting*, *1*(3), 139–157. http://www.scienpress.com/Upload/JAFB%2FVol 1_3_10.pdf

Vang, Q. D., & Tran, V. H. (2021). Short-Term Debt and Firms' Earnings Management Choices: the Case of Vietnam. *The EUrASEANs: Journal on Global Socio-Economic Dynamics*, *2*(2(27)), 47–57. https://doi. org/10.35678/2539-5645.2(27).2021.47-57

Wang, H. Da, & Lin, C. J. (2013). Debt financing and earnings management: An internal capital market perspective. *Journal of Business Finance and Accounting*, *40*(7–8), 842–868. https://doi.org/10.11 11/jbfa.12030

Watts, R. L., & Zimmerman, J. L. (1986). *Positive Accounting Theory*. New Jersey: Prentice-Hall, Inc.

Watts, R. L., & Zimmerman, J. L. (1990). Positive Accounting Theory: A Ten Year Perspective. *The Accounting Review*, *65*(1), 131–156.

Zamri, N., Rahman, R. A., & Isa, N. S. M. (2013). The Impact of Leverage on Real Earnings Management. *Procedia Economics and Finance*, *7*(March), 86–95. https://doi.org/10.1016/s2212-5671(13)00222-0

Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *Accounting Review*, *87*(2), 675–703. https://doi.org/10.2308/accr-10196