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Debt Maturity Structure and Earning Management: Evidence from Emerging Markets

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This study aims to examine the non-linear impact of debt maturity structureon earnings management (EM) in international data settings. Panel dataset of 5129 non-financial listed firms from 9 Asian Emerging Economies (AEE)is analyzed covering the period from 2000 to 2021. EM is measured using Accrual-Based Earnings Management (AEM) and Real Activity-Based Earnings Management (REM). Debt is categorized into Total Financial Debt (TFD), Short-Term Debt (STD), and Long-Term Debt (LTD). Based on fixed effect regression model, results clearly reveal presence of non-linear relationship between debt maturities and EM. The study provides the evidence that firms of AEEs are engaged in accrual as well as real earnings management to report their earnings. TFD and STD have positive where as LTD has negative impact on AEM at low debt level. In the similar vein, TFD and STD have negative where as LTD has no impact on REM. The findings also demonstrate substitution of REM for AEM at varying debt levels. This study offer valuable insight for investors, creditors, policy makers, auditors and researchers.

1. Introduction

The issue of earnings management (referred to as EM hereafter) has garnered significant attention from scholars, especially following the collapses of numerous international companies at the end of the 20th century due to ongoing corporate accounting scandals in the USA. For example, Lehman Brothers, Washington Mutual Inc., WorldCom, General Motors Company, Parmalat, Enron, and Xerox, were implicated in these scandals as provided by Enomoto et al., (2018). The collapse of these international companies significantly impacted global markets and heightened concerns among shareholders and stakeholders regarding the transparency and credibility of the financial information disclosed by these firms (Katmon & Farooque, 2017).

EM has aroused considerable interest as an objective of the study (Cascino et al., 2010; Lennox et al., 2018; Prencipe et al., 2011). Disclosure of company's profit and profitability has always remained controversial because of the extra ordinary concealment practices. Financial managers or corporate executives (as insiders) manage firm's earnings in different dimensions. Prior literature evident two principal approaches to manipulate earnings; Accrual based earnings management (onwards denoted by AEM) and Real activity-based earnings management (onwards denoted by REM). Previous researches confirms the use of both techniques (accruals and real) as complementary or substitute provides a comprehensive picture of EM practice (Zang, 2012; Fields et al., 2001; Lisboa, 2017; Cohen et al., 2008).

A comprehensive understanding of EM practices in a firm can be achieved by addressing both types of techniques (Lisboa, 2017). Managers compromise the quality and reliability of their financial reporting by excessively engaging in EM, leading to misleading information that artificially portrays the firm's financial health as better than it actually is (Kazmi et al., 2024). Therefore, investors and other external parties are usually hesitant to trust firms with low-quality financial information. Hence, to restore stakeholders' confidence in capital markets and to reduce EM practices is to introduce debt in the firms. This approach not only encourages the participation and oversight of lenders and creditors (Valaskova & Gajdosikova, 2022), but also absorb free cash-flow to restrict the sub-optimal spending by the firm managers (Alves, 2021; Hart & Moore, 1994). Alternatively, previous literature also presents evidence of debt as a motive for EM. For Instance, managers alter the reported earnings for diverse underline motives such as for evading contractual violations for acquiring favorable and renegotiable terms of contract, maintaining favorable link with creditors etc (Strakova, 2021; Muhtaseb et al., 2024).

This discussion is grounded in three foundational theories of this study. Debt Control hypothesis of agency theory (Jensen & Meckling, 1976), and Agency Cost of Free Cash Flow Theory (Jensen, 1986) provide the justification of debt as a disciplinary and monitoring mechanism that mitigate the EM practices in the firm. Whereas on the other hand, Debt Covenant Hypothesis of Positive Accounting Theory (Watts & Zimmerman, 1986) is the third theory that provides insights into how debt contracts influence managerial behavior and accounting decisions within firms

Emerging markets constitute a significant portion of the global economy (Ma & Ma, 2017), which draws substantial business investments worldwide due to their potential for economic growth over the past few decades (Li et al., 2014). Asian emerging economies (AEEs) constitute a substantial share of the global emerging economies worldwide. AEEs experience challenges with weak governance and legal frameworks. Institutions in these economies are loosely integrated, leading to less stringent regulatory oversight (Ararat et al., 2020) . The economic and financial transformation of the Asian region has occurred amidst heightened political instability, with ineffective rule of law significantly constraining corporate performance (Mahmood & Orazalin, 2017). Furthermore, Asian economies exhibit inadequate protection for investor and financial reporting disclosures are less transparent which allows more leeway to the insiders to influence corporate strategy, particularly EM.

Corporate debt, encompassing both short-term debt (STD) and long-term debt (LTD), has garnered significant attention in capital structure literature. There is a scarcity of recent empirical research investigating how debt structure, particularly in terms of maturity impact EM, despite the importance of decisions regarding the allocation of a firm's debt between short-term and long-term obligations, which significantly affect the firm's health, solvency, performance, and future investment strategies (Rauh & Sufi, 2010).The divergent empirical results of debt-EM nexus are may be due to the omission of considering debt maturity structure rather than total debt.

Corporate debt financing in emerging market economies offers significant benefits, including financing growth opportunities, executing profitable investments, and enhancing the quality of financial statements through increased monitoring by creditors. However, this increase in debt levels also raises several concerns, particularly regarding earnings management (EM) practices aimed at avoiding debt covenant defaults and camouflaging financial distress. Despite of some literature available on debt-EM relationship, the research on non-linear relationship between debt and EM, especially concerning debt maturity structures and for a large sample of emerging markets requires investigation. Thus, this study aims to fill this gap by analyzing non-linear relationship between total debt, debt maturities and EM in non-financial firms across multiple Asian emerging economies (AEEs). It explores how changes in debt levels and structures influence both accrual-based (AEM) and real activity-based earnings management (REM) practices.

This study provides multifold contributions to the development of theories and frameworks that better explain corporate behavior in relation to financial decisions. Theoretical contribution rest in the extension of underlying theories of the study. The findings of this study help determine the debt level which is subject to serious EM where the investors, creditors and lender should pay attention in order to avoid the risk of bankruptcy.Literature tested agency theory only with the perspective of total debt, the earnings manipulation behavior of firm managers towards varying levels of debt in terms of different maturities such as STD and LTD is not explored before. Monitoring activities of loan providers at different levels of STD and LTD has not been previously documented. While few studies have explored EM type based on debt levels, existing evidence is

largely limited to developed countries. Moreover, no study has specifically addressed EM practices at varying level of LTD.

The remaining of 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.

2. Literature Review

This chapter reviews the literature on the non-linear relationship between debt maturities and EM for Asian emerging economies (AEEs).This section at first discusses the theoretical review and then supplements a detailed empirical review.

This literature on debt-EM relationship is divided into two streams based on their underlying theories about the effects of debt maturities on EM. These include the Debt control hypothesis of Agency theory(Jensen & Meckling, 1976) and Agency cost of free cash flow theory(Jensen, 1986) and Debt covenant hypotheses of positive accounting theory(Watts & Zimmerman, 1986). Here, we briefly explain both these hypotheses and report some selected studies testing the empirical validity of both these hypotheses across different countries.

Agency theory argues that debt is one of the vital factors that play an important role in solving agency problems (Jensen, 1986). According to the corporate finance and governance literature, the presence of extreme agency costs and asymmetric information affect the choice of a capital structure by a firm. Harvey et al. (2004) report empirical evidence on the role of financial debt as a governance mechanism. Debt imposes monitoring checks on managers and hence limits managerial discretion and non-optimal investment policy use. Issuance of debt locates managers to increased surveillance, discourage them from managing earnings, which is known as “debt control hypothesis” (Maurice et al., 2020; Rey et al., 2020). One domain of this study based on this theory. (Kate Jelinek, 2007) empirically tests the debt control hypothesis by examining the impact of leverage on EM across five years period. 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.

The literature also indicates that debt issuance mitigates the agency costs associated with free cash flow through three primary mechanisms. Firstly, debt acts as an external control mechanism, imposing increased supervision and constraints on earnings (Jensen and Meckling, 1976; Harris and Raviv, 1990; Harvey et al., 2004). Secondly, the obligations of debt repayment restrict the availability of funds that managers could otherwise invest or misallocate (Hart and Moore, 1994). Thirdly, the heightened risk of default on debt obligations increases the likelihood of legal intervention, thereby incentivizing firms to operate more efficiently (Jensen, 1986).

Debt serves as the main reason for employing EM activities by firms' managers. The debt covenant hypothesis of positive accounting theory proposed by (Watts & Zimmerman., 1986) suggested that debt-driven EM can be expected for two motives. First, different EM 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 evade debt covenant violations.

The concept of EM is as old as the concept of earnings. Healy and Wahlen (1999) stated that "Earnings Management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers (p.368)."The most relevant aspect affecting EM is the debt financing.

Given the dual role of debt in determining firms' EM activities, some authors argue that the nature of the debt–EM relationship could be non-linear.Kate Jelinek, (2007) reports that debt levels have different impact on EM activities in the firm. (Costa et al., 2018) considered Brazilian market, revealed that debt positively associated with earnings quality at low level of debt because managers found no incentive to manipulate earning at this point, whereas for higher level ofdebt, managers exercise EM in order to avoid contractual breeches. On another side, (Khanh & Thu, 2019) found that managers are more involved in earnings manipulations at low debt levels in order to acquire more loan or to negotiate the debtterms and less engage at high debtlevels because of strong monitoring from the capital providers. This study is carried out in Vietnam.

A famous study by Ghosh & Moon (2010) on non-linear relationship between debt and EM particularly AEM, shows that in the beginning when the debt level increases from negligible levels, more debt reduces AEM. However, when debt levels are considerably high, managers opt for high AEM practices. This argument is also supported by the study of Valipour & Moradbeygi (2011) in the context of Taiwan.

Similarly, Thanh et al. (2020) applied the PSTR model to examine the nonlinear threshold impact of debt on earnings management (EM) among listed firms in Vietnam. Their findings, based on estimates from the PSTR model, clearly demonstrate nonlinear effects of the debt ratio on EM. At low debt regime the effect is positive where as at high debt regime the effect is negative.

Contrary to this, Qamar et al., (2015) examined the relation of debt financing with quality of earnings. The results showed high EM practices at low debt level because lack of monitoring from creditors provides incentives for mangers to report high earnings for the sake of attracting new investors as well as grabbing more loans.

Rezaei et al. (2022) recently evaluated debt-AEM & REM nexus among firms belongs to an Asian emerging market, Tehran. The finding revealed a non-linearimpact of debt and AEM, while the results for REM were mixed. Awuye and Aubert, (2022) examined debt-EM nexus for firms belong to European countries. The findings suggest that debt curtails EM but this is only in case of AEM. Firms prefer to switch to REM when debts are considerably high.

Zagers-Mamedova (2009) and Esadinia et al. (2014)predicted manager's behavior of shifting from AEM to REM in case where leverage is increasing. In the similar vein, Graham et al. (2005) involved 400 executives in a survey. The findings suggested the preference of REM over AEM as it is hard for external parties to detect such type of manipulation. Hence, relatively higher cost and risk of detection is associated with REM than the benefits of AEM. Furthermore, the preference of managers towards REM is increased after introduction of "business judgment rule" and "Sarbanes-Oxley Act" back in 2002 due to the fact that via REM it is difficult to detect manager's arbitrary decisions (Tulcanaza-Prieto et al., 2020).

In terms of debt maturity structure, literature provides evidence that increased DACC are related to increased STD particularly in case of debt refinancing (Fields et al., 2018).Gupta and Field (2006) conducted a study on banks and confirm that information asymmetry between banks and firms create an association between STD and EM. Afza and Rashid (2014) conducted a study on Asian emerging market, Pakistan and confirms that shorter the term debt, the higher will be EM with less control from the creditors. Based on distinction between STD and LTD, Datta et al. (2005) stated that managers favor debt with long term debts (LTD) because of difference in goal alignment between managers and shareholders. Sondes Draief & Adel Chouaya (2022) empirically investigated how manager's preference of EM strategy based on debt maturity in the firm.

The study is conducted for the sample of 486 American listed firms and the results clearly indicate preference of REM in case of increased STD level. High STD in the firm invite high monitoring and manager's choice of REM is based on the fact that it is difficult for external parties to detect such type of manipulation. This argument is also supported by a latest study of Liem (2020), who also found that increased REM practices in the firms are associated with increased level of STD. The research on relationship between LTD and EM is scarce. Rey et al. (2020) examine the association between LTD and AEM for Italian firms. Findings report that AEM significantly and negatively correlate with LTD and TFD of the firm suggesting the fact that lenders grant loans on the basis of quality of accruals and will reject the request of LTD where the accruals quality is low. In support of same argument, Maurice et al. (2020) debt maturity structure and EM on for sample of 17 European countries.

The results indicate the association of high EM practices with low LTD. They further add that lender's valuation of future cash flow use for debt repayment is greatly influenced by financial reporting quality (Bharath et al., 2008). Therefore, lenders refrain from sanctioning long term loans to borrower with low accounting quality. Hardly any study found till date that investigated non-linear impact of LTD on EM. All the above mentioned evidences clearly point out that the

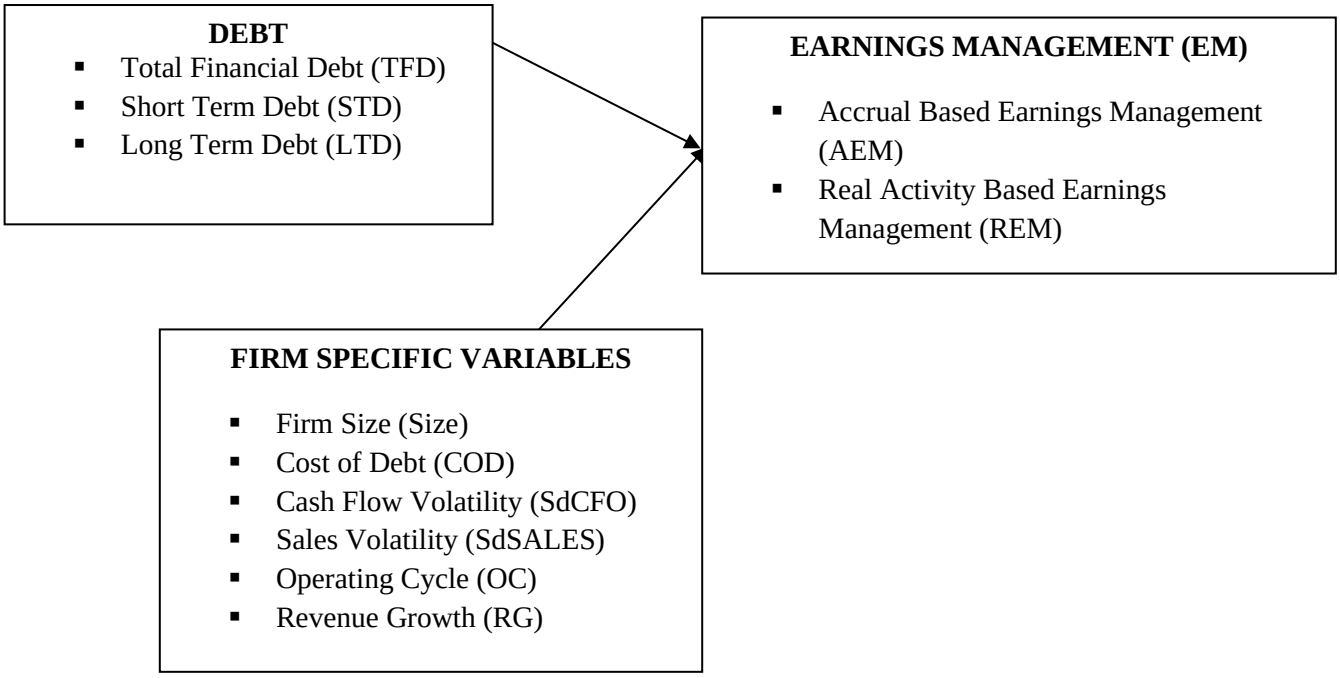
association between debt, debt maturities and EM is mixed and inconclusive which need further analysis to confirm the results.

As this study is considering the sample of emerging economies, so the hypotheses developed are as follows;

H0: The linear relationship exists between debt, debt maturities and EM for the firms belongs to AEEs

H1: The non-linear relationship exists between debt, debt maturities and EM for the firms belongs to AEEs

Figure No1: Conceptual Framework



3. Methodology and Data

This study aim's to evaluate impact of debt and debt maturities on AEM and REM cross Asian emerging economies (AEEs) from year 2000 to 2021. The Analysis of this study is based on an unbalanced panel-dataset of 5129all non-financial industry-firms listed on respective stock exchanges cross 9 countries reported on MSCI emerging market index. The sample economies include Pakistan, China, Indonesia, India, South Korea, Malaysia, Philippines, Taiwan, and Thailand. Secondary data is used by this study sourced from Thompson Reuters' data stream covering the period 2000-2021, focusing exclusively on non-financial industry firms.

3.1 Variable Measurement

3.2 Dependent Variable

Earnings Management is the dependent variable of this study. Two approaches are considered. Accrual based earnings management (AEM) and Real activity based earnings management (REM)

3.3 Accrual Based Earnings Management (AEM)

Discretionary accruals (DACC) are used as a proxy for AEM. Four different model are employed to estimate DACC. These models are Jones (1991) Model denoted by (JM), Modified Jones (1995) Model denoted by (MJM), Kasznik (1999) Model represented through (KZ) and finally Kothari (2005) Model by (KO).

3.4 Real Activity Based Earnings Management (REM)

This study has implemented 'The Roychowdhury Model' for estimating REM (Roychowdhury, 2006). Six proxies of REM are devised, three individual whereas three combined matrices, based on the models developed by Roychowdhury, (2006); Cohen and Zarowin, (2010); Faroqi et al., (2014) and Alhadab, (2016).

3.5 Independent Variable

The present study includes three independent variables: Total financial debt (TFD), short-term debt (STD), and long-term debt (LTD). TFD ratio is obtained by dividing total financial debt to total assets. STD ratio is computed by dividing Short term borrowing from bank and other financial institutions by total assets. LTD ratio use in this study is measured by dividing long term debt to total assets.

3.6 Control Variables

This study also controls for various firm-specific factors. Firm size (SIZE) is estimated by taking natural logarithm of total assets. Cost of Debt (COD) is computed by dividing the total interest expense for that year by the average amount of interest-bearing debt outstanding throughout the year, and subsequently multiplying by 100. Sd_CFO is the measures of cash flow volatility, is computed as the standard deviation of cash flows from operating activities over the preceding three-year period. Sd_SALES is the measure of sales volatility, is estimated by taking standard deviation of annual sales of firm over past three years respectively, scaled by total assets. Operating cycle (OC) is calculated by taking the logarithm of the sum of accounts receivable and inventory outstanding, where; Accounts receivable = 360/(Sales/Average accounts receivable) and Inventory outstanding = 360/(Cost of goods sold/Average inventory).This study measures RG by taking the natural logarithm of firm revenue.

3.7 Empirical Methodology

In order to investigate non-linearity of debt-EM nexus, this study has employed fixed effect regression model.

$$EM_{it} = \beta_o + \beta_1 Debt_{it} + \beta_2 Debt^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

Where EM symbolizes earnings management, AEM and REM techniques are used to capture the EM practices in the firms of AEEs. Debt indicates debt ratio at normal or low debt level where as $Debt^2$ represents the high debt ratio. Firm specific factors are the set of control variables that include; size, cost of debt, volatility of cash-flow, volatility of sales, operating cycle and revenue growth of firm i and year t. f_i represents firm fixed effect, $y_t$denotes year fixed effect where asε_{it} is the symbol use for showing error term in the model.

3.7.1 Total Financial Debt and Accrual Based Earnings Management

$$DACC = \beta_o + \beta_1 TFD_{it} + \beta_2 TFD^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

3.7.2 Total Financial Debt and Real Activity Based Earnings Management

$$REM = \beta_o + \beta_1 TFD_{it} + \beta_2 TFD^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

3.7.3 Short Term Debt and Accrual Based Earnings Management

$$DACC = \beta_o + \beta_1 STD_{it} + \beta_2 STD^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

3.7.4 Short Term Debt and Real Activity Based Earnings Management

$$REM = \beta_o + \beta_1 STD_{it} + \beta_2 STD^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

3.7.5 Long Term Debt and Accrual Based Earnings Management

$$DACC = \beta_o + \beta_1 LTD_{it} + \beta_2 LTD^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

3.7.6 Long term Debt and Real Activity Based Earnings Management

$$REM = \beta_o + \beta_1 LTD_{it} + \beta_2 LTD^2{}_{it} + \beta_3 Size_{it} + \beta_4 Cost_{it} + \beta_5 SdCfo_{it} + \beta_6 SdSales_{it} + \beta_7 Oc_{it} + \beta_8 Rg_{it} + f_i + y_t + \varepsilon_{it}$$

4 Data analysis, Results and Discussion

The analysis started with the discussion of “Hausman test” because this study employed panel data and individual-specific panel data test required to verify the validity of model for proposed hypothesis(Habib et al., 2019; Hussain et al., 2020). In the current study, it is found that in all cases Hausman test reports that (prob > chi) value is fairly less than 0.05. Therefore, this study employs fixed effects to estimate all models, fixed effects modeling is commonly used with panel datasets. All regressions include firm and year fixed effects

The empirical results of non-linear impact of Debt on EM for 5129 non-financial firms listed on respective stock exchanges on 9 Asian Emerging Economies (AEEs) for the period of 22 years from 2000 to 2021 are given below.

The results reported in Table 4.1 clearly demonstrate the existence of non-linear relationship between TFD and AEM across all models of AEM. An inverse U shaped association is found

Table No 1: Regression Results of Impact of Total Financial Debt (TFD) on Accrual Based Earnings Management (AEM)

Variables	$DACC_{JM}$	$DACC_{MJM}$	$DACC_{KZ}$	$DACC_{KO}$
TFD	0.102***	0.102***	0.088***	0.124***
	(0.010)	(0.010)	(0.010)	(0.010)
TFD^2	-0.102***	-0.109***	-0.097***	-0.103***
	(0.010)	(0.010)	(0.010)	(0.010)
SIZE	0.002*	0.004***	0.002*	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
COD	-0.063***	-0.067***	-0.050***	-0.076***
	(0.007)	(0.007)	(0.007)	(0.008)
Sd_CFO	0.070***	0.062***	0.073***	0.044**
	(0.016)	(0.017)	(0.016)	(0.017)
Sd_SALES	0.066***	0.068***	0.064***	0.032***
	(0.006)	(0.006)	(0.006)	(0.007)
OC	0.005***	-0.004**	0.002	0.009***
	(0.002)	(0.002)	(0.002)	(0.002)
RG	-0.008***	0.003***	0.003***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.087***	-0.063***	-0.071***	-0.113***
	(0.021)	(0.021)	(0.020)	(0.022)
Observations	49,055	49,055	49,055	41,045
R-squared	0.010	0.010	0.008	0.011
Number of id	5,734	5,734	5,734	4,922

Note: This table reports the results of regression estimates. AEM is captured through four proxies of DACC. TFD is debt ratio at normal or low debt level. TFD^2 is the debt ratio at high debt level. SIZE represents firm size, COD is cost of debt, Sd_CFO is cash-flow volatility, Sd_SALES is sales volatility, OC represents operating cycle and RG is revenue growth.
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table No 2: Regression Results of Impact of Total Financial Debt (TFD) on Real Activity Based Earnings Management (REM)

Variables	**REM_{CFO}**	**REM_{PROD}**	**REM_{DISEXP}**	**REM_1**	**REM_2**	**REM_3**
TFD	-0.179***	-0.115***	-0.004	-0.178***	-0.113***	-0.293***
	(0.005)	(0.006)	(0.003)	(0.006)	(0.008)	(0.011)
TFD^2	0.092***	0.064***	0.007**	0.093***	0.066***	0.157***
	(0.005)	(0.006)	(0.003)	(0.007)	(0.008)	(0.011)
SIZE	0.004***	-0.008***	-0.011***	-0.003***	-0.014***	-0.010***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
COD	0.031***	0.022***	-0.005**	0.030***	0.021***	0.052***
	(0.004)	(0.004)	(0.002)	(0.005)	(0.006)	(0.008)
Sd_CFO	0.009	0.068***	0.006	0.033***	0.092***	0.101***
	(0.008)	(0.010)	(0.006)	(0.011)	(0.014)	(0.018)
Sd_SALES	-0.022***	-0.023***	-0.006***	-0.023***	-0.024***	-0.046***
	(0.003)	(0.004)	(0.002)	(0.004)	(0.005)	(0.007)
OC	-0.015***	-0.011***	0.000	-0.020***	-0.016***	-0.031***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
RG	-0.000	-0.001***	0.018***	0.002***	0.001***	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.051***	0.202***	0.175***	0.177***	0.328***	0.379***
	(0.010)	(0.013)	(0.007)	(0.013)	(0.017)	(0.022)
Observations	58,619	58,619	51,664	58,619	58,619	58,619
R-squared	0.043	0.018	0.152	0.033	0.015	0.032
Number of id	5,129	5,129	5,129	5,129	5,129	5,129

Note: This table reports the results of regression estimates. REM is the dependent variable captured through six proxies. Independent variables: TFD is debt ratio at normal or low debt level. TFD^2 is the debt

ratio at high debt level. Control variables: SIZE represents firm size, COD is cost of debt, Sd_CFO is cash-flow volatility, Sd_SALES is sales volatility, OC represents operating cycle and RG is revenue growth. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Between TFD and AEM for firm belongs to emerging markets of Asia. Inverse U-shaped relationship indicates that when debt starts to raise from low debt levels, the impact of TFD on AEM is positive whereas at high debt level, this impact turns out to be negative. These results are consistent with the finding of Khanh and Thu (2019) and Qamar et al. (2015) but contrary to the studies of Ghosh and Moon (2010) and Thanh et al. (2020).

Table 4.2 report the regression results of TFD-REM, which also present a non-linear U-shaped relationship between debt and REM for most of the models. There is significant negative association between TFD and REM at low debt level whereas this relationship turned significant positive at high debt level (TFD^2) across all individual and combined models.The findings suggest that managers are not interested in manipulating earnings at normal level of debt because the cost of REM is higher than the incentives managers can grab by performing EM (Zang, 2012), But as the debt levels exceeds beyond a certain limit, in order to achieve certain earnings targets and advantage of not to be detected, managers prefer to exercise REM (Awuye & Aubert, 2022; Vakilifard & Mortazavi, 2016).

4.1 Regression Results of Impact of Debt Maturity structure on Earnings Management

Table 4.3 presents the regression results that clearly demonstrate theexistence of non-linear relationship between STD and AEM. In other words, EM behaviorchanges as the changes occur in debt levels. STD significantly and positively influences AEM at low levels of debt, as indicated by the coefficient estimates. The relationship and the level of significance are same across all four models. Whereas high debt levels (STD^2) comes up with reduced AEM activities in the firm as shown by highly significantand negative signs of coefficient estimates. These findings are consistent with the studies of Draief and Chouaya (2022) and Naz and Sheikh (2023).

Table No 3: Regression Result of impact of Short Term Debt (STD) on Accrual Based Earning Management (AEM)

Variables	$DACC_{JM}$	$DACC_{MJM}$	$DACC_{KZ}$	$DACC_{KO}$
STD	0.074***	0.076***	0.072***	0.080***
	(0.007)	(0.007)	(0.007)	(0.007)
STD^2	-0.011***	-0.012***	-0.011***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.001)
SIZE	0.004***	0.006***	0.004***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)

COD	-0.094***	-0.100***	-0.080***	-0.096***
	(0.008)	(0.008)	(0.008)	(0.008)
Sd_CFO	0.021	0.008	0.020	0.014
	(0.018)	(0.018)	(0.017)	(0.017)
Sd_SALES	0.043***	0.042***	0.041***	0.030***
	(0.007)	(0.007)	(0.006)	(0.007)
OC	0.021***	0.014***	0.021***	0.020***
	(0.002)	(0.002)	(0.002)	(0.002)
RG	-0.010***	0.000	-0.000	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.207***	-0.210***	-0.228***	-0.213***
	(0.023)	(0.023)	(0.022)	(0.022)
Observations	41,847	41,847	41,847	40,235
R-squared	0.043	0.053	0.064	0.038
Number of id	5,061	5,061	5,061	4,891

Note: This table reports the results of regression estimates. AEM is the dependent variable, captured through four proxies of DACC. Independent variables: STD is the short term debt ratio at normal or low debt level. STD^2 is the short term debt ratio at high debt level. Control variables: SIZE represents firm size, COD is cost of debt, Sd_CFO is cash-flow volatility, Sd_SALES is sales volatility, OC represents operating cycle and RG is revenue growth.
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table No 4: Regression Results of Impact of Short Term Debt (STD) on Real Activity Based Earnings Management (REM)

Variables	REM_{CFO}	REM_{PROD}	REM_{DISEXP}	REM_1	REM_2	REM_3
STD	-0.107***	-0.063***	-0.000	-0.107***	-0.063***	-0.170***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.005)	(0.007)
STD^2	0.013***	0.007***	0.001**	0.014***	0.008***	0.021***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
SIZE	0.001*	-0.009***	-0.006***	-0.005***	-0.016***	-0.015***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
COD	0.043***	0.030***	-0.001	0.042***	0.029***	0.072***

	(0.004)	(0.004)	(0.003)	(0.005)	(0.006)	(0.008)
Sd_CFO	0.018**	0.074***	0.023***	0.040***	0.097***	0.114***
	(0.008)	(0.010)	(0.006)	(0.011)	(0.014)	(0.018)
Sd_SALES	-0.020***	-0.022***	-0.001	-0.021***	-0.023***	-0.043***
	(0.003)	(0.004)	(0.002)	(0.004)	(0.005)	(0.007)
OC	-0.016***	-0.011***	-0.005***	-0.021***	-0.016***	-0.033***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
RG	-0.000*	-0.001***	0.002***	0.002***	0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.078***	0.220***	0.125***	0.203***	0.345***	0.423***
	(0.011)	(0.013)	(0.008)	(0.013)	(0.017)	(0.022)
Observations	58,619	58,619	58,619	58,619	58,619	58,619
R-squared	0.030	0.014	0.011	0.026	0.013	0.024
Number of id	5,129	5,129	5,129	5,129	5,129	5,129

Note: This table reports the results of regression estimates. REM is the dependent variable captured through six proxies. Independent variables: STD is short term debt ratio at normal or low debt level. STD^2 is the short term debt ratio at high debt level. Control variables: SIZE represents firm size, COD is cost of debt, Sd_CFO is cash-flow volatility, Sd_SALES is sales volatility, OC represents operating cycle and RG is revenue growth.
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

The findings reported in Table 4.4 of fixed effect regression model reveal that the impact of STD on REM is negative and significant for all the individual models and combined measures of REM at low debt regime. It indicates that managers reduce the practicing of REM because the cost of REM at low debt levels is much higher than the managerial incentives. On the contrary, STD^2 show significant positive impact on all measures of REM, which declare that increased STD motivate manager to employ more REM. This study established non-linear U-shaped associationbetween STD and REM in line with the studies of Draief and Chouaya (2022) and Park (2016).

Table 4.5 illustrates fixed effect regression results on LTD – AEM nexus. The findings demonstrate a linear relationship between LTD and AEM for the sample economies unlike TFD and STD. At low debt regime, LTD negatively impact AEM at 1% level of significance (Costa et al., 2018; Muñoz Mendoza et al., 2020; Naz & Sheikh, 2023) whereas at high debt regime, there is no impact of LTD on AEM as indicated by the insignificant coefficient estimates. The results reveal that LTD strongly constraint AEM in the firms operating in AEEs. Long term borrowings

are of great value for the firm because long repayments are attached with it, which leads to increase in significant risks to creditors and bankruptcy risk for the firm. This has put pressure on lender/creditors to continuously monitor EM behaviors in order to ensure safety from creditors.

The demand of high accounting quality information with immense transparency as well as constant monitoring of creditors thus dispirits managers to involve in AEM (Afza et al., 2014; Ilmas et al., 2018). Thus LTD enhances monitoring mechanism in firm in order to limit EM, support "Debt control hypothesis" of Agency theory. Furthermore, LTD absorb free cash flows available with the firm in the form of principle and interest payments, thus very little or nothing is left with manager for spending on sub-optimal project. Therefore, manager find no motivation

Table No 5: Regression Results of Impact of Long Term Debt (LTD) on Accrual Based Earnings Management (AEM)

Variables	$DACC_{JM}$	$DACC_{MJM}$	$DACC_{KZ}$	$DACC_{KO}$
LTD	-0.018***	-0.021***	-0.017***	-0.016***
	(0.005)	(0.005)	(0.005)	(0.005)
LTD^2	0.002	0.005	0.004	-0.006
	(0.012)	(0.012)	(0.012)	(0.011)
SIZE	0.001	0.002*	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)
COD	-0.077***	-0.082***	-0.062***	-0.099***
	(0.009)	(0.009)	(0.009)	(0.010)
Sd_CFO	0.055***	0.048***	0.067***	0.034*
	(0.018)	(0.018)	(0.017)	(0.019)
Sd_SALES	0.063***	0.066***	0.062***	0.036***
	(0.007)	(0.007)	(0.006)	(0.007)
OC	0.010***	0.001	0.007***	0.014***
	(0.002)	(0.002)	(0.002)	(0.002)
RG	-0.008***	0.004***	0.004***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	-0.073***	-0.047**	-0.056***	-0.104***
	(0.022)	(0.023)	(0.021)	(0.024)
Observations	41,131	41,131	41,131	34,787
R-squared	0.008	0.007	0.006	0.008

Number of id	5,302	5,302	5,302	4,645

Note: This table reports the results of regression estimates. AEM is the dependent variable, captured through four proxies of DACC. Independent variables: LTD is long term debt ratio at normal or low debt level. LTD^2 is the long term debt ratio at high debt level. Control variables: SIZE represents firm size, COD is cost of debt, Sd_CFO is cash-flow volatility, Sd_SALES is sales volatility, OC represents operating cycle and RG is revenue growth.
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table No 6: Regression Results of impact of Long Term Debt (LTD) on Real Activity Based Earnings Management (REM)

Variables	REM_{CFO}	REM_{PROD}	REM_{DISEXP}	REM_1	REM_2	REM_3
LTD	-0.059***	-0.039***	0.002	-0.057***	-0.037***	-0.096***
	(0.004)	(0.005)	(0.003)	(0.006)	(0.007)	(0.009)
LTD^2	0.012***	0.011***	0.003	0.015***	0.013***	0.026***
	(0.002)	(0.003)	(0.002)	(0.003)	(0.004)	(0.005)
SIZE	0.002***	-0.009***	-0.006***	-0.004***	-0.015***	-0.013***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
COD	0.049***	0.033***	-0.000	0.048***	0.033***	0.082***
	(0.004)	(0.004)	(0.003)	(0.005)	(0.006)	(0.008)
Sd_CFO	0.018**	0.074***	0.023***	0.042***	0.097***	0.116***
	(0.009)	(0.010)	(0.006)	(0.011)	(0.014)	(0.018)
Sd_SALES	-0.019***	-0.021***	-0.001	-0.020***	-0.022***	-0.041***
	(0.003)	(0.004)	(0.002)	(0.004)	(0.005)	(0.007)
OC	-0.018***	-0.012***	-0.005***	-0.023***	-0.017***	-0.035***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
RG	-0.000*	-0.001***	0.002***	0.002***	0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.057***	0.206***	0.126***	0.183***	0.332***	0.389***
	(0.011)	(0.013)	(0.008)	(0.013)	(0.017)	(0.022)
Observations	58,619	58,619	58,619	58,619	58,619	58,619
R-squared	0.016	0.011	0.011	0.016	0.011	0.016
Number of id	5,129	5,129	5,129	5,129	5,129	5,129

Note: This table reports the results of regression estimates. REM is the dependent variable captured through six proxies. Independent variables: LTD is long term debt ratio at normal or low debt level.

LTD^2 is the long term debt ratio at high debt level. Control variables: SIZE represents firm size, COD is cost of debt, Sd_CFO is cash-flow volatility, Sd_SALES is sales volatility, OC represents operating cycle and RG is revenue growth.
Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

To exercise AEM in the firm. The results also reveal insignificant LTD – AEM nexus at high debt regime. The finally the findings on LTD-REM nexus reported in Table 4.6 demonstrate that there is negative and highly significant impact of LTD on REM at low debt regime except model III. On the contrary, there is highly significant and positive impact of LTD on REM at high debt regime. The regression estimates of LTD-REM nexus postulate non-linear U-shape relationship between the variables. These outcomes point out that manages are reluctant to manipulate real operations when the LTD level is normal orconsiderably low but high LTD encourage REM practices in firms operating in AEEs. Based on the regression results reported in Tables above, it is deduced that the firms in AEEs substitute AEM with REM when the debt level rises.

5 Conclusion and Policy Recommendations

This study aims to determine EM practices with respect to structural changes in debt particularly for Emerging Asia. Extensive research in the past has explored the linear link between debt and EM, but focusing solely on this linear association presents limitations. Linear relationship in debt-EM nexus suggests a straightforward cause-and-effect scenario where increasing debt levels always lead to a predictable increase or decrease in EM practices. However, in reality, the relationship between these factors is often more complex and can be influenced by numerous other variables and contextual factors. Understanding how changes in debt impact EM practices in the firm is the main motivation behind this study.

Based on the above discussion, this study aims to estimate non-linear relationship between debt, debt maturities and EM for the large sample of 5129 non-financial firms listed on 9 Asian Emerging Economies (AEEs) for the period spanning 2000 to 2021.The study argues that any structural change in TFD, STD and LTD leads to change in EM patterns in the firm. This argument is build on the basis of three theories; Debt control hypothesis of Agency theory (Jensen & Meckling, 1976), Agency cost of free cash flow theory (Jensen, 1986) and Debt covenant hypothesis of Positive accounting theory (Watts & Zimmerman, 1986). The findings reveal that an inverted U-shaped relationship exists between TFD and AEM and U-shaped relationship between TFD and REM. Likewise TFD, there is an inverted U-shaped relationship between STD and AEM, however non-linear U-shaped relationship is shown between STD and REM. The impact of LTD on AEM and REM provide mixed outcomes. The relationship between LTD and AEM is linear while the relationship between LTD and REM is non-linear. Substitution effects between AEM and REM are observed at various levels of TFD and STD.

This study has important implications for investors, creditors, policymakers and practitioners. These results can help creditors or financial agents while designing such debt covenant to protect their investments. From a policy maker's standpoint, this study provides clear insights into the inadequate corporate governance mechanisms of firms in AEEs. Regulators can use these research findings to educate stakeholders, including corporate managers, auditors, investors, and the public, about the implications of debt on EM. The implications of this study are generalized to whole group of AEEs sharing the same institutional and financial settings. The researchers can follow the same methodology and can build a comparative study with developed markets.

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