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Debt covenant and financial intermediation: how debt characteristics shape earnings management in Vietnam

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Abstract

Purpose – This study refines debt covenant, financial intermediation and information economics theories by examining how debt maturity and sources shape earnings management (EM) in emerging markets.

Design/methodology/approach – Using Vietnam's bank-dominated economy, we develop a theoretical framework integrating debt structure, monitoring mechanisms and temporal dynamics to explain heterogeneous reporting incentives.

Findings – Short-term debt drives income-increasing manipulation, while long-term debt fosters income-decreasing strategies. Contrary to financial intermediation theory's predictions, bank debt increases rather than decreases EM.

Originality/value – Unlike prior studies focusing on single-theoretical perspectives or developed markets, we integrate multiple theories to reveal maturity-specific incentives and earnings persistence dynamics. Critically, we document that bank monitoring effects reverse, whereby bank debt increases rather than decreases EM, contradicting financial intermediation theory's predictions and specifying institutional scope conditions for the theory's applicability.

Keywords Debt covenant, Financial intermediation, Information economics, Earnings management, Vietnam

Paper type Research article

1. Introduction

The relationship between debt financing and financial reporting quality remains a crucial area of research in accounting and finance. While traditional debt covenant theory suggests relatively uniform effects of leverage on earnings management (EM) (Watts and Zimmerman, 1986; Defond and Jiambalvo, 1994), recent literature highlights that debt structure – especially maturity composition and creditor identity – matters substantially (Denis and Wang, 2014; Fung and Goodwin, 2013; Anagnostopoulou and Tsekrekos, 2017; Draief and Chouaya, 2022).

This heterogeneity becomes particularly pronounced in emerging market contexts, where institutional mechanisms differ substantially from developed economies. Recent contributions further highlight the need to unpack these dynamics. Recent empirical advances using quasi-experimental methods provide new insights into these relationships, with evidence showing that bank intervention following debt covenant violations significantly reduces both

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accruals-based and real EM (Huang *et al.*, 2024). Additionally, contemporary research reveals that debt maturity structure influences not only the magnitude but also the strategic choice between different types of EM, with short-term debt leading managers to shift toward real activities manipulation while reducing accruals-based management (Draief and Chouaya, 2022). Debt level also moderates the audit quality – real EM relationship, with low debt curbing and high debt heightening real EM (Le, 2025). These findings challenge traditional assumptions about uniform EM responses to debt pressure and highlight the importance of creditor characteristics in determining monitoring effectiveness.

Most prior studies have predominantly focused on developed markets characterized by competitive banking sectors, diversified financing structures and strong institutional enforcement. However, these conditions are largely absent in emerging economies, where financial systems are often more concentrated and institutional mechanisms remain underdeveloped. Vietnam offers a particularly interesting case in this regard. Its bank-dominated financial system, accounting for over 65% of corporate financing in 2016 (National Financial Supervisory Commission, 2016), 40.71% in 2019 and 48.61% in 2023 (Can Van Luc, 2024) – combined with a concentrated banking structure and relatively weak enforcement – creates a fundamentally different monitoring environment from that observed in developed markets.

Such institutional and structural differences raise three unaddressed questions: Do short-term debt effects intensify under financing constraints? Do bank monitoring predictions hold in bank-dominated systems? Does weak enforcement enable stronger temporal persistence? These questions challenge existing theories' implicit universality and underscore the need for systematic empirical examination. Vietnam's emerging market provides an ideal setting for examining these theoretical relationships. The dominance of bank-based financing and the limited development of the bond market create distinct monitoring environments that highlight the importance of debt characteristics in shaping reporting incentives. Furthermore, the country's evolving institutional framework and significant information asymmetries amplify the theoretical mechanisms identified in this study, offering valuable insights into how debt structure and institutional features interact to influence EM behavior.

Existing studies on debt and EM, primarily in developed markets, often rely on single-theoretical perspectives, such as debt covenant theory, to explain uniform leverage effects (e.g. Fung and Goodwin, 2013; Denis and Wang, 2014). Research in emerging markets, while growing, tends to focus on empirical patterns without integrating multiple theoretical lenses to explain contextual nuances (e.g. Thanh *et al.*, 2020). In the Vietnamese context, Trung *et al.* (2020) examined short-term debt effects using 183 firms. This study bridges these gaps by integrating debt covenant theory, financial intermediation theory and information economics to examine the heterogeneous effects of debt maturity and sources on EM with 1,349 firms over 2010–2020, yielding 10,130 firm-year observations. Using dynamic generalized method of moments (GMM) estimation to address endogeneity and capture temporal persistence in EM behavior, our analysis distinguishes between income-increasing and income-decreasing manipulation, revealing asymmetric effects across debt types. Notably, we find that bank debt increases rather than decreases EM, contradicting the financial intermediation theory's predictions and revealing institutional conditions under which monitoring mechanisms reverse.

This study makes three empirical contributions that advance theoretical understanding. First, we extend debt covenant theory by demonstrating that debt maturity structures create heterogeneous monitoring incentives, with short-term debt driving income-increasing manipulation, while long-term debt fosters income-decreasing strategies. This resolves mixed findings on leverage effects by showing that maturity-specific refinancing pressures and renegotiation dynamics create opposing reporting incentives. Second, we provide critical evidence that financial intermediation theory's bank monitoring predictions are institutionally contingent. Contrary to the theory's predictions, bank debt increases rather than decreases EM in Vietnam's bank-dominated system, revealing that relationship preservation and

concentrated lending can reverse monitoring effectiveness. This finding specifies scope conditions under which bank monitoring advantages do not hold. Third, we document significant temporal persistence in debt-driven EM, demonstrating that weak enforcement environments enable more entrenched manipulation patterns than predicted by information economics. These findings collectively show that debt-earnings management relationships are institutionally contingent, requiring theoretical modifications for emerging market contexts.

2. Background and hypothesis development

2.1 Theoretical framework

This study integrates three theoretical frameworks to explain how debt characteristics influence EM in emerging markets. Debt covenant theory suggests that debt structures create incentives to avoid covenant violations (Watts and Zimmerman, 1986). While prior research emphasizes covenant violations as the primary mechanism linking debt to EM (Press and Weintrop, 1990; Defond and Jiambalvo, 1994), recent empirical evidence shows that monitoring effectiveness varies significantly with debt characteristics and institutional context (Huang *et al.*, 2024). Prior studies document that debt maturity affects EM, with short-term debt associated with income-increasing manipulation, while long-term debt shows different patterns (Draief and Chouaya, 2022; Rodríguez-Pérez and Van Hemmen, 2010; Fung and Goodwin, 2013). We extend this theory by examining how these maturity-specific effects intensify in emerging markets with limited financing alternatives, where frequent refinancing pressures and strategic renegotiation dynamics create more pronounced opposing reporting incentives.

Financial intermediation theory posits that banks possess superior monitoring capabilities due to repeated interactions, specialized expertise and access to private information (Diamond, 1991; Boot and Schmeits, 2000). Banks develop relationship-specific knowledge enabling more effective detection of earnings manipulation than dispersed bondholders (Petersen and Rajan, 1994), allowing them to enforce covenants more actively and renegotiate terms based on true firm performance (Denis and Wang, 2014). Recent evidence confirms that banks can effectively reduce EM when properly incentivized (Huang *et al.*, 2024). We extend this theory by examining whether these monitoring advantages hold in bank-dominated emerging markets where institutional conditions differ fundamentally from competitive banking systems. While theory predicts banks constrain EM, relationship preservation priorities and concentrated lending structures may alter monitoring incentives, potentially reducing or reversing monitoring effectiveness when banks face competing objectives beyond profit maximization.

Information economics suggests repeated interactions between firms and creditors reduce information asymmetry (Petersen and Rajan, 1994). Prior research documents persistent EM in firms with ongoing debt covenant concerns but treats this as static responses to debt contracts (Watts and Zimmerman, 1986; Deangelo *et al.*, 1994; Defond and Jiambalvo, 1994). Contemporary evidence reveals EM to avoid covenant violations can enhance future performance, suggesting dynamic rather than purely opportunistic motivations (Dyreng *et al.*, 2022). We extend this framework by examining temporal persistence mechanisms – how organizational learning, creditor expectation management and evolving information asymmetries create path dependence in EM behaviors. In weak enforcement environments characteristic of emerging markets (Leuz *et al.*, 2003), successful manipulation may become embedded in organizational routines, creating self-reinforcing cycles where past behavior influences current choices through institutionalized practices.

2.2 Vietnam's context

Vietnam's financial system is predominantly bank-based, with banks providing approximately 65% of corporate financing in 2016 (National Financial Supervisory Commission, 2016), 40.71% in 2019 and 48.61% in 2023 (Can Van Luc, 2024). The banking sector exhibits high concentration and significant state ownership, with the five largest state-owned commercial banks accounting for over 50% of total banking assets. This concentrated banking structure creates unique

monitoring dynamics where relationship-based lending may substitute for formal covenant-based monitoring. The underdeveloped corporate bond market, representing only 17% of GDP in 2020 (Vietnam Bond Market Association, 2020) and 10% of GDP in 2023 (Can Van Luc, 2024), limits alternative financing sources and increases firms' dependence on bank relationships. These features amplify refinancing pressures for firms with short-term debt and strengthen banks' bargaining power in lending relationships. The institutional environment exhibits high information asymmetry – limited analyst coverage, nascent institutional investor presence and development of credit rating systems – enabling greater EM opportunities while simultaneously increasing the theoretical importance of debt-based monitoring mechanisms. Corporate governance structures feature concentrated ownership, significant state influence and limited board independence (Phuong *et al.*, 2020), creating agency conflicts that may influence debt-based monitoring effectiveness. Weak enforcement mechanisms and limited investor protection (La Porta *et al.*, 2000) may reduce constraints on EM, enabling more persistent manipulation patterns over time. This combination of bank dominance, limited financing alternatives, high information asymmetry and weak enforcement creates an institutional environment where debt characteristics' effects on EM may differ substantially from developed markets.

2.3 Hypotheses development

2.3.1 Debt structure, monitoring effectiveness and earnings management. Debt covenant theory suggests that debt structures influence financial reporting by creating incentives to avoid covenant violations (Watts and Zimmerman, 1986). We extend debt covenant theory by specifying the refinancing pressure mechanism whereby short-term debt creates concentrated creditor scrutiny at predictable refinancing intervals. This mechanism operates through management's anticipation of creditor evaluation during refinancing periods, leading to strategic timing of discretionary accruals (DA) and revenue recognition to demonstrate creditworthiness. The mechanism is amplified in emerging markets, where limited financing alternatives and relationship-based lending intensify refinancing pressures beyond those observed in developed markets. Short-term debt, with its frequent renewals, intensifies creditor scrutiny, prompting income-increasing EM to demonstrate financial health (Defond and Jiambalvo, 1994; Bharath *et al.*, 2008). While Fung and Goodwin (2013) document this effect in developed markets, their focus on standardized covenants overlooks relationship-based monitoring in emerging markets. Recent empirical evidence using panel data from Fortune 1,000 firms reveals that managers respond strategically to short-term debt by shifting toward real EM activities while reducing accruals-based manipulation, suggesting that debt maturity influences not only the magnitude but also the type of EM employed (Draief and Chouaya, 2022). We extend debt covenant theory by proposing that short-term debt's frequent refinancing needs amplify income-increasing manipulation in contexts with weak institutional enforcement.

In Vietnam's bank-dominated financial system, where short-term debt predominates and creditor protections are limited, managers face heightened pressure to manage earnings upward to secure favorable loan terms. This refinement addresses a gap in understanding how institutional factors moderate debt-driven reporting incentives in emerging markets.

H1. Short-term debt is positively associated with income-increasing earnings management.

The debt covenant hypothesis suggests that long-term debt incentivizes EM to avoid covenant violations (Watts and Zimmerman, 1986). Long-term debt operates through the conservative signaling and renegotiation positioning mechanism, whereby sustained creditor relationships incentivize income-decreasing management through two pathways: conservative signaling to maintain long-term creditor confidence and strategic income reduction during renegotiation periods to improve bargaining positions. When firms approach renegotiation periods, management strategically demonstrates financial constraints to secure more favorable covenant terms. This differs fundamentally from the episodic pressure created by short-term debt.

While prior studies indicate income-increasing manipulation to meet financial covenants (Defond and Jiambalvo, 1994), we extend this theory to propose that long-term debt can foster income-decreasing EM in emerging markets. Sustained creditor monitoring may constrain aggressive income-increasing practices (Kim *et al.*, 2005; Ahn and Choi, 2009), while renegotiation periods create strategic incentives for income-decreasing adjustments to secure favorable terms (Jaggi and Lee, 2002). Recent empirical evidence using quasi-experimental variation from covenant violations confirms that bank intervention effectively reduces EM, with the constraint being more pronounced for accruals-based manipulation than real activities manipulation (Huang *et al.*, 2024).

In Vietnam's bank-dominated economy, long-term debt, primarily from state-owned banks, involves restrictive covenants that require stable financial ratios (Defond and Jiambalvo, 1994). Managers may use income-decreasing EM to signal conservatism, reduce regulatory scrutiny and strengthen creditor relationships in a relationship-oriented lending culture (Rodríguez-Pérez and Van Hemmen, 2010). Unlike developed markets, where Jaggi and Lee (2002) document similar patterns under strong legal frameworks, Vietnam's state-influenced banking and weaker enforcement amplify these incentives. Our extension of debt covenant theory highlights how institutional factors in emerging markets shape strategic reporting, addressing a gap in prior literature. We hypothesize that long-term debt fosters income-decreasing EM to secure favorable terms during restructuring.

H2. Firms with higher levels of long-term debt are more likely to engage in income-decreasing earnings management.

2.3.2 Financial intermediation and earnings management. Financial intermediation theory posits that bank debt offers superior monitoring compared to market-based debt due to banks' repeated interactions, specialized expertise and access to private information (Diamond, 1984; Boot and Schmeits, 2000). Banks develop relationship-specific knowledge through ongoing interactions, enabling them to detect earnings manipulation more effectively than dispersed bondholders (Petersen and Rajan, 1994). This information advantage allows banks to enforce covenants more actively and renegotiate terms based on true firm performance rather than manipulated accounting numbers (Denis and Wang, 2014). In contrast, bond financing relies on standardized covenants with less flexible enforcement (Nikolaev, 2010). Diamond (1991) demonstrates that relationship banking creates reputational incentives for firms to maintain reporting quality, as banks can credibly threaten to terminate relationships or impose stricter terms when manipulation is detected.

In emerging markets, these bank monitoring advantages may be even more pronounced due to higher information asymmetry and weaker institutional environments. When public information is limited and regulatory oversight is weak, banks' private information advantages become relatively more valuable (Bharath *et al.*, 2008). Vietnamese firms face high information asymmetry – limited analyst coverage, nascent institutional investor presence and underdeveloped credit rating systems. Unlike developed markets where multiple governance mechanisms operate simultaneously (active equity markets, analyst coverage, institutional investors and litigation threats), Vietnam's institutional environment concentrates monitoring power in banks, potentially amplifying their disciplining role. Furthermore, Vietnam's bank-dominated financial system (65% of corporate financing from banks) creates strong dependence relationships where firms cannot easily switch lenders. This dependence enhances banks' bargaining power and enforcement capability (Rajan, 1992). When firms have limited financing alternatives – as evidenced by the underdeveloped bond market (17% of GDP) – banks can credibly threaten to deny credit renewal, creating powerful incentives for firms to maintain transparent reporting and avoid aggressive EM that might jeopardize these critical relationships. The repeated nature of bank-firm interactions in Vietnam also creates long-term reputational concerns. Firms manipulating earnings risk damaging relationships with their primary financing source, potentially facing credit rationing or higher borrowing costs in future periods (Diamond, 1991). This intertemporal discipline mechanism should

constrain EM more effectively than arm's-length bond market financing, where reputation effects are diffused across many bondholders. Recent empirical evidence supports the disciplining role of bank monitoring, demonstrating that bank intervention following debt covenant violations significantly reduces both accruals-based and real EM, with stronger effects when banks possess greater bargaining power (Huang *et al.*, 2024).

Based on financial intermediation theory and the heightened importance of bank monitoring in emerging markets with limited alternative governance mechanisms, we hypothesize:

H3. Bank debt is associated with lower levels of earnings management compared with market-based debt financing.

2.3.3 Temporal dynamics of debt-driven earnings management. Information economics suggests that repeated interactions between firms and creditors shape persistent reporting behaviors, as EM becomes embedded in organizational routines when monitoring is imperfect (Fischer and Verrecchia, 2000). Prior studies document persistent EM in firms with ongoing debt covenant concerns (Deangelo *et al.*, 1994; Defond and Jiambalvo, 1994), but their static approaches overlook dynamic temporal patterns in emerging markets. Information economics theory is extended through the dynamic path dependence mechanism whereby temporal persistence operates via three interconnected channels: organizational learning processes where successful EM strategies become embedded in corporate routines, creditor expectation management where consistent reporting patterns create institutional pressures for continuity and information asymmetry evolution where partial resolution paradoxically may increase manipulation sophistication. This creates self-reinforcing cycles whereby successful manipulation leads to routine formation, which establishes creditor expectations, thereby necessitating continued manipulation to meet those expectations.

In Vietnam's bank-dominated financial system, where relationship banking coexists with nascent capital market pressures, weak investor protections amplify persistent EM (Leuz *et al.*, 2003). Unlike developed markets, Vietnam's concentrated banking sector and gradual market liberalization foster sustained reporting patterns tied to past debt structures. This refinement of information economics addresses a gap in understanding dynamic reporting incentives in emerging markets.

H4. Debt-driven earnings management shows significant temporal persistence, with past debt structure continuing to influence current reporting choices.

3. Methodology

3.1 Sample selection and data sources

The study sample consists of 1,349 non-financial firms listed on the Vietnam Stock Exchange from 2010 to 2020, yielding 10,130 firm-year observations after excluding observations with missing data, collected from the FinPro database, supplemented by manual collection from company filings. Financial institutions are excluded due to their distinct regulatory environment, and firms with missing data for key variables are also excluded. The data includes variables representing debt maturity (short-term and long-term debt ratios) and source types (bank loans versus bonds), along with control variables for firm size, profitability and industry. Table I in the supplementary material presents the sample distribution.

3.2 Variable measurement

3.2.1 Earnings management. EM is measured using DA calculated from the modified Jones model (Dechow *et al.*, 1995). DA captures the extent of earnings adjustments beyond normal business operations, which indicates potential earnings manipulation. The model used to estimate abnormal accruals is as follows:

$$\frac{TA_{it}}{A_{it-1}} = \alpha + \beta_1\left(\frac{1}{A_{it-1}}\right) + \beta_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \beta_3\left(\frac{PPE_{it}}{A_{it-1}}\right) + \varepsilon_{it}$$

where TA_{it} represents firm i's total accruals, calculated as net income minus cash flow from operations; ΔREV_{it} is the change in revenues; ΔREC_{it} is the change in receivable; PPE_{it} is the firm's property, plant and equipment; A is total assets and ε_{it} is the error term.

Using this equation, we compute industry- and year-specific DA for each firm as follows.

$$DA_{it} = \frac{TA_{it}}{A_{it-1}} - \left[\widehat{\alpha} + \widehat{\beta}_1\left(\frac{1}{A_{it-1}}\right) + \widehat{\beta}_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right) + \widehat{\beta}_3\left(\frac{PPE_{it}}{A_{it-1}}\right)\right]$$

DA serves as a proxy for measuring EM. To distinguish between income-increasing and income-decreasing manipulation – addressing theoretical predictions that debt maturity creates opposing reporting incentives (H1 vs H2) – DA is analyzed in three ways: absolute magnitude (|DA|), positive values (DA > 0) indicating income-increasing manipulation and negative values (DA < 0) indicating income-decreasing manipulation. To account for past accrual decisions and test temporal persistence, lagged EM (DA_{it-1}) is incorporated into the model, reflecting the persistence of earnings manipulation over time. DA_{it-1} is used as an instrument to control for dynamic effects. The basic form of the dynamic model is shown in Equation (1):

$$DA_{it} = \alpha + \theta EM_{it-1}(DA_{it-1}) + \gamma_{it} \quad (1)$$

Debt structure variables The debt structure variables are defined as follows: SDebt represents the short-term debt ratio, calculated as short-term debt divided by total assets; LDebt represents the long-term debt ratio, calculated as long-term debt divided by total assets; Loan represents the bank debt ratio, calculated as bank debt divided by total debt; and Bond represents the Bond debt ratio, calculated as Bond debt divided by total debt.

3.2.2 Empirical model. Arellano and Bond (1991, p. 278) emphasize that dynamic panel estimation addresses both unobserved heterogeneity and potential endogeneity concerns inherent in corporate finance research. Given the temporal persistence predicted by H4 and the potential endogeneity of debt choices, dynamic GMM estimation is utilized to address these concerns. The inclusion of lagged-dependent variables allows the capture of how past EM influences current choices, directly testing the path dependence mechanism. The primary models are as follows:

Model M1 examines the impact of debt maturity structure (short-term debt – Sdebt vs. long-term debt – Ldebt) on EM. Dummy variables indicate firms with increased debt levels (ISDebt and ILDebt) compared to the prior year, allowing analysis of how changes in debt levels influence EM.

$$DA_{it} = \alpha + \theta DA_{it-1} + \beta_1 SDebt_{it} + \beta_2 ISDebt_{it} + \beta_3 LDebt_{it} + \beta_4 ILDebt_{it} + \beta_5 Control_{it} + \varepsilon_{it} \quad (M1)$$

Model M2 analyzes the effect of different debt sources (bank loans versus bonds) on EM. Similar to Model M1, dummy variables indicate firms with increased loan and bond debt (ILoan and IBond) compared to the prior year, allowing analysis of how changes in loan and bond debt levels influence EM.

$$DA_{it} = \alpha + \theta DA_{it-1} + \beta_1 Loan_{it} + \beta_2 ILoan_{it} + \beta_3 Bond_{it} + \beta_4 IBond_{it} + \beta_5 Control_{it} + \varepsilon_{it} \quad (M2)$$

In addition, we estimate two extended versions of models M1 and M2 that include interaction terms between debt level and debt increases (*Sdebt*ISdebt* and *Ldebt*ILdebt* in model M1;

*Loan*ILoan* in model M2). These models provide insight into the combined effect of debt levels and changes on earnings manipulation.

Control variables for both models include *firm size*, measured as the natural logarithm of total assets, and *return on assets*, following the recommendations of previous studies (Anagnostopoulou and Tsekrekos, 2017; Rodríguez-Pérez and Van Hemmen, 2010; Fung and Goodwin, 2013). Firm size captures the political cost hypothesis whereby larger firms face greater regulatory scrutiny constraining manipulation (Watts and Zimmerman, 1986; Defond and Jiambalvo, 1994). Profitability captures performance pressure, whereby lower profitability creates stronger incentives to manage earnings upward (Burgstahler and Dichev, 1997). These variables represent theoretically grounded EM drivers consistently employed in the literature. Furthermore, the dynamic GMM specification uses first-differencing to remove all time-invariant firm characteristics. This approach addresses omitted variable concerns that additional controls would target in static panel models.

3.3 Addressing endogeneity

Three sources of endogeneity are addressed in this analysis. First, EM may be persistent over time due to organizational routines and creditor expectations (H4), creating autocorrelation. Second, debt structure choices may be endogenous – firms anticipating EM needs may strategically choose debt maturity or sources. Third, unobserved firm heterogeneity (e.g. management quality) may simultaneously affect both debt choices and EM. Endogeneity is managed using the GMM, which provides unbiased and consistent estimates by accounting for potential correlations between lagged variables and residuals. The study employs a system GMM (S-GMM), which is suitable for large samples and effectively addresses both time-invariant characteristics and endogeneity issues (Arellano and Bover, 1995; Blundell and Bond, 1998).

To verify the robustness of the GMM models, standard diagnostic tests are conducted, including first-order (AR1) and second-order (AR2) serial correlation checks, as well as the Hansen test for over-identifying restrictions. These tests ensure that our models are correctly specified and that the instruments used in GMM are valid.

3.4 Immediate and persistent effects

The dynamic panel data model allows the estimation of both immediate and persistent effects of debt on EM, which is important for understanding the full impact of debt characteristics on reporting behavior. This distinction directly addresses our theoretical framework, which predicts not only contemporaneous effects of debt pressure but also temporal persistence due to organizational learning and creditor expectations. The immediate effects represent the contemporaneous impact of debt on EM within a single year, as captured by the coefficients in models M1 and M2. These immediate effects test whether debt characteristics create incentives for EM in the current period. The lagged dependent variable (DA_{it-1}) captures temporal persistence – the degree to which EM patterns continue over time. When the coefficient θ on DAit-1 is significant and positive, it indicates that past EM influences current choices. The persistent effect is calculated using the formula:

$$Persistent\ effect = \frac{\beta}{1-\theta} \tag{2}$$

Here, β represents the immediate coefficients of the independent variables in the model, while θ denotes the coefficient for the lagged dependent variable, EM_{it-1}, in models M1 and M2. This captures the total effect after one period of adjustment.

By combining cross-sectional and time-series data, this analytical approach offers a more comprehensive understanding of how debt affects EM over time, providing insights into both immediate and persistent managerial behavior.

4. Results and discussion

4.1 Descriptive statistics and correlation

Table II in the Supplementary material presents descriptive statistics for the key variables. The distribution of DA exhibits a marginally negative mean value of −0.04% of total assets (median: −0.16%), consistent with prior literature suggesting that EM practices tend to offset across firms (Cohen *et al.*, 2008). Further decomposition revealed an asymmetric pattern between income-increasing EM (mean DA of 10.08%) and income-decreasing strategies (mean DA of −9.90%), indicating a slight predominance of upward EM within the sample.

The financing structure reveals distinctive characteristics pertinent to our theoretical framework. Short-term debt (Sdebt) constitutes a substantial portion of firm financing (mean: 56.9% of total assets), markedly higher than long-term debt (Ldebt) at 14.74%. This pronounced reliance on short-term financing aligns with expectations in emerging market contexts, where capital market imperfections and institutional constraints often limit access to longer-term financing options. The temporal dynamics further reveal that 45.7% of firm-year observations demonstrate year-over-year increases in short-term debt, compared to only 31.80% showing increases in long-term obligations.

Analysis of debt sources indicates a significant predominance of bank-based over market-based financing, with bank debt constituting 28.45% of total assets compared to corporate bonds at merely 2.1%. This pattern reflects the bank-dominated financial system characteristic of emerging economies where bond markets remain underdeveloped. This concentration of bank financing provides the setting for testing whether financial intermediation theory's monitoring predictions hold in bank-dominated systems. The composition of bank debt further demonstrates a preference for shorter maturities, with short-term bank loans accounting for 18.71% of total assets versus 9.74% for long-term bank loans.

Table III in the Supplementary material presents the Pearson correlation coefficients among key variables. The absolute magnitude of DA (|DA|) demonstrates positive and statistically significant correlations with both short-term debt ($\rho = 0.07$, $p < 0.01$) and long-term debt ($\rho = 0.03$, $p < 0.01$), providing preliminary support for our hypothesized relationship between debt structure and EM intensity. Directional analysis reveals that income-increasing discretionary accruals (DA > 0) correlate positively with both short-term debt ($\rho = 0.02$, $p < 0.05$) and long-term debt ($\rho = 0.03$, $p < 0.01$), offering initial evidence consistent with H1.

The correlation patterns between EM and debt source variables provide insights relevant to H2. Bank loans demonstrate stronger correlations with DA ($\rho = 0.09$, $p < 0.01$) compared with corporate bonds, for which correlations are largely insignificant. Additionally, the correlation between increases in bank debt (ILoan) and income-increasing accruals ($\rho = 0.18$, $p < 0.01$) is significantly stronger than with income-decreasing accruals ($\rho = -0.13$, $p < 0.01$), suggesting asymmetric effects of bank financing on EM decisions.

Control variables exhibit anticipated relationships. Firm profitability (ROA) shows a negative correlation with the absolute magnitude of DA ($\rho = -0.08$, $p < 0.01$), suggesting that more profitable firms engage less in EM. Similarly, firm size exhibits a negative correlation with EM magnitude ($\rho = -0.1$, $p < 0.01$), consistent with the notion that larger firms face greater scrutiny and maintain higher financial reporting quality.

4.2 Model estimation and diagnostic validation

To ensure robust empirical estimation, we implemented several econometric procedures to address potential statistical and methodological concerns. First, to mitigate the influence of outliers, we employ a winsorization procedure at the 1st and 99th percentiles for all variables. The selection between Difference GMM (D-GMM) and System GMM (S-GMM) estimators follows the methodological framework established by Bond (2002), involving comparative analysis of lagged discretionary accruals (L.DA) coefficients across three estimation methods.

Table IV in the Supplementary material presents these comparative results for models M1 and M2. The D-GMM coefficient estimates (0.127 for M1 and 0.128 for M2) are positioned between

the pooled ordinary least squares (OLS) estimates (0.2199 for M1 and 0.2278 for M2) and the within-groups estimates (−0.0126 for M1 and -0.0137 for M2). This intermediate positioning provides empirical evidence supporting the consistency of the D-GMM estimator with our panel structure, justifying its use to address endogeneity concerns in our dynamic panel specification.

The findings remain robust across alternative specifications and estimation approaches. The Hansen J-test results ($p > 0.5$) provide stronger support for instrument validity than comparable studies (e.g. Rodríguez-Pérez and Van Hemmen, 2010, $p > 0.3$). The autoregressive (AR) (2) test results confirm the absence of second-order autocorrelation, consistent with methodological requirements and previous dynamic panel studies in the field. These findings validate the model specification and confirm the appropriateness of including lagged dependent variables as explanatory variables, which is essential for testing the temporal dynamics hypothesis (H4).

The analysis identifies endogenous characteristics not only in L.DA but also in the short-term debt variable (Sdebt). The validity of our instrumental variables approach is confirmed through the Hansen test for over-identifying restrictions, with *p*-values exceeding the 0.25 threshold recommended by Roodman (2009), providing statistical evidence that supports the appropriateness of our instrument selection.

4.3 Empirical results and discussion

4.3.1 Debt structure and earnings management. Table 1 presents the estimation results for model M1, examining the effects of debt structure on EM across three measures: absolute magnitude (|DA|), income-increasing accruals (DA > 0) and income-decreasing accruals (DA < 0) in both immediate and persistent effects. For each specification, both immediate effects and persistent effects are reported, with the latter calculated using the formula β/(1-θ). Consistent with H1, short-term debt (Sdebt) exhibits strong positive associations with EM, particularly in the absolute value and income-increasing specifications, with coefficients of 0.111 and 0.114, respectively ($p < 0.01$). The persistent effects are even more pronounced (0.1269 and 0.114), demonstrating that temporal dynamics amplify the impact of short-term debt. The interaction term (Sdebt*ISdebt) demonstrates positive significance in income-increasing models (immediate effects: 0.0234, $p < 0.05$; persistent effects: 0.0257, $p < 0.05$), indicating that incremental increases in short-term debt amplify upward EM practices. These findings provide robust support for H1, suggesting that firms with higher short-term debt obligations face greater pressure to present favorable financial performance, resulting in income-increasing EM.

Table 1. Regression for model M1 across six sub-models

Model variable	|DA| (immediate effect)	|DA| (persistent effect)	DA > 0 (immediate effect)	DA > 0 (persistent effect)	DA < 0 (immediate effect)	DA < 0 (persistent effect)
L.DA	0.127***		0.0875***		0.0832***	
Sdebt	0.111***	0.1269***	0.114***	0.0834***	−0.0222*	−0.0241*
ISdebt	−0.0013		−0.00362	−0.0123*	0.0140***	0.0152***
Sdebt*ISdebt			*0.0234***	0.0257**		
Ldebt	*0.0671***	*0.0769****	0.0114		0.0803**	0.0875**
ILdebt	−0.00434		−0.00169		−0.00521	
Ldebt*ILdebt			0.0467***	0.0513**		
ROA	−0.118**		0.165**		−0.346***	
Size	−0.00544		0.0409***		−0.00285	

Note(s): Results from dynamic panel GMM estimation for Model M1
AR(1) test: significant ($p = 0.000$); AR(2) test: insignificant ($p > 0.1$); Hansen J-test: non-significant *p*-values, confirming valid instruments. GMM-style instruments include L.DA and Sdebt. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively

Source(s): Created by authors

Conversely, short-term debt demonstrates negative and significant effects on income-decreasing accruals in both immediate effects (−0.0222, $p < 0.10$) and persistent effects (−0.0241, $p < 0.10$), suggesting that higher short-term debt obligations constrain firms' ability to report lower earnings. This asymmetric pattern further strengthens the evidence for H1, indicating that short-term debt specifically incentivizes income-increasing rather than income-decreasing EM. These results align with Fung and Goodwin (2013), who found similar patterns in developed markets (coefficient: 0.089, $p < 0.05$). However, our coefficients suggest stronger effects in emerging markets, extending their findings. Our results contrast with Rodríguez-Pérez and Van Hemmen (2010), who found weaker associations (coefficient: 0.043, $p < 0.10$) in European firms, suggesting that institutional context significantly moderates these relationships.

Long-term debt (Ldebt) demonstrates positive associations with the magnitude of EM, particularly in the absolute value (immediate effects: 0.0671, $p < 0.05$; persistent effects: 0.0769, $p < 0.01$) and is most pronounced in income-decreasing specifications (immediate effects: 0.0803, $p < 0.01$; persistent effects: 0.0875, $p < 0.01$) in both immediate effects and persistent effects. The interaction term (Ldebt*ILdebt) exhibits positive significance in income-increasing models (immediate effects: 0.0467, $p < 0.01$; persistent effects: 0.0513, $p < 0.05$), suggesting that growing long-term debt obligations also incentivize upward EM, though to a lesser extent than short-term debt. This finding suggests that while long-term debt primarily drives income-decreasing manipulation (supporting H2), firms with increasing long-term debt may engage in income-increasing manipulation to meet covenant thresholds before subsequently shifting to conservative signaling.

The results for long-term debt reveal a more complex pattern than those found in previous studies. While Thanh *et al*. (2020) found stronger effects in Vietnam (coefficient: 0.089, $p < 0.01$), their study period preceded significant regulatory changes. Our findings align more closely with Jaggi and Lee (2002), particularly regarding income-decreasing manipulation during renegotiation periods. However, our study finds stronger evidence of strategic behavior, with income-decreasing accruals showing greater magnitude (persistent effects coefficient: 0.0875, $p < 0.05$) compared to their results (coefficient: 0.054, $p < 0.05$).

4.3.2 Debt source and earnings management. Table 2 presents the estimation results for model M2, examining the influence of debt source on EM practices. This analysis tests H3's

Table 2. Regressions for the M2 model across six sub-models

Variables	|DA| (immediate effect)	|DA| (persistent effect)	DA > 0 (immediate effect)	DA > 0 (persistent effect)	DA < 0 (immediate effect)	DA < 0 (persistent effect)
L.DA	0.128***		0.0960***		0.0950***	
Loan	0.0915***	0.1049***	0.199***	0.2201***	0.120***	0.1327***
ILoan	−0.00144		3.47205		−0.00397	
Loan*ILoan			0.0364**	0.0402**		
Bond	−0.104	−0.0950	0.0488	0.0133	−0.0181	
IBond	0.0213	0.0298				
SLoan			0.154***	0.1768**	0.245***	0.2682***
LLoan			0.0426*	0.0488*	0.0997**	0.1092**
ROA	−0.0935*	0.180**	0.168**	−0.0763	0.249***	
Size	0.0155	0.0268*	0.0372***	0.00968	0.0295*	

Note(s): Results from dynamic panel GMM estimation for Model M2
AR(1) test: significant ($p = 0.000$); AR(2) test: insignificant ($p > 0.5$); Hansen J-test: non-significant p-values, confirming the validity of instruments. ***, ** and * denote significance at the 1%, 5%, and 10% levels, respectively

Source(s): Created by authors

prediction, derived from financial intermediation theory, that bank debt should be associated with lower EM due to superior bank monitoring capabilities. Contrary to H3, bank loans consistently demonstrate positive and significant associations with EM across all specifications. The effect is particularly pronounced for income-increasing accruals (persistent effects coefficient: 0.2201, $p < 0.01$). The loan interaction term (Loan*ILoan) exhibits positive significance in income-increasing specifications (immediate effects: 0.0364, $p < 0.05$; persistent effects: 0.0402, $p < 0.05$), suggesting that higher loan levels intensify upward EM practices. When decomposed by maturity, short-term loans (SLoan) show strong positive associations with EM, particularly in income-decreasing specifications (coefficient: 0.245, $p < 0.01$). Long-term loans (LLoan) exhibit positive significance in both income-increasing and income-decreasing models, with stronger effects in persistent effects specifications (coefficient: 0.1092, $p < 0.05$).

Corporate bonds primarily show insignificant associations with EM practices, suggesting a limited influence of market-based debt on financial reporting choices in this emerging market context. This finding reflects the underdeveloped nature of the corporate bond market in Vietnam rather than providing clear support for H3. The differential impact of bank loans versus bonds (coefficient: 0.0915 vs. −0.104) extends previous findings in several ways. While Denis and Wang (2014) documented stronger monitoring effects for bank debt in developed markets (coefficient differential: 0.063), our results show a larger disparity, suggesting that relationship lending becomes more critical in emerging markets. These findings also contrast with Nikolaev (2010), who found more comparable effects between debt types in U.S. firms. Regarding relationship effects, the interaction between loan increases and EM (coefficient: 0.0364, $p < 0.05$) provides stronger evidence of relationship effects than previous studies. Franz *et al*. (2014) found weaker interactions (coefficient: 0.023, $p < 0.10$) in developed markets, while our results suggest that relationship dynamics have greater influence in emerging market contexts.

The rejection of H3 reveals a fundamental reversal of the financial intermediation theory's predictions in Vietnam's institutional context. Rather than constraining manipulation, bank debt enables higher EM. This contradiction occurs because Vietnam's bank-dominated system creates monitoring environments fundamentally different from the competitive banking markets assumed in the theory. When relationship preservation and concentrated lending dominate – as evidenced by the 65% bank financing share and limited alternative sources – banks may tolerate EM that maintains borrower viability rather than enforce strict oversight. This violates the theory's implicit assumption that banks prioritize profitability over relationship maintenance. Rather than invalidating the theory entirely, this finding specifies critical scope conditions: bank monitoring advantages apply when banks operate as profit-maximizing entities in competitive markets but may reverse when relationship preservation and political objectives dominate. This refines financial intermediation theory by demonstrating that institutional context determines whether bank monitoring constrains or enables EM.

4.3.3 Temporal dynamics of earnings management. The lagged discretionary accrual coefficient (L.DA) demonstrates consistent significance across all specifications in both models, with coefficients ranging from 0.083 to 0.128 ($p < 0.01$). These substantial coefficients provide strong support for H4, indicating that previous EM decisions significantly influence current reporting choices with economic magnitude. For instance, in Model M1's income-increasing specification (Table 1), the L.DA coefficient of 0.0875 implies that 8.75% of the period's DA persist into the current period, even after controlling for current debt pressures. This implies that, in Vietnam's weak enforcement environment, successful EM strategies face limited penalties, enabling them to become institutionalized practices rather than episodic responses to immediate pressures. The temporal dependence suggests that firms develop consistent patterns of EM that persist over time, potentially reflecting organizational learning, established reporting routines, or structural constraints that limit rapid changes in financial reporting behavior.

The temporal persistence is further evidenced by the effectiveness of our dynamic panel specification, as confirmed by the diagnostic tests. The significant AR1 and non-significant AR2 test results validate the inclusion of lagged-dependent variables and support the temporal dynamics hypothesized in H4.

Our findings systematically resolve the three theoretical questions posed earlier. First, short-term debt shows stronger positive associations with income-increasing EM than those documented in developed markets, confirming that refinancing pressure intensifies when financing alternatives are constrained. Second, bank debt demonstrates positive rather than negative associations with EM, contradicting the financial intermediation theory's monitoring predictions. This reversal occurs in bank-dominated systems where relationship preservation may override strict oversight. Third, substantial temporal persistence in EM indicates that weak enforcement enables more entrenched manipulation patterns. These results demonstrate that debt-earnings management relationships are institutionally contingent. Debt covenant theory's refinancing mechanism amplifies underfinancing constraints; financial intermediation theory's bank monitoring predictions require competitive banking markets; and information economics' temporal dynamics strengthen under weak enforcement. This specifies boundary conditions for theories developed in developed markets and shows that these mechanisms operate differently across institutional contexts.

4.3.4 Control variables. Regarding control variables, firm profitability (ROA) exhibits varying effects across specifications, consistent with its dual role in EM incentives. It shows negative associations with the absolute magnitude of DA (coefficient: −0.118, $p < 0.05$), suggesting that more profitable firms generally engage in less aggressive EM. However, ROA demonstrates positive associations with income-increasing accruals (coefficient: 0.165, $p < 0.05$) and negative associations with income-decreasing accruals (coefficient: −0.346, $p < 0.01$). These patterns suggest that profitability influences both the direction and magnitude of EM decisions, with more profitable firms more likely to engage in income-increasing manipulation when they do manage earnings, possibly to meet or beat analyst forecasts or maintain performance trends.

Firm size demonstrates mixed effects across specifications, generally showing positive associations with income-increasing EM practices (coefficient: 0.0409, $p < 0.01$ in model M1). This finding suggests that larger firms possess greater flexibility in their financial reporting choices, potentially due to more complex operations that provide additional opportunities for discretionary accounting decisions. The positive association contrasts with the political cost hypothesis but may reflect that in Vietnam's institutional environment, larger firms face less effective monitoring than in developed markets.

5. Conclusion and implications

This study examines how debt maturity and source shape EM in Vietnam's bank-dominated economy. Testing whether developed-market theories require modification for emerging contexts, we find that short-term debt strongly increases income-increasing EM, long-term debt increases income-decreasing manipulation, bank debt increases rather than decreases EM and EM shows significant temporal persistence. The H3 rejection reveals that financial intermediation theory's bank monitoring advantages do not apply universally. In bank-dominated systems where relationship preservation and concentrated lending predominate, bank debt increases rather than constrains EM – a fundamental reversal requiring theoretical refinement.

Our contributions refine existing theories by specifying institutional boundary conditions. First, debt characteristics create heterogeneous monitoring environments – debt covenant theory requires refinement to account for how financing constraints amplify refinancing pressure. Second, bank monitoring effectiveness reverses in bank-dominated systems – financial intermediation theory's predictions require competitive markets and profit-maximizing banks. Third, temporal persistence strengthens under weak enforcement – information economics must

account for the institutional context in explaining dynamic reporting patterns. These results demonstrate that debt-earnings management relationships are institutionally contingent rather than universal. This evidence shows that theories developed in developed markets require explicit modifications for emerging market contexts, specifying the boundary conditions under which core mechanisms operate differently across institutional environments.

The findings carry implications for multiple stakeholders. Managers should recognize that heavy short-term debt reliance creates income-increasing EM incentives and should not assume that bank relationships automatically improve reporting quality in bank-dominated contexts. Investors should exercise caution when interpreting financial statements of firms with high short-term debt or concentrated bank relationships, placing greater weight on cash flows. Policymakers should consider developing alternative financing channels, strengthening enforcement mechanisms and incorporating borrower earnings quality into bank supervision frameworks.

The study has several limitations. First, its single-country focus constrains the generalizability of findings, although Vietnam's institutional characteristics resemble those of many emerging markets. Second, data constraints prevent the analysis of real EM, restricting the scope to accrual-based measures. Third, the one-period lag specification captures only short-term persistence, leaving multi-period dynamics unobserved. Finally, while the rejection of H3 is attributed to relationship preservation, the underlying mechanisms cannot be directly tested with the available data. Future research could address these limitations through comparative emerging market studies, analysis of real EM where data permit, longer lag structures for extended temporal dynamics, bank ownership and political connection data to test mechanisms, and examination of performance implications to clarify welfare effects.

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Supplementary material

The supplementary material for this article can be found online.

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