The Moderating Role of Corporate Governance Mechanism on the Relationship between Corporate Financing and Earnings Management: Evidence from Bangladesh

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Abstract: This study applies accrual and real earnings management methodologies to a promising economy, intending to evaluate the impact of corporate financing (i.e., external and internal) on earnings management and the moderating role of the corporate governance mechanism on this connection. The empirical study analyzed data from the annual reports of 118 publicly traded companies across 13 categories of non-financial organizations in Bangladesh from 2011 to 2021. Initially, the study used an ordinary least square (OLS) regression model. After that, for a more thorough examination of potential heterogeneities and endogeneities within the industry, the study employed a random-effects model and a generalized method of moments (GMMs) model. Earnings management is shown to be lower when external financing is high compared to when it is low. External financing has a statistically significant negative relationship with accrual and real earning management. There is no substantial impact of internal financing on earnings management. Corporate governance mechanism significantly negatively impacts earnings management. However, corporate governance mechanisms and external financing jointly reduce earnings management. Internal financing positively impacts real earnings management in highly competitive industries, but corporate financing does not affect earnings management in low-competitive industries. This paper contributes new evidence to the research by addressing the moderating role of the corporate governance mechanism on the relationship between corporate financing and earnings management.

Keywords: External financing, Internal financing, Earnings management, Corporate governance mechanism, Non-financial organization, Bangladesh.

JEL classification: F34, G30, G31, M41, M 48.

1. INTRODUCTION

The relationship between corporate financing and earnings management is complex and can vary depending on the specific context and circumstances of a company. Financial markets around the world have become more accessible than ever before. And yet every country is different, with its own set of financial, accounting, legal and fiscal systems, and its own cultural norms (Zhang et al., 2020). Therefore, financings patterns also different. If funds become available in the market then companies can easily raise desired capital. Extreme competition sometimes creates problems getting appropriate funds from the capital market (Balakrishnan & Cohen, 2009). Due to some other issues like; political instability, climate changes, medical emergency, natural disaster, economic instability sometimes company face the challenges of raising appropriate funds. Therefore, it is likely that firms may involve with unethical practice to attract the stakeholders for getting funding facilities. One crucial corporate malpractice is earnings management (EM). Companies with strong internal financing might face external pressures from investors, analysts, or the market to meet certain earnings targets (Suryandari et al., 2019). Studies also demonstrate that external capital markets are highly susceptible to information asymmetry, while internal financing is not. Given that earnings information influences market perceptions of firms' quality, firms that rely on external financing should have incentives to manage earnings to improve their financing conditions. Firms also make accounting information-based contracts with bond holders (debt covenants) when they issue public debt, and those issuing bonds are likely to manage their reported earnings to avoid violating debt covenants (Tran & Ashraf, 2018). These facts naturally give rise to the prediction that firms turning to corporate financing engage in earnings management. Manipulation of earnings is an intentional mechanism instigated by managers of organizations to realize financial benefits from the commercial center (Schipper, 1989). Sometimes executives take part in unscrupulous earnings treatment for their benefit (Bergstresser & Philippon, 2006) and to generate some expected

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affluence of the organization (Degeorge et al., 1999). Many factors may trigger the motives of managers to involve with earnings management. Corporate financing (CF) patterns reveal wide variation in international data settings among the various factors potentially associated with earnings management. The development of financial markets, which differs significantly across countries, affects the availability of external financing considerably. Meanwhile, internal financing comprises a significant portion of mature companies' financing, and the firms rely heavily on internal financing may likely to less involve earnings management (Deangelo et al., 2006). Existing literature regarding the association between corporate financing and earnings management seems to have many limitations. First of all, though partial study prevails on CF_EM nexus but no study has been conducted on CF-to-EM relationship in Bangladesh. Secondly, so far our knowledge goes very few studies consider internal financing in CF-EM nexus (e.g., Mindzak & Zeng, 2018). Fewer studies nevertheless have been conducted on the relationship between external financing and earnings management (e.g., Zhang et al., 2020; Fields et al.,2018; Alzoubi,2018; Wang et al., 2013; Gajdosikova et al., 2022; Trung et al., 2020; Bui et al., 2022; Hoang & Phung, 2019; Ghosh & Moon, 2010). The present study therefore extends the existing body of literature by offering new evidence about the relationship between corporate financing and earning management in an emerging economy has recently undergone substantial governance and regulatory transformations, namely Bangladesh. To address the relationship between corporate financing and earnings management the study uses the ordinary least square (OLS) model and later on random effect and generalized method of moments (GMM) models estimations for empirical analysis. The current study has considered external-to-internal capital ratios and internal-to-external capital ratios as key independent variables consistent with Zhang et al. (2020). There are two main predictions of the study, such as; if external-to-internal capital ratio increases than earnings management will increase or decrease, on the other hand, if internal to external capital increase than earnings management will also increase or decrease. This study will strengthen the findings of Mindzak & Zeng (2018), who consider the association between internal financing and earnings management under a pyramidal structure based on USA-listed firms. Study also fortify the recent study of Zhang et al. (2020) and Bui et al. (2022) who only consider external financing in corporate financing and earning management study but current study considered internal and external financing.

The main purpose of this study is to investigate the relationship between corporate financing and earnings handling in an emerging economy. Initially, the study examines the association between corporate financing (i.e., Internal and External financing) and earnings management. Secondly, the study examines the moderating effect of corporate governance mechanism on the CF-EM connection. Strong governance measures in a company may alter the mindset of managers who are not engaged in opportunistic and advantageous earnings management for their own benefit (Almasarwah, 2015). Poor governance procedures, on the other side, may foster fraud and unethical corporate activity (e.g., Leventis & Mitropoulos, 2012). To address moderating affects, following Al-Haddad & Whittington (2019) this study measures corporate governance index (CGI) by summarizing the individual score of corporate governance attributes. Additionally, to check the robustness of the finding, study uses alternative dependent and independent variables. Empirical findings shows that earnings management is shown to be lower when external financing is high compared to when it is low. External financing has a statistically significant negative relationship with accrual and real earning management. There is no substantial impact of internal financing on earnings management. Corporate governance mechanism significantly negatively impacts earnings management. However, corporate governance mechanisms and external financing jointly reduce earnings management. This study is important for the economy of Bangladesh for the following reasons; Bangladesh presents an opportune context for investigating the connection between corporate financing and earnings management, as well as the potential moderating influence of corporate governance mechanisms on this relationship. This assertion is based on four key factors. First, the economic landscape of Bangladesh is distinct from other developing nations, as it serves as a manufacturing hub for several prominent corporations, including Nike, Adidas, and Marico (Elahi, 2021). Notably, Bangladesh exhibits unique characteristics compared to other developing countries, such as lower wages in any given occupation relative to Thailand. Moreover, Bangladesh surpasses Laos in terms of communication infrastructure, boasting a comprehensive range of communication systems. Furthermore, Bangladesh's population exceeds that of Cambodia, presenting opportunities for leveraging this demographic advantage. In contrast, while Turkey holds a prominent position in the footwear industry, Bangladesh surpasses it due to the comparatively lower labour costs prevalent in the latter (Elahi, 2021). Additionally, current statistical data reveals that Bangladesh holds the 39th position globally in nominal terms and the 30th position in terms of purchasing power parity (PPP). Bangladesh is classified as one of the "next eleven (N-11)" emerging economies and a frontier market, as noted by Riaz et al. (2016). According to the Economy of Bangladesh (2020), Bangladesh's economy exhibited a noteworthy real GDP annual growth rate of 7.3% from January to April 2019, ranking seventh globally.

Second, regulatory agencies' activities are frequently deemed significant by investors. The efficacy of regulatory agencies can compel industries to adhere to established guidelines, thereby mitigating instances of fraudulent conduct. Inconsistencies have been identified within the regulatory agency framework in recent times. According to Alo's (2020) recent study, a number of companies have received assistance from two auditors in the form of falsified financial report disclosure in exchange for monetary compensation. According to Kamal and Begum's (2018) findings, recent instances of corruption at Hallmark and Basic Bank could not be effectively mitigated through corporate governance measures. The prevalence of corruption has resulted in significant turmoil throughout the historical trajectory of Bangladesh. The primary cause of this scandal can be attributed to the significant inadequacies in the corporate governance framework in Bangladesh. The downfall of the corporation was characterised to several factors, including inadequate internal control,

insufficient transparency in financial reporting, substandard audit quality, inadequate supervision of management by the board, and inadequate communication between the board and management (Kamal & Begum, 2018). The Hallmark and BASIC bank scandal can be interpreted as a typical instance of impractical anticipations, inadequate tactics, and unauthorised appropriation of funds by board members, among other factors.

Third, in 2012, Bangladesh implemented a corporate governance code that requires listed organisations to comply with its provisions (Bala, 2018). According to a report by The Wall Street Journal in 2014, companies in Bangladesh, including larger manufacturing companies, have demonstrated noncompliance with corporate governance regulations. Ferdous' (2018) research findings indicate that Bangladeshi listed companies exhibit a moderate level of compliance with the Code after a period of four years. The level of agreement is comparatively higher with the sections of the Code that bear resemblance to other established regulations.

Fourthly, over the years, firms in Bangladesh have engaged in the manipulation of earnings through real earnings management (REM) and accrual earnings management (AEM) practices. In addition, there is evidence of surpassing earnings benchmarks through marginal modifications in earnings per share (EPS) and return on assets (ROA) Bhuiyan (2015). Moreover, Arif et al. (2023) report that there is a concern in Bangladesh regarding the accuracy of business earnings reports. According to a statement made by the head of the Financial Reporting Council (FRC) to a daily newspaper, the FRC was established by the government in response to the significant manipulation of financial statements by multiple corporations (Financial Reporting Council Not Fully Ready, 2019). The significant inaccuracies result in financial losses for numerous individual investors and lending institutions that provide funds to fraudulent companies on an annual basis. According to the Curious Case of GMG Loan (2018), GMG Airlines' manipulation of earnings resulted in losses of BDT 3,000 million for several thousand stockholders and BDT 2,470 million for a state-owned commercial bank. The absence of confidence in the financial statements of publicly traded companies is a contributing factor to the withdrawal of foreign investment from the stock market (Financial Reporting Council Not Fully Ready, 2019).

Fifth, non-financial organizations in Bangladesh rely on financial organizations to secure funding. The acquisition of institutional funding is a highly competitive process, and the expansion of a corporation is contingent upon both internal and external financial resources. According to Xuezhou et al. (2021), the growth of a company may be impeded by collateral in the face of economic shocks. The belief among scholars and professionals in the business field is that a greater amount of financial resources is required for the initiation and expansion of a business (Sabet et al., 2020). To facilitate safe funding from external sources, a business is required to satisfy seven distinct benchmarks, namely creditworthiness, income and employment track record, debt-to-income ratio, collateral value, down payment magnitude, liquidity of assets, and loan duration (Hagen, 2020). In order to secure funding, it is advisable for the Bangladeshi enterprise to verify its trade license and creditworthiness by means of a credit information bureau (CIB). In addition, the Certificate of Incorporation, Memorandum of Articles, Profit and Loss Statement from the previous year (in the case of a private limited company), and the Decision to Accept Loan Resolution (for a private limited company) are scrutinized by the relevant parties. The regulatory body of Bangladesh Bank mandates that corporations maintain risk-based capital adequacy and adhere to single borrower exposure limits. Additionally, these entities are required to furnish loan information to the Credit Information Bureau (CIB), provide credit facilities, and assess credit risk through grading mechanisms. The provision of resources for corporations under foreign control is restricted to term loans in Bangladeshi Taka that are commensurate with the proportion of equity held by Bangladeshi citizens and non-foreign firms or companies, relative to the total amount of term borrowing. Additionally, a debt-equity ratio of 50:50 is mandated. The act of borrowing foreign currency frequently adheres to these established criteria. A debt-to-equity ratio of up to 70:30 is permissible, with the exception of certain industries such as electricity, which allows for an 80:20 ratio for foreign currency borrowing. Hence, it is likely that companies may engage in unethical conduct in order to conform to funding requirements and regulatory agency directives.

The remaining parts of the study are laid down in the following format: The literature review and hypothesis development have shown in section 2. Research methodology is presented in Section 3 which includes the selection of samples, the measurement of variables, and the building of empirical models. In section 4 demonstrates the regression results and discussion, such as; descriptive statistics, a multivariate analysis, and the primary findings. The additional analyses and robustness checks are presented in Section 5. Sensitivity analysis demonstrates in section 6. Finally chapter summary have been shown in Section 7.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. External Financing and Earnings Management

When a firm obtains financing from a source outside of its operations, it is referred to as external financing. This type of financing includes equity financing, which involves raising capital through selling company shares, and debt financing, which involves borrowing money from external lenders. According to Pope (2003), prior research has indicated that an organisation's financial reporting can be influenced by external finance. Furthermore, a considerable variation exists in financial reporting among enterprises that rely on external finance. There is a divergence of opinions regarding the practice of financial report manipulation by companies to obtain external financing. Previous research has presented two perspectives on this matter. Firstly, it has been shown that enterprises seeking external funding tend to prioritise the quality of their reporting (Tan et al., 2014), resulting in a decrease in earnings management. Another perspective argues that by manipulating earnings, a corporation can entice stakeholders to increase essential funds. The first perspective is supported by signalling theory, which suggests that in a competitive market, information asymmetry can arise. Consequently, companies must provide transparent information

to effectively signal quality to stakeholders (Taj, 2016; Connelly et al., 2011). Following the body of research on signalling theory, empirical evidence also indicates that increased transparency in financial reporting positively impacts the possibility of securing additional money while decreasing the likelihood of engaging in earnings management (Hunton et al., 2006).

An alternative perspective posits that certain organisations engage in the manipulation of financial information as a means to signal attractiveness to stakeholders and secure financing from the capital market. This phenomenon is particularly prevalent in industries characterised by intense competition and a lack of effective corporate governance structures (Lakshmana & Yang, 2014). In addition, it is worth noting that capital obtained from external financial markets is susceptible to information asymmetry, as highlighted by Zhang et al. (2020). Hence, corporations must give investors attractive financial information to secure adequate and suitable capital. Moreover, researchers have employed signalling theory to illustrate that by manipulating financial facts, some companies attempt to convey to the market that their current financial state is stable and will exhibit improvement in the future (Rotemberg & Scharfstein, 1990). Moreover, scholarly studies have demonstrated that firms strategically manipulate their earnings and inflate their stock prices in order to secure funding at a more favourable rate (Erickson & Wang, 1999). The existing body of empirical research demonstrates a varied and multifaceted association between external finance and the practice of earnings management. In a study by Zhang et al. (2020), a dataset of 75,790 observations from 12,874 firms across 43 countries was used to examine the relationship between accrual-based and real earnings management and firms' dependence on external financing. The study's findings indicate a positive association between accrual-based and real earnings management and firms' reliance on external financing. According to a study by Bui et al. (2022), an analysis of 494 non-financial enterprises listed between 2009 and 2018 reveals a positive correlation between external financing and earnings management. This suggests that firms are motivated to engage in earnings management practices to raise external funds. The existing research on this topic is notably scarce, with a need for studies explicitly examining Bangladesh's perspective. The conclusions derived from the examination of Bangladesh may exhibit variations, as corporations in Bangladesh are required to adhere to the corporate governance requirements during the period of financial disclosure (sec.gov.bd-code-9). Otherwise, the probability of obtaining suitable financial resources becomes constrained. In order to secure funding from external sources securely, a business must meet seven specific criteria that serve as indicators for stakeholders. These benchmarks include creditworthiness, track record of income and employment, debt-to-income ratio, collateral value, magnitude of down payment, liquidity of assets, and loan duration (Hagen, 2020). Hence, it is imperative to delve deeper into comprehending the correlation between external funding and earnings management. Thus we propose following hypothesis that:

H1: Firms involves more on external financing are less likely to involve with earnings management.

2.2. Corporate Internal Financing and Earnings Management

The relationship between internal financing and earnings management is a subject of interest in the field of finance and accounting. While it can vary depending on the specific context and circumstances of a company, there are several key observations and findings from existing research. Companies with strong internal financing capabilities, such as high levels of retained earnings or positive cash flows, may have less pressure to manipulate earnings to meet short-term financial targets or obtain external financing. Having sufficient internal funds can reduce the need to resort to aggressive earnings management practices (Aburisheh et al., 2022). However, internal financing can help companies overcome financial constraints and reduce their dependence on external capital sources (Linck et al., 2010). This can lead to a more stable financial structure, reducing the incentive for earnings management to maintain access to external funding. Previous research also pointed out that earnings management can be influenced by managerial incentives (Tsitinidis & Duru, 2013). In certain cases, managers might manipulate earnings to increase bonuses or stock-based compensation. When internal financing is available, it might mitigate the need for such earnings manipulation, as managers are not as pressured to artificially boost earnings. Moreover, even companies with strong internal financing might face external pressures from investors, analysts, or the market to meet certain earnings targets (Suryandari et al., 2019). In such cases, there could be an incentive to engage in earnings management, despite having sufficient internal funds. Additionally, companies with a long-term orientation may prioritize internal financing and avoid aggressive earnings management to build sustainable growth. In contrast, firms with a short-term focus might engage in earnings management to achieve immediate financial goals, regardless of their internal financing position. Pecking order theory suggests that firms prefer internal funds to finance their investment opportunities rather than external financing (Myers & Majluf, 1984). This theory implies that market imperfection (information asymmetry) imposes higher costs of capital on firms that rely on external financing. Most of the time, the organizations resort to internal sources of finance for the purpose of meeting their short term financial needs. This is due to the ease of availability of funds and least involvement of cost. Internal sources of finance are trade credit, advance from customers, retained profits, undistributed dividend, depreciation charged on the fixed assets etc. Research also states that external capital markets are highly susceptible to information asymmetry, while internal financing is not (Tran & Ashraf, 2018). Given that earnings information influences market perceptions of firms' quality, firms that rely on external financing should have incentives to manage earnings to improve their financing conditions. Therefore, firms involves internal financing may not manipulate reported earnings. Based on these clarifications, we propose following hypothesis:

H2: Firms involves more on internal financing are less likely to involve with earnings management.

2.3. Corporate Governance (CG) and Earnings Management (EM) Nexus: The Moderating Effect of CG on CF-EM Connection

The corporate Governance (CG) system may effectively manage the earnings management (EM) influencing elements, such as external financing, internal financing and enhanced financial disclosures. Governance frameworks relate to the collection of rules, regulations, and guidelines for various business actors to make choices about company affairs. Strong governance measures in a company may alter the mindset of managers who are not engaged in opportunistic and advantageous earnings management for their own benefit (Almasarwah, 2015). Managers' participation in earnings management for personal benefit is referred to as opportunistic earnings management, while satisfying investors' incentives is referred to as beneficial earnings management (Jiraporn et al., 2006). Poor governance procedures, on the other side, may foster fraud and unethical corporate activity (e.g., Leventis & Mitropoulos, 2012). Regarding the CG-EM nexus, previous research has shown divergent conclusions. For instance, Man & Wong (2013) illustrates negative associations; in contrast, Ali Shah et al. (2009) revealed a favorable link between CG and EM. Moreover, a UK research demonstrates that CG is generally unrelated to EM (Farooque et al., 2017). Concerning the expected moderation effect of CG mechanisms on the CF-EM nexus, there is no evidence on such an investigation. Our final objective is, therefore, to expand the existing body of studies by remarkably investigating how corporate compliance with good CG arrangements can affect the CF-EM nexus in the context of emerging economies. Therefore this study proposes following hypothesis:

H3: Firms comply with corporate governance guidelines and financing from internal or external sources are less likely to involve with earnings manipulation.

3. METHODOLOGY OF THE STUDY

3.1. Sample Selection & Data Collection

The main focus of this investigation is on 118 manufacturing businesses in Bangladesh that are registered and fit into one of thirteen industries. Our research didn't include financial institutions because they do things differently and have different rules. This study is based mainly on secondary data; it uses annual reports to collect information from 2011 to 2021. The data collection has been conducted using "purposeful sampling." Out of the years from 2011 to 2021, this one was chosen because of how well the information in the annual report fit together. This study looked at 2135 firm-year observations but excluded 837 observations due to insufficient evidence. The empirical investigation of 118 businesses across thirteen sectors (143 industry years) has been fixed. The study further divided the sample into highly competitive and weakly competitive industries, following the guidelines established by the Department of Justice (DJ) and the Federal Trade Commission (FTC) of the United States (United States, Department of Justice & Federal Trade Commission, 1997). Again, all of the information was taken by hand from the annual reports so that the analysis would be reliable and accurate.

3.2. Accrual Earnings Management (Dependent Variable)

Earnings management was evaluated in two stages, first in terms of discretionary and non-discretionary accruals, and subsequently as a whole. Accruals have an impact on a firm's net income as reported on the income statement, irrespective of whether there has been any actual exchange of cash. Non-cash assets and liabilities in accruals influence the balance sheet. In a company's financial accounts, income from a service completed for a client but not yet paid for is reported as an accrual. Even if the firm hasn't been paid for all its services, its financial statements will correctly represent its real financial status. Discretionary accruals serve to demonstrate the delineation of discretionary expenses. The interest accrued on a company's savings account, but not yet paid out, is an example of an accrual that would appear on the company's financial statements. Non-discretionary accruals refer to the pre-recording of necessary expenses or assets in accounting systems that have not yet been realized. In simpler terms, an accrual represents an essential expense or asset that has been documented but not yet recognized (Uddin, 2022; Uddin, 2023). Payroll taxes are a prime instance of this kind of accruals ("Financial Dictionary - Non-discretionary accrual," n.d.). In addition, it is common for a company to record certain expenses in their accounting statement despite not having incurred them yet. These expenses may include anticipated costs for research and development or gratuities (Chang et al., 2019). The empirical substitution of earnings management is investigated in the research conducted by Uddin (2022), wherein discretionary accruals are examined. Consequently, the Modified Jones model is employed as a surrogate for earnings management, as per the findings of Dechow et al. (1995). The presented framework is structured in the following manner:

$$\mathrm{TAC_{it}} = \mathrm{NOPI_{it}} - \mathrm{CFO_{it}}$$

The aforementioned equation illustrates that the total accruals are equivalent to the net operating income subtracted from the cash flow derived from operating activities. Yet, 'i, t' stands for firm (i) and t for year.

Non-discretionary accruals (NDAC) as:

$$\frac{\mathbf{TAC_{i,t}}}{\mathbf{TA_{i,t-1}}} = \beta_1\left(\frac{1}{\mathbf{TA_{it-1}}}\right) + \beta_2\left(\frac{\mathbf{\Delta REV_{it}} - \mathbf{\Delta REC_{it}}}{\mathbf{TA_{it-1}}}\right) + \beta_3\left(\frac{\mathbf{PPE_{it-1}}}{\mathbf{TA_{it-1}}}\right) + \varepsilon_{it}$$

The Total Accruals (TAC) can be calculated by subtracting the operating cash flows from the income before the specific items.

The alteration in net sales revenues, denoted as ΔREV, can be calculated as the disparity between the sales figures in year t and the sales figures in year t−1. The acronym ΔREC denotes the alteration in the amount of money owed to a company by its customers, commonly referred to as receivables. The valuation of property, plant, and equipment (PPE) was conducted by factoring in the standard depreciation expenses. The acronym T.A. denotes Total Asset, while the symbol εit denotes arbitrary error.

Discretionary accruals (DAC) define as follows:

$$DAC_{it} = TAC_{it} - NDAC_{it}$$

The formula for calculating Discretionary Accrual (DAC) involves the subtraction of non-discretionary accruals from total accruals.

3.3. Real Earnings Management (REM) Measurement (Dependent Variable)

According to Roy Chowdhury (2006), REM is "deviations from usual company operations. Previous studies have classified REM procedures as either "operational," "investment," or "financing" (Sellami, 2016). Increasing sales, decreasing discretionary expenses, and increasing output are all examples of ways that operational activity can be manipulated to reduce costs and maximize profits (Roychowdhury, 2006). Company can manipulate sales of long-term assets and investments in new technologies to influence profits (Gunny, 2010). Financing choices also affect earnings per share via stock repurchases and stock options (Burnett et al., 2012). Managers influence sales by offering preferential payment plans and deeper discounts (Roychowdhury, 2006). This tactic enhances sales volumes temporarily, which increases profits but decreases cash flow because of the sales surplus (Sun et al., 2014). The method proposed by Roychowdhury (2006) is widely used in the literature to quantify abnormal cash flow from operations (a proxy for sales manipulation) by year and industry. Therefore, our research uses a set of equations to determine real-earnings management. The first model is used to compute abnormal cash flow from operating activities. The first model is as follows:

$$\frac{CFO_{it}}{ASSET_{it-1}} = \beta_1\left(\frac{1}{ASSET_{it-1}}\right) + \beta_2\left(\frac{SALES_{it}}{ASSET_{it-1}}\right) + \beta_3\left(\frac{\Delta SALES_{it}}{ASSET_{it-1}}\right) + \varepsilon_{it}$$

The acronym CFO represents net operating cash flow, while the variable "asset" represents the value of total assets lagged by a single period. Additionally, the symbol ΔSALES denotes the fluctuations in overall sales.

Managers who use REM may, for example, redirect funds from regular operations to more unusual ones in order to artificially inflate profits. Graham et al. (2005) found that when managers expect to fall short of profit goals, they may take precautionary actions by reducing discretionary spending. Profits during the period could be improved by cutting these costs. Empirical evidence was established by Roychowdhury (2006) that managers manipulate profitability by allocating cash to research and development(R & D), selling and administrative expenses (SG & A), and advertising in order to hide losses. The study notes that although these expenditures do not directly affect sales, they may be decreased by businesses in order to affect actual profitability. The following is a summary by Roychowdhury (2006), who established a widely-used model for measuring abnormal discretionary spending (DISC) across years and industries: The study also measured abnormal discretionary expenses as per following model;

$$\frac{DISCexpenses_{it}}{ASSET_{it-1}} = \beta_1\left(\frac{1}{ASSET_{it-1}}\right) + \beta_2\left(\frac{SALES_{it-1}}{ASSET_{it-1}}\right) + \varepsilon_{it}$$

Where, DISC refers to selling and administrative costs as well as R&D costs in the profit and loss statement. The difference between the projected value of the discretionary cost and the amount of other in-service item charges is then used to estimate an atypical discretionary expense.

When output increases beyond what is needed by consumers, overproduction occurs. Productions overruns are a common revenue management strategy among manufacturers (Tabassum et al., 2021). Managers can reduce product costs by using this strategy to allocate fixed production overhead charges across a larger number of manufactured units (Roychowdhury, 2006). Profitability improves if and only if the cost of goods sold decreases. According to Manowan and Lin (2013) managers that employ this tactic make it challenging for other users to access accounting information. Overproduction was discovered to be employed by Pakistani manufacturers to boost real earnings management (Tabassum et al., 2021). As a result, these businesses' future financial performance will suffer. Production costs are defined by sales and inventory swings, according to Roychowdhury (2006). He created the following methodology to identify production cost manipulation (a proxy for overproduction):

$$\frac{PROD_{it}}{ASSET_{it-1}} = \beta_1\left(\frac{1}{ASSET_{it-1}}\right) + \beta_2\left(\frac{SALES_{it}}{ASSET_{it-1}}\right) + \beta_3\left(\frac{\Delta SALES_{it}}{ASSET_{it-1}}\right) + \beta_4\left(\frac{\Delta SALES_{it-1}}{ASSET_{it-1}}\right) + \varepsilon_{it}$$

In above model PROD denotes the cost of goods sold and adjustments to inventory levels. The difference between the assessed assessment of manufacturing costs from the cost of products sold and the adjustment in stock for each company is then used to estimate abnormal production costs. Based on the aforementioned three models, a comprehensive metric for real earnings management is computed for each company.

Real Earnings Management (REM) =

$$\sum \frac{CFO_{it}}{ASSET_{it-1}} + \frac{PROD_{it}}{ASSET_{it-1}} + \frac{DISCexpenses_{it}}{ASSET_{it-1}}$$

The study shall use a series of statistical tests to examine whether any relationship could be detected in either the cross- sectional or longitudinal data over the sample periods. Various statistical tools like SPSS (22) and STATA (14) uses to carry out empirical studies.

3.4. Corporate Financing Measures (Independent Variable)

This study generates corporate financing variables, such as external-to-internal capital ratios and Internal-to-external capital ratios, in accordance with (Zhang et al., 2020). The variable definitions are given in Table (1).

Internal-Financing: Internal-to-external capital ratios:

$$\frac{\text{Retained earnings}}{\text{Total long} - \text{term interest} - \text{bearing debt, current long} - \text{term debt, other short} - \text{term debt, and capital from common stocks}}$$

External financing: External-to-internal capital ratios

$$\frac{\text{The total long – term interest – bearing debt, current long – term debt, other short – term debt, and capital from common stocks}}{\text{Retained earnings}}$$

3.5. Research Model

The data has been analysed and hypotheses have been tested through the utilisation of multivariate linear regression via the ordinary least squares method. The aforementioned findings align with prior research conducted on external financing and earnings management, as evidenced by studies such as Zhang et al., 2020. When considering linear relationships and normally distributed data, the ordinary least squares (OLS) model is commonly employed as an estimation method, as noted by Gujarati (2003) and Born and Breitung (2016). According to Wagner's (2005) assertion, the Ordinary Least Squares (OLS) estimation method is a valuable tool, given that certain conditions are satisfied. These conditions include the assumption that the errors are identically and independently distributed, the hypothetical homoscedasticity of the errors, and the fulfilment of the conventional linear regression assumptions. In order to conduct a more thorough examination of potential heterogeneities and endogeneities within the industry, we employed both a random-effects model and a generalised method of moments (GMMs) model. The main model can be described in the following terms.

$$EM_{it} = \beta_0 + \beta_1(\text{INT}_{\text{FIN}_{it}}) + \beta_2(\text{EXT}_{\text{FIN}_{it}}) + \beta_3(LD_{it}) + \beta_4(LEV_{it}) + \beta_5(ROA_{it}) + \beta_6(MBR_{it}) + \beta_7(TQ_{it}) + \beta_8(DSTR_{it}) + \beta_9(SIZE_{it}) + \beta_{10}(AOC_{it}) + \beta_{11}(LTAC_{it}) \beta_{13}(\text{Industryfixedeffects}_{it}) + \varepsilon_{it} \quad \ldots. (1)$$

The present study examines the aforementioned hypothesis utilizing the equations. Equation one (1) is use to test the hypothesis one (1) and two (2). The primary independent variables in the model are corporate external financing and internal financing, while the remaining variables serve as control variables. As per the existing literature, this study employs a range of control variables. Prior studies have presented varying findings regarding the correlation between the magnitude of a business and the practice of earnings management (Sellami & Slimi, 2016). The study conducted by Bouaziz et al. (2020) reveals that managers of enterprises with substantial assets tend to exert control over accounting processes and operational systems during the recording and reporting phases.

Table 1. Definitions of the variables.

Variable	Definition
Accrual-based earnings management:	
DACC	The absolute value of discretionary accruals measured by Modified Jones Model Total accruals: $\text{TAC}_{it} = \text{NOPI}_{it} - \text{CFO}_{it}$ Non-discretionary accruals (NDAC) as: $\frac{\text{TAC}_{i,t}}{\text{TA}_{i,t-1}} = \beta_1\left(\frac{1}{\text{TA}_{it-1}}\right) + \beta_2\left(\frac{\Delta\text{REV}_{it} - \Delta\text{REC}_{it}}{\text{TA}_{it-1}}\right) + \beta_3\left(\frac{\text{PPE}_{it-1}}{\text{TA}_{it-1}}\right) + \varepsilon_{it}$ Discretionary accruals (DAC) define as follows: $\text{DAC}_{it} = \text{TAC}_{it} - \text{NDAC}_{it}$
Real-Earnings Management (REM):	
R_CFO (Proxy-01)	Abnormal cash flow from operations $\frac{CFO_{it}}{ASSET_{it-1}} = \beta_1\left(\frac{1}{ASSET_{it-1}}\right) + \beta_2\left(\frac{SALES_{it}}{ASSET_{it-1}}\right) + \beta_3\left(\frac{\Delta SALES_{it}}{ASSET_{it-1}}\right) + \varepsilon_{it}$
R_PROD(Proxy-02)	Abnormal production costs: $\frac{PROD_{it}}{ASSET_{it-1}} = \beta_1\left(\frac{1}{ASSET_{it-1}}\right) + \beta_2\left(\frac{SALES_{it}}{ASSET_{it-1}}\right) + \beta_3\left(\frac{\Delta SALES_{it}}{ASSET_{it-1}}\right) + \beta_4\left(\frac{\Delta SALES_{it-1}}{ASSET_{it-1}}\right) + \varepsilon_{it}$

R_DISC(Proxy-03)	Abnormal discretionary expenses: $\frac{DISCexpenses_{it}}{ASSET_{it-1}} = \beta_1\left(\frac{1}{ASSET_{it-1}}\right) + \beta_2\left(\frac{SALES_{it-1}}{ASSET_{it-1}}\right) + \varepsilon_{it}$
Real-Earnings management(REM)	We measure real-earnings management by combining three proxies. REM $= \sum \frac{CFO_{it}}{ASSET_{it-1}} + \frac{PROD_{it}}{ASSET_{it-1}} + \frac{DISCexpenses_{it}}{ASSET_{it-1}}$
Independent Variable:	
Internal-Financing (INT_FIN)	Retained earnings divided by Total long-term interest-bearing debt, current long-term debt, other short-term debt, and capital from common stocks
External financing (EXT_FIN)	Total long-term interest-bearing debt, current long-term debt, other short-term debt, and capital from common stocks divided by retained earnings
Moderator variable (CGI)	Corporate governance mechanism measured by summarizing the individual scores of governance attributes, such as; Board size, board meeting, no. of female director, independent director, audit committee member, audit committee meeting, Managerial ownership, institutional ownership, foreign ownership, local individual ownership, government ownership.
Independent variables (for robustness test)	Independent variables (for robustness test)
INT_FIN/Asset	Retained earnings divided by Total Asset
EXT_FIN/ Asset	Total long-term interest-bearing debt, current long-term debt, other short-term debt, and capital from common stocks divided by total assets
Control variables	
LD (Loss Dummy)	If companies incur loss in a year we denoted it by 1 and 0 otherwise.
Leverage (LEV)	The ratio of total shareholders' equity to total assets
Return on Asset (ROA)	We measure ROA by using the formula, such as, Net income / Total asset
Market to Book Ratio (MBR)	Market value divided by the book value of shareholders' equity
Tobin's Q (TQ)	Tobin's q is the market value of equity plus the book value of total debt divided by the book value of asset
Debt maturity structure (DSTR)	Total current liabilities to total liabilities
Firm Size (SIZE)	Firm Size is calculated by taking the natural log of total sales
Average Operating Cycle (AOC)	We use the following formula $\left(\frac{\text{Average account receivable}}{\text{Sales}/360} + \frac{\text{Average Inventory}}{\text{Cost of Good sold}/360}\right) - \frac{\text{Average account Payable}}{\text{Purchase}/360}$
Lagged total Accruals (LTAC)	Lagged total accruals.

The research consistently revealed a positive correlation between the size of a company and the practice of earnings management (e.g., Barton & Simko, 2002). Prior studies have indicated that large corporations frequently possess advanced internal control mechanisms and exhibit lower susceptibility to engaging in earnings manipulation (Chandra & Wimelda, 2018; Zouari et al., 2012). Furthermore, several additional variables are utilized, the empirical evidence on which has yielded ambiguous results. Various financial metrics such as firm financial leverage, return on assets, market to book ratio, average operating cycle, loss dummy, lagging total accruals, and Tobin's Q have been identified as relevant indicators in the literature (Muttakin et al., 2017; Chandra & Wimelda,2018; Kordestani & Mohammadi, 2016; Lemma et al., 2018; Alzoubi, 2018; Laksmana& Yang, 2014; Uddin, 2022). The variable is explained in Table (1), followed by a depiction of the data and presentation of descriptive statistics in the subsequent section. The present study utilizes two distinct methods of earnings management, namely accrual and real-earnings management. It is worth noting that a business entity may opt to employ either accrual or real-earnings management techniques, as previously noted by Zang (2012). According to Laksmana and Yang (2014), managers have the option to employ either one or both methods of earnings management in order to manipulate their earnings, depending on their expectations for revenue. According to Fields et al. (2001), it is inadequate to rely solely on one empirical method to accurately reflect the comprehensive impacts of earnings management.

4. EMPIRICAL FINDINGS AND DISCUSSION

4.1. Descriptive Statistics

Table **2** presents an overview of the dependent and independent variables. The overall number of manufacturing companies observed in the research is 118 (13 industries 11 years = 143 industry years and 1298 firm years). The average absolute value of discretionary accruals is 0.39 while the average absolute value of real-earnings management is 0.42.

Table 2. Descriptive statistics.

Variable	OBS	Mean	Stand. dev	Min	Max
AEM (DACC)	1298	0.391	0.681	0	1.976
REM	1298	0.424	0.293	0	2.005
EXT_FIN	1298	2.514	1.431	-5.135	10.172
INT_FIN	1298	1.237	2.440	-2.867	3.764
CGI	1298	8.374	0.944	6	11
LEV	1298	0.108	0.133	0	2.183
ROA	1298	0.067	0.66	-2.969	23.542
MBR	1298	0.355	0.271	-4.11	0.985
TQ	1298	0.48	0.38	-3.571	9.865
DSTR	1298	0.34	0.211	0.003	1.599
SIZE	1298	7.049	1.662	2.185	11.865
LTAC	1298	-2.481	2.52	-3.078	0.852
AOC	1298	-1.828	2.768	-4.03	0.713
LD	1298	0.06	0.237	0	1

Note: The tabular representation provides a comprehensive overview of the variables utilised for the analysis within the sample period spanning from 2011 to 2021. Table **1** displays the explanations for all variables.

Table 3. Bivariate analyses: Correlation analyses.

VARIABLE	AEM	REM	EXT_FIN	INT_FIN	CGI	LEV	ROA	MBR	TQ	DSTR	SIZE	LTAC	AOC	LD
AEM	1.000													
REM	0.482	1.000												
EXT_FIN	-0.007	0.010	1.000											
INT_FIN	0.007	-0.007	-0.983	1.000										
CGI	-0.12	-0.21	-0.01	0.012	1.00									
LEV	-0.022	-0.082	-0.087	0.076	0.25	1.000								
ROA	-0.028	0.007	-0.013	0.013	0.00	-0.021	1.000							
MBR	0.052	0.028	-0.030	0.031	-0.01	-0.021	-0.028	1.000						
TQ	0.010	-0.008	-0.061	0.058	0.08	0.299	-0.033	0.084	1.000					
DSTR	0.109	0.247	0.006	-0.003	-0.01	-0.032	0.029	-0.025	0.046	1.000				
SIZE	-0.442	-0.283	-0.068	0.075	0.49	0.113	0.025	-0.120	0.035	0.139	1.000			
LTAC	-0.195	-0.162	0.062	-0.058	0.08	-0.053	-0.060	-0.160	-0.123	-0.039	0.230	1.000		
AOC	-0.070	-0.069	0.007	-0.006	0.01	-0.062	0.002	0.108	0.055	0.042	-0.014	-0.038	1.000	
LD	0.032	0.035	0.028	-0.043	-0.11	0.130	-0.051	0.047	0.071	-0.001	-0.177	-0.035	0.060	1.000

Note: The above table shows the correlations matrix among the observations, some variables depict positive, and some show a negative relationship.

According to Lemma et al. (2018), based on a dataset comprising 41 countries spanning the years 1995 to 2016, the mean values for discretionary accruals and real-earnings management were approximately 0.45 and 0.50, correspondingly.

Due to the temporal difference and sample size, our results are not compatible with those of Klein (2002) and Abed et al. (2012), who performed research in the United States and Muttakin et al. (2017), who conducted research in Bangladesh. In the case of accrual and real-earnings management, minimum, maximum, and standard deviation are essentially identical.

The average value of external financing (external to internal ratio) is 2.514, while the lowest and greatest values are -5.135 and 10.172 respectively, this results is consistent of Zhang et al.(2020) who finds somewhat the same result based on Denmark, Sweden, and japan sample. In addition, the mean value of internal financing (Internal financing to external financing ratio) is 1.237, with a standard deviation of 2.440; the lowest and highest values are -2.867and 3.764, respectively. These data demonstrate that on an average comparatively external financing is greater than internal financing in Bangladesh. The negative minimum value indicates that some companies incurred losses during the study period. The negative minimum value indicates that some companies incurred losses during the study period. Corporate governance index shows average value 8.37, while minimum score is 6, and maximum score is 11. Some non-financial organizations are not fully complying the corporate governance guidelines.

4.2. Bivariate Analysis

Table **3** presents the interrelationships among the dependent, independent, and control variables. In general, there exists no evidence of multicollinearity among the variables. Multicollinearity can arise when there is a significant correlation between variables, particularly if it exceeds 0.80, as noted by Almasarwah (2015), Alghamdi and Ali (2012), and Uddin (2023). The findings indicate a significant positive correlation between the utilization of accrual and real-earnings management by managers of manufacturing firms listed in Bangladesh. This suggests that these methods are employed by managers to attain their objectives. The findings show that external financing negatively correlated with accrual earnings management and positively correlated with real-earnings management. However, internal financing is positively correlated with accrual earnings management and negatively associated with real-earnings management. The utilization of univariate tests presents a limited perspective of the relationship, thus prompting researchers to employ regression analysis as a means of delving deeper into the investigation of said relationship. The validity inflation factor (VIF) has undergone independent examination, with the results presented in Table **11**.

4.3. Regression Results and Discussion

4.3.1. The relationship Between External Financing, Internal Financing and Earnings Management

Table **4** and Table **5** present different tests to examine the relationship between corporate financing and earnings management. The findings of conducting a multivariate regression analysis using an OLS estimation method, supplemented by a random-effects model and a GMM model, are presented, correcting for the impact of autocorrelation and heteroscedasticity issues. Multicollinearity should not be a severe statistical problem, as the highest variance inflation factor (VIF) is 2.66. Table IV presents the empirical finding of accrual earnings management, whereas Table V illustrates real earnings management. We run the first model to examine the impact of CF on EM using OLS regression models. This type of regression helps to mitigate the problems of autocorrelation and heteroscedasticity effects (Gujarati, 2003; Wooldridge, 2010). The findings of model 1 of Tables **4** and **5** show that corporate internal financing has no significant effect on EM.

Table 4. Regression results of Accrual earnings management: Baseline.

Variable	Model1 (Pooled OLS)	Model 2(RE)	Model 3(GMM)	Model 4(Interaction)
Intercept	0.526***(3.90)	0.076 (0.68)	0.202**(2.31)	0.054(0.36)
INT_FIN	-0.000(-0.60)	-0.000(0.21)	-0.000(-2.24)	0.000(-0.56)
EXT_FIN	-0.048**(-2.35)	-0.005*(-0.23)	-0.039**(-2.14)	0.112(1.34)
CGI	-0.057***(-3.30)	-0.086***(-4.65)	-0.051**(-2.09)	-0.091***(4.78)
INT_FIN × CGI				0.000(0.79)
EXT_FIN× CGI				-0.041*(-1.95)
LEV	0.294**(2.48)	0.275**(2.37)	0.233*(1.92)	0.149(1.23)
ROA	-0.019(-0.84)	-0.013(-0.63)	-0.019***(2.73)	-0.018(-0.82)
MBR	-0.058(-0.92)	-0.004(-0.06)	-0.056(-1.35)	-0.060(-0.96)
TQ	-0.002(-0.04)	0.004(0.11)	0.063(0.03)	0.002(0.05)
D_STAR	0.147**(1.98)	0.137*(1.69)	0.27***(2.86)	0.197***(2.63)
SIZE	-0.176***(-12.47)	-0.165***(-11.14)	-0.147***(-15.91)	-0.177***(-12.61)
LTAC	0.000(-1.17)	0.000(-0.75)	0.000***(-4.09)	0.000(-1.48)

AOC	0.000(-0.13)	0.000(-0.05)	0.000(-1.29)	0.000(-0.57)
LD	-0.082(-1.27)	-0.03(-0.46)	-0.081(-1.19)	-0.064(-1.01)
Adj. R-square	0.236	0.247	0.258	0.251
Year-effect	yes	yes	yes	yes
Industry-effect	yes	yes	yes	yes
OBS	1298	1298	1178	1298

Note: The presented table displays the outcomes of the regression analysis conducted on the relationship between corporate financing and earnings management. In statistical analysis, the levels of significance are denoted by asterisks, namely *, **, and *** for the 10%, 5%, and 1% levels, respectively. The values enclosed in brackets denote the T-value.

Table 5. Regression results of real earnings management: Baseline.

Variable	Model1 (Pooled OLS)	Model 2 (RE)	Model 3 (GMM)	Model 4 (Interaction)
Intercept	0.140**(1.00)	-0.474***(-4.11)	-0.249***(-3.32)	-0.400**(-2.53)
INT_FIN	0.000(0.98)	0.000(1.47)	0.000(0.50)	0.000(1.30)
EXT_FIN	-0.067***(-3.16)	-0.035**(-1.39)	-0.058***(-2.64)	0.096(1.11)
CGI	-0.049***(-2.78)	-0.040**(-2.13)	-0.044*(-1.85)	0.019(0.97)
INT_FIN × CGI				0.000(-0.61)
EXT_FIN × CGI				0.08(1.48)
LEV	-0.178(-1.45)	-0.198(-1.61)	-0.199*(-1.79)	-0.211(-1.67)
ROA	0.002(0.10)	0.002(0.08)	0.003(0.03)	0.003(0.12)
MBR	0.127*(1.94)	0.12*(1.76)	0.098(1.38)	0.128(1.95)
TQ	-0.101**(-2.24)	-0.118***(-2.83)	-0.130***(-8.52)	-0.100**(-2.21)
D_STAR	0.554***(7.19)	0.424***(4.95)	0.593***(6.05)	0.552***(7.06)
SIZE	0.042**(0.75)	-0.032**(-2.08)	-0.091***(-9.06)	-0.024(-1.63)
LTAC	0.000***(-3.72)	0***(-3.37)	0.000***(-2.83)	0.000***(-3.83)
AOC	0.000(-0.57)	0.000(-0.19)	0.000(0.13)	0.000(-0.75)
LD	0.005(0.07)	0.061(0.90)	0.052(0.84)	0.005(0.07)
Adj. R-square	0.199	0.211	0.222	0.202
Year-effect	yes	yes	yes	yes
Industry-effect	yes	yes	yes	yes
OBS	1298	1298	1178	1298

Note: The presented table displays the outcomes of the regression analysis conducted on the relationship between corporate financing and earnings management. In statistical analysis, the levels of significance are denoted by asterisks, namely *, **, and *** for the 10%, 5%, and 1% levels, respectively. The values enclosed in brackets denote the T-value.

However, corporate external financing (CEF) has a negative effect on EM (-0.048** & -0.067***) at the 5% and 1% level of significance, which signifies that firms engaged more in external financing are less likely to engage in unethical behaviors such as EM in Bangladesh. Results show that earnings management decreases as enterprises concentrate more on providing correct information to get appropriate funds from the capital market (Hoberg & Phillips, 2010). The results support Hypothesis 1, suggesting that firms raising more external capital than internal financing tend to disclose quality reports to augment stakeholders' attractiveness. Therefore, the study findings validate the signaling theory among the sample of Bangladeshi companies. However, this finding is inconsistent with (Zhang et al., 2020). To check whether the negative association between the main CF and EM proxy is driven by a particular category of these two independent variables separately, we regress each one of these categories on EM individually (see Table **6**).

The results suggest that both independent variables (internal financing and external financing) indicate qualitatively the same results, which aligns with the main findings of examining the CF-EM nexus. Specifically, corporate external fi-

Table 6. Regression results of Individual proxy of corporate financing and earnings management.

	Accrual Earnings Management		Real Earnings Management	
Variable	**Model 1 (Pooled OLS)**	**Model 2 (Pooled OLS)**	**Model 1 (Pooled OLS)**	**Model 2 (Pooled OLS)**
Intercept	0.502*** (3.72)	0.522*** (3.87)	0.095 (0.67)	0.138 (0.99)
INT_FIN	0.000 (-0.73)		0.000 (0.98)	
EXT_FIN		-0.049** (-2.39)		-0.067*** (-3.18)
LEV	0.291** (2.45)	0.279** (-2.36)	-0.168 (-1.36)	-0.179 (-1.46)
ROA	-0.019 (-0.84)	-0.019 (-0.87)	0.003 (0.11)	0.002 (0.10)
MBR	-0.060 (-0.96)	-0.056 (-0.89)	0.128* (1.94)	0.126* (1.93)
TQ	-0.002 (-0.04)	-0.002 (-0.04)	-0.095** (-2.10)	-0.101** (-2.24)
D_STAR	0.149** (2.01)	0.156** (2.10)	0.551*** (7.14)	0.555*** (7.22)
SIZE	-0.175*** (-12.45)	-0.173*** (-12.31)	-0.026* (-1.78)	-0.025* (-1.70)
LTAC	0.000 (-1.20)	0.000 (-1.31)	0.000*** (-3.76)	0.000*** (-3.74)
AOC	0.000 (-0.13)	0.000 (-0.07)	0.000 (-0.67)	0.000 (-0.57)
LD	-0.084 (-1.30)	-0.08 (-1.21)	0.002 (0.02)	0.004 (0.05)
Adj. R-square	0.236	0.239	0.195	0.200
Year-effect	yes	yes	yes	yes
Industry-effect	yes	yes	yes	yes
OBS	1298	1298	1298	1298

Note: The presented table displays the outcomes of the regression analysis conducted on the relationship between corporate financing and earnings management. In statistical analysis, the levels of significance are denoted by asterisks, namely *, **, and *** for the 10%, 5%, and 1% levels, respectively. The values enclosed in brackets denote the T-value.

nancing has significant and negative relationships with EM at a 5% and 1% significance level (i.e., p = -0.049**and -0.067***). This implies that our main results are robust.

Using fixed or random-effects estimations can address some statistical concerns that may not be tackled by employing OLS regression methods (Gujarati, 2003). Following Wooldridge (2010), the study employs fixed-effects and random-effects techniques to control for unobservable firm heterogeneities over time that is likely to be constant yet may affect the predictor-outcome nexus, which is probably not recognised by using the OLS estimation method. The appropriateness of using a random-effects rather than a fixed-effects estimation method was decided using the Hausman test, which confirmed that the unobserved firm-specific variables were significantly related to those of the other companies of our sample. We found that the random-effects model is more appropriate than the fixed-effects model. Based on the random-effects model (model 2 in Table **4** & **5**), CEF and

EM have a significant negative relationship (p = -0.005* & -0.035**). Results imply that the findings of running OLS methods, presented in Model 1 of Tables IV & V, are not statistically affected by firm-level heterogeneities. Results further showed that corporate external financing is more suitable for curb earnings management than internal financing.

Regarding the control variable, leverage ratio, debt maturity structure, and firm size show significant association with accrual earnings management in all the models. However, Tobin'Q, debt maturity structure, firm size, and lagged total accruals demonstrate a significant relationship with real-earnings management. Moreover, the average operating cycle (AOC) and loss dummy (LD) have no significant relationship with earnings management in the non-financial organization of Bangladesh.

4.3.2. The Moderating Effect of CG Structures on the CF-EM Nexus

To examine the moderating effect of corporate governance mechanisms on the relationship between corporate financing and earnings management, this study initially calculated the corporate governance index (CGI). The study uses the interaction of corporate financing and CG structures to get the empirical evidence for the third research hypothesis. More specifically, to determine the potential moderating effect of CG structures on the CF-EM nexus, Equation (1) is re-regressed with an inclusion of the INT_FIN × CGI and EXT_FIN× CGI in Equation 1. Results are shown in Tables IV and V; Model 4 illustrates that the corporate governance index significantly negatively affects earnings management. Corporate governance mechanism significantly negatively moderates the relationship between corporate external financing and accrual earnings management. The coefficient is -0.041*(-1.95), and the result indicates that external financing and corporate governance mechanisms jointly decrease accrual earnings management. The study further shows that CGI does not affect internal financing and earnings management connections.

5. FURTHER ANALYSIS: ALTERNATIVE DEPENDENT AND INDEPENDENT VARIABLES

5.1. Corporate Financing and Alternative Earnings Management Models (Dependent Variable)

In order to assess the strength and reliability of our results, we have additionally employed alternative metrics of dependent and independent variables. Therefore, to measure accrual earnings management, the study have used Jones model (Jones, 1991) as follows:

$$\frac{\mathrm{TAC_{i,t}}}{\mathrm{TA_{i,t-1}}} = \beta_1\left(\frac{1}{TA_{it-1}}\right) + \beta_2\left(\frac{\Delta REV_{it}}{TA_{it-1}}\right) + \beta_3\left(\frac{PPE_{it-1}}{TA_{it-1}}\right) + \varepsilon_{it}$$

The variables TAC and ΔREV represent the total accruals and change in revenue, respectively, for a given company (i) during a specific period (t). The acronym PPE refers to property, plant, and equipment. Meanwhile, TAit-1 denotes the total assets of a given company (i) at the conclusion of period (t-1). Additionally, εit represents the stochastic error. Moreover, the study uses the Caylor model, the model proposed by Caylor (2010) places emphasis on the discretionary power of managers in relation to revenue recognition, specifically with regards to accrued revenue (accounts receivable) and deferred revenue (advance from customers). Moreover, Caylor (2010) the analysis is organized into three distinct earnings objectives, referred to as benchmarks. These benchmarks include the prevention of losses, avoidance of reductions in earnings, and avoidance of negative earnings surpasses. The model is grounded on authentic business operations, specifically the facilitation of customer credit policies. It employs gross accounts receivable as opposed to net accounts receivable, as the latter may exhibit anomalous fluctuations that could potentially signify alterations in the allowance for bad debt. The present model is structured in the following manner:

$$\frac{\Delta GROSS_R \frac{A}{t}}{\mathrm{TA_{i,t-1}}} = \beta_0 + \beta_1\left(\frac{1}{TA_{it-1}}\right) + \beta_2\left(\frac{\Delta S_{it}}{TA_{it-1}}\right) + \beta_3\left(\frac{\Delta \mathrm{CFO}_{it+1}}{TA_{it-1}}\right) + \varepsilon_{it}$$

The symbol ΔGross A/Rt represents the alteration in gross accounts receivable that occurs over the course of year t. The variable denoted as TAt-1 represents the initial value of the total assets at the start of the year. On the other hand, the variable ΔS it signifies the alteration in sales that occurred during the year t. The symbol ΔCFO it+1 denote the alteration in the cash flow resulting from operations in the year following t. The study also uses three proxies of real earnings management, the models shown in table (1). Based on this alternative approach we find qualitatively the same results (see table **7**). Consistent with the main results we are observing that internal financing has no significant effects on accrual earnings management. However, internal financing impacts abnormal cash flow from operating activities and abnormal discretionary accruals positively.

Table 7. Regression results of earnings management: Alternative dependent variable.

Variable	Accrual-Earnings Management Models			Real-Earnings Management Models	
	Jones Model	Caylor (2010) Model	Abnormal production Cost (R_PROD)	Abnormal Cash flow from Operating Activities(R_CFO)	Abnormal Discretionary Accruals(R_DISC)
	Coefficient(OLS)	Coefficient(OLS)	Coefficient(OLS)	Coefficient(OLS)	Coefficient(OLS)
Intercept	0.483***(3.66)	-1.348***(-8.25)	-1.119***(-8.12)	0.244*(1.85)	-1.643***(-12.43)

INT_FIN	0.000(-0.72)	0.000(0.73)	0.000(-0.51)	0.000*(1.72)	0.000***(4.33)
EXT_FIN	-0.046**(-2.27)	-0.015*(-0.60)	-0.035*(-1.67)	-0.049**(-2.44)	-0.086***(-4.31)
LEV	0.307***(2.63)	-0.252*(-1.75)	-0.248**(-2.04)	-0.060(-0.51)	-0.165(-1.42)
ROA	-0.018(-0.83)	0.017(0.64)	0.011(0.50)	0.001(0.04)	-0.059***(-2.72)
MBR	-0.063(-1.02)	0.144*(1.88)	-0.028(-0.44)	0.129**(2.08)	-0.015(-0.24)
TQ	-0.003(-0.06)	-0.002(-0.03)	-0.020(-0.44)	-0.020(-0.46)	-0.010(-0.23)
D_STAR	0.139*(1.90)	0.210**(2.33)	0.464***(6.10)	0.319***(4.38)	0.488***(6.69)
SIZE	-0.169***(-12.24)	0.022(1.27)	0.088***(6.13)	-0.056***(-4.09)	0.142***(10.29)
LTAC	0.000*(-1.65)	0.000(1.08)	0.000**(-2.00)	0.000**(-2.02)	0.000***(-2.87)
AOC	0.000(-0.36)	0.000(0.21)	0.000(0.20)	0.000(-1.18)	0.000**(-2.00)
LD	-0.087(-1.37)	0.036(0.47)	-0.139**(-2.10)	-0.016(-0.26)	-0.055(-0.86)
Adj. R-Square	0.246	0.197	0.181	0.202	0.291
Year-Effect	yes	yes	yes	yes	yes
Industry-effect	yes	yes	yes	yes	yes
OBS	1298	1298	1298	1298	1298

Note: The presented table displays the outcomes of the regression analysis conducted on the relationship between external financing and earnings management. In statistical analysis, the levels of significance are denoted by asterisks, namely *, **, and *** for the 10%, 5%, and 1% levels, respectively. The values enclosed in brackets denote the T-value.

5.2. Alternative Independent Variable

Table 8. Alternative Measures of Debt Financing and Equity financing: The Empirical Analysis Based on New Independent Variables.

Variable	**Accrual Earnings Management**	**Real Earnings Management**
	Total Debt/ Total Asset	**Total Equity/ Total Asset**
	Coefficient(OLS)	**Coefficient(OLS)**
Intercept	0.539***(3.96)	0.161(1.14)
INT_FIN/asset	-0.001**(-2.16)	-0.001**(-2.28)
EXTF_FIN/asset	-0.152***(-3.21)	-0.128**(-2.59)
LEV	0.290**(2.44)	-0.139(-1.13)
ROA	-0.019(-0.89)	0.002(0.10)
MBR	-0.044(-0.69)	0.122*(1.86)
TQ	0.000(-0.01)	-0.096**(-2.13)
D_STAR	0.163**(2.20)	0.562***(7.29)
SIZE	-0.172***(-12.21)	-0.030**(-2.04)
LTAC	0.000(-1.40)	0.000***(-3.44)
AOC	0.000(-0.10)	0.000(-0.52)
LD	-0.084(-1.32)	-0.006(-0.09)
Adj. R-Square	0.239	0.201
Year-Effect	yes	yes
Industry-effect	yes	yes
OBS	1298	1298

Note: Table shows the regression results of external financing and Earnings management. Statistical significance level are marked by star *, **, *** for 10%, 5%, and 1% level respectively.

Table 9. Corporate financing and earning management: Comparative analysis between High and Low competitive industry.

	High Competitive Industry		Low Competitive Industry	
	Accrual-Earnings Management (OLS)	**Real-Activity Based Earnings Management (OLS)**	**Accrual-Earnings Management (OLS)**	**Real-activity based Earnings Management (OLS)**
Intercept	-0.060(-0.19)	-0.770**(-2.44)	0.437(1.16)	-0.005(-0.01)
INT_FIN/RE	-0.001(-0.57)	0.004***(3.92)	0.000(-1.03)	-0.001(-1.52)
EXT_FIN/RE	-0.055(-1.21)	0.042(0.93)	-0.075(-1.63)	-0.045(-0.91)
LEV	1.130***(3.51)	0.486(1.51)	0.715***(3.35)	-0.291(-1.27)
ROA	1.650**(2.21)	3.030***(4.07)	-0.018(-0.75)	-0.003(-0.11)
MBR	0.047(0.19)	0.535**(2.24)	-0.025(-0.21)	0.362***(2.83)
TQ	-0.098(-0.62)	-0.404**(-2.56)	-0.022(-0.42)	-0.122**(-2.19)
D_STAR	0.281(1.53)	0.756***(4.13)	-0.192*(-1.66)	0.332***(2.68)
SIZE	-0.121***(-3.48)	-0.027(-0.77)	-0.190***(-8.19)	0.003(0.12)
LTAC	0.000(-1.27)	0.000(-1.47)	0.000(-0.55)	0.000***(-3.02)
AOC	0.000(-0.07)	0.000(-0.03)	0.000(-0.05)	0.000(-0.67)
LD	-0.085(-0.66)	0.142(1.10)	0.034(0.27)	-0.119(-0.87)
Adj. R-Square	0.182	0.201	0.278	0.207
Year-Effect	yes	yes	yes	yes
Industry-effect	yes	yes	yes	yes
OBS	342	342	487	487

Note: The presented table displays the outcomes of the regression analysis conducted on the relationship between external financing and earnings management. In statistical analysis, the levels of significance are denoted by asterisks, namely *, **, and *** for the 10%, 5%, and 1% levels, respectively. The values enclosed in brackets denote the T-value.

Corporate assets and financing are interconnected in terms of risk and return. Higher levels of debt financing can increase financial risk due to interest payments and debt obligations. Still, it might also lead to higher potential returns for equity holders if the company performs well. Similarly, the types of assets a company holds can influence its financing choices. Valuable and stable assets might make it easier to secure debt financing at favorable terms. In some cases, companies use their assets as collateral to secure debt financing. The lender can claim ownership of the collateral assets if the company fails to meet its debt obligations. The relationship between assets and financing ensures that lenders have a level of security in case of default. Therefore, Companies must carefully balance their financing decisions with their asset acquisition and management strategies to optimize their capital structure, manage risk, and create shareholder value. Regarding our key independent variable, we have created two variables such as; internal financing to external financing ratio and external financing to internal financing ratio to highlight the impact of external and internal financing on earnings management. There is a concern that the retained earnings are affected by firms' earnings and dividend payouts. Therefore, our external financing measures may absorb the influence of earnings management and the dividend policy. Moreover, if firms external or internal financing increases or decrease compare to asset, will it impacts on financial reporting? To address these issues, the study measure two new variables deflated by companies total asset, and construct (INT_FIN/asset, EXTF_FIN/asset, as alternative independent variables. The analyses previously mentioned are being re-conducted utilizing equations (equation1) and alternative independent variables (INT_FIN/asset, EXTF_FIN/asset). Results (Table VIII) demonstrate that if corporate financing (internal or external) increase compare to asset than earnings management will decrease. This is because of information accuracy and quality signal. Firms which intend to increase financing from whatever source compare to asset try to be very conscious about financial accuracy and stakeholder's connectivity.

5.3. Corporate Financing and Earning Management (High and Low Competitive Industry)

Previous study illustrated that extreme competition may sometimes make it difficult to get enough financing from the capital market (Balakrishnan & Cohen, 2009). Therefore, to address this concern, according to the guidelines set forth by the U.S. Department of Justice (DJ) and the Federal Trade Commission, our sample was divided into sectors that were deemed highly competitive and those that were considered to be less competitive. As per the observations made by the Department of Justice and the Federal Trade Commission, a Herfindahl-Hirschman Index (HHI) value lower than 0.01

Table 10. Test of Endogeneity.

Test of endogeneity (orthogonality conditions) Ho: variables are exogenous	
Accrual-Earnings Management	**Real-Earnings Management**
Corporate financing(Internal financing and External financing) and Earnings management	
GMM C statistic $chi^2(2)$ = 3.95824 (p = 0.1382)	GMM C statistic $chi^2(2)$ = 3.60441 (p = 0.1649)

(or 100) indicates a minimal market concentration, thereby signifying a high level of market competition. On the contrary, it can be inferred that an industry is concentrated when its HHI value is less than 0.15 (or 1,500). Furthermore, a Herfindahl-Hirschman Index (HHI) falling within the range of 0.15 to 0.25 (equivalent to 1,500 to 2,500) indicates a significant level of market concentration. Furthermore, as per the United States Department of Justice and Federal Trade Commission (1997), an HHI value exceeding 0.25, which is equivalent to over 2,500, indicates an unwarranted level of concentration, thereby implying a less competitive industry. According to a previous study conducted by Laksmana and Yang (2014), companies operating in industries with low levels of competition tend to engage in overproduction, accelerate sales timing, and reduce discretionary costs more frequently than those operating in highly competitive sectors.

Empirical evidence shows that (see Table IX) if firms concentrate more on internal financing in highly competitive market it will augment real earnings management. Results also demonstrate that the corporate external financing ratio does not impact earnings management in high or low-competitive industries.

6. ADDITIONAL SENSITIVITY CHECKS

Arellano and Bond (1991) claim that dynamic panel data methods are reliably estimated by applying random-effects and/or fixed-effects estimators only, where the regressor is, by nature, not firmly exogenous. Using the main proxies for corporate financing (i.e., Internal and external financing ratio) and EM (i.e., Modified Jones Model), the study consequently uses a generalized method of moment (GMM) estimator as an additional sensitivity check to ensure that the principle findings of our study were not severely affected by the likely incidence of endogeneities. Following previous literature (e.g., Jyun-Yi et al., 2008; Sargan, 1958; Lu et al.,2018), this study employs the generalized method of moments(GMM) model as a sensitivity check to address the potential occurrence of endogeneity problem arising from the reverse causality association between CF and EM. Model 3 of Tables IV and V presents the findings of estimating the GMM models. Results show that both external financing ratios are significantly negatively associated with earnings management. The findings are consistent with the main results.

6.1. Test of Endogeneity

Endogeneity occurs when a predictor (independent variable) correlates with the unexplained residual (disturbance, error term) of the outcome (dependent variable) in a predictive model (Lu et al., 2018). There are three sources of endogeneity: errors in variables omitted variable bias, and simultaneity (e.g., Zaefarianet al., 2017). Consistent with the previous study this study employs GMM technique to solve the endogeneity issue (e.g., Sargan Hansen, 1958; Jyun-Yi et al., 2008; Lu et al., 2018). This test helps to determine whether a statistical model fits the data (Lu et al., 2018). Following the Sargan Hansen (1958) test, it is straight forward to evaluate the outcome of a Hansen test: if the p-value is tiny (less than 0.05), reject the null hypothesis. However, our results shown in table X illustrate no values lower than 5, meaning that our model does not have endogeneity.

6.2. Test of Over Identifying Restriction

Hansen test (over-identifying restrictions test) is a method for determining whether or not extra instruments are exogenous. A test of the over identifying restriction is conducted to assess the "exogeneity condition" of the instruments. Finding an instrument for multiple endogenous variables may not be very practical (Lu et al., 2018). Theoretically, the instruments must be uncorrelated with the disturbance term (i.e., the error term) (Ebbeset al., 2021). Tests of over identifying restrictions/orthogonality condition also confirm whether the instrument or model is correctly specified (Ullah et al., 2021). The Hansen test requires more instruments than endogenous regressors to be valid and the Sargan-hansen (1958)'s test has a null hypothesis (Ho): The instruments are exogenous as a whole. According to the Sargan's test, the p-value of the Sargan statistic must be between5 and 10%; the higher the p-value, the better (Sargan-hansen, 1958). Roodman (2007), on the other hand, recommends that the Sargan p-value be more than 0.25. According to the research, the p-value in both accrual and real-earning management is more than 5 (see table XI). As a result, they may infer that their model has no over-identifying constraints.

Table 11. Test of over identifying restriction.

Test of over identifying restriction:	
Accrual-Earnings Management	**Real-Earnings Management**
Corporate financing(Internal financing and External financing) and Earnings management	
Hansen's J $chi^2(9)$ = 12.7429 (p = 0.1746)	Hansen's J $chi^2(9)$ = 18.2088 (p = 0.0328)

6.3. Test of Instrumental Variables

The weak instrument tests (Stock-Yogo test/F-statistics) are implemented to judge the explanatory power of the instruments. These tests assess the level of correlation between the additionally included instrumental variable (IVs) and the

endogenous variables because chosen instruments need to be relevant and exogenous. The finding shows a series of test statistics, including first-stage F-statistics. The criteria and threshold for first-stage F-statistics are very simple. The null hypothesis states that the instruments are weak. Overall table (XII) shows that all the R^2 statistics are relatively high, so they do not imply a weak-instrument problem. Therefore, we conclude that our instrumental value is substantial.

Table 12. Test of instrumental variables.

Test of effectiveness of instrumental variables: Internal financing, external financing and earnings management		
Variable	**Shea's Partial R-square.**	**Shea's Adjusted R-square.**
INT_FIN/RE	0.8344	0.8278
EXT_FIN/RE	0.7686	0.7594

6.4. Test of Multicollinearity

Table 13. VIF test of multicollinearity.

Variable	VIF	Tolerance
SIZE	2.66	0.377
LTAC	1.44	0.693
MBR	1.42	0.703
TQ	1.34	0.749
LEV	1.2	0.832
EXT_FIN	1.05	0.954
D_STAR	1.19	0.839
LOSS.D	1.12	0.891
INT_FIN	1.06	0.946
Debt-FIN	1.07	0.936
AOC	1.06	0.939
Equity-FIN	1.05	0.954
ROA	1.02	0.980
Mean VIF	3.31	

In a multivariate regression model, multicollinearity occurs when there are strong correlations between multiple independent variables. Multicollinearity may cause bigger confidence intervals, indicating less certainty, when assessing the effect of independent variables in a model. Therefore, this study uses the VIF test for multicollinearity. To quantify the degree of multicollinearity between a set of multivariate regression variables, researchers employ a statistic called the variance inflation factor (VIF). In regression analysis, the variance inflation factor (VIF) is the ratio of the entire model variance to the variance of a model that includes just that independent variable. This ratio is calculated separately for each independent variable. When the VIF is high, it indicates that the dependent variable is highly correlated with other variables in the model. Because of the multicollinearity, it may be difficult to separate the effects of the independent variables on the dependent variable in a regression model. In accordance with accepted norms, VIF begins at 1, and there is no upper bound. At a VIF value of 1, there is no correlation between the independent and other variables. There is substantial multicollinearity between an independent variable and the others when the VIF is more than 5 or 10 (Snee Ron, 1981). Table XII1 shows that, there is no evidence of multicollinearity because no variable has a VIF greater than 5.

7. CONCLUSION

This investigation incorporates the relationship between corporate financing and earnings management. Based on 118 publicly traded companies across 13 categories of non-financial organizations in Bangladesh from 2011 to 2021, the study measures the association between corporate financing (i.e., internal and external financing) and earnings management. The primary independent variable is internal and external financing. The current research employs a modified Jones model to measure earnings management (dependent variable). Initially, the study uses the ordinary least square model (OLS) to get empirical evidence. Later on, the GLS random effect model finally uses the generalized method of moments (GMM) to check the sensitivity of the findings. The research also uses alternative dependent and independent variables to check the robustness of the evidence. The findings show no significant association between internal financing and earnings management. This indicates that the increase in internal financing compared to external financing has no significant impact on earnings management. However, external financing significantly negatively affects earnings management. It has been crystal clear that if non-financial firms of Bangladesh rely more on external financing, they are involved less in earnings management. Corporate financing has no significant impact on earnings management in a low-competitive industry. Corporate governance mechanism significantly negatively moderates the relationship between corporate external financing and accrual earnings management. Specifically, external financing and corporate governance mechanisms jointly decrease accrual earnings management. The study further shows that the corporate governance index does not affect internal financing and earnings management connections. The study findings are robust; no multicollinearity and endogeneity problem is found in the evidence. The conclusions of the study are precise and reliable. However, we also recognize the following limitations: 1) All data for assessing the hypothesis were acquired manually, which required a significant time investment; hence, we focused on a sample of Bangladesh-listed firms. Future studies may include cross-national contexts like Nordic, Middle Eastern, and North American nations. 2) The empirical investigation is limited to internal CG structures due to data constraints. Future research should examine how and why national culture, law, politics, and market forces may affect the CF-EM nexus in developed and developing countries.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflict of interest.

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