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Earnings management, capital structure, and the role of corporate governance: Evidence from sub-Saharan Africa

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This study investigates the effect of earnings management and corporate governance on the capital structure decision of firms. We utilized data of non-financial firms from selected sub-Saharan African countries over the period 2008 to 2018. Both fixed and random effect regressions were the methods of analysis employed. Our findings indicate that earnings management is associated with low equity usage and by implication, high leverage levels among firms. Importantly, the presence of corporate governance was found to mitigate the high leverage implication of earnings management. We therefore recommend an improvement in corporate governance practices to minimize the occurrence of earnings management.

1 | INTRODUCTION

In the wake of the collapse of high-profile entities such as Enron, WorldCom, Royal Ahold, Parmalat among others, the need for firms' reported earnings to depict their economic reality and not merely desired earnings is of much relevance (Amidu & Kuipo, 2015). It is believed that the collapse of these organizations stemmed from the absence of quality and reliable financial information required for their smooth running (Idialu, 2008; Jiraporn, Miller, Yoon, & Kim, 2008). In essence, the scandal surrounding these entities can be regarded as the aftermath of the doctoring or manipulation of their financial statements. According to Shen, Luo, and Huang (2015), the practice of using innovative ways within the confines of the financial reporting framework to characterize or report assets, incomes, and liabilities in a way that misleads stakeholders about the actual performance of the entity is referred to as earnings management. Depending on the target to be achieved, management manipulates or misrepresents reported financials through, but not limited to, the deferment or untimely recognition of transactions to influence earnings (Nwaobia, Kwarbai, & Fregene, 2019). The practice of earnings management therefore fails to give a true reflection of firms' performance thereby compromising on the capacity of financial reports in serving as a guide to optimal corporate decisions (Amidu, Coffie, & Acquah, 2019; McNichols & Stubben, 2008).

The financing decision of firms, also referred to as capital structure decision, is generally concerned with the optimal debt-equity mix (Hackbarth, 2008). Organizations that achieve the optimal proportions

of debt and equity are able to minimize their cost of capital and improve corporate performance. Extant studies posit that organizations are burdened with an increased likelihood of financial distress when they fail to apportion their debt and equity in an optimal manner (An, Li, & Yu, 2016; Mutairi, 2011). The capital structure decision of firms hinges on cash flows, profitability, earnings volatility, and liquidity among other factors (Khémiri & Noubbigh, 2018; Ramli, Latan, & Solovida, 2019). This is indicative of the fact that an entity's capital structure decision is influenced by its reported financial information. Therefore, it is crucial for financial statements to report the underlying economic performance since altering or manipulating financial reports would adversely affect the optimality of capital structure decisions.

Owing to the suboptimal implication earnings management presents on capital structure decision, efforts have been targeted at attenuating the practice of earnings management among entities. Some studies argue that monitoring mechanisms could check opportunistic behavior of management. These mechanisms would therefore control the practice of earnings management and enhance the quality of financial information (Agyekum, Aboagye-Otchere, & Bedi, 2014; Elghuweel, Ntim, Opong, & Avison, 2017; Fiador, 2013; Lawal, Nwanji, Oye, & Adama, 2018). According to Elghuweel, Ntim, Opong, and Avison (2017) and Fiador (2013), good corporate governance systems ensure that management is held accountable for their (in)actions that translates into quality financial reporting. Since financial data feed into capital structure decisions, credible financial data will foster the making of sound financing decisions.

Although earnings management presents significant implications on corporate decisions, to date, there exists little evidence addressing its effect on the financing decisions of firms. More so, there is a lack of studies particularly on developing economies where the practice is believed to be more pervasive (He, Ng, Zaiats, & Zhang, 2017). This study is therefore a response to the call by earlier studies for more research works on earnings management and the corporate finance decisions of firms (McNichols & Stubben, 2008). Moreover, the role of corporate governance in the earnings management–corporate finance decision relationship is a gray area as prior studies have neglected corporate governance, which is a key mitigating factor in earnings management practice (Elghuweel, Ntim, Opong, & Avison, 2017; Fiador, 2013). The study therefore aims to address these problems by, first, investigating the effect of earnings management on capital structure decision and, second, investigating the interactive effect of earnings management and corporate governance on the capital structure decision of firms.

2 | LITERATURE REVIEW

2.1 | Theoretical motivation

The separation of ownership from control may give rise to conflict of interest between managers and shareholders. This conflict, also known as the agency conflict, is usually fueled by disparities in the goals of the manager and shareholder. The existence of agency conflicts has been employed to elucidate why managers occasionally come to a decision that is not in support of shareholders' interests (Booth & Schulz, 2004; Harrell & Harrison, 1994). Scott (2003), explains that in light of the misalignment of the incentives of shareholders and managers whose responsibility is to act on behalf of the principal, managers tend to use the authority given them for their own benefit to maximize their wealth. Hence, managers act in an opportunistic manner to satisfy their interests. Earnings management therefore provides a tool that managers utilize to push their opportunistic agenda. In essence, the severity of the agency conflicts incentivize managers to indulge in earnings management activities to satisfy their individual interest (Bartov, Gul, & Tsui, 2000). By indulging in earnings management, the economic reality of firms is distorted, and this facilitates the making of suboptimal capital structure decisions.

To avoid the occurrence of such opportunistic behavior and curtail agency conflicts so as to safeguard the interest of shareholders, the institution of monitoring mechanisms for firms is crucial (Jensen & Meckling, 1976). These monitoring mechanisms place checks on the behavior of managers that ensures that they act with the focus of maximizing the wealth of shareholders. This would augment shareholders' wealth and the corporate performance of organizations. Essentially, corporate governance structures, which present a system of practices, rules, and processes used to manage and direct the affairs of organizations, contribute greatly in monitoring the activities of management to minimize opportunism and foster effective corporate decisions (Huang, Louwers, Moffitt, & Zhang, 2008).

2.2 | Earnings management and capital structure decision

Although studies have argued that earnings management presents implications on the capital structure decisions of organizations, there exists scanty evidence on the issue. Carter (2013) assessed the nexus between capital structure, earnings management, and Sarbanes–Oxley recommendations of firms. They found that firms that had heavily managed their earnings prior to the promulgation of Sarbanes–Oxley used less debt afterwards while firms that had slightly managed their earnings prior to the Sarbanes–Oxley maintained more debt afterwards. Similarly, An, Li, and Yu (2016) assessed the effect of earnings management on capital structure decision and how institutional environments influence the relationship existing between the two variables. The results from their regression reveal the existence of a significant, positive relationship between earnings management and leverage for firms used in the study. This implies that organizations with increasing earnings management record high financial leverage levels. It could be argued that firms managing their earnings do so to make their books attractive to secure funds from lenders. Notably, their findings also revealed that the positive effect of earnings management on financing decision is mitigated in the presence of strong institutional environments. Ajay and Madhumathi (2015) postulate that earnings management has a positive and significant effect on the capital structure of firms. This indicates that as the manipulation of earnings increases, firms tend to use higher levels of leverage. Tahir, Sabir, and Ali (2011) found corroborating evidence of a positive and significant relationship between earnings management and capital structure of firms. Similarly, Dang et al. (2018) documented that organizations with higher earnings management have larger corporate leverage ratios, and this positive effect is less pronounced in countries with stronger institutional environments. Thus, the few studies that have investigated this issue provide evidence that earnings management leads to high corporate debt levels.

2.3 | Corporate governance and capital structure decision

Owing to the crucial function of corporate governance mechanisms in monitoring managers and ensuring smooth operation of organizations, a wealth of works have investigated the effect of corporate governance on the resource allocation or internal decisions of organizations. Wen, Rwegasira, and Bilderbeek (2002) assessed the nexus between corporate governance and capital structure decision, particularly by employing characteristics of the board. Their findings revealed a negative effect of corporate governance on firms' leverage decisions. Thus, suggesting that managers of organizations with stronger corporate governance, with respect to the board composition and CEO tenure, tend to utilize less financial leverage in running the firm. This implies that a larger portion of independent or external directors on the board translates into management taking on less risk by reducing financial leverage or debt financing. Hence, independent directors on the board

provide more rigorous monitoring that discourages management from using higher debt levels to avoid additional risks associated with high leverage. Hasan and Butt (2009) also investigated the impact of corporate governance on the financing decision of entities. Their results revealed that managerial shareholding and the size of boards have a negative and significant effect on the financing decisions of firms whereas an insignificant relationship was obtained with regard to the duality of CEO and the proportion of independent directors. This finding implies that corporate governance indicators, namely, managerial shareholding and board size, play important roles in determining the debt to equity mix of firms. Particularly, managers of firms with larger board sizes would take up less debt, and firms with more managerial shareholding or concentrated ownership also tend to pursue less debt financing.

Bokpin and Arko (2009) also provide insights pertaining to the effect of corporate governance on the financing decisions of listed firms. The results from their regression analysis suggest that both the size of the board and managerial share ownership are positively and significantly related with the long-term capital structure decision of organizations. Nonetheless, the proportion of independent directors and CEO duality variables were found to be insignificantly related with the financing decisions of firms. This implies that the use of debt financing increases with the size of the board and managerial ownership. Similarly, Liao, Mukherjee, and Wang (2015) document that high levels of leverage is associated with firms having better corporate governance systems. These systems include a greater representation of independent and non-executive directors, the separation of the CEO, and chairperson roles along with a larger institutional holding. Also, Agyei and Owusu (2017) posit that the size and composition of boards have significant and positive implications on the leverage levels of firms. Bokpin and Arko (2009) expound that corporate governance, with regard to board size, has a positive and significant effect on firm leverage. This implies that directors of firms with relatively larger boards opt for debt over equity in their financing decisions. Sheikh and Wang (2012) also found supporting evidence that external directors, board size, and ownership concentration are positively related with firm debt levels. Altogether, the literature presents mixed results on the effect of corporate governance on capital structure decisions.

2.4 | Corporate governance and earnings management

Some studies have investigated the effect of corporate governance on earnings management. Agyekum, Aboagye-Otchere, and Bedi (2014) found that the independence of directors presents negative implications on earnings management. Hence, independent directors help in minimizing the prevalence of earnings management practices among entities. Bekiris and Doukakis (2011) also document a significant and negative relationship between a multidimensional corporate governance index and earnings management. Thus, their finding supports the argument that corporate governance helps to

hamper the adoption of earnings management by entities thereby leading to more transparent and reliable financial reporting. Waweru and Riro (2013) postulate that organizations with a larger proportion of independent directors are less likely to partake in earnings management compared with firms having fewer independent directors. They posit that external or nonexecutive directors are able to effectively scrutinize the undertakings of management and therefore ensure quality reporting by the firm. Similarly, Mansor, Che-Ahmad, Ahmad-Zaluki, and Osman (2013) indicate that board independence, non-duality of CEO, and other auditing indicators were the mechanisms found to decrease earnings management adoption among firms. Orazalin (2020) posits that earnings management is effectively constrained by firms with a greater board gender diversity and larger board size. El Diri, Lambrinoukakis, and Alhadab (2020) provide evidence that corporate governance, particularly, quality board characteristics, is effective in attenuating the practice of earnings management.

In contrast, Klein (2002) found a significant and positive nexus between earnings management and board independence. This indicates that the rise in the proportion of independent members on the board amounts to an increase in earnings management. Rahman and Mohamed-Ali (2006) suggest that board size has a significant and positive effect on earnings management. This implies that as the board gets larger, inefficiencies in the oversight function is increased thereby causing an increase in earnings management and vice versa. This finding is supported by Agyekum, Aboagye-Otchere, and Bedi (2014), who argue that board size presents a positive effect on earnings management. Thus, firms with larger boards are ineffective in their monitoring role and consequently tend to partake more in earnings management activities.

Extant studies have also documented insignificant effects of corporate governance on earnings management. Lawal et al. (2018) reveal that audit independence as well as board independence has no bearing on the earnings management activities of firms. This finding is corroborated by Rahman and Mohamed-Ali (2006) who found that both audit committee independence and board independence have an insignificant effect on earnings management. The insignificant relationship obtained is attributed to the ineffectiveness of the board in carrying out their monitoring role such that management tends to be dominant over the affairs of the board. Jamaludin, Sanusi, and Kamaluddin (2015) also document an insignificant relationship between the independence of directors and corporate earnings management. The literature therefore presents varying conclusions given the disparities in the effectiveness of corporate governance systems across firms.

3 | EMPIRICAL DESIGN

3.1 | Empirical model

For the purpose of achieving the objectives of this research, which are to investigate the effect of earnings management on capital

structure decision and to examine the interactive effect of earnings management and corporate governance on capital structure decision, regression models are employed. The Hausman test was used to determine whether the fixed effect model or random effect model was appropriate for each regression. In line with Schepens (2016), the current study employed an equity ratio computed as total equity of the organization divided by total assets to proxy capital structure decision. This study adapts a panel regression model from An, Li, and Yu (2016). The general model employed is presented below:

$$CAPSTD_{it} = \beta_0 + \beta_1 EM_{it} + \sum_{j=2}^n \beta_j CG_{jit} + \sum_{j=5}^n \beta_j X_{jit} + \sum_{j=8}^n \beta_j Y_{jt} + \varepsilon_{it} \quad (1)$$

where CAPSTD represents capital structure decision; EM refers to earnings management; CG represents the vector of corporate governance variables, namely, board size, composition of the board, gender diversity of the board, and CEO duality; X represents a vector of control variables namely, firm size, firm age, and operating cash flow; Y represents a vector of country-specific control factors, namely, GDP per capita and inflation proxied by consumer price index; i represents the i th firm; t represents time t ; n represents the number of control variables; and ε is the error term, which is decomposed as shown below:

$$\varepsilon_{it} = \alpha_i + \mu_t + \nu_{it}$$

where α denotes the country fixed effect, μ depicts the time fixed effect, and ν symbolizes the random component, which is presumed to be independent and identically distributed.

To analyze the interactive effect of earnings management and corporate governance on capital structure decision, an interaction term of earnings management and corporate governance is incorporated into the model as shown below:

$$CAPSTD_{it} = \beta_0 + \beta_1 EM_{it} + \beta_2 CG_{it} + \beta_3 (EM_{it} * CG_{it}) + \sum_{j=4}^n \beta_j X_{jit} + \sum_{j=7}^n \beta_j Y_{jt} + \varepsilon_{it} \quad (2)$$

3.2 | Earnings-management measure

The literature presents various ways for detecting and measuring earnings management among organizations. Particularly, the discretionary accruals and discretionary revenue models have proven to be suitable for measuring earnings management of non-financial organizations while financial firms have been argued to manage their earnings through discretionary loan loss provisions. Since non-financial firms are under investigation in this research, the discretionary accruals method is employed. Specifically, the Kothari, Leone, and Wasley (2005) performance-matched discretionary accruals method is utilized by the study. The models for estimating the earnings management variable using the performance-matched discretionary accrual method are specified below.

First, the Jones model discretionary accrual is estimated for the entities using the model below.

$$TA_{it} = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \Delta SALES_{it} + \beta_3 PPE_{it} + \varepsilon_{it} \quad (3)$$

where TA is the total accruals calculated by subtracting operating cash flows from net income; A represents total assets; $\Delta SALES$ represents the change in sales; PPE represents property plant and equipment; i symbolizes the i th firm; and t denotes time t . The residual obtained from Equation (3) is the Jones discretionary accruals. Second, the model is augmented by including the performance measure return on assets (ROA).

$$TA_{it} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \Delta SALES_{it} + \alpha_3 PPE_{it} + \alpha_4 ROA_{it} + \nu_{it} \quad (4)$$

ROA represents the ratio of net income divided by assets. In order to check for heteroscedasticity, the variables are scaled by prior year total assets. The residual obtained from Equation (4) represents the matched firm's Jones discretionary accrual. The performance-matched Jones discretionary accrual is estimated by subtracting the Matched firm's Jones discretionary accrual obtained in Equation (4) from the Jones discretionary accrual obtained in Equation (3). Since the performance-matched Jones discretionary accruals are regression residuals, it is expected they have an average of zero. Larger values indicate high earnings management of firms while smaller values depict low earnings management of firms.

The performance-matched discretionary accruals obtained from the models above are used to proxy the earnings management variable employed in this research.

3.3 | Corporate governance variables

The study employs the widely used proxies for corporate governance, namely, board size, composition of the board, gender diversity of the board, and CEO duality (Bokpin, 2011; Fiador & Sarpong-kumankoma, 2021; Pucheta-Martinez & Bel-oms, 2016). The board size represents the number of board members at each reporting date while the board composition depicts the blend of non-executive and executive directors. The non-executive directors are the board members who are inactively engaged in running the entity on a daily basis whereas the executive directors see to the effective running of the organization. The board composition variable is estimated by the number of non-executive directors divided by the total number of board members. The board gender diversity variable depicts the female representation on the boards and is measured by the portion of female directors divided by the size of the board. CEO duality, captured by a dummy variable, also indicates if an individual plays both roles of CEO and board chair. In this case, a value of 1 is assumed and 0 otherwise, that is, where separate individuals fill the position of CEO and board chair.

3.4 | Control variables

The study employed some firm-specific and country-specific macro-economic variables that have been argued to influence the capital structure decision of firms from the literature (Huang, Boateng, & Newman, 2016; Kieschnick & Moussawi, 2018; Mallisa & Kusuma, 2017; M'ng, Rahman, & Sannacy, 2017). Among the firm-specific control variables are firm size, computed as the natural logarithm of total assets, firm age, computed as the firms' number of years in operation since incorporation and operating cash flow which is a line item found in the statement of cash flows of the firms. The macroeconomic controls employed were GDP per capita, computed by dividing the gross domestic product by total population of the countries that the sampled firms operate in and inflation, measured using the consumer price index of the country in which the firm operates.

4 | DATA AND SAMPLE

The study sampled listed non-financial firms in selected sub-Saharan African countries over an 11-year period from 2008 to 2018. Specifically, the sample includes non-financial firms listed on the stock exchange of Ghana, Kenya, Botswana, Nigeria, Uganda, and Namibia. The data were obtained solely from secondary sources; hence, information on earnings management, capital structure decision, corporate governance variables, and the firm specific control variables were sourced from public annual reports, organizational websites, and stock exchange databases. Data on the country specific macro-economic control variables employed in this research were sourced from the World Development Indicators (WDI) Database. Table 1 presents the specific number of non-financial firms from the six sub-Saharan African countries employed in this research.

5 | EMPIRICAL RESULTS

This section presents a discussion of the findings of the research. The subsections that make up this chapter include the descriptive statistics, diagnostic results, and the regression results with regard to the

TABLE 1 Sample size of listed firms

Country	Non-financial firms
Ghana	11
Kenya	16
Botswana	16
Nigeria	10
Uganda	3
Namibia	6
Total	62

variables under investigation in this study. The results presented in this chapter exclude the CEO duality corporate governance variable. The variable was dropped because the value 0 that depicts that the CEOs were separate from the Chairman of the board was recorded for majority of the observations; thus, incorporating this variable would not yield meaningful results.

5.1 | Descriptive statistics

Table 2 presents the descriptive statistics of all the variables pertaining to the sample incorporated in this research. The sample covers 62 non-financial firms in selected sub-Saharan African regions from the year 2008 to 2018. The mean, standard deviation, and number of firm-year observations are reported.

Capital Structure Decision variable, measured by an equity ratio, has a mean of approximately 37%. This implies that the total assets of firms are financed using approximately 37% of equity thereby indicating that the firms finance a greater part of their assets using other financing options such as debt. Earnings management that was captured by the performance-matched discretionary accruals of firms reported an average of 0, which was expected since they are residuals from a regression. Maximum and minimum values of approximately 13% and -19%, respectively, were obtained. This implies that overall, the firms show evidence of engaging in both upward and downward earnings management.

For the corporate governance indicators, the board size variable has a mean of 8.36 implying that on average approximately eight directors make up the board of the firms sampled. Board composition also has a mean of approximately 66% suggesting that on average, more than half of the boards consisted of non-executive directors. Board gender diversity also recorded a mean of approximately 0.15 indicating that on average, 15% of the directors on the board were female.

The mean score for firm age suggests that on average, the firms sampled have been in operation over a 40-year period. The mean score for firm size is 10.76 with a standard deviation of 1.63. The mean score of 53% obtained for the operating cash flow variable suggests that firms generate approximately 53% operating cash flow from their total assets. The mean score of 131% for inflation, measured by consumer price index, indicates that the firms sampled are operating in countries with high levels of inflation. Finally, the GDP per capita variable also recorded a mean of approximately 3373. This implies that on average, each citizen has a share of \$3373 of the nations' GDP.

The descriptive statistics of leverage variables for the firms sampled in the study were also investigated to provide some insights with regard to the debt levels of firms. The findings are presented in Table 3.

The mean of 0.608 obtained for total debt indicates that on average, approximately 61% of debt is utilized in financing the assets of firms. This depicts that the firms sampled are highly levered since their capital structure is composed of a greater

Variables	Obs	Mean	Std. Dev.	Min	Max
Capital Structure Decision	599	0.365	0.307	-0.433	0.989
Earnings Management	489	0	0.039	-0.188	0.128
Board Size	487	8.359	2.723	3	24
Board Composition	485	0.655	0.179	0	1
Board Gender Diversity	485	0.148	0.143	0	0.667
Firm Age	599	40.13	24.64	1	99
Firm Size	599	10.76	1.634	4.127	15.574
Operating Cash Flow	555	0.530	0.420	0	252.28
Consumer Price Index	600	130.93	33.64	75.75	255.10
GDP per Capita	600	3372.53	109.56	587.95	8031.01

TABLE 2 Descriptive summary statistics of variables

TABLE 3 Descriptive statistics of leverage variables

Variables	Obs	Mean	Std. Dev.	Min	Max
Short-term debt	553	0.447	0.422	0	3.560
Long-term debt	553	0.161	0.238	0	1.555
Total debt	553	0.608	0.577	0	4.723

proportion of debt. This is corroborated by the mean obtained for the equity variable used in the study. Further, the descriptive statistics reveal a mean of 0.447 for short-term debt and a mean of 0.161 for long-term debt. This implies that on average, short-term financing comprises approximately 45% of firms' total debt whereas long-term financing contributes 16% to total debt. It can therefore be inferred that short-term debt presents a larger source of financing to firms sampled in the region.

The trend of earnings management across the firms sampled in the sub-Saharan African region was also assessed and presented in Figure 1.

Overall, the practice of both upward and downward earnings management by firms are observed in the region. The analysis reveals that the adoption of upward earnings management occurred from the periods 2009 to 2013 and later in 2015 with a peak recorded in 2010. Although upward earnings management activities were reported over this period, the rate seemed to be diminishing. In 2014 and from the periods 2016 to 2018, it is observed that the firms in the region were found practicing downward earnings management. Extant studies posit that in periods of economic stress, the practice of upward or income-increasing earnings management is more pervasive (Ahmad-Zaluki, Campbell, & Goodacre, 2011; Charitou, Lambertides, & Trigeorgis, 2007; Filip & Raffournier, 2014). This is because such periods are associated with lower earnings, and in an attempt to avoid devaluation in stocks, firms are more likely to resort to earnings management to cover-up decreasing performance. Thus, it is evident that in the periods where the sub-Saharan African region experienced economic stress due to activities such as general elections, oil shocks coupled with the global financial crisis that took a toll on the economy, an upward trend of earnings management was observed.

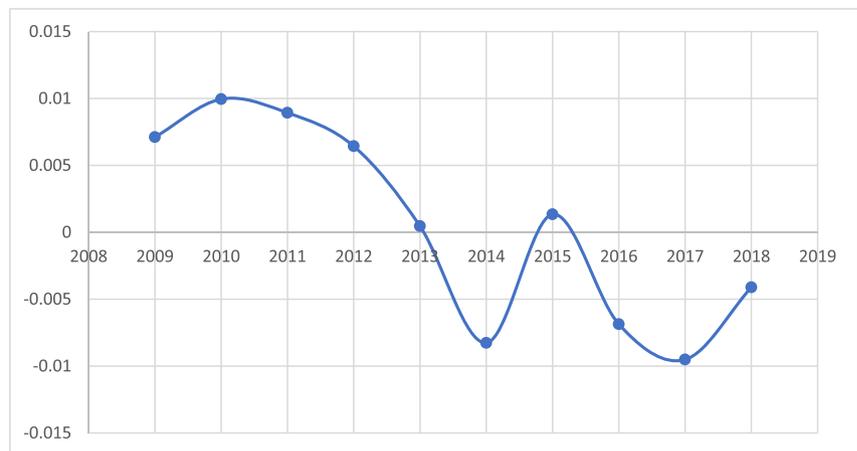
5.2 | Hausman test

The Hausman test was employed to determine if the fixed effect model or the random effect model was appropriate for the regression analysis. The findings from the test indicated that the fixed effect model was appropriate for the model investigating earnings management and capital structure decision as well as models 1 and 2 for investigating the interactive effect of earnings management and corporate governance on capital structure decision. The random effect model, on the other hand, was found to be appropriate for model 3 of the regression involving the interaction of earnings management and corporate governance on capital structure decision.

5.3 | Earnings management and capital structure decision

The empirical results obtained for the effect of earnings management on the capital structure decision of the entities sampled are presented below (Table 4).

Earnings management was discovered to be negative and significantly related to capital structure decision at a 5% significance level. This indicates that earnings management negatively affects the level of adoption of equity financing which is used to proxy capital structure decision. In other words, the practice of earnings management leads to the decreased usage of equity financing by the non-financial firms thereby indicating that firms managing their earnings tend to use more debt in financing their business activities. This finding is corroborated by An, Li, and Yu (2016), who also found that entities with an increased adoption of the earnings management are usually associated with higher levels of debt financing. Similarly, the finding is supported by Carter (2013) who found that firms that manage their earnings had higher levels of leverage prior to the implementation of the Sarbanes-Oxley, which subsequently controlled the practice of earnings management by firms. Since debt is a cheaper means of financing the firms' activities compared to equity, the negative relationship obtained with regard to capital structure decision points to a possibility of firms using the cheaper version of external

FIGURE 1 Trend of earnings management from 2008 to 2018**TABLE 4** Earnings management and capital structure decision

Variables	Capital structure decision
Earnings Management	-0.038** (0.018)
Board Size	0.008 (0.018)
Board Composition	0.143 (0.546)
Board Gender Diversity	0.067 (0.384)
Firm Size	0.051*** (0.008)
Firm Age	0.321 (0.271)
Operating Cash Flow	0.004 (0.005)
Consumer Price Index	-0.885*** (0.277)
GDP per Capita	0.069* (0.040)
Constant	9.854*** (2.332)
Observations	327
R ²	0.535

Note: Robust standard errors in parentheses.

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

capital as their earnings management activities increase. In essence, earnings management leads to excessive risk taking for listed firms due to the potential of debt overhang, financial distress, and bankruptcy resulting from the use of excessive leverage (Shen, Luo, & Huang, 2015; Wang & Lin, 2013).

With regard to the corporate governance indicators, the study found that although all three indicators, namely, board size, board composition, and board gender diversity, had a positive effect on capital structure decision, this effect was insignificant, thus suggesting that the corporate governance indicators had no bearing on the capital structure decision of firms. From the findings, it also appears that bigger firms are in a position to attract more equity capital compared to firms that are smaller in size. This is evidenced by the positive and significant relationship obtained between firm size and capital structure decision. Firm age and Operating cash flow, however, were found to have an insignificant effect on capital structure decision. The consumer price index variable that was used to proxy inflation was detected to be negatively associated with capital structure decision. This suggests that as inflation increases, the use of equity financing at

the firm level decreases thereby indicating a rise in the use of debt financing. This finding could be explained by the fact that as inflation rises in the economy, it has the tendency to lower the real value of debt thereby making debt financing attractive to businesses. This would therefore result in high corporate leverage levels. GDP per capita was also identified to be significant and positively related to capital structure decision. This suggests that as GDP per capita increases, firms' profitability improves leading to the use of more equity financing since entities are better positioned to finance their activities organically.

5.4 | Earnings management, corporate governance, and capital structure decisions

The regression results on the interactive effect of earnings management and corporate governance on capital structure decision are presented in Table 5. Since the study incorporates three corporate governance indicators, three models are generated, where model (1) is with respect to the board size variable, model (2) with respect to board composition and model (3) with respect to the board gender diversity variable.

The interaction of earnings management and board size as exhibited in model (1) is positive and significantly related with capital structure decision at a 5% significance level. It can therefore be seen that the previously negative relationship between earnings management and capital structure decision obtained in the earlier analysis is transformed into a positive relationship when earnings management is interacted with the board size variable. Thus, the interaction of earnings management and board size reshapes the negative nexus between earnings management and capital structure decision thereby resulting in a positive effect on the capital structure decision of firms. This indicates that firms with larger boards are less likely to partake in earnings management (Khalil & Ozkan, 2016; Orazalin, 2020; Think & Tan, 2019). This implies that a larger board minimizes the effect of earnings management which results in the use of higher levels of debt financing by firms. This causes firms to increase their usage of equity financing and decrease their debt levels. This could be attributable to

TABLE 5 Interactive effect on capital structure decision

Variables	(1)	(2)	(3)
Earnings Management	−0.194** (0.0780)	−0.1775* (0.0818)	−4.621* (2.327)
Board Size	0.0942** (0.0396)		
Board Composition		0.8370 (0.6136)	
Board Gender Diversity			−0.356 (0.406)
Earnings Mgmt * Board Size	0.0197** (0.00875)		
Earnings Mgmt * Board Composition		0.2241* (0.1176)	
Earnings Mgmt * Board G Diversity			13.53** (6.181)
Firm Age	0.209 (0.310)	0.1837 (0.2892)	1.015 (1.543)
Firm Size	1.024*** (0.131)	1.0381*** (0.1230)	0.0445*** (0.00906)
Operating Cash Flow	0.0345 (0.0269)	0.0471* (0.0261)	0.00473 (0.00447)
Consumer Price Index	−1.310*** (0.461)	−1.2275*** (0.4249)	−0.849*** (0.281)
GDP per Capita	−0.844 (0.929)	−1.5612* (0.7960)	0.162 (0.242)
Constant	12.53 (9.791)	15.0900** (6.7941)	8.789** (3.589)
Observations	303	327	327
R ²	0.595	0.6018	0.536

Note: Robust standard errors in parentheses. Interactions: Board Size (1), Board Composition (2), and Board Gender Diversity (3).

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

the fact that a sizable board offers a larger pool of skilled and experienced directors who are able to effectively manage and control the undertakings of management and improve its decisions as a result (Peasnell, Pope, & Young, 2005).

With reference to the interactive effect of the earnings management and board composition on capital structure decision, a positive relationship significant at a 10% significance level was obtained as observed in model (2). This implies that the interaction of earnings management and board composition transforms the negative effect of earnings management on capital structure decision obtained in the previous analysis into a positive one. Particularly, this finding suggests that in the presence of a larger number of non-executive directors on boards of firms, the negative effect of earnings management on the capital structure decision is reshaped into a positive one. Therefore, the presence of non-executive directors helps to enforce stringent and effective supervision of management activities so the business is carried out in the best interest of shareholders through the making of better capital structure decisions (El Diri, Lambrinouidakis, & Alhadab, 2020).

The interaction of earnings management and board gender diversity also yielded a positive effect which was significant at a 5% significance level shown in model (3). Similarly, the interaction of earnings management and board gender diversity alters the previously negative relationship between earnings management and the capital structure decisions of the non-financial firms. This suggests that the more the female representation on the board increases, the more equity financing is employed in financing the activities of the firm thereby implying that lower levels of debt financing are used in running the business. This indicates that female directors are effective in curbing the practice of earnings management since they bring a stricter perspective to governance (Ye, Deng, Liu, Szewczyk, & Chen, 2019). Again, this could

be the case because females are believed to be more risk averse and hence female representation on boards will go a long way to ensure that less risky or conservative financing options such as equity financing are employed in financing business activities. Thus, ensuring that the reputation of the organization is protected from the event where excessive debts cannot be paid (Adusei & Obeng, 2019; Dowling & Aribi, 2013; Orazalin, 2020; Pucheta-Martinez & Bel-oms, 2016). Overall, it is evident that the presence of corporate governance controls the effects of earnings management which subsequently results in firms making improved capital structure decisions.

5.5 | Earnings management and capital structure decisions (based on sectors)

The study also analyzed the results based on the various sectors of the sample firms. Based on the study's data, the firms sampled were grouped under seven sectors namely oil and gas, consumer goods, consumer services, residential, mining, information technology, and agriculture. The mining, information technology, and agriculture sectors were excluded since they had insufficient observations to perform the analysis. The oil and gas sector basically comprise firms dealing in oil and petroleum, industrial gas, energy, and other chemical production. Firms in the production and processing of goods such as beverages, cocoa, cement, cables, food and drugs, automobiles, furniture, paint, and paper were categorized under the consumer goods sector. The consumer services sector is made up of firms offering investment advisory, tourism, leisure, arts and hospitality, rental and property management and other professional services. Finally, the residential sector consists of firms involved in real estate development and building construction. Thus, the results based on the four

remaining sectors, that is, oil and gas (1), consumer goods (2), consumer services (3), and residential (4) are presented below.

It is observed from Table 6 that earnings management has a negative effect on the capital structure decision of firms operating in the oil and gas sector and consumer goods sector. This negative effect however, was found to be significant only in the oil and gas sector. This implies that the practice of earnings management results in the use of less equity and by implication more leverage to finance the activities of firms operating in the oil and gas sector. On the other hand, earnings management was found to have a significant and positive effect on the capital structure decision of firms belonging to the residential sector. This implies that firms operating in the residential sector tend to use more equity financing as their earnings management practice increases. It can therefore be inferred that the overall negative effect of earnings management on capital structure decision obtained in the previous analysis is largely driven by firms operating in the oil and gas sector. According to Sadiq (2015), the practice of earnings management is usually dominant among firms in the oil and gas sector and that could explain the significant effect of earnings management obtained in this sector.

For the corporate governance indicators, board composition was found to have a positive and significant relationship with the capital structure decision of firms operating in the oil and gas sector, thereby suggesting that as the presence of non-executive directors increase on the board, the use of equity financing increases as a result. Board gender diversity was found to have a negative and significant effect on capital structure decision in the consumer services sector. This implies that the increase in the female representation on boards leads to the decreased use of equity financing among firms in the consumer services sector.

With regard to the control variables employed, it was found that larger firms operating in the oil and gas, consumer goods, and consumer services sectors tend to increase their use of equity financing. Additionally, older firms belonging to the oil and gas as well as

residential sectors were found to increase their usage of equity financing. Further, the increase in operating cash flow of firms in the oil and gas sector was found to lead to an increase in equity financing levels whereas a decrease in the use of equity financing was obtained in the residential sector. Inflation was also found to lead to lower equity use in the oil and gas sector while GDP per capita was found to have no bearing on the capital structure decision of firms in the various sectors.

5.6 | Earnings management, corporate governance, and capital structure decisions (based on sectors)

The results were further analyzed to assess the interactive effect of earnings management and corporate governance on capital structure decision of firms with respect to the sectors in which they operate. Thus, results were presented based on the three corporate governance variables employed namely board size, board composition, and board gender diversity.

From the results presented in Table 7, it is observed that the interaction of earnings management and board size presented a significant and positive implication on capital structure decision. This effect was recorded in the consumer goods and residential sectors. From the previous analysis however, earnings management was found to have a negative effect on capital structure decision in the consumer goods sector and a positive and significant effect in the residential sector. This implies that the adverse effect of earnings management on capital structure decision in the consumer goods sector is mitigated in the presence of a larger board. Thus, firms operating in the consumer goods sector who possess larger boards are more effective in controlling the practice of earnings management which consequently improves their capital structure decision. In contrast, the presence of larger boards was found to reinforce the effect of earnings management on capital structure decision for firms in the residential sector.

TABLE 6 Earnings management and capital structure decision (based on sectors)

Variables	(1)	(2)	(3)	(4)
Earnings Management	-0.056*** (0.014)	-0.039 (0.029)	0.022 (0.015)	0.274** (0.057)
Board Size	-0.032 (0.018)	-0.010 (0.028)	-0.009 (0.017)	0.110 (0.054)
Board Composition	1.023*** (0.279)	-0.706 (0.726)	0.028 (0.393)	0.601 (0.667)
Board Gender Diversity	0.055 (0.485)	-0.361 (0.762)	-1.121** (0.396)	-0.410 (0.885)
Firm Size	0.064*** (0.015)	0.047*** (0.012)	0.059*** (0.009)	-0.030 (0.035)
Firm Age	2.615*** (0.222)	0.640 (0.841)	-0.059 (0.331)	1.545*** (0.183)
Operating Cash Flow	0.006*** (0.002)	0.001 (0.008)	0.012 (0.008)	-0.112*** (0.004)
Consumer Price Index	-0.722*** (0.203)	-0.510 (0.475)	-0.478 (0.439)	0.828 (0.627)
GDP per Capita	-0.036 (0.223)	0.249 (0.296)	0.497 (0.318)	0.385 (0.288)
Constant	0.966 (2.930)	6.079 (5.656)	1.603 (7.212)	0.404 (7.418)
Observations	60	145	75	25
R ²	0.883	0.389	0.923	0.970

Note: Robust standard errors in parentheses. Sectors: Oil & Gas (1), Consumer Goods (2), Consumer Services (3), Residential (4).

* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

TABLE 7 Interactive effect of earnings management and board size on capital structure decision (based on sectors)

Variables	(1)	(2)	(3)	(4)
Earnings Management	-0.000 (0.151)	-0.478*** (0.106)	0.027 (0.031)	-1.321*** (0.132)
Board Size	-0.083 (0.065)	0.214*** (0.061)	0.008 (0.043)	1.266*** (0.093)
Earnings Mgmt * Board Size	-0.007 (0.019)	0.051*** (0.012)	-0.001 (0.005)	0.241*** (0.018)
Firm Size	0.883*** (0.226)	1.257*** (0.249)	0.813*** (0.200)	0.563* (0.202)
Firm Age	2.045** (0.687)	0.438 (0.689)	0.223 (0.336)	1.918*** (0.248)
Operating Cash Flow	0.012 (0.041)	0.010 (0.042)	0.062** (0.028)	-0.573*** (0.026)
Consumer Price Index	-0.556 (0.755)	-0.807 (0.785)	-0.226 (0.904)	7.464*** (0.100)
GDP per Capita	0.153 (0.140)	-0.066 (0.153)	-0.120 (0.112)	0.549*** (0.026)
Constant	23.697* (12.404)	3.715 (17.097)	-45.305* (25.721)	-135.805*** (8.870)
Observations	58	137	64	22
R ²	0.870	0.461	0.945	0.999

Note: Robust standard errors in parentheses. Sectors: Oil & Gas (1), Consumer Goods (2), Consumer Services (3), Residential (4).
* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

TABLE 8 Interactive effect of earnings management, board composition and capital structure decision (based to sectors)

Variables	(1)	(2)	(3)	(4)
Earnings Management	-0.148 (0.085)	-0.262* (0.135)	-0.200 (0.162)	0.412** (0.089)
Board Composition	1.371* (0.637)	1.180 (1.144)	0.596 (0.926)	-2.019 (1.254)
Earnings Mgmt * Board Composition	0.158 (0.150)	0.400* (0.210)	0.302 (0.217)	-0.485** (0.140)
Firm Size	0.878*** (0.158)	1.128*** (0.251)	0.909*** (0.136)	0.327 (0.350)
Firm Age	1.262 (1.215)	1.049 (0.755)	1.053** (0.462)	0.251 (0.261)
Operating Cash Flow	0.038 (0.035)	0.030 (0.044)	0.059 (0.037)	-0.186** (0.044)
Consumer Price Index	-0.188 (0.230)	-0.276 (0.332)	0.534 (0.660)	1.520** (0.420)
GDP per Capita	0.000 (0.000)	0.000** (0.000)	0.000*** (0.000)	0.000 (0.000)
Constant	-4.488*** (1.348)	-6.291** (2.739)	-7.585** (2.670)	1.034 (4.384)
Observations	60	145	75	25
R ²	0.848	0.380	0.846	0.867

Note: Robust standard errors in parentheses. Sectors: Oil & Gas (1), Consumer Goods (2), Consumer Services (3), Residential (4).
* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

TABLE 9 Earnings management, board gender diversity, and capital structure decision (based to sectors)

Variables	(1)	(2)	(3)	(4)
Earnings Management	-3.523 (3.240)	-7.261** (2.980)	2.104 (1.940)	15.732 (13.612)
Board Diversity	-0.051 (0.265)	-1.048 (0.873)	-1.031** (0.450)	2.208*** (0.169)
Earnings Mgmt * Board Diversity	-31.314 (18.333)	28.081** (10.765)	-0.782 (4.179)	-89.747 (41.727)
Firm Size	0.052*** (0.011)	0.043*** (0.011)	0.058*** (0.009)	0.056*** (0.006)
Firm Age	16.025*** (0.671)	2.603 (3.264)	-0.014 (1.470)	-0.637 (0.739)
Operating Cash Flow	0.007*** (0.002)	0.001 (0.008)	0.014* (0.008)	-0.074 (0.034)
Consumer Price Index	-0.147 (0.141)	-0.561 (0.458)	-0.505 (0.421)	0.580** (0.161)
GDP per Capita	0.040 (0.141)	0.260 (0.269)	0.477 (0.306)	0.329 (0.218)
Constant	-16.205*** (1.310)	4.608 (6.683)	1.709 (7.352)	0.732 (2.758)
Observations	60	145	75	25
R ²	0.827	0.390	0.923	0.902

Note: Robust standard errors in parentheses. Sectors: Oil & Gas (1), Consumer Goods (2), Consumer Services (3), Residential (4).
* $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$.

Therefore, firms operating in the residential sector with larger boards are less effective in controlling the practice of earnings management and improving capital structure decision.

With regard to the findings on the interaction of earnings management and board composition presented in Table 8, a positive and significant interactive effect is recorded in the consumer goods sector whereas a negative and significant interactive effect is obtained in the residential sector. This implies that in the presence of a greater proportion of non-executive directors on the board, the previous negative effect of earnings management in the consumer goods sector is transformed into a positive one. Likewise, the previous positive effect of earnings management in the residential sector is transformed into a negative effect in the presence of a larger proportion of non-executive directors on the boards. Thus, the increase of non-executive directors on the boards of firms in the consumer goods and residential sectors is able to mitigate the adoption of earnings management and improve the capital structure decision of firms.

Finally, the interaction of earnings management and board gender diversity as presented in Table 9 was found to have a positive and significant effect in the consumer goods sector. This indicates that a larger representation of female directors on the boards of firms in the consumer goods sector mitigates the practices of earnings management. This as a result transforms the previous negative effect of earnings management on capital structure decision into a positive effect thereby improving the capital structure decision of firms in the consumer goods sector.

6 | CONCLUSION

The study set out to examine the effect of earnings management on the capital structure decision of non-financial listed organizations from selected sub-Saharan African countries. It also sought to ascertain whether corporate governance, specifically the board size, board composition, and board gender diversity indicators, play any mitigating or reinforcing role as far as the effect of earnings management on capital structure decision is concerned.

First, the study found that the practice of earnings management leads to the use of less equity financing by firms and more debt financing thereby increasing the potential for debt overhang and financial distress. Second, in the presence of corporate governance however, the research found that the adverse effect of earnings management on the capital structure decisions is transformed into a positive one. Particularly, the high leverage implication of earnings management on capital structure decision is mitigated such that the use of equity financing increases. The analysis of the results based on the various sectors also revealed that the high leverage implication is more evident in the oil and gas sector. The findings therefore present policy implications. Since the adverse effect of earnings management on capital structure decision is attenuated by fully operational or increasing corporate governance mechanisms, the study recommends that corporate governance practices should be

improved to minimize the occurrence of earnings management. This would help to facilitate the making of more optimal capital structure decisions.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available in organizational annual reports, websites, stock exchange databases, and the world development indicators database that are available in the public domain.

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APPENDIX A. HAUSMAN TEST

TABLE A1 Hausman test for earnings management and capital structure decision

	(b) fe	(B) re	(b – B) Difference	sqrt (diag(V _b – V _B)) S.E.
Earnings Management	–0.0327807	–0.0383283	0.0055476	0.0028429
Board Size	0.0169776	0.0080477	0.0089299	0.005225
Board Composition	0.0981452	0.143149	–0.0450038	0.0846914
Board Diversity	–0.0829062	0.0671884	–0.1500946	0.1125098
Firm Size	0.0443098	0.0507804	–0.0064705	0.0042746
Firm Age	0.3145473	0.3213751	–0.0068279	0.1548237
Operating Cash Flow	0.0053352	0.0039138	0.0014214	0.001059
Consumer Price Index	–0.8231037	–0.8854958	0.0623921	0.05623
GDP per Capita	0.1749304	0.0691611	0.1057693	0.1308905

Note: b = consistent under Ho and Ha; obtained from xtreg. B = inconsistent under Ha, efficient under Ho; obtained from xtreg.

Test: Ho: difference in coefficients not systematic $\chi^2(18) = (b - B)' [(V_b - V_B)^{-1}] (b - B) = 15.90$
 Prob > $\chi^2 = 0.0395$

Since Prob > $\chi^2 = 0.0395$ is < 0.05, we reject the null hypothesis that the random effect model is appropriate and use the fixed effect model.

TABLE A2 Hausman test for earnings management, corporate governance, and capital structure decision—Model (1)

	<u>(b)</u> fe	<u>(B)</u> re	<u>(b - B)</u> Difference	<u>sqrt (diag(V_b - V_B))</u> S.E.
Earnings Management	-0.1978571	-0.2294724	0.0316153	0.0180903
Board Size	0.120363	0.1442949	-0.0239319	0.0142404
Earnings Mgmt * Board Size	0.0196837	0.0213706	-0.0016869	0.0018629
Firm Age	0.6633406	0.1990815	0.4642591	0.2668621
Operating Cash Flow	0.1145303	0.2579045	-0.1433741	0.0185844
Consumer Price Index	-1.607651	-1.866015	0.2583634	0.1796502
GDP per Capita	-0.0111628	-0.0276031	0.0164404	0.0380611

Note: b = consistent under Ho and Ha; obtained from xtreg. B = inconsistent under Ha, efficient under Ho; obtained from xtreg.

Test: Ho: difference in coefficients not systematic $\chi^2(17) = (b - B)'[(V_b - V_B)^{-1}](b - B) = 81.37$

Prob > $\chi^2 = 0.0000$

Since Prob > $\chi^2 = 0.0000$ is <0.05, we reject the null hypothesis that the random effect model is appropriate and use the fixed effect model.

TABLE A3 Hausman test for earnings management, corporate governance, and capital structure decision—Model (2)

	<u>(b)</u> fe	<u>(B)</u> re	<u>(b-B)</u> Difference	<u>sqrt (diag(V_b - V_B))</u> S.E.
Earnings Management	-0.151465	-0.1316487	-0.0198163	0.0123912
Board Composition	0.7853314	0.7658836	0.0194478	0.1414932
Earnings Mgmt * Board Composition	0.1896812	0.1462739	0.0434074	0.0204887
Operating Cash Flow	0.047103	0.0551331	-0.0080301	0.0066801
Firm Age	0.1837308	0.0021825	0.1815483	0.1577243
Firm Size	1.038074	0.9931019	0.0449722	0.0851514
Consumer Price Index	-1.227464	-1.45577	0.2283061	0.11201
GDP per Capita	-1.56125	-0.1552667	-1.405983	0.659817

Note: b = consistent under Ho and Ha; obtained from xtreg. B = inconsistent under Ha, efficient under Ho; obtained from xtreg.

Test: Ho: difference in coefficients not systematic $\chi^2(17) = (b - B)'[(V_b - V_B)^{-1}](b - B) = 39.87$

Prob > $\chi^2 = 0.0014$

(V_b - V_B is not positive definite)

Since Prob > $\chi^2 = 0.0014$ is <0.05, we reject the null hypothesis that the random effect model is appropriate and use the fixed effect model.

TABLE A4 Hausman test for earnings management, corporate governance, and capital structure decision—Model (3)

	<u>(b)</u> fe	<u>(B)</u> re	<u>(b-B)</u> Difference	<u>sqrt (diag(V_b - V_B))</u> S.E.
Earnings Management	-4.619532	-4.352715	-0.2668173	0.459339
Board Gender Diversity	-0.3645507	-0.2391378	-0.1254129	0.1054988
Earnings Mgmt * Board G Diversity	13.26072	11.05108	2.209636	1.855708
Firm Size	0.0455023	0.0512257	-0.0057234	0.0041528
Operating Cash Flow	0.0048164	0.0041005	0.0007159	0.0011082
Consumer Price Index	-0.9033852	-0.974508	0.0711229	0.0503857
GDP per Capita	0.1954286	0.0416331	0.1537956	0.1250714

Note: b = consistent under Ho and Ha; obtained from xtreg. B = inconsistent under Ha, efficient under Ho; obtained from xtreg.

Test: Ho: difference in coefficients not systematic $\chi^2(16) = (b - B)'[(V_b - V_B)^{-1}](b - B) = 10.44$

Prob > $\chi^2 = 0.8428$

Since Prob > $\chi^2 = 0.8428$ is >0.05, we fail to reject the null hypothesis that the random effect model is appropriate.