CORPORATE DISCLOSURE AND EARNINGS MANAGEMENT: THE MODERATING ROLE OF CORPORATE GOVERNANCE MECHANISMS

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Abstract

Notwithstanding the enormous amount of regulation and standards governing the financial reporting process, corporate failures and prior research have strongly indicated that earnings management (EM) is becoming a regular business practice in most firms today. Although this practice is more common in developed economies, there is limited research on corporate governance (CG) failures that have occurred in East Africa's emerging economies. In this study, therefore, we examine whether corporate governance mechanisms (CGM) moderate the association between corporate disclosure (CD) and EM using evidence from listed firms at the Uganda Securities Exchange (USE). We employ disclosure and corporate governance indices to measure the extent of CD and corporate governance. Additionally, we use the magnitude of discretionary accruals (DACC) obtained from the modified Jones model as a proxy for EM. We find that audit committee (AC) characteristics have a negative and significant moderating effect on the association between CD and EM. Our study contributes to the growing strand of literature on the moderating or complimentary effect of CGM in constraining EM in the context of an emerging economy.

Keywords: Corporate Disclosure, Corporate Governance, Earnings Management

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1. INTRODUCTION

This study examines the effect of corporate disclosure (CD) on earnings management (EM) among listed firms at the Uganda Securities Exchange (USE) during the period 2012–2019. In particular, we examine whether corporate governance mechanisms (CGM) have a moderating effect on the association between CD and the magnitude of discretionary accruals (DACC) as a proxy for EM. According to Sun and Al Farooque (2018), the issue of corporate governance (CG) has received much attention throughout the world to the extent that every country has been trying to implement good CG practices in its corporate sector. Prior studies have raised concerns about the quality

of accounting information reported and disclosed in the annual reports of financial statements (Adams, 2011). CD and governance are monitoring tools that operate within the governance system of a firm and seem to be useful in reducing information asymmetry as well as agency costs (Arcot & Bruno, 2011; Holm & Schøler, 2010), and consequently the practice of opportunistic earnings manipulation. To create disincentives for managers to engage in EM and mitigate agency costs, there is a need for strong disclosure transparency and effective CGM (Sun & Al Farooque, 2018).

Relative to previous studies, we employ disclosure and CG indices to measure the extent of CD and CG. EM is measured using the modified Jones model (Dechow et al., 1995). We find that audit committee (AC) characteristics have a negative and significant moderating effect on the relationship between CD and EM. However, the interaction effect between CD and the board of directors (BoD) characteristics and ownership structure (OS) features is not positively significant.

The study contributes to the literature on CD, CGM and EM in several ways. First, a majority of studies in this line of research have been conducted in the context of the UK (Katmon & Al Farooque, 2017; Sun et al., 2010), France (Ajina et al., 2019; Lakhal, 2015) and the U.S. (Khlifi & Zouari, 2022; Liu et al., 2017). The extent to which the UK, French and U.S. managers manage earnings is significantly higher than their counterparts in Uganda. Second, unlike prior CD research (Bauer & Boritz, 2013; Boesso & Kumar, 2007; Katmun, 2012) that exclusively uses disclosure scores related to financial analysts such as the investor relations magazine award, and the analyst forecast accuracy, this study employs the manual measurement for CD. Moreover, such manual measures have rarely been used in studies on CD and EM at the USE. Based on the aforementioned considerations, the present study has a strong incentive to shed more light on the potential moderating role of CGMs on the association between CD and EM in the Ugandan context.

The subsequent sections of this paper cover a review of the relevant theoretical perspectives, provide an empirical review of the literature on CD, CGM and EM, and present the testable hypothesis in Section 2. This is followed by the methodology in Section 3, results and discussion in Section 4 and a conclusion in Section 5.

2. LITERATURE REVIEW

2.1. Theoretical review

Previous studies on the moderating effect of CGM on the relationship between CD and EM (Katmon & Al Farooque, 2017; Lakhal, 2015) have highlighted various propositions provided by agency theory (Jensen & Meckling, 1976) with an emphasis on information asymmetry. Agency theory refers to a contract under which the principal engages an agent to achieve some service on their behalf; that includes delegating some decision-making authority to the agent (Alqatamin, 2016). The theory suggests that the separation of ownership and control leads to agency costs by way of the assumption of information asymmetry between the principals and the agents (Kılıç & Kuzey, 2018). Information asymmetry arises in a situation where the agents possess superior information relative to the principals (An et al., 2011).

According to Almahrog et al. (2018), managers could undertake opportunistic EM to achieve their objectives, which in turn, increases the firm's agency costs. This can be achieved by misleading shareholders through the manipulation of financial statements for their selfish interests, which in the end influences the quality of earnings (Asogwa et al., 2019). EM occurs less in firms that disclose more information, because when transparency of information is increased, information asymmetry between managers and shareholders decreases, which in turn enables investors to detect EM (Jo & Kim, 2007). Thus, the disclosure of corporate information can act as an instrument of control for shareholders, as well as a mechanism of legitimacy for managers. Despite the contribution of agency theory to this study, the theory is limited to only the principals and the agents. Furthermore, the theory overlooks other stakeholders of corporate reports such as communities in the governance earnings quality (EQ) relationship (Asogwa et al., 2019).

2.2. Empirical review of literature and hypothesis development

Concerning studies undertaken on the moderating effect of CGM on the association between CD and EM, Sun et al. (2010) explore the association between corporate environmental disclosure (CED) and EM and the effect of CGMs on that association in the UK. The study employs the performance-matched DACC to proxy for EM. Ordinary least squares (OLS) regression with robust standard errors was used to examine the association between CED and EM for a sample of 245 UK non-financial companies in the financial year ended March 2007. The authors find that CG attributes affect the association between CED and EM.

In the context of the UK, Katmon and Al Farooque (2017) studied the effect of internal corporate governance (ICG) on the association between disclosure quality and EM for a period of four years (2005–2008). The sampled firms comprised 170 firms with 145 matched-pair samples equivalent to 290 firm-year observations. Financial data relating to the control variables, disclosure information and CGM was collected manually from the annual reports. The modified Jones model was used to test the hypotheses of the study on matched-pair sample data of investor relations magazine award-winning and non-winning firms. Their findings demonstrated that disclosure quality is significantly and negatively related to EM relative to internal corporate governance mechanisms (ICGM).

Lakhal (2015) examines the association between CD practices, OS features, and EM using a sample of 170 quoted companies in the SBF 250's index in France during the year 2008. The researcher measures the level of CD using a disclosure index and estimates EM using the modified Jones and the Kothari et al.'s (2005) models. The results of the study revealed that CD and OS negatively affect EM.

Susanto (2016) studies the moderating effect of female AC on the association between corporate

social and environmental responsibility disclosure (CSERD) and EM. The population of her study comprised 121 manufacturing quoted companies on the Indonesian Stock Exchange during the period 2010–2012. She samples 61 manufacturing firms using the purposive sampling method. CSERD was measured using content analysis while EM was estimated using the modified Jones model. The results of her study show that female AC has a negative influence on the association between CSERD and EM.

Liu et al. (2017) examined the moderating effect of family involvement in corporate ownership, management, and/or governance on the association between the disclosure of corporate social responsibility (CSR) activities and EM using a sample of S&P 500 companies listed on the U.S. stock markets during 2003–2010. The findings revealed an insignificant relationship between CSR disclosure and EM when family involvement is accounted for, hence, suggesting that the association between CSR performance and family involvement is the primary driver of the relation between CSR performance and EM.

Ajina et al. (2019) investigated the moderating effect of good CG on the relationship between EM and CSR using a panel of data for a sample of 101 French-listed companies between 2010 and 2013. Financial data was gathered from the Thomson One Banker database and social responsibility information was collected from the CSR Hub database. EM was measured by DACC estimated using the models of Dechow et al. (1995) and Kothari et al. (2005) to enhance the robustness of their study. The results of the moderating effect of CG attributes on the relationship between CSR and EM show that CSR activities reduce EM particularly, in small and highly independent boards. They also found that institutional investors control strategic decisions and investments in CSR to mitigate EM.

Gerged et al. (2023) examine whether ICGMs moderate the relationship between a firm's engagement in CED and EM practices in Jordan as an emerging economy. The population of the study consisted of all non-financial firms listed on the Amman Stock Exchange, with complete data for a period of five years (2010 to 2014). The final sample comprised 100 firms (50 services companies and 50 industrial companies). CED in annual reports was measured using both unweighted and weighted disclosure indices while DACC as a proxy for the possible incidence of EM were estimated following Kothari et al. (2005). Their findings reveal that board size, managerial, and institutional OS have moderating effects on the CED-EM nexus.

Khlifi and Zouari (2022) examine the moderating effect of good CG on the relationship between CSR and real earnings management (REM) in innovative firms during mergers and acquisitions transactions. The final sample included 113 companies in the U.S. S&P 500 index for the period between 2015 and 2021 and adopted a sampling process that divided the total sample into two sub-samples, that is, a test sample and a control sample. The regression results show that CSR and good CG scores have a negative and significant effect on REM for the full and test samples but non-significant for the control sample. Moreover, good CGMs strengthen the BoD and the management of the firm to achieve its objectives by maximizing the wealth of the shareholders' interests.

Xi and Xiao (2022) examine the relationship among CED, EM practices and accounting conservatism in Chinese listed firms and further determine how ICGM moderates these relationships. The study focused on both accrual-based EM and REM. The final sample consisted of 1,619 observations, documented over the period 2015 to 2019. The sample selected for the study was obtained from the China Stock Market and Accounting Research (CSMAR) database. The study found that independent director ratio, institutional ownership and state-owned entities positively moderate the relationship between environmental disclosure index and accounting conservatism by 21.3%, 11.7% and 9.6%, respectively. The conclusion they drew is that CG strengthens the relationship between CED and EM practices. Based on the aforementioned review the hypothesis to be tested is thus formulated as follows:

H1: Ceteris paribus, there is a negative moderating effect of CGM on the association between CD and EM among non-financial listed firms at the USE.

3. METHODOLOGY

3.1. Data and data collection

In order to examine the moderating effect of CGM on the association between CD and EM, a census of all the listed firms at the USE was used. This was deemed large enough to perform the empirical part of this study given that no single investigation has been conducted on CD and EM with such large amounts of data on listed companies at the USE.

The use of large and industrially diverse samples permits a more comprehensive exploration and analysis of the relationship in question and allows greater generalisability of results (Aburaya, 2012). The inclusion criteria for firms in the final analysis were: 1) all the eligible firms for the analysis must have had eight consecutive years of income statement and statement of financial position data, and 2) the firm's annual reports have to be available for all the eight years, either on the USE website, the archives of the Registrar of Companies, the firms' website. Firms with missing reports were contacted by telephone and e-mail as suggested by Elghuweel (2015) or by physically going to their address to obtain the missing reports. To ensure that the secondary data collected was complete for purposes of computing disclosure indices and DACC, three firms were excluded due to insufficient financial information.

According to Oluoch (2015), the normal approach to studies that use secondary data is to identify the number of firm years which is taken to mean 12 consecutive months that incorporate a financial year for each of the accounting entities under evaluation. Accordingly, if 14 firms out of the listed 17 firms under study are evaluated for all the financial years, this would translate to 112 firm-year observations over the eight-year period, from 2012 to 2019.

The year 2012 was selected for the purposes of comparing the effect of CD on EM practices with the findings of other related Ugandan studies (Sejjaaka, 2007) which were conducted shortly after the mandatory International Financial Reporting

Standards (IFRS) adoption period. Moreover, this period is synchronized with key changes to disclosure regulations in the Companies Act (amended 2012)[1]. Therefore, the findings from the time frame selected (2012–2019) will not only shed light as to whether the recommendations related to EQ in the CG reforms in Uganda such as the adoption of IFRS and the amendments to the Companies Act, along with the market fluctuations have had any significant effect on the CD-EM nexus but also collect the timeliest information available.

3.2. Measurement of earnings management

According to Alzoubi (2016), accruals have been shown to be the most popular method of EM. Following past studies (Katmon & Al Farooque, 2017; Mouselli et al., 2012; Rajgopal & Venkatachalam, 2011), EM is measured based on DACC using the modified Jones model (Dechow et al., 1995) because of its superior specification and less restrictive data (DeFond & Jiambalvo, 1994). However, in order to calculate DACC, it was first necessary to calculate total accruals ($TACC_{i,t}$) measured as the difference between the net income ($NI_{i,t}$) and the net cash flows from operations ($CFO_{i,t}$) using the cash flow approach defined as follows:

$$TACC_{i,t} = NI_{i,t} - CFO_{i,t} \quad (1)$$

Having ascertained the value of *TACC* in Eq. (1), the coefficients β_1, β_2 and β_3 are estimated using the following pooled OLS equation (Eq. 2):

$$\frac{TACC_{i,t}}{A_{i,t-1}} = \beta_1\left(\frac{1}{A_{i,t-1}}\right) - \beta_2\left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right) + \beta_3\left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \varepsilon_{i,t} \quad (2)$$

where, $TACC_{i,t}$ is the value of total accruals for firm *i* in year *t*, $\Delta REV_{i,t}$ is the variation in the net revenue of firm *i* from time *t* - 1 to time *t*, $\Delta REC_{i,t}$ is the variation in the accounts receivable of firm *i* from time *t* - 1 to time *t*, $PPE_{i,t}$ is gross property, plant and equipment of firm *i* in year *t*, and $\varepsilon_{i,t}$ is the error term of firm *i* in year *t*. All the variables are scaled by the lagged value of total assets in year *t* - 1 $A_{i,t-1}$ and regressed on total accruals.

Using the estimated coefficients β_1, β_2 and β_3 of each firm-year (Eq. 2), the non-discretionary accruals ($NDACC_{i,t}$) were computed. The probable explanation for excluding non-discretionary accruals (*NDACC*) has been provided by Islam et al. (2011), who argue that they are used to reflect the business condition subject to the firm's condition and sales growth thus, cannot be controlled by managers. *NDACC* is calculated as follows:

$$NDACC_{i,t} = \beta_1\left(\frac{1}{A_{i,t-1}}\right) - \beta_2(\Delta REV_{i,t} - \Delta REC_{i,t}) + PPE_{i,t} \quad (3)$$

The absolute value of DACC ($DACC_{i,t}$) represents the difference between total accruals ($TACC_{i,t}$) and $NDACC_{i,t}$ as follows:

$$DACC_{i,t} = TACC_{i,t} - NDACC_{i,t} \quad (4)$$

The study uses the absolute value of DACC to proxy for the mixed effect of upward or downward earnings since managers might have incentives to engage in either income-increasing or income-decreasing EM (Etengu et al., 2019).

3.3. Measurement of corporate disclosure

Consistent with prior mandatory disclosure studies (Alfaraih, 2009; Hassaan, 2013; Popova et al., 2013) and voluntary disclosure studies (Al-Akra et al., 2010; Alotaibi, 2014; Lan et al., 2013), the extent of CD was measured by a disclosure index. The index consists of an exhaustive list of 218 items classified as follows: IASs/IFRSs (185 items), corporate and strategic information (15 items), financial and capital market data (6 items), and forward-looking information (12 items).

The study uses the dichotomous unweighted approach due to widespread criticisms labeled against the use of the dichotomous weighted approach, the qualitative unweighted approach and the qualitative weighted approach in academic accounting literature, particularly the subjectivity inherent in any individual scoring of disclosure index items that are apparent in them (Biobele et al., 2013). However, the major problem with this type of scoring is that some companies might be penalized by assigning a zero score to an undisclosed item when it is not required to disclose that item (Alias, 2011). Due to this weakness, the researcher found it necessary to use a relative scoring approach whereby the disclosure index for each firm is assessed as the ratio of actual disclosure scores computed to the total number of items required to be disclosed by the firm. The relative CD index (*CDINDEX*) for each firm is mathematically represented as:

$$CDINDEX_{i,t} = \frac{Actual\ number\ of\ disclosed\ items}{Maximum\ possible\ disclosure\ items} \quad (5)$$

where, $CDINDEX_{i,t}$ is the corporate disclosure index for firm *i* in year *t*.

3.4. Measurement of corporate governance mechanisms

In this study, three CGM were included as moderating variables. These variables are gleaned from previous studies and include BoD characteristics, AC characteristics, and OS features. Following Bekiris and Doukakis (2011), an index of 15 items was created and data on CGM was manually collected from the annual reports of listed companies. The decision not to use questionnaires was taken to avoid the possibility that the data collected would be biased and subjective (Constantatos, 2018).

To develop the corporate governance index (*CGINDEX*), a weighted dichotomous approach based on categorical coding is employed to score the CG disclosure items. As far as this approach is concerned, all items included in the governance

[1] https://ulii.org/akn/ug/act/2012/1

index checklist are equally valued regardless of their relevance to any particular stakeholder group. A dichotomous procedure was then conducted, whereby an item was awarded 1 point if the item of disclosure included in the checklist was disclosed, and 0 points if otherwise. The *CGINDEX* for each listed firm is estimated as follows:

$$CGINDEX_{i,t} = \frac{Actual\ CG\ disclosed\ items\ in\ each\ firm\ year}{Maximum\ score\ obtainable\ in\ each\ firm\ year} \quad (6)$$

where, $CGINDEX_{i,t}$ is the corporate governance disclosure index for firm *i* in year *t*.

3.5. Measurement of control variables

In addition to the main variables tested, we control for the use of variables that prior studies have found to be associated with EM to avoid the possible effect of puzzling factors (Constantatos, 2018). These variables are consistent with previous studies (Bekiris & Doukakis, 2011; Marra et al., 2011) and include firm size (*FSIZE*), profitability (*PRFT*) and leverage (*LEV*). It is expected that larger firms have more difficulty in conducting EM because they are more carefully monitored by the market (Marra et al., 2011). On the contrary, Bekiris and Doukakis (2011) reveal that larger firms find it easier to manage earnings because the complexity of their operations makes it difficult to detect EM. *FSIZE* is measured as the natural logarithm of total assets (Etengu et al., 2020).

Moreover, leveraged firms are likely to increase EM when they are close to the violation of binding debt agreements (Marra et al., 2011). *LEV* is proxied as the ratio of total debt to total assets. Furthermore, high profitability can be negatively related to EM because highly profitable firms make no EM effort to reach their earnings threshold (Katmun, 2012). *PRFT* is proxied as the ratio of net income to total assets (Etengu et al., 2019).

3.6. Model specification

To test the moderating effect of CGM on the relationship between CD and EM, the following panel regression model is estimated:

$$DACC_i = \beta_0 + \beta_1 LEV_i + \beta_2 PRFT_i + \beta_3 FSIZE_i + \beta_4 CDINDEX_i + \beta_5 BoDINDEX_i + \beta_6 ACINDEX_i + \beta_7 OSINDEX_i + \beta_8 CDINDEX * BoDINDEX_i + \beta_9 CDINDEX * ACINDEX_i + \beta_{10} CDINDEX * OSINDEX_i + \varepsilon_i \quad (7)$$

where, $DACC_i$ is the absolute value of discretionary accruals for sample *i* firm, β_0 is the intercept, β_1–β_{10} are the coefficients of the slope parameters, LEV_i is the ratio of debt to total assets for sample *i* firm, $PRFT_i$ is the ratio of net income to total assets for sample *i* firm, $FSIZE_i$ is total assets for sample *i* firm, $CDINDEX_i$ is the CD score for sample *i* firm, $BoDINDEX_i$ is the board of directors score for sample *i* firm, $ACINDEX_i$ is the audit committee score for sample *i* firm, and $OSINDEX_i$ is ownership structure score for sample *i* firm, $CDINDEX * BoDINDEX_i$ is the interaction effect between CD and BoD characteristics for sample *i* firm, $CDINDEX * ACINDEX_i$ is the interaction effect between CD and AC characteristics for sample *i* firm, $CDINDEX * OSINDEX_i$ is the interaction effect between CD and OS features for sample *i* firm, and ε_i is an error term for sample *i* firm.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

Table 1 presents a summary of descriptive statistics for all the study variables. The mean and median values of *CD* are 0.583 and 0.558, respectively. The maximum *CD* score of 0.767 and the minimum *CD* score of 0.44 signifies a wide variation in *CD* among USE-listed firms, suggesting that some firms provide high-quality disclosures while others opt for low-quality disclosures.

The absolute value of *DACC* as a proxy for EM has a mean value of 0.026. This result suggests that the magnitude of EM in listed firms at the USE may be lower than those reported in previous studies such as Katmun (2012), Ugbede et al. (2013), Habbash et al. (2014), and González and García-Meca (2014), who found that the UK, Malaysian, Chinese and Latin American companies have an average absolute value of *DACC* of 0.065, 0.075, 0.066, and 0.11, respectively, whilst our evidence shows that USE listed firms practice income increasing accruals.

Table 1 also shows that the mean values of *LEV*, *PRFT* and *FSIZE* are 0.294, 0.113 and 26.562, respectively. For CGMs, the mean value of *BoD* is 0.884, while the *AC* characteristics have an average of 0.712. These results indicate that on average, 88.4% of USE firms have efficient boards, whereas 71.2% have efficient audit committees. In addition, the mean value of *OS* is 0.701 and is consistent value with the mean of *AC*.

Table 1. Descriptive statistics

Variable	*Mean*	*Min*	*Median*	*Max*	*St. dev*
CD	0.583	0.440	0.558	0.767	0.092
DACC	0.026	0.007	0.027	0.053	0.012
LEV	0.294	0	0.33	0.83	0.261
PRFT	0.113	-0.165	0.095	0.403	0.144
FSIZE	26.562	24.728	26.319	29.397	1.667
BoD	0.884	0.667	0.917	1	0.094
AC	0.712	0.125	0.75	1	0.207
OS	0.701	0.375	0.688	0.875	0.109

Note: N = 112. *CD refers to corporate disclosure score; DACC is the absolute value of discretionary accruals from the cross-sectional version of the modified Jones model (Dechow et al., 1995); LEV is the ratio of debt to total assets; PRFT is the ratio of profit before tax to total assets; FSIZE is the natural log of total assets; BoD collectively refers to the board size, board activity, board independence, board size, representation by non-executive directors on the board, and chief executive officer (CEO) duality; AC represents audit committee size, audit committee independence, audit committee competence, and audit committee activity; OS is the proportion of the shares held by directors, families, locals institutions, foreign institutions, the state, local individuals, foreign individuals, and the state.*

Table 2 presents a pairwise correlation matrix for all the variables used in the robust regression analysis. From the table, it can be noted that the highest correlation is between *DACC* and *LEV* with a coefficient of 0.527 at a 0.05 significance level. Moreover, multicollinearity does not exist between the variables because the coefficients of correlation obtained in Table 2 are less than the plus or minus 80% beginning at which multicollinearity might exist as suggested by Almahrog et al. (2018).

It is also noted that the variations in *BoD* characteristics are positively correlated with the variations in *CD*, suggesting that large boards enhance the quality of *CD*. In addition, *PRFT* shows a negative relationship with *DACC* at approximately 59%. This is in tandem with Sun et al. (2010) who argue that it is important to consider firm performance when measuring DACC.

Table 2. Pair-wise correlation matrix

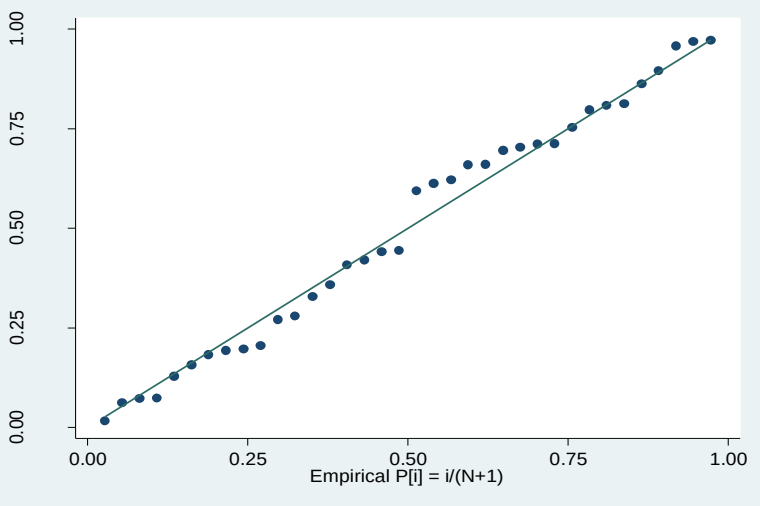
Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
(1) CD	1.000							
(2) DACC	0.044	1.000						
(3) PRFT	0.002	-0.593*	1.000					
(4) LEV	0.137	0.527*	-0.398*	1.000				
(5) FSIZE	-0.302	0.305	-0.169	0.477*	1.000			
(6) BoD	0.404*	-0.014	0.257	-0.220	-0.342	1.000		
(7) AC	-0.220	-0.330	0.401	-0.436*	0.295	0.088	1.000	
(8) OS	0.235	0.259	-0.573*	0.078	-0.175	-0.216	-0.065	1.000

*Note: * Shows significance at the 0.05 level. CD refers to corporate disclosure score; DACC is the absolute value of discretionary accruals from the cross-sectional version of the modified Jones model (Dechow et al., 1995); LEV is the ratio of debt to total assets; PRFT is the ratio of profit before tax to total assets; FSIZE is the natural log of total assets; BoD collectively refers to the board size, board activity, board independence, board size, representation by non-executive directors on the board, and CEO duality; AC represents audit committee size, audit committee independence, audit committee competence, and audit committee activity; OS is the proportion of the shares held by directors, families, locals institutions, foreign institutions, the state, local individuals, foreign individuals, and the state.*

4.2. Model diagnostic tests

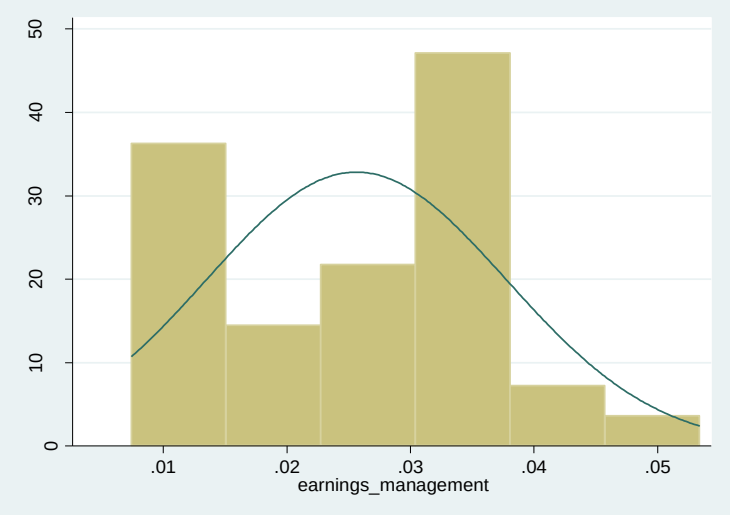
In a bid to allow for the use of multiple linear regression models, the OLS assumptions of normality and multicollinearity were carried out to ensure that the OLS regression coefficients are the best linear unbiased estimators. First, the error terms were tested to ascertain if they were normally distributed with a mean of zero and constant variance. The key issue here was whether the errors followed a normal distribution because if there was non-normality, we would get misleading regression coefficients and standard errors. This was done using *p–p* plots which is believed to be the most straightforward method of testing this assumption. As shown in Figure 1, there is a modest amount of linearity around the centre of the distribution because the *p-norm* graph is sensitive to non-normality in the middle range of data.

Figure 1. Normality of error terms



Two, the normality of the distribution had to be met in order to test for the hypothesis using multivariate OLS robust regression analysis. In this regard, the histogram (with normal curve) test was performed. As evident from the findings exhibited in Figure 2, it can be observed the histogram with the normal curve for EM is mildly skewed to the left. However, due to the fact that this problem is a very common phenomenon in CD research, the results are acceptable (Katmun, 2012).

Figure 2. Normality of the distribution



Three, the study ascertained whether the explanatory/predictor variables were highly correlated (the multicollinearity problem). In regression analysis, the problem of multicollinearity that arises due to a significant linear relationship between the explanatory variables can affect the estimation of the coefficients of the variables thus leading to imprecise results (Kjærland et al., 2020). To test the severity of multicollinearity in the data, a correlation matrix and the variance inflation factor (VIF) method were used. According to Brooks (2019), severe multicollinearity arises when the correlation between the two variables exceeds 0.80. Having run a correlation, the researcher manually observed the correlation coefficients between the independent variables.

As exhibited in Table 2 none of the correlations was more than 80% suggesting that multicollinearity was not present in the model. When the VIF was checked, the results (Table 3) revealed that the highest VIF is 7.13 and this belongs to *AC*, hence, suggesting that multicollinearity is not a serious problem because the general rule is that VIF should not be more than 10 (Katmun, 2012). Related to the VIF is the tolerance statistics which is a reciprocal of VIF (1 / VIF). As presented in Table 3, the tolerance statistics range from 0.140270 to 0.421402 indicating that multicollinearity does not exist in the data because only tolerance statistics below 0.1 indicate serious problems of multicollinearity.

Table 3. Multicollinearity test

Variables	*VIF*	*1 / VIF*
CD	3.01	0.312268
BoD	2.37	0.421402
AC	7.13	0.140270
OS	3.09	0.323587
FSIZE	5.60	0.178504
PRFT	3.04	0.328915
LEV	3.53	0.283433

Note: CD is the index for corporate disclosure; FSIZE is the natural log of total assets; BoD denotes board of directors characteristics, AC represents audit committee characteristics; OS represents ownership structure, FSIZE is the natural log of total assets, PRFT is the ratio of profit before tax to total assets; and, LEV is the ratio of debt to total assets.

Overall, the tests conducted show that the assumptions of the OLS regression analysis have been met and, therefore, the model developed in the study is statistically significant for explaining EM.

4.3. Regression analysis

To test the moderating effect of CGM on the relationship between CD and EM, a robust multivariate regression analysis was performed using three hierarchical models. Model 1 which tests for the effect of CDs on EM is stated as follows:

Model 1

$$DACC_i = \beta_0 + \beta_1 CDINDEX_i + \varepsilon_i + \quad (8)$$

where, $DACC_i$ is the value of EM for sample *i* firm, β_0 is the intercept to be estimated from the data, β_1 is the coefficient of the slope parameter, $CDINDEX_i$ is the CD score for sample *i* firm, and ε_i is the error term for sample *i* firm.

Model 2 which tests for the effect of CD on EM after incorporating the control variables (*LEV*, *PRFT*, and *FSIZE*) is stated as follows:

Model 2

$$DACC_i = \beta_0 + \beta_1 LEV_i + \beta_2 PRFT_i + \beta_3 FSIZE_i + \beta_4 CDINDEX_i + \varepsilon_i \quad (9)$$

where, $DACC_i$ is the value of EM for sample *i* firm, β_0 is the intercept to be estimated from the data, β_1–β_4 are the coefficients of the slope parameters, LEV_i is the ratio of debt to total assets for sample *i* firm, $PRFT_i$ is the ratio of net income to total assets for sample *i* firm, $FSIZE_i$ is the ratio of total assets for sample *i* firm, $CDINDEX_i$ is the CD score for sample *i* firm, and ε_i is the error term for sample *i* firm.

In Model 3, the moderating effect of CGM on the relationship between CD and EM is tested by incorporating three interaction variables of *BoD* with *CD*, *AC* with *CD*, and *OS* with *CD* by employing the following robust regression model:

Model 3

$$DACC_i = \beta_0 + \beta_1 LEV_i + \beta_2 PRFT_i + \beta_3 FSIZE_i + \beta_4 CDINDEX_i + \beta_5 BoDINDEX_i + \beta_6 ACINDEX_i + \beta_7 OSINDEX_i + \beta_8 CDINDEX * BoDINDEX_i + \beta_9 CDINDEX * ACINDEX_i + \beta_{10} CDINDEX * OSINDEX_i + \varepsilon_i \quad (10)$$

The results in Table 4 indicate changes in the adjusted R-square at each step of the regression as well as the significance of the beta weights (coefficients) for the predictor variable as stated and analyzed. The findings in Model 1 yielded an adjusted R-square of 0.2% which shows that about 0.2% of the changes in *EM* can be explained by *CD*. The model also shows that an increase in *CD* leads to a decrease in *EM* (coef. = -0.029) but *CD* is not a significant ($p > 0.05$) predictor of *EM*. This negative and insignificant result between the two variables is consistent with prior studies (Alzoubi, 2016; Bauer & Boritz, 2013).

In Model 2, the control variables were added to the *CD* dimensions to determine if they could predict *EM* when taken together. It can be observed that the control variables are a significant predictor of *EM* and explain an additional variance of approximately 41% (ΔAdj. $R^2 = 0.409$, $p \leq 0.01$) of the variation in *EM*. This suggests that the control variables add to the predictive ability of *CD* by 41%. However, collectively the control variables and *CD* account for 41.1% variance in *EM*. The study's adjusted R-square is higher than for previous studies (Dimitropoulos & Asteriou, 2010; Habbash, 2010) and lower than the findings of Alzoubi (2016) and Katmun (2012). It can also be seen from the model that there is a negative insignificant (coef. = -0.017, $p > 0.05$) relationship between *CD* and *EM* after controlling for *PRFT*, *LEV* and *FSIZE*. This result concurs with the results of Alzoubi (2016) who found a negative association between disclosure quality and DACC.

In Model 3, *CD* dimensions were added to *CGM* and the control variables to determine if they could predict *EM* when taken as a set. To begin with, it can be observed that *CGMs* explain an additional variance of about 19% (ΔAdj. $R^2 = 0.186$) of the variation in *EM*. This indicates that *CGMs* add to the predictive ability of the control variables by about 19%. However, collectively *CD*, the control variables and *CGMs* account for 59.7% of the variation in *EM*.

The results in Model 3 likewise show that the interaction effect between *CD* and *BoD* is negative and insignificant (coef. = -0.0169, $p > 0.05$). These results are contrary to the findings of Sun et al. (2010) who found a positive significant interaction effect between DACC and board size and Gerged et al. (2023) who found that the interaction effect between CED, board size and EM was significant. When the interaction effect between *CD* and *OS* is tested, a positive and significant relationship (coef. = -0.187, $p > 0.005$) was obtained. This result is consistent with the empirical evidence obtained by Xi and Xiao (2022) who found that institutional ownership among other CGMs positively moderates the relationship between CED and EM and is inconsistent with the results of Lakhal (2015) whose findings show that families, institutional investors and multiple large shareholders negatively influence EM, and hence, act as good CG devices to limit managerial discretion. Finally, the results in Model 3 depict that the interaction effect between *CD* and *AC* is negative and significant (coef. = -0.133, $p < 0.001$).

In summary, *H1* which stated that there is a negative moderating effect of *CGM* on the relationship between *CD* and *EM* among non-financial listed firms at the USE is supported with respect to *AC* characteristics. It can, therefore, be concluded that *H1* is only partially supported. Moreover, the results offer support to the agency theory predictions that *CD* acts as a controlling device leading to the alignment of management interests with those of the shareholders (Jensen & Meckling, 1976).

Table 4. Regression results

Variables	*Model 1 coefficient*	*Model 2 coefficient*	*Model 3 coefficient*
CD	-0.029	-0.017	0.591
PRFT		**-0.034***	-0.018
LEV		0.008	0.009
FSIZE		0.000	**0.005***
BoD			0.401
AC			**-0.111****
OS			0.155
*CD * BoD*			-0.169
*CD * AC*			**-0.133****
*CD * OS*			-0.187
Constant	**0.043****	0.031	-0.481
r2_a	0.002	0.411	0.597
∆r2_a	0.002	0.409	0.186

*Note: * p < 0.05; ** p < 0.01; *** p < 0.001. N = 112. r2_a = adjusted R-square; ∆r2_a = change in adjusted R-square; CD = corporate disclosure; CD * BoD = interaction effect between corporate disclosure and board of directors; CD * AC = interaction effect between corporate disclosure and audit committee; and, CD * OS = interaction effect between corporate disclosure and ownership structure.*

5. CONCLUSION

This study examined the moderating effect of CGM on the association between CD and EM among listed firms at the USE during the period 2012–2019. We hypothesised that CGM has a negative moderating effect on the association between CD and EM. To support or reject our hypothesis, we employed disclosure indices to measure the levels of CD and CG. Our results show that out of the three CG variables (AC characteristics, OS features, and BoD characteristics), only AC characteristics had a positive and significant moderating effect on the association between CD and EM.

Given the voluntary nature of CG disclosure on a comply or explain basis in Uganda as an emerging economy in East Africa, the empirical findings of this study shed light on the crucial need for more concerted and deliberate efforts by the Government of Uganda, the USE, and other national regulatory bodies, such as the Capital Markets Authority of Uganda, to develop new enforcement avenues for CG provisions that may lead to a reduction in EM practices by the well-governed firms in Uganda.

The findings of this study also act as a basis for future researchers who might wish to study the moderating effect of CGM on the association between CD and REM in emerging economies. Moreover, the results of this study might act as a source of value-relevant information for regulators of corporate entities to understand better the combined effect of both CD and CGM in constraining the EM practices of firms.

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