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Role of earning management in shaping capital structure decision: Do corporate governance matters in the textile industry of Pakistan

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ABSTRACT

The manipulation of the financial statements through earnings management practices provides misleading information to the shareholders. This study investigates the impact of earning management practices on the capital structure decisions of 69 textile companies in Pakistan listed on the stock exchange. This study further investigates the moderating role of corporate governance in this nexus using the System Generalized Method of Moments (GMM) estimation technique for the period from 2013 to 2020. The empirical evidence indicated a significant negative relationship between earning management practices and capital structure decisions among textile companies in Pakistan. The results further revealed that effective corporate governance mechanisms can mitigate the negative impact of earnings management practices on the capital structure decisions of Pakistan's textile companies. The controlling factor, firm age, significantly influences capital structure decisions, whereas firm size and operating cash flow have no significant impact. Lastly, the study's findings offer prudential recommendations for policymakers and think tanks to restrict earnings management practices through corporate governance to achieve an optimal capital structure.

Introduction

Capital structure (CS) is the combination of debt and equity financing to fulfill the company's financial requirements (Banerjee, 2012; La Rocca, Baker, & Martin, 2011; Van Horne, 1983). According to Van Horne (1983) CS is considered a funding source and is categorized into two primary groups: equity financing and debt financing. The company's CS is dependent on a hybrid arrangement. Some of the equity is in shares; the second is short-term and long-term debt finance comprising bank loans, bonds, and debentures. Drawing on Gordon (1963) theory CS has a significant influence on business value based on financial performance and financial position. A company cannot rely solely on equity financing because it results in high taxes and reduces earnings per share. Consequently, it reduces shareholders' dividend returns. On the other hand, fully leveraged firms also face higher capital costs. Resultantly, it increases financial leverage and ultimately negatively influences firm performance (Gordon, 1963). Unlike banking industry, insurers risk management framework is not governed internationally (Ahmed et al., 2023). The growing discussion highlights earning management (EM) as one of the significant factors negatively impacting CS (Ajay & Madhumathi, 2015; Dang et al., 2021; Nikoomaram, Arabahmadi, & Arabahmadi, 2016; Okyere, Fiador, & Sarpong-Kumankoma, 2021). EM can play a significant role in financial reporting, but it has become a limitation on future decisions about CS. Xie, Davidson III, and DaDalt (2003) stated that EM is known for manipulation and alteration in adjustments; firm managers have the motive and desire to enhance their packages and get promotions; however, they employ these practices, which can adversely affect corporate decisions. Booth and Schulz (2004) stated that this is the agency problem in which the manager does not make decisions in the shareholders' best interest. Corporate governance (CG) is a powerful tool vital for monitoring management activities and restricting managers' opportunistic behavior (Elghuweel et al., 2017; Lawal, Nwanji, Opeyemi, & Adama, 2018). In addition, CG also reduces agency conflict and asymmetric information. The theoretical lens of the corporate governance (CG) is based on CEO duality, independent director, managerial ownership, firm size, ownership consideration, board size, and the board composition that made the best monitoring system in this firm (H. Ahmad, Akhter, Siddiq, & Iqbal, 2018; Bekiris & Doukakis, 2011; Kirana, Wibawaningsih, & Wijayanti, 2020).

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Moreover, Okyere et al. (2021) argued that CG is essential because boards have complete information about the firms and their legal responsibilities. Nonetheless, CG plays a significant role in achieving optimal CS decisions (Elghuweel et al., 2017; Lawal et al., 2018). Al-Mohareb and Alkhalaileh (2019) investigated the relationship between earnings management and capital structure. Their findings revealed a significant impact of earnings management on capital structure. Elghuweel et al. (2017) argued that corporate governance could reduce earnings management practices and highlighted the impact of CG on the relationship between EM and corporate structure decisions. In addition, Okyere et al. (2021) explored the impact of corporate governance (Board size, Board compensation, and board gender diversity) and earnings management on capital structure in Sub-Saharan African countries.

Although the above-stated discussion provides a comprehensive understanding of the role of EM and CG in shaping optimal CS, the literature lacks an all-inclusive model that incorporates EM, CG, and CS. Prior studies mainly focus on the direct impact of EM and CG on the CS. In contrast, none of the studies examined the relationship between EM and CS in the presence of CG in developing and volatile economies. Therefore, this study addresses the gap in the literature by making significant contributions. **First**, this study investigates the relationship between EM and CS in the volatile conditions of Pakistan textile companies. Second, this study further extends the discussion of the relationship between CG and CS under the volatile conditions of Pakistani textile companies. Third, to the best of the authors' knowledge, this is the first study to investigate the moderating role of CG in the relationship between EM and CS under the current volatile conditions of Pakistan's textile companies. **Fourth**, the study's outcomes provide guidance for think tanks to formulate informed policies on optimal capital structure decisions. The remainder of the manuscript is arranged as follows. Section 2 presents academic literature, while Section 3 explains the material and method. Section 4 presents the main results and discussion, and Section 5 concludes the study, including policy implications and limitations.

Review of Literature

Earnings management and capital structure

Tahir et al. (2011) explored the impact of EM on CS by using data from Pakistan's non-financial listed companies from 2001 to 2005. EM is an independent variable measured through discretionary accruals, and CS is measured using the gearing ratio. The results of this study indicate that EM has a positive and significant effect on the gearing ratio; an increase in EM practices would increase the gearing ratio, and EM can modify the effect on the CS of Pakistan's non-financial sectors. Ajay and Madhumathi (2015) investigated the impact of EM practice on CS in the context of the Indian economy using 13,910 firms from the 2004 to 2013 panel data, analyzed with random-effects and fixed-effects models. The study's results revealed that EM has a significant and positive influence on leverage, and they found that an increase in EM practices can increase the firm's Bowring; however, it would increase the firm's financial leverage. This means that EM has diverse effects on optimal CS decisions. In addition, An, Li, and Yu (2016) investigated the impact of EM on CS and the role of environmental institutions in the relationship between EM and CS across 37 countries. This study has two novel results. The first is that EM practices have a positive and significant influence on CS; higher EM practices can increase the firm's leverage ratio due to asymmetric information, and this result supports the agency theory of free cash flow, which states that higher EM practices increase the debt level. Moreover, Gregova, Smrcka, Michalkova, and Svabova (2021) investigated the impact of EM on CS decisions using a sample of 10,627 firms from V4 across countries from 2014 to 2017. The results revealed that EM has a significant negative relationship with company debt; they argued that debt monitoring reduced EM's agency costs and practices. Dang et al. (2021) investigated the impact of EM on the CS of 41 countries from 2000 to 2010. This study found that EM positively affects financial leverage because the quality of earnings information is systematically linked to the leverage decision; however, firms engaged in EM practices have higher financial leverage. Dang et al. (2021) also investigated the country-level economic status of the EM practice and its impact. They found the same results because information is more asymmetric in countries with weak institutional environments; thus, EM practices have a greater impact on the economy. Furthermore, Okyere et al. (2021) investigated the impact of EM on CS decisions in sub-Saharan African countries. The results indicate that EM has a significant negative effect on equity financing and a positive association with debt financing levels. Based on the above literature, the first hypothesis formulated is given below.

H₁: *Earnings management significantly and negatively affects the capital structure decisions of Pakistani textile firms, given their current volatile conditions.*

Corporate governance and capital structure

CG is a system and mechanism for monitoring managers' activities and ensuring that the firm's operations run smoothly. It can also be ensured that resource allocation and an internal decision have been affected by corporate governance or not (Butt & Hasan, 2009). This study uses six essential components of CG: ownership concentration, board size, board composition, CEO duality, managerial ownership, and board independence. Wen, Rwegasira, and Bilderbeek (2002) found that strong corporate governance reduced debt. Furthermore, Liao, Mukherjee, & Wang (2015) found that Good CG has high leverage because the CG mechanism addresses the separation of the CEO duality problem and the high percentage of managerial shareholders, in the presence of board characteristics with high director independence and non-decision-making directors. Atanasova, Gatev, and Shapiro (2016) investigated the role of CG on financial decisions in Canadian firms, and the results revealed that CG has a significant and positive impact on financial decisions because good CG are in a fever of issuing new equity rather than debt financing; those firms that have less collateralized assets have a lower leverage level. Butt and Hasan (2009) explored the effect of CG on corporate financial decisions. The study results found that BRDS and MGROs negatively and significantly affect financing decisions. This result indicated that larger BRDS and MGROs can influence decision-making and positively impact CS. According to H. Ahmad et al. (2018), the impact of CG on CS was investigated. The results revealed that BRDS

and BRDI have a positive and significant impact on the leverage ratio. Higher BRDS and larger BRDI increase the debt level in CS decisions. However, it adversely affects CS. In addition, it was found that CEOD and MGRO have adverse consequences on firm leverage levels. This means that MGRO and CEOD positively influence CS because they prefer equity financing. Moreover, the results indicate that OWRC has no significant effect on financial leverage in Pakistan. Bulathsinalage and Pathirawasam (2017) studied the effect of CG and CS decisions in Sri Lanka. MGRO and BRDI proxies are used as the CG. The result showed that MGRO negatively affects the leverage ratio. Based on the above literature, mixed results were found regarding CG indicators and CS. However, we formulate the second hypothesis of this study as given below.

H₂: *Corporate governance has a significant positive impact on the capital structure of Pakistani textile firms, given their current volatile conditions.*

Corporate governance and earnings management

According to Governance (1992), CG is a system that can be directed and controlled by the company's activities. Nevertheless, the board of directors is responsible for establishing a sound governance system, and shareholders of the firms also play an essential role in this mechanism. According to Iraya, Mwangi, and Wanjohi (2014), CG is the process and structure of firms that can be used to manage, control, and direct the firm's activities; however, it can also enhance wealth and the accounting method to protect the shareholder interest. Gulzar (2011) investigated the impact of CG on EM. The findings of this study revealed that OWRC and CEOD have a negative and significant relationship with EM; this result emphasized that higher stockholders (more than 5% of shares) can be influenced by opportunistic behavior by policymakers and managers to overcome EM practices. In addition, Hamid, Eddine, Ayedh, and Echchabi (2014) investigated the impact of CG on EM. The findings of this study showed that CG has a significant impact on EM and a positive influence on policymakers in addressing EM practices. Iraya et al. (2014) investigated the impact of CG on EM in Nairobi, Kenya. It was found that CG is significantly associated with EM. Furthermore, Kirana et al. (2020) investigated the impact of BRDI on EM in the context of Indonesian firms; the results revealed no relationship between independent directors and EM, as the results were insignificant. Faisal (2021) investigated the impact of CG on EM. The results revealed a significant relationship between BRDC and EM, and they argued that for firms with outside directors, there is a lower likelihood that managers will manipulate the firm's financial reports; however, board composition has influenced managers' opportunistic behavior in manipulating financial reports. Based on the above literature, the findings concerning CG indicators and EM are mixed. Nevertheless, this study formulated the following hypothesis.

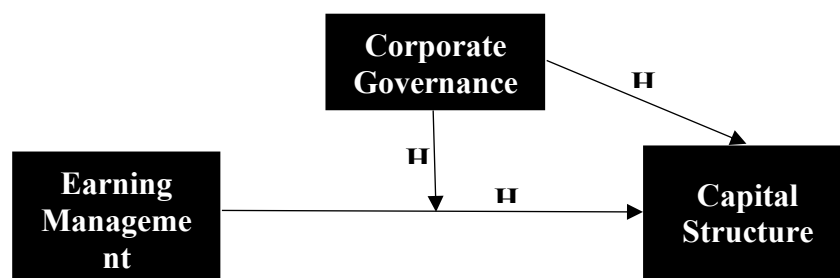
H₃: *Corporate governance significantly moderates the relationship between earnings management and capital structure in Pakistani textile firms' current volatile conditions.*

Material and Method

Theoretical framework

This research used agency theory for theoretical consideration. Jensen and Meckling (1976) stated that agency theory elaborates on the relationship between shareholders and managers of the firms. The principal (Shareholders) transfers their control and corporate decision-making power to agents (managers) so that the agents can act in the shareholders' best interests. In light of agency conflict, Jensen and Meckling (1976) stated that the firm's capital structure is shaped by agency costs. Therefore, the concept of CG attracted significant consideration in this regard as it helps firms resolve agency conflicts. Furthermore, good corporate governance limits EM practices to improve the quality of financial information and establish an optimal capital structure. Researchers have recently been keen on reducing agency conflict and moral hazard problems. Furthermore, Roche (2005) enhanced the existing literature on agency theory and governance control mechanisms by signifying the need to develop and implement effective internal control mechanisms to ensure good governance, limit earnings management practices, and protect shareholders' interests. Based on this theoretical consideration, the conceptual model is given below in figure 1.

Figure 1 Conceptual framework



Population size, sample set, and data sources

This quantitative and applied research is based on secondary data from Pakistan's textile industry. Currently, 423 textile firms operate in Pakistan, but only 121 are registered with the Securities and Exchange Commission of Pakistan. So, the study population consists of 121 textile companies operating in Pakistan and 69 companies, which are a sample set based on data availability. EM, CG, and CS data are obtained from each firm's financial statements and from the State Bank of Pakistan (SBP) for eight years, spanning 2013 to 2020. Moreover, these firms represent a significant portion of Pakistan's textile sector. Moreover, the dataset remains

restricted to 69 firms to ensure data availability and consistency, thereby producing reliable and robust outcomes. This research has also used several control variables as independent variables, such as firm size, firm age, and operating cash flow. Furthermore, data on control variables are obtained from the financial statements of the selected firms.

Estimation technique

Cross-sectional dependence

In the modern era of globalization, cross-sectional dependence (CD) is a common issue in panel data analysis. However, Yasmeeen, Li, Hafeez, and Ahmad (2018) stated that CD is an instrumental technique for decision-making at the international level, and the CD test is a significant step for panel unit root, and the CD test is one of the important techniques to avoid the ambiguous results and errors (M Hashem Pesaran, Schuermann, & Weiner, 2004). The CD test was introduced by (M Hassem Pesaran, 2004). He argued that the CD test analyzes the degree of dependence among the firms or countries. However, the CD test is also reliable for small and large t and large i , provided stationarity and heterogeneity are present in the panel model. The equation (1) of the CD test is given below:

$$CD = \sqrt{\frac{2T}{N(lagN)}} \left(\sum_{i=1}^{n-1} \sum_{j=i+1}^n \rho_{ij} \right) \quad (1)$$

Some residual variables, such as the CG indicators, differ across firms. So, due to the presence of residual variables, three tests are applied to check the CD: the Frees test, the Pesaran test, and Friedman's test. In the existence of CD, the second-generation test proposed by Pesaran (2004) will be used. However, the panel fixed unit root and Wald tests were employed to investigate the unit root in these circumstances.

Panel fixed unit root test

A panel fixed-effects unit root test is used to assess the stationarity of the variables and to mitigate estimation bias. This investigates the order of integration using the econometric BLUE (Best Linear Unbiased Estimator) test (Cavaliere, Phillips, Smeekes, & Taylor, 2015). In this technique, three types of stationarity are identified: the first one is weak stationarity, which means that mean values are the same over time, but the variance is not the same over time; the second one is strong stationarity, which means that over time, mean values and variance are same, these two cases support that there is no unit root. On the other hand, if the mean and variance are not constant over time, it is considered evidence of non-stationarity in the data (Cavaliere et al., 2015).

Westerlund co-integration test

The first-generation co-integration test can address CD issues using the Kao, Pedroni, and Johansen tests. However, the Westerlund co-integration test estimates the existence of the long-run relationship because variables are incorporated at the first difference Westerlund (2007). Therefore, this study employed this test on textile industry panel data to test for a long-run relationship among the variables. Accordingly, Hafeez et al. (2020) claimed that this test reflects the cross-sectional dependence based on two statistics: the first one is the panel statistics, and the second one is the group statistics.

System dynamic GMM estimation model

To estimate this study analysis, the dynamic panel regression model will be used. The estimation equations (1) and (2) are given below:

$$\text{EM model:} \quad CS_{it} = \phi_0 + \phi_1 CS_{it-1} + \phi_2 EM_{it} + \sum_{i=3}^5 \phi_i Y_{it} + \epsilon_{it} \quad (2)$$

$$\text{CG model:} \quad CS_{it} = \phi_0 + \phi_1 CS_{it-1} + \phi_2 CG_{it} + \sum_{i=3}^5 \phi_i Y_{it} + \epsilon_{it} \quad (3)$$

The EM Model represents the impact of EM on CS, and the CG model represents the impact of CG on CS. CS_{it-1} is the lag value of leverage, CG is the observation of corporate governance's overall impact, and Y_{it} represents the three control variables.

EMCG model:

$$CS_{it} = \phi_0 + \phi_1 CS_{it-1} + \phi_2 EM_{it} + \phi_3 (EM_{it} \times CG_{it}) + \sum_{i=4}^{06} \phi_i Y_{it} + \epsilon_{it} \quad (4)$$

The EMCG Model represents the influence of EM on CS and the moderating effect of CG by using the three control variables in this model

CGI model:

$$CS_{it} = \phi_0 + \phi_1 CS_{it-1} + \phi_2 EM_{it} + \sum_{i=3}^8 \phi_i (EM \times CG_{it}) + \sum_{i=9}^{11} \phi_i Y_{it} + \epsilon_{it} \quad (5)$$

CGI model representing the relationship of EM on CS in the light of the moderating effect of CG indicators using the three control variables in this model

$$i = 1, 2, \dots, 69, t = 2013-2020$$

All these models show the effect of earning management on capital structure and the moderating effects of corporate governance indicators. Whereas CS_{it} represents the capital structure proxy such as leverage, EM represents discretionary accrual, CS_{it-1} is the lag value of leverage, CG is the corporate governance variable and it has six proxies CEOD (CG_1), BRDC (CG_2), OWRC (CG_3), MGRO (CG_4), BRDS (CG_5), BRDI (CG_6), and Y_{it} representing the three control variables such as firm size, firm age and operating the cash flow, i is devoted to i^{th} firm, t is devoted to years (time), n is devoted to the total number of control variables, and ϵ is used as the error term which is represented as given below in the equation (6),

$$\epsilon_{it} = \alpha_i + \mu_t + v_{it} \quad (6)$$

According to (Kitazawa, 2003; Yaffee, 2003), this model is estimated through the GMM estimator by approximating the dynamic panel data model to avoid correlation problems. This method was proposed by (Arellano & Bover, 1995) and they argued that this technique can overcome the bias problems that arise when using different GMM models. Also, it can overcome the issues of endogeneity that arise through reverse causality (Ullah, Akhtar, & Zafarian, 2018). For that, the following equation (7) has been utilized:

$$(CS_{it} - CS_{it-1}) = \beta_0 + \rho CS_{it-1} - CS_{it-2} + \beta(Y_{it-1} - Y_{it-2}) \delta(EM_{it-1} - EM_{it-2}) + (\epsilon_{it} - \epsilon_{it-1}) \quad (7)$$

Variables and measurements

Earning management is the independent variable, proxied by discretionary accruals calculated through the Jones model (Kothari, Leone, & Wasley, 2005). Capital structure is the research's dependent variable, measured by the leverage ratio (debt-to-equity ratio). Additionally, the debt-to-equity ratio is calculated by dividing total debt by total equity (Damak & Hamad, 2019; Dang et al., 2021; Hapsoro & Bahantwelu, 2020; Huang, Boateng, & Newman, 2016; Sheikh & Wang, 2012). Corporate governance is used as a moderating variable in this study, and it is measured using six indicators (ownership concentration, managerial ownership, CEO duality, board size, board compensation, and independence of boards). Furthermore, this research employed several control variables, including operating cash flow, firm age, and size. All measurement details for these variables are given in Table 1 below.

Earnings management measurement

Kothari et al. (2005) argued that discretionary accrual is the most reliable proxy because discretionary accrual matches the performance of the firms, so the performance-matched discretionary accrual measure through the (Jones, 1991) the model was invented by Jones J. J in 1991, and he argued that this model is the most powerful for detecting EM. The estimated model is given below in equation (8):

$$TA_{it} = \beta_0 + \beta_1 \left(\frac{1}{A_{it-1}} \right) + \beta_2 \Delta SALES_{it} + \beta_3 PPE_{it} + \epsilon_{it} \quad (8)$$

In this model, TA represents the total accrual. It is measured by subtracting operating cash flow from net income (TA = Net income - Operating cash flow), whereas in this formula, A represents the total assets of the firms, $\Delta SALES$ represents the changes in sales that are measured through (current year sale – previous year sale), and the PPE is the observation of property, plant, and equipment and that is measured in this study through operating fixed assets + capital W.I.P. In this model, i denotes the i^{th} firm, and t denotes time because this study uses panel data. However, match Jones's discretionary accrual is measured using the equation below in equation (9).

$$TA_{it} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \alpha_2 \Delta SALES_{it} + \alpha_3 PPE_{it} + \alpha_4 ROA_{it} + \epsilon_{it} \quad (9)$$

In this equation, ROA represents return on assets, measured as net income divided by total assets (Net income/total assets). The previous year's total assets scale is used to check heteroscedasticity. However, performance matches the discretionary accrual measure by subtracting equation 9 from equation 8. The value of performance-matched discretionary accruals is expected to be higher than it is, as EM is higher. However, a lower value indicates that EM is low; a zero value indicates that no EM is involved in the firms.

Table 1: Variable's measurements

Variables	Nature	Proxy	Measurement	Reference	Data Source
Earning Management	IV	discretionary accrual	Jones model	(Jones, 1991) (Kothari et al., 2005) (Okere et al., 2021)	
Capital Structure	DV	Leverage ratio	Debt-to-equity ratio	(Masood & Shah, 2014; Wellalage & Locke, 2014)	
Corporate governance	Mediator Variable	Ownership concentration	Number of shares taken by shareholders who have ownership of 5% or more	(H. Ahmad et al., 2018; Ahmadpour, Jafari Samimi, & Golmohammadi, 2012)	Financial Statement of Textile, Listed in Pakistan
		Board size	Log of the number of members on the board	(Ahmadpour et al., 2012) (H. Ahmad et al., 2018)	
		Board composition	The ratio of external directors to the total No of directors	(Bokpin, 2011; Okere et al., 2021)	
		CEO Duality	It is a dummy variable that is equal to 1 if the CEO has board chairmanship; otherwise, 0	(H. Ahmad et al., 2018; Butt & Hasan, 2009)	
		Managerial Ownership	Percentage shares held by director, executive, spouse, and children	(H. Ahmad et al., 2018; Bear, Rahman, & Post, 2010)	
Control Variables	Firms control Factors	Board independence	Number of independence director	(H. Ahmad et al., 2018; Butt & Hasan, 2009)	
		Size of Firm	Log of the book assets	(Huang et al., 2016) (Kieschnick & Moussawi, 2018) (Okere et al., 2021)	
		Age of Firm	Age of the firm since incorporation		
		Operating Cashflow	Current assets and current liabilities		

Results and Analysis

Correlation matrix

Table 2 presents the correlation matrix for the textile industry in Pakistan, and the results indicate that EM and leverage are positively correlated. CEOD, BRDC, OWRC, MGRO, and BRDS are proxies for CG, and the correlation matrix shows that these indicators are negatively correlated with CS, except BRDI, which is positively correlated with CS. In addition, CEOD, BRDC, OWRC, BRDS, and BRDI show a negative correlation with EM, except for MGRO, which shows a positive correlation.

Table 2: Correlation matrix

Variables	CS	EM	CEOD	BRDC	OWRC	MGRO	BRDS	BRDI	FRMS	FRMA	OCF
CS	1.000										
EM	0.026	1.000									
CEOD	-0.089	-0.037	1.000								
BRDC	-0.051	-0.151	0.019	1.000							
OWRC	-0.052	-0.002	0.023	0.097	1.000						
MGRO	-0.037	0.183	0.042	-0.037	0.435	1.000					
BRDS	-0.005	-0.001	-0.107	0.011	-0.215	0.033	1.000				
BRDI	0.061	-0.015	-0.127	-0.604	-0.127	-0.149	0.224	1.000			
FRMS	0.042	-0.074	-0.081	-0.063	-0.039	0.034	0.218	0.033	1.000		
FRMA	0.027	0.040	-0.133	-0.051	-0.124	-0.042	0.123	0.000	0.045	1.000	
OCF	0.023	0.126	-0.087	-0.010	-0.051	0.013	0.158	0.050	0.212	0.070	1.000

Preliminary tests for panel data sets

Cross-sectional dependence

Table 3 shows the results of the CD test in this study. The results confirmed the presence of cross-sectional dependence among the 69 textile companies in Pakistan over the specified period.

Table 3: Cross-sectional independence tests

Variables	CS	EM	FRMS	FRMA	OCF
CD-stats	1.79	81.47	22.04	137.00	8.74
Prob-value	0.074	0.00	0.00	0.00	0.00
Residuals cross-sectional independence					
	Frees' test		Pesaran CD test		Friedman's test
	5.06*		23.403***		87.338**
Prob-value	0.06605		0.00		0.0572

Notes: Under the null hypothesis of cross-section independence, $CD \sim N(0,1)$.

The results show that all variables are significant at the 1% level, except CS, which is significant at the 10% level. Based on the results, the null hypothesis (H_0) is rejected; according to Liu et al. (2018), this indicates the presence of a CD between the input and output variables. On the other hand, Liu et al. (2018) residual variables, such as CG indicators, have different values for each firm. So, we employed three tests to check the CD: the Frees test (Frees, 1995), the Pesaran CD test (Pesaran, 2004), and the Friedman test. These tests' results are significant at 0.1, 0.001, and 0.05. Therefore, it indicates the presence of CD in the data of textile companies in Pakistan. Furthermore, using the panel fixed-effects regression test and the Wald test to examine the unit root in these circumstances is more appropriate.

Panel fixed effect unit root test

Table 4 presents the results of the panel fixed-effect unit root regression test and Wald test. The results indicate that the lag values for all variables are highly significant at the 0.001 level and are not equal to 1. Hence, the test result rejects the null hypothesis and confirms the absence of a unit root. Moreover, the variables in this study are stationary, and they don't exhibit unit root behavior.

Table 4: Panel fixed effect unit root test

	CS	EM	CEOD	BRDC	OWRC	MGRO	BRDS	BRDI	FRMS	OCF
CS (-1)	-0.198 (***)									
EM (-1)		-0.005								
CEOD (-1)			0.538 (***)							
BRDC (-1)				0.470 (***)						
OWRC (-1)					0.544 (***)					
MGRO (-1)						0.536 (***)				
BRDS (-1)							0.266 (***)			
BRDI (-1)								0.527 (***)		
FRMS (-1)									0.402 (***)	
OCF (-1)										0.331 (***)
Wald-statistics	2391.3 (***)	2214.1 (***)	204.0 (***)	151.8 (***)	27.7 (***)	142.6 (***)	214.2 (***)	113.3 (***)	169.2 (***)	155.2 (***)
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

Note: (***) 0.01 significance level, (**) 0.05 significance level, (*) 0.1 significance level

Westerlund test

Results for H_0 : no cointegration with 69 series and 1 covariate

Table 5 presents the results of the Panel Westerlund cointegration tests used to examine the existence of a long-run relationship among the variables. The results show that most of the test statistics (Gt, Pt, and Pa) are statistically significant at the 1% level, as their p-values are 0.000. This indicates strong evidence of cointegration among the variables, suggesting the presence of a long-run equilibrium relationship in the panel data. Specifically, the Gt statistic (-2.747) and Pt statistic (-143.481) strongly reject the null hypothesis of no cointegration. Similarly, the Pa statistic (-74.441) also confirms the presence of cointegration across the panel. However, the Ga statistic ($Z = 2.759$, $p = 0.997$) is not statistically significant, indicating weak evidence under this particular sub-test. Overall, the combined results of the Westerlund test provide robust evidence that the variables are cointegrated, confirming a stable long-run relationship among them.

Table 5: Panel Westerlund cointegration tests

Statistic	Value	Z-value	P-value
Gt	-2.747	-8.963	0.000
Ga	-5.335	2.759	0.997
Pt	-143.481	-132.219	0.000
Pa	-74.441	-131.371	0.000

Corporate governance index construction

The CG index is constructed using PCA (Principal Component Analysis). It was introduced by Pearson (1901) and is denoted as principal component analysis, employed to develop indices of different indicators of a variable to avoid multicollinearity and robustness issues (Wold, Esbensen). In this study, six indicators, such as CEO duality (CEOD), board composition (BRDC), ownership concentration (OWRC), managerial ownership (MGRO), board size (BRDS), and board independence (BRDI), are used to construct the index. The following equation (10) is used to develop the CG index.

$$\sum_{i=1}^6 W_i \times CG_i \quad (10)$$

This equation represents sub-dimensions of CG, such as CG1 = CEOD, CG2 = BRDC, CG3 = OWRC, CG4 = MGRO, CG5 = BRDS, and CG6 BRDI. W_i is the weight of each indicator, calculated using the formula below in equation (11).

$$W_i = \frac{v_i}{\sum_{i=1}^6 v_i} \quad (11)$$

V_i is the ratio of the difference enlightened by each indicator (Li et al., 2021). Table 6 presents the PCA results for the textile industry in Pakistan, comprising 558 observations. With six composite and Eigenvalues, the results show that Comp 1 (CEOD) explains the 1.77 variation in CG variables, Comp 2 (BRDC) explains the 1.36 variation, Comp 3 (OWRC) explains the 1.06 variation, Comp 4 (MGRO) explains the 0.93 variations, Comp 5 (BRDS) explaining the 0.58 variation, and Comp 6 (BRDI) explaining the 0.30 variation, thus all the components are relevant to construct the CG index. On the other hand, the factor loading is 17.89%, 51.11%, 39.62%, 27.22%, -31.21%, and -61.47%. It shows the standard deviation of each component from CG1, CG2, CG3, CG4, CG5, and CG6, and these factor loadings are used as weights to determine the composite CG index. The following equation (12) is used to construct the index.

$$CG = \frac{0.1789 \cdot ceod + 0.5116 \cdot brdc + 0.3962 \cdot owrc + 0.2722 \cdot mgro - 0.3121 \cdot brds - 0.6147 \cdot brdi}{0.1789 + 0.5116 + 0.3962 + 0.2722 - 0.3121 - 0.6147} \quad (12)$$

Table 6: Principal components (eigenvectors)

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1 (CEOD)	1.76576	.402324	0.2943	0.2943
Comp2 (BRDC)	1.36343	.305021	0.2272	0.5215
Comp3 (OWRC)	1.05841	.123887	0.1764	0.6979
Comp4 (MGRO)	.934525	.355761	0.1558	0.8537
Comp5 (BRDS)	.578764	.279653	0.0965	0.9501
Comp6 (BRDI)	.299111	.	0.0499	1.0000
Variable	Factor loading (W)			
CG1 (CEOD)	0.1789			
CG2 (BRDC)	0.5116			
CG3 (OWRC)	0.3962			
CG4 (MGRO)	0.2722			
CG5 (BRDS)	-0.3121			
CG6 (BRDI)	-0.6147			

System dynamic GMM results

Table 7 presents the results of EM on CS and the moderating effect of CG indicators, estimated using a dynamic GMM regression. The table above presents the results of four models used in this study.

EM model results and discussion

In Table 7, the First model is the EM model, which shows the impact of EM on CS, and in this model, leverage is used as the proxy of CS. The results indicated that EM has a positive and significant impact on leverage at the 0.02 significance level, and the EM coefficient indicates that for each 1-unit increase in EM practices, CS's debt level increases by 154.93 units. Notably, CS has been measured by the Debt-to-Equity ratio (leverage ratio). Therefore, a positive relationship between EM and leverage illustrates a negative impact of EM on CS. The result for the control variable, firm age, indicates that firm age also has a positive impact on leverage at the 0.01 significance level, meaning that higher firm age is associated with higher debt levels. On the other hand, control variables such as firm size and operating cash flow are found to be insignificant. The results of this study are also in line with the previous studies of (Ajay & Madhumathi, 2015; Al-Mohareb & Alkhalaileh, 2019; Dang et al., 2021; Nikoomaram et al., 2016; Okyere et al., 2021; Tahir et al., 2011). Based on the findings, this study concludes that EM practices exist in Pakistan's textile sector and that managers engage in unethical practices and manipulate financial statements. However, it adversely affects CS decisions in Pakistan's

textile sector because EM practice increases debt levels in such decisions. Finally, based on the empirical evidence, this study accepts H1, which posits that the EM negatively impacts CS decisions.

Table 7: GMM regression analysis

Variable	EM model	CG model	EMCG model	Corporate governance indicators models (CGIM)					
	EM	CG	EM*CG	EM*CG1	EM*CG2	EM*CG3	EM*CG4	EM*CG5	EM*CG6
Capital Structure dependent variable (leverage)									
L1.CS	-0.33*** (0.00)	-0.34*** (0.00)	-0.35*** (0.00)	-0.44*** (0.00)	-0.33*** (0.00)	-0.34*** (0.00)	-0.33*** (0.00)	-0.33*** (0.00)	-0.34*** (0.00)
Earning Management									
EM	154.93*** (0.002)	-	109.40** (0.03)	90.06* (0.09)	137.44*** (0.00)	183.81*** (0.00)	146.34*** (0.004)	132.14 (0.16)	7.96 (0.90)
Corporate Governance									
CG	-	-0.63*** (0.00)	-	-	-	-	-	-	-
Moderating effect									
EM*CG	-	-	-1.36*** (0.00)	-	-	-	-	-	-
Corporate Governance indicators									
EM*CG1	-	-	-	-143.53 *** (0.00)	-	-	-	-	-
EM*CG2	-	-	-	-	-0.700*** (0.003)	-	-	-	-
EM*CG3	-	-	-	-	-	-0.62*** (0.07)	-	-	-
EM*CG4	-	-	-	-	-	-	-0.54** (0.025)	-	-
EM*CG5	-	-	-	-	-	-	-	25.02 (0.77)	-
EM*CG6	-	-	-	-	-	-	-	-	14.07*** (0.00)
Control factors									
FRMS	-0.51 (0.89)	-3.47 (0.38)	-4.02 (0.31)	-3.46 (0.38)	-1.48 (0.70)	-0.72 (0.854)	-2.83 (0.48)	-0.61 (0.87)	-3.33 (0.39)
FRMA	3.33*** (0.00)	2.85*** (0.00)	3.1*** (0.00)	1.32*** (0.001)	3.24*** (0.00)	3.53*** (0.00)	3.43*** (0.00)	3.31*** (0.00)	14.07*** (0.00)
OCF	17.15 (0.21)	7.41 (0.60)	6.13 (0.67)	10.07 (0.49)	13.40 (0.34)	14.62 (0.30)	13.19 (0.35)	16.61 (0.235)	9.53 (0.50)
constant	-205.81*** (0.00)	-36.71 (0.35)	-94.58* (0.08)	-62.55 (0.24)	-162.62 *** (0.002)	-198.48 *** (0.00)	-169.42*** (0.001)	-203.76*** (0.00)	-83.40 (0.16)
Diagnostics statistics									
Model Wald test	200.31*** (0.00)	209.78*** (0.00)	223.31*** (0.00)	354.54*** (0.00)	205.76*** (0.00)	212.68*** (0.00)	203.56*** (0.00)	199.90*** (0.00)	212.72*** (0.00)
Co-efficient	89.54 *** (0.00)	103.52*** (0.00)	118.01*** (0.00)	974.70*** (0.00)	96.89*** (0.00)	105.40*** (0.00)	93.33*** (0.00)	89.45*** (0.00)	103.65*** (0.00)
Wald test									
Sargan-Hansen-J-statistic	1236.07*** (0.00)	1167.73*** (0.00)	1142.22*** (0.00)	252.2*** (0.00)	1205.65 *** (0.00)	1178.32 *** (0.00)	1219.99*** (0.00)	1231.94*** (0.00)	1202.974*** (0.00)
Instrumental	48	48	49	49	49	49	49	49	49
ranks									
N0. Of Firms	69	69	69	69	69	69	69	69	69
No of Obs	450	450	450	450	450	450	450	450	450

Note: (***) 0.01 significance level, (**) 0.05 significance level, (*) 0.1 significance level. Note CS has been measured by the Debt-to-Equity ratio (leverage ratio). Therefore, a positive relationship between EM and leverage illustrates a negative impact of EM on CS.

CG model results and discussion

In Table 7, the second model is the CG model, which shows the overall impact of CG on CS. In this model, leverage is used as a proxy for CS. The results indicate that CG has a negative and significant impact on leverage at the 0.01 significance level, with a coefficient of 0.63, meaning that a 1-unit increase in CG reduces debt by 0.63 units. The result for the control variable, firm age, indicates that firm age also has a positive impact on leverage at the 0.01 significance level, meaning that higher firm age is associated with higher debt levels. On the other hand, control variables such as firm size and operating cash flow are found to be insignificant. The findings of this study are also in line with the previous studies by (Javaid et al., 2021; Okyere et al., 2021; Wen et al., 2002). Finally, based on the empirical evidence, this study accepts H2, which posits that CG positively impacts CS decisions. Furthermore, the study's results indicate that good CG negatively affects the leverage ratio and reduces debt levels in CS decisions. Likewise, (Butt & Hasan, 2009) argued that CG is the mechanism of monitoring the activities of the management and also to ensure the optimal allocation of resources. Ultimately, it reduces the cost of capital and fosters the firm's performance and the shareholders' wealth. In addition, CG refers to the procedures and functions of firm maintenance, and good CG influences the sustainability of the firm's performance and financial decisions because it is associated with management, the board, shareholders, and stakeholders. However, CG is directly linked to CS and financial decisions (Graham & Harvey, 2001; Naseem, Zhang, & Malik, 2017). Based on the findings, it is concluded that better CG can reduce the debt ratio in the textile firm, and good CG also improves the CS decision by increasing the equity level.

Moderating role of CG

Overall moderating effects of corporate governance

In Table 7, the third model, EMCG, presents the overall moderating effect of CG on the relationship between EM and CS. In this model, leverage is used as a proxy for CS. The findings of this model indicate that CG negatively and significantly moderates the relationship between EM and CS at a 0.01 significance level. Good CG reduces the EM practices and enhances the CS decisions. The result for the control variable, firm age, indicates that firm age also has a positive impact on leverage at the 0.01 significance level, meaning that higher firm age is associated with higher debt levels. On the other hand, control variables such as firm size and operating cash flow are found to be insignificant. The study's findings indicate that EM negatively impacts CS in Pakistan's textile industry. However, good CG is a

viable mechanism for reducing debt levels and improving CS. So, the study's findings are clear: CG is one of the most important techniques and mechanisms for overcoming the effects of EM, as it moderates the relationship between EM and the leverage ratio. The findings of the present study are also in line with the prior study of (Okyere et al., 2021). Furthermore, it is recommended that earnings management be minimized by fostering strong corporate governance, which leads to an optimal capital structure. Furthermore, An et al. (2016) argued that EM increased the CS's debt level due to asymmetric information. This study supports agency theory, which argues that a negative relationship between EM and CG arises due to a weak institutional environment; those firms that have a strong institutional environment are influenced by financial manager decisions to overcome the practices of EM; however, a good institutional environment can strengthen the positive relationship between EM and CS. Finally, based on the empirical evidence, this study accepts H3, which posits that CG moderates the relationship between EM and CS decisions in Pakistan's textile industry.

Indicators-wise moderating effect of corporate governance

In Table 7, the model CGIM presents the moderating effect of each CGIM indicator separately on the relationship between EM and CS. The first interaction term comprises EM*CG1, and CG1 represents the first indicator, CEOD. The study's findings indicate that CEOD negatively and significantly moderates the relationship between EM and CS at a 0.01 significance level. This means that CEOD reduces EM practices and enhances CS decisions. The findings of this study are also in line with the previous study by (Okyere et al., 2021). The second interaction term comprises EM*CG2, and CG2 represents the second indicator, BRDC. The study's findings indicate that BRDC negatively and significantly moderates the relationship between EM and CS at a 0.003 significance level. This means that BRDC reduces EM practices and facilitates CS decisions. The findings of this study are also in line with the previous study of (Okyere et al., 2021). The third interaction term comprises EM*CG3, and CG3 represents the third indicator, OWRC. The study's findings indicate that OWRC negatively and significantly moderates the relationship between EM and CS at a 0.07 significance level. This means that OWRC reduces EM practices and enhances CS decisions. Likewise, (Gabrielsen, Gramlich, & Plenborg, 2002; Gulzar, 2011; Iraya et al., 2014) argued that block-holder shares can play a crucial role in the internal control system, and they can influence firm strategies, policies, and opportunistic behavior of managers to overcome the EM practices. The fourth interaction term comprises EM*CG4, and CG4 represents the fourth indicator, MGRO. The study's findings indicate that MGRO negatively and significantly moderates the relationship between EM and CS at a 0.025 significance level. This means that MGRO reduces EM practices and enhances CS decisions. The fifth interaction term comprises EM*CG5, and CG5 represents the fifth indicator, BRDS. The study indicates that BRDS does not significantly moderate the relationship between EM and CS. The sixth interaction term comprises EM*CG6, and CG6 represents the sixth indicator, BRDI. The study's findings indicate that BRDI positively and significantly moderates the relationship between EM and CS at a 0.00 significance level. This means that BRDI increases the EM practices, consequently leading to weak CS decisions. The outcomes for the control variables, such as firm age, indicate that firm age also has a positive impact on leverage at a 0.00 significance level, meaning that the higher the firm age, the higher the debt level. On the other hand, control variables such as firm size and operating cash flow are found to be insignificant.

Diagnostic test results

Wald test and coefficient Wald test is also called the Wald chi-squared test, and was introduced by Abraham Wald (Wald, 1943). The Wald coefficient test indicates that all explanatory variables jointly have a significant influence on the dependent variable. The Wald test determines whether each parameter influences the dependent variable. In the present study, the Wald and coefficient Wald test statistics are significant at 0.00 in all models. The results of the Wald coefficient test confirmed that the explanatory variables jointly and significantly affect the dependent variables. The Wald test confirmed that each parameter individually influences the dependent variable. The Sargan test is a statistical test used to assess over-identification and endogeneity in statistical data. While using the GMM model that mixed the observation of data with the given information in population instant conditions to create the estimates of unknown parameters of the model, the Sargan test proposed by John Denis Sargan (J. D. Sargan, 1958). Later on, there is an alternative derived by him to check whether all the instruments are valid or not J. Sargan (1975). GMM is a well-fitting model. While using dynamic micro panel data with large firm size and short time span, the Sargan test controls for endogeneity. The null hypothesis of these tests demonstrates that all the instruments are valid and they are uncorrelated with the error term Baum, Schaffer, and Stillman (2003). Table 7 shows that the Sargan test results are significant in all the models at 0.000. This confirms that all the instruments are valid and that an issue relevant to endogeneity is captured, as the Sargan Hansen J test rejects the null hypothesis (H_0).

Conclusions and Implications

Earning management is a significant factor in capital structure decisions in Pakistan's textile industry. Especially in Pakistan, firms create a false impression by providing misleading information to shareholders, investors, and analysts to appear more profitable. However, it adversely affects capital structure decisions and creates problems. In this study, leverage is used as the proxy for CS, discretionary accruals as the proxy for EM, and CG uses six indicators: CEOD, BRDC, MGRO, OWRC, BRDS, and BRDI. Likewise, the study's results depicted that EM has a positive and significant impact on the leverage ratio. This means that EM has adversely affected CS by increasing its debt and decreasing its equity. Furthermore, agency theory of free cash flow posits that when the financial manager manipulates financial statements and provides misleading information to shareholders, it increases EM practices and the debt level. Furthermore, the study's second objective is to investigate whether CG moderates the relationship between EM and CS in Pakistan's textile industry. The result of the study revealed that all six CG (jointly) indicators negatively and significantly moderate the relationship between EM and CS. This means that good CG can reduce EM practices and, in turn, achieve optimal CS. Lastly, this study investigates the moderating effect of each CG indicator separately on the relationship between EM and CS. Empirical evidence relevant to interaction terms (moderating effect) reflects the mixed outcomes. The interaction terms (CEOD, BRDC, OWRC, and MGRO) negatively and significantly

moderate the relationship between EM and CS. It means that these indicators overcome EM practices and, as a result, reduce the debt level and increase the equity portion in CS. Furthermore, the interaction term (BRDI) positively and significantly moderates the relationship between EM and CS. This means that BRDI increases EM practices, raising debt levels and reducing the equity portion in CS. Lastly, the interaction term (BRDS) indicator does not significantly moderate the relationship between EM and CS. Finally, it is concluded that EM has adversely impacted CS decisions in Pakistan's textile industry, and CG has negatively moderated the relationship between EM and CS.

Policy recommendations

Based on the findings, the present study recommends the following policy implications for the textile industry of Pakistan: Firstly, as EM adversely impacts CS, it is recommended that the textile industry develop a good CG mechanism that is fully operationalized for the internal control system. However, good CG can strengthen the internal control system and curb managers' opportunistic behavior, thereby minimizing EM practices. Secondly, it is recommended that good CG be evaluated against indicators such as CEO duality, board composition, ownership concentration, and managerial ownership. These indicators can play a significant role in improving EM practices; companies should focus on them to strengthen corporate governance. In addition, it is recommended that companies avoid higher board independence, as it can increase EM practices.

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Appendix

Table 8: Variable's measurements

Variables	Nature	Proxy	Measurement	Reference	Data Source
Earning Management	IV	discretionary accrual	Jones model	(Jones, 1991) (Kothari et al., 2005) (Okyere et al., 2021)	
Capital Structure	DV	Leverage ratio	Debt-to-equity ratio	(Masood & Shah, 2014; Wellalage & Locke, 2014)	
Corporate governance	Mediator Variable	Ownership concentration	Number of shares taken by shareholders who have ownership of 5% or more	(H. Ahmad et al., 2018; Ahmadpour, Jafari Samimi, & Golmohammadi, 2012)	Financial Statement of Textile, Listed in Pakistan
		Board size	Log of the number of members on the board	(Ahmadpour et al., 2012) (H. Ahmad et al., 2018)	
		Board composition	The ratio of external directors to the total No of directors	(Bokpin, 2011; Okyere et al., 2021)	
		CEO Duality	It is a dummy variable that is equal to 1 if the CEO has board chairmanship; otherwise, 0	(H. Ahmad et al., 2018; Butt & Hasan, 2009)	
		Managerial Ownership	Percentage shares held by director, executive, spouse, and children	(H. Ahmad et al., 2018; Bear, Rahman, & Post, 2010)	
Control Variables	Firms control Factors	Board independence	Number of independence director	(H. Ahmad et al., 2018; Butt & Hasan, 2009)	
		Size of Firm	Log of the book assets	(Huang et al., 2016) (Kieschnick & Moussawi, 2018)	
		Age of Firm	Age of the firm since incorporation	(Okyere et al., 2021)	
		Operating Cashflow	Current assets and current liabilities		

Table 9: Correlation matrix

Variables	CS	EM	CEOD	BRDC	OWRC	MGRO	BRDS	BRDI	FRMS	FRMA	OCF
CS	1.000										
EM	0.026	1.000									
CEOD	-0.089	-0.037	1.000								
BRDC	-0.051	-0.151	0.019	1.000							
OWRC	-0.052	-0.002	0.023	0.097	1.000						
MGRO	-0.037	0.183	0.042	-0.037	0.435	1.000					
BRDS	-0.005	-0.001	-0.107	0.011	-0.215	0.033	1.000				
BRDI	0.061	-0.015	-0.127	-0.604	-0.127	-0.149	0.224	1.000			
FRMS	0.042	-0.074	-0.081	-0.063	-0.039	0.034	0.218	0.033	1.000		
FRMA	0.027	0.040	-0.133	-0.051	-0.124	-0.042	0.123	0.000	0.045	1.000	
OCF	0.023	0.126	-0.087	-0.010	-0.051	0.013	0.158	0.050	0.212	0.070	1.000

Table 10: Cross-sectional independence tests

Variables	CS	EM	FRMS	FRMA	OCF
CD-stats	1.79	81.47	22.04	137.00	8.74
Prob-value	0.074	0.00	0.00	0.00	0.00
Residuals cross-sectional independence					
	Frees' test		Pesaran CD test		Friedman's test
	5.06*		23.403***		87.338**
Prob-value	0.06605		0.00		0.0572

Notes: Under the null hypothesis of cross-section independence, $CD \sim N(0,1)$.

Table 11: Panel fixed effect unit root test

	CS	EM	CEOD	BRDC	OWRC	MGRO	BRDS	BRDI	FRMS	OCF
CS (-1)	-0.198 (***)									
EM (-1)		-0.005								
CEOD (-1)			0.538 (***)							
BRDC (-1)				0.470 (***)						
OWRC (-1)					0.544 (***)					
MGRO (-1)						0.536 (***)				
BRDS (-1)							0.266 (***)			
BRDI (-1)								0.527 (***)		
FRMS (-1)									0.402 (***)	
OCF (-1)										0.331 (***)
Wald-statistics	2391.3 (***)	2214.1 (***)	204.0 (***)	151.8 (***)	27.7 (***)	142.6 (***)	214.2 (***)	113.3 (***)	169.2 (***)	155.2 (***)
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: (***) 0.01 significance level, (**) 0.05 significance level, (*) 0.1 significance level

Table 12: Panel Westerlund cointegration tests

Statistic	Value	Z-value	P-value
Gt	-2.747	-8.963	0.000
Ga	-5.335	2.759	0.997
Pt	-143.481	-132.219	0.000
Pa	-74.441	-131.371	0.000

Table 13: Principal components (eigenvectors)

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1 (CEOD)	1.76576	.402324	0.2943	0.2943
Comp2 (BRDC)	1.36343	.305021	0.2272	0.5215
Comp3 (OWRC)	1.05841	.123887	0.1764	0.6979
Comp4 (MGRO)	.934525	.355761	0.1558	0.8537
Comp5 (BRDS)	.578764	.279653	0.0965	0.9501
Comp6 (BRDI)	.299111	.	0.0499	1.0000
Variable	Factor loading (W)			
CG1 (CEOD)	0.1789			
CG2 (BRDC)	0.5116			
CG3 (OWRC)	0.3962			
CG4 (MGRO)	0.2722			
CG5 (BRDS)	-0.3121			
CG6 (BRDI)	-0.6147			

System dynamic GMM results

Table 14: GMM regression analysis

Variable	EM model	CG model	EMCG model	Corporate governance indicators models (CGIM)					
	EM	CG	EM*CG	EM*CG1	EM*CG2	EM*CG3	EM*CG4	EM*CG5	EM*CG6
Capital Structure dependent variable (leverage)									
L1.CS	-0.33*** (0.00)	-0.34*** (0.00)	-0.35*** (0.00)	-0.44*** (0.00)	-0.33*** (0.00)	-0.34*** (0.00)	-0.33*** (0.000)	-0.33*** (0.00)	-0.34*** (0.000)
Earning Management									
EM	154.93*** (0.002)	-	109.40** (0.03)	90.06* (0.09)	137.44*** (0.00)	183.81*** (0.00)	146.34*** (0.004)	132.14 (0.16)	7.96 (0.90)
Corporate Governance									
CG	-	-0.63*** (0.00)	-	-	-	-	-	-	-
Moderating effect									
EM*CG	-	-	-1.36*** (0.00)	-	-	-	-	-	-
Corporate Governance indicators									
EM*CG1	-	-	-	-143.53 *** (0.00)	-	-	-	-	-
EM*CG2	-	-	-	-	-0.700*** (0.003)	-	-	-	-
EM*CG3	-	-	-	-	-	-0.62*** (0.07)	-	-	-
EM*CG4	-	-	-	-	-	-	-0.54** (0.025)	-	-
EM*CG5	-	-	-	-	-	-	-	25.02 (0.77)	-
EM*CG6	-	-	-	-	-	-	-	-	14.07*** (0.00)
Control factors									
FRMS	-0.51 (0.89)	-3.47 (0.38)	-4.02 (0.31)	-3.46 (0.38)	-1.48 (0.70)	-0.72 (0.854)	-2.83 (0.48)	-0.61 (0.87)	-3.33 (0.39)
FRMA	3.33*** (0.00)	2.85*** (0.00)	3.1*** (0.00)	1.32*** (0.001)	3.24*** (0.00)	3.53*** (0.00)	3.43*** (0.00)	3.31*** (0.00)	14.07*** (0.00)
OCF	17.15 (0.21)	7.41 (0.60)	6.13 (0.67)	10.07 (0.49)	13.40 (0.34)	14.62 (0.30)	13.19 (0.35)	16.61 (0.235)	9.53 (0.50)
constant	-205.81*** (0.00)	-36.71 (0.35)	-94.58* (0.08)	-62.55 (0.24)	-162.62 *** (0.002)	-198.48 *** (0.00)	-169.42*** (0.001)	-203.76*** (0.00)	-83.40 (0.16)
Diagnostics statistics									
Model Wald	200.31*** (0.00)	209.78*** (0.00)	223.31*** (0.00)	354.54*** (0.00)	205.76*** (0.00)	212.68*** (0.00)	203.56*** (0.00)	199.90*** (0.00)	212.72*** (0.00)
test									
Co-efficient	89.54 *** (0.00)	103.52*** (0.00)	118.01*** (0.00)	974.70*** (0.00)	96.89*** (0.00)	105.40*** (0.00)	93.33*** (0.00)	89.45*** (0.00)	103.65*** (0.00)
Wald test	1236.07*** (0.00)	1167.73*** (0.00)	1142.22*** (0.00)	252.2*** (0.00)	1205.65 *** (0.00)	1178.32 *** (0.00)	1219.99*** (0.00)	1231.94*** (0.00)	1202.974*** (0.00)
Sargan-Hansen- J-statistic									
Instrumental	48	48	49	49	49	49	49	49	49
ranks									
N0. Of Firms	69	69	69	69	69	69	69	69	69
No of Obs	450	450	450	450	450	450	450	450	450

Note: (***) 0.01 significance level, (**) 0.05 significance level, (*) 0.1 significance level. Note CS has been measured by the Debt-to-Equity ratio (leverage ratio). Therefore, a positive relationship between EM and leverage illustrates a negative impact of EM on CS.