

## Article

# The Moderating Effect of the Business Group Affiliation on the Relationship between Debt and Earnings Management: Evidence from Borsa Istanbul

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**Abstract:** Earnings quality is crucial to provide investors and lenders with accurate information about the economic health of the firm and to help them make the right decisions. This paper examines whether the pooling of financial resources and internal funds allocation in corporate groups has a positive effect on earnings quality through reduced earnings management practices in affiliated firms. It is hypothesized that the funding benefits of pooling financial resources in corporate groups allow affiliated firms to reduce solvency problems arising from higher leverage, which in turn reduces incentives for earnings management. The study is based on a balanced panel data set of 95 non-financial firms traded on Borsa Istanbul covering the period between 2015 and 2022 (8 years) with a total of 760 observations. Using management's discretionary accruals as a proxy variable to measure management's flexibility to engage in earnings management, this study finds that being affiliated to a business group reduces earnings management incentives in group affiliates when firm's leverage increases. The business group's support on the debt-leveraged firm alleviates the motivation for earnings management practices.

**Keywords:** business group affiliation; earnings management; quality of earnings; ownership structure; corporate governance; sustainability; sustainable finance



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## 1. Introduction

Investors are progressively searching for organizations that demonstrate a strong commitment to sustainable and ethical business operations. Companies with high earnings quality are more likely to be perceived as socially responsible investments because earnings quality refers to the reliability, sustainability, and accuracy of a company's reported earnings by assessing the extent to which a company's earnings accurately reflect its genuine financial performance and the underlying economic reality [1,2]. Hence, earnings quality contributes to long-term sustainability as it enhances investor confidence, establishes credibility and trust, improves risk management, ensures compliance, and enables informed decision-making.

On the other hand, earnings management may have detrimental effects on sustainability by distorting financial performance, undermining openness and confidence, and increasing the likelihood of financial instability, resulting in regulatory and legal repercussions, and fostering a myopic emphasis on short-term gains. Earnings management, a significant principal-agent issue in corporate governance, refers to the strategic utilization of accounting methods to manipulate reported earnings. This practice diminishes the quality of earnings by distorting a company's actual financial performance and misleading stakeholders in their decision-making process. Most of the research indicate that corporations deliberately increase accounting accruals, which are determined by management's judgement and estimations, to manipulate their reported profitability and create a favorable perception among investors and creditors. Ref. [3] provides supporting evidence that

managers use discretionary accruals to decrease income during import relief investigations by the regulating authority in the USA. Ref. [4] investigates the motives for earnings management and finds that firms use earnings management to influence the perceptions about stock market pricing expectations of investors, increase executive remunerations, and decrease the probability of default for debt covenants to avoid regulatory burdens. Ref. [5] finds that managers understate earnings before management buyout of the firm's public shares. Ref. [6] posits that the earnings management in the form of income increasing discretionary accruals (upward earnings management) are mostly detected among firms with higher default risk, and managers can change the auditors of their financial statements opportunistically. Ref. [7] provides evidence about the determinants and consequences of earnings quality and points out "firm characteristics, financial reporting practices, governance and controls, auditors, equity market incentives, and external factors" as major determinants and "litigation propensity, audit opinions, market valuations, real activities including disclosure, executive compensation, and firm's cost of equity capital" as major consequences.

Additionally, most studies suggest that firms with high levels of debt inflate accounting accruals, which are based on management's subjective decisions to influence their reported earnings and generate a positive image among investors and creditors. In many studies related to the developed markets, the main rationale behind earnings management is found to be the minimization of the expense of breaking debt covenants. Hence, according to the debt covenants perspective, the earnings management is empirically linked to higher debt, and particularly earnings-increasing accruals decisions [8].

Distinguishably, this paper tries to contribute to the existing literature on debt and earnings management relation by adding a business group affiliation dimension to this relation. It is aimed to investigate whether business group-affiliated firms are less sensitive to engage in earnings management when they are under financial distress. It is expected that through internal capital markets created among the firms within a business group, affiliated firms are further supported by the group's profitability in the form of pooling of financial sources. This study is exactly situated in the literature at the intersection point of the debt-covenant hypothesis (which claims that financially distressed firms are more prone to engage in earnings management due to the risk of facing default) and internal capital markets (propping) theory about business groups (which claims that group-affiliated firms are supported or propped by a pool of internal capital sources within the business group). This paper connects these two above-mentioned theories. They are further explained under Section 2 of this study to address how the relevant hypotheses are developed.

Business groups are holdings of firms that are linked together by shared ownership, control, or other forms of ties. These groups often provide a range of advantages to its affiliated firms, such as access to resources, shared knowledge, and risk diversification.

The pyramidal ownership (or vertically integrated diversified business groups) is a common type of indirect ownership in many emerging countries including Turkey [9]. The ultimate owner on the top of the pyramid (usually a holding company led by a family) concentrates its power by having more voting or control rights with less cash flow or ownership rights. Ref. [10] makes a synthesis of the existing literature on different perspectives for business groups which includes the expropriation (entrenchment or tunnelling) perspective, the rent-seeking perspective through political ties, and the institutional voids perspective, which asserts that in countries with inefficient external capital markets, high cost of borrowing, high cost of capital, and underdeveloped institutions like stock exchanges, internal capital markets created within a business group structure substitute these lacking mechanisms.

Hence, the objective of this research becomes examining how business group affiliation influences the relationship between debt-leverage and earnings management. Prior research has commonly demonstrated that business groups yield advantageous outcomes by fostering favorable conditions for the capital structure of affiliated companies. Ref. [11] conducts a comprehensive study of 45 countries and finds that group structure is motivated

by a limited availability of capital and increases internal capital funding. Ref. [12] provides a rationale for business group structures and claims that forming a pyramidal business group is beneficial if external capital funding is costlier than internal capital funding and underlines a theory for the formation of pyramidal business groups. Ref. [13] further finds supporting evidence for Korean chaebols. Ref. [9] studies the Turkish business groups and claims that pyramidal ownership in Turkey beneficially provides a less costly way of financing by indicating that firms within the business group reduce financial distress via transferring funds to each other in the form of debt and dividends. Ref. [14] examines the debt financing and earnings management relation in the Taiwan stock exchange context and finds supporting evidence about group solvency via internal capital markets, which reduces the incentives for earnings management in group firms when firm debt increases. Ref. [15] studies the Turkish stock market by comparing the performance of affiliated and non-affiliated firms and finds that internal capital markets play an important role in the formation of business groups in Turkey. Ref. [16] studies the Canadian business groups and indicates that group-affiliated firms use less accrual-based and real earnings management than non-affiliated firms.

The benefits of the business group structure include the utilization of internal capital markets through within-group credits, transfers, and equity markets, as well as the ability to increase debt using the tax shield effect. The favorable impact described here is the opposite of tunneling or entrenchment and is known as “propping”. Propping involves the movement of cash between companies within the group to alleviate financial difficulties. In the context of a developing country with various flaws, certain factors contribute to the effectiveness of a business group structure as a means of financing. These factors include higher costs associated with external markets, a tendency to maintain control, limited liability of the holding company, a desire to minimize the risk of bankruptcy, the ability of managers to use internal funds within a group structure, and their superior knowledge of internal capital markets compared to external capital markets. This conclusion is supported by research conducted by [17–19]. Ref. [17] provides evidence and theoretical models for propping, especially in the case of emerging markets where institutional voids commonly exist. Ref. [18] examines another emerging market, India, and finds that affiliated firms mostly outperform non-affiliated firms because of the support provided by the combined sources of the group. Ref. [19] provides an extensive taxonomy of the reasons behind the formation of business groups worldwide.

Nevertheless, more investigation is required to explore the influence of internal capital markets resulting from business group affiliation on the relationship between debt and earnings management, since this is a relatively unexplored research area in an emerging market conjecture with its different peculiarities like incomplete capital markets. Ref. [9] examines the transfer of funds via debt and dividends channels within business groups to reduce financial distress and finds that business groups in Turkey use pyramidal ownership as a financing vehicle to substitute for incomplete financial markets and provide insurance against bankruptcy risk. In the same vein, this study provides empirical evidence that the existence of internal capital markets inside company groups effectively mitigates the practice of earnings management resulting from excessive debt. Specifically, the findings of this paper indicate that when a group is more profitable, the scope of discretionary accruals are less affected by the level of debt in individual enterprises within the group. The benefit of internal finance is especially noticeable for business group-affiliated firms. In summary, the findings indicate that internal capital markets play a role in mitigating the motivation for managing earnings to finance debt and this is contingent upon the effectiveness of the internal capital markets within the business groups.

This paper proceeds as follows: Section 2 summarizes the literature on business groups, debt and earnings management, and develops the related hypotheses in the light of logical predictions and underlying theoretical discussions. Section 3 mentions the sample and data set, definitions of variables, model building, and empirical findings. Finally, Section 5 draws conclusions and avenues for future research.

## 2. Literature Review and Hypothesis Development

A company's involvement with a business group may impact the link between debt and earnings management in several ways. First and most importantly, according to the internal capital markets perspective, companies within a business group may have enhanced access to external finance or internal resources, enabling them to manage their debt levels more efficiently. This access might reduce the need of engaging in earnings management to ease financial discomfort resulting from excessive amounts of debt. Second, business groups often use centralized governance systems that enable closer monitoring of the financial activity of member businesses. The use of this monitoring system may serve as a deterrent against the practice of manipulating earnings. Third, companies belonging to a business group might experience the transfer of risks and financial consequences. When a business group shares the risk of high debt levels or aggressive profit management, it diminishes the motivation for individual enterprises to partake in these behaviors. Fourth, affiliation in a highly reputable business organization might discourage affiliated companies from participating in unethical or high-risk financial behaviors, such as manipulating profits or accumulating excessive debt.

In this study, first, it is hypothesized that there is a positive association between debt and earnings management given the debt-covenant theory. Second, if it is so, business group affiliation will alleviate this relationship between debt levels (financial distress) and earnings management given the internal capital markets (propping) theory for business groups. According to the theoretical discussions below, the following hypotheses are constructed to test in this study (Figure 1).

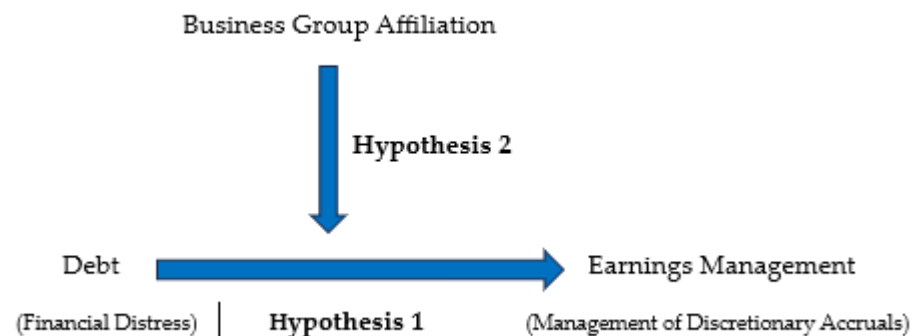


Figure 1. Conceptual Framework.

**Hypothesis 1.** *Debt has a significant and positive impact on earnings management.*

According to the debt-covenant theory, companies that have a greater level of debt are more prone to breaking the terms of their loan agreements, which in turn leads to an increase in activities aimed at manipulating their reported profits [8,20,21]. Earnings management may occur in either an upward or downward direction. For instance, some companies may deliberately boost discretionary accruals (abnormal accruals) of financially troubled corporations to prevent breaches of debt payments. Some companies may use discretionary accruals that decrease their income to negotiate contracts with more favorable conditions. Ref. [22] finds that earnings are managed upward during debt-covenant violations by using a large data set of US companies. Ref. [23] analyzes contract-specific details and provides “sharper evidences about the importance of debt contracts in borrowers’ accounting choices”. Ref. [24] provides supporting evidence and asserts that the accounting choices for managing discretionary accruals are influenced by the severity of financial distress. Ref. [25] claims that “corporate financing conditions in the external capital market are significantly affected by information asymmetry, while internal financing is not and by using data related to 43 countries, finds that accrual-based earnings management is positively associated with the firm’s reliance on external financing”. Ref. [26] further focuses on “the influences of financial distress on the ESG–earnings management relationship

and shows that financially distressed companies tend to disclose more ESG (Environment, Social and Governance) practices and engage in earnings management”.

The debt-covenant hypothesis of earnings management asserts that companies with higher debt levels, which need to raise more capital and loan, are more motivated to engage in earnings management to reduce the probability of debt covenant violations and improve the firm’s bargaining power during debt negotiation. Ref. [8] tests this hypothesis for Belgian companies and finds that there is a significantly positive relation between debt and income increasing discretionary earnings management and that is explainable by the “standard view of modern corporate finance theory which puts that the firm’s objective is to avoid general costs of financial distress”. Ref. [27] finds that managers of insolvent firms tend to increase earnings using “discretionary accruals to prevent or delay the occurrence of default”. Ref. [26] takes another approach by examining the ESG (Environmental Social Governance) involvement of firms in Saudi Arabia to cover their mis-conducts such as earnings management and showed that financially distressed companies tend to engage in more earnings management in this way. Ref. [28] shows that as debt increases marginally, there are more motivations for managers to manipulate earnings, and as the intransparency level increases, this effect becomes more severe. Ref. [29] finds that “managers of firms approaching default respond with income-increasing accounting changes and that the default costs imposed by lenders and the accounting flexibility available to managers are important determinants of managers’ accounting responses”. Ref. [25] claims that firms which depend more on external financing are subject to information asymmetries and have more motivation to engage in earnings management. Ref. [30] tests for the French and Canadian cases for debt and earnings management relation. Ref. [20] provides a cornerstone in the debt and earnings management relation by constructing the positive accounting theory, which states that there are irregularities in the accounting choices depending on factors like debt, equity, and size. Ref. [31] asserts that debt covenant restrictions influence accounting choices in the year preceding and the year of violation of debt covenants and confirms the debt-covenant hypothesis for earnings management. Ref. [32] tests the same hypothesis for Indian family firms and confirms that firms with above-average financial distress levels are liable to be involved in earnings management practices.

**Hypothesis 2.** *If Hypothesis 1 holds true, then it is also hypothesized that business group affiliation will moderate the positive relationship between debt and earnings management by making a negative indirect influence on this relation. Group affiliation as a moderating variable reduces the impact of debt on earnings management.*

The benefit of internal capital markets is especially evident in pyramidal companies, as they could tap into a greater reservoir of internal funds from business group-affiliated firms further up in the hierarchical chain of management [12,13]. Consequently, companies inside pyramidal business groupings are less likely to engage in profits manipulation driven by excessive debt or leverage. Conversely, the entrenchment approach posits that controlling shareholders are motivated to manipulate profits to minimize external interference, due to the private benefits that result from the divergence between control and ownership in the pyramid ownership structure (referred to as tunneling) [33]. During times of financial hardship, majority owners are more motivated to manipulate results to safeguard their personal profits and prevent defaulting on their debt. Therefore, when considering the process of combining financial statements, it is expected that the influence of manipulating profits in response to debt levels would be greater for companies with a hierarchical ownership structure (pyramidal business groups) as opposed to companies without such a structure. The purpose of this study is to investigate if the sensitivity of earnings management to debt levels in pyramidal organizations can be better explained by either the internal capital market or the entrenchment viewpoint.

This research is anticipated to provide valuable contributions in the field of finance by enhancing the existing knowledge on the favorable characteristics of business group



affiliation, particularly in the context of pyramid ownership systems like Turkey. Previous research indicates that dominant owners may use the pyramid group structure to get access to internal capital markets, rather than only for the purpose of obtaining private advantages of control because of the entrenchment effect. Ref. [34] makes a justification for the existence of pyramidal ownership in some countries by theoretically modelling tunnelling and propping phenomena. Ref. [35] investigates whether the governance structure of a diversified firm affects its internal capital market and the associated investment efficiencies and suggests that “governance mechanisms play an important role in capital allocation among divisions of diversified firms”. Ref. [36] finds that ownership concentration reduces the extent of corporate diversification but increases the probability that internal capital markets are efficient. Ref. [11] indicates that being part of a business group and having a hierarchical ownership structure may save capital costs and enhance the value of a company. There are many advantages provided by being affiliated to a business group in the conjecture of emerging markets. This research further seeks to determine if internal capital market advantages of business group membership have a mitigating effect on debt and earnings management relation.

On the other hand, controlling shareholders in developing markets have been seen to possess an edge over minority owners within a corporate group of enterprises due to their involvement in self-interested actions. This phenomenon is referred to as the entrenchment effect. Business groups are often characterized by a structure where the controlling shareholder has more control rights than rights over cash flow, which might serve as a means to engage in tunneling activities. This results in elevated agency expenses and poor corporate performance. Ref. [37] specifically investigates East Asian companies and evaluates that the entrenchment effect exists as it is evidenced by lower firm value when the control rights of the dominant shareholder are bigger than his cash flow rights. Ref. [38] finds the entrenchment effect in the case of Canadian companies. Ref. [39] finds the same for twelve Western European countries. Alternatively, business groups might serve as a replacement for lacking external financial markets in underdeveloped nations. Refs. [40,41] contend that investments in business groups are impacted by the cash flows inside those firms, and that there exists an internal capital market among these firms. An internal capital market enables the use of external capital markets. Ref. [42] contends that banks exhibit a greater inclination to provide loans to affiliated enterprises within a corporate group. The reason for cross-collateralization across enterprises within a group is to minimize the risk of defaulting on the loan owed to the bank. The presence of a group structure is likely to result from the financing choice made by the company group. According to [12,13], when a new company is introduced to a corporate structure, it benefits from the ability to raise capital from the current affiliates within the chain. Refs. [19,34] contend that corporations under a corporate group ownership structure get advantages from the insurance offered by the group entities, particularly during periods of financial distress.

These findings stimulate further investigation into the impact of internal capital markets endogenously inherent in the business groups on the relation between debt and earnings. This analysis forecasts that as the funds available within the business group’s internal capital market grow due to improved profitability, the heavily indebted member of the business group will have less vulnerability to the possibility of failing to repay its debts [42]. Consequently, this business group member will have less motivation to manipulate its profits. The benefit of internal capital markets is especially evident in the pyramidal type of business groups, as they could access a greater pool of internal funds from affiliates further up in the hierarchical chain of management [12,13]. Hence, companies in pyramidal business groups are less likely to engage in earnings management driven by excessive amounts of debt-leverage.

Controlling owners in company groups often face allegations of pursuing self-interested acts via transactions among the group’s affiliates. Refs. [43,44] have discovered data suggesting that business groups with lower cash flow rights exhibit reduced sensitivity to industry shocks compared to firms with greater cash flow rights. Additionally, these

group firms use the group chain for tunneling purposes. Pyramidal structures or control-enhancing methods like cross-shareholding are often used to promote the exploitation of outside investors [33]. These methods assist the dominant shareholder in the pyramid, who is the ultimate owner, in efficiently enhancing their influence over the companies in the pyramidal structure by contributing a lower portion of the invested capital, specifically by possessing fewer cash flow rights. As the gap (also named as the control wedge of the ultimate owner at the top) widens between the rights to control (voting rights) and the rights to cash flow (ownership rights), the controlling shareholder will get more private gains by exploiting the resources of the company against minority shareholders as it will have more controlling power with concentrated voting rights while investing less cash through indirect ownership provided by the pyramidal ownership structure in the business group. Consequently, a company positioned at the lower end of the hierarchy (i.e., a company with a greater difference between control rights and cash flow rights) is more susceptible to the issue of entrenchment caused by the ultimate owner at the top of the hierarchy.

Conversely, joining a group may be a reaction to scarcities in external capital markets, where obtaining funds and recruiting experienced personnel and management are comparatively challenging. Likewise, dominant owners in corporate conglomerates may choose to use pyramid structures for reasons unrelated to entrenchment. According to [19], not all pyramids are connected to tunneling, and tunneling is not exclusive to pyramidal organizations. In their study, the authors of ref. [33] highlight that pyramidal groupings may provide substantial benefits in countries characterized by the underdeveloped factor of production markets and institutions.

In developing economies, pyramidal structures and control-enhancing mechanisms serve to raise funds for start-up enterprises that have difficulties in accessing external funding owing to inefficiencies in financial markets. Refs. [12,19] contend that a firm's inclusion in a pyramidal structure facilitates its access to the accumulated profits of other enterprises further up in the control hierarchy of the pyramid. In their study, the authors of ref. [11] analyze the expenses and advantages associated with family-owned pyramidal groupings. They find that these types of organizations have higher value since they can access cheaper internal funding and benefit from cross-debt guarantees. Their findings indicate that the internal capital markets approach is more effective than the entrenchment perspective in family-owned company groups. Essentially, the benefit of internal capital markets is more prominent in pyramidal organizations than other kinds of business groups.

Considering the viewpoint of internal capital markets, the group's significant profitability decreases the motivation for affiliates to manipulate their income results when faced with increased debt leverage. The funding provided by group affiliates serves the purpose of financing investment opportunities for affiliated firms or preventing member firms in financial distress from failing to meet their financial obligations [40]. Ref. [42] states that the primary source of loans or guarantees inside a group comes from profitable group enterprises. Hence, a more affluent internal system for allocating wealth inside the corporate groups will amplify the favorable impacts of being part of the group. Therefore, in highly profitable groups, affiliated enterprises have fewer financial limitations and are less prone to default. Furthermore, it is important to ensure that the credit conditions outlined in loan contracts are more advantageous. Therefore, the generally assumed positive link between debt and earnings management may be offset by the endogenous capital pool of affluent enterprises in the business group. Consequently, it is hypothesized that business group affiliation will negatively moderate the relationship between debt leverage and earnings management.

### 3. Methodology

#### 3.1. Sample and Data Set

The sample in this study consists of 760 company-year data for the period between 2015 and 2022 (8 years) for 95 non-financial companies traded on Borsa Istanbul. Financial sector companies are excluded from the original sample due to the uniqueness of the

financial sector data. Of the total sample, 45 firms are affiliated to a business group, 50 firms are stand-alone or non-affiliated to a business group. The useful sample's data were obtained from financial statements and company reports on Borsa Istanbul and the Turkish public disclosure platform ([www.kap.org.tr](http://www.kap.org.tr), accessed 12 December 2023). The sample selection is given in Table 1 below.

**Table 1.** Sample selection and characteristics.

<b>Panel A: Sample Selection</b>	<b>Frequency</b>	<b>%</b>
Number of all listed firms on the Borsa Istanbul Market during 2015–2022	350	
Less: financial firms	150	
Useful firm data	200	
Less: firms with incomplete data	105	
Net available firms in the sample	95	
<b>Panel B: Division of Sample According to the Sectors</b>		
Industrials	65	68%
Services	20	21%
Technology	10	11%
<b>Panel C: Division of Sample According to the Group Affiliation</b>		
Group-affiliated firms	45	47%
Stand-alone firms	50	53%

### 3.2. Variables

#### 3.2.1. Dependent Variable (DIS-ACR)

The dependent variable is the absolute value of the discretionary accruals (DIS-ACR) which is calculated using the modified Jones model [45] by [46]. Discretionary accruals, also known as abnormal accruals, vary from non-discretionary accruals, or normal accruals, since they result from deliberate transactions or accounting choices intended to manipulate results. Non-discretionary accruals, also known as normal accruals, refer to accruals that result from routine transactions conducted by a company in the current quarter. These accruals are considered regular for the company based on its performance level, business plan, and other economic considerations.

In the literature, there are many studies about the calculation of the discretionary accrual models. Ref. [47] provides one of the earliest studies which defines discretionary accruals as the difference between total accruals and non-discretionary accruals. Accordingly, total accruals are calculated by subtracting operating cash flows from reported earnings. The revised model by [5] also assumes that without real-activity manipulation, non-discretionary (normal) accruals do not vary over time, hence the change in total accruals results from discretionary accruals. Therefore, the change in total accruals between periods is discretionary. Ref. [3] added gross property, plant, and equipment and change in revenues as control variables for changes in non-discretionary accruals. Total accruals include changes in working capital accounts (accounts receivable and inventory or accounts payable) which relate to revenue. Property, plant, and equipment (PPE) has been added to the model since depreciation expense also affects non-discretionary accruals over time. The authors in [45] further revise the model by considering the relation between revenue and receivables. Because credit sales are easier than cash sales to be manipulated by the management, this model uses revenues from sales minus receivables instead of only cash sales. Ref. [46] introduced a new modified version of the model by adding a performance-related variable, namely Return on Assets (ROA), as a control variable to estimate the normal earnings more accurately.

Most of the previous studies focus on specific accruals for finding specific types of manipulations. The adjusted Jones model [45] takes all the accruals into account for estimating the discretionary accruals to detect earnings management. Many of the later studies on the measurement of earnings management are mostly modified versions of



the Jones model specified by [45]. Ref. [46] added “lagged return on assets to resolve heteroscedasticity issues and model misspecification prevalent in past models”. This revised model by [46] proposes a performance-matched accrual model which also includes company performance by adding ROA [26].

In the literature on accruals, total accruals are conceptually separated into two distinct portions. If the corporation does not engage in earnings manipulation, all accruals are generated because of regular business activities, and non-discretionary accruals would be equivalent to total assets (TA). However, if a corporation is involved in manipulative practices, the value of discretionary accruals will deviate considerably from zero. Total accruals (TACC) for firm  $i$  in year  $t$  are calculated by taking the difference between the operating earnings (EARN) and the net cash flow from operations (CFO) [47].

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

$$TACC_{it}/TA_{i,t-1} = \alpha_0 + \alpha_1 [(1/TA_{i,t-1})] + \alpha_2 [(\Delta REV_{i,t} - \Delta REC_{i,t})/TA_{i,t-1}] + \alpha_3 [(PPE_{i,t}/TA_{i,t-1})] + \alpha_4 ROA_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

The deviations from the total accrual model or the error terms of the accrual model ( $\varepsilon_{i,t}$ ) refer to the size of discretionary accruals [5]. The absolute value of discretionary accruals is more important than the negative or positive direction of the accruals because the size of the discretionary accruals is significant for detecting earnings management practices. The discretionary accruals are estimated based on the absolute value of the residual values in the equation above and this gives a measure of the earnings quality of a company. In other words, the magnitude of this residual value in the error term of the equation explains the extent of management’s flexibility for discretionarily managing earnings, other than non-discretionary normal accruals. Details of estimating the discretionary accrual models are as follows. Total accruals (TA) are defined as the difference between operating earnings minus net cash flow from operations and it is scaled by lagged total assets. All variables, including the constant term, are scaled by the lagged value of total assets ( $TA_{i,t-1}$ ) as the deflator in Equation (2) above to mitigate heteroskedasticity in residuals ([46], pp. 12–14). The definitions of all variables in the second equation are given in Table 2.

**Table 2.** Definitions of variables used for estimating the discretionary accruals for detecting earnings management.

Variables	Definitions
TACC <sub>it</sub>	Total accruals for firm $i$ at time $t$ (difference between operating earnings in the income statement and cash flow from operations in the cash flow statement) [10,46]
TA <sub>i,t-1</sub>	Lagged value of total assets for firm $t$ at time $t-1$ [46]
$\Delta REV_{i,t}$	Change in revenue from time $t-1$ to $t$ [45,46]
$\Delta REC_{i,t}$	Change in receivables from time $t-1$ to $t$ [45,46]
PPE <sub>i,t</sub>	Property, plant, and equipment value for time $t$ [46]
ROA <sub>i,t-1</sub>	Lagged value of the ratio of return on assets for firm $i$ (net income over total assets for firm $i$ at $t-1$ ) [46]

An increase in discretionary accruals indicates an increase in earnings management. Increased earnings management reduces the quality of earnings and provides investors and lenders with false information about the economic conditions of the firm [4]. According to the debt-covenant hypothesis, the direction of earnings management can be upward or downward depending on the debt level of the firm [8,14].

### 3.2.2. Independent Variables

The independent variables are the business group affiliation dummy (AFF), which takes the value of 1 if the company is affiliated to a business group or zero if it is a stand-alone firm, and the debt leverage (LEV), which is calculated as the ratio of total liabilities to total assets. As the debt-leverage increases, the risk of bankruptcy also increases, and it is

assumed that companies will be more likely to engage in earnings management to attract more capital and lending. To investigate the potential moderating effect of group affiliation on debt level and earnings management relation, the business group affiliation dummy (AFF) is used. Moderation refers to the situation when the connection between a continuous independent variable and a categorical moderator variable is characterized by varying slopes among the different groups represented by the moderator variable.

For controlling the other relevant characteristics of the firms, firm size (SIZE), return on assets (ROA), growth rate in sales (GRW), negative net income dummy (LOSS), and age (AGE) are added in the equation, and they are included under  $X_{it}$ , which is a vector of control variables for firm  $i$  in the year  $t$ . Firm size is the natural logarithm of total assets. Larger firms are assumed to have fewer discretionary accruals based on earnings management due to the characteristics of their operations. As a measure of profitability, return on assets is calculated as net income divided by average total assets. The management's discretionary accruals are affected by the firm's profitability. The growth rate is expressed as the rate of increase in sales. More growth opportunities will encourage more earnings management. The categorical variable for net income takes the value 1 when the firm's net income is less than zero and 0 otherwise. Thus, a dummy variable is created for the probability of loss in the firm's financial reports. This variable, like leverage ratio, will lead to more earnings management as it indicates the risk of bankruptcy. The age of the company is found by the natural logarithm of firm age. The study by [45] suggests that firms with higher profitability, as measured by ROA, tend to have higher levels of discretionary accruals. This finding implies that firms may use earnings management techniques to either inflate or deflate reported earnings to align them with their desired level of profitability.

The aforementioned firm-specific characteristics are also used as control variables by [48] which presents evidence about determinants of earnings management, ref. [49] which studies earnings management around initial public offerings, ref. [50] which focuses on the impact of pyramid control and multiple control chain mechanisms on accruals earning management and real earnings management, ref. [14] which investigates the relation between debt and earnings management in Taiwan, and ref. [27] which studies debt and earnings management relation for Belgian firms.

In this research, the firm's age, the firm's loss, increase in sales, size of company, leverage, and return on assets are used as control variables. The variable "firm size" (SIZE) is used as a proxy for several operational features that may result in reduced accruals for larger companies [51]. Regarding financial metrics, ref. [7] discovered a relation between discretionary accruals and business profitability, specifically return on assets (ROA). According to [52], "Leverage (LEV) and loss (LOSS) signal greater likelihood of bankruptcy and lead to higher level of earnings management. Higher growth opportunities (GROWTH) also lead to a higher level of earnings management". The definitions of all variables in the third equation are given in Table 3.

**Table 3.** Definitions of all variables.

Variables	Definitions
<b>Dependent Variable</b> Earnings Management (DISC-ACR)	Absolute value of discretionary accruals scaled by lagged value of total assets (based on modified Jones model) (Jones, 1991 [3]; Dechow et al. 1995 [45]; Kothari et al. 2005 [46])
<b>Independent Variables</b>	
Affiliation (AFF)	Categorical variable which takes value of 1 for firm with business group affiliation or 0 for stand-alone firms with no group affiliation
Leverage (LEV)	Ratio of total liabilities to total assets
LEV × AFF	The interacting variable for measuring the moderating influence of AFF on the relation between LEV and DISC_ACR
<b>Control Variables (X<sub>it</sub>)</b>	
Size (SIZE)	Natural logarithm of total assets
Profitability (ROA)	Net income divided by average total assets
GROWTH (GRW)	Rate of increase in sales
Loss (LOSS)	Categorical variable which takes value 1 when firm's net income is less than zero and 0 otherwise
Age (AGE)	Natural logarithm of firm age

### 3.3. Model

The following equation is used to test the hypotheses of this study,

$$\text{DISC\_ACR}_{it} = \beta_0 + \beta_1 \text{AFF}_{it} + \beta_2 \text{LEV}_{it} + \beta_3 \text{LEV}_{it} \times \text{AFF}_{it} + \beta_4 X_{it} + \varepsilon_{i,t}, \quad (3)$$

where DISC\_ACR is the absolute value of the discretionary accruals (scaled by lagged value of total assets), calculated according to the modified Jones model [3] revised by Kothari et al. [46], and gives us a proxy for the measure of earnings management practices. The independent variables are AFF, which takes a value of 1 if the company has an affiliation to a business group or 0 if the company is stand-alone, and LEV, which gives a ratio of total liabilities to total assets.  $X_{it}$  is a vector of control variables (company size, profitability, growth, loss, and firm age) related to the company characteristics.

The use of the GMM (Generalized Method of Moments) method in determining the impact of the group affiliation on earnings management is due to some advantages over the pooled regression method using least squares estimation. Predicting the model using the least squares estimation method can lead to biased decisions due to the potential endogeneity and heterogeneity problems inherent in the model. This may be due to the reverse causality between discretionary accruals and group affiliation or there might be an indirect effect between each other through an omitted instrumental variable. Therefore, the GMM prediction method is used in this study, where the lagged values of the explanatory variables are instrumental variables. On the other hand, several firm-specific factors which may have periodic effects on the earnings management proxied by the absolute value of the discretionary accruals are controlled for. To control these effects over time, the year data has also been added to the regression equation as a dummy variable.

Dynamic panel data models are models where the lagged values of the independent variables are included, as well as the lagged value of the dependent variable, among the factors affecting the dependent variable [53]. The dynamic panel model is best predicted using the GMM method developed by [54]. When the lagged value of the dependent variable included in the model has a relationship with the error terms, it is not possible to predict the model with the least squares method. The use of the lagged values of the dependent variable as an explanatory variable causes the error terms to correlate with the other explanatory variables in the equation. This will cause the least squares predictors to be deviant and inconsistent. Thus, the most appropriate method of prediction that can be used to predict the model structure with dynamic panel data is the GMM proposed by [54].

## 4. Results

Table 4 in the following paragraph gives the summary of the descriptive statistics of the variables. The averages for discretionary accruals, leverage, size, return on assets, sales growth, and age are 0.213, 0.353, 5.688, 0.077, 0.145, and 23.125, respectively. The percentage of business group-affiliated firms in the sample is 47.3%. The 21.1% of companies in the sample register a loss in their net income. The mean average for the absolute value of the discretionary accrual variable is much higher than is reported by [14] for Taiwanese firms and reported by [8] for Belgian firms. This demonstrates a larger scope of earnings management for the Turkish firms.

Table 5 reports the correlation coefficients in between each variable in the model. There are no multicollinearities in between independent variables as all correlation coefficients are below 0.80. This issue is further tested by VIF (variance inflation factor) and confirmed as all VIFs are below 10. By addressing this potential multicollinearity issue, the robustness is increased which supports the model's validity.

Table 6 presents the results for the pooled regression with OLS estimator (Model 1) and the dynamic panel data regression with GMM estimator (Model 2). To increase the robustness and validity of the analysis, two different estimation techniques are applied.

**Table 4.** Descriptive statistics.

Variables	Mean	Median	St. Deviation
DISC_ACR	0.213	0.046	1.022
LEV	0.353	0.369	0.155
AFF	0.473	0.000	0.492
SIZE	5.688	3.657	2.289
ROA	0.077	0.072	0.089
GRW	0.145	0.083	0.333
AGE	23.125	25.000	12.791
LOSS	0.211	0.000	0.406

**Table 5.** Correlation matrix and variance inflation factor (VIF).

	VIF	1	2	3	4	5	6	7	8
(1) DIS_ACR		1.00							
(2) LEV	1.50	0.042 *	1.00						
(3) AFF	1.14	−0.098 *	0.091 *	1.00					
(4) SIZE	1.64	−0.107 *	−0.155 *	0.151 *	1.00				
(5) ROA	1.45	0.002 *	0.308 *	0.023 *	0.035	1.00			
(6) GRW	1.72	−0.015 *	0.041	−0.016	0.043	0.040	1.00		
(7) AGE	1.32	−0.157 *	0.037 *	0.175	0.254 *	0.247 *	0.201	1.00	
(8) LOSS	1.43	0.282 *	0.227 *	−0.060	−0.054 *	−0.678	−0.324	0.034	1.00

\* Denotes significance level at 95% confidence level.

**Table 6.** Empirical analysis on the moderating effect of business group affiliation on earnings management and debt relation.

Dependent Variable: DISC_ACR				
Independent Variables	Predicted Relation	Model 1 (OLS)	Model 2 (GMM)	Findings
LEV	+	0.265 (0.05) ***	0.544 (0.003) *	+
AFF	?	−0.045 (0.019) **	−0.059 (0.002) *	−
LEV × AFF	?	−0.1508 (0.023) **	−0.2456 (0.001) *	−
SIZE	−	−0.039 (0.005) *	−0.004 (0.009) *	−
ROA	+	0.265 (0.05) ***	0.544 (0.003) *	+
GRW	+	0.1204 (0.074) ***	0.1211 (0.042) **	+
AGE	−	−0.058 (0.04) **	−0.073 (0.03) **	−
LOSS	+	0.0522 (0.03) **	0.0482 (0.02) **	+
Adj. R <sup>2</sup>		0.4421		
Wald Chi <sup>2</sup>		336.456 *		
AR <sub>1</sub>			0.64 * (0.000)	
AR <sub>2</sub>			−1.13 (0.298)	
Sargan test			112.66 * (0.262)	

This table contains the predicted coefficients in the first paragraph and their related probabilities (*p* values) in the second paragraph. \*, \*\*, and \*\*\* denote significance at the 0.99, 0.95, and 0.90 confidence levels.

The first independent variable, debt level (LEV), affects the earnings management (measured by the absolute value of discretionary accruals scaled by the lagged value of the total assets) positively by the OLS-estimated coefficient of 0.265, which has a statistically meaningful  $p$ -value of 0.05 which is lower than 0.10 and accepted as reliable at the 90% confidence level. The GMM-estimated coefficient is higher with a value of 0.544 and has more reliability with a  $p$ -value of 0.003, which is far below the  $p$ -value of 0.01 set at 99% confidence. Thus, the null hypothesis of  $H_1$  is rejected at the 90% and 99% confidence levels. This result confirms the predicted hypothesis ( $H_1$ ) in this study.

The second independent variable, business group affiliation dummy (AFF), is negatively (by OLS-estimated coefficient of  $-0.045$ ) and significantly (with  $p$ -value of 0.019, which is under 0.05 maximum  $p$ -value at 95% reliability) associated with the dependent variable (DISC\_ACR). Under the GMM estimation of Equation (3), there is a statistically meaningful negative relation of the AFF variable with DISC\_ACR at 99% confidence with a  $p$ -value of the tested parameter of 0.002, which is below 0.01 (the largest significance level to reject the null hypothesis at 99% reliability). This indicates the direct effect of being affiliated to a group on earnings management and means that for business group-affiliated firms, there is less tendency for earnings management practices. This is in line with the predictions.

For testing the second hypothesis ( $H_2$ ) of this study, business group affiliation is used as a moderating variable which is predicted to have a reducing influence on the magnitude of relation between LEV and DISC\_ACR, and a new variable has been created (LEV X AFF) to measure the indirect effect of AFF on DISC\_ACR. Thus, for measuring the interaction of the group affiliation on the relation between leverage and discretionary accruals, the moderating variable (LEVXAFF) is added. Business group affiliation (AFF) indirectly reduces the effect of LEV on DISC\_ACR by  $-0.1508$  ( $p < 0.05$  with 0.023 at 95%) and  $-0.2456$  ( $p < 0.01$  with 0.001 at 99%) for Model 1 and Model 2, respectively. The direct effect of LEV on DISC\_ACR is significantly positive under both models. When LEV interacts with AFF (the moderating variable), it influences the relation between LEV and DISC\_ACR negatively. Thus, the moderating variable (LEV  $\times$  AFF) is found to have a significantly meaningful and negative effect on the relation between debt and earnings management at the 95% and 99% confidence levels. Business group affiliation has an indirect effect on earnings management of highly debt-leveraged firms. It can be inferred that group affiliation negatively moderates the relation between debt (LEV) and discretionary accruals (DISC\_ACR) leading to a lower level of earnings management practices. This is in line with the constructed hypothesis  $H_2$ .

Hence, the null hypotheses  $H_{1,0}$  and  $H_{2,0}$  are rejected, and  $H_1$  and  $H_2$  are supported. Among the control variables, firm size and age are found to have a negative relation with the dependent variable DISC\_ACR. The SIZE variable negatively affects DISC\_ACR with an estimated coefficient of  $-0.039$  at 99% under OLS (Model 1) and  $-0.004$  at 99% under GMM (Model 2). The AGE variable affects DISC\_ACR by  $-0.058$  ( $p < 0.05$ ) using the OLS estimation method and by  $-0.073$  ( $p < 0.01$ ) using the GMM estimation method. The profitability variable (ROA) affects DISC\_ACR by 0.265 ( $p < 0.10$ ) in Model 1 and by 0.5444 ( $p < 0.01$ ) in Model 2. The growth rate of sales (GRW), which stands for further growth opportunities, affects earnings management positively by 0.1204 with  $p < 0.10$  at the 90% confidence level in Model 1 and by 0.1211 with  $p < 0.05$  at the 95% level. Negative net income dummy (LOSS) positively affects earnings management (DISC\_ACR) by an estimated coefficient of 0.0522 ( $p < 0.05$ ) in Model 1 and by 0.0482 ( $p < 0.05$ ) in Model 2.

The results detailed in the above paragraph are confirmed in both models by varying confidence levels. Since firm-specific fixed effects are not observed, the ordinary least squares method leads to a tendency for dependence on the neglected variable. This is because there is a correlation between firms' fixed effects and explanatory variables [47]. In such cases, the generalized momentum method (GMM) gives better predictions. The effectiveness of the generalized moment method depends on whether the delayed values of the dependent variable and other explanatory variables are valid instruments and whether



the error terms do not show serial correlation. To overcome this problem, [55] proposed three tests. The first test is the test of the absence of autocorrelation from the first scale in error terms. ( $AR_1$ ). The second test is the test that there is no auto-correlation from the second scale in the error terms ( $AR_2$ ). The third is the Sargan test which tests the overidentification of the model and validity of the instrumental variables under asymptotic distribution. The results of the  $AR_1$ ,  $AR_2$ , and Sargan tests confirm there is no autocorrelation, the instrumental variables are valid, and the model is not overidentified. This further increases the compatibility of the model.

Overall, the first finding emerged from the panel data analysis for pooled regression with the OLS estimator (Model 1) and the dynamic panel data regression with the GMM estimator (Model 2) indicates that debt-leverage significantly and positively affects the scope of earnings management, measured by the absolute value of discretionary accruals. Hence, the first hypothesis, which is set as “debt has a significant and positive impact on earnings management”, is supported. This is in line with the prior studies. Ref. [8] finds that earnings management (EM) is positively related to leverage for a sample of Belgian non-listed firms. Ref. [27] finds that the “discretionary accruals of financially non-insolvent firms were larger than those of insolvent firms from the timespan of one year to three years before the occurrence of insolvency and the differences became larger as insolvency approached”. Ref. [29] finds that “managers of firms approaching default respond with income-increasing accounting changes and that the default costs imposed by lenders and the accounting flexibility available to managers are important determinants of managers’ accounting responses”. Ref. [25] finds that accrual-based and real earnings management are positively associated with a firms’ reliance on external financing and argues that “reliance on external financing which is connected to the problems arising from information asymmetry, generates a motive for earnings management”. Ref. [30] provides evidence that earnings management for French firms are specifically motivated by contractual debt costs and the effective tax rate. Ref. [32] confirms the positive relation between debt and earnings management for Indian family firms. Ref. [56] finds that firm leverage has a positive effect on earnings management for French firms. Companies with larger amounts of debt, particularly those in need of more money and loans, are more inclined to participate in earnings management. This is done to decrease the likelihood of violating debt covenants and enhance the company’s negotiating strength during debt negotiations.

Further, business group-affiliated firms significantly engage in less earnings management than non-affiliated or stand-alone firms and the moderating influence of business group affiliation on the relationship between debt and earnings management is found to be significantly negative, which also supports the second hypothesis of the study which has been constructed as “business group affiliation will negatively moderate the positive relationship between debt levels and earnings management so that business group affiliation reduces the influence of debt on earnings management”. This finding is also consistent with [17,19], which mention that business groups generate advantageous outcomes by fostering favorable conditions for the capital structure of affiliated companies within a business group, especially in emerging markets with lacking institutional mechanisms and inefficient capital markets. Ref. [11] claims that “group structures emerge not only to perpetuate control, but also to alleviate financing constraints at the country and firm levels”. Refs. [14,16] find evidence which support that firms with group affiliation tend to engage in earnings management less than stand-alone firms, for the cases of Taiwan and Canada, respectively. The findings of this study are also consistent with them.

## 5. Discussion and Conclusions

The present study investigates the moderating influence of business group affiliation on the relationship between debt and earnings management of non-financial companies listed on Borsa Istanbul for the years between 2015 and 2022, conducting a panel data analysis of 760 firm-year data in total. In the recent decades, both regulators and academic studies

have devoted significant attention to earnings management which has adverse effects on sustainability by eroding transparency and trust, raising the risk of financial instability.

Unlike prior studies which highlighted the empirical link between debt and earnings management in developed markets, this study specially makes a contribution to the debt and earnings management issue in the context of an emerging market by adding a moderating variable, namely, business group affiliation. This is a relatively unexplored research area which needs to be investigated more. The moderating impact of business group affiliation on the link between debt and earnings management pertains to the influence that membership in a business group may have on the way corporations handle their debt levels and manipulate their reported profits.

This study presents empirical evidence that the presence of internal capital markets inside corporate groups efficiently reduces the occurrence of earnings management motivated by excessive debt. This research shows that the profitability of a group or pooling of internal funds within a group has an indirect impact (or moderating effect) on the extent to which discretionary accruals are influenced by the debt levels of individual companies within the group. Business group-linked enterprises particularly benefit from internal finance. To summarize, the results suggest that internal capital markets help reduce the incentive for earnings management when it comes to debt financing. The reduction of earnings management is dependent on the efficiency of internal capital markets inside the business groups.

The outcomes of this study may guide managers and investors about the adverse effects of earnings management practices which misguide their decisions. Managers should consider to be more motivated to reflect the true financial performance and the underlying economic reality to sustainably survive in the long-run and avoid myopic behaviors at the expense of deteriorating investors' confidence. The investors should consider the supportive influence of business group affiliation alongside the guidance of financial statements. In emerging markets with incomplete financial markets like Turkey, this could be an implicit insurance against bankruptcy risk and a deterring factor against earnings management.

Overall, in emerging economies, corporations with little investor protection tend to use strategies to enhance control, such as forming group connections and implementing pyramid structures. These mechanisms possess various characteristics that may or may not coincide with the objectives of investors and creditors, but they have contrasting impacts on the quality of earnings. Controlling shareholders sometimes take advantage of the difference between voting rights and ownership rights to obtain an advantage over minority shareholders and establish pyramid or cross-shareholding arrangements. On the flip side, this method also entails a strong partnership between companies inside a business group, resulting in the establishment of internal capital markets for the group's enterprises. This study examines the potential beneficial influence of group support and the pyramidal ownership structure on profits quality, via the internal capital pooling effects. However, there are also some limitations existing in the present study. The sample size is not large enough and this limitation confines the generalization of the findings. A cross-country analysis which also investigates different conjectures would produce more sophisticated and detailed results.

Further research is needed to analyze different country conjectures. A more comprehensive study covering multi-country data is suggested to make a robust generalization. Another research avenue could be analyzing this relation with its effects on the real earnings management (or real activities manipulation) rather than the accruals-based earnings management which is in the scope of this study.

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