

Research Article

Effects of corporate governance on management earnings: Study based on non-financial firms in Pakistan

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ABSTRACT

Corporate governance is an important mechanism to control earnings management. The objective of our research is to investigate the impact of corporate governance on earnings management along with some control variables. We used secondary and panel data of 159 non-financial firms and the time period we covered was from 2010 to 2019. We applied different techniques like descriptive statistics, correlation matrix, multicollinearity, and Generalized Method of Moments (GMM) for data analysis. This investigation found that there is a significant and negative impact of audit quality, audit committee size, audit committee activities on earnings management, while CEO duality has a positive and significant impact on earnings management. We also found a significant and negative impact of asset tangibility and profitability on earnings management; however, there is no effect of board size and sales growth on the earnings management.

Keywords: *Corporate Governance; Earnings Management; GMM*

1. INTRODUCTION

1.1. BACKGROUND

According to Arsoy and Crowther (2008), corporate governance is the relationship of firms with their stakeholders. Corporate governance is a set of procedures used to shield external investors from the infringements by the management (Laporta et al., 1997). Originally, corporate governance tended to eliminate interest conflicts between managers and stockholders if the ownership and controlling roles are separated (Baydun et al., 2013). Khongmalai et al., (2009) found that the key purpose of establishment of corporate governance concept in the 1980s was to create constitutional procedures to discourage managers while pursuing their own interests. Executive chief performs important functions in firm's internal governance through balancing the owners' and managers' interests (O'Regan et al., 2005). The agency framework suggests that internal

supervision frameworks help insure the directors implement policies that optimize the wealth of shareholders. Such frameworks include the percentage of non-executive board members, they separating the positions of chairman and CEO as well as establishing sub-committees of the board.

Separating ownership from management raises the problem of supervising management activities to ensure confidence of investors. The main purpose of our research is to study the effect of corporate governance practices on discretionary accruals, used as a proxy for earnings management. Earnings management and corporate governance has got a global attention and this motivated us to research on it. According to previous research, management may capitulate to accounting choices to conceal poor choices (Campello et al., 2011). Additionally, management can misuse the flexibility of IFRS (International Financial Reporting Standards) as well as GAAP (Generally Accepted Accounting Principles) in opting among different accounting systems when calculating earnings and other financial performance measures which may cause reduction in the efficiency of financial statements (Karmarkar et al., 2000).

According to the study of different researchers' duality means when one individual serve as a CEO as well as board chairman. Management of the board is the primary duty of the board chairman and the responsibility of the CEO is to manage the firm including enforcement of decisions of the board. Thus, organizations with duality have a powerful person having capability to make decisions that may or may not optimize wealth of shareholders. Therefore the CEO and chairman roles must be separated in addition stewardship theory suggests that CEO duality may strengthen this relationship rather than reducing boards independence from management and its supervision roles (Sheikh et al., 2013; Al-Rahahleh, 2015).

The financial statements of the firm are audited by the audit committee externally. If the board performance is monitored by remuneration and audit committees, it is assumed that board will be encouraged to increase performance, and investors will trust more on the accuracy of the financial statements of the firm (Laing & Weir, 1999). The role of nomination committee is to enhance the quality of financial statements and making sure that the nominated directors possessed the expertise required (Ruigrok et al., 2006).

Earnings management occurs when managers use their financial reporting and transaction structuring judgements to manipulate financial statements to either mislead some stakeholders about the actual financial performance of the firm or control contract results based on published accounting figures (Healy & Wahlen, 1999). This shows two aspects of earnings management: intent and consequences. Actions by divisional managers that aim increase or decrease a division's current earnings reported without a subsequent increase or decrease in the division's long term economic profitability (Fischer & Rosensweig, 1995). It is allowed to alter the described profits in accordance with GAAP, such as changes to the inventory estimation and depreciation procedure. However, earnings management becomes misleading when it goes beyond GAAP such as speeding up income recognition and delaying cost recognition (Al-Rahahleh, 2015). Nazir and Afza (2018) asserted that manipulating of accounting numbers as a result of ordinary

corporate activities tends to emerge from the desire of the management to deceive stockholders and ensure that the financial targets of the firm are achieved in the course of business.

1.2. PROBLEM IDENTIFICATION

Previous research related to CG and EM originated from developed economies such as the UK, Canada or the US, compared with a limited amount of studies from emerging economies such as Pakistan. Shah et al., (2009) noticed a positive association between the EM and CG. The association examined by them is quite contrary to the corporate governance philosophy. The span they observed to be very short (from 2003 to 2007), and they argued that the system of corporate governance in Pakistan's corporate culture could be in its formative stages stage. This can however raise concerns about the ineffectiveness of corporate governance in Pakistani firms. Kamran and Shah (2014); Latif and Abdullah (2015) examined the association between CG and EM in the non-financial sector in Pakistan. Pakistan's investment culture is not suitable if businesses involved in earnings management share fraudulent market information. This leads investors to make sales or purchases choices, which lead to a loss, ultimately deteriorating their confidence. Businesses must provide a favorable business climate and good governance, improve overall accountability and minimize asymmetric information to attract more investment and boost trust among investors. Nazir and Afza (2018) explored the role of the board and audit structure on the earnings management behavior of company managers in listed firms on the Karachi Stock Exchange and stated that corporate governance tools are important for effective tracking of managers and for ensuring realistic reporting of accounting information.

Previous studies show that good corporate governance is important for controlling the activities of managers as it minimize cost of the agency by aligning management and owners' interests. Literature shows that there is a long debate on the correlation between corporate governance and earnings management, and EM is a weak characteristic of the quality of corporate financial reporting (Shah et al., 2009). Our study is also covering the recent years so any changes occurred would be identified. Our research adds to the finite literature on the correlation between CG and EM in non-financial sector in Pakistan by presenting a logical and clear image of this relationship.

Due to certain reasons, the importance of good corporate governance has been emphasized over the last few years, because of the immense scandals happened worldwide triggers scholars, regulators and other stakeholders. These drawbacks emerge from interest conflicts between shareholders and management, the opportunist behavior, corruption, carelessness of managers, deceit, weak internal control, moral breaches, and inadequate risk management. CG has become prominent in developed as well as emerging economies, but the methods in which corporate governance can be organized differ because of social, economic, and political differences among countries.

1.3. PROBLEM STATEMENT

The proper implementation of corporate governance i.e. board, audit and ownership characteristics may lead to less earning management but corporate governance mechanism is not properly being practiced in Pakistani non-financial sector which is cause of high earnings management. Therefore, our study investigate this problem.

1.4. RESEARCH QUESTION

How a corporate governance mechanism affects earnings management?

1.5. OBJECTIVE OF THE STUDY

To explore the effect of corporate governance on earnings management.

1.6. SIGNIFICANCE OF THE STUDY

Our research may be useful for researchers, practitioners, investors and regulatory bodies to understand how corporate governance affects financial reporting in emerging economies. The study would make companies' shareholders aware of the importance of establishing good corporate governance to maximize their wealth. It will guide investors to understand the mechanisms used by various firms for the manipulations of their earnings and to efficiently allocate their resources and manage their portfolios of investments in capital markets. The findings of this study may be helpful for investors in developing countries who, when making investment decisions, must interpret financial statement numbers published by firms.

Our study will also warn management against manipulation of earnings and the implications of their various activities. Our research may help the board to devise policies to ensure that a variety of information is accessible to it. The audit committee must ensure that the financial statements of the company should be in accordance to the Financial Reporting Standards. The board must create an internal audit function for reviewing and reporting to the audit committee on the risk management, internal auditing, and governance effectiveness of the company. Because of the negative correlation between corporate governance quality and earnings management, non-financial companies should enhance compliance with corporate governance requirements related to boards of directors, board meetings, independence of the audit committee, duality of the CEO, board structure, and compensation.

1.7. SCOPE OF THE STUDY

Since our research is solely about the non-financial companies listed on the Pakistan Stock Exchange, other emerging economies may benefit from our research as they have nearly similar corporate structures as well. Hence, our investigation results can be applied to other countries whose economies are developing. This may help investors to understand how businesses are engaged in earnings fraud and allow them to better

distribute their money in the marketplace. This would also help to make management aware of its coercive practices and the after-effects of earnings manipulation.

2. LITERATURE REVIEW

The findings of the previous researches are discussed in this chapter. The first section of this chapter deals with corporate governance and its variables (board size, CEO duality, audit quality, audit committee activity & audit committee size) & control variables (firm size, tangibility, sales growth, profitability & firm age). The second section deals with theoretical framework and the third section deals with hypothesis statement.

Brownbridge (2007) asserted that corporate governance keeps the economic, social, individual, and corporate goals in balance. Lin and Hwang (2010) clarified that good governance ensures that managers employ the company's resources appropriately in the best interests of the absentee owners and reasonably publishes the company's financial position and operating performance. Dabor and Ibadin (2013) cited that corporate governance is a factor that determines whether or not the management is involved in controlling and manipulating earnings. Since the owners are no longer in charge of power, the organizational structure has emerged as a possible issue of authority and this is the concept behind this theory. Conflict between the agencies occurs when managers are hired to make decisions about shareholder benefits, but they begin to make decisions that are better tailored to their own personal interests (Khongmalai et al., 2009).

Chung et al., (2005) found that corporate policies are primarily responsible for the firm performance, but the scale of earnings management depends more on the performance of operations. In addition to previous studies, El-Mehdi and Seboui (2011) added that corporate governance approaches provide necessary grounds for earnings management, such as 'opportunistic behaviour, a culture of self-sufficiency that encourages short-term profits at the cost of long-term sustainability and selective and subjective disclosure practices, etc.' or inappropriate conditions such as 'a culture that promotes integrity, accountability and transparency.

2.1. BOARD SIZE AND EARNINGS MANAGEMENT

More bureaucracy, inefficient communication and slower decision-making, results in higher earning management (Agrawal and Cooper, 2016) generally characterize large board size. Large board companies are more like to participate in earning management through seasoned equity deals (Chin et al., 2006). The greater size of board indicates less capacity to control discretionary behaviour (Gonzalez & Meca, 2014). Cyril and Chinakpude (2019) found that there is negative correlation between earning per share and board size. In contrast, another study conducted by Okougbo & Okike (2015) found a positive correlation between size of the board and earnings management.

Board monitoring is strongly related to large boards because of their capacity to assign a larger number of observers for the workload (Klein, 2002). Earnings management has less probability to occur in organizations with larger boards (Xie et al., 2001). Small board tend to be more likely to fail to recognize earning management (Yu, 2008). Alonso et al. (2000)

reported that larger boards represent a weaker coordination and combination and their results suggest the positive correlation between larger boards and earning management. Kao and Chen (2004) argue that the size of the large board is often associated with an increased level of earning management. Chin et al., (2006) reported there is a strong direct relationship between the size of the board and the management of earnings.

More time and energy should be devoted to effective supervision by larger boards (Monks & Minow, 1995). Klein (2002) also endorsed this statement and claimed that larger boards are positively related to successful monitoring because of their combined expertise and the opportunity to spread the workload over many board members. Smaller boards are not seen as much as capable of detecting or restricting earnings management (Yu, 2008). Larger board size with more diverse academic and professional backgrounds, experiences and perceptions of how successful decision-making can be formed, are more likely to protect and serve shareholders' interests. Therefore, they are less vulnerable to CEO domination. Nugroho and Eko (2011) found that board size has no major impact on earnings management practices.

2.2. CEO DUALITY AND EARNINGS MANAGEMENT

When the same individual serves the duties of both CEO and Chairperson on a company's board, it is called CEO duality. From Persons' previous work (2006), he pointed out that centralizing authority in a company will enable the CEO to assert excessive control over the board, e.g. in holding meetings, creating board agendas and controlling the information stream made accessible to board members. Latif and Abdullah (2015) observed in a study that CEO duality is positively correlated with earnings management. Rahman and Haniffa (2005) explained that the empirical research suggests the two perspectives on the role of CEO duality: the theory of agencies & the theory of stewardship. However, it is debated by Hashim & Devi (2008) that it is necessary, under agency theory, to keep these two roles separate in order to maintain effective board control over the managers of the firm: crosschecks are provided to minimize any aggressive strategies by the CEO.

When one person holds two main positions, they are more likely to adopt policies that favor them, rather than all the shareholders of the firm. This view is supported by Zulkafli et al., (2005) and expressed that the separation of power between the CEO and the chairperson of the board allows effective supervision through the board of the firm. Companies committing frauds are more probably having the CEOs who are also the chairperson of the board (Chen et al., 2006). Stewardship theory is opposite to the agency theory in which it is stated that combining the two positions of CEO and board chairperson improves decision-making and allows for strategic vision, enabling their chair/ CEO to guide the board towards the firm's goals and objectives with limited board involvement. Despite the coordination problems, several board are still in favor of CEO duality. Furthermore, Haniffa and Cooke (2002) highlighted that CEO duality companies are subject to less management intervention while maintaining sufficient oversight relying on strong boards.

2.3. AUDIT COMMITTEE CHARACTERISTICS AND EARNINGS MANAGEMENT

Iqbal et al., (2015) found negative correlation between audit committee and EM. An essential role the audit committee has played in monitoring management to safeguard shareholder interests. García-Meca and Sánchez-Balletsta (2012) conducted a research and argued that investor's confidence can be improved through audit committee by restricting the earning management. Lin (2006) conducted a research to check that how audit committee and result effect earning management shows that there is negative effect between audit committee and earnings management. This suggests that earnings management practices done by management can be reduced by audit committee.

Researches related to audit quality showed an association between audit quality and earnings management (Lopes, 2018). These studies also observed that earnings management decreases if the auditor is independent, and indicated that higher audit quality is delivered by 4 big auditors (Lopes, 2018). The efficiency of an audit in controlling the manipulation of earnings is directly related to the audit quality. Piot & Janin (2007) elaborated in their study that audit committee enhances the audit efficiency at two stages. First, management's earnings management activities can be reduced by monitoring accounting department results by audit committee. Second, any disparity in the financial reports or disclosures is likely to be uncovered because of the committee's combination of internal and external auditors and its protection of the sovereignty of external auditors (McMullen, 1996).

Large and more independent audit committees work better as supervisory entities (Mansor et al., 2013). A large size audit committee could be expected to be inversely related to earnings management, believing that a larger audit committee could better maintain consistency and credibility of the reported financial statements. Even so, Latif and Abdullah (2015) did not explored a significant relationship between the size of audit committee and earnings management. A very larger audit committee can lead to a hindrance in debates and discussions, while a very small audit committee could lack expertise in auditing. Baxter and Cotter (2009) found that a large audit committee effectively monitor the reporting process, and its members have diverse skills to track the financial reporting activities more intensively.

Frequency of board and audit committee meetings could be an effective supervision mechanism to control earnings management. García et al., (2012) found that frequent audit committee meetings affects the manipulation of earnings negatively in Spanish firms. The frequency of audit committee meetings could demotivate managers to involve in the manipulation of earnings and to enhance the reliability of financial reports. Xie et al., (2003) observed that earnings manipulations is negatively affected by the frequency of board meetings.

The audit committee members are responsible for many responsibilities, such as the reliability of the financial statements, the effectiveness of internal and external audit and preventing any prohibited measures (El-Kassar et al., 2014). Sarbanes-Oxley Act (2002) highlighted in his study that board of directors appointed the group of individuals as an audit committee to supervise all the accounting and financial information.

Specific researches were carried out to assess the efficacy of the audit committee when working together as a team with the internal audit. Davies (2009) suggested that it must be identified that when determining internal audit obligations and selecting the right person to lead internal audit, the audit committee has greater powers. The audit committee shall provide guidance for the internal audit to carry out all the tasks and improve its functions (Karamanou & Vafeas, 2005). Goodwin & Yeo (2001) stated that it is also the responsibility of the audit committee to keep the internal audit independent.

While the association between CG and EM is focus of our research but for the impact of external factors measurement we need control variables. We used, firm size, tangibility, profitability, sales growth and firm age, as control variables in our research.

2.4. FIRM SIZE AND EARNINGS MANAGEMENT

The value which shows the size (Large, medium & Small) of the firm is known as firm size. Internal control system of the firm is also interlinked with firm size. Rahmani and Akbari (2013) argued that the larger firms have greater internal control while maintaining the accuracy of providing the information to public. For motivation of public, the large firms may avoid the management profits. This study shows the negative correlation between Firm size and EM.

Sireger and Utama (2008) stated that the proxy used to access the information in market related to the firm is known as firm size. To measure the availability of information in the market and economies of scale, firm size is used. Fagiolo and Luzzi (2006) argued that sales is considered as a substitute indicator of firm size. For the annual turnover of companies, firm size is used as a proxy. Kim and Rhee (2003) highlighted that to prevent themselves from financial losses, small organizations participates more in earnings management than medium-sized and large sized organizations. In contrary to this argument, another study conducted by Chih & Shen (2007) showed that larger sized companies participates more in earnings management.

According to Alviantini (2013), Nassirzedah et al., (2012), Kouki et al., (2011), Halim et al., (2006), and Kim et al., (2003), firm size and earnings management have a favourable relationship. In contrast, Swastika (2013), Tangjitprom (2013), Rezaei and Roshani (2012), and Wuryani (2012) discovered that business size is adversely connected with earnings management. Khuong et al., (2019) discovered a favourable relationship between firm size and earnings management. Gu et al., (2005) and Aini et al., (2006) discovered that firm size influences discretionary accruals. According to Nalarreason et al., (2019), there is a positive relationship between firm and earnings management. A study conducted by Alexander and Hengky (2017) shows that there is no effect on EM of firm size.

2.5. TANGIBILITY AND EARNINGS MANAGEMENT

All the physical assets like machinery, plant, property, equipment, building etc. lies in the category of tangible assets. Sun and Rath (2009) argued that the probability of management to engage in discretionary earnings management depends upon the proportion of current and fixed assets and liabilities of a firm. High tangibility means more

proportion of fixed assets in total assets, which eliminates the opportunity of managers to engage in earnings management. As asserted by Kim et al., (2003), firms with higher tangibility ratios, reduces the management's ability to involve in manipulations of earnings.

2.6. PROFITABILITY AND EARNINGS MANAGEMENT

Profitability helps in measuring that how much profit is gained by the firm in a specific period of time by the firm. The study of Gunawan et al., (2015) argued that to achieve best performance of the firm manager may engage in EM practices. This study shows the positive relationship between profitability and EM.

To monitor the performance of the company, return on asset implemented as a control variable. The study of Wu & Huang (2011) says that return on asset is positively proportional to the earnings management. In contrast to this argument another study conducted by Sun & Rath (2009) found that return on asset is positively proportional to the earnings management although there is strong evidences that return on assets is a main component of the earnings management. Lee et al., (2005) observed that firm performance is positively correlated with discretionary accruals. Abbadi et al., (2016) explored that the firms with higher profit will not involve in earnings management practices. A study by Kothari et al., (2005) and Jiraporn et al., (2007) argued that ROA is negatively correlated with EM. A study conducted by Alexander and Hengky (2017) asserted that there is no effect on EM of Profitability.

2.7. SALES GROWTH AND EARNINGS MANAGEMENT

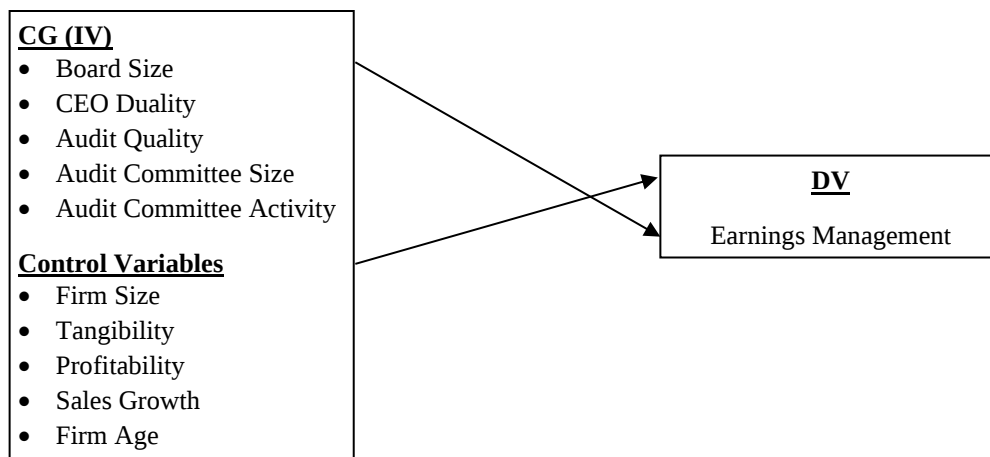
Growth in sales may affect management's intention to manipulate earnings. Companies with higher sales growth may reduce manager's ability to involve in earnings management because of their large share in the market that improves profitability. Sales growth can be measured as percentage change in sales from the previous year (Mehmood et al., 2019). Wernerfelt (1986) found that as the growth of a firm maximizes in such a way that it also optimize profits, a firm will gain enough share in the market. Abdularahman and Ali (2006) argued that managers has less incentive to engage in discretionary earnings management in higher-growth firms. Contrary to this Matsumoto (2002) suggested that managers in high growth rate firms are more motivated toward management of earnings. The study conducted by Abbadi et al., (2016) explored that the relationship between sales growth and earnings management is irrelevant.

2.8. FIRM AGE AND EARNINGS MANAGEMENT

Firm age helps in demonstrating the presence of firm and capability of firm to compete in the economy of country. A recent research by Bassiouny et al., (2016) argued that as compared to the new firms, older firms are less likely to involve in EM practices because they do not want poor reputation in front of public. This study shows the negative correlation between age of the firm and EM.

The age of the company is an important control variable as it represents the stage of the firm in the business cycle (Stubben, 2010). Mnif (2009); Loderer et al., (2001) observed that the date on which company is enlisted in SECP, from that date the age of the firm is determined. The age of the firm is positively proportional to the earning management (Wu & Huang, 2011). Kamran & Shah (2014) argued that with the increase in firm's age, there is decrease in earnings management practices. A study conducted by Alexander and Hengky (2017) showed that there is no effect on EM of age of the firm.

2.9. THEORETICAL FRAMEWORK



Whereas: CG = Corporate Governance, IV = Independent Variable, CV = Control Variable and DV = Dependent Variable

Hypotheses Statement

- H₁: Board size significantly affects the earnings management
- H₂: CEO duality significantly affects the earnings management
- H₃: Audit quality significantly affects the earnings management
- H₄: Size of audit committee significantly affects the earnings management
- H₅: Audit committee activities significantly affect the earnings management
- H₆: Firm size significantly affects the earnings management
- H₇: Tangibility significantly affects the earnings management
- H₈: Profitability significantly affects the earnings management
- H₉: Sales growth significantly affects the earnings management
- H₁₀: Age of the firm significantly affects the earnings management

3. RESEARCH METHODOLOGY

3.1. RESEARCH DESIGN

It is a method of conducting an investigation, a well-organized procedure used by a researcher or a scientist, a detailed assimilation of components already described, and any other information or data leads to a rational outcome. A sample of non-financial firms are selected to find the impact of different mechanisms of corporate governance on

discretionary accruals, which is proxy of earnings management. The data is collected from the annual reports of selected companies. We used Stata and Gretl for data analysis.

3.2. METHODOLOGICAL LITERATURE

The concept of accruals accounting is that costs and expenses differ from profits and revenues. As a result, net profit can be viewed as a change in the transitory operating cash flow; these adjustments are referred to as accruals (Abed et al., 2012). Accruals, according to Dechow, Sloan, and Sweeney (1996), are more discretionary than cash flows. Previously, researchers utilised discretionary accruals (the difference between total and non-discretionary accruals) as a measure of earnings control (Islam et al., 2011). Dechow et al., (1996) evaluated various models used to estimate accruals and developed a modified version of the Jones model that can successfully identify accrual management. The updated Jones model compares the increase in sales with the increase in receivables in the original model to the calculating error of accruals when the management of a business makes use of its choice in sales.

Latif and Abdullah (2015) conducted a research on effectiveness of corporate governance mechanisms in controlling earnings management in non-financial firms of Pakistan. They used descriptive statistics and correlation matrix for data analysis. Iqbal et al., (2015) conducted a similar research and used descriptive statistics, correlation matrix, Tolerance, and GMM for data analysis.

3.3. RESEARCH MODEL

The study investigates the effect of five corporate governance structures on earnings management, where control variables include firm size, tangibility, profitability, firm age, and sales growth. To evaluate the association between the governance mechanisms and earnings management, we establish the following model:

$$EM_{i,t} = \alpha + \beta_1 (BSIZE)_{i,t} + \beta_2 (CEOD)_{i,t} + \beta_3 (AQ)_{i,t} + \beta_4 (ACSIZE)_{i,t} + \beta_5 (ACA)_{i,t} + \beta_6 (SIZE)_{i,t} + \beta_7 (TANG)_{i,t} + \beta_8 (PRF)_{i,t} + \beta_9 (GRW)_{i,t} + \beta_{10} (AGE)_{i,t} \quad (1)$$

Whereas EM = Earnings management, BSIZE = Board size, CEOD = CEO Duality, AQ = Audit Quality, ACSIZE = Audit Committee Size, ACA = Audit committee Activity, SIZE = Firm size, TANG = Tangibility, PRF = Profitability, GRW = Sales growth, AGE = Firm Age. Where i stands for company and t for year, α = Constant, $\beta_1, \dots, \beta_{10}$ = Slopes

3.4. DATA

The nature of data is secondary, panel data, which is extracted from financial statements of selected 159 listed companies of non-financial sector of Pakistan. The time period of data is from 2010 to 2019 which are 10 years.

3.5. STATISTICS

3.5.1. Earnings Management: Discretionary Accruals

Healy and Wahlen (1999) measured earnings management using discretionary accruals as a proxy. To estimate discretionary accruals, we employed the cross-sectional modified Jones' model (Jones, 1991). According to Dechow et al., (1995), the modified Jones' model is the most successful approach for measuring discretionary accruals. Using the preceding statement as a guide, the discretionary accruals can be calculated as follows:

The difference between net income and cash flows from operating operations is referred to as total accruals.

$$TAACC_{i,t} = NI_{i,t} - OCF_{i,t} \quad (2)$$

For each combination of firm and fiscal year, the equation below is calculated; so, the specific parameters of the industry of the Jones model are described as follows:

$$TAACC_{i,t} / TA_{i,t-1} = \alpha_1 (1 / TA_{i,t-1}) + \alpha_2 [(\Delta REV_{i,t}) / TA_{i,t-1}] + \alpha_3 (PPE_{i,t} / TA_{i,t-1}) + \varepsilon_{i,t} \quad (3)$$

Non-discretionary accruals are measured as follow:

$$NDAC_{i,t} = \hat{\alpha}_1 (1 / TA_{i,t-1}) + \hat{\alpha}_2 [(\Delta REV_{i,t} - \Delta REC_{i,t}) / TA_{i,t-1}] + \hat{\alpha}_3 (PPE_{i,t} / TA_{i,t-1}) \quad (4)$$

Discretionary accruals is equal to total accruals minus non-discretionary accruals:

$$DACC_{i,t} = TACC_{i,t} - NDAC_{i,t} \quad (1)$$

Where:

TACC = Total accruals of a firm, NI = Net income, OCF = Operating cash flows, $TA_{i,t-1}$ = Total assets of previous year, ΔREV = Change in operating revenues, PPE = gross plant, property and equipment, NDAC = Non-discretionary accruals, ΔREC = Change in net receivables, DACC = Discretionary accruals, α_1, α_2 and α_3 are the regression parameters, $\varepsilon_{i,t}$ = error term.

3.6. CORPORATE GOVERNANCE

Corporate governance has different mechanisms from which we chose CEO duality, board size, audit quality, audit committee size, frequency of audit committee meetings.

3.6.1. Board Size

We measured board size as total members of the board. Latif and Abdullah (2015) also used this method in their study.

Board Size = Total number of board of directors

3.6.2. CEO Duality

Its value will be 1 if when CEO is also the chairman of the board, otherwise 0 (Latif & Abdullah, 2015).

3.6.3. Audit Quality

We are using the method of Francis and Yu (2009) by taking the value 1 if four large auditors audit the company, otherwise 0.

3.6.4. Size of Audit Committee

Audit committee size means total number of board members in the audit committee (Latif & Abdullah, 2015).

Size of audit committee = total members in the audit committee

3.6.5. Audit Committee Activity

Xie et al., (2003) used number of audit committee meetings held in a year as a proxy for audit committee activity.

Audit committee Activity = frequency of audit committee meetings in a year

3.7. CONTROL VARIABLES

Control variables include firm size, firm age, sales growth, tangibility and profitability.

3.7.1. Firm Size

Firm size is calculated as natural log of total assets of a company (Latif & Abdullah, 2015).

Firm Size = Natural log of total assets

3.7.2. Tangibility

We measure tangibility of a firm is as the proportion of fixed assets in total assets as calculated by (Nasution et al., 2017).

Tangibility = Fixed Assets / Total Assets

3.7.3. Profitability

We used ROA as a proxy to measure profitability as used by Afza et al., (2008) and is calculated as net income divided by total assets.

ROA = Net income / Total assets

3.7.4. Sales Growth

We calculated sales growth as percentage increase or decrease in sales following the method of (Mehmood et al., 2019).

Sales growth = %age change in sales

3.7.5. Firm Age

Mnif (2009); Loderer et al., (2001) observed that the date on which company is enlisted in SECP, from that date the age of the firm is determined.

Firm age = the time when the company was registered until now is the age of the firm.

3.8. TECHNIQUES

3.8.1. Descriptive Statistics

To describe the basic features of the data in a sample descriptive statistics are used. This helps to deliver quantitative explanations in a concise way. Descriptive statistics help in the logical simplification of huge numbers of statistics. The distribution, central tendency and the dispersion are the key attributes of a single variable in a study. The value or ranges of frequency of any variable are summarized in a distribution. The approximate value of the center of distribution of values is provided by the central tendency. The central tendency is further classified into mean, median and mode. The spread of values around the central tendency is known as dispersion. The range and standard deviation are the two common measure of dispersion.

3.8.2. Correlation Analysis

Correlation analysis measures the association between two continuous variables. Correlation analysis measure a correlation co-efficient. It ranges between -1 to 1 and the linear relation between two variables is quantified by the correlation of sample. The correlation between the variables can be either positive, (i.e. one variable is significantly associated with another variable) or negative, (i.e. one variable is less correlated with another variable). The positive or negative correlation co-efficient sign shows the involvement route. The correlation co-efficient scale point to the association force if close to zero correlation implies there is no linear correlation between the two variables.

3.8.3. Multicollinearity

In a multiple regression model, multi-collinearity is the phenomenon of a strong relationship between the independent variables. It is a statistical concept, which co-relates independent variables within a model. Tolerance ($Tol. = 1 / VIF$) is used as measure of collinearity in a regression analysis. Tol. is related to independent variables. The range of Tol. varies from 0 to 1. A value less than 0.6 is considered a cause for concern. A high value of Tol. like 0.7 shows low multicollinearity, and a low tolerance value like 0.2 shows high multicollinearity.

3.8.4. Generalized Method of Moments (GMM)

GMM is a common technique used in statistics or econometrics to estimate parameters of statistical model. This is typically applied in the sense of semiparametric models, when the parameter under study has finite dimensions, and the complete form of the distribution function of the data could not be known, and hence the maximum estimate of probability is not valid.

4. RESULTS AND DISCUSSION

This chapter discusses the effect of corporate governance mechanisms on earnings management. We used Stata and Gretl software for data analysis. Results are shown in different tables, which consist of descriptive statistics, Multicollinearity measured through

variance inflation factor and tolerance, and Generalized Method of Moments (GMM) is used for hypotheses testing.

4.1. RESULTS

Table 1. Descriptive statistics

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
BSIZE	7.885	7.000	15.000	4.000	1.288	1749
CEOD	0.265	0.000	1.000	0.000	0.441	1749
AQ	0.410	0.000	1.000	0.000	0.492	1749
ACSIZE	3.232	3.000	6.000	3.000	0.519	1749
ACA	4.254	4.000	10.000	3.000	0.669	1749
SIZE	14.196	15.442	19.839	5.023	4.636	1749
TANG	0.869	0.763	4.129	0.321	0.685	1749
PRF	0.450	0.044	18.021	-2.413	1.354	1749
GRW	2.045	0.519	16.000	0.013	14.297	1749
AGE	37.112	32.000	156.000	5.000	18.967	1749
EM	16.882	13.176	52.074	4.463	9.754	1749

Note: EM = Earnings management, BSIZE = Board size, CEOD = CEO Duality, AQ = Audit Quality, ACSIZE = Audit Committee Size, ACA = Audit committee Activity, SIZE = Firm size, TANG = Tangibility, PRF = Profitability, GRW = Sales growth, AGE = Firm Age

The mean, median, mode, standard deviation, minimum and maximum values of all variables and total number of observations are given in table 1. Our study sample consist of 159 non-financial firms and covers the time period from 2010 to 2019 that consists of balanced panel. The corporate governance measures used in our study are board size, CEO duality, audit quality, audit committee size, and audit committee activities. There are large variations of board size, audit committee size, audit committee activities, firm size, sales growth, age and earnings management from its average values. However, CEO duality, audit quality, tangibility and profitability shows less variation from their mean values.

The mean value of board size shows that on average firms have 8 members on its boards with high variation. Our result shows that CEO does not perform the role of chairman. Our mean value of audit quality 0.410 shows that on average firms are not audited by big 4 auditors. The mean value 3.232 of audit committee size shows that on average firms have 3 members in their audit committees. The mean value 4.254 of audit committee activities shows that on average firms hold 4 meetings in a year with less deviation. Mean value of firm size 14.196 shows the average value of log of assets of all firms under study. The variations from the mean is because some firms have more assets as compared to others. On average firms are investing more in assets. The mean value of tangibility shows that on average firms have more fixed assets with less variation. The mean value 37.112 of firm age shows that on average firms are 37 years old with higher deviation. The mean value of profitability shows that on average the firms are gaining 0.450 on return on equity with less deviation from its mean. The mean value of sales growth 2.045 shows that on average firm 2.045 sales growth form previous year, with higher deviation from its mean.

Table 2. Test of Multicollinearity

Variables	VIF	Tol.=1/VIF
BSIZE	1.32	0.758
CEOD	1.072	0.933
AQ	1.216	0.822
ACSIZE	1.357	0.737
ACA	1.047	0.955
SIZE	1.051	0.951
TANG	1.025	0.976
PRF	1.027	0.974
GRW	1.004	0.996
AGE	1.041	0.961

Note: VIF = Variance Inflation Factor $1/VIF = \text{Tolerance(Tol.)}$, BSIZE = Board size, CEOD = CEO Duality, AQ = Audit Quality, ACSIZE = Audit Committee Size, ACA = Audit committee Activity, SIZE = Firm size, TANG = Tangibility, PRF = Profitability, GRW = Sales growth, AGE = Firm Age

In table 2, VIF is used to identify the problem of multicollinearity. Tol. is used as measure of collinearity in a regression analysis. Tol. is related to independent variables. The range of Tol. varies from 0 to 1. A value less than 0.6 is considered a cause for problem. A high value of Tol. like 0.8 shows low multicollinearity, and a low tolerance value like 0.2 shows high multicollinearity. Our results shows that all the values are greater than 0.6 so it the clear that there is very low multicollinearity.

Table 3. Correlation analysis

Var.	EM	AGE	ACA	ACSIZE	AQ	CEOD	BSIZE	GRW	PRF	TANG	SIZE
EM	1.000										
AGE	0.019	1.000									
ACA	-0.049	-0.004	1.000								
ACSIZE	-0.078	0.021	0.175	1.000							
AQ	-0.086	0.174	0.128	0.306	1.000						
CEOD	0.021	0.006	-0.066	-0.132	0.203	1.000					
BSIZE	-0.030	0.051	0.115	0.431	0.284	-0.191	1.000				
GRW	-0.016	-0.017	-0.026	-0.016	0.026	-0.017	-0.018	1.000			
PRF	-0.042	0.044	0.049	-0.029	0.037	-0.013	0.103	-0.009	1.000		
TANG	-0.096	0.035	0.013	0.096	0.090	-0.019	0.046	-0.004	0.054	1.000	
SIZE	0.169	-0.071	0.021	-0.147	-0.090	0.066	0.005	-0.022	-0.036	-0.100	1.000

Note: EM = Earnings management, BSIZE = Board size, CEOD = CEO Duality, AQ = Audit Quality, ACSIZE = Audit Committee Size, ACA = Audit committee Activity, SIZE = Firm size, TANG = Tangibility, PRF = Profitability, GRW = Sales growth, AGE = Firm Age

The correlation analysis is shown in table 3 correlation values ranges from -1 to +1. Therefore, any value close to +1 shows high correlation, and a value near to -1 indicate negative correlation. Correlation matrix is used to find the problem of Multicollinearity among the variables under study. In above table the highest correlation value is 0.431 that is between board size and audit committee size, while lowest correlation is -0.191 between board size and CEO duality. The results in our table shows that there is no high correlation between our variables, so the problem of Multicollinearity does not exists. It means that all the variables under study are different and less associated to each other, which ultimately means that there is no problem of Multicollinearity among the variables.

Table 4. Two-step system dynamic panel estimation

EM	Coef.	Std. Err.	z-value	p-value
L1.	0.991	0.003	297.220	0.000
L2.	-0.004	0.000	-22.810	0.000
BSIZE	-0.007	0.008	-0.850	0.397
CEOD	0.494	0.069	7.150	0.000
AQ	-0.062	0.030	-2.070	0.027
ACSIZE	-0.035	0.017	-2.059	0.021
ACA	-0.024	0.005	-5.288	0.008
AGE	0.001	0.001	-1.000	0.318
SIZE	0.149	0.073	2.041	0.023
TANG	-0.029	0.010	2.890	0.004
PRF	-0.007	0.003	-2.012	0.043
GRW	-0.001	0.000	-0.960	0.339
Sargan p-value	0.206			
AR1 p-value	0.013			
AR2 p-value	0.817			

Note: BSIZE = Board size, CEOD = CEO Duality, AQ = Audit Quality, ACSIZE = Audit Committee Size, ACA = Audit committee Activity, SIZE = Firm size, TANG = Tangibility, PRF = Profitability, GRW = Sales growth, AGE = Firm Age

Two-step dynamic panel estimation are shown in table 4. The P-values indicate the significant effect of independent and control variables on dependent variable. The result shows that board size insignificantly affects the earnings management, which disapproves our hypothesis H₁. It shows that in larger board size there is less communication, coordination that leads to more probability of earnings management. CEO duality also have a significant effect on the earnings management that also approves our hypothesis H₂. Audit quality also affects the earnings management significantly, which approves our hypothesis H₃. Audit committee size is also significantly affected by earnings management, which approves our hypothesis H₄. Earnings management is also significantly affected by the activities of audit committee that approves our hypothesis H₅. Firm age insignificantly affects the earnings management that disapproves our hypothesis H₆. Firm size is significantly affects the earnings management that again approves our hypothesis H₇. Tangibility also affects the earnings management significantly that approves our hypothesis H₈. Profitability has a significant effect on the earnings management hence our hypothesis H₉ is approved. Sales growth is insignificant to earnings management; therefore, our hypothesis H₁₀ is disapproved. Our results show that Sargan p-value is insignificant and AR1 is significant.

4.2. MAJOR FINDINGS AND DISCUSSIONS

According to the findings of our study, the size of the board has no effect on earnings management. The findings of our research are consistent with the findings (Nugroho & Eko, 2011). Our study discovered that CEO duality has a significant and positive impact on earnings management, and our findings are consistent with those of Zulkafli et al., (2005) and Chen et al., (2006). That is, when one person holds two major positions, they are more likely to adopt policies that benefit them rather than all of the firm's shareholders. Companies that perpetrate fraud are more likely to have CEOs who also serve as the chairwoman of the board.

Our findings also shows that audit quality significantly and negatively affects the earnings management as found by (Lopes, 2018). Which means that earnings management decreases if the auditor is independent, and 4 big auditors deliver that higher audit quality. We also found that the size of the audit committee significantly but negatively affects the discretionary earnings management and our results are associated with the findings of Mansor et Al., (2013) that large and independent audit committee work better to supervise and control the practices of earnings management. Similarly et al., (2009) found that a large audit committee efficiently controls the reporting process and its members have different expertise to more intensively track the financial reporting activities.

Our findings also show that frequency of audit committee meetings also significantly and negatively effects the earnings management and our results are supported by (García et al., 2012) and (Xie et al., 2003). The frequency of meetings of boards and audit committees may be an important supervisory mechanism for controlling earnings management. We found that age of the firm is insignificantly associated to earnings management as supported by Alexander and Hengky (2017); they found that age of the firm has no effect on the earnings management. In our results, firm size has a positive and significant effect on the earnings management as found by Chih & Shen (2007), Alviantini (2013) that larger firms are more involved in the management of earnings.

Tangibility in our results also significantly but negatively affects the earnings management and our findings are supported by (Sun & Rath, 2009) & (Kim et al., 2003). They found that that the probability of management to engage in discretionary earnings management depends upon the proportion of current and fixed assets and liabilities of a firm. Therefore, firms with higher tangibility ratios, reduces the management's ability to involve in manipulations of earnings. Our findings also indicate that profitability is also significantly and negatively associated with earnings management as found by (Abbadi et al., 2016) & (Jiraporn et al., 2007). The firms with higher profits will not involve in earnings management practices. The sales growth in our study is insignificantly associated with management of earnings as argued by Abbadi et al., (2016) that the relationship between sales growth and earnings management is irrelevant.

5. CONCLUSION AND RECOMMENDATIONS

5.1. CONCLUSION

The purpose of this research is to look into the impact of various corporate governance measures on earnings management in non-financial companies listed on the Pakistan Stock Exchange. Corporate governance procedures include board size, CEO duality, audit quality, audit committee size, audit committee activities, and audit committee activities with control variables firms' size, sales growth, profitability, firm age, and tangibility. Our study sample consists of 159 non-financial firms and the time period of our study is from 2010 to 2019. For data analysis, we used Stata and Gretl software and we used descriptive statistics correlation, Multicollinearity, and regression analysis.

Corporate governance is critical in preventing earnings manipulation. We discovered that the size of the board has little effect on earnings management. The findings of our study reveal that CEO duality has a positive significant influence on earnings management, implying that firms with dual-role CEOs can engage in earnings management. We also discovered that audit quality is adversely connected to earnings management, implying that organisations that are audited by the major four auditors have a decreased possibility of earnings management. The size of the audit committee is also related to earnings management, indicating that larger committees have more skill in tracking financial reporting standards.

The frequency with which audit committee meetings are held is also significantly and negatively related to earnings management. We discovered that the age of the firm has no effect on earnings management. We discovered that business size is directly connected to earnings management techniques; thus, larger firms are more involved in earnings management. Our data also suggest that tangibility is inversely associated with earnings management strategies. Firms with higher tangibility ratios have a lower ability to manipulate earnings. The profitability of the organisation has a negative and considerable impact on earnings management. In addition, we discovered that sales increase has little effect on earnings management.

5.2. RECOMMENDATIONS

As we found that, the firms with dual role of the CEO are more motivated to earnings management so firms may separate the roles of CEO and chairman in order to control the earnings management. The firms can audit their companies from four big auditors in order to reduce the earnings management. Firms may keep the optimum size of their audit committees in order to have the expertise to track the activities of financial reporting. We also recommend that audit committees may meet regularly at least 4 times in a year. We also recommend that large firms may focus more on controlling their earnings management. As we found that tangibility is negatively related to earnings management, therefore, they may invest more in fixed assets. We also recommend that firms may focus on increasing their profitability, which will ultimately reduce the managers' intention to involve in the earnings management.

5.3. PRACTICAL IMPLICATIONS

As our research is totally about the non-financial firms listed on Pakistan Stock Exchange, therefore other emerging economies may also benefit from our research because they share almost similar corporate structures. Therefore, the findings of our investigation can be referred to other countries whose economies are emerging. It will help investors to understand that how companies involve in the manipulation of earnings and help them to them to efficiently allocate their resources in the market. It will also help make management aware of their aggressive policies and the after effects of manipulation of earnings. It will also be beneficial for regulatory entities like Securities and Exchange Commissions to devise rules and regulations for firms so that they could not involve in earnings management and make the financial reports reliable and accurate.

5.4. LIMITATIONS AND FUTURE RESEARCH

Our study is only limited to the 159 manufacturing companies of Pakistan and the time period we covered is from 2009 to 2019. We also discussed only five mechanisms of corporate governance and five control variables as well. However, interesting results may be found on pre and post financial crisis. Further research could also be done by adding more mechanisms of corporate governance like ownerships structure, compensation and nominations, board structure, board meetings with more control variables like leverage, return on equity etc.

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