Earnings Management, Earnings Quality, and Corporate Social Responsibility: A Panel Data Analysis.

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Table of Contents

List of Table

List of Figures

Abbreviations

AAERs	Accounting and Auditing Enforcement Releases
CSR	Corporate Social responsibility
DACC	Discretionary Accruals
DV	Dependent variable
EQ	Earnings Quality
EM	Earnings Management
ERC	Earnings Response Coefficient
ESG	Environmental, Social, and Governance
EViews	Econometric Views
FASB	Financial Accounting Standards Board
FRS	Financial Reporting Standard
FRSSE	Financial Reporting Standard for Smaller Entities
FRC	Financial Reporting Council
GAAP	Generally Accepted Accounting Principles
GMM	Generalised method of moments
IASB	The International Accounting Standards Board
IV	Independent Variable
LSE	London Stock Exchange
OLS	Ordinary Least Squares
SEC	Securities and Exchange Commission
SPE	Special-Purpose Entity
SIC	Standard Industrial Classification
SiRi	Company, Sustainable Investment Research International
SPSS	Statistical Package for The Social Sciences
SRI	Socially responsible investing
TLR	Timely Loss Recognition

Abstract

Corporate Social Responsibility (CSR) has become a major priority for many companies in recent years. With increased attention placed on CSR, many questions have been raised as to whether it can help mitigate earnings management. The current research was carried out to examine the impact of CSR on earnings management by exploring the concept of earnings management, the different motivations behind it, and the role of CSR in mitigating earnings management, drawing on evidence from both theoretical and empirical studies. This research contributes to the ongoing discourse on the ethical dimensions of corporate behaviour. It provides empirical evidence on the role of CSR in mitigating earnings management, offering insights for practitioners, investors, and policymakers. Multivariate regression analysis is applied to panel financial data from 2010-2019, using a sample of the entire population of the FSTE-350 on the London Stock Exchange. Econometric analysis utilising the system General Method of Moments (GMM) addresses endogeneity concerns, while instrumental variables mitigate reverse causality issues, ensuring valid and robust empirical findings.

The findings of the study revealed that there is a positive relationship between earnings management and CSR, a negative relationship between earnings quality and earnings management, a positive relationship between financial performance and earnings quality, and a positive relationship between financial performance and CSR. The Conceptual model constructed suggests that CSR affects financial performance through its impact on earnings quality and directly through the theories of CSR. The study's conclusion emphasises that a high level of earnings management corresponds to symbolic CSR, leading to diminished firm performance within the FTSE-350 index. Managers might use CSR as a façade to conceal their earnings management practices, negatively impacting the company's long-term performance. Stakeholders are encouraged to discern between authentic CSR and symbolic CSR (greenwashing) to make informed assessments of a company's true social responsibility efforts. The conceptual model developed illustrates the non-monotonic nature of the concepts under consideration, implying a limitation in the predictability of models as the monotonicity of relationships between dependent and independent variables across the entire range is a fundamental aspect of linear regression analysis.

Keywords: Earnings Management, Corporate Social Responsibility, Earnings Quality,

Chapter 1 : Introduction

1.1 Background and Research Problem

The Securities and Exchange Commission's (SEC)[1] then-Chairman Arthur Levitt, Jr., delivered a speech titled "The Numbers Game" to the NYU Centre for Law and Business in 1998. In his speech, he argues that accounting principles are not supposed to be a straitjacket; flexibility in financial reporting is necessary as it allows the accounting process to keep up with business innovations and adapt to changing circumstances. Accountants cannot anticipate and provide for every business structure or new and innovative transaction. Also, "accounting choice likely exists because it is impossible, or infeasible, to eliminate it" (Fields et al., 2001, p. 7). Earnings management (EM), among other abuses in the financial reporting process, occurs when this pliancy in accounting principles is exploited through trickery or 'accounting hocus-pocus' to obscure a company's actual financial position, thereby misleading stakeholders (Moratis & van Egmond, 2018). Companies have developed a preoccupation with meeting earnings expectations whilst ignoring common sense business practices and, in the process, eroding the quality of earnings. The pressure on companies to meet their earnings is not just perceived but real, "a company once failed to meet its earnings "numbers" by a penny and lost six per cent of its value in a day" (Levitt, 1998, p. 3). "If accounting earnings can influence public opinion, then altering the earnings may alter public opinion" (Hall, 1993, p. 329; Larcker & Revsine, 1983, p. 714).

Regulators and consumers of financial statements have expressed concern about earnings management and its widespread prevalence (Krishnan & Visvanathan, 2011). However, the top accounting firms failed to detect earnings management in almost all prominent financial scandals. Questions were asked after each financial scandal, e.g., "Why didn't the watchdog bark?" (Sterling, 2002, p. viii), "Why didn't the auditors function as a check on the cover-up? It is like the robbers had hired the police, …. The auditors should have been able to

[1] Although this study is based on companies listed on the London stock exchange, references will be drawn from The US and the Securities and Exchange Commission (SEC) since as of end of November 2019, 210 UK companies are trading on the US Over-the-Counter (OTC) Markets of which 38 are listed on either the New York Stock exchange (NYSE) or the NASDAQ. Some of these UK companies include the BT Group, Barclays Bank, BP, AstraZeneca, GlaxoSmithKline, HSBC, and the Lloyds Group

identify and do something about this" (Nakamoto, 2011, p. 1) and "The dozy watchdogs" (Economist, 2014, p. 1). In response to these failures in the UK, there are current recommendations to replace the Financial Reporting Council (FRC) with the Audit, Reporting, and Governance Authority. For example, corporate governance reforms are instituted by enacting the Companies (Audit, Investigations and Community Enterprise) Act of 2004. In the US, the Sarbanes Oxley Act of 2002 was enacted. Even after these reforms, the HealthSouth scandal (2003, Freddie Mac (2003), AIG (2005), Lehman Brothers (2008), Satyam (2009) and Toshiba (2015), BHS (2015), Carillion (2017), General Electric Co. (GE) (2017), Patisserie Valerie (2018) occurred. This research will investigate whether adherence to the principles of corporate social responsibility can mitigate earnings management, thereby improving earnings quality and increasing Firm Value (FV). The bottom line is that there are mechanisms in existence that potentially cause earnings management to occur, and the circumstances of these mechanisms are consequential (Brennan, 2021).

Dechow and Skinner (2000) explain the differing perceptions of earnings management by arguing that accounting professionals and regulators view earnings management as pervasive and a cause for concern whilst noting the unwillingness of academics to acknowledge the existence of earnings management or to accept that most firms are actively engaged in earnings management To compound the problem, Martínez-Ferrero et al. (2016) discovered that some firms are strategically using corporate social responsibility to counter negative perceptions of earnings management. The market cannot even distinguish when corporate social responsibility is used in such a way to mask earnings management. Companies have developed a preoccupation with meeting earnings expectations whilst ignoring common sense business practices and, in the process, eroding the quality of earnings.

To further illustrate the magnitude of the problem, a study by Kim et al. (2013) on accounting and auditing enforcement violations consisting of 211 US firms revealed that earnings management was the most common violation by a considerable margin with 52%; Failure to disclose material information 23.7%; Bribing foreign officials 14.2%; Backdating stock options 10.4%, and Embezzlement 10% – refer to **Table 1-1** for a summary of the violations. Cases involving earnings management include overstating revenues by early

recognition and inflating revenues through fictitious customers and bogus sales orders. Dechow Patricia M. (2004), through her study of 294 firms, concurred, finding that 70% of earnings manipulation consisted of overstating revenue, overstating accounts receivables, and understating bad debts provision; 30% in understated expenses other than the cost of goods sold; and 10% in overstated inventory or understated cost of goods sold (**Figure *1-2***).

Table 1-1 Prevalence and Types of AAER Infractions

Types of Accounting and Auditing Enforcement Release Violation	Firms in Original Sample	Percentage in Original Sample	Firms in Final Sample	Percentage in Final Sample
Earnings Manipulation (EM)	110	52.10	76	59.40
Failure to Disclose Material Information (FD)	50	23.70	22	17.20
Bribing Foreign Officials (BFO)	30	14.20	14	10.90
Backdating Stock Options (BSO)	22	10.40	20	15.60
Embezzlement (EBZ)	21	10.00	9	7.10
Firms with Double Violations	(22)	(10.40)	(13)	(10.2)
Total Number of Companies with violations	211	100.00	128	100.00

Source: Kim et al. (2013)

Accounting irregularities in Carillion plc, Patisserie Valerie, and British Home Stores (BHS) led to their demise in the UK. These failures were severe enough to result in an independent review of the Financial Reporting Council (FRC) led by Sir John Kingman. In December 2018, that independent review found some shortcomings of the FRC, resulting in a new body, the Audit, Reporting, and Governance Authority, being recommended as its replacement. With a listing on the London Stock Exchange and 43,000 employees globally, including 18,257 in the UK, Carillion plc was the second-largest construction company in the country. The company managed earnings through aggressive accounting - declaring revenue and profits based on optimistic forecasts, but all the while, Carillion's actual income was falling. In July 2017, the company decided to write down £845m of its profits, and on 15 January 2018, it went into liquidation. Soon after, the FRC announced an investigation into Carillion's auditors (KPMG), charging the auditors with failure to make adequate tests on recognition of revenue on significant contracts and accounting for pensions.

In the case of Patisserie Valerie, the café chain, the events were less dramatic. In January 2018, Patisserie Valerie went into administration after irregularities in this financial

statement revealed a net debt of £9.8m instead of the reported £28m cash. The last case is BHS, which was sold for a pound with a £571m deficit in pensions. PwC, auditors for BHS at the time, were severely reprimanded, and a senior partner, Steve Denson, was banned from practising for 15 years for failing to test assumptions in BHS's financial statement. The first assumption was a predicted rise of 6.7% in BHS's like-for-like sales in 2015 while ignoring that between 2012 and 2014, the retail sales fell 2.6%. The second assumption was a shrinkage in annual losses of £30m in 2015 from £69m the previous year, attributing that to a rise in sales and an expansion of margins. The FRC concluded that such margin and sales growth were unsupported by audit evidence and should have appeared to. PwC and Steve Denson are unrealistic and require further investigation. Therefore, companies constantly fight to match or beat earnings forecasts to increase shareholder value, market capitalisation, and share value. Auditors dare not stand in the way of companies' pursuit to achieve earnings or risk losing clients as they are too reliant on their revenue and, therefore, "are powerless in front of opportunistic managerial activities" (Habbash & Alghamdi, 2017, p. 351) Corporate managers, auditors, and financial market analysts participate in this "numbers game" in which integrity, good practices, and quality of earnings are sacrificed whilst selective disclosures and 'accounting hocus-pocus' are prevalent due to the eagerness of these participants to reach a consensus on earnings estimates and project less volatile financial positions to the investors and market. The hiring of accountants by Enron from Ernst & Young LLP, Deloitte & Touché, PwC, KPMG, and even their auditors -Arthur Andersen & Co. is an example. Listed in **Table *1-2*** are job losses and investor losses due to earnings management.

Table 1-2 Job and Investor Losses Due to Financial Scandals

Firm	Auditors	Jobs losses	Investor losses
Patisserie Valerie (2018)	Grant Thornton	900	£94m
Carillion (2017)	KPMG	43,000	£845m
BHS (2015)	PwC	11,000	£571m in pensions
Lehman Brothers (2008).	Ernst & Young	25,000	$3.9b
Global Crossing (2002).	Arthur Andersen	2,000	$40b
Tyco (2002)	PwC	6,000	$86b
WorldCom (2002)	Arthur Andersen	17,000	$100b
Enron (2001)	Arthur Andersen	20,000	$73b

Source: Researcher construction, 2023.

1.1.1 Research Motivation

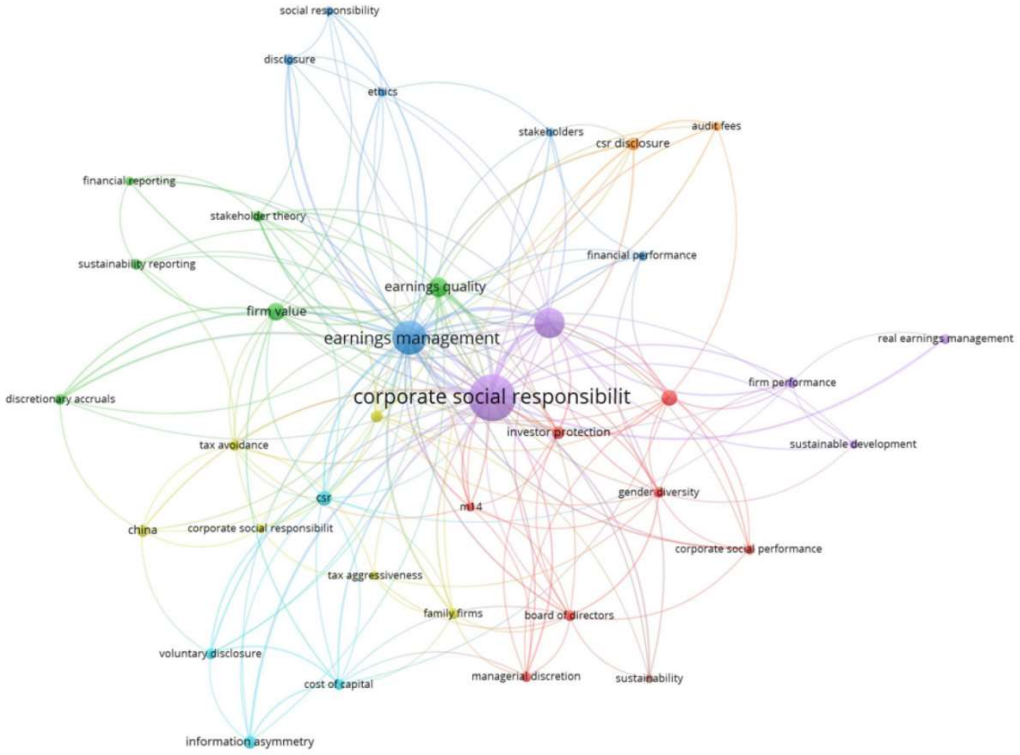

Figure 1-1 Bibliometric Review of Research Studies on Earnings Management and CSR

Source : Santos-Jaén et al. (2021)

This research investigating whether corporate social responsibility contributes to the quality of financial reporting and business performance, thereby increasing firm value, was motivated by Arthur Levitt. He specifically cited the SEC's worries that earnings management casts doubt on the accuracy of financial reporting. The world economy did not take heed of this warning, resulting in the Enron scandal three years after that speech and WorldCom in 2002. The second motivation was from a bibliometric review by Santos-Jaén et al. (2021) on the Effect of corporate social responsibility on earnings management The bibliometric review revealed CSR, earnings management, earnings quality, firm value, and financial performance as prominent words in studies on the influence and correlation between corporate social responsibility and earnings management Therefore, the best way to tackle earnings management is not to look at the topic in isolation but to consider any other matter closely mentioned with earnings management listed above and in **Figure *1-1***. The third motivation comes from assertions by Robins (2015) that most business executives

believe corporate social responsibility can increase firm value but are not aware of research substantiating some of those beliefs. This research is intended to fill that gap.

Fourthly, according to Belgasem-Hussain and Hussaien (2020), earnings management is now a worldwide phenomenon that has questioned the reliability of financial reporting. Dechow and Skinner (2000) noted the unwillingness of academics to acknowledge the existence of earnings management or to accept that most firms are actively engaged in earnings management, and Santos-Jaén et al. (2021) evidenced this assertion by proving a lack of research articles in accounting and finance journals. Between 2015 and 2021, just 37% of the studies examining how corporate social responsibility affects earnings management and how corporate social responsibility and earnings management are related were published in journals devoted solely to accounting and finance (**Table 1-3**). This unwillingness to recognise earnings management as an issue also led to an accounting system that could not accurately depict the respective companies' financial health (Sterling, 2002). Despite those companies being audited by the big four auditing firms, the most significant financial scandals were partially attributed to audit risk. For example, the Lehman Brothers (2008) were audited by Ernst and Young, Saytam (2009) was audited by Price Waterhouse, Carillion's auditors by KPMG, and BHS by PwC (**Table *1-2***).

Table 1-3 Top 20 Journals on Influence and Correlation Between Corporate Social Responsibility and Earnings Management

Pos.	Publisher	Journal	Articles
1	Springer	Journal of Business Ethics	27
2	Wiley	Corporate Social Responsibility and Environmental Management	22
3	MDPI	Sustainability	21
4	Elsevier	Journal of Corporate Finance	12
5	Wiley	Business Strategic and the Environment	10
6	Emerald	Social Responsibility Journal	9
7	Emerald	Internal Journal of Accounting and Information Management	8
8	Taylor and Francis	Emerging Markets Finance and Trade	6
9	Taylor and Francis	Cogent Business and Management	5
10	Wiley	Accounting and Finance	4
11	Emerald	Accounting Research Journal	4
12	Elsevier	Journal of Multinational Financial Management	4
13	Elsevier	Journal of Applied Accounting Research	4
14	Wiley	Corporate Governance – An International Review	4

15	Wiley	Australian Accounting Review	4
16	Emerald	Journal of Financial Reporting	4
17	Emerald	Managerial Auditing Journal	4
18	Taylor and Francis	European Accounting Review	3
19	Elsevier	Journal of Cleaner Production	3
20	AAA	Accounting Review	3

Source: Web of Science and Santos-Jaén et al. (2021)

1.1.2 Earnings Management and Earnings Quality

Earnings management erodes earnings quality. Earnings management negatively impacts the quality of financial reporting (Hong & Andersen, 2011; Moratis & van Egmond, 2018; Prior et al., 2008). In such cases, the financial reporting standard of providing 'information useful to present and potential investors, creditors, and other users in making rational investment, credit, and similar decisions' will not be met. *So, what are earnings?* Most people know that companies' earnings are their net income or net profit; in simple terms, earnings and profit mean the same thing. However, a more sophisticated understanding of earnings is needed to understand how earnings are managed. Dechow and Dichev (2002) provide the following relationship:

$$E_t = CF_t + Accruals_t \quad (1)$$

ere E_t are earnings in period t and CF_t represents cashflow in period t. Total $Accruals$ is the sum of opening and closing accruals. *Ceteris paribus*, accruals anticipate future cashflows and are negatively related to current cashflows and positively associated with past and future cash flows.

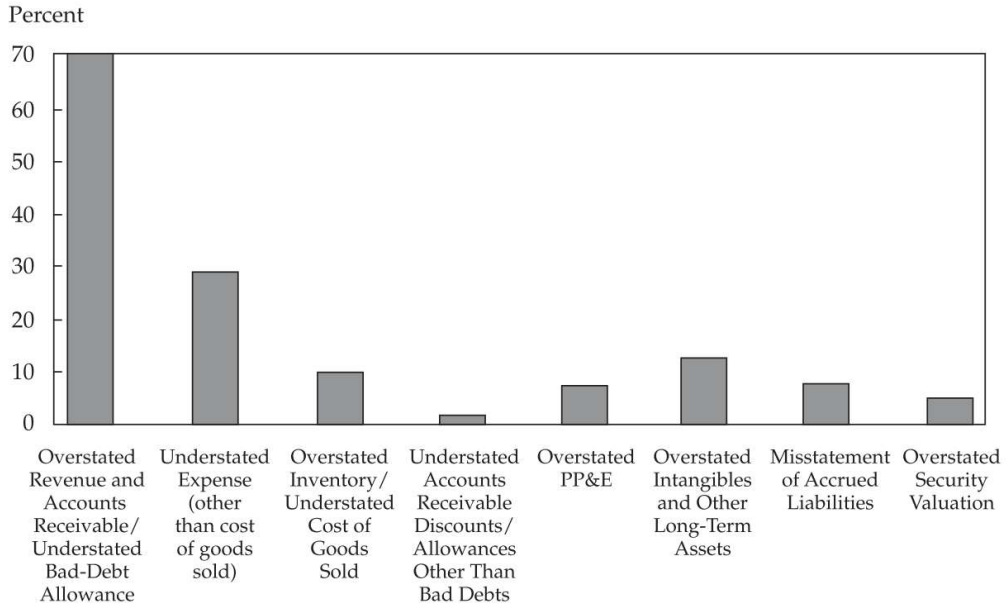

Figure 1-2 Earnings Manipulation Types and Frequency

Source: Dechow et al. (2010)

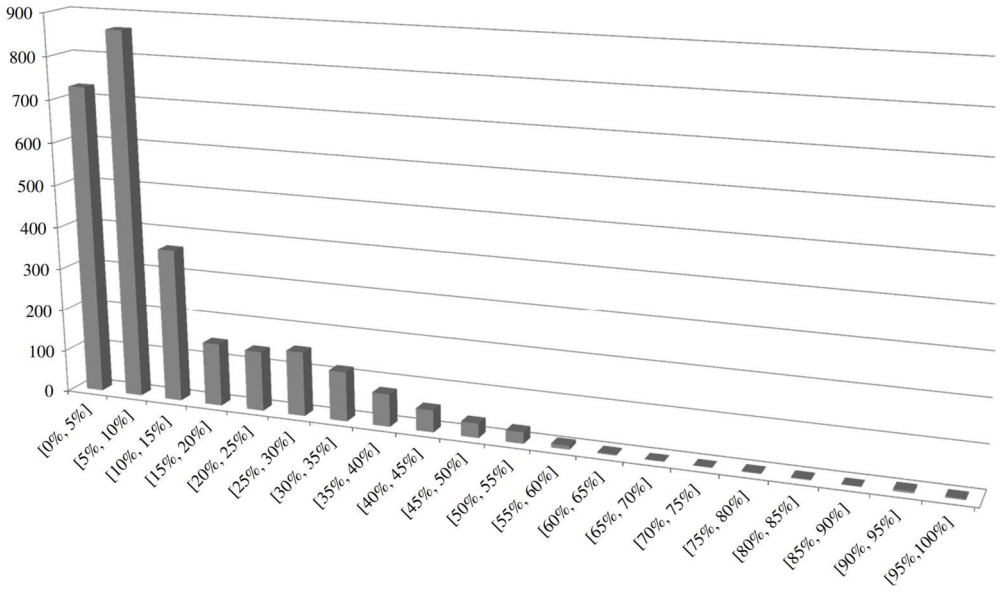

Figure 1-3 Distribution of Votes for Shareholder Corporate Social Responsibility Proposals 1997-2012

Source: Flammer (2015, p. 2552) compiled from RiskMetrics and SharkRepellent databases for S&P 1500 companies. The horizontal axis = vote share in 5% intervals. The vertical axis =frequency of proposals.

1.1.3 Corporate Social Responsibility

"Social responsibility begins where the law ends" (Davis, 1973a, p. 313). Many corporate initiatives instituted in the past that benefited the communities and the environment resulted from new legislation, community pressure, or customer safety concerns (Olson, 2009). earnings management, though harmful, is legal and within accounting standards. However, companies that adhere to the bare minimum of legal and accounting obligations are not socially responsible. Corporate social responsibility is when companies accept their social obligations beyond what the law entails (Davis, 1973b; Garriga & Melé, 2004). The challenges above reinforce the importance of business ethics and sharpen the focus on the firm's purpose versus its social responsibility. There are many reasons for a company to be socially responsible, which include a feel-good factor arising from its contribution to the community, the reputation of a company can be enhanced by practising CSR, talented employees who care about the planet can be attracted to such companies together with consumers as well as investors with sustainable investing strategies, and corporate social responsibility activities can also be a source of revenue streams.

ESG ratings are the most objective way of measuring corporate social responsibility, with approximately 915 funds registered under European Union regulations actively promoting the ratings (Marsh, 2023). The FTSE ESG index will be used in this research as a proxy for corporate social responsibility. This index is part of the non-financial factors most investors use to identify risk and growth opportunities, evaluate corporate social responsibility activities, and publish yearly ratings. The ratings range from 1-5, with 5 being the most robust ESG practice adherence. This rating indicates the degree of ethical management of the company and verifies whether a well-rated company has proper ethical management. The FTSE ESG index is one of the objective measures of corporate social responsibility on the London Stock Exchange and, at times, commissions the big four audit firms in verifying companies for their index, e.g., FTSE commissioned PwC to verify Nestle's breastmilk substitutes independently against 104 criteria in countries with the highest infant mortality and malnutrition. In reporting, ESG metrics are not required by law except for the environment and governance components. The environmental component was legislated in 2022 through the Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022, which mandates UK companies with at least 500 employees and £500

million to produce a sustainability statement. Some companies have been including corporate social responsibility disclosure in their annual financial statement and dedicated sustainability reports. However, companies increasingly make disclosures in their annual or standalone sustainability reports.

Some companies and investors believe ESG ratings to be a 'scam'. The CEO of Tesla labelled them as such when the company was downgraded from the S&P 500's ESG Index due to safety issues with its self-driving vehicle (Kerber, 2022). However, Frangoul (2022) reported that other business leaders do not share that view and argue that Tesla does not understand the ratings as they appear to conflate the ESG ratings with Climate change. The confusion is compounded by the fact that Exxon Mobil is still included in the rankings, considering the oil and gas sector's negative environmental impact. The argument is that in evaluating companies' ESG adherence, the methodology favours profitability over social impact, "current environmental, social and governance (ESG) reporting does not measure the scope of positive impact on the world. Instead, it focuses on measuring the dollar value of return" (Tesla, 2021, p. 2). This argument will be explained below when comparing the objective of corporate governance and corporate social responsibility.

According to the concept of corporate governance, the firm's main objective is to maximise shareholder value. However, corporate social responsibility views the firm as a stakeholder maximiser. Research has shown that firms that adhere to social and ethical principles are well-respected (Dubey et al., 2015). However, earlier studies by Hemingway and Maclagan (2004) and Jamali (2007) dispute this assertion, arguing that all strategic corporate social responsibility contributions are disguised profit-motivated expenditures. Moreover, corporate social responsibility proposals do not appear to be popular in annual board meetings (**Figure *1-3***), and others claim the corporate social responsibility proposals at annual meetings might be symbolic (Flammer, 2015) or boardroom activism by trying to shine a light on social issues to the management (Loss, 2004). 10% of all US investments use socially responsible investing (SRI) as part of the screening process, indicating that investors pay attention to corporate social responsibility (Galema et al., 2008). This topic will be explored further later. Still, the dichotomy here is that corporate governance is the profit maximiser, and corporate social responsibility is supposed to be sacrificing profits for

social responsibility. This is why firms move towards corporate social responsibility (stakeholders) without abandoning corporate governance (shareholders). However, there is concern that a shift from shareholder to stakeholder orientation will make it more challenging to institute discipline mechanisms, implement internal controls, and detect and punish self-serving managers hell-bent on increasing their power and emolument whilst pretending to serve stakeholder interests (Donaldson & Preston, 1995).

Business ethical lapses, as evidenced by the many financial scandals in recent years, have exposed companies to regulatory, economic, market and reputational risk. In the US, The Sarbanes Oxley Act (2002) and other corporate governance reforms were instituted in response to the Enron scandal[2]. However, despite these reforms, the magnitude and frequency of financial scandals have increased. An implication of this is that no amount of external force, either through regulation or law, can combat or deter this nefarious behaviour. Business leaders are now taking the initiative as they understand that sitting on their laurels will result in costly government laws and regulations. Therefore, 34 of the largest multinational corporations in the world signed a statement on *Global Corporate Citizenship - the Leadership Challenge for CEOs and Boards* during the World Economic Forum in 2002. (See **Appendix B**). In 2019, a *Statement on the Purpose of a corporation* proposing that companies have a broader responsibility to all stakeholders and not just to shareholders (see Appendix A) was signed by 181 CEOs. The latter document is the best evidence of the shift towards corporate social responsibility.

Resource-based, stakeholder and institutional theories can be used to explain how corporate social responsibility affects corporate performance. The resource-based concept holds that corporate social responsibility is a non-replaceable resource that can result in a competitive advantage or in acquiring and developing assets that determine a firm's competitive advantage. According to the stakeholder theory, achieving stakeholders' needs for a sustainable future might improve financial performance. The institutional theory states that adhering to the institutional pressures that push businesses to act socially responsibly results

[2] The Enron financial scandal together with other recent scandals will be discussed in section 2.2.2 which will focus on earnings management techniques

in accruing legitimacy and, consequently, superior financial performance (Luffarelli & Awaysheh, 2018).

1.1.4 Research Aim, Objectives, and Methodology

The research investigates whether corporate social responsibility contributes to the quality of financial reporting and business performance, thereby increasing firm value. The culmination of this investigation is the conceptual model and the designing of an econometric estimation model for predicting the impact of CSR, earnings management, and earnings quality on financial performance, with ROA as the dependent variable. A comprehensive financial dataset of the FTSE 350 between 2010 and 2019 is used. This period is chosen to avoid the effects of the 2008/9 recession and COVID-19, which started impacting economies in January 2020. Considering that the demands of economic downturns are connected to pronounced earnings management activities, Almahrog (2018) also avoided the 2008 financial crisis period. The data source is the London Stock Exchange (LSE), Fame and DataStream. Although there are 350 companies on the FTSE-350 index, the final sample will include 230 companies with 2,300 observations. The sample was reduced to 230 due to companies with less than ten years of financial data exclusions.

A study by Leng et al. (2011) on AAER accounting violations by industry found that 52% of all infractions were perpetrated by manufacturing companies, with agriculture companies the most minor offenders, with only 0.42% (**Table *1-4***). the regression model will need to account for those industry effects. Therefore, companies will be classified according to their industry classifications: Technology, Telecommunications, Healthcare, Financials, Real Estate, Consumer Discretionary, Consumer staples, industrials, Basic Materials, Energy and Utilities to counter industry effects in the model. All companies on the FTSE-350 were included., but several research studies have excluded heavily regulated industries, e.g., financials or controversial industries containing energy and tobacco companies. High environmental impact firms will have higher corporate social responsibility performance, on average, and are less involved in earnings management (Kim et al., 2012), and greater transparency in accounting disclosure and regulations in the banking/financials industry can reduce bank's incentive to manage earnings (Gras-Gil et al., 2016). However, the position is that, according to evidence provided in **Table *1-4***, even companies in these heavily

regulated companies still violate accounting practices and should not be excluded. The estimation model used in this research is the generalised method of moments (GMM), which allows econometric models of panel data to be specified while avoiding unwanted and unnecessary assumptions. GMM also eliminates group characteristics, omitted variable bias, worries about unobservable factors, and controls for, or partially out, the effects of time-invariant variables (Allison, 2009).

Table 1-4 AAER Accounting Violations by Industry

N⁰	Publisher	Frequency	Percentage
1	Manufacturing	124	51.88
2	Service	43	17.99
3	Finance & Insurance	28	11.72
4	Transportation & Utilities	13	5.44
5	Wholesale	10	4.18
6	Retail	9	3.77
7	Mineral	8	3.35
8	Construction	3	1.25
9	Agriculture	1	0.42
	Total	239	100

Source: Leng et al. (2011)

1.1.5 Objectives

The aim will be achieved through the following objectives:

1. To establish the relationship between earnings management, earnings quality, and corporate social responsibility (CSR) and develop a conceptual model. This will be achieved by conducting a comprehensive literature review to understand existing theories and studies on earnings management, CSR, and financial performance. Theoretical links to the main variables will be provided. The conceptual model will depict the interrelationships between earnings management, earnings quality, and CSR, considering mediating factors and their impact on firm performance and stakeholder value creation. The model will incorporate theoretical perspectives from agency theory, stakeholder theory, and signalling theory to explain the underlying mechanisms and behavioural drivers.

2. To examine the influence of corporate social responsibility on earnings management for companies on the FTSE-350 in the London Stock Exchange (LSE). This will be achieved by using multivariate regression analysis on panel financial data. The empirical analysis will involve the estimations of system GMM models, followed by diagnostic tests to ensure the validity and robustness of the results. The researcher will develop a research methodology that includes archival data to analyse the relationship and test four hypotheses for correlation between CSR, earnings management, earnings quality, and financial performance. Earnings management, earnings quality and CSR will be measured using the Modified Jones Model for discretionary accrual, earnings persistence, and Environmental, social, and corporate governance (ESG) scores, respectively.

Since this is quantitative research, quantitative research questions derived from the hypotheses will be stated, and these questions are inferential and inquire about the relationship among the variables. The hypotheses for this study are **H_1** - Engagement in corporate social responsibility is negatively associated with the degree of EM; **H_2** - Engagement in earnings management is negatively associated with the degree of EQ; **H_3** - earnings quality is positively associated with the degree of Financial Performance; and **H_4**- Engagement in corporate social responsibility is positively associated with the degree of Financial Performance. Therefore, the main research questions to be answered to fulfil the objectives are: (1) Does corporate social responsibility contribute to the firm's value? (2) How does earnings management affect a firm's financial performance? Moreover, (3) What is the nature and extent of the association between earnings management, earnings quality, and CSR?

1.1.6 Thesis Structure and Summary

This thesis will be made up of five chapters. Chapter 1: Introduction to the Research provides an overview of the research topic, the study's motivations, aim and objectives and research questions. This chapter aims to grab the reader's attention by discussing a more significant subject related to the research, adding impact by drawing on statistics and quotations from international or national professional associations, governmental organisations, or important authors on the study's topic.

Chapter 2: Literature Review - The chapter will delineate various theoretical positions whilst developing hypotheses. It will allow the researcher to answer some pertinent questions on theoretical aspects of earnings management, earnings quality, and corporate social responsibility, e.g. What is EM? and What are the motivations to manage earnings? How is earnings management measured? What are the theories of EQ? What are the principles and theories of CSR? What is the importance of accruals in financial reporting? Prior research will be explored to identify the gaps. Hypotheses will be developed from the theoretical framework introduced in Chapter 2, and four hypotheses will be developed in this chapter. The argument will be made that in prior research surveyed, using the FTSE ESG ratings as a proxy for corporate social responsibility has been difficult to find, making the research unique.

Chapter 3: Research Methodology - The chapter will outline the research design and methodology, giving the basis for the choice of research method. The purpose of the section on methodology is to advance the appropriateness of techniques used to gather data and methodological approaches to show an understanding of data collection techniques and methodological implications and to justify their use over alternative techniques.

Chapter 4: Data Analysis and Findings - Data Analysis and results will be combined in this chapter. Results will be presented and analysed with a complete discussion, interpretation, inference, and evaluation.

Chapter 5: Discussion and Research Conclusion - In this section, we will recap the main findings and sub-conclusions, reiterate the research problem, and explain the major findings. We will also relate our findings to previous studies. The chapter will also contain a summary and conclusion of the thesis, contribution to knowledge, and limitation of the study and answer the following questions: So, what is the theory? Where to from here? What are the practical implications? Furthermore, a discussion of where the study may be extended.

Chapter 2 : Background and Literature Review

2.1 Introduction

The previous chapter lays the foundation for this research, examining the potential impact of corporate social responsibility (CSR) on earnings management. The chapter also provides an overview of the research topic, the study's motivations, aim, objectives, and inferential research questions. Establishing a sound theoretical framework is essential for empirical research, as findings and conclusions lacking theoretical justification have limited value. Therefore, this chapter plays a critical role. This chapter will discuss seven research gaps in prior studies and introduce the conceptual model. Since earnings management is one of the dependent variables in this study, a more in-depth exploration of the following questions will be undertaken: What constitutes earnings management? What are the motivations for earnings management? Can accounting choices be predicted? And how is earnings management measured? The chapter will also discuss CSR and earnings quality theories, along with measures of earnings management and earning quality. These discussions will lead to hypothesis development towards the end of the chapter.

2.2 Background

2.2.1 What is Earnings Management?

The importance of earnings was aptly expounded by Dechow, Kothari, and L. Watts (1998), arguing that “earnings occupy a central position in accounting. It is accounting's summary measure of a firm's performance. Although theoretical models value cash flows, accounting earnings are widely used in share valuation and to measure performance in management and debt contracts” (p. 133). According to the CFI (2023), “Earnings management is a method a company’s management uses to manipulate its financials to show consistent profits, flatten out earnings variations, and increase the share price” (p. 1).

We have included definitions from different economic eras to show how the definition has evolved before and after the Enron scandal and the financial crisis of 2008. The first defines earnings management as “the use of managerial discretion (within GAAP) over accounting choices, earnings reporting choices, and real economic decisions to influence how

underlying economic events are reflected in one or more measures of earnings" (Walker, 2013, p. 446). The second defines earnings management as occurring "when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers"[3] (Healy & Wahlen, 1999, p. 368). The third definition is "the purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process)"[4] (Schipper, 1989, p. 92). The fourth definition defines managing earnings as "the process of taking deliberate steps within the constraints of the generally accepted accounting principles to bring about a desired level of reported earnings" [5] (Davidson, Stickney, and Weil, 1987, cited in Schipper, 1989, p.92)

These definitions of earnings management reflect differing perspectives of this financial reporting phenomenon rather than a need for more consensus on what earnings management is - as has been referenced by Beneish (2001). The definition of earnings management is contextual (Dechow Patricia M. , 2004) – it means different things to users of accounting information standard setters, regulators, creditors and auditors. For instance, the definition by Schipper (1989) provides an analysis of implications and trade-offs among research design choices in earnings management research, whilst the definition offered by Healy and Wahlen (1999) is primarily from the perspective of standard setters. Dechow and Skinner (2000) explained the differing perceptions of earnings management by arguing that practitioners and regulators view earnings management as pervasive and problematic whilst noting the unwillingness of academics to acknowledge the existence of earnings management or to believe most firms are actively practising earnings management. Healy and Wahlen's definition will be used to investigate how managers use discretionary accrual to manipulate earnings.

There are various degrees of earnings management. Dechow and Skinner (2000) classified these into conservative, neutral, and aggressive accounting, all of which conform to GAAP

[3] Definition was also cited by Beneish (2001); Ghazali, Shafie, and Sanusi (2015),
[4] Definition was also cited by Ghazali, Shafie, and Sanusi (2015); Beneish (2001); Dechow and Skinner (2000)
[5] Definition was also cited by Beneish (2001)

(*see* **Table *2-1***). Fraudulent accounting differs from earnings management because it involves accounting choices that violate accounting standards. Fraud harms the company and its stakeholders (Dechow & Skinner, 2000; El Diri, 2017).

Table 2-1 The Distinction Between Fraud and EM

	ACCOUNTING CHOICES WITHIN GAAP	Real Cash Flow Choices
Conservative Accounting	Overly aggressive recognition of provisions or reserves Overvaluation of acquired in-process R&D in purchase acquisitions. Overstatement of restructuring charges and asset write-offs	Delaying sales Accelerating R&D or advertising expenditures
Neutral Earnings	Earnings that result from a neutral operation of the process	
Aggressive Accounting	Understatement of the provisions for bad debts Drawing down conditions or reserves in an overly aggressive manner	Postponing R&D or advertising expenditures Accelerating sales
	ACCOUNTING CHOICES THAT VIOLATE GAAP	
Fraudulent Accounting	Recording sales before they are realised Recording fictitious sales Backdating sales invoices Overstating inventory by recording fictitious inventory	

Source: Dechow and Skinner (2000)

2.2.2 Earnings Management Techniques

Earnings can be manipulated in several situations and ways, including outright fraud, aggressive revenue recognition, cookie jar reserves, and insufficient due diligence in mergers and acquisition operations. Levitt (1998) cited five instances of abused EM: 'big bath' restructuring costs, creative acquisition accounting, cookie jar reserves, immaterial misapplications of accounting concepts, and premature sales recognition. After expanding the list, the following were determined to be the most prevalent profits management strategies by McKee (2005).

2.2.2.1 Big Bet on The Future Techniques

According to McKee (2005), a company can make a ‘big bet on the future’ by acquiring another company with the hope of increased earnings. Nevertheless, proper planning is needed for such acquisitions to realise an increase in earnings in the parent company. Big bet strategies offer the chance to control profits since they permit the acquisition company's R&D expenses to be deducted from present profits while increasing future profits. These costs are part of the acquisition's purchase price, making the acquisition more of a bargain than it is. The big bet strategy also enables the parent firm to reclaim the acquired company's present earnings, which increases the parent company's profitability. Levitt (1998) described this technique as a form of creative accounting or ‘merger magic’. It entails designating a 'portion of the acquisition price as in-process research and development, writing off the portion as a one-time expense in the current period, thereby guaranteeing future profits. Also, through acquisition, a company can protect its future earnings by creating significant liabilities for future operating expenses.

If adequately planned, these bets can go right. In 1996, Manhattan Bagel Company, Inc., which owns and operates restaurants, acquired a bagel company on the West Coast without performing the necessary due diligence, resulting in the parent company inheriting millions of dollars of overstated revenues. Manhattan Bagel lost 35% of its share value in Nasdaq trading on June 21, 1996. The company ended up selling the West Coast franchise at a heavy loss, and with shareholder lawsuits, the company went into bankruptcy protection.

In 1997, 3Com Corp. bought U.S. Robotics Corp. for $6.6 billion, one of the most significant tech mergers. 3Com then discovered and concealed losses at U.S. Robotics after the merger. Even before the merger, 3Com shut down US Robotics for two months, causing US Robotics' revenue to drop to around $7 million per month from about $ 200 million. 3Com agreed to pay $259 million to settle shareholder claims after the SEC ordered that they reduce its net income for 1997 by $111 million.

2.2.2.2 Cookie Jar Reserve Techniques

FRS 102.2.36 requires a financial statement to reflect transactions when they occur irrespective of any cash movement – this is called the accruals basis; e.g., If a company sells

products that come with a guarantee, it is required to estimate the cost of the warranty and accounts for it as an expense at the time of the sale. The company should estimate the portion of the debts that would go overdue in the event of credit sales and record them as 'bad debt expense'. These estimates have varying degrees of accuracy, particularly in the banking and insurance industries. Suppose a company overestimates these expenses in the current period or uses unrealistic assumptions to estimate liabilities. If so, it won't have to classify them as significant expenses in subsequent accounting periods, moving earnings from the current quarter to the future. This is known as cookie jar accounting. In times of solid earnings, expense accruals are overestimated, establishing reserves to be dipped into when future earnings fall. Estimating sales returns and allowances, inventory write-downs, warranty charges, pension expenses, pension plans, loan losses, and the percentage of long-term contracts completed can be used to build these cookie jar reserves. Levitt (1998) gave an example of a company that, to reimburse franchisees for equipment, decided to take a sizeable one-time loss to earnings only to announce a 15 per cent growth in future earnings growth.

In July 2015, it was discovered that Japanese manufacturing giant Toshiba Corp. had been inflating profits since 2008, amounting to $1.2 billion. The business had made dubious accounting choices, such as failing to account for the risk of fluctuating currency exchange rates by setting aside reserves for rising project costs. The Houston-based commodities, energy, and service business Enron (2001) used its subsidiary companies for an extended period to keep significant debts off the balance sheet. The subsidiaries would submit finance and loan applications, which they would then forward to Enron, who had no intention of repaying the debts. Enron's then-CFO Andrew Fastow revealed that the company had once borrowed $1.5 billion from subsidiaries but only included 65 million on the balance sheet. (Albeksh, 2016; Zulauf, 2011).

2.2.2.3 Revenue and Expense Recognition

Revenue and expense recognition is the flipside of the cookie jar technique. To inflate earnings, a company can prematurely (before revenue has been fully earned) recognise profits into the current period and delay recognising expenses. Suppose earnings of the current period are high and can be shifted to the next financial period by delaying the

recognition of revenue already earned and recognising expenses prematurely before they are incurred. Levitt (1998) provided an example of how businesses could increase profits by recognising revenue before the completion of the sale, before the items are delivered to the client, and during the cooling-off period during which the consumer may legally cancel, nullify or delay the sale. For example, Tesco was investigated for questionable accounting practices over several years. Tesco overstated profits through the early recognition of revenue and delayed the recognition of costs by £145 million before 2014 and £118 million in the first six months of the fiscal year 2014 alone.

In 1996, Sunbeam Corporation had 12,000 stock-keeping units (SKUs), with 12,000 employees, 26 factories, 61 warehouses, and six headquarters. Sunbeam reported inventory levels for seasonal items to be unusual for certain times of the year, e.g., massive sales of electric blankets in the autumn (3rd Quarter) and grills were high in the winter (4^{th} quarter), with accounts receivable also high. The company's shares were downgraded on April 3, 1998, only hours before Sunbeam reported a $44.6 million loss for the first quarter. The stock prices of Sunbeam had decreased by 25% by that point. The business increased its revenue by employing a bill-and-hold method with merchants, whereby goods purchased in large quantities at steep discounts are kept in third-party warehouses and delivered later. Sales were moved to the current quarter by using this method. It contributed to Sunbeam's revenues increasing by 18% in 1997. Sunbeam's shareholders filed lawsuits, claiming that the company had violated the Securities and Exchange Act of 1934 by misrepresenting and omitting material information regarding the business operations, sales, and sales trends of the company, resulting in shareholders buying Sunbeam's artificially inflated stock, even though the bill-and-hold strategy is legal and complies with accounting principles of financial reporting. In 2000, once the SEC had finished looking into Sunbeam's accounting irregularities, Sunbeam was finally penalised.

Sensormatic Electronics Corporation overstated earnings to meet analysts' expectations by recognising out-of-period revenue between 1994 and 1995. The company shipping records indicate that the number of orders shipped and the amount of revenue recognised on the last day of the first, third, and fourth quarters of the fiscal year 1993 substantially exceeded the daily average of the number of orders shipped and the amount of revenue recognised for the

other days in the quarters (**Table *2-2***). A good example is the final day of the third quarter of the fiscal year 1993: On that day, Sensormatic shipped 1,692 orders, compared to a daily average number of orders shipped of 232, and recognised $10,351,360 in revenue, compared to an average daily amount of revenue of $506,900 (SEC, 1998). Penalties of $50,000 and $40,000 were imposed on the Chairman and CFO, respectively. Many individual investors probably suffered more significant financial losses because of their conduct.

Table 2-2 Sensormatic Reported an Estimate in a Press Release.

Year, Quarter	Amount of Improperly Recognised Revenue ($m)	Net Income as reported by Sensormatic ($m)	Over / (Under) Statement of Net Income ($m)	% Over / (Under) Statement of Net Income
1994 Q1	$8.50	$14.80	(0.80)	(5.30)
1994 Q2	$4.60	$18.80	(1.90)	(9.10)
1994 Q3	$15.80	$16.40	3.60	28.10
1994 Q4	$15.50	$22.00	(0.90)	(3.80)
1995 Q1	$12.80	$20.10	(0.50)	(2.20)
1995 Q2	$13.80	$25.30	0.30	1.20
1995 Q3	$30.20	$24.10	6.70	38.30
1995 Q4	$29.30	18-21	5.20	40.50

Source: SEC (1998)

Ramalinga Raju, the chairman of Satyam Computer Services Limited, made headlines when he uncovered the crisis at the Indian IT company. As of September 30, 2008, the balance sheet comprised inflated cash and bank balances of 50.40 billion rupees and non-existent accrued interest of 3.76 billion rupees, Raju admitted in a letter to the Satyam board on January 7, 2009. The balance sheet also included several other items and an understated liability of 12.30 billion rupees, overstated debts of 4.90 billion rupees and overstated revenues of 5.88 billion rupees.

2.2.2.4 Big Bath Techniques

The phrase ‘Big bath’ refers to the idea that if a corporation is going to ‘clean up’ its balance sheet and experience poor performance for a given period, it might as well take a big bath and eliminate as many future costs as possible. When a company inflates earnings for the

current period by prematurely recognising and delaying recognising expenses, this depletes economic earnings from future periods, resulting in the company seeking a one-time event in which they will offload the losses they have been masking into that event. Write-offs can do this, e.g., the expense associated with a failed project or an asset revaluation that drastically lowers an asset's value on the balance sheet. The large bath can be utilised for asset impairment and write-downs, complex debt restructuring, operations restructuring and disposal circumstances. If a corporation uses earnings management, these charges are either incurred upfront if current earnings are high enough to cover the losses or deferred until earnings are high enough to cover the losses. Some companies will take this opportunity to combine all other expenses and accelerate other expenses with that hefty one-time charge for that period. From Levitt's perspective, the 'Big bath' occurs when significant charges are associated with restructuring, allowing companies to 'clean up' their balance sheets through a big bath.

McKee (2005) argues that the big bath technique is used primarily because a company must report bad news, and it is best done all at once and gets it out of the way. Investors always look beyond one-time losses whilst focusing on future earnings. Generally, investors view such losses negatively, resulting in a fall in share prices. However, such charges related to operational changes, like restructuring, might result in a stock price rebound. This technique offers the only practical means to escape the trap of over-aggressive accounting practices by using unusual or non-recurring charges. These no-recurring assets may include asset write-downs, closing operating divisions, stopping selling a specific product and creating restructuring reserves. The analyst will inevitably overlook these charges because they are unrelated to the business operations or operating income. Since the stock price is not negatively impacted by missing profit targets, as is typically the case, analysts may dismiss the one-time charge as not constituting operating earnings. The company may incur additional write-offs or make accruals not directly related to the event and credit those costs to the one-time event to increase its 'cookie jar' reserves or cover up its prior transgressions. Elliott and Hanna (1996) examined earnings' financial data in the presence of excessive 'nonrecurring or exceptional' charges. They noticed that write-offs were not random between 1975 and 1994, and businesses that reported write-offs were likely to report more.

Additionally, an increasing trend in the percentage of firms reporting write-offs was seen from 5% in 1975 to 14% in 1985 to over 21% in 1993.

2.2.2.5 'Flushing' The Investment Portfolio

When a company has excess funds on their balance sheet, it might form a strategic alliance or invest by buying shares in another company. FRS 102:14.2 defines an associate as "an entity, including an unincorporated entity such as a partnership, over which the investor has significant influence, and that is neither a subsidiary nor an interest in a joint venture. Significant influence is the power to participate in the association's financial and operating policy decisions but is not control or joint control over those policies." The investor must control 20% or more of the voting power of the affiliate for this to occur. In this instance, the equity method is used, which entails the periodic adjustment of the stock value so that the investee's dividends and earnings or losses are accounted for. During this process, the asset equity investment accounts will be debited with the acquisition cost and then credited with dividends to the equity investments account. The revenue account is debited with the investor's share of the investee's net income from the investment account. However, suppose less than 20% of the voting power of the associate is held. In that case, such an investment is said to be a passive investment, and companies are not required to show the income of such investments separately in their financial statements. The investment cost approach entails debiting the asset and equity investment accounts for the purchase costs, debiting the cash account, and crediting the dividend revenue account with any dividends. If this method is used, the carrying balance of the investment is not affected by income. The difference between the acquisition and sale costs will account for the gain or loss when the equity investment is.

According to McKee (2005), distinct reporting requirements for investments present a chance for earnings management using the following strategies:

- Timing the sale of appreciated securities: When extra cash is required, portfolio security with an unrealised gain should be sold. Operating earnings will be used to report the gain.

- Timing the selling of securities with diminished value - Sell security with an unrealised loss when it makes sense to report lower earnings. Operating earnings will be used to report the loss.
- A shift in holding intentions - A security may be moved from the portfolio of trading securities to the portfolio of securities available for sale or vice versa if management decides to modify its intent. A transfer to or from the income statement would occur for any unrealised gain or loss on the security.
- Securities with an evident long-term decline in fair market value may be written down, regardless of how they are categorised in a portfolio.

When Cendant revealed in April 1998 that its CUC International unit had misstated its financial results, its market capitalisation fell by $14 billion in just one trading day. Before this announcement, Wall Street loved Cendant. It has generated a remarkable track record of profitability and revenue growth. By April 1998, the corporation was actively acquiring companies that offered diverse services (Ramada, Coldwell Banker, Avis). It had recently gained notoriety by outbidding industry giant AIG for American Bankers Insurance Group. The discovery of accounting fraud, however, caused the sale to fail. In a merger of equals, Cendant acquired the CUC segment. The firm had two headquarters for the previous CUC: one in New Jersey and one in Stamford, Connecticut. Cendant relied on the CUC's audited financial accounts for the merger's due diligence. They needed help locating the $ 500 million in fictitious sales and receivables recorded between 1995 and 1997 or the million-plus in expenses that the company's CEO billed the company. The Cendant unit's irregularities grew so they could no longer be covered by its yearly audit, which led to the declaration. Despite surviving, Cendant sold 11 businesses, and their stock price and price-to-earnings ratio have yet to recover. Cendant ultimately paid $2.8 billion to resolve history's largest shareholder litigation.

2.2.2.6 Capitalisation of Intangible Assets, Software, and Development

FRS 102 does not include provisions for classifying software and website development costs; hence, reporting entities or businesses must design and implement an appropriate accounting strategy to classify such costs as tangible or intangible fixed assets – unlike FRS 10. Commercial realities demand that while an application software, such as Microsoft

Word, may be claimed to be an asset in and of itself, compared to an operating system like Windows 11, it is more likely to be recognised as an intangible asset that enables IT equipment to be used for its intended purpose. Despite being arbitrary, this classification has significant tax ramifications. The capital allowances scheme provides tax reductions for fixed assets that are intangible. With this procedure, one can avoid paying for the software upfront or take advantage of the 18% written-off allowance for reducing balances. It can be argued, however, that reporting the expense as revenue may also be advantageous. Instead, if the software is considered an intangible fixed asset, the tax benefit will be spread throughout the asset's lifetime at the accounting standard-compliant amortisation rate.

Since decisions are based on judgment, ambiguities in classifying software expenses and development costs create a manipulative environment. To reduce operating costs, a business can devote more resources to projects that can be capitalised on. WorldCom, a US-based telecommunications business, was the country's second-largest long-distance provider at the time of the incident. In 2002, the corporation admitted that it had classified $3.8 billion in line expenses (access fees and transport costs paid to other businesses) as capital expenditures rather than disclosing them in the income statement. Line expenditures totalling $14.7 billion were moved to a capital account in 2001. These classification errors combined boosted its Net Income due to underestimated expenses and rising assets.

2.2.2.7 Throw Out a Problem Child

The parent business may ‘throw out’ the ‘problem child’ when a subsidiary is underperforming and reducing its earnings to boost future profits. Omar et al. (2014) and According to McKee (2005), the subsidiary may be sold using one of the following strategies, each of which requires an adjustment to the accounting entity:

- Dispose of the subsidiary. When a subsidiary is sold, a gain or loss is noted in the income statement for the current period. A spin-off should be considered if reporting a sizable loss on sale is not desired.
- For financial assets, establish a special-purpose entity (SPE). One very complex choice made possible by GAAP is the transfer of financial assets to a qualifying SPE. Such assets are considered to have been sold and are taken off the balance sheet after the transferor records a gain or loss on their sale. The financial accounts of a

qualifying SPE are not consolidated with those of the transferor. These entities are now known as ‘variable interest entities’, or VIEs, under new accounting requirements.

- Subsidiary Spin-off. Divide the offshoot. In a spin-off, existing shareholders receive shares in the subsidiary in return for their current company shares, making them the actual owners of the problematic subsidiary instead of the company. No gain or loss is usually recorded on a spin-off since GAAP mandates that prior period financial statements be recast only to reflect the remaining firm's operations, and the subsidiary's adverse effects are removed from the financial accounts.
- An ‘equity’ approach to the subsidiary stock exchange. The shares in an equity method subsidiary may be ‘swapped’ without resulting in a recordable gain or loss. This approach is addressed later in the text under Sale/Leaseback and Asset Exchange Techniques.

When a subsidiary is underperforming and dragging down its earnings, the parent company might ‘throw out’ the ‘problem child’ to increase its future profits. According to Omar et al. (2014) and McKee (2005), One of the following methods involving accounting entity changes may be used to dispose of the subsidiary: selling the subsidiary with the gain loss recognised in the current period and considering a spin-off when a significant loss on sale is not desirable to report; creating a special-purpose entity (SPE) for financial assets; if assets are transferred to the SPE, they are then removed from the balance sheet as they are deemed to have been sold with a gain. Due to GAAP's requirement that prior period financial statements be recast only to reflect the results of the remaining firm, any negative impact of the subsidiary is eliminated from all financial statements. When a subsidiary is spun off and its stock is exchanged, neither a gain nor a loss is disclosed. When stock is traded in a subsidiary using the equity method, gains or losses are not recorded.

2.2.2.8 Change GAAP

The previous UK GAAP used a combination of FRSs, SSAPs, and UITFs for guidance. Since then, FRS 102, a single Financial Reporting Standard, has replaced the outdated UK GAAP. Reporting entities will be able to use one of the following: EU-adopted IFRS (IFRS) and those made available by the Companies Act - IFRS recognition and measurement with reduced disclosures (FRS 101), also known as the reduced disclosure framework or RDF;

FRS 102, the FRS for UK GAAP reporters (also known as new UK GAAP), which is based on the IFRS for SMEs; FRS 102 (new UK GAAP) (FRSSE)—amortisation, depreciation, and depletion. With the help of these accounting standards, businesses are free to select the inventory valuation techniques and capital depreciation schedules that best suit their needs. Although these approaches differ in the long run, they all lead to the same outcome, but in the short run, the choice of accounting techniques may significantly affect profits.

2.2.2.9 Amortisation, Depreciation, And Depletion

Long-term operational asset costs are typically amortised over the expected benefit periods as an expense. It can be charged in three ways: Depreciation expense is incurred for tangible assets like buildings, machinery, and equipment. Depletion costs are incurred for commodities like lumber, coal, oil, and natural gas harvested or mined—amortisation costs related to intangible assets, such as goodwill, patents, copyrights, and trademarks. Numerous decisions must be made when writing off long-term assets, and several present a chance to control profits: (a) choosing the write-off strategy. The mechanism for writing off newly acquired long-term operating assets must be determined by management. In the present age, specific procedures cost more than others; (b) Determining the write-off time frame. A long-term asset's 'useful' life must frequently be estimated by management; this life can be much shorter than the asset's actual physical life; (c) Salvage value calculations. Even after reaching the end of their projected valuable lives, certain long-term assets have significant value. This value needs to be estimated to enter the right annual spending amount. Because the benefit might not be realised for 10, 15, or even 30 years, there can be a wide range of reasonable estimates, and (d) switch to inactive use. If a long-term asset is changed from an operating to a nonoperating service, which is permissible when a business no longer uses an asset for operational reasons, depreciation and amortisation charges are not required to be reported.

Waste Management, Inc., a publicly traded US firm, declared $1.7 billion in fictitious earnings in 1998. Due to slower-than-expected revenue growth, the corporation was falling short of its earnings goals. As a result, the company decided to experiment with the value of its assets. Certain assets, including the trash trucks, were no longer subject to depreciation by the firm. The usable lives of various assets have generally been extended, which spreads

out the cost over a more significant number of years, hence minimising depreciation. A salvage value was given to some assets that had none (Perumalsamy, 2012).

2.2.2.10 Sale/Leaseback and Asset Exchange Technique

Suppose an asset's book value is measured on the balance sheet according to its historical cost. In that case, a company can accrue unrealised gains at losses if the asset were to be sold at the right time, which can be accomplished using the following two methods; the first is making an outright sale where the asset is sold year to cover losses or enhance earnings in that year. For example, a company owns a building that appears on its balance sheet as worth £3m (historical value) but actually has an actual value of £5m. Therefore, the company will stand to gain and boost its earnings by £2m if the asset is sold, and the second method is through a sale/leaseback, where a company sells assets and then leases them back immediately. Whether a capital lease (the same as ownership) or an operating lease (renting), the accounting standards provide explicit rules on classifying and distinguishing between the two. Losses from sale/leaseback transactions are recorded immediately in the selling year in the seller's books. However, if it is a capital lease or a portion of the rental payments if it is an operating lease, profits are amortised into income during the asset's useful life.

By converting an asset that cannot be depreciated under accounting rules, such as land, into a lease expense, a sale/leaseback transaction provides a chance to manage earnings. For instance, if a company owns a building depreciating at £200k per year but sits on land valued at £10m, the accounting standards do not permit any deduction for using the land. Imagine a business buying the building and property and signing an operational lease. As the lessor/new owner would have to cover the cost of the land and the building, the depreciation expense would be less than the lease payments in that scenario. The worth of the land and the building may be determined by the annual lease payment, which would need to be £500k. The yearly expense of the £500k lease payment would appear on the income statement, reducing net income by an additional £300k on top of the existing annual depreciation of £200k.

According to accounting standards, in certain circumstances, e.g., exchanging similar assets, an asset can be disposed of without a recorded gain or loss. For instance, if Valero Energy

Corporation were to swap its Pembroke Refinery, which produces 220,000 barrels per day and is in Wales, with Coryton Refinery, located in Essex and owned by Petroplus with a capacity of 220,000 barrels per day. The swap is because Valero wants to align production with its customers. If correctly structured, this swap between Valero and Petroplus will result in neither a gain nor a loss. Another illustration is when the equity method is applied to an investment (usually when the ownership percentage is between 20% and 50%), which permits the disposal of some subsidiaries without recording a gain or loss.

2.2.2.11 Operating vs Non-Operating Income

The two primary categories of income are operational earnings and non-operating earnings. Operating or core earnings are expected to continue in the future. Nonrecurring events or earnings are categorised as non-operating since they are not likely to affect future earnings. Financial analysts frequently project growth rates for core earnings and then retroactively discount those earnings to the present to estimate a stock's worth. Some alternative categories on the income statement for disclosing uncommon things that are not considered typical operating expenses are exceptional charges, discontinued operations, extraordinary gains and losses, and the cumulative effect of change in accounting standards.

The income calculation from ongoing operations includes the first category's elements but not the other three. Because certain ambiguities exist in categorising some products, managing earnings is possible while making decisions regarding items falling into categories. For instance, selling a sizable industrial facility can be considered a discontinued operation or an exceptional or uncommon expense. Bonds and other long-term company debt are typically represented at amortised book value. As a result of their early retirement, there may be a significant difference between the cash payment needed and the book value, resulting in an accounting gain or loss.

2.2.2.11.1 Use of Derivatives

To hedge against business risks like fluctuating interest rates, commodity prices, weather, oil prices, and foreign exchange rates, one can use derivatives, which are financial instruments or contracts whose value is either derived from another asset (such as a stock, bond, or commodity) or related to a market-determined indicator (such as a stock market

index). Some derivatives include swaps, options, and financial forwards (futures). The FASB states that derivatives should be recorded as assets and liabilities and valued at fair value. Gains and losses are only amortised for cash flow hedges recorded in equity as part of comprehensive income. However, the gains and losses of the remaining derivative trades are instantly recorded. Earnings can be managed via derivatives. For instance, a corporation with outstanding fixed-rate bonds could engage in an interest rate swap, converting the fixed-rate obligations into variable-rate bonds. The corporation would record an increase in interest expense for the bonds when the interest rate increased and a drop in expense if the rate decreased. The timing option offers a chance to manage earnings because the time of the company's entry into the swap is up to the company.

Lehman Brothers (2008) managed earnings through the so-called Repo 105 transactions. EY did not audit the Repo 105 transactions or test them for materiality against the balance sheet and Net leverage ratio (Chen, Chidambaran, Imerman, & Sopranzetti, 2014). It is worth pointing out that these transactions were in accordance with the US GAAP. Freddie Mac (2003) was also caught manipulating earnings by understating earnings before 2000 and between 2000 and 2002, totalling $6 billion. In 2001, the company inflated earnings by $1 billion. The SEC concluded that Freddie Mac’s derivatives were incorrectly accounted for. The result is an understatement of its income. Freddie Mac would use ambiguous acronyms and terminology transactions, e.g., linked swaps and CTUGs (for coupon trade-up giant), to avoid dictation during audits. At one point, the company temporarily changed its derivatives valuation methods to avoid a profit spike caused by its heavy use of derivatives and, by doing so, erased a $731 million gain. (McKinnon, Barta & Zuckerman, 2003)

2.2.2.11.2 Shrink the Ship

No income is recognised when a company repurchase its shares; therefore, there is no requirement to report any gain or loss during this process; hence, a company can manage earnings by using stock repurchases as a means of earnings management just after beating analyst earnings forecasts. These share buybacks increase the earnings per share (EPS) in that financial quarter, meaning that stock buybacks do not affect earnings but their surrogate - earnings per share.

2.2.3 Motivations for Earnings Management

2.2.3.1 Window Dressing

Window dressing is an altruistic type of motivation, where managers manipulate earnings purportedly for the benefit of the company (Hamid et al., 2012). Window dressing the company's financial posture is thought to enhance shareholder confidence, adjust taxable income, and prevent breaches in the debt contract covenants. The purpose of these covenants is to discourage managers from investing and financing. Companies may also use window dressing by stretching accounting assumptions before an initial public offering or when applying for a large loan.

2.2.3.2 Internal Targets

In most companies, managers' compensation in the form of salaries and bonuses and indirect compensations in prestige, future promotions, and job security primarily depend on the companies' financial performance through pre-established benchmarks. This causes managers to act in their self-interest by managing earnings to show that the company's performance is better than it is (Xie et al., 2003). This is speculative motivation, where managers manipulate earnings to meet financial goals established within the company (Albrecht et al., 2007).

2.2.3.3 Income Smoothing

When a company manipulates its income by adjusting the timing of its earnings, making the income less variable or volatile, the process is called income smoothing (Copeland, 1968; Fudenberg & Tirole, 1995). Income smoothing can be defined as "the intentional dampening of fluctuations about some level of earnings that is currently considered to be normal for a firm" (Beidleman, 1973, p. 653) or the method of precisely adjusting when costs and revenues are recognised to even out the amount of earnings that are reported from year to year (Albrecht et al., 2007). Management will manage earnings to ensure either earnings ≤ 0, income = previous year or income ≥ analysts' expectations to avoid spooking the markets. This technique becomes problematic when companies aggressively manage earnings. Income smoothing increases firm value by reducing corporate risk, resulting in the company paying lower interest rates and reducing capital cost, reducing investment risk, attracting

investors and creditors, transferring data to the market, facilitating predictive income capability, etc.

Copeland (1968) identified the five characteristics of an effective smoothing device: There must be no commitment to future action; It must be consistent with GAAP, and professional judgment should be used; Year-to-year differences in income should not shift materially; it should be composed of only reclassified transactions and not actual transactions involving outside parties, and income smoothing should be used consecutively through financial periods. However, Beidleman (1973) noted that Copeland failed to consider discretionary accounting practices. He argues that only the following two characteristics are necessary for income smoothing: To achieve long-term earnings growth, managers should be able to reduce reported earnings fluctuation while avoiding committing the company to any one course of action.

The "cookie jar" reserves approach was employed by chemical producer WR Grace & Co. in the 1990s to smooth stated earnings in its National Medical Care Inc. Between 1991 and 1995, the company had unprecedented yearly growth of 30% at its National Medical Care Inc. subsidiary. The SEC contended that WR Grace & Co. used excess reserves to keep reported earnings at its Health Care Group aligned with the company's targets. Tyco International Ltd., a large corporation with a wide range of products from healthcare services and security solutions to fire protection, was forced to restate 1999 fiscal year earnings and earnings for the 1st quarter of 2000. Tyco increased earnings for 1999 and decreased the same for the 1st quarter of 2000 by manipulating restructuring, merger, and non-recurring charges. The SEC also investigated Tyco's use of pooling of interest accounting in its acquisition and merger activity.

2.2.3.4 External Expectations

Stakeholders may put pressure on management to limit earnings to meet their demands. Suppliers desire guarantees that they will be paid, and that the buyer will be a dependable client for a long time. A robust financial situation indicates that the firm will be a trustworthy partner for the foreseeable future and can fulfil its long-term commitments, such as employee pensions and product guarantees. The company's accountants have been instructed

to review the accrual judgements and estimates to squeeze out a few more dollars of profits to make earnings positive. According to Albrecht et al. (2007), when management at some businesses realises they are going to record a loss, they would instruct the accountants to go back to the accrual judgements and estimates to see if just a few more dollars of earnings can be squeezed to get earnings to be positive. In 2012, the computer division of Toshiba Corp., which is part of its digital product and service division, informed then-President Sasaki that it would have an operational loss of ¥24.8 billion for the first half of the fiscal year. Sasaki, though, was unconvinced and ordered the division to increase its earnings by ¥12 billion in just three days. Then-President Tanaka informed a senior VP that he desired to hold a 'secret talk' the following year. By inflating the data, he requested the vice president fix a loss at the digital product and service business.

2.2.4 Accounting Theory

A question which is going to be answered in this chapter is whether accounting choices can be predicted. Accounting theory provides that answer, which is crucial in understanding and anticipating earnings management.

2.2.4.1 Positive and Normative

Management can decide on accounting policy, introducing the possibility of self-serving subject choices. According to the earlier definition of earnings management, there is an intent to mislead self-interest by exhibiting such opportunistic behaviour. *Is there a way to predict accounting choices?* Positive and Normative accounting theories provide some answers to the question. Normative theories are not designed to have predictive value, so they can simultaneously have predictive and no predictive value. An example is the Theory of Investment, which deals with portfolio diversification, with many investors taking up this opportunity.

The Homos economic theory serves as the foundation for positive accounting theory, which characterises people as rational beings who, when faced with a decision, would make a cost-benefit analysis and pick an option only when the benefit outweighs the cost. When an incentive is offered to perform a specific action, people will respond and change their behaviour towards that incentive. For example, some health insurance charges a premium to

obese people, which means people are incentivised to lose weight, which they will do to reduce their medical costs. This is the best choice one can make when the marginal cost and marginal benefit are equal.

Positive Accounting Theory is, therefore, predictive and can predict how firms will treat proposed accounting standards and their choices given their financial condition. On the other hand, normative theories tell a firm what it should do, not what it should expect. Positive accounting theory's three hypotheses are crucial parts of the theory. The first is the maximisation of compensation theory, which states that if managers' bonus packages are linked to profitability, they are more inclined to make less conservative accounting decisions that move earnings from future periods than managers of companies without such plans. Proposed accounting standards that could reduce reported net income are anticipated to be opposed by managers of companies with bonus programmes because they would make it more challenging to maximise currently reported profitability through accounting policy. Healy (1985) agrees with the positive accounting hypothesis, finding empirical evidence that managers would systematically adopt and support accounting policies maximising their bonus plans.

The second is the debt covenant hypothesis (minimising problems with creditors). If there is a political cost, managers will choose accounting practices to transfer earnings from the present to the future. This hypothesis also predicts that managers choose less conservative policies if their firms have high debt-to-equity ratios. The third one is the political cost hypothesis (minimising political heat). If there is a political cost, managers will use accounting practices that transfer earnings from the present to the future. This is the strategy most oil companies follow in an environment of rising consumer energy prices. The political cost theory also predicts that managers of smaller businesses will adopt less cautious accounting practices than managers of giant corporations and will be less inclined to object to new rules that could boost reported net income (Watts & Zimmerman, 1986).

2.2.5 The Role of Accruals in Financial Reporting

The UK Financial Reporting Council (2018) requires that “An entity shall prepare its financial statements, except for cash flow information, using the accrual basis of accounting.

On the accrual basis, items are recognised as assets, liabilities, equity, income, or expenses when they satisfy those items' definitions and recognition criteria" (FRS 102.2.36). Accruals ensure the quality of earnings by enabling proper income and cost matching and reducing the need for one-time items, which are essential in ensuring the quality of earnings (Dichev et al., 2013; Lev, 2018), and 92% of CFOs surveyed by Lev (2018, p. 474) concurred with this assertion adding that: "policies that match expenses with revenues' are essential for high-quality earnings." GAAP is a rules-based standard and leaves no choice for firms but to substitute accrual earnings management with real earnings management, resulting in lower earnings quality than IFRS, a principle-based standard (Ralf & Alfred, 2005; Schipper, 1989; Sundvik, 2019). Prior reach found accruals to be key to determining earnings manipulation (Dechow & Sloan, 1991). Large accruals have been observed in the financial periods of alleged manipulation (Richardson et al., 2002), and firms with abnormally high working capital accruals experience tend to have a decline in earnings performance (Bradshaw et al., 2001). The income statement can remove several valuation adjustment elements connected to the present performance or period thanks to the matching principle.

Accruals that are used by management at their discretion are known as discretionary accruals. Discretion allows for possible manipulation of earnings by overvaluing or undervaluing accruals, e.g., depreciation and amortisation expenses can be increased. Reported earnings can be easily manipulated using discretionary accruals, which are difficult to detect. Jones (1991) found that companies claiming unfair foreign competition used discretionary accruals to decrease reported earnings to try and receive government protection.

2.2.6 The Legal Background to Earnings Management and Financial Crime

Before moving to earnings quality and CSR theories, the sticking point is: *Why has earnings management yet to be criminalised?* It will be addressed. Insider dealing will be used as an example because, although outlawed, it is difficult to prosecute, just like any financial crime. Benson and Simpson (2009) defined white-collar crime as a crime carried out by a respectable and high-social-status individual during employment. This definition proves that legislating financial crime is ineffective in stopping that type of crime because there are

loopholes in the law that people with money can take advantage of. Some even have political influence and are involved in formulating these laws.

Criminalising an act involves justification for doing so. Again, this can be done using the ethical/moral argument, which will be illustrated again using insider trading as an example. Firstly, insider trading is considered unfair as some investors will have more information than others. Using or giving away inside information is considered theft and wrong. Secondly, it has to be determined who is harmed in the offence. Seredyńska (2012) argued that for an act to be condemned, it is not always true that there is a victim, but when there is an injured party involved, there is a greater chance that the analysed act will be deemed unethical. In the UK, maintaining market integrity is the primary goal. In the US, the objective is to protect the shareholders/investors by holding those officers with fiduciary duties accountable. For the UK, the market is the victim of insider dealing. When the market's integrity is questioned due to insider dealing, the market performance will react negatively. However, in the US, the shareholders/Investors are the victims. According to Friedrichs (2010), workers' pension funds are invested in stocks. Therefore, ordinary people will lose out rather than big corporations. This argument has succeeded in criminalising insiders dealing with more prosecutions and convictions in the US as ordinary people identify with the cases. In the UK, only after 2009 have people started to understand the ripple effect of a careless, selfish, and greedy market. All the convictions to date were after 2009.

There are several inherent problems in the investigation and prosecution of financial crimes. Firstly, financial crime cases are so sophisticated or complex that they are challenging to detect, investigate and prosecute, making them expensive and time-consuming to bring to court (Benson & Simpson, 2009). This is because knowledgeable and educated individuals with high self-concepts commit financial crimes. According to Clinard and Meier (2011), they view themselves as respectable citizens and not as criminals. The Second characteristic is the offender's legitimate access to the information and activities from which their crime arises (Benson and Simpson (2009). This makes it difficult to prevent the crime by blocking the offender's access to privileged information. This is an argument for criminalising insider dealing using the incapacitation theory as it is a situational crime. Incapacitation involves

removing the offender from society through imprisonment and conditions restricting their movement, thereby removing the opportunity to commit further crimes.

The third characteristic of insider dealing is spatial separation, which means that the crime does not occur at a specific time and place, the offender does not even see the victims, and some even mistake it as a victimless crime. Fourthly, it is difficult to determine its prevalence through statistics and commit resources to its enforcement. For example, most companies will only fire/dismiss the involved employees rather than report the individuals to authorities. Lastly, it is difficult to determine the amounts involved in insider dealing crimes. Pavlo (2014) stated that in most cases, the accused never realised nearly how much money they were said to have gained—in certain situations, they saw none. In (2011), the Defendants attained £590,000 from insider dealing. The FCA had sought £2.8m, but eventually, there was a negotiated settlement of £767,000.

Theories of motivation can help us understand why people commit financial crimes or insider trading. The theories include individual choice theories: Differential, Interactionist, Rational choice, and self-control theories. Rational Choice theory proponents believe an offender follows a decision-making process when committing a crime. The decision to engage in a particular crime is made after assessing the cost and the benefits. Rational persons will engage in crime rather than non-crime if the net benefits of crime are more considerable than those of non-crime" (Benson & Simpson, 2009, p. 66). In Insider trading, the incentive is high, e.g. in the case "R v Richard Joseph" 2013), The former futures trader who made a net profit of £591k using private documents was given access to them by Ersin Mustafa, a print room manager at JP Morgan Cazenove. The Deterrent theory in criminology asserts that obeying or violating the law depends on calculating the consequences and gains of those actions. If offenders are punished as an example for others and aware of the horrors when caught, they will prevent the same people from committing similar acts when released. Martha Stewart, who spent five months in prison, later commented on how terrible it was that she had lost a fortune. However, in most cases, proving the effectiveness of deterrence is difficult; hence, one may never know why others do not offend.

Edward Sutherland, an American sociologist, introduced the theory of differential association. Deviant behaviour occurs when the scales are tipped towards an individual's

law-breaking rather than non-deviant tendencies. Albert Bandura (1977) supported the concept of nature or nurture in his social learning theory by arguing that social interactions and imitations are how humans learn and shape their behaviour (McLeod, 2014). Sutherland goes further with this argument by saying attributing human behaviour to nature or nurture is too simplistic; in terms of crime, individuals will try to rationalise why they are committing the crime. Sutherland believed everyone encounters circumstances favourable to breaking the law and occasionally unfavourable to breaking the law (Burke, 2009). The differential theory introduces the concept of subcultures and primary groups and their influence on human behaviour. For instance, people might commit financial crimes because it is generally accepted and rewarded in the City and Wall Street. When a person starts work in such an environment, they will also engage in the practice because everyone is doing it. In this case, punishment will also act as a deterrent in that it will hammer the point into the offender that society does not approve of such behaviour. The problem with the above assertion is its need for more appreciation that individuals and societies are different and, therefore, will respond differently to social stimuli and that social inequalities might be a factor in committing a crime.

According to Interactionists, individuals justify or excuse their criminal acts by rationalising and neutralising their behaviour. Motivation is a symbolic construction that causes the offender to define their behaviour so that it is socially acceptable. Benson and Simpson (2009) argue that a manager might complain about the restrictive nature and unfairness of laws and regulations in business operations. Therefore, there is no shame in breaking an unfair, unnecessary, and counterproductive law. Most offenders view it as a way of doing business, an ordinary and everyday experience. However, when caught breaking the law, offenders tend to lose everything and face humiliation in the process, and after prison, most of them are not allowed – and this might act as a deterrent. Martha Stewart received a five-year ban from serving as a director, CEO, CFO, or any other officer responsible for preparing, auditing, or disclosing the financial results of any public company (Kim, 2013).

Gottfredson and Hirschi were the leading proponents of the self-control theory in explaining the propensity to commit a crime. People who commit crimes tend to lack self-control more than other personality traits. They viewed self-control as a “summary constructed of

individual traits including impulsivity, insensitivity, risk-taking and short-sightedness that tends to manifest in the same individuals and persist through life" (Wikström & Treiber, 2007, p. 239). Gottfredson and Hirschi further argue that the vulnerability of individuals to temptation explains why they commit a crime. This means that if one lacks self-control and is exposed to an opportunity (environment) to commit an act/crime, they are more likely to give in to temptation. Gottfredson and Hirschi, as cited by Wikström and Treiber (2007), claim that crimes are committed to satisfy self-interest'. This mirrors the concept of *Homo Economicus* or economic man, which reduces humans to rational and narrowly self-interested actors. This explains Insider dealing, where individuals resort to illegal means to make gains due to profit making and avoiding losses. Such individuals seek immediate and not delayed gratification. According to this theory, using forms of punishment as a deterrent is less effective because they claim that children should be punished for unacceptable behaviour, and a lack of punishment at that stage will make punishment in adulthood less effective. The first criticism of the self-control theory is its notion that 'once a thief, always a thief', where there is empirical evidence that rehabilitation and integration of criminals into society works. Secondly, self-control alone does not predict crime; Geis (2000) asserts that lack of self-control cannot be attributed to all crimes to the extent that the existence or nonexistence of self-control is not even a factor in some crimes. He cites research in Nigeria by Marenin and Reisig (1995) that found that the Self-control theory contains 'unacknowledged value assumptions' that 'undermine its claim to universality.'

What is the recourse for victims of financial crime? There are several alternatives to criminal justice. Firstly, Civil law with a lower threshold of the burden of proof can be used, ensuring that more offenders are brought to account. Civil Law is used to resolve disputes between individuals or organisations. As stated above, the market is said to have suffered harm due to financial crime under UK law. This presents a problem when using civil law as a 'market' is too broad. Alternatively, individual Companies can try to seek compensation from the offender. Seredyńska (2012) proposed that collective redress or class action can be instituted to seek compensation. Secondly, companies themselves can use employment contractual liability to sanction offenders. The offence by the employee will be against their employer, and the employer can seek compensation from the employee for losses due to financial misconduct. Thirdly, corporate governance codes can be instituted to protect the investors,

which can be used in the same way as data protection policies. Lastly, Administrative law can be used; the government can set up bodies that institute rules of conduct and impose sanctions for non-adherence. FRC, CCAB and other accounting professional bodies already censure individuals who do not conform to their codes of conduct.

2.2.7 Earnings Quality

EM erodes earnings quality (Dechow et al., 2010; Dechow Patricia M. , 2004). This relation is essential in defining earnings quality and management for this research. As a result, the Performance-matching Model (2005), the Dechow and Dichev (2002) Model, the Jones Model (1991), the Modified Jones (1995), and the Discretionary Estimation Errors (2005) Model are some of the models of discretionary accruals that can be used to gauge earnings quality High-quality earnings are characterised by their ability to portray the firm's performance either current or historical accurately and also the knowledge to accurately predict future performance (Barker & Imam, 2008; Lev, 2018; Ohlson, 2001); can predict the future better (Schipper & Vincent, 2003); not variable overtime hence smooth provide (Dechow Patricia M. , 2004; Francis et al., 2004); the capacity to identify the aspects of a decision-making process that contributed to a firm's financial performance and repeat them to get the same results. (Dechow et al., 2010; FASB, 2008); are characterised by less pronounced variances in total accruals that are unrelated to fundamentals (DeAngelo, 1986; Dechow et al., 1995; Jones, 1991; Kothari et al., 2005); “are backed by past, present, or future cash flows” (Dechow & Dichev, 2002, p. 11; Sloan, 1996); are persistent and hence the best indicator of long-term sustainable earnings (Dechow Patricia M. , 2004; Melumad & Nissim, 2009; Penman & Zhang, 2002); and possess neither recurring nor exceptional items (Dechow Patricia M. , 2004; McVay, 2006). Other factors contribute to earnings quality, such that higher quality earnings are not a given if earnings management doesn't exist. (Lo, 2008).

2.2.8 Theories of Earnings Quality

A detailed look at how earnings quality is measured is irrelevant to this study. However, Dechow et al. (2010) provided a comprehensive summary of earnings quality indicators, the theory for its use, its strengths and weaknesses and the specification(s) of the variable

described below. However, these indicators have been criticised for not considering the dynamic nature of the earnings process and for being estimated in the cross-section (Beyer et al., 2018; Gerakos, 2012).

2.2.8.1 Persistence

Earnings sustainability or persistence is the present value of the change in anticipated future earnings because of recent unanticipated earnings (Fatma and Hidayat, 2020). The slope coefficient obtained by regressing current earnings on prior earnings measures earnings persistence (Francis et al., 2004; Richardson et al., 2005). According to this idea, enterprises with longer-lasting profits have a more 'sustainable' stream of profits and cash flows, which makes them a more valuable input for DCF-based share valuations. This interpretation of earnings as a summary indicator of anticipated cash flows helpful for equity valuation was endorsed by Graham and Dodd (2008). This view has the disadvantage that persistence depends on the firm's real performance and the accounting measurement method. It isn't easy to separate each person's function apart. Short-term persistence can be attained by using earnings management.

$$Earnings_{t-1} = \alpha + \beta Earnings_t + \varepsilon_t \quad (2)$$

Where β represents the measures of persistence.

2.2.8.2 Magnitude of Accruals

According to this theory, extreme accruals represent a less persistent component of earnings, making them low-quality. This measure's key drawback is that multiple factors, including fundamental performance and measurement standards, contribute to the accrual component's lower persistence. Therefore, the actual financial performances of extreme accruals vs less extreme accruals firms will tend to differ. Accruals are explained through the following correlations:

$$Accruals = Earnings_t - CF_t \; Accruals \; \Delta(Noncash\ working\ capital) \quad (2)$$

$$Accruals = \Delta(net\ operating\ assets)\ Specific\ Accruals\ component$$

2.2.8.3 Residuals From Accrual Models

These models are designed to measure discretion and are widely accepted in accounting methodology. This theory posits that estimation errors and management discretion reduce decision usefulness and are represented by residuals from accrual models. Suppose accruals and their economic drivers are regressed. Then, an error term or residuals is obtained, and one benefit of this metric is that it isolates the managed or erroneous accruals component. Testing the causes or effects of earnings management, however, involves testing both the theory and the aberrant accrual metric used as a stand-in for earnings management, given that normal accruals are dependent on fundamentals and that the anticipated determinants and consequences are endogenous with the fundamentals, correlated omitted factors linked with fundamentals, particularly performance, are of concern.

2.2.8.4 Smoothness

Improved earnings persistence and earnings informativeness can be achieved by smoothing cyclical cashflows. A less accurate and less valuable earnings number will result from managers' attempts to smooth out long-term variations in cash flows. The benefit of this perspective is that income smoothing seems to be a standard corporate practice in many nations around the globe, but it is challenging to distinguish between the smoothness of reported earnings that reflects the smoothness of the basic earning process; (ii) accounting rules; and (iii) intentional earnings manipulation.

$$Numerator \frac{\sigma\ (Earnings)}{\sigma(Cash\ flows)} \tag{3}$$

A lower ratio denotes a more significant smoothing of the earnings stream over the cash flows.

2.2.8.5 Timely Loss Recognition (TLR)

TLR is needed to counter management's inherent optimism. TLR is an indicator of excellent earnings. Its advantage is that by assuming that returns accurately reflect fundamental information, it seeks to decouple the measurement of the process from the process itself.

However, while TLR causes reduced persistence during bad news compared to times of good news, its overall impact on earnings quality is uncertain (Basu, 1997). Both persistence and TLR influence the decision-making utility of earnings. TLR is a turn-based metric.

$$Earnings_{t-1} = \alpha_0 + \alpha_1 D_1 + \beta_0 Ret_t + \beta_1 D_t \times Ret_t \varepsilon_t \quad (4)$$

Where $D_1 = 1$ if Ret_t<0. A higher β_1 suggests recognising the incurred losses in earnings more quickly.

2.2.8.6 Benchmarks

Earnings distributions that are unusually clustered suggest earnings management around targets. Low-quality earnings are observed when observations are at or just above targets. The measure is simple to calculate, the idea is logically compelling, and survey data indicate that earnings management occurs around targets. Cons: In addition to problems with statistical validity, there is conflicting evidence that kinks show opportunistic earnings management, and there are plausible reasons for non-accounting problems. It is difficult to tell which companies are at irregularities by luck and which ones have tricked their way into the benchmark dumpsters. Kinks in the earnings distribution, variations in the earnings distribution, kinks in the forecast error distribution, and a run of increasing earnings are all examples.

2.2.8.7 Earnings Response Coefficient (ERCs)

One of the measurements or proxies of earnings quality is the Earning Response Coefficient (ERC), which is a response to profits declared by a company and represents the quality of earnings provided by the company (Collins & Kothari, 1989). Investors react to information that affects value. A higher correlation between earnings and value suggests that earnings more accurately represent performance. The metric explicitly connects earnings to decision usefulness, which is quality, albeit only concerning choices on equity price. The fact that it presumes market efficiency is a benefit. Additionally, measurement error of unexpected earnings, cross-sectional variance in return-generating processes, and linked omitted variables that affect investor reaction (including endogenously controlled availability of additional information) weaken inferences.

$$Ret_t = \alpha + \beta(EarningsSurprise_t) + \varepsilon_t \quad (5)$$

A higher β denotes a more instructive portion of earnings. Earnings with a higher R^2 will be more value-relevant. The abnormal return per dollar of abnormal profits can also be determined by dividing the abnormal share return by the period's unexpected earnings. Various factors can influence earnings, each of which might vary in persistence. Permanent persistence, anticipated to last indefinitely and indicated by ERC > 1, can be brought on by adjustments in competition, new technology, successful patents, acquisitions, reorganisations, or economies of scale. There is also transitory persistence denoted by ERC=1, which only affects earnings in the current year, e.g., disposals of capital assets. The final one is price irrelevant, where persistence is zero and is indicated by ERC = 0. Examples include accounting policy decisions that capitalise on R&D, staff training expenditures, or advertising costs without impacting cash flow. The following elements have an impact on ERC.

2.2.8.7.1 Firm Characteristics

Low ERC is correlated with higher CAPM risk (beta). The lower a firm's worth will be to a risk-averse investor, other things being equal, the riskier the sequence of its future predicted returns is. Investors will be less likely to purchase if a company recently reported positive earnings data and high beta securities. Less demand suggests a lower increase in market price and share return in response to positive news, which results in a lower ERC (lower than it could have been, could have been higher). Higher debt for capital structure means a lower ERC. An increase in earnings strengthens and protects bonds and other loans for highly leveraged companies, which means that positive earnings news benefits debtholders rather than shareholders. With everything else equal, the ERC for a high-levered firm should be lower than that of a firm with little or no debt. Higher growth potential suggests higher ERC; for instance, the firm's positive news relates to the success of a recent investment. Future earnings will continue, leading to increased ERC. Additionally, this indicates to the market that the company can make lucrative investments, leading to its designation as a growth corporation.

2.2.8.7.2 Earnings Characteristics

An increase in earnings strengthens and protects bonds and other loans for highly leveraged companies, which means that positive earnings news benefits debtholders rather than shareholders. With everything else equal, the ERC for a high-levered firm should be lower than that of a firm with little or no debt. Higher growth potential suggests higher ERC; for instance, the firm's positive news relates to the success of a recent investment. Future earnings will continue, leading to increased ERC. Additionally, this indicates to the market that the company can make lucrative investments, leading to its designation as a growth corporation.

2.2.8.8 External Indicators of Earnings Misstatements

These indicators consist of AAERs reported to the SEC, restatements, and SOX reports of internal control flaws. Error-prone companies (AAERs and restatement companies) are more likely to have internal control weaknesses in their financial reporting systems, which suggests low-quality profits. Utilising external indicators of profit misstatements also has the benefit of clearly reflecting issues with accounting measurement (low Type I error rate). The researcher can find low-quality companies without employing a model. Using these indicators has the drawback of Type II error rates, small sample sizes, selection concerns, and matching issues for AAERs. Inconsistencies in accounting regulations that cause errors or difficulties separating intentional from accidental errors for SOX firms and restatements.

2.2.9 Corporate Social Responsibility

Chandler (2016, p. 2) defines corporate social responsibility as “a view of the corporation and its role in society that assumes a responsibility among firms to pursue goals in addition to profit maximisation and a responsibility among a firm’s stakeholders to hold the firm accountable for its actions.” In the process of doing business, firms take actions that are beyond their economic and technical interest. As an instrument of wealth creation, firms only engage in social activities for economic benefit (Garriga & Melé, 2004). ISO 26000 notes that social responsibility is more critical as it applies to all types of organisations, not corporate social responsibility, which only concentrates on industry or private companies. Therefore, it defines social responsibility as the “responsibility of an organisation for the

impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that contributes to sustainable development, including health and the welfare of society; takes into account the expectations of stakeholders; is in compliance with applicable law and consistent with international norms of behaviour; and is integrated throughout the organisation and practised in its relationship" (ISO26000, 2017, p. 9). This study is based on listed companies only. Therefore, the narrow definition offered by Chandler (2016) will apply.

"Social responsibility begins where the law ends" (Davis, 1973a, p. 313). Considering this, does it follow that businesses that only adhere to the bare minimum of legal and accounting obligations are not acting responsibly toward society? "Social responsibility is a firm's acceptance of a social obligation beyond the requirements of the law" (Davis, 1973b, p. 313; Garriga & Melé, 2004). corporate social responsibility views the firm as a stakeholder maximiser. Empirical evidence points to the perception of respectability and better profitability of firms due to being socially and ethically responsible (Dubey et al., 2015). Business leaders are now taking initiatives as they face costly government laws and regulations if they do not mitigate financial scandals. Therefore, 34 of the largest multinational corporations in the world signed a statement on "Global Corporate Citizenship - the Leadership Challenge for CEOs and Boards" during the World Economic Forum in 2002 (see Appendix B). According to a "Statement on the Purpose of a Corporation" signed by 181 CEOs on August 19, 2019, businesses should have a broader responsibility to all stakeholders, not only shareholders (see Appendix A).

2.2.9.1 Principles of CSR

According to Crowther and Aras (2009), there are three basic principles of CSR: *Sustainabilit*y – Resources must be used sparingly to transfer benefits to future generations as they are finite. It is measured by considering the rate at which an organisation consumes resources concerning the regeneration rate of those resources. Therefore, companies should not use more resources than can be generated. *Accountability* – Organisations' actions affect the environment. All companies should implement appropriate environmental performance measures and reporting to communicate and justify actions and decisions. *Transparency* –

Organisations should report the positive or negative impact of their decisions and actions. Organisations should not attempt to hide, bury, or disguise wrongdoing.

2.2.10 Criticism of Corporate Social Responsibility

The advantages will be discussed below when considering the concept theories, but critics of corporate social responsibility are legion. Freeman and Dmytriyev (2017) argue that corporate social responsibility is immoral and violates the rights of entrepreneurs as it masks wrongdoing by companies. Managers are equated to gangsters going to church on a Sunday to try and recover their reputation by occasionally seeking redemption. Friedman (1970), the most ardent critic, argues that although a company is an artificial person with artificial responsibilities, no responsibilities should be attached to the 'businesses. Corporations should be allowed to make as much money as possible if they follow the law, ethics, and societal norms in a free-enterprise system. Even though preventing inflation is a social objective, businesses should be allowed to increase prices. They should not be forced to spend more on pollution or improving the environment beyond the law's requirements and interests.

Empirical evidence points to the perception of respectability and better profitability of firms due to being socially and ethically responsible (Dubey et al., 2015). However, Hemingway and Maclagan (2004) and Jamali (2007) dispute this assertion, arguing that all strategic corporate social responsibility contributions are disguised profit-motivated expenditures. According to Friedman (1970), the social responsibility philosophy is similar to socialism, which believes that political rather than market procedures should be used to decide how to allocate scarce resources. Although insightful, most of Friedman's views are now outdated and irrelevant. Milton Friedman and his friend George J. Stigler were part of the Chicago school ideology known as 'champions of the free market'. They argued that managers and executives who use corporate resources to solve non-business 'social problems', like CSR, were effectively stealing from shareholders (Freeman & Dmytriyev, 2017; Friedman, 1970). They saw regulations (to protect the public from pollution) and taxation (to fund the social program) as unnecessary business burdens. In any event, businesses generally transfer those costs to consumers (Stigler, 1971).

2.2.11 Theories of Corporate Social Responsibility

2.2.11.1 Agency Theory

Business owners contract managers and executives to manage companies on their behalf. The agent is then morally responsible for maximising shareholder value. According to the agency theory, agents are *Homo Economicus* or rational economic man. They are selfish and will take every opportunity to advance their self-interest. A rational economic man knows what he wants and will make rational choices to maximise personal gain. If the interest of the agent and the principal converge, there is no agency problem, but when they diverge, the principal will incur agency costs. The interests of the agency and the principal will always diverge, and principles cannot be aware ex-ante whether the agent shares the same interest (Davis et al., 1997). The agency theory also requires principals to institute internal controls to check agents' behaviour and reduce agency costs.

These choices are based on the concept of marginal utility. Accounting data reduces managerial and shareholder conflicts of interest. These conflicts will be apparent if a business undergoes a merger, acquisition, or initial public offering. During a merger or buyout, management understates earnings, as evidenced by a systemic reduction of accruals (DeAngelo, 1986). Jensen and Meckling (1994) dismissed the economic model of human behaviour by arguing, ‘People do not behave this way’. They further claim the concept of *Homo Economics* reflects economists' desire for simplicity in their models and unrealistic description of human behaviour. Humans are a product of their social environment, which moulds their behaviour and attitudes through taboos, traditions, and other social practices.

2.2.11.2 Stakeholder Theory

Freeman et al. (2018, p. 1) define a stakeholder as “any group or individual who can affect or is affected by the achievement of the organisation’s objectives and groups who are vital and upon which the organisation depends on surviving. According to the stakeholder theory, organisations are obligated by fiduciary duty to operate in the interests of their stakeholders. There are internal and external stakeholders; internal stakeholders include owners, employees, and management of the organisation, whilst external stakeholders are made up of suppliers, customers, the culture of the community where the business is located,

creditors, shareholders, and the government (refer to **Figure 2.1**). These stakeholders have competing interests, and the challenge for managers and owners of organisations is to identify common interests and work towards satisfying those interests, avoiding conflict in the process. According to Freeman (2004, p. 231), "stakeholders are about the business, and the business is about the stakeholders." A business is best understood by knowing how stakeholder relationships work and change over time and how to jointly interact with all groups of stakeholders to create and trade value (Parmar et al., 2010).

Figure 2-1 Stakeholder Analysis

Source: Researcher construction, 2023

Managers sometimes use discretionary decisions in accounting to alter transactions to paint a rosy picture of a company's performance and mislead stakeholders (Healy & Wahlen, 1999). This is due to constant pressure on management to satisfy stakeholder interests. Mitchell et al. (1997) put forward that - to what extent managers bend backwards to try and satisfy different groups of stakeholders depends on the following stakeholder attributes: *Power* – This is an actor's capacity to enforce their own will be unopposed within a relationship. For example, creditors, through debt covenants, can make sharp management decisions. *Legitimacy is the process by which companies justify their right to do business and, ultimately, their right to exit to the societal system* (Dowling & Pfeffer, 1975; Maurer, 1971). This concept will be discussed further in the legitimacy theory below (2.2.11.7). Urgency is the degree to which an organisation pays attention to various stakeholders and

the speed at which it responds to concerns raised by those stakeholders. Mitchell et al. (1997, p. 864) define it "as the degree to which stakeholder claims call for immediate attention."

Stakeholder Theory Limitations and criticisms: The theory excuses opportunism among managers (Sternberg, 2000); distribution of financial output appears to be the primary goal of the theory (Marcoux, 2000), it requires a change to the current law, which makes it impractical (Hendry, 2001a, 2001b; Van Buren, 2001), the theory can be linked to socialism and has limited influence in a free market environment (Barnett, 1997; Hutton, 1995; Rustin, 1997); and reads like an elaborate moral doctrine (Orts & Strudler, 2002).

2.2.11.3 Stewardship Theory

The Stewardship theory depicts a man who, given a choice, just like a steward, will act in the organisation's best interest. The theory was developed by Davis et al. (1997) as an improvement of the Stakeholder theory. According to the stewardship theory, managers are stewards, not agents. The steward perceives greater utility in cooperative behaviour and will not substitute this behaviour for anything self-serving (Davis et al., 1997). Managers and stakeholders share the same interests, and managers can achieve their goals when the company performs well. The Stewardship theory view has a model of a sophisticated man who is self-actualising with collective serving behaviour, an intrinsical man motivated with higher order needs of growth and achievement. This man looks to the long term and has the trust of the principal. Contrast this model of a man with the *homo economicus*, who is simplistic, self-serving, extrinsically motivated, with lower order needs, who is short-sighted and needs to be controlled.

2.2.11.4 Resource Dependency Theory

The concept was introduced by (Pfeffer & Salancik, 1978). According to the Resource Dependence theory, organisations require critical resources to achieve their objectives of value maximisation. These dependencies will ultimately influence decisions and actions taken by the organisation (Nienhueser, 2008). The theory argues that the organisation will identify the critical resources provided by its environment, analyse the extent to which other organisations control those resources and ultimately endeavour to control those resources to minimise or reduce its dependence on its environment for those resources. These resources

depend on the type of industry but may include financial resources, a skilled labour force, technology, and raw materials. The ecology of the organisation is crucial in understanding its behaviour. Strategies organisations use to reduce dependence include mergers and acquisitions. Hillman et al. (2009) argue that organisations will engage in mergers and acquisitions to reduce or remove competition and take control of resources by absorbing other organisations and mitigating environmental risk and uncertainty through diversifying operations.

2.2.11.5 Transaction Cost Theory

This was developed in 1960 by Ronald Coase, an economist. Transaction Cost Theory concerns economic transactions based on the most effective and efficient corporate governance structure. The theory assigns legal rights and obligations to facilitate socially desirable outcomes through decentralised decision-making, but transactions are costly to produce (Fennell, 2013). A company's first option is to create and use in-house goods and services, but there are situations where a company will go to the market for those goods and services, and the cost incurred through this process is called transactional costs. Suppose the administration costs of providing a transaction within a firm are less than the cost of the market transaction (due to drawing up, policing and the risk of breaches in contract terms and the cost thereof). In that case, it is worth organising in-house. But if it is the other way round and the firm transaction costs are higher, then the market is preferred (Coase, 1960). This was further developed into the Coase Theorem. The theorem is applied in property law, where parties will bargain until an efficient outcome is reached if transaction costs are zero, irrespective of the initial assignment of entitlement by law. But transaction costs are always high and seldom zero, and to suggest otherwise is idealistic and far removed from reality (Coase, 1960; Schlag, 1989), and they are not the only source of inefficiency (Fennell, 2013). It is also problematic not to consider that the identification and magnitude of transaction costs depend on a given setting.

In addition the transaction cost theory is problematic and inadequate in that: party's wrongful activities that harm innocent victims is the cause for externalities rather than mutually incompatible activities; it assumes that in the absence of transaction costs, private negotiations between parties engaged in incompatible activities will achieve efficient

outcomes provided the initial rights to activity levels are clearly delineated (Hahnel & Sheeran, 2009); it suggests that if transaction costs inhibit private negotiation, the law should delineate the parties' rights in a way that facilitates efficient outcomes by mitigating the effects of transaction costs; it suggests courts often ignore or do not know the private benefits or costs of activities associated with externalities or public goods, so they may be unable to determine the optimal activity levels; and it assumes that decentralised solutions in which the parties to a dispute negotiate outcomes subject to clearly delineated rights and duties are generally preferable to those imposed by a third party, such as a court or social planner (Daniel, 2015).

2.2.11.6 Political Theory

Political theory views organisations as key and influential social entities whose activities significantly impact stakeholders. Businesses adopt social obligations and rights with this authority or participate in specific social cooperation (Garriga & Melé, 2004). They endeavour to develop shareholder votes rather than buying votes and control to change company policies and management. Corporations intentionally influence public policies and laws through lobbying, participation in public debates, and the provision of information. There are two common approaches to political theory: Corporate constitutionalism - Davis (1960) was among the pioneers who acknowledged business people's considerable social power. They are intelligent leaders; the government and communities seek their ideas and advice, and what they do and say influences society. Davis cautions – that such power should be balanced with responsibility. If businesses fail to use social power in a manner considered responsible by society, they are bound to lose it (Davis, 1960; Garriga & Melé, 2004).

Corporate citizenship – According to corporate citizenship, a good citizen obeys the law, but a good corporate citizen must go further. A corporate citizen should also be socially responsible – by accepting social obligations beyond the requirements of the law (Davis, 1973b; Garriga & Melé, 2004). The global effects and damage caused by financial failures have seen a progressive movement toward 'global corporate citizenship' (see Appendix B)

2.2.11.7 Legitimacy Theory

The Legitimate theory postulates that if the organisation conforms to the bounds and norms of its communities, society will allow it to exist. An organisation and society have a 'social contract' that contains expectations for how the organisation should conduct business activities. The organisation can continue operating if those expectations are honoured (Deegan & Blomquist, 2011; Donaldson, 1982). Suppose the organisation breaches the terms of the 'social contract'. In that case, society will impose sanctions ranging from legal restrictions on its operations and limitations on resources, including financial capital and labour, to reduced demand or a total boycott of its products. The effect of the sanctions is to introduce a financial burden on the organisation such that it will have no choice but to conform and ensure legitimacy (Deegan & Blomquist, 2011; Dowling & Pfeffer, 1975)

Suchman (1995, p. 574) defines legitimacy as "a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." The organisation must adhere to societal norms to retain legitimacy. Legitimacy is subjective and only a perception; as such, a corporation may stray from societal norms and still retain legitimacy if the infraction can go unnoticed or gets noticed but draws no public disapproval or if the divergence is dismissed as unique or insignificant (Perrow, 1981; Suchman, 1995). If the organisation is perceived as legitimate, stakeholders will likely supply financial capital, labour, and tools to achieve its objectives. Enron Corporation's shares fell from $90.75 to $0.26 when it filed for bankruptcy – because of the financial scandal, Enron lost its legitimacy, investors cut their losses and withdrew their financial resources, creditors rushed to salvage their funds, and as a result, the organisation ceased to exist.

2.3 Research Gap

While the literature exploring the relationship between Corporate Social Responsibility (CSR) and financial reporting practices has witnessed substantial growth, several notable gaps persist, motivating the current investigation.

1. **Limited Focus on Earnings Management**: Existing studies on CSR often emphasise its impact on financial performance and shareholder value, with a limited

exploration of its potential influence on earnings management practices. The need for more research specifically addressing the intersection of CSR and earnings management constitutes a significant gap. Previous empirical studies on corporate social responsibility are difficult to compare as they examine the relationship between corporate social responsibility and various concepts.

2. **Contextual Variations and Industry Specificity:** Most of the prior research tends to generalise findings across industries and geographic locations. This overlooks the potential contextual variations and industry-specific dynamics that may influence the relationship between CSR and earnings management. Understanding these nuances is vital for developing targeted strategies and interventions.
3. **Dynamic Nature of CSR Initiatives**: CSR initiatives are dynamic, evolving in response to changing societal expectations and organisational priorities. The literature often needs a temporal perspective, neglecting the potential impact of the duration and evolution of CSR activities on earnings management practices. A more nuanced understanding of the temporal dynamics is crucial for guiding practical recommendations.
4. **Proxy for CSR:** There are currently no global ESG ratings. Therefore, most of the ESG ratings are individual to the country. For instance, studies in South Africa used the JSE SRI index, Korea - Korean Corporate Governance Index and Spain - FTSE4Good IBEX Spanish Sustainability. Other researchers have used content analysis, and some arbitrary indexes were developed for that study. The US has the most variety, with researchers using the Domini 400 Social Index, Bloomberg ESG disclosure score or MSCI ESG Stats Database. Prior studies on the LSE in the UK have used content analysis, indices developed by authors, and the Sustainability Index. The study positions itself uniquely by using FTSE ESG ratings.
5. **Moderating Factors:** While some studies suggest a negative relationship between CSR and earnings management, the role of moderating factors still needs to be explored. Factors such as firm size, industry competitiveness, and regulatory environments could potentially moderate the observed relationship. Identifying and analysing these moderating factors is essential for a comprehensive understanding of the dynamics at play.

6. **Integrated Theoretical Frameworks:** Previous studies often rely on individual theoretical perspectives, such as agency theory or stakeholder theory, to explain the relationship between CSR and financial outcomes. However, an integrated theoretical framework that considers the simultaneous influence of multiple theories still needs to be developed. Developing such a framework can provide a more holistic understanding of the complex interactions between CSR and earnings management.
7. **Long-Term Financial Consequences:** While the short-term financial implications of CSR activities have been studied, more research is needed to explore the long-term financial consequences. Understanding whether a commitment to CSR has sustained effects on earnings management and financial performance over an extended period is crucial for both theoretical understanding and practical decision-making.

By addressing these gaps, the current study aims to contribute to the literature by providing a more nuanced and comprehensive understanding of the relationship between CSR and earnings management. Through an exploration of these uncharted territories, the research seeks to offer valuable insights for academics, practitioners, and policymakers alike.

2.4 Conceptual Model

The conceptual model was developed using the theoretical framework. The model links theories of corporate social responsibility and their specific motivations for managing earnings. For example, the stakeholder theory holds organisations accountable to suppliers, workers, customers, creditors, the local government, and financial institutions. These groups are risk-averse and are easily spooked by volatile markets. Therefore, any large swings in earnings will be problematic. Firms will engage in earnings management through earnings smoothing to appease these groups. The rationale is that if accounting results can affect public opinion, then changing the earnings may change public opinion (Hall, 1993; Larcker & Revsine, 1983).

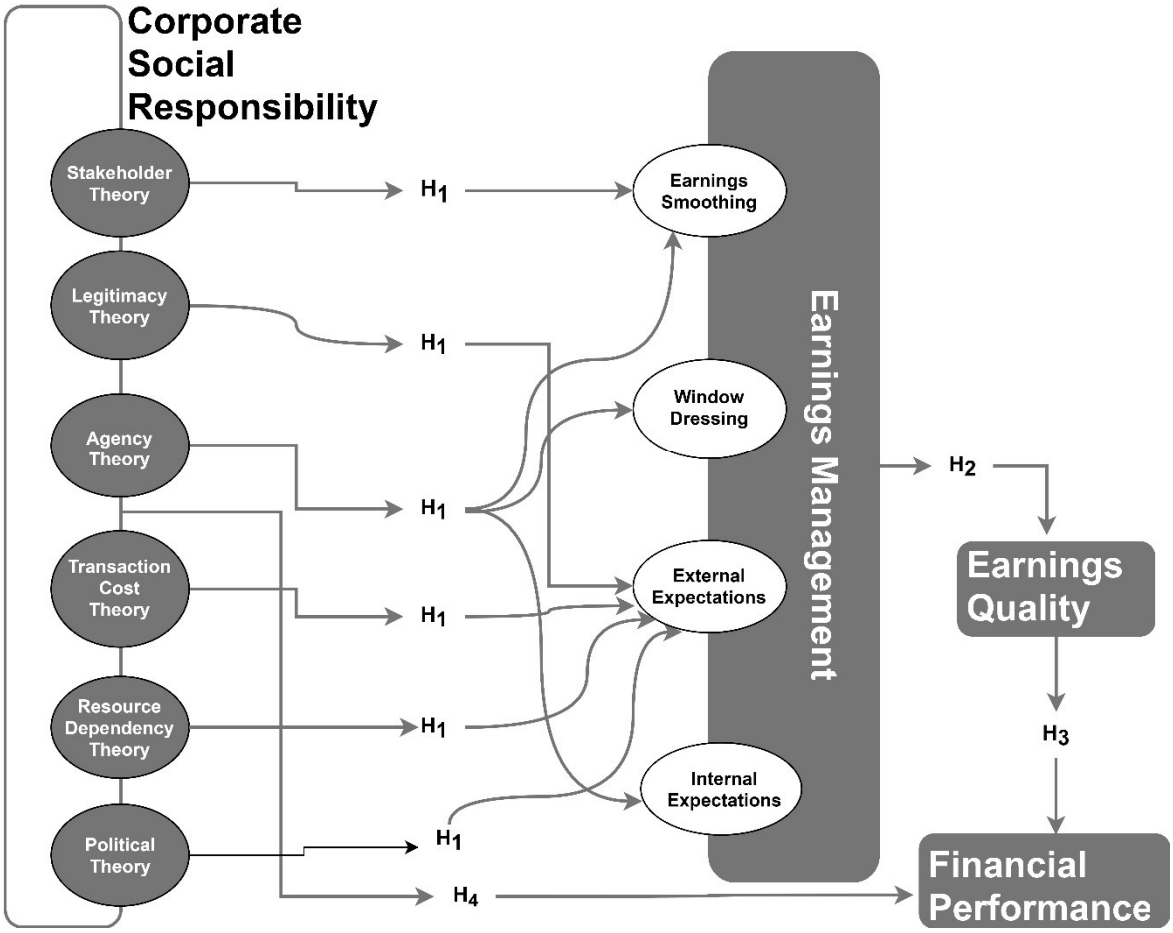

Figure 2-2 Earnings Management, Earnings Quality & Corporate Social Responsibility Conceptual Model

Source: Researcher constructed, 2023

Where: H_1, H_2, H_3 and H_4 are the hypothesis to be tested

Table 2-3 Corporate Social Responsibility Theories vs Motivation/Types of EM

CSR theory	Motivation/Types of Earnings Management
Stakeholder	Earnings Smoothing
Legitimacy	External expectation
Agency	Earnings Smoothing, External expectation and Window
Transaction Cost	External expectation
Resource Dependency	External expectation
Political	External expectation

Source: Researcher construction, 2023

The conceptual model is evidence of the non-monotonic nature of the concepts, as displayed in **Table 5-2**. Each theory of corporate social responsibility can be linked explicitly to the type of earnings management. **Table *2-3*** expressly matches corporate social responsibility theory to the motive or type of earnings management. The conceptual framework results are supported by prior studies by Li (2019) and Hosseini et al. (2016). Monotonic functions in mathematics are increasing or decreasing in their entire domain. If increasing on an interval, this means the function value increases as the independent value increases; in mathematics, monotonic functions are those that are increasing or decreasing throughout their whole domain; if they are increasing on an interval, this means that the function value is increasing while the independent value is increasing, i.e., if $x1 > x2$. Then $f(x1) > f(x2)$ and decreasing on an interval if the function value decreases as the independent value increases. That is if $x1 > x2$, then $f(x1) < f(x2)$ (Hong & Yang, 2017) (see **Figure *2-3***).

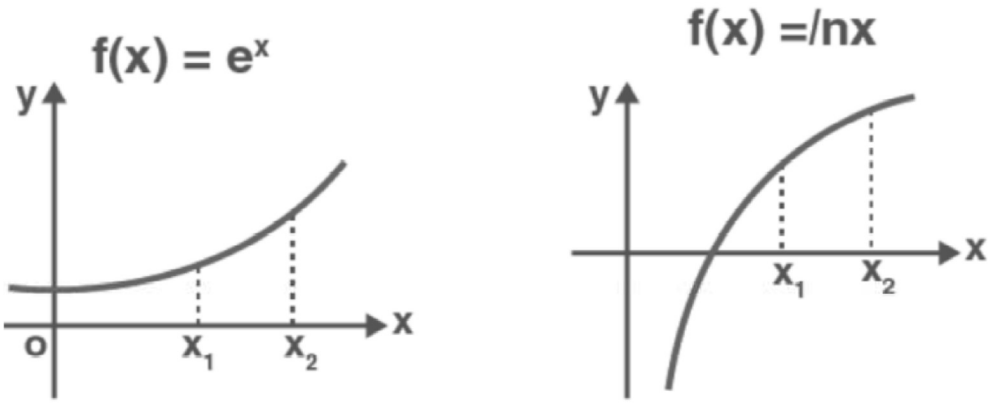

Figure 2-3 Monotonic
Source: Agarwal (2022)

Conversely, non-monotonic functions have both increasing and decreasing sides in their domain (See **Figure 2-4**). Monotonic computations are outside the purview of this study, but they provide a potential direction for further investigation. The results of the analysis suggest that the model's capacity to forecast financial performance is constrained by the lack of a monotonic relationship between CSR, earnings management and earnings quality (Hong & Yang, 2017) because the monotonicity of the relationships between the dependent

and independent variables over the entire range is one of the core tenets of linear regression analysis (Schechtman & Yitzhaki, 2010)

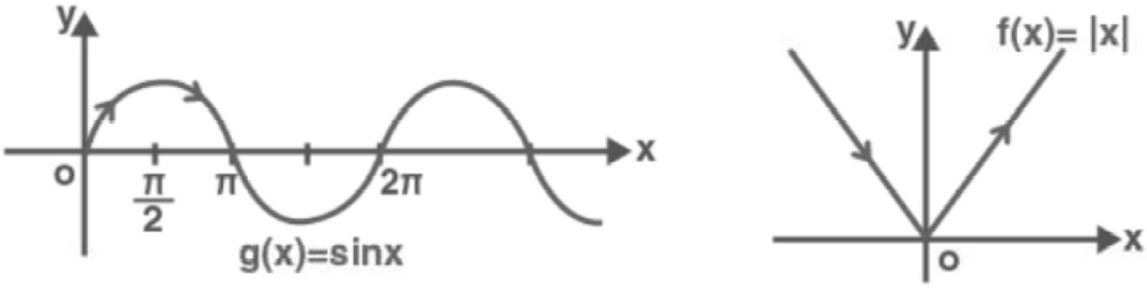

Figure 2-4 Non monotonic

Source: Agarwal (2022)

2.5 Hypothesis

2.5.1 Earnings Management and Corporate Social Responsibility

Hypothesis (**H_1**) presents a negative correlation – a higher commitment to corporate social responsibility results in lower levels of earnings management, and the opposite is also true. This relationship will be explained through the stakeholder, agency, legitimacy, political, and transaction theories. Empirical evidence from prior studies will also establish a link between these two concepts and find a correlation.

H_1: *Engagement in corporate social responsibility is negatively associated with the degree of EM.*

2.5.2 Corporate Social Responsibility as a mitigating factor

The Stakeholder theory recognises the power stakeholders such as suppliers, workers, customers, creditors, the local government, and financial institutions have over business organisations. These groups are vital for organisations (Freeman, 2004), and the corporation must adopt more as its stakeholders become more powerful (Gray, 1995, p. 53). According to the stakeholder hypothesis, businesses have a fiduciary duty to operate in the best interests of their stakeholders, essentially the company's owners. These stakeholders have competing

interests, and the challenge for managers and owners of organisations is to identify common interests and work towards satisfying those interests, avoiding conflict in the process. Accounting numbers mitigate conflicts of interest between managers and stakeholders. These conflicts are evident if a company is going through a merger, acquisition, or IPO. During a merger or buyout, management understates earnings, as evidenced by a systemic reduction of accruals (DeAngelo, 1986).

The ongoing pressure on managers to satisfy stakeholder interests drives them to alter financial reporting transactions to mislead stakeholders about the business's success (Healy & Wahlen, 1999). Through altruistic motivation, managers manipulate earnings for the 'good of the company' (Hamid et al., 2012). The purpose of 'window dressing' the company's financial status is to increase stakeholder trust, change income taxation, and prevent breaching the covenant in the financing contract. Companies may also use window dressing by stretching accounting assumptions before an initial public offering or when applying for a large loan. However, stakeholders might succeed as a check on bad business practices, as evidenced by the studies below.

During the 2002 World Economic Forum, 34 of the biggest multinational firms in the world signed a declaration. During the 2002 World Economic Forum, a declaration was signed by 34 of the top multinational firms in the world. The leadership challenge for CEOs and boards 'on 'Global Corporate Citizenship' (see Appendix B) and on August 19, 2019, 181 CEOs signed a 'Statement on the Purpose of a Corporation' proposing that companies have a broader responsibility to all stakeholders and not just to shareholders (see Appendix A). The latter document is the best evidence of the shift towards corporate social responsibility. Business leaders have decided to take this initiative as they pin their hopes on corporate social responsibility to foster ethics in their organisations. Corporate social responsibility states where the law ends. Several studies support the notion that corporate social responsibility can mitigate earnings management behaviour; even China - a country not known for its environmental policies, encourages companies, including state-owned ones, to embrace social responsibility standards. Research of 2580 Chinese listed companies from 2009 to 2015 with 14,807 firm-year data discovered that earnings quality and corporate social responsibility are positively correlated. Compared to non-CSR organisations, Less

likely to take part in earnings management are corporate social responsibility companies and those with higher corporate social responsibility scores (Rezaee et al., 2019).

There is a correlation between socially conscious businesses and higher quality accruals, according to a US study by Hong and Andersen (2011). Determining the quality of earnings is mainly based on accruals. In agreement, higher levels of ethical commitment result in lower levels of earnings management, according to research by Choi and Pae (2011) into the relationship between corporate adherence to business ethics and financial reporting quality. They also found that corporate responsibility and business ethics have long-lasting effects on future financial reporting quality. These results were consistent with research by Kim et al. (2012), demonstrating a link between high-quality earnings and corporate social responsibility. In their investigation of Asian businesses, according to Scholtens and Kang (2013), socially responsible corporate enterprises were less likely to engage in aggressive earnings management. Still, their operational and accounting decisions tended to be more conservative. Bozzolan et al. (2015) also found that corporate social responsibility firms are more likely to give up accrual-based earnings management for real earnings management. Whether corporate social responsibility affects the informative property of smoothed earnings was examined by Gao and Zhang (2015). Stronger present return-future earnings ties and better contemporaneous earnings-return relationships are observed in income-smoothing corporations with higher corporate social responsibility. As it provides a unique 'quality dimension' to profitability attributes and aids in firm valuation, corporate social responsibility has shown to be desirable. More informative are consistent earnings combined with moral reporting practices.

According to a study done between 2008 and 2010 by Almahrog (2018), UK businesses with higher corporate social responsibility levels are likelier to engage in modest-size earnings management. The study used content analysis and the disclosure index to gauge the extent of corporate social responsibility. The research will likewise focus on UK-based businesses. However, the extent of corporate social responsibility will be measured using the ESG index. Ben Amar (2018) used 119 French non-financial companies on the CAC All Tradable index between 2010 and 2014 to research the relationship between corporate social responsibility and earnings management in emerging economies. He found a negative

relationship between corporate social responsibility and earnings management and that some corporate social responsibility components have a detrimental impact on earnings management. Their findings concur with those of Barrena Martínez et al. (2016). They contend that the stakeholder approach and legitimation institutional theory are advantageous to businesses over the long term since they increase competitiveness.

Cho and Chun (2016) investigated whether a company's corporate social responsibility initiatives are linked to real activities earnings management (RAEM) from a stakeholder perspective. Firms that practise social responsibility have a significant and unfavourable association with RAEM, a relationship that is tempered by corporate governance as determined by a composite CG index. Katmon and Farooque (2017) contested some of the findings above. They examined how internal corporate governance affected the link between disclosure quality and earnings management (EM) in UK-listed companies and discovered that earnings management and disclosure quality had a negative association for all proxies regarding restricting earnings management. Most corporate governance factors have negligible associations with earnings management.

In summary, although Katmon and Farooque (2017) found no link between corporate governance and earnings management, Gao and Zhang (2015), Cho and Chun (2016), Ali and Zhang (2015); Almahrog (2018), Bozzolan et al. (2015), Hong and Andersen (2011), Barrena Martínez et al. (2016) and Ben Amar (2018) argue that corporate social responsibility moderate earnings management Alternatively, a firm with a high degree of commitment to corporate social responsibility will exhibit low levels of earnings manipulation. Based on these arguments, engagement in corporate social responsibility based on the Stakeholder Theory is negatively associated with the degree of earnings management.

2.5.3 Legitimacy Theory and Earnings Management

According to the Legitimate theory, organisations can exist if they abide by the rules and values of their respective communities. There is a putative ‘social contract" between the organisation and society. The ‘social contract’ outlines implicit and overt societal expectations for the organisation's function. According to the Legitimate theory,

organisations can exist if they abide by the rules and values of their respective communities. It will allow the organisation to continue operating if those expectations are met (Deegan & Blomquist, 2011; Donaldson, 1982). If the organisation breaches the terms of the 'social contract, society will impose sanctions ranging from legal restrictions on its operations and limitations on resources, including financial capital and labour, to reduced demand or a total boycott of its products. The effect of the sanctions is to introduce a financial burden on the organisation such that it will have no choice but to conform and ensure legitimacy (Deegan & Blomquist, 2011; Dowling & Pfeffer, 1975)

According to Alsaadi et al. (2017), companies with a high level of corporate social responsibility are less likely to manage earnings. They evaluated the impact of two potential sources of ethical principles on earnings quality and corporate social responsibility. When Gras-Gil et al. (2016) looked at the connection between corporate social responsibility and earnings management, they discovered that corporate social responsibility practices had a detrimental effect on earnings management. The ethical and moral considerations in corporate decision-making are related to corporate social responsibility. Participating in socially responsible activities enhances stakeholder satisfaction and a company's reputation. The findings demonstrate that corporate social responsibility practices may be an organisational tool that promotes resource efficiency, which has a detrimental effect on earnings management practices. When examining whether a firm's corporate social responsibility orientation influences its reporting incentives, Bozzolan et al. (2015) discovered comparable impacts, noting that enterprises focusing on corporate social responsibility are less likely to use accruals earnings management than real earnings reporting. Real earnings are constrained by a focus on CSR, which also increases shareholder value.

CSR can be strategically employed to combat the unfavourable view of earnings management, according to Martínez-Ferrero et al. (2016), who tackled their investigation radically. Corporate social responsibility enhances the company brand and brings down capital costs. When corporate social responsibility practices are employed to obfuscate earnings management, the market does not recognise it. Muttakin Mohammad (2015) investigates the connection between corporate social responsibility disclosures and earnings

quality as measured by earnings accruals. Such earnings management is accomplished through rising discretionary accruals of income.

Furthermore, by limiting earnings management, businesses from export-oriented sectors with a high concentration of significant stakeholders (foreign consumers) declare more corporate social responsibility operations and provide comprehensive financial reports. Using a corporate governance index comprised of 55 different corporate governance variables, Bekiris and Doukakis (2011) explored the relationship between corporate governance and accruals earnings management. It discovered an antagonistic relationship between the two. This was true for both large and moderate capitalisation. Corporate governance provisions restrain the tendency of management to control profitability, leading to improved confidence in financial statements.

The level of earnings smoothing is lessened by a higher commitment to CSR, according to a study by Chih et al. (2008) on the links between corporate social responsibility and earnings management. A positive correlation was found by Grougiou et al. (2014) in their investigation of the two-way interaction between corporate social responsibility and earnings management relationships. Companies that manipulate earnings often increase their involvement in corporate social responsibility initiatives as a preventative measure to draw attention away from undesirable accounting practices and establish a protective shield by developing a socially responsible persona.

Yip et al. (2011) concluded that there is a high correlation between corporate social responsibility reporting and earnings management after finding evidence of a detrimental (complementary) link in the oil and gas industry as well as evidence of a beneficial (substitutive) relationship in the food industry. According to Jordaan et al. (2018), companies with strong corporate social responsibility practices were more inclined to manage earnings by income-boosting discretionary accruals. Prior et al. (2008) state that earnings management practices benefit corporate social responsibility. This study also reminds policymakers that some actions used to increase a company's corporate social responsibility may only be a cover for other nefarious actions. Laksmi and Kamila (2018) argue that the board of commissioners' makeup, foreign ownership, and earnings management do not influence how much information is disclosed about a company's social

responsibility. These considerations lead us to conclude that the degree of earnings management through Earnings External Expectations is inversely correlated with corporate social responsibility engagement.

2.5.4 Agency Theory, Stewardship Theory and Earnings Management

According to the agency theory, agents are *Homo Economicus* or rational economic man. They are selfish and will take every opportunity to advance their self-interests. A rational economic man knows what he wants and will make rational choices to maximise personal gain. If the interest of the agent and the principal converge, there is no agency problem, but when they diverge, the principal will incur agency costs. The interests of the agency and the principal will always diverge, and principles can't know *ex-ante* if the agent shares the same interest (Davis et al., 1997). According to the Agency Theory, principals must institute internal controls to check agents' behaviour and reduce agency costs. Jensen and Meckling (1994) dismissed the economic model of human behaviour by arguing that people usually do not behave that way. They further claim the concept of *Homo Economics* reflects economists' desire for simplicity in their models and unrealistic description of human behaviour. Human beings are products of their social environment, which shapes their behaviour and attitudes through customs, traditions, taboos, and other social practices.

In most companies, managers' compensation in the form of salaries and bonuses and indirect compensations in prestige, future promotions, and job security mainly depend on the companies' financial performance through pre-established benchmarks. This causes managers to act in their self-interest by managing earnings to show that the company's performance is better than it is. It may be in managers' self-interest to use earnings management to appear to perform better when manager rewards depend on their companies' financial performance (Xie et al., 2003). This is speculative motivation, where managers manipulate earnings to meet financial goals established within the company (Albrecht et al., 2007).

This notion implies that managers will fudge earnings through window dressing and income smoothing. Income smoothing involves adjusting the timing of earnings to reduce the volatility or variability of the company's income (Copeland, 1968; Fudenberg & Tirole,

1995). According to another definition, the intentional dampening of swings about some level of earnings that is now deemed to be expected for a firm refers to smoothing reported earnings (Beidleman, 1973, p. 653) or the process of timing the recognition of sales and expenses to ensure that reported results are consistent from year to year (Albrecht et al., 2007). Management will control earnings to maintain either earnings equal to or less than zero, income results like those realised in the prior year, or income results equal to or better than analysts' estimates to prevent market spookiness. Income smoothing increases a company's stock market shareholder value, lowers corporate risk, lowers borrowing costs, lowers the company's capital cost, and makes it easier to raise capital because investors and creditors believe there is little investment risk. It is an excellent place to invest. According to agency theory, businesses exist to increase shareholder wealth. According to stewardship theory, the goal is to advance societal well-being.

Managers may participate in earnings management in response to external pressure to meet expectations. Suppliers want assurance that they will be paid, and that the buyer will be a trustworthy customer for many years. A solid financial situation indicates that the firm will be a reliable partner for the foreseeable future and can fulfil its long-term commitments, such as employee pensions and product guarantees. In their study, Ali and Zhang (2015) examined how CEOs' incentives changed throughout their employment to manage reported earnings. They discovered that earnings overstatement is more prevalent in the early years of a CEO's tenure than in the later years and that this relationship is less prominent for companies with more extensive external and internal monitoring. Additionally, in line with the horizon problem, earnings overstatement is higher in the CEOs' final year of employment. However, this conclusion only occurs after adjusting for earnings overstatement in the CEOs' first few years of employment.

210 UK companies were trading on the US Over-the-Counter (OTC) Markets as of November 2019, of which 38 are listed on either the New York Stock Exchange (NYSE) or the NASDAQ. Even though this study is based on companies listed on the London Stock Exchange, references will be drawn from the US and the Securities and Exchange Commission (SEC). The BT Group, Barclays Bank, BP, AstraZeneca, GlaxoSmithKline, HSBC, and the Lloyds Group are a few of these UK businesses. Before and after American

Depositary Receipts (ADRs) were cross-listed on the U.S. market, Beckmann et al. (2019) looked into the existence of real and accrual-based earnings management and discovered firms actively managing earnings around cross-listing events; however, firms adopting International Financial Reporting Standards engage in less earnings management.

In an exploratory investigation of the connection between corporate social responsibility and earnings management, Hong and Andersen (2011) discovered that earnings management degrades the accuracy of financial reporting. Higher quality accruals and fewer activity-based earnings management affect the quality of financial reporting in more socially responsible businesses. According to Habbash and Alghamdi (2017), auditor opinion is the sole factor limiting earnings management practice. However, they are occasionally helpless in the face of managerial opportunistic actions. Scholtens and Kang (2013) discovered that Asian businesses with comparatively strong corporate social responsibility are much less involved in earnings management. Corporate social responsibility limits corporations' earnings management in Asian nations, and the legal framework influences this. According to Kim et al. (2012), socially conscious businesses are less likely to distort genuine operating activities, manage earnings through discretionary accruals, or become the focus of SEC investigations. Yu (2008) makes the case that companies that employ more analysts control their earnings less to skew earnings. Salewski and Zülch (2013) showed that corporate social responsibility positively correlated with the degree of earnings management, contradicting the findings of the previous study. According to their admission, sample bias may be to blame for this. These arguments enable us to recognise that engagement in corporate social responsibility based on the Agency Theory is negatively correlated with the degree of earnings management via Earnings Smoothing, Window Dressing, and Internal Expectations. Engagement in corporate social responsibility based on the Stewardship Theory is negatively correlated with the degree of earnings management via Eternal Expectations, and engagement in corporate social responsibility based on Resource Dependence Theory is negatively associated with the degree of Earnings Management through External Expectations.

2.5.5 Political Theory and Earnings Management

According to Political Theory, Organizations are essential and powerful social actors whose actions significantly impact stakeholders. This influence leads stakeholders to embrace their social obligations and rights and participate in specific social cooperation (Garriga & Melé, 2004). To manage personnel, they deploy political mechanisms of group decision-making. Instead of acquiring voting power and control, investors should seek to modify corporate policy by gaining shareholder support. Corporations intentionally influence public policies and laws through lobbying, participation in public debates, and the provision of information. A component of corporate constitutionalism acknowledges the significant social influence businesspeople have. They are intelligent leaders, and the government and communities seek their ideas and advice. What they do and say has an impact on society. However, if businesses do not exercise their social influence in a way that is regarded as responsible by the community, they will inevitably lose it (Davis, 1960; Garriga & Melé, 2004). Corporate citizenship is another aspect of the theory promoting the view that a good corporate citizen should be socially responsible by accepting social obligations beyond the requirements of the law (Davis, 1973b; Garriga & Melé, 2004).

It is worth pointing out that the direction in which earnings are managed depends on the industry. The oil and gas industry faces much scrutiny from politicians, and its fortunes are tied to the political process. The industry has historically been laden with regulation and taxes even before the Deep Horizon oil spill in 2010. There is also public anger due to the unsustainable nature of the activities, higher prices, and large profits. Ceteris paribus, the larger a corporation's political costs, the more likely the manager will use accounting procedures that shift reported earnings from present to future periods. The claim is valid for businesses in the oil and gas sector and other industries subject to wealth transfers due to prospective regulatory, legislative, or other governmental activities. (Hsiao et al., 2016; Watts & Zimmerman, 1986) . Oil companies will often make more income-decreasing earnings management during periods of high oil prices to move profits from the current period to future periods when price increases may be more pronounced. Conversely, during periods of low prices, they will make more income-increasing earnings management (Hall, 1993).

Political expenses are one such aspect that Yip et al. (2011) acknowledged could impact the relationship between earnings management and corporate social responsibility. As a result, they examined the relationship between corporate social responsibility disclosures and earnings management in two US industries: the high-political-visibility oil and gas business and the low-political-visibility food industry. Their analysis indicates that political factors—not ethical factors—affect the relationship between corporate social responsibility reporting and earnings management. Hsiao et al. (2016) studied whether US oil and gas firms participated in earnings management during the 2011 Arab Spring and discovered that they did so collectively in an income-decreasing manner. The findings appear to lend credence to the political cost concept. Since the political theory concerning corporate social responsibility and earnings management will be tested, the presented empirical data supports the political cost hypothesis. According to political theory, corporate social responsibility is negatively correlated with the degree of earnings management as measured by external expectations.

2.5.6 Earning Management and Earnings Quality

Earnings that are heavily managed could be of better quality. However, the lack of earnings management does not ensure good earnings quality because other factors that affect the quality of earnings also exist. To better understand the correlation between earnings quality and earnings management, the other variables will be constant. The legality of earnings management affects both the quality of the profit and the reliability of the companies' financial reporting. The Accounting Standards do not provide clear guidelines for separating earnings management from financial fraud. The knowledge of auditors and financial professionals is essential in separating the two. The auditors are in a great position to evaluate the profit quality since they know internal audits, generally recognised accounting and auditing principles, and business practices. Earnings management is viewed as an ethical issue when there is a slight deviation from the norm. The transactions' materiality is related to earnings management as well. If the amount on the earnings management is small, this activity may be categorised as a minor legal violation; nevertheless, if the amount is large, this conduct is regarded as a serious legal violation (Shuli, 2011).

Li (2019) focused on real earnings management through the abnormal reduction in discretionary expenditures and examined how this sort of real earnings management affects earnings quality. She also looked at the effect of real earnings management on earnings persistence and its informativeness about future cash flows. Li observed that the size of real earnings management is adversely correlated with profit persistence after looking at a sizable sample over four decades. This correlation is caused mainly by real earnings management's negative impact on cash flows rather than accruals. Due to real earnings management, current earnings could be more resilient. They show a weaker ability to anticipate future cash flows, which suggests that current earnings are less informative about future cash flows. The abnormal decrease in discretionary spending has a detrimental impact on profit persistence. It is linked to future cash flows from operations, and this effect is pronounced in the post-SOX period. According to Li's findings, actual earnings management through an unusual reduction in discretionary spending is linked to worsened earnings quality. The means of earnings management in the two groups of low earnings persistence and high earnings persistence enterprises were compared by Tariverdi (2012). The two groups had equal means of earnings management, and there was no discernible relationship between earnings management and earnings persistence.

The relationship between earnings management and earnings quality is also not monotonic, as will be discovered later when discussing the relationship between earnings quality and financial performance. Each of the earnings quality traits uniquely responds to earnings management. Hosseini et al. (2016) used a sample of 100 companies listed on the Tehran Stock Exchange between 2007 and 2013 to investigate the potential connection between earnings management incentives and the earnings response coefficient. The results of the second hypothesis test also point to a negative association between earnings management incentives and earnings response coefficient, indicating no relationship between earnings management incentives and earnings response coefficients. Hosseini et al.'s findings were corroborated by an earlier study by Ghosh et al. (2005) that demonstrated a positive correlation between income and earnings response coefficient. Tariverdi (2012) also investigated 70 Tehran Stock Exchange-listed companies and found that earnings management through accruals reduced the accuracy of financial reporting. Since earnings management made it harder to forecast future operations' cash flows, managing earnings

was done to inflate financial reporting and benefit managers. Finally, they discovered that earnings management did not impact the accounting profit's durability.

Salewski and Zülch (2013) found a negative association between corporate social responsibility and earnings quality. Alipour (2019) examined the association between corporate environmental disclosure equality and earnings quality and found a significant positive relationship between EDQ and earnings quality. Ball and Shivakumar (2005) explored earnings quality in UK private firms, finding that private-company earnings are lower on average despite being prepared under the same regulations. Lower earnings quality in private firms might be because of financial reporting demands.

Salewski and Zülch (2013) found that corporate social responsibility and earnings quality were negatively correlated. A significant positive relationship between EDQ and earnings quality was discovered by Alipour (2019), who looked into the association between corporate environmental disclosure equality and earnings quality. Ball and Shivakumar (2005) investigated earnings quality in UK private enterprises. They discovered that, despite being produced in accordance with the same standards, private-company profits were, on average, of worse quality. However, the requirements for financial reporting may be the source of lower earnings quality in private companies.

Whether corporate social responsibility affects the informative property of smoothed earnings was examined by Gao and Zhang (2015). Firms that smooth out income have more extensive contemporaneous earnings-return relationships and stronger present return-future earnings relationships when they practise more corporate social responsibility. Corporate social responsibility is advantageous since it gives earnings qualities a particular quality dimension and aids corporate value. Smooth earnings and ethical reporting practices are more illuminating. Based on these justifications, it hypothesised:

H_2: *Engagement in Earning Management is negatively associated with the degree of Earnings Quality.*

Hypothesis (**H_2**) presents a negative correlation: high earnings management results in low earnings quality and vice versa.

2.5.7 Earnings Quality and Financial Performance

The primary earnings quality traits are outlined in section 2.3. Studies by Melumad and Nissim (2009) argue that high-quality earnings are more informative to the long-term value of the firm, Revsine et al. (1999) acknowledge that earnings are of higher quality when they are sustainable, and Richardson et al. (2005), which show that the quality of earnings determines the extent to which earnings performance persists into the future, have all confirmed these findings. Francis et al. (2008) investigated the relationships between voluntary disclosure, emotional intelligence (EQ), and cost of capital. They discovered that while firms with high earnings quality have more extensive voluntary disclosures, the cost of capital effect on voluntary disclosure is significantly diminished or even disappears when earnings quality is considered. According to research done on 51 companies listed on the Nigerian Stock Exchange, earnings quality proxies together considerably improved the financial performance of the company (Theophillus et al., 2018). Later sections of this study will explore the usage of proxies and their effect on the research findings. According to claims made by other researchers, there is a positive and significant correlation between corporate valuation and a total earnings quality index. Additionally, they mention earnings quality as one of the most precise measures of company valuations (Li, 2014).

According to research by Ma and Ma (2017) on publicly traded Chinese companies, poor earnings quality is typically defined by unhealthy profitability and false financial information, resulting in incorrect capital allocation and poor corporate performance. The enterprises have been regarded as having poor earnings quality, and China's most outstanding emerging economy has had rapid and erratic expansion. In addition, they assert that the negative correlation between earnings quality and corporate performance results from a new emerging market during an economic boom and that earnings management is not the primary cause of the negative correlation but rather one of its contributors. However, Islam et al. (2020) disagree, arguing that their analysis of emerging markets clearly shows earnings quality as the most important predictor of financial flexibility and is negatively associated with financial flexibility. A study by Ball and Shivakumar (2005) found that

private companies had lower-quality earnings than public companies. However, a later study by Liu (2018) compared earning quality using the organisation's size and found that listed and small companies had higher earnings quality than medium-sized companies with the lowest earnings quality. More and more companies are becoming socially and environmentally responsible.

Banks, in particular, are extensively regulated in the financial services sector, but the mechanics of the relationship between earnings quality and performance are consistent across all other businesses. Utami et al. (2019) examined the impact of earnings quality on the financial performance of Indonesian banks. They contrasted whether state-owned or private banking is the bank type where the independent variable significantly impacts the dependent variable. Four public banks and four private banks were determined. The findings showed that earnings quality has a favourable, statistically significant impact on the financial performance of the banks, with the effect of earnings quality on private banks being more significant than that of state-owned banks. This indicates that banks control how much earnings quality affects financial performance.

The results indicate that earnings quality has a positive significant influence on the financial performance of the banks and that the effect of earnings quality on private banks is greater than that of state-owned banks. This means that the types of banks moderate the influence of earnings quality on financial performance. Using a sample of 55 European banks over the period from 2001 to 2015 consisting of 477 bank-year observations, Alhadab (2018) discovered evidence that European banks with high levels of earnings management occurring via discretionary loan loss provision experience inferior performance (measured via ROA and ROE) in the current and subsequent years. The results also show a negative impact of earnings management in prior years, which feeds through into the following years.

According to research, there is no monotonic association between earnings quality and financial performance. Charitou et al. (2007) found that distressed firms exhibit low levels of earnings timeliness for bad news and high levels for good news, while healthy firms exhibit high levels of earnings timeliness for bad news but not for good news in their study using the option theory. Islam et al. (2020) assert that their study has refuted empirical research on the advanced economy that showed information about earnings quality and

earnings in general as negatively associated with firms' financial performance regardless of firms' characteristics, such as firms with profit or loss and firms with or without R&D expenditure. They argue that the degree of dominance varies on the characteristics of the firm and cite the firm's earnings quality, firm size, cash flows, financial limitations, dividends, and growth as the leading predictors of financial flexibility. In their article on R&D and earnings quality, Bereskin et al. (2014) explained that there is evidence that actual earnings management hurts innovation. They looked at how much, how well, and how influential corporations that control profits by changing R&D spending produce patents—reduced R&D results in fewer, weaker, and less helpful patent portfolios.

Further, they claimed that variations in patent performance are value-relevant and negatively impact stock prices, arguing that genuine earnings management hinders enterprises' technical advancement, which in turn has a detrimental impact on market valuations. According to other earlier research Huynh, 2018; Li, 2014; Machdar et al., 2017), there is a favourable correlation between earnings quality and firm success. Based on these justifications, it is hypothesised that.

H_3: *Earnings Quality is positively associated with the degree of Financial Performance.*

Hypothesis (**H_3**) presents a positive correlation: high earnings quality results in increased financial performance, and the opposite is true.

2.5.8 Corporate Social Responsibility and Financial Performance

According to Porter's Hypothesis, innovation will reduce the cost of environmental legislation and corporate social responsibility. Porter and van der Linde (1995) predicted two scenarios in which this innovation offset will take place: Product Offset: Environmental regulations will result in the development of high-quality, better performing, and safer products, all at lower product costs; Process Offset: Environmental regulations will also result in higher resource productivity because of higher process yields, less downtime because of more careful monitoring and maintenance, materials savings due to increased efficiencies, better utilisation of by-products, and lower production energy consumption.

Environmental and financial performance will be enhanced by reduced material storage and handling costs, the recycling of waste into usable forms, lower waste disposal costs, and safer working conditions. Pohle and Hittner (2008) agreed, suggesting that corporate social responsibility may contribute to a company's effective competitive strategy through enhanced connections with its main stakeholders, more devoted clients, fewer expenses, higher revenues, and an overall enhancement of its societal standing. Although innovation cannot always totally balance the cost of compliance, especially in the short term, before learning can reduce the cost of innovation-based solutions, Porter and van der Linde (1995) acknowledged this. As a result, organisations will have to spend their funds to finance social programmes for the foreseeable future. However, shareholder value will only be generated over the long term and not in the short term. Corporate social responsibility policies include prospects for value creation, and studies in this field have shown that the Porter hypothesis is accurate (Badia et al., 2013).

In addition to supporting Porter's hypothesis, the Stakeholder theory asserts that corporate social responsibility is a type of strategic investment that boosts a company's worth by balancing the interests of investing and non-investing stakeholders (Freeman, 2004). The resource-based concept asserts that corporate social responsibility improves a firm's competitive edge, raising the firm's value. A Sheikh (2018) study empirically demonstrates that corporate social responsibility is a strategic investment that adds value. Raleigh (2014) surveyed senior executives in the UK and discovered that the key drivers of corporate social responsibility are client and consumer demand (62%), recruitment and staff retention (49%), cost management (48%), public perceptions/brand building (44%), and because it's *the right thing to do* (40%).

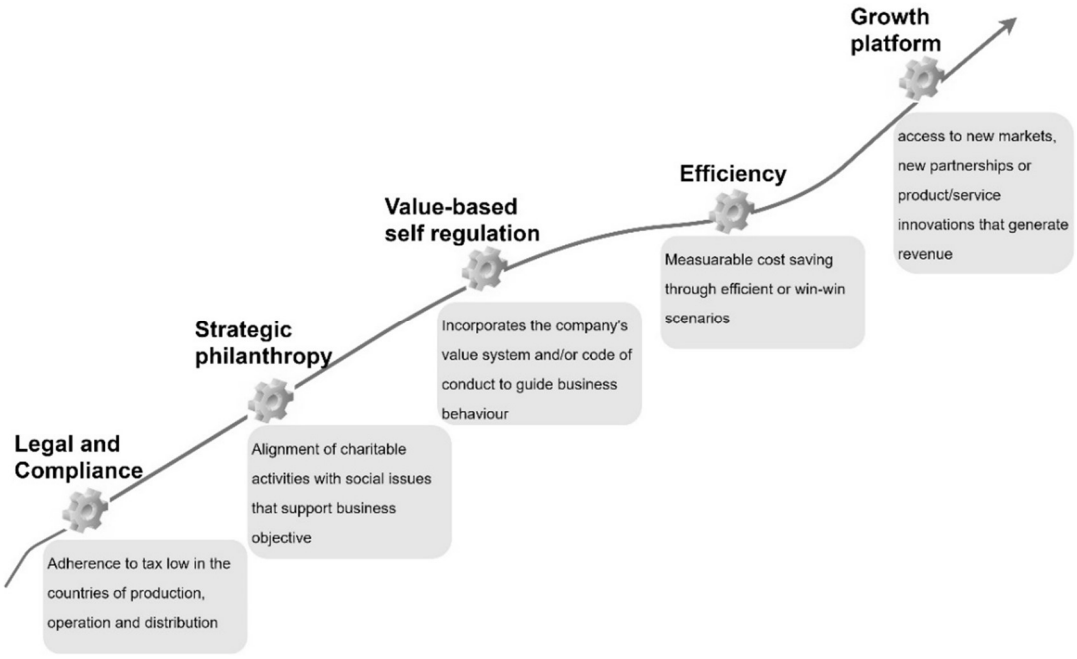

Figure 2-5 Corporates Social Responsibility Value Curve

Source: IBM Institute for Business Value (2008)

According to a Pohle and Hittner (2008) study of 250 business leaders worldwide, corporations have adopted a far more strategic view of CSR, with 68 per cent using it as a chance and a platform for growth. Companies can use corporate social responsibility to achieve sustainable growth by combining the following activities: alignment, integration, and inclusion of corporate social responsibility with company strategy across all operational functions, making it simple to invest (not spend) the money required to meet its goals; the implementation of an open information strategy to raise the transparency of information sharing among various stakeholders and to increase the level of engagement of important stakeholders and clients. According to the IBM Institute for Business Value, larger returns are realised when corporate social responsibility becomes increasingly integrated into core business strategy as organisations move from the left to the right on the value curve, as shown in **Figure *2-5***. Gao and Zhang (2015) investigated how corporate social responsibility might impact the informational quality of smoothed earnings. More considerable corporate social responsibility results in higher contemporaneous earnings-return relationships and a better relationship between present and future earnings for income-smoothing enterprises. Corporate social responsibility is beneficial since it gives earnings qualities a special quality

dimension and aids corporate value. Smooth earnings combined with moral reporting practices are more educational.

According to Simpson and Kohers (2002) and Maqbool and Zameer (2018), financial performance and corporate social responsibility correlate positively. Salama (2005) found a strong correlation between a company's financial and environmental success. The findings of McGuire et al. (1988) demonstrate that corporate social responsibility and a company's past performance are related. Risk reduction is one of the main advantages of corporate social responsibility. Corporate social responsibility and financial outcomes showed a significant positive link, according to Waworuntu et al. (2014). According to Cohen and Zarowin (2010), genuine actions were the cause of the post-SEO operating performance deterioration. However, accrual reversals may also be to blame for the fall (Rangan, 1998; Teoh et al., 1998), showing poor operational choices in managing earnings during the SEO. According to Sial Muhammad (2018), earnings management has a moderately negative association between corporate social responsibility and firm performance, while the opposite is true for CSR, which has a favourable and significant relationship with solid performance. These findings suggest that high earnings management values translate into high symbolic corporate social responsibility levels and negative business performance.

The Socially Responsible Investment (SRI) Index of the Johannesburg Stock Exchange (JSE) was used in an investigation by du Toit and Lekoloane (2018), who found no compelling evidence of a link between being listed on the index and financial performance. McWilliams and Siegel (2000) found that corporate social responsibility has a neutral impact on financial performance, as did they. According to Hirigoyen and Poulain-Rehm (2015), improving financial performance does not improve social responsibility, and vice versa. Business social performance and corporate financial success did not correlate, according to Griffin and Mahon (1997). Prior et al. (2008) state that earnings management and corporate social responsibility harm financial performance. The negative impact on financial performance makes it impossible to maintain a socially acceptable façade to hide earnings management over time. Despite the dissenting voices, it is hypothesised:

H_4: *Engagement in corporate social responsibility is positively associated with the degree of Financial Performance.*

Hypothesis (**H_4**) presents a positive correlation: an increase in corporate social responsibility as matched by an increase in financial performance.

2.6 Summary

Several definitions of earnings management reflect differing perspectives rather than a lack of consensus on what earnings management is and are also contextual. While Healy and Wahlen's (1999) definition is essentially from the standpoint of standard setters, Schipper's definition analyses the consequences and trade-offs between different study design options in earnings management research. Healy and Wahlen's definition will be adopted. Earnings manipulations are done through accruals as accounting standards give discretion to firms on how many future earnings are to be matched with current outgoings. Each of the discretionary accrual models has its weaknesses, and most of them were developed to improve on the failings of their predecessors. This study will employ the cross-sectional variation of the Modified Jones model. Window Dressing, internal targets, income smoothing, and external expectations are some of the motivations towards earnings management. The research study aims to address several gaps and contribute to a more nuanced understanding of the link between CSR and earnings management. The identified gaps include Limited Focus on Earnings Management, Contextual Variations and Industry Specificity, Dynamic Nature of CSR Initiatives, Proxy for CSR, Moderating Factors: Integrated Theoretical Frameworks, and Long-Term Financial Consequences.

Four hypotheses have been developed and introduced. Considering the main ideas, research has shown that A higher commitment to corporate social responsibility results in lower levels of earnings management and vice versa; high earnings management results in low earnings quality and vice versa; high earnings quality results in high financial performance, and the opposite is true; and an increase matches an increase in corporate social responsibility in financial performance. Empirical evidence has shown that the direction in which earnings are managed depends on the industry. The oil and gas industry faces much scrutiny from politicians, and its fortunes are tied to the political process. Using the

theoretical framework; the researcher constructed a conceptual model linking theories of corporate social responsibility and their specific motivations for managing earnings. Theories of CSR include Agency, stakeholder, steward, resource dependency, transaction cost, political and legitimacy.

Chapter 3 : Data and Methods

3.1 Introduction

The methodology section aims to advance the appropriateness of data collection techniques and methodological approaches, demonstrate knowledge of data collection techniques and their methodological implications, and justify their use over alternative techniques. This chapter outlines the data collection and analysis procedures employed in this study to address the research questions and objectives. The chapter begins by discussing the overall research design, followed by a detailed description of the data collection methods, including sampling strategies and instruments. The chapter then elaborates on the data analysis techniques utilised, encompassing the use of the system GMM to examine the relationship between corporate social responsibility (CSR) and earnings management (EM). Additionally, the chapter addresses the measures taken to ensure the validity and reliability of the research findings, demonstrating the trustworthiness and credibility of the study. Finally, the chapter discusses the ethical considerations addressed throughout the research process.

3.2 Data and sources

The research is based on data from listed companies on the London Stock Exchange (LSE) from 2010 - 2019. The ten years were chosen to avoid the effects of the 2008/9 recession and COVID-19, which started rampaging economies in January 2020. Almahrog (2018) also avoided the financial crisis period of 2008, arguing that the pressures of economic downturns are associated with pronounced earnings management practices. The data will be sourced from the LSE website and Fame and the ESG ratings from DataStream. Non-random sampling will be used in this study. As of 30 April 2020, there were 2,020 listed companies on the LSE, of which 1,967 had available data on Fame. The top 100 and top 250 companies by market capitalisation on the LSE are classified as FTSE-100 and FTSE-250 share indices, respectively. There is also the FTSE-350 index, comprising the FTSE-100 and FTSE-250 constituents. The sample for this study will comprise the FTSE-350 companies on the London Stock Exchange.

Sources

The financial data for five years is available free on the London Stock Exchange website: https://www.londonstockexchange.com/live-markets/market-data-dashboard/price-explorer and financial data for ten years is available for UK students and university alums on FAME, https://fame.bvdinfo.com/version-202073/fame/1/Companies/Search

ESG ratings are obtainable through DataStream.

3.3 Population and Sample

Inferences about a population can be made by testing a sample from that population (Gay et al., 2015). A sample is a portion of the population that shares the same traits as the broader population from which it was drawn. When conducting a quantitative study, testing a sample might help the researcher conclude the performance of the population. In empirical research, the size of the sample depends on the population's size, whether the units of analysis are homogeneous (very similar) or heterogeneous (dissimilar), and the degree of precision required in making predictions regarding the population from the sample. There are models available (expressed as an equation) that can be used to calculate the sample size to produce valid and reliable results. In sampling, the general rule is that the larger the population, the lower the population percentage needed to obtain a representative sample (Gay et al., 2015). However, Rooney and Evans (2018) argue that consideration should be given to the effect size. If the size effect is large, a relatively small sample might produce significant results if the independent variable's relationship with the behaviour was strong, and the control was tight.

On the other hand, if the effect size is small, a larger sample is required to achieve statistical significance. Compared to laboratory research, field research will require a large sample with greater variability in the data, leading to significant results. Therefore, larger samples are used in field research, where there is typically less control than in the laboratory—concluding that there is a trade-off between sample size and effect size.

The previous paragraph introduced several terminologies with the definitions offered below.

Population: In statistics, a population collects all relevant items or individuals. Typically, studies designate their population of interest at the outset. Populations may be limited in size but may also be significant, for instance, all smokers, all British adult females, and all valves made at a particular factory. Additionally, populations can grow indefinitely. For all potential outcomes of a series of trials, like tossing a coin, infinite populations are used as an illustration. The study's population comprises all the businesses listed on the London Stock Exchange.

The Effect Size: The degree to which the phenomena are present in the connection, or the degree to which the null hypothesis is untrue, is known as the effect size (Ellis, 2010). The likelihood of random error decreases as the effect magnitude increases. It is evident that Study A significantly influences the sample, but this is not enough.

The Sample Size: The sample size, denoted by N, also refers to the number of observations, and it establishes how much sampling error is there in each result. Hypothesis tests can identify more subtle effects with more significant sample numbers. The less dramatic effect of a study may be statistically significant if the sample size is large enough. The top 350 LSE businesses by market capitalisation form the sample of this study.

Statistical power: This is the implied or chosen Type II error rate (β) of the test. For example, if the acceptable level of β s .20, the desired power is .80 or $(1-\beta)$. In this case, the false null hypothesis is correctly rejected. Considering this, power and a Type II error have an opposite connection. Power is calculated as power = 1 – β; thus, a power of 80% indicates an 80% chance of seeing an effect. The 20% chance that the effect might not be detected is due to sampling errors, which may sometimes cause a random sample to misrepresent the population.

Variability: Even when there is no meaningful effect, random sampling error is more likely to result in significant variations between the experimental groups when your sample data are more variable. If Study A's sample data are sufficiently variable, random error may be blamed for the significant difference.

Leedy and Ormrod (2015) provide the following rules of thumb:

N ≤ 100	The entire population
N = + 500	50% of the population

N = + 1,500 20% of the population

N = 5,000 or more 400 units

Naimpally (2018) goes deeper than Leedy and Ormrod (2015) by introducing six rules of thumb. These rules determine the sample size and statistical power. These rules of thumb outline the key relationships between the determinants of statistical power and sample size. They also demonstrate the way to design a high-powered randomised evaluation.

1st Rule - The statistical power of an evaluation increases as the sample increases.

2nd Rule - A larger size is required in programs with a small effect size to achieve a given power level.

3rd Rule – The evaluation requires a larger sample size if the population is characterised by high outcome variation.

4th Rule - A large sample size is required when there is low take-up in the evaluation of a program.

5th Rule - If the sample is equally split between the treatment and the control group, the power is minimised for a given sample size.

6th Rule - A larger sample is needed if the outcomes of individuals in clusters are similar. Randomising at the cluster levels reduces the power of the evaluation. On the other hand, randomising the individual l increases the power.

3.3.1 Archival Research

When original research data is unavailable, researchers may resort to utilising archival data, granting them more control over the collected information. However, circumstances such as a pandemic, like the one experienced with COVID-19 in 2020-21, can hinder the gathering of original data, making archival data a valuable alternative. According to Fawcett (2008), archival data can be used when it is available, when it is relevant, when you do not have the time and resources to collect it yourself and when it can inform your evaluation.

Moers (2006) defines archival research as an empirical study employing quantitative research techniques on archival data. Archival data is information already in existence in

someone else's domain originally gathered for purposes other than academic research. The reason for the storage of such information is legal requirements. The data would have been produced initially just for reporting, as is the case with financial data, or just kept for reference or as an internal record and as it is historical data and a result of completed activities, it is referred to as fixed data as it is no longer subject to change (Fawcett, 2008). The nature of the data for this research will entail using archival methods as they are the only realistic alternative (Smith 2019).

Archival data can be categorised into public data, accessible to anyone, and proprietary data, accessible only to the data owner. Noteworthy databases for financial data include Thomson Reuters DataStream, FAME, and COMPUSTAT. Fawcett (2008) emphasises that researchers should use archival data when available and relevant when time or resource constraints exist and when it aids in the evaluation process. Fawcett (2008) emphasizes that researchers should use archival data when available and relevant when time or resource constraints exist and when it aids in the evaluation process.

3.3.1.1 Advantages of Archival Data Financial Information

Archival data presents several advantages, including:

1. Accessibility: Archival data may already be available, sparing researchers from the effort of creating surveys or experiments.
2. Extensiveness: Third-party information, often collected by large organisations, tends to be more extensive than academic research data, allowing for a more comprehensive analysis.
3. Larger Samples: Archival data typically involves larger samples, reducing issues associated with small sample sizes, such as low statistical power.
4. Perceived as Hard Data: Archival data is often considered "hard data" with fewer concerns about perception biases.
5. Furthermore, archival data can take the form of time series or panel data, enabling a dynamic analysis of research problems and better reflecting the actual dynamics of management accounting practices.

3.3.1.2 Disadvantages of Archival Financial Data

Despite the advantages, there are also disadvantages to using archival data:

1. Limited Disclosure: Management accounting practices are often not widely disclosed, especially as they pertain to internal company processes.
2. Selective Information: Companies may selectively disclose information that portrays them positively, potentially leading to incomplete or biased data.
3. Aggregated Information: Financial information in the public domain is typically aggregated at the company level, limiting the depth of analysis, especially in management accounting research.
4. Confidentiality Challenges: Accessing confidential information requires substantial effort and permission from the data owner.

Researchers must carefully weigh these advantages and disadvantages when choosing to use archival data for addressing specific management accounting problems. The implicit assumption is that archival data can provide insights comparable to other forms of data.

3.4 Research Design

Our methodological approach will follow the research onion as a roadmap. The research onion (***Figure 3-1***) illustrates different choices at all stages of a researcher's journey regarding research philosophy, approach, methodology, etc. This chapter is organised according to the research onion presented by Saunders et al. (2019).

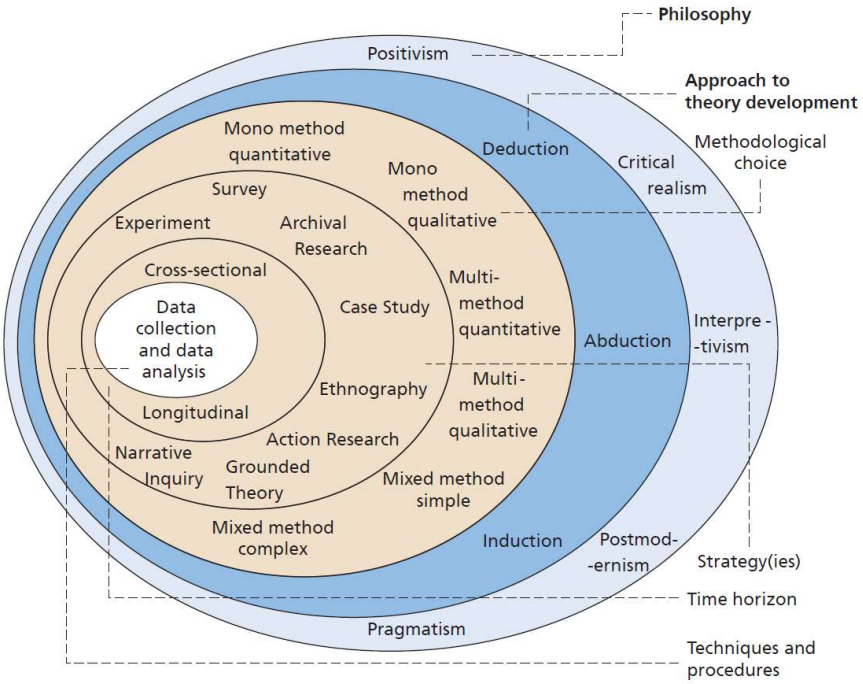

Figure 3-1 Research Onion

Sources: Saunders et al. (2019)

This study's research approach can be represented by an Iceberg Model **(Figure 3.2)** adapted from Fartning (2016) and Harman & Stilwell (2021). The tip of the iceberg represents research methods because they are the most tangible and visible processes characterised as doing tools. The research is an archival study with secondary data analysis. Much of the iceberg is submerged and represents the less visible/tangible or theoretical methodology and paradigm known as thinking tools, soft facts, or unquestioned assumptions. Methodology and paradigm are the underwater foundations that support the methods depicted in the iceberg's tip.

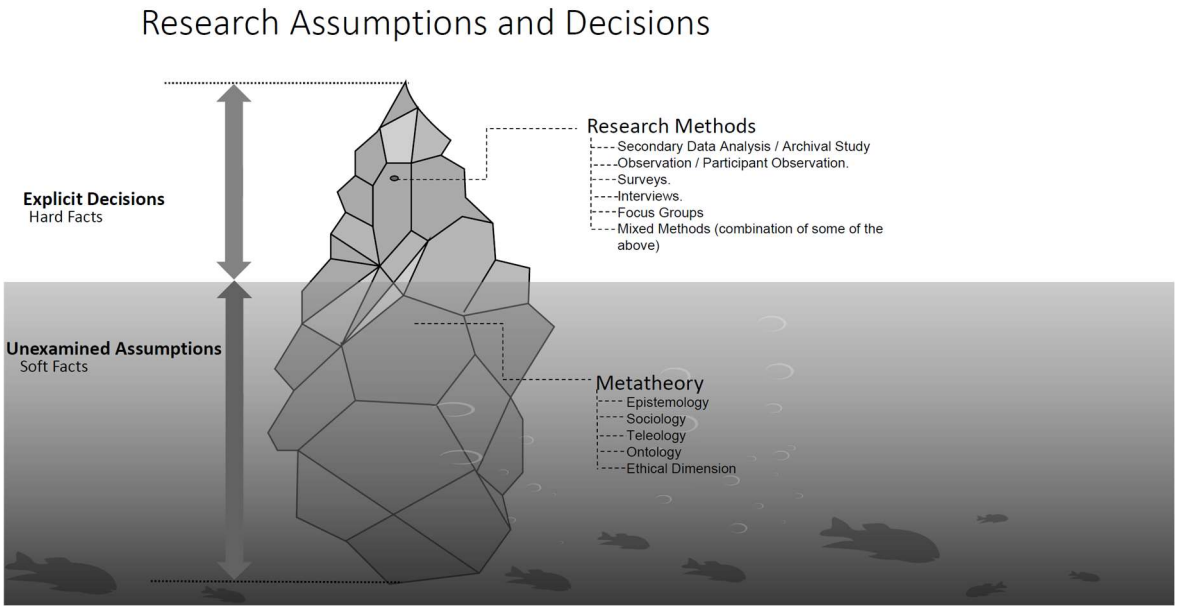

Figure 3-2 The Research Iceberg Model

Source: Researcher construction, 2023 and Lor (2019)

3.4.1 Research Philosophy

There are currently five major research paradigms that can be adopted: positivism, interpretivism, transformative, realism, and post-positivism. Accepting interpretivism, transformative, or realism automatically implies a rejection of positivism, while accepting post-positivism involves partial rejection of the aforementioned (Corry, Porter & McKenna 2019). According to Kirby (2013), the demise of positivism was a result of (a) its naïve empiricist observations, (b) its argument that justification can only be achieved through two methods - manipulations and physical operations, (c) its hostility towards metaphysics, and (d) that Comte's scientific method is the only path to knowledge. Post-positivism has superseded positivism as the guiding paradigm of the scientific.

3.4.2 Post-Positivism

Post-positivism will be explained below, but for context and perspective, positivism is explained first. A comparison with post-positivism can be found in **Table *3-1***. According to positivism or logical positivism, scientific methods are the only way of establishing truth and objective reality, and the methods, techniques and procedures employed in the natural sciences provide (Wagner et al., 2012). The term positivism was given prominence by social

philosopher Auguste Comte (1798–1857). Positivists lean towards quantitative methods, including official statistics, as they have good reliability and representativeness. To this end, this research is based on financial data from the London Stock Exchange, which is the custodian of financial data for all listed companies. Companies are obliged to provide such accuracy or risk being delisted. Post-positivism is a technical field of interest that investigates cause and effect. Variables can be controlled, and their research results have the predictive capacity and can be generalised. The main criticism of positivism is that it was blinkered towards empiricism and rejected the subjectivity of facts. Post-positivism has since emerged as a replacement, and it combines qualitative and quantitative methods to explore the diversity of facts (Panhwar, Ansari & Shah 2017:255)

The Positivist/post-positivist/empirical paradigm can be summarised as follows: *Ontology:* There is a stable external reality 'out there' which is rational and observable – law *Epistemology*: An objective and detached observer can discover the truth. *Methodology*: Post-positivism uses hypothesis testing involving empirical/quantitative and quasi-experimental methods. Post-positivism may be viewed as a reaction or adaptation to positivism. Before the 20th century, the understanding of the university was mostly through mechanistic and deterministic approaches. However, this was no longer adequate halfway through the century, as evidenced by the theories of relativity, quantum, and uncertainty principle (Lor 2019). Although these paradigmatic shifts occurred in the natural sciences, they are relevant to the social sciences because positivists in the social sciences tend to emulate natural sciences approaches in the first half of the 20th century. Post-positivism, as well as positivism, believe the truth to be probabilistic and provisional rather than absolute. Observations can influence the observers in their quest for the truth. Reality should be viewed from different angles to counter bias and potential errors. The standardised technique is recommended using more than one research (Pickard 2017:7–11; Lor 2019:174; Guba & Lincoln 1994:110). However, this may not be feasible, especially in this research, with time and financial constraints. Hence, the phenomenon is looked at from more than one angle. Post-positivists employ both qualitative and quantitative research but lean more towards the latter, and this ability to combine the two methods allows for the exploration of a diversity of facts (Panhwar, Ansari & Shah 2017)

Metaphysics or paradigms refers to beliefs dealing with the first principles. For its holder, metaphysics "represents a worldview that defines the nature of the world, the individual's place in it, and the range of possible relationships to that world and its parts" (Guba & Lincoln, 1994, p. 107). It is impossible to establish the truthfulness of beliefs; hence, it must be accepted on faith even if argued well. Critical realists believe in social reality, but the ability of humans to unlock this reality is hindered by their infallibility (Pickard 2017:7). Reality exists. Still, the human intellectual mechanism is so flawed that they cannot truly comprehend it (Lor 2019:201). It is called critical realism because a position or argument put forward by proponents about the nature of reality must be critically examined to facilitate a better understanding of reality).

In terms of epistemology, a modified dualist/objectivist version is adopted. Following critical traditions, if followed, will guide you towards objectivity. When researching, you must compare your findings with prior research and knowledge. As a measure of objectivity, your finding should be able to be replicated without falsification. The methodology in post-positivism advocates for experimental manipulation. A hypothesis should be falsified (rather than verified) using critical multiple, a form of triangulation. Qualitative methods should be used to understand the meaning and purpose humans ascribe to their actions (Glaser & Strauss, 1967; Strauss & Corbin, 1990).

3.4.2.1 Post-positivism Critique

The differences between Positivism and Post-positivism (**Table *3-1***) also highlight post-positivist recidivism. Post-positivism still maintains that large cultures are the basic units of research. Therefore, they can be triangulated and sampled, and researchers can maintain objectivity throughout the investigative processes of interview and observation. They are mindful of the pitfall of stereotyping and recognise that intercultural (Holliday & Macdonald, 2020). However, Loughlin (2020) rejects this characterisation and argues that recidivism is not a weakness but a complementary relationship between positivism and post-positivism, but also notes that post-positivism sows the seeds for intellectual incoherence as it does not offer guidance for choosing among multiple competing explanations produced by methodological pluralism and relativism.

Table 3-1 Difference between Positivism and Post-positivism

	Post positivism	Positivism
1	Consistently and systematically observing occurrences of conjunction allows for testing hypotheses positing a causal relationship (hypothetico-deductivist).	Through systematic and ongoing empirical observation of instances of conjunction, causal laws are discovered (inductivism)
2	The purpose of observation is to disprove theories about causal connections (falsification).	If observation shows that the events under investigation always occur together, causal laws are confirmed to exist (verification)
3	While science can eliminate unfounded theories, it can never conclusively determine the true nature of causal laws.	The fundamental nature of causal laws is something that science can reveal.
4	The scientist has a creative function to perform in the research process because their job entails creating conjectures and hypotheses.	The scientist is responsible for methodically examining and documenting instances of continual conjunction and creating or confirming hypotheses based on those findings.

Source: Corry et al. (2019:7)

3.4.3 Logic and Research

Applying logic to the data used for the research allows the researcher to develop their argument. There are two types of logic, deductive and inductive, that approach the research question differently. Deduction moves from theory, testing and then observation. Induction moves the opposite way by starting from observing the empirical world to building a theory. Statements or assumptions which are widely accepted truths and self-evident are known as premises—one or more premises from the beginning of deductive logic. Based on observations, the reasoning proceeds logically from these premises to conclusions that must also be true (AbuSneineh & Zairi, 2010). Deductive logic is useful for generating hypotheses and testing theories generated through deductive reasoning. Deductive reasoning works from the more general to the more specific. Sometimes, this is informally called a 'top-down' approach. A conclusion follows logically from premises (available facts) (Malhotra et al., 2017, p. 1138)

To illustrate, the following example of a student in their final year of a taxation course who appears to be performing well in tax with higher grades than for other courses like finance or economics can be used. The premise to start from could be that the student is performing

better due to the better technique used by the tax lecturer. It can be argued that if other lectures adopt the technique, the student will also perform well in finance and economics.

On the other hand, inductive logic usually begins with a general observation before specific instances or occurrences are employed to draw general conclusions. In research, a sample is drawn from the population, which is then observed, and conclusions are drawn about that population. Still, on the example of the student, after observing the differences in results for the student, data is collected through questionnaires and interviews on possible causes for the differences. Based on the data, it will then be concluded that the tax lecturer technique accounts for better performance in taxation results.

AbuSneineh and Zairi (2010) quoted a classic example often cited as 'the black swan'. Deductive logic would assume that all swans are white. Many observations would be recorded of swan' sightings; when no black swans are found, the assumption or premise would be supported. Inductive logic would ask the question – are all swans white? Again, many observations would be recorded, and eventually, the conclusion could be made that all swans are white. Deductive logic is usually associated with the postpositivist paradigm and hypothesis testing, while inductive logic is usually associated with the non-positivist paradigms to generate hypotheses or theories. In many cases, both types of logic are used to develop the thesis (argument)

Post-positivism theories positing a causal connection are scrutinised through meticulous and ongoing empirical observation of conjunction (hypothetico-deductivist). Causal laws are discovered through systematic and ongoing empirical observation of instances of conjunction (inductivism). The purpose of observation is to disprove theories about causal connections (falsification). If observation shows that the events under investigation always occur together, causal laws are confirmed to exist (verification). Science can eliminate unfounded theories, but it will never be able to prove causal laws to be what they truly are. The true nature of causal laws can be discovered via science. Conjectures and hypotheses are developed as part of the scientist's job; hence, they play a creative role in the research process. Scientists' tasks include methodically observing and documenting instances of continual conjunction and creating or confirming hypotheses regarding rules based on those observations. Therefore, the goal of the research method selected for this study is to develop

a hypothetical-deductive model through hypothesis formulation, draw testable conclusions from it, and test its validity by attempting to falsify it through empirical observation, rejecting the hypothesis if they do not hold, and confirming the hypothesis if they do pass (Gill & Johnson, 2010; Kyburg, 1983). Neoclassical economists are the main users of this logical approach (Bresser-Pereira, 2010). The model is an advancement over the original deductive approach, criticised for being overly liberal by taking almost any observation as support for any theory (Lipton, 2001; Rappaport, 1996; Salmon, 2006).

Following post-positivism, theories of a causal relationship between variables are then examined through the systematic and empirical observation of conjunctions (hypothetico-deductivist). The observation is used to disprove the hypothesis through a process known as falsification. Verification will then confirm the existence of causal laws between the variables. Science can uncover the true nature of causal laws. Therefore, the scientist's role is to develop conjures and hypotheses, make systematic observations, and verify those statements about laws. Hence, the objective of the chosen research method for this study is to come up with a hypothetical-deductive model achieved through hypothesis formulation, drawing testable implications from it, testing its reliability by attempting to falsify it through empirical observation, rejecting the hypothesis, if they fail; and confirming the hypothesis, if they pass (Gill & Johnson, 2010; Kyburg, 1983). This deductive method is mostly used by neoclassical economists (Bresser-Pereira, 2010). The model is an improvement of the original deductive model, which was thought to be over-permissive by treating virtually any observation as evidence for any hypothesis (Lipton, 2001; Rappaport, 1996; Salmon, 2006).

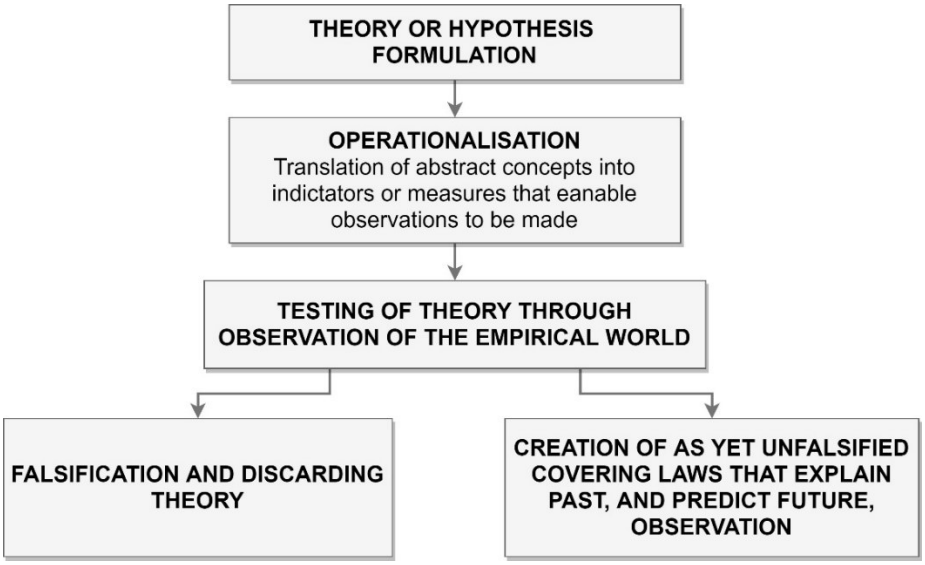

Figure 3-3 The Process of Deduction

Source: Gill and Johnson (2010)

3.4.4 Panel Data Econometrics

Panel data refers to the aggregation of behavioural observations from various participants (entities) and periods (Baltagi, 2013), and according to Arellano (2003) and Ammari (2007), subjects can be workers, households, firms, industries, regions, states or a country. This research will involve firms. A panel is a set of observations on individuals collected over time. In regression, an observation is denoted by x_{it}, y_{it} where i is the subject and t denoting time (Hansen, 2016); panel data enables the researcher to account for variables like the variation in business practises among organisations or cultural elements that are sometimes difficult to observe and measure. Panel data also allows you to control for other variables that change over time but do not vary between subjects, such as laws and regulations or the government; doing so accounts for individual heterogeneity. Panel data enables the researcher to account for variables like the variation in business practises among organisations or cultural elements that are sometimes difficult to observe and measure. Panel data also allows you to control for other variables that change over time but do not vary between subjects, such as laws and regulations or the government; doing so accounts for individual heterogeneity. Panel data analysis is appropriate for hierarchical modelling because it allows for the inclusion of variables from many levels of study. However, there are problems to overcome when using panel data, e.g. data collection issues to do with

sampling design and coverage, and there can also be non-response issues in micro panels or cross-country dependency in macro panels (Ammari, 2007).

3.4.5 Overview of Statistical Analysis Software

Today, the main econometric/statistical software used in accounting research are - Stata, EViews and SPSS. The type of data, the research question, the level of analysis needed, and the researcher's familiarity with computing and econometrics all play a role in the programme selection. Microeconometrics is primarily done with Stata. Statistical Package for The Social Sciences (SPSS) is a statistical program, as the name implies, primarily used in the social sciences, educational sciences, and health sciences. It is used for survey analysis and various social scientific measurements. The program's data are obtained using descriptive statistics, which calculate mean, standard deviation, mode, and median values. 'Frequency analysis' is then used to discover how the data are distributed numerically. The SPSS application allows for relationship analysis, such as regression and correlation. Regression analysis only works with normally distributed data, but correlation analysis can be applied to both normally and non-normally distributed data. Parametric and non-parametric analyses are generally separated into two divisions in studies of comparison or relationships. Various factors will determine which of these analyses is used. The main criterion is whether the data meets normal distribution and homogeneity requirements. It is necessary to have statistical knowledge to discern between homogeneity and normal distribution. Due to its accessibility and characteristics that are specifically designed for panel data, SPSS will be used in this investigation.

Econometric Views (EViews) are useful for visually entering data from the keyboard or recorded files. It is a recommended program to print out series, generate new series from existing ones, and perform statistical comparisons between series. It is a Windows statistics package software. Also frequently used for econometric analysis is EViews. EViews is a program that combines spreadsheet and relational database technology with aspects of conventional statistical tools. Incorporating the outputs into applications like Word and Excel is another helpful feature. Regression analysis and econometric analysis both frequently employ EViews. The ability to apply it for general statistical analysis objectives can also be asserted. EViews allows for analysing horizontal sections, time series, and panel

data. Excel, SPSS, SAS, Stata, Rats, and TSP file types are also supported. The least squares method can be used in EViews to execute complex procedures, including logistic regression, weighted regression, simultaneous equation systems, regression analysis, and coefficient statistics. Additionally, EViews supports simulations, vector autoregression, cointegration, granger causality tests, time series analysis, and vector autoregression.

Despite not being widely utilised in the UK, the Stata programme is one of the most widely used programmes for data analysis worldwide. It is feasible to say that the Stata programme is increasingly employed, notably in the social sciences and health sciences. The ability of this application to analyse in both code and window form is by far its most significant benefit. The examination of panel data is significant, particularly in contemporary econometric studies. All requirements in the areas of data analysis, data administration, and visualisation can be satisfied by the Stata programme. Due to its benefits in panel data econometrics, it is a software program commonly used for econometric analysis. Platforms for computing like Windows, Mac, and Unix are all compatible with Stata.

Stata features a point-and-click user interface, a robust and clear command syntax, and an online help system that users can access when facing problems. This makes using Stata simpler. All analyses can be duplicated and documented with Stata for publication and evaluation. The software also includes additional features for modelling, dynamic panel data regressions, generalised prediction equation analysis, multi-level mixed models, sample selection models, multiple loss data replacements with an appropriate value, cluster analysis, standardisation of ratios, status-control analysis, fundamental tables, and summary statistics. Stata's powerful data management Uses linked data sets, so you can manipulate the variables in this circumstance and provide statistics.

Broadcast-quality images are included in the Stata application. Stata makes it easy to produce distinct style visuals of publishing quality, such as contour, distributional, time series, and regression graphics. Thanks to the integrated graphic editor, you can update your graphic with just one click and include titles, notes, lines, arrows, and text. Matrix programming is a component of the Stata programme MATA that provides an interactive matrix manipulation interface and a complete development environment where constructed and optimised programmes can be created. It can work with simple or complex matrices,

fully supports object-oriented programming, and is fully interoperable with Stata. It also provides special tools for processing panel data.

In summary, Stata is a contemporary, all-purpose software program for managing data, performing statistical analyses, and creating visualisations. For example, taking EViews is common for Time series and Panel analysis; SPSS is limited to explanatory analysis (descriptive analysis). However, STATA allows for analysis of cross-sectional, time-series, cohort study, longitudinal, repeated-measures, and correlated data - survival-time data. It is used by many fields of study, including economists, social scientists, political scientists, biostatisticians, epidemiologists, sociologists, geographers, medical researchers, psychologists, and other research professionals needing to analyse data. Due to its availability and its features tailor-made for panel data, as explained above, Stata will be used in this study.

3.4.6 Types of Panel Data

A panel data set consists of n entities or subjects, each of which has T observations made from 1 through t at different points in time. As a result, there are nT total observations in the panel data. Ideal panel data measurements should occur regularly (e.g., year, quarter, and month). If not, panel data analysis should be done with care. A panel may be long or short, fixed or rotating, balanced or unbalanced, etc.

3.4.6.1 Long vs Short Panel Data

When a panel has large n , i.e., a wide cross-sectional area, and fewer T it is a short panel. On the other hand, a long panel will have a smaller n but larger T (Cameron and Trivedi, 2009. The problems of too small N (Type I error) and too large N (Type II error) matter. When using short or long panels, the researcher should be prepared for Type 1 errors due to many entities (n) or Type II errors caused by too large T too.

3.4.6.2 Balanced vs Unbalanced Panel Data

In a balanced panel, every entity has measurements for every period. A contingency table, called a cross-table, should only have one frequency per cell and incorporate cross-sectional

and time-series data. *n*T thus represents the total number of observations. This guide assumes that there is well-balanced and organised panel data collection. The panel data are not balanced when the number of observations for each entity in a data collection varies. Some cells in the contingency table have 0 frequency. Consequently, the total number of observations in an unbalanced panel is not *n*T. Even though most software programs can handle both balanced and unbalanced data, unbalanced panel data present some computation and estimating challenges. The econometric data analysis used in this research is adversely affected by unbalanced panels, which occur when time-series data is not of equal length. In balanced data, an observation is denoted by.

$$\{x_{it}, y_{it}\} : t = 1, \dots, T; \quad I = 1, \dots, n,$$

And its error term is represented as. $u = mu + v$

With an unbalanced data panel, the error term *e* is introduced to the equation. If the value of e becomes significant, it exerts pressure on the system, which becomes problematic.

$$\{x_{it}, y_{it}\} : \text{For } i = 1, \dots, n, \quad t = \underline{t}_i 1, \dots, \bar{t}_i.$$

and its error term is represented as $u = mu + v + e$

a method by taking special care in initial sampling and ensuring the number of observations is not affected by such sampling.

3.4.7 Advantages of Panel data

Controlling for individual heterogeneity. Using panel data has the main benefit of not treating things as homogeneous groups. The data recognise the heterogeneity of entities such as firms, countries, individuals, and states. When this variability is not controlled, time series and cross-section investigations could produce skewed results, as Moulton (1986, 1987) demonstrated. Let's use a real-world scenario to illustrate this. The demand for cigarettes in 46 American states from 1963 to 1988 is examined by Baltagi and Levin (1992). Lagged consumption, price, and income are all considered in the consumption modelling. The conditions and the time affect these variables. But there are a lot of other factors that could have an impact on consumption that might be state-invariant or time-invariant.

We'll refer to these as Z_i and W_t, respectively. Religion and education are two examples of Z_i. Suppose one were to look at the religion variable. In that case, one might not be able to determine, for example, the proportion of the Mormon population in each state for every year, nor would one presume that it would change significantly over time. The population's proportion of graduates from high school or college is the same. W_t examples include radio and TV advertising. There are no regional variations in this national advertising.

Furthermore, not all Z_i or W_t variables are difficult to measure or get; therefore, they cannot all be used in the consumption equation. When these factors are excluded, the estimates that are generated are biased. Time-series research or a cross-sectional study cannot consider these state- and time-invariant characteristics, but panel data can. According to the statistics, Utah has a per-person cigarette consumption of less than half the national average. Due to the state's predominately Mormon population, which outlaws smoking, this is the case. Utah can be controlled for in a cross-section regression by using a dummy variable, effectively removing Utah's observation from the regression. This is not true for panel data. Using panel data allows one to effectively account for all state-specific characteristics by first diffusing the data to remove all Z_i -type variables. Whether the Z_i can be seen or not, this remains true. Instead, the dummy variable for Utah eliminates the data for Utah without adjusting for any state-specific effects unique to Utah.

Hajivassiliou (1987) used a panel of 79 developing nations monitored between 1970 and 1982 to study the problem of repaying external debt. These nations' colonial histories, banking systems, political systems, and religious affiliations are all different. All these factors unique to each country impact how these nations view borrowing, defaulting, and how lenders view them. Serious misspecification results from failing to take this national heterogeneity into account. Another illustration from agricultural economics is provided by Deaton (1995). This discussion will focus on how much smaller farms are more productive than larger ones. The land coefficient estimate is typically negative in OLS regressions of yield per hectare on inputs like land, labour, fertiliser, farmer education, etc. According to these results, smaller farms are more productive. Some explanations from economic theory say that hired labour requires more monitoring than family labour and that the best approach for small farms to deal with uncertainty is to increase production per person. Deaton (1995)

offers a different justification. This regression is faulty because it does not consider the systematic relationship between the explanatory variables. ‘Land quality’ is an example of the unobserved heterogeneity (farm size). Farms in low-quality marginal areas (semi-desert) are typically larger than in high-quality land areas. Even while gardens produce more value per hectare than sheep stations do, Deaton contends that this does not mean sheep stations should be designed similarly to gardens. Since farm size frequently varies very little or not at all over brief periods, it may be impossible to determine whether small farms are productive in this instance.

Panel data offer more useful information, variability, less cross-collinearity between variables, and more degrees of freedom. Multicollinearity is an issue in time-series studies; for instance, In the instance of the cigarette demand for the USA, the relationship between pricing and income is substantially associated over the whole time series. This is less likely when using a panel of US states because the cross-section dimension offers much variance and more insightful data on pricing and income. There are differences between and within states of varied sizes and characteristics that account for the diversity in the data. The former variation is typically greater. With more thorough supplemental data, parameter estimates can be produced more accurately. Naturally, each state must have the same relationship—the capacity to share the data.

The dynamics of adjustment can be studied more effectively with panel data. Despite appearing to be quite constant, cross-sectional distributions can undergo significant shifts. Panel studies are more effective for studying job churn, job mobility, residential mobility, and income mobility. The panels can offer insight into how rapidly economic policy changes are enacted if the panels are sufficiently long. They can be used to analyse the duration of economic circumstances like unemployment and poverty. Cross-sectional data, for instance, can be used to estimate the percentage of the population who is jobless at a given period when gauging unemployment. The variation in this fraction over time can be seen by comparing successive cross-sections. The percentage of unemployed people in a subsequent period can only be estimated using panel data. Panel analysis is required to address important policy questions, including determining if a family's experiences with poverty, unemployment, and welfare dependency are transient or enduring. According to Deaton

(1995), panel surveys produce information on changes for specific people or families instead of cross-sections. It lets us watch how fluctuating living levels affect people as societies grow. It can be identified who gains from development thanks to it. The income dynamics issue determines whether poverty and deprivation are short-term or persistent. The estimation of lifespan and intergenerational models, as well as intertemporal connections, require panels. Panels can compare the person's past experiences and present behaviour to past experiences and present behaviour from later. Observing a group of participants and non-participants before and after a training program is one example of evaluating it.

Panel data allows for the improved identification and quantification of effects that are simply undetectable in pure cross-sectional or pure time-series data. Consider a sample of women who, on average, spend a year in the labour force at a 50% participation rate. This might be the case because (a) there is a 50% chance that every woman will be employed in any given year or (b) 50% of women work full-time and 50% do not. While Case (b) does not, Case (a) has a high turnover rate. Panel data was the only means to differentiate between these cases. Investigating whether earnings increase or decrease because of union membership is another example. This question will become obvious when a worker moves from union to non-union employment or vice versa. This helps to establish if and to what extent union membership affects wages while maintaining the individual's attributes. Other sorts of wage differentials can also be estimated using this methodology while keeping the characteristics of the workers unchanged. For instance, estimating wage premiums paid for disagreeable or dangerous jobs. Researchers examining workers' satisfaction levels run into the anchoring problem in a cross-section study. A typical survey question is, *how satisfied are you with your life?* Absolute discontent is represented by 0 and complete contentment by 10. Since everyone calibrates their scale at a different level, comparing answers between people is pointless. In panel research where the individuals' chosen metric is time, a difference (or fixed effects), The estimator will only make judgments based on internal satisfaction comparisons rather than external comparisons.

More complex behavioural models can be created and tested using panel data than cross-sectional or time-series data alone. Panels, for instance, are a superior instrument for researching and modelling technological efficiency (Kumbhakar and Lovell, 2000; Koop

and Steel, 2001). With fewer restrictions than in a study that uses time series data, panels can also use a distributed lag model (Hsiao, 2003).

Comparable factors obtained at the macro level might not be as measured adequately as micro panel data collected on people, businesses, and households. Biases from aggregation favouring certain businesses or people may be reduced or eliminated (Oliva and Watson, 2009) for specific advantages and disadvantages of estimating life cycle models with micro panel data (Blundell and Meghir, 1990).

More extended time series are present in macro panel data; in contrast to time-series analysis unit root tests, which have the problem of nonstandard distributions, asymptotic distributions for panel unit root tests are standard.

3.4.8 Limitations of Panel Data

Issues with the design and data collecting. Interview frequency, interview spacing, reference period, use of bounding, and time-in-sample bias are a few examples of coverage issues (insufficient representation of the population of interest), nonresponse (due to respondent disobedience or interviewer error), recall issues (respondent incorrectly recalling), and nonresponse issues (Svihla et al,2020).

Measurement error distortions. Measurement errors can be caused by unclear questions, memory lapses, intentional falsification of responses (such as prestige bias), improper informants, inadequately recorded responses, and interviewer effects. For instance, Herriot and Spiers (1975) compared wage information for the same people from the Internal Revenue Service and the CPS. They found that approximately 30% of the matched sample had earnings differences of at least 15%. The validation research conducted on the PSID by Duncan and Hill (1985) serves as an additional example of the importance of the measurement error issue. They contrast the employee responses from a large company with the employer's records. Apart from longer work hours, examining response biases uncovers primarily minor distortions. The ratios for yearly earnings, annual labour hours, and average hourly pay are 15%, 37%, and 184%, respectively, of measurement error variation to real variance. These numbers are for a one-year recall in 1982; a two-year recall would more

than triple those numbers. Brown and Light explore the discrepancy between the PSID and NLS job tenure responses (1992). Users of cross-section data must accept the claimed tenure values in the absence of other information.

In contrast, users of panel data can examine differences in tenure responses by comparing the interval between interviews. Respondents can say they have three years of experience in one interview but six years in another. This should notify the panel user that there has been a measurement error. As Brown and Light (1992) demonstrated, internally consistent tenure sequences can help prevent drawing incorrect assumptions about the slope of wage-tenure profiles.

Selection issues. Truncation and attrition non-response are the three selection problems with panel data. Nonresponse can also occur in cross-sectional research, but since it can continue to occur in waves after the first panel, it is a bigger problem with panels. Respondents may pass away, move, or learn that responding is expensive.

Short time-series dimension. Micro panels typically employ annual data for each person throughout a limited period. As a result, asymptotic arguments heavily rely on the population size going to infinity. The expense of lengthening the panel's duration is also considered. As a result, panel data models with few dependent variables become more computationally tricky and are more likely to experience attrition.

Cross-section dependence. If cross-sectional dependencies are not considered, macro panels on long-term nations or regions may draw incorrect conclusions. Many panel unit root tests suggested in the literature assumed that cross-sections were independent. It becomes evident that cross-section dependence must be considered and that doing so affects conclusions. It is, therefore, suggested that panel unit root tests that consider this reliance be substituted. A panel data analysis cannot solve all the problems that a cross-sectional study or a time series could not. Panel data will result in better unit root testing than individual time series. As a result, it should be easier to understand the issues of growth convergence and buying power parity. This triggered a surge of empirical applications and criticism from those who believed panel data could not resolve the growth convergence problem or the PPP, including Maddala (1999), Maddala, Wu, and Liu (2000), and Banerjee et al. (2005). The cost of

compiling panel data is significant, and questioning respondents frequently is a persistent worry. Deaton (1995) argues that because economic development takes time, changes from one year to the next are likely too pronounced and fleeting to be very helpful. He concludes that panel data pays off over extended times, such as five, ten, or even more years.

On the other hand, regarding health and nutrition issues, particularly those involving youngsters, one can argue that panels with shorter periods are important to monitor these kids' development and health. As Griliches (1986) emphasised about economic data in general, however, the more economic data available, the more it is needed. The economist must understand the limitations of all data, even panel data.

3.5 Panel Data Econometric Procedure

A quantitative approach will be adopted using multivariate regression analysis of panel data to examine if a relationship exists and the extent of the relationship between earnings quality, corporate social responsibility, and earnings quality. Steps and methods for panel regression model construction are illustrated in **Figure *3-4***. A test for panel unit root will be used, as well as cointegration, and then the Hausmann test will be used to choose between the fixed and random effects models. Suppose the results of the Fixed or random Effects Models experience multicollinearity, endogeneity, or heteroscedasticity issues. In that case, the results will be rejected, and the generalised Moments (GMM) methods will be employed. These steps will be explained in detail below in chronological order.

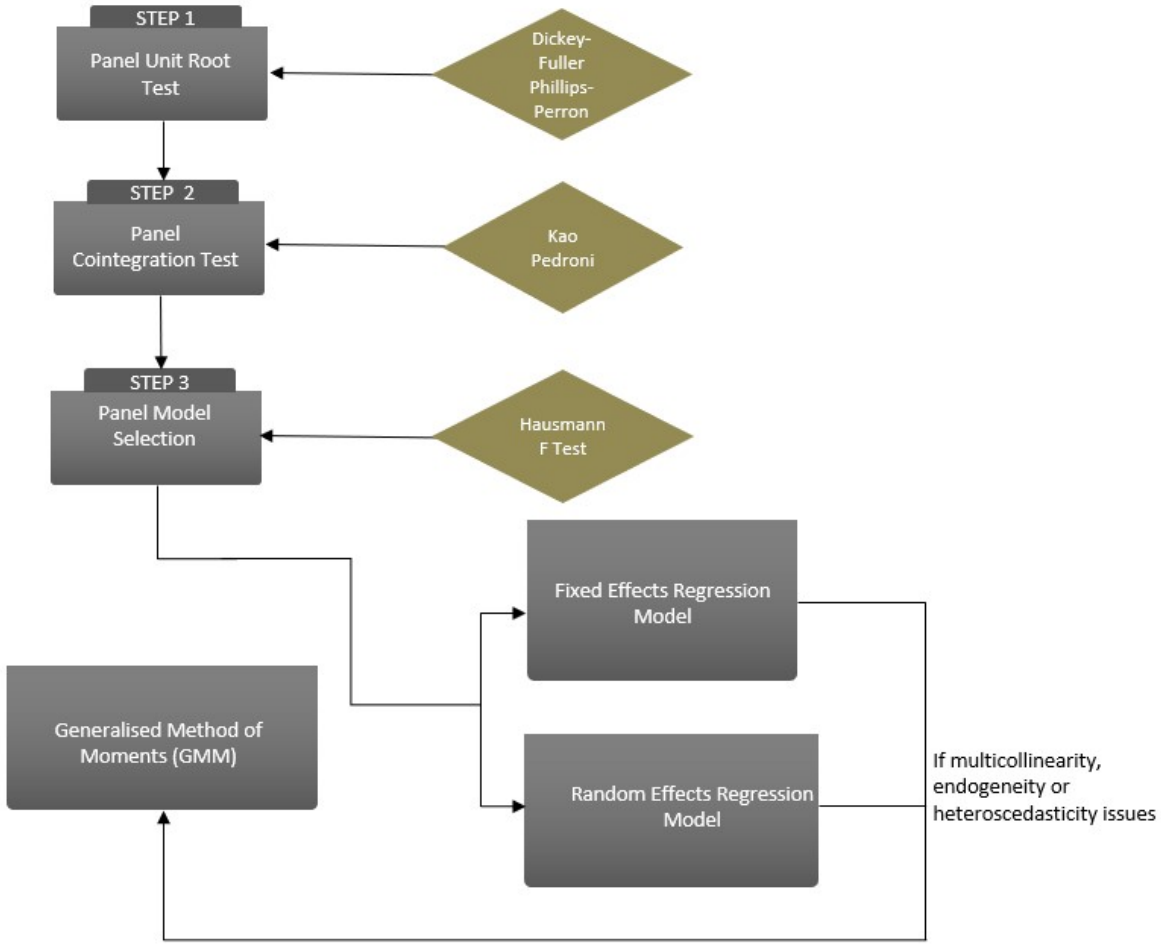

Figure 3-4 Steps and Methods for Panel Regression Model Construction

Source: Researcher and Baltagi (2013), Park (2015)

3.5.1 Test for Stationarity

Most economic variables are $I(I)$ variables, meaning they are non-stationary. Equilibrium theories require a combination of stationary $I(0)$ variables and lack will mean any deviation from equilibrium will not be temporary. For a cointegration test, two or more variables must be $I(I)$ or non-stationary. The Dickey-Fuller statistic tests whether the panel data is stationary around its mean, and the Phillips-Perron tests whether the panel data is stationary around a linear time trend.

3.5.1.1 Panel Unit Root Test

Panel unit root and cointegration tests are applied to panel data to gain statistical power while improving the poor power of their univariate units. The main outcome of these tests

is the conclusion that a significant portion of the panel data is stationary or cointegrated (Mátyás & Sevestre, 2008). The likelihood that any test of statistical significance will reject a false null hypothesis is known as statistical power. Statistical power is the probability that any statistical significance test will reject an incorrect null hypothesis. The probability of making a Type II error, or beta, determines statistical power, which is expressed as $Statistical\ power\ =\ 1 - \beta$. The likelihood that a study will find an effect when one exists and can be found is another way to explain it. The likelihood of making a Type II error or concluding there is no effect when there is one is decreased when statistical power is large. The size of the effect and sample size affect statistical power. Large samples provide greater test power, and larger effects are more straightforward to detect than smaller ones.

Panel unit root application is unavailable in SPSS and Stata, and several steps must be taken to develop the unit root. The test is essential because if you have unit roots, you should estimate a long-run equilibrium model, a short-run model with first differences, or an error-correction model. One should estimate a model in levels if there is a lack of unit roots. Estimating both a short-run (initial differences) and a long-run model in levels is usually a good idea. It hopes the primary conclusions are consistent across both specifications because unit root tests are ineffective.

3.5.1.1.1 Dickey-Fuller Panel Unit Root Test

The fundamental Dickey-Fuller (DF) test (Dickey and Fuller 1979, 1981) determines whether the answer to the equation $\rho < 1$ in the equation. $y_t = \mu + \rho y_{t-1} + e_t, e_t \sim N(0,, \hat{\sigma}_\varepsilon^2)$ Which, after subtracting y_{t-1} from both sides may be expressed as:

$$\Delta y_t = \mu + (\rho - 1) y_{t-1} + e_t = \mu + \theta y_{t-1} + e_t \qquad (6)$$

In contrast to the alternative $H_1: \theta < 0,$ or there is no unit root in y_t The null hypothesis is that. y_t has a unit root or $H_0: \theta = 0$. The DF test procedure was developed since the traditional t-distribution does not hold under the null hypothesis. Therefore, the traditional t-statistic for the estimate cannot confirm whether 0it is or not. A collection of critical values developed to handle the non-standard distribution problem and acquired through simulation are made available to us by the DF method. The test outcome is then understood as a simple

conventional regression. The two equations above reflect the simplest case where the residual is white noise. Serial correlation is usually present in the residual and Δy_t It can be modelled as an autoregressive process:

$$\Delta y_t = \mu + \theta y_{t-1} + \sum_{i=1}^{p} \phi_i \Delta y_{t-1} + e_t \quad (7)$$

According to the equation above, DF's method is now known as the Augmented Dickey-Fuller (ADF) test. A deterministic trend can also be incorporated into the same equation. There are four test specifications for intercept and deterministic trend combinations.

3.5.1.2 Phillips-Perron Test

The PP test, developed by Phillips and Perron in 1988, is a frequency domain method. It first computes the time series' Fourier transform. Δy_t as in $\Delta y_t = \mu + \theta y_{t-1} + \sum_{i=1}^{p} \phi_i \Delta y_{t-1} + e_t$ .before analysing its zero-frequency components. The PP test's t-statistic is determined as follows:

$$the\ t = \sqrt{\frac{r_0}{h_0}} t_\theta - \frac{(h_0 - r_0)}{2h_o\sigma} = c^2 \qquad \text{Where} \qquad h_0 = r_0 + 2\sum_{\tau=0}^{M}\left(1 - \frac{j}{T}\right) r_j$$

is the spectrum of Δy_t at zero frequency, r_j Is the autocorrelation function at lag j, t_θ is the t-statistic of θ, σ_θ Is the standard error of θ, and σ is the standard error Unit roots, cointegration, expected trends, and cycles 17 of the test regression. In actuality, h_0 is the variance of the one-period difference, $\Delta y_t - y_{t-1}$, while. $In\ contrast,$ is the variance of the M-period differenced series, $y_t - y_{t-M}$. Two extreme scenarios are examined: the time series is a pure random walk, and the other is a pure white noise process. In the former, $t = t_\theta$ And the standard t-distribution is applicable since, $r_j = 0, j \neq 0, and\ \ h_0 = r_0$. The latter case has $h_0 = M \text{ x } r_0$. If the first term on the right side of the equation is examined, $= \sqrt{\frac{r_0}{h_0}} t_\theta - \frac{(h_0 - r_0)}{2h_o\sigma} = c^2$, t has been modified by a factor of $\sqrt{\frac{1}{M}}$, and further diminished by the value of the second term, $\approx \frac{\sigma_\theta}{2\theta}$. To account for the influence of non-conventional t-distributions, which become more pronounced as ρ approaches unity, the PP test gradually

diminishes the significance of the estimate as one proceeds from zero to unity (or as θ moves from −1 to 0).

3.5.2 Panel Model Selection

The guide to model selection can be visualised in **Figure *3-5***. The options and the decision-making at each stage will be explained below,

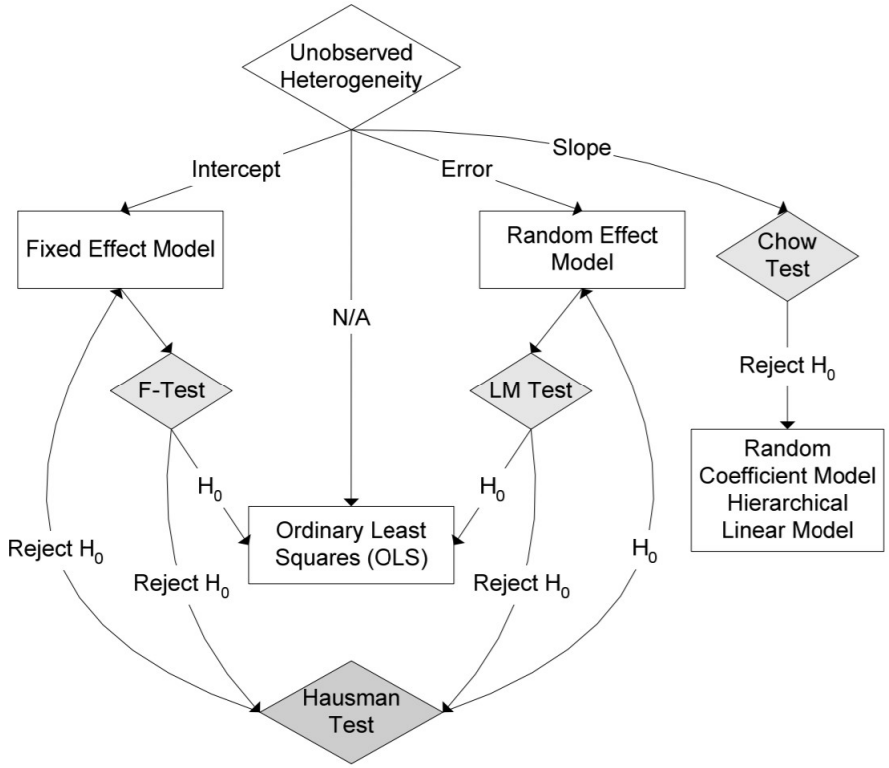

Figure 3-5 Step-by-Step Panel Model Selection

Source: Park (2015)

3.5.2.1 Fixed-Effects Models

The primary criterion for selecting between the fixed and random effects models is whether there is unobserved variability in the cross sections. The individual state intercepts are not included in the random effects model, which also has bias due to missing variables. The only option in this situation is the fixed effects model. However, the random effects model might be worth exploring if the cross-section dummies seem unimportant. The third consideration is whether the data set may be viewed as a representative sample of a larger population,

especially if the data set included observations on particular people resurveyed at various periods. It does not make much sense to suppose that West Midlands, for example, has been randomly selecting from a broader population of potential but unrealised counties in cases when observations are on states, cities, counties, or countries. The Fixed-Effects models should be employed because the UK only has one hundred counties, and data from all one hundred is being collected (Moody, 2009).

The fixed effect model is the only option when considering time-varying components. The fixed effect model examines how predictor and result variables relate to one another within an entity (country, person, company, etc.). Everything has unique qualities that could influence the predictor variables or not (for example, being a male or female could influence the opinion toward certain issue; or the political system of a particular country could have some effect on trade or GDP, or the business practices of a company may influence its stock price). When employing a fixed effect model, the possibility that a specific person may influence or bias the result or predictor variables might need consideration. This rationale supports the correlation between the entity's error term and the predictor components. An analysis of the entire impact of the predictors on the outcome variable is made possible by a fixed effect model by removing these time-invariant properties from the equation. The Fixed Effect model's time-invariant properties are considered unique to the person and unrelated to other aspects of their personality. Since each object is distinct from the others, there shouldn't be any correlation between the error term for each and the constant (which encapsulates special features). The primary goal of the Hausman test is to ascertain whether the error terms are related; if they are, the Fixed Effect model is inappropriate since faulty inferences must be modelled (probably using random effects) (Ammari, 2007). The fixed effects model's equation is:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it} \quad (8)$$

Where Y_{it} Is the dependent variable (DV), i is the entity, t is the time, and α_i ($i=1 \ldots. n$) is the unknown intercept for each entity (n entity-specific intercepts). One independent variable is represented by – X_{it} , its coefficient is β_1, and its error term is, u_{it}. The crucial finding is that changes in the dependent variable must be attributed to forces other than these

fixed qualities if the unobserved variable does not vary over time (Stock and Watson 2003). For time-series cross-sectional data, the beta coefficients would mean that for a specific country, if X varies over time by one unit, Y rises or falls by units (Bartels, 2009). Fixed effects are ineffective when there is little within-cluster variation in the data, or the variables gradually change over time. Binomial variables can also be used to visualise the fixed effects model. The equation for the fixed effects model is thus:

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \cdots + \beta_k X_{k,it} + Y_2 E_2 + \cdots + Y_n E_n + u_{it} \quad (9)$$

Where $X_{k,it}$ represents the IV, β_k Is the coefficient for the IVs, $u_{it}$is the error term, and E_n. is the entity n. Y_{it} It is the DV. You have $n-1$ entities in the model, Y_2They are binary (dummies), so what is the coefficient for the binary repressors (entities)? Equations 14 and 15 are interchangeable because each entity has the same slope coefficient on X. The unobserved variable Z_1, which fluctuates across states but not over time, is the source of the entity-specific intercepts in Equation 14 and the binary regressors in Equation 15 (Stock and Watson, 2003). Creating a regression model with time and entity-fixed effects is possible by adding time effects to the entity effects model.

$$Y_{it} = \beta_0 + \beta_1 X_{1,it} + \cdots + \beta_k X_{k,it} + Y_2 E_2 + \cdots + Y_n E_n + \delta_2 T_2 + \cdots + \delta_t T_t + u_{it} \quad (10)$$

Where - The DV is represented as Y_{it} . where *i* = entity and *t* = time, $X_{k,it}$ represents IV, β_k Is the coefficient for the IVs, u_{it} is the error term, and E_n Is the entity *n*. Given that they are binary (dummies), the model includes *n*-1 entities; Y_2 is the coefficient for the binary regressors (entities); T_t is time as a binary variable (dummy); as a result, *t*-1 periods are included; and δ_t Is the coefficient for the binary time regressors. Whenever a sudden change or a unique occurrence may impact the outcome variable, account for temporal effects (Ammari, 2007).

3.5.2.2 Random-Effects models

The basis for the random effects model is that, in contrast to the fixed effects model, it assumes that change between entities is random and unrelated to any independent or

predictive factors. The important distinction between fixed and random effects is whether the unobserved individual effect contains elements associated with the model's regressors, not whether these effects are stochastic. In other words, if the individual effect (heterogeneity) is unrelated to any regressor, a random effect model predicts error variance particular to groups (or times). Therefore, u_i is an element of the composite error term or an individual-specific random heterogeneity. Because of this, an error component model is another name for a random effect model. Each regressor has the same intercept and slope. Individuals' (or periods') differences are due to their unique errors, not their intercepts. Use random effects if you have reason to believe that differences across entities impact the dependent variable. You can incorporate time-invariant variables by using random effects, which is a benefit (i.e., gender). In a model with fixed effects, the intercept absorbs these variables. The random effects model: what is it?

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it} + \varepsilon_{it} \quad (11)$$

Where -ε_{it} An error within the entity, u_{it}. The error between entities. Under the premise of random effects, which states that the entity's error term is uncorrelated with the predictors, time-invariant variables can serve as explanatory variables. The characteristics of random effects that might or might not influence the predictor variables must be identified. Because some variables might not be available, this raises the issue of omitted variable bias in the model. RE makes it possible to extrapolate results from the model's sample.

3.5.2.2.1 Testing Fixed and Random Effects

The Breusch-Pagan Lagrange multiplier (LM) test is used to assess random effects, while the F-test is used to assess fixed effects. Concentrate on cross-sectional (group) effects if neither test invalidates the null hypothesis. Swap out *i* with *t* in the formula to account for time effects. Utilising a pooled OLS regression is advised. Using the Hausman specification test, you may compare a random effect model to its fixed counterpart (Hausman, 1978). If the null hypothesis that the individual effects are uncorrelated with the other regressors is not disproven, its fixed counterpart favours a random effect model. A one-way fixed or random effect model is utilised when only one cross-sectional or time-series variable (such as a country, business, or race) is considered. Two-way effect models present some

estimating and interpretation issues because there are two sets of dummy variables for individual and temporal variables (such as state and year).

F-Test

The null hypothesis in a regression of the form, $y_{it} = \alpha + \mu_i + X_{it}'\beta + \varepsilon_{it}$, is that all of the dummy parameters, except for one, are zero, as stated in the formula, H_0: $\mu_i = \ldots \mu_{n-1} = 0$. The other possibility is that at least one of the dummy parameters is not zero. A loss of goodness-of-fit-based F test is used to evaluate this hypothesis. This test compares the pooled OLS (efficient model) with the LSDV (robust model) and looks at how much the goodness-of-fit measurements (SSE or R^2) have changed.

$$F(n-1, nT-n-k) = \frac{(e'e_{pooled} - e'e_{LSDV})/(n-1)}{(e'e_{LSDV})/(nT-n-k)} = \frac{(R^2_{LSDV} - R^2_{pooled})/(n-1)}{(1-R^2_{LSDV})/(nT-n-k)} \quad (12)$$

If the null hypothesis is rejected (at least one group/time-specific intercept μ_i is not zero), if there is a substantial fixed effect or an increase in goodness-of-fit in the fixed effect model, then the fixed effect model is preferable to the pooled OLS.

Breusch-Pagan LM Test for Random Effects

Using the LM test, you can choose between a straightforward OLS regression and a random effects regression. The LM test's null hypothesis is that variances between entities are zero. No discernible difference between the units can be seen (i.e., no panel effect). According to Baltagi (2013), cross-sectional dependence is a problem in macro panels with long time series (around 20–30 years). These unaffected Micro panels (a few years and many cases). The B-P/LM test of independence's null hypothesis is the absence of correlation between residuals across entities.

Breusch and Pagan's Lagrange multiplier (LM) test determines if each individual (or time-specific) variance component is zero, $H_0: \sigma_u^2 = 0$. The LM statistic has one degree of freedom and follows the chi-squared distribution.

$$LM_u = \frac{nT}{2(T-1)}\left[\frac{T^2\bar{e}'\bar{e}}{e'e} - 1\right]^2 \sim x^2 \tag{13}$$

Where *e'e* is the SSE of the pooled OLS regression, and *e* is the group means of the pooled regression residuals contained in a *n* × *1* vector. The same LM test is presented in a different form by Baltagi (2013).

$$LM_u = \frac{nT}{2(T-1)}\left[\frac{\sum(\sum_{it} e)^2}{\sum\sum_{it}^2 e} - 1\right]^2 = \frac{nT}{2(T-1)}\left[\frac{\sum(T\bar{e}_{i.})^2}{\sum\sum_{it}^2 e} - 1\right]^2 \sim x^2 \tag{14}$$

One can conclude that the panel data has a significant random effect if the null hypothesis is rejected, and the random effect model manages heterogeneity better than the pooled OLS.

Hausman Test

The null hypothesis of the Hausman test is that random effects are preferred over fixed ones, and it can be used to distinguish between fixed and random effects (Green, 2008). It examines whether the regressors and the unique errors (u_i) are connected; the null hypothesis assumes that they are not connected. Run the test, run the fixed effects model, run the random model, store the estimates, and run the fixed effects model.

Which random or fixed effect in the panel data is more significant and relevant, and how can one tell? The Hausman specification test contrasts fixed versus random effect models under the null hypothesis that individual effects are uncorrelated with any model regressor (Hausman, 1978). Generalized least squares (GLS) and least-squares dummy variables (LSDV) are consistent without violating the null hypothesis of no correlation. Still, GLS is inconsistent and biased without such a violation (Greene, 2008). Under the null hypothesis, no discernible differences between the LSDV and GLS calculations should exist. The

Hausman test states, "the covariance between an efficient estimator and its difference from an inefficient estimator is zero" (Greene, 2008, p. 1061).

$$LM = (b_{LSDV}\text{-}b_{random})\widehat{W^{-1}} \; - \; (b_{LSDV}\text{-}b_{random}) \sim x^2(k) \qquad (15)$$

Where $\widehat{W} = Var[b_{LSDV} - b_{random}] = Var\ (b_{LSDV}) - Var\ (b_{random})$

Is there a difference between the covariance matrices for the GLS and LSDV (efficient model)? Remember that the computation shouldn't include an intercept or dummy variables. This test statistic has k degrees of freedom and is distributed according to the chi-squared formula. To evaluate whether the random effects estimate is insignificantly different from the unbiased fixed effect estimate If the null hypothesis of no correlation is rejected, one can conclude that individual effects, u_i, are strongly correlated with at least one of the model's regressors. The random effect model needs to be revised in this situation. Therefore, one should pick a fixed effect model instead of its random effect counterpart. The Hausman test has the drawback that the difference between the covariance matrices *W* could only sometimes be positively definite. If the covariance matrices are equal, a false conclusion can be drawn that the null hypothesis is not rejected.

The model's fundamental flaw is its inability to distinguish between two hypotheses, which means there are two possible ways to produce an inconsequential result (Moody, 2009). In most panel data applications, such as when you have data sets that are not random samples from a wider population, correlated fixed effects are obvious and important. Hence, the fixed effects model should be chosen based on a priori considerations. However, the Hausman test is useful for samples comprising a panel of people and regarded as samples from a wider population.

Estimating Fixed Effects Models

Numerous techniques can be used to estimate fixed effect models. Dummy variables are not used in the "inside" estimation but in the least squares dummy variable model (LSDV). Naturally, the parameter estimates for the regressors from these techniques are the same (non-dummy independent variables). The "between" estimation fits a model using the

individual or time means of the dependent and independent variables without dummies. Due to how straightforward it is to estimate and analyse the data on a substantive level, LSDV with a dummy deleted from a set of dummies is frequently used. However, this LSDV becomes problematic when there are many individuals (or groups) in panel data. The parameter estimates of the regressors are consistent if *T* is fixed and $n \to \infty$ (*n* is the number of groups or businesses and *T* is the number of periods). Still, the coefficients of the individual effects, $\alpha + u_i$ are not (Baltagi, 2013). Due to the enormous number of dummy variables in this small panel, additional parameters must be calculated as n increases (incidental parameter problem). As a result, LSDV loses n degrees of freedom while still producing less accurate estimators. The inside effect estimating approach should be used in place of LSDV since it is useless in this circumstance. In contrast to LSDV, the "inside" estimator employs deviations from the group (or period) means rather than dummy variables. In other words, rather than employing many dummies, "inside" estimation depends on variability within each individual or object. The estimate that is "inside" is,

$$y_{it} - \bar{y}_{i\bullet} = (x_{it} - \bar{x}_{i\bullet})'\beta + (\varepsilon_{it} + \bar{\varepsilon}_{i\bullet}) \quad (16)$$

Where *I*, $\bar{x}_{i\bullet}$ represents the means of IV of group $\bar{y}_{i\bullet}$ Is the mean of DV of the individual (group) *i*, and $\varepsilon_{i\bullet}$ What is the mean of errors of group *i*? The accidental parameter problem is no longer a problem in this "within" estimation. Regressor parameter estimates in the "inside" estimation is the same as those in LSDV. The "inside" estimation reports (SSE) correct the total squared errors. However, the "inside" estimation has some drawbacks. First, all time-invariant variables (such as gender, citizenship, and ethnic group) that do not vary inside an entity are eliminated during data transformation for the "within" estimate (Kennedy, 2008). Since the variances of time-invariant variables are equal to zero, it is impossible to estimate their coefficients "within" estimation.

Consequently, one must fit LSDV when a model includes time-invariant independent variables. Additionally, "within" estimation results in inaccurate numbers. The inside effect model provides small mean squared errors, estimates' standard errors, or the square root of mean squared errors., as well as inaccurate (lower) standard errors of parameter estimations because there is no dummy utilised. As a result, the formula below must be used to rectify inaccurate standard errors.

$$se_k^* = se_k \sqrt{\frac{df_{error}^{within}}{df_{error}^{LSDV}}} = se_k \sqrt{\frac{nT-k}{nT-n-k}} \tag{17}$$

Third, the "inside" estimation's R2 is incorrect because the intercept term is suppressed. Finally, the "inside" estimation omits the reporting of dummy coefficients and, if truly necessary, must be computed using the formula - $d_i^* = \overline{y}_{i\bullet} - \overline{x}_{i\bullet}{}'\beta$.

3.5.2.3 Estimating Random Effects Models

The composite error term in the one-way random effect model is $w_{it} = u_i + v_{it}$.. The standard error terms it, v_{it} and regressors X_{it}, are independent of each other for every *i* and *t*., as are the, u_i. Remember that a fixed effect model does not require you to make this assumption. This design is.

$$y_{it} = \alpha + X_{it}{}'\beta + u_i + v_{it} \tag{18}$$

Where - $u_i \sim IID(0, \sigma_u^2)$, and - $v_{it} \sim IID(0, \sigma_v^2)$

The covariance elements of $Cov(w_{it}, w_{js}) =) E(w_{it}w'_{js})$ are $\sigma_u^2 + \sigma_v^2$ if *i=j* and *t=s* and σ_u^2 if *i=j* and $t \neq s$. Therefore, the covariance structure of composite errors $\Sigma = E(w_i w_i{}')$ the variance-covariance matrix of all errors (disturbances) *V* for individual *i* is,

$$\sum_{T\text{x}T} = \begin{bmatrix} \sigma_u^2 + \sigma_v^2 & \sigma_u^2 & \dots & \sigma_u^2 \\ \sigma_u^2 & \sigma_u^2 + \sigma_v^2 & \dots & \sigma_u^2 \\ \dots & \dots & \dots & \dots \\ \sigma_u^2 & \sigma_u^2 & \dots & \sigma_u^2 + \sigma_v^2 \end{bmatrix} \text{and } \underset{nT \text{ x } nT}{V} = I_n \otimes \Sigma = 0 \begin{bmatrix} \Sigma & 0 & \dots & 0 \\ 0 & \Sigma & \dots & 0 \\ \dots & \dots & \dots & \dots \\ 0 & 0 & \dots & \Sigma \end{bmatrix} \tag{19}$$

When the covariance structure is known, a random effect model is calculated using generalised least squares. When it is unknown, it is feasible or estimated generalised least squares. Feasible generalised least squares or estimated generalised least squares are more frequently utilised than generalised least squares because Σ is frequently unknowable. A random effect model is more challenging to estimate than its fixed effect cousin. The initial

step in feasible generalised least squares is to estimate θ using. $\hat{\sigma}_u^2$ and $\hat{\sigma}_v^2$. The $\hat{\sigma}_u^2$ is produced from the sum of squared errors of the inside effect estimate or the deviations of residuals from group averages of residuals. The $\hat{\sigma}_u^2$ is generated from the between-effect estimation (group mean regression).

3.5.2.4 Pooled Ordinary Least Squares

A pooled model combines individuals without accounting for individual characteristics or time differences (Adkins & Hill, 2011). Ordinary least squares (OLS) generate effective and dependable parameter estimates when individual effects, u_i (cross-sectional or time-specific impact does not exist ($u_i = 0$),

$$Y_{it} = \alpha_i + \beta_1 X_{it} + \alpha_i + u_{it} \ (u_i = 0) \tag{20}$$

OLS is based on five fundamental presumptions: (i) Linear functions are used to define the error (disturbance) term, a collection of independent variables, and the dependent variable; (ii) Exogeneity states that disturbances have no anticipated value or are not connected with any regressors; (iii) Disturbances are unrelated to one another and share the same variance (homoskedasticity) (nonauto correlation); (iv) The independent variable's observations are fixed in repeated samples without measurement mistakes rather than stochastic; and (v)According to the total rank assumption, independent variables do not have a perfect linear connection (no multicollinearity).

If the individual effect u_i For longitudinal data, it is not zero. Heterogeneity may impact assumptions two and three (individually specific traits like intelligence and personality not represented in regressors). Disturbances may differ amongst individuals rather than having a consistent variance (heteroskedasticity, assumption violation) or be linked (autocorrelation, violation of assumption). In this instance, the variance-covariance matrix of the disturbances is not spherical. Because of the failure of assumption 2, random effect estimators are biased. The OLS estimator is no longer the best unbiased linear estimator. The panel data models remedy these problems (Myoung, 2011).

3.5.3 Generalised Method of Moments (GMM)

According to Roodman (2009), the GMM is a dynamic panel estimator suitable for situations involving a linear functional relationship, a small number of periods ("small T" panels) and a large number of individuals ("large N" panels); one dynamic left-side variable that depends on its past realisations; independent variables that are not strictly exogenous (correlated with past and potentially current realisations of the error); fixed individual effects; as well as heteroskedasticity. M. Arellano and S. Bond (1991), Bond (2002) and Roodman (2009) provided an autoregressive specification(without exogenous variables) of the form below.

$$y_{it} = \alpha y_{i,t-1} + X_{it}'\beta + u_i + v_{it} \quad (21)$$

The Arellano-Bond autocorrelation test and other summary statistics are reported along with the estimation results when System GMM is implemented in Stata using the syntax *xtabond2*. The GMM estimator has one disadvantage: if T is big, it may lose accuracy as the number of instruments increases, and the instrumented variables become overfitted. As a result, the expected elimination of the endogenous components of the lagged dependent variable(s) may not take place.

Without heterogeneity and an upward bias, OLS never reliably predicts the coefficient on l. depvar. Fixed effects are similarly biased, typically in the negative direction, and the bias can be significant unless T is high. As a result, using OLS, one obtains a sizable positive estimate, while using FE, you obtain a negative estimate. The most reliable GMM uses the Arellano-Bond conditions: It correctly eliminates the heterogeneity and solely employs the moment requirements suggested by the AR (1) model. Additional moment conditions added by the GMM system may not be true. GMM is always favoured, albeit if the difference GMM estimate seems accurate and there is no indication of weak instruments—in that case, OLS or FE are preferred—until huge standard errors are produced. The research panel data contains firms grouped according to industry, generalised method of moments (GMM) regressions remove group characteristics, omit variable bias, and concern for unobservable factors. Additionally, they use time-invariant variables to partially or completely account for the effects of time-invariant variables (Allison, 2009). The most common problem of using

system GMM or panel methods, in general, is that micro-data produces rather unsatisfactory results: low and often insignificant capital coefficients and unreasonably low estimates of returns to scale (Griliches and Mairesse, 1997; Ornaghi, 2002).

3.5.4 Measures of Earnings Management

Healy (1985), Jones (1991), Dechow and Sloan (1991), Dechow et al. (1995), and Kothari, Leone, and Wasley (2005) use models for discretionary accruals that substitute anomalous accruals with earnings management, specifically using specific accruals that are used in earnings management, such as depreciation estimates, bad debt provisions, and deferred tax valuations. A sophisticated model that estimates discretionary accruals attempts to split discretionary and non-discretionary components of reported earnings, and simple models measure discretional accrual as total accruals (Dechow et al., 1995). Several competing models measure discretionary accruals, from which the best model for this study will be chosen. Nevertheless, before considering the discretionary accruals models, a short discussion on methods for calculating total accruals is warranted as most of the models are based on the methods. Two methods are used to calculate Total Accruals (TA): *The balance Sheet-based approach* used by Healy and Jones (1991). Total accruals are calculated in this case as the change in non-cash working capital, which is calculated as the change in non-cash current assets minus the change in current liabilities before any due income taxes and before the total depreciation expense (Jones, 1991; Young, 1999). Here is how this calculation is displayed.

$$TA_\tau = \Delta CA_\tau - \Delta Cash_\tau - \Delta CL_\tau - \Delta DCL_\tau - DEP_\tau \quad (1)$$

Where:

ΔCA_τ = Current asset change in year *t*;

$\Delta Cash_\tau$ = Difference between cash and cash equivalents in year *t*;

ΔCL_τ = Current liabilities change in year t;

ΔDCL_τ = Change in debt included in current liabilities in year t;

DEP_τ = Expense for depreciation and amortisation in year t.

The cashflow statement-based approach used by Dechow and Sloan (1991) is calculated as follows;

$$TA = NI - CFO \quad (2)$$

Where:

NI = Net Income

CFO = Operational activity cash flow.

According to Hribar and Collins (2002) analysis of the two total accruals techniques, any test for earnings management that uses the balance sheet methodology will probably be tainted by measurement errors in accruals estimations. In this regard, the cash flow statement-based approach is more accurate. Despite this, most discretionary accruals models continue to use the balance sheet method as the CRSP-Compustat Merged (CCM) database, which is a source of precise accruals data found in the cash flow statement, was only made accessible in 1988. But by then, Healy (1985), Rayburn (1986) and (Wilson, 1986) had already developed their models, and the rest just followed as their models were based on Healy's. Healy's model of discretionary accruals and competing models for estimation of discretionary accruals used as a measure of earnings management will now be discussed below:

3.5.4.1 Healy (1985) Model of Discretionary Accruals

By using this technique, the total accruals are randomly split into discretionary and non-discretionary halves. The Healy model compares mean total accruals scaled by lagged total assets (*TA*) using the partitioning variable for earnings management. The partitioning variables separate the sample into three groups: Group 1 (estimation period) contains samples with anticipated upward management of earnings; Groups 2 and 3 (event time) comprise samples with predicted downward management of earnings. Nondiscretionary accruals are determined as the difference between total accruals in the event year scaled by the lagged total and anticipated nondiscretionary accruals using the mean total accruals of group 1. The following is a presentation of this model of discretionary accruals:

$$\mathrm{NDA}_{\tau} = \frac{\sum_t \mathrm{TA}_t}{\mathrm{T}} \quad (22)$$

Where:

NDA = Projected non-discretionary accrual;

TA = Scaled total accruals based on total lag assets;

t = 1, 2… T = is a year subscript for years included in the estimation period.

And τ = a year in the event period is indicated with a subscript with the year.

The discretionary accruals are assumed to be zero in this model, and any departures from zero point to possible earnings manipulation. Let's say that the discretionary accruals are not zero. In that situation, earnings manipulation is more significant than zero because it is directed towards raising profit- earnings manipulation is in the direction of decreasing profit (Young, 1999; Yurt & Ergun, 2015). Kaplan (1985), Young (1999) and (Yurt & Ergun, 2015) criticised this model as being naïve, simplistic and highly restrictive in that, besides managerial discretion, the economic environment is sometimes responsible for the fluctuations in the levels of working capital accruals.

The benefit of using this method to split total earnings is minimal as the slope coefficient produced for discretionary and non-discretionary are similar in magnitude (Guay et al., 1996). DeAngelo (1986) introduced her model, loosely based on the Healy model, and measures discretionary accruals at the first difference. Instead of the estimation period having multiple periods, DeAngelo proposed only the previous year's observation. The Healy and DeAngelo models will be equal to nondiscretionary accruals if discretionary accruals have a mean of zero and nondiscretionary accruals are consistent across time (Dechow et al., 1995). The DeAngelo model is presented as follows:

$$NDA_t = TA_{t-1} \quad (23)$$

The discrepancy between the total accruals for the event year represents the discretionary part of accruals *t* scaled by A_{t-1} and NDA_t. Discretionary accruals in year *t* less discretionary accruals in year *t-1* should equal zero, implying that any difference is attributable to managerial discretion. However, this model fails to consider that business activity might be responsible for varying non-discretionary accruals (Friedlan, 1994; Young, 1999). The DeAngelo Model assumes that nondiscretionary accruals follow a random path, whereas the Healy Model considers that nondiscretionary accruals follow a mean reverting

process. This is another distinction between the models besides the estimate periods. (Bartov et al., 2000).

3.5.4.2 Jones (1991) Model of Discretionary Accruals

The Jones model uses a regression-based expectation model to consider variations in non-discretionary accruals brought on by changes in company activity and depreciation expense (Bartov et al., 2000; Young, 1999). Jones (1991) claims that this method avoids the shortcomings of the McNichols and Wilson (1988) model, which estimates the discretionary component of a single accrual while combining the advantages of the Jones Model and the DeAngelo Model, both of which estimate the discretionary component of total accruals to measure earnings management

$$= \alpha_1\left(\frac{1}{A_{\tau-1}}\right) + \alpha_2(\Delta REV_\tau) + \alpha_3(PPE_\tau) \quad (24)$$

Where.

ΔREV_τ = revenues in year τ minus revenues in year $\tau - 1$ scaled by total assets at $\tau - 1$; $PPE\tau$ = gross property plant and equipment in year τ scaled by total assets at $\tau - 1$; $A_{\tau-1}$ = total assets at $\tau - 1$

And $\alpha_1, \alpha_2, \alpha_3$= firm-specific parameters.

To get estimates of the parameters specific to each firm, the following model is used: $\alpha_1, \alpha_2, and\, \alpha_3$

$$TA_\tau = \alpha_1\left(\frac{1}{A_{\tau-1}}\right) + \alpha_2(\Delta REV_\tau) + \alpha_3(PPE_\tau) + \upsilon_\tau \quad (25)$$

Where:

$\alpha_1, \alpha_2$and α_3 = the Ordinary Least Squares (OLS) estimates of α_1, α_2 and α_3 and *TA* = are total accruals scaled by lagged total assets.

According to Dechow et al. (1998), barely a fifth of the overall fluctuations in accruals may be accounted for by the findings of Jones (1991). The Jones Model overemphasises revenues

as a reliable company performance indicator. However, reported sales can also be compromised when management, for example, delays the distribution of items to defer recognising the revenue until the following financial month (Jones, 1991).

The use of this method is also limited in that Jones proposed the model in her study of earning management in import relief and based on import relief regulations and the United States International Trade Commission and an additional limitation is that the non-discretionary accrual coefficient is not stationary through time, but the Jones model assumes otherwise.

3.5.4.3 The Industry Model (1991)

Dechow and Sloan (1991) put forth this model. The model presupposes that non-discretionary accrual changes over time and that driver variation is common among businesses operating in the same sector.

$$NDA_{\tau} = \gamma_1 + \gamma_2 median_1(TA)_{\tau} \quad (26)$$

Where:

$median_1(TA)_{\tau}$ = is the median value of the total accruals scaled

γ_1 and γ_2 = is total accruals scaled by lagged total assets.

Dechow and Sloan (1991) utilised this model to investigate whether CEOs manage investment spending to improve short-term profit performance in their final years. They focused on R&D spending and concluded that CEOs cut back on R&D spending in the latter few years of their tenure but that this is minimised when the CEOs have stock or executive stock options and when there is a planned succession mechanism in place. However, they also discovered that R&D spending increased during the first year after the CEO's replacement, indicating a delay rather than a reduction in investment during the succession period (Dechow & Sloan, 1991).

3.5.4.4 Modified Jones Model (1995) of Discretionary Accruals

Dechow et al. (1995) introduced the Modified Jones Model (1995). In contrast to the original Jones model, the year earnings management has hypothesised the revenue change is

corrected for the change in receivables (Yurt & Ergun, 2015). The Modified Jones model was created to correct an issue in the Jones model that occurs when judgment is used to determine whether to recognise revenue or not.

$$NDA_{\tau} = \alpha_1\left(\frac{1}{A_{\tau-1}}\right) + \alpha_2(\Delta REV_{\tau} - \Delta REC_{\tau}) + \alpha_3(PPE_{\tau}) \quad (27)$$

Where; ΔREC_{τ} is net receivables in year τ less net receivables in year τ−1 scaled by total assets at τ−1. The estimates of α_1, $\alpha_2$and α_3 remains the same as those on the Jones Model. If earnings are not managed in the estimating period, account receivables are treated in the event period according to the Modified Jones Model. As a result, credit sales accruals are typical during the estimation period but anomalous during the event period. (Ronen & Yaari, 2008). In comparing the Jones and modified Jones models, Kothari et al. (2005) discovered a significant variation in the frequency of rejection for low-growth quartile files. The Modified Jones model has 46 per cent, but the Jones model only had 18 per cent. The Modified Jones model's assumption that every credit sale is an example of accruals manipulation accounts for the disparity. According to this supposition, the discretionary accruals are favourably connected with sales growth and consistently negative for low sales growth quartile enterprises, as seen by a high number of rejections. However, the rejection rates between the two models are often low when sales growth is substantial.

In this study, the following equation will be used to calculate the discretionary accrual per the Modified Jones model (see Appendix D for Stata Code)

$$DACC_{it} = k_{1t}\ \frac{1}{Assets_{i,t-1}} + k_2\ \frac{(\Delta REV_{it} - \Delta REC_{it})}{Assets_{i,t-1}} + \frac{PPE_{it}}{Assets_{i,t-1}} + +\varepsilon_{it} \quad (28)$$

Where.

$DACC_{it}$ = discretionary accruals of firm *i* in year *t. DACC* is represented by $\frac{TA_{1t}}{Assets_{i,t-1}}$

3.5.4.5 Dechow and Dichev (2002) Model of Discretionary Accruals

The Dechow and Dichev (2002) Model evaluates the quality of working capital accrual using a firm-level time series regression. A firm-level metric of accruals is the standard deviation of the regression's residuals; a higher standard deviation indicates lower quality.

$$\Delta WC_t = b_0 + b_1\, CFO_{t-1} + b_2\, CFO_t + b_3\, CFO_{t+1} + \varepsilon_t \qquad (29)$$

Where.

ΔWC_t	= is the change in working capital from the year (t – 1) to (t). (ΔWC), is computed as *ΔAccounts Receivable + ΔInventory − ΔAccounts Payable−ΔTaxes Payable + ΔOther Assets (net)*
CFO_{t-1}	= the cash flows that created cash flows in the previous period but the effect of them on the earnings that took place in the period (t),
CFO_t	= the cash flows that both create cash flows and affect the earnings in the period (t),
CFO_{t+1}	= the cash flows that affect the earnings in the period (t) although they will create cash flows in the following period,
ε_t	= represents accruals not turned into cash; their standard deviation measures the firm's accrual quality. the cash flows that both create cash flows and affect the earnings in the period (t),
b_0, b_1, b_2 *and* b_3	= are coefficients with expected theoretical values of $0 < b_1 < 1$ and $-1 < b_2 < 0$ and $0 < b_3 < 1$. These regression coefficients are biased towards zero because the independent variable in the equation is measured with error (Yurt & Ergun, 2015).

3.5.4.6 The Performance-matching Model of Discretionary Accruals

The model was introduced by Kothari, Leone and Wasley (2005). The Model is also known as The Performance-matching Model and is a further development of the Jones model in which the operating performance is controlled. To eliminate type 1 error, Kothari et al. (2005), To reduce the impact of exceptional performance that leads to a non-linear relationship between performance and accruals, compare the discretionary accruals of the sample companies to those of the control companies in the same industry (refer to **Figure *3-6***. According to this model, the discretionary accruals can be calculated as follows:

$$DA_{it} = \frac{DA_{it}}{A_{avg}} - \frac{DA_{icont}}{A_{avg}} \quad (30)$$

Where DA = discretionary accruals of firm *i* in year *t;* *A* = Total Assets
Icont = a firm from the group close to firm *i* in terms of return on assets

Ye (2006), cited in El Diri (2017), argues that The Performance-matching Model offers better explanations than the Jones model. The problem with this model is that when grouping firms, it is sometimes difficult to obtain homogeneity in performance and accruals, resulting in inappropriately matched groups and, consequently, biased results (El Diri, 2017).

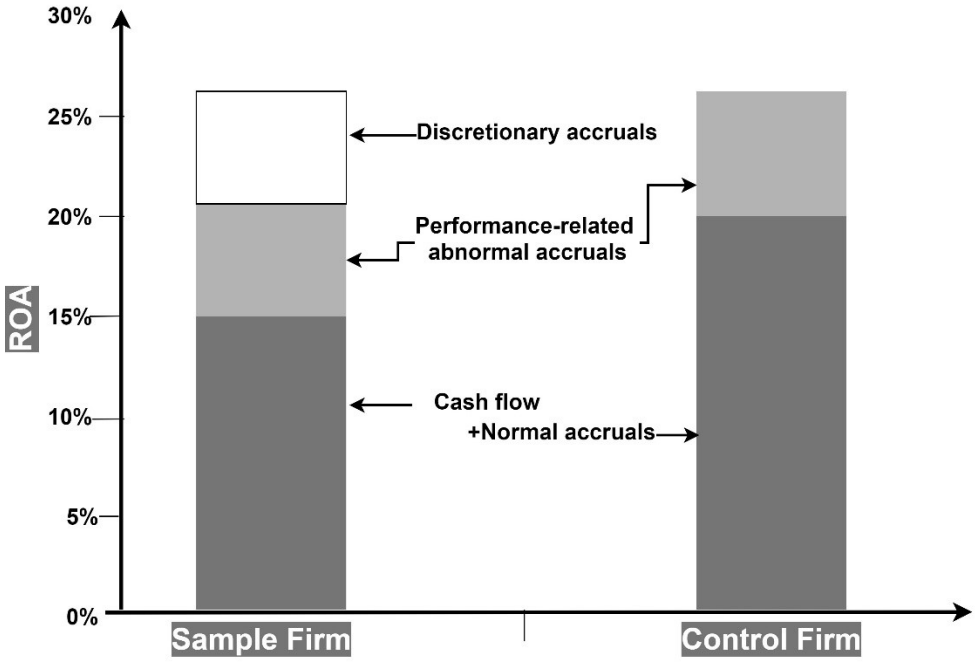

Figure 3-6 Measuring discretionary accruals: ROA-matched models**.**

Source: Researcher constructed, 2023

3.5.5 A Critique of Accrual-based Models

A specific critique of the models is included within the description of the models above, but there are common problems concerning the discretionary accruals models. It has already been noted that Hribar and Collins (2002) found a measurement error in accruals estimates when using the balance sheet approach. Any earnings management test using this method is

potentially contaminated. The following are other common problems with the discretionary accrual models: *Their ability to detect earnings management could be higher* as they neglect some variables and have econometric flaws. The modified Jones model is preferred as Dechow used SEC data. Dechow et al. (1995), Guay et al. (1996), Young (1999), Thomas and Zhang (2000) and Kothari et al. (2005) all use different angles, different data, and different methods to detect earnings management. *The accruals-based models also neglect many factors that will affect accruals.* McNichols (2002), through her findings, argues that a firm's growth influences the quality of accruals, but the Jones model neglects this variable. Other variables associated with accrual levels, such as the size and debt of a company, have also been neglected, and there is much noise *in these models.* A large noise component in abnormal accruals is generated by substantial heterogeneity.

3.5.6 Income Smoothing: Eckel Model

The Eckel model can measure earnings management in the form of income smoothing. The model is also known as the Coefficient of variation model. Eckel (1981) made the following assumption when developing the model.

- Income is a linear function of sales = sales - fixed costs - variable cost.
- The ratio of variable cost to sales is in fixed currency units.
- Fixed costs are fixed or increase from period to period but are not likely to decrease.
- Total sales value can only be paved by real boots and not through artificial boots.

An Eckel Index of less than 1 is an indication of Income smoothing.

$$\text{Eckel Index} = \frac{CV\Delta I}{CV\Delta S}$$

Where: $CV\Delta I$ is the absolute value of Earnings/Net Income Change Coefficient of Variation of firm *i* in year *t,* and $CV\Delta S$ is the absolute value of Sales/Turnover Change Coefficient of Variation of firm *i* in year *t.*

For both profits and revenues, the coefficients are extracted to determine the indicators of income smoothing. If the profit coefficient is smaller than the revenue coefficient, the business has smoothed its earnings. According to Younis (2018), the income smoothing index is correlated with the following relationship:

$$CV\Delta\%Net\ Profit < CV\Delta\%Sales = Smoothing$$

Where: CVΔ%Net Profit = Net Profitt – Net Profitt-1 / Net Profitt-1.

CVΔ%Sales = Revenue-t – Revenuet-1 / Revenuet-1.

3.5.7 Measures of Corporate Social Responsibility (CSR)

Two primary methods of measuring corporate social responsibility are Environmental, Social, and Governance (ESG) ratings and content analysis. The latter method has been used in several studies by Aljifri and Hussainey (2007), Almahrog (2018), Aribi Zakaria and Gao (2010), and Hussainey et al. (2003). This method has reliability and validity issues (Almahrog, 2018; Aribi Zakaria & Gao, 2010). However, recent studies by Folger-Laronde et al. (2020), Fiskerstrand et al. (2020), and Cajias et al. (2014) have taken advantage of ESG ratings, and this study will also use these ratings as a measure of corporate social responsibility. ESG rating agencies are responsible for maintaining corporate social responsibility data. ESG rating started in the 1960s mainly to penalise tobacco companies and those companies linked to the South African apartheid regime South African (MSCI, 2022). Various indices are used to measure CSR: FTSE4Good Index, KLD ranking index, Standard & Poor's Corporate Governance Scores and Evaluations, and SiRi ranking index. The following sections will explain these indices to provide an idea of how the ESG ratings are calculated. Analysis of corporate social responsibility practises by industry reveals significant differences in financial donations and corporate social responsibility disclosures between various industries. Among all industries, the oil and gas sector were judged to be the most accountable, providing more details about its corporate social responsibility initiatives.

CSR activities and spending more money on these activities. The main criticism of these indices is that they need to provide more information on their methodologies (Almahrog, 2018), meaning they are mostly subjective. However, the following is one of the equations that can be used to establish a score in a corporate social responsibility index (Chau & Gray, 2002; Othman et al., 2011).

$$CSRI_{jit} = \frac{\Sigma_{j=1}^{nj} X_{Jt}}{n_{jt}} \quad (31)$$

Where:

CSR = Total score of corporate social responsibility disclosure; X = Takes 1 if an item is disclosed and 0 otherwise

n = The number of items expected, where n ≤ 59, and

j, i and t= the category j for firm i in year t; so that 0 ≤ CSRI ≤.

The most used ESG ratings will now be introduced in the next section.

3.5.7.1 FTSE ESG Ratings

The ratings generated by the FTSE Russell ESG Data Model serve as an objective gauge of ESG exposure and performance across several aspects. The FTSE ESG ratings in some FTSE sustainable investing indexes determine the eligibility of index constituents. Materiality is one of the main characteristics of the index. Businesses must be more exposed to certain themes, such as corporate governance, labour standards, and climate change, and take greater action to address them. As a result, greater criteria are used to evaluate higher-exposure firms than lesser-exposure companies. A weighted average of the Theme Scores is used to determine the pillar score. One weight is assigned to low exposure, two to medium exposure, and three to extreme exposure. The average Exposure Level of the topics included in each pillar determines its weight, and this method is also used to determine the overall FTSE ESG grade. In addition to those above "absolute" Scores and Ratings, peer-relative Scores and ESG Ratings are also available. These are established by comparing a company's score or ESG rating to other companies in the same FTSE Industry Classification Benchmark (ICB) supersector. The overall FTSE ESG rating is a percentile, with a score of 1 representing a company's position in the worst 1% and 100 representing a company's position in the top 1%.

Using the organisation's theme exposure and theme score assessment, the FTSE ESG ratings compute several assessments that allow investors to appreciate a firm's ESG activities in numerous dimensions. The FTSE4Good Index Series, launched in 2001, requires companies to have an overall ESG rating of 3.3 out of 5, ensuring that only companies that successfully

manage ESG risks are included. A company is eliminated from the index if its rating exceeds 2.9. The ranking excludes several corporations based on their economic activities and legal disputes. Companies with "significant controversies" exposure are prohibited from joining the Index Series, and worst-case scenarios call for removing current index components. The following producers and manufacturers have been excluded: weapons include coal, cluster munitions, anti-personnel mines, depleted uranium, chemical and biological weapons, and tobacco (ICB Subsector) (FTSE Russel, 2022).

3.5.7.2 KLD Ranking Index

The market capitalisation-weighted MSCI KLD 400 Social Index focuses on businesses that uphold high environmental, social, and governance (ESG) criteria. Several researchers have used this index as a proxy for corporate social responsibility, including Flammer (2015), Michelon et al. (2013), El Ghoul et al. (2011), Nelling and Webb (2009), Callan and Thomas (2009) Galema et al. (2008) and Van der Laan et al. (2008). Formerly known as the Domini 400 Social Index, it was founded in 1990. Amy Domini, one of the founders of KLD Research & Analytics, which aids in administering the index, was honoured with this moniker. As a stock index, the MSCI KLD 400 Social Index gives corporations credit for their social and environmental responsibility. It selects candidates from reputable, big businesses with American headquarters. The returns obtained historically by the MSCI KLD 400 Social Index have been comparable to those of mid- and large-cap U.S. stock indices.

The MSCI KLD 400 Social Index comprises 400 publicly traded companies with excellent ESG ratings. Thus, the index is part of a bigger group of tools and financial products developed for investors concerned about the social and environmental impacts of the assets they buy. This philosophy states that potential MSCI KLD 400 Social Index candidates are likely to have stellar records regarding how they treat their employees, how safe their products are, how environmentally friendly their supply chains are, and how they conduct corporate governance. For instance, businesses that deal with alcohol, cigarettes, gambling, and weapons technology are not considered. Due to the index's deliberate focus on large-cap stocks, candidates must be domiciled in the United States and listed on either the New York Stock Exchange (NYSE) or the Nasdaq exchange. Companies that do not maintain the

required ESG ratings will be replaced with those that perform better based on a continuous review conducted in April of each year.

Microsoft, Facebook, and Alphabet will all have significant positions in the MSCI KLD 400 Social Index by December 1, 2020. Microsoft had the highest individual ownership percentage, about 9%. Given its recent stellar ESG ratings, Microsoft's participation in the MSCI KLD 400 Social Index is unsurprising. According to reports, Microsoft became a leader in ESG issues in the American technology sector after achieving the highest MSCI grade of "AAA" in 2016. The business succeeded in several areas, including corporate governance, the creation of environmentally friendly technologies, data security, and lack of corruption. The MSCI KLD 400 Social Index has returned about 13% annually since October 30, 2010. For comparison purposes, its benchmark, the MSCU USA Index, also produced a return of 13% during the same time frame.

3.5.7.3 SiRi Ranking Index

Sustainable Investment Research International Company Ltd (SiRi) is the world's largest network of independent research organisations, with eleven institutions on three continents and more than 40 sustainability analysts who specialise in company research. Based in Germany, the index is mainly used to measure German and Austrian companies. Still, SiRi partners and their customers worldwide use the data to analyse and evaluate the sustainability of German and international stocks and bonds portfolios. Approximately 120 indicators in seven research areas and information on more than 30 exclusion/negative criteria SiRi enables the creation of individual company evaluations. The individual weighting of all topics and indicators is possible. The index selects companies from all over the world that are particularly committed to climate protection. It contains a third of companies that - are involved in the field of renewable energies, develop and use environmental technologies, and strive to develop and use substitutes for fossil fuels. KLD Research & Analytics, Inc. is a US SiRi partner. Investors can utilise the non-compliant list of companies to aid them in applying the UN Principles for Responsible Investment (PRI), Optimising investment portfolios by decreasing carbon risk exposure.

3.5.7.4 The Standard & Poor's Corporate Governance Scores and Evaluations

The Standard & Poor's Corporate Governance Scores and Evaluations lean heavily toward corporate governance rather than corporate social responsibility. In contrast to international standards, best practices, and governing principles, a company's policies and practices are assessed using the S&P Corporate Governance Score. S&P grades consider several variables, such as ownership structure and influence, relationships and rights of financial stakeholders, financial transparency and information disclosure, and board structure and process. An interactive examination with company representatives to document their collaboration is exclusive to the S&P index. Companies pay for the rating because S&P only examines them upon their request. S&P's governance scoring, and credit ratings are two distinct but complementary types of study.

S&P, well known for rating the debt and credit of large-cap companies, also offers the S&P Corporate Governance Scoring Service. S&P handles the governance rating with a methodology more analogous to its debt rating, in contrast to some of the other governance ratings. S&P analyses governance practices to global corporate governance guidelines. The Governance Services Department of S&P published a follow-up to its white paper from July 2002, which described the standards and procedures for S&P's Corporate Governance Score. According to S&P's Business Sector Advisory Group on Corporate Governance to the Organization for Economic Cooperation and Development, the four pillars of effective corporate governance systems are fairness, openness, accountability, and responsibility. S&P emphasises that this technique may be used to evaluate corporate and national governance. Based on these principles, it develops its corporate governance rating methodology for companies.

The Corporate Governance Score from S&P looks at how well a company's corporate governance practises and policies serve the interests of its financial stakeholders. The rating is based on the approach and structure of corporate governance, focusing on shareholders' interests. The interactions between a company's management, board of directors, shareholders, and creditors are considered while calculating the Corporate Governance Score. Interviews are conducted for the company under review by analysts from S&P's Corporate Governance Services and S&P's affiliates, as well as, if necessary, by regional

law firms and other corporate governance specialists. Additionally, the board and board committee minutes, internal governance documents, public filings, regulatory filings, and records of legal compliance will all be examined by this committee. Interview subjects often include the CEO, the director of finance, the corporate lawyer and company secretary, the board of directors (including the chairman and independent directors), the staff of shareholder relations, significant creditors and shareholders, and the firm auditor. The Corporate Governance Score is calculated using a scale from one (lowest) to ten (highest and best). A company must provide adequate data for comprehensive research to receive a score of 0. Scores ranging from one to ten are also assigned to each of the four components that comprise the overall Corporate Governance Score. These elements include the ownership structure and outside factors, stakeholder relations and rights, transparency, disclosure, auditing, and the composition and performance of the board of directors. The committee will submit a thorough report with the key findings of the analysis following the corporate meeting. Each component will also have a Corporate Governance Score and individual scores.

3.5.7.5 GMI

GMI, a business established in April 2000, created a scoring system that may be used to compare the corporate governance traits of different organisations. To demonstrate why corporate governance is important, more than 450 pieces of information from the following categories are used in the rating game, which includes ratings for shareholder rights, board accountability, the market for control and ownership base, financial disclosure, internal controls, CEO compensation, reputational issues, and socially responsible investment issues. The GMI rating criteria are based on securities laws, regulations for stock market listings, and other corporate governance norms and standards made available to the public by numerous governmental organisations and publications. According to GMI, this results in a set of over 450 metrics that are intended to be as objective as possible and can only return yes, no, or unrevealed answers. Reviewing pertinent public data, such as regulatory filings, corporate websites, news services, other specialised websites, and the Dow Jones Global Industry Classification System, is the first step in the research process at GMI. After the collected data is entered into a relational database, data entry reports are distributed to all the GMI world companies for one last accuracy check.

Following any necessary revisions by the company, GMI sets the data and employs a scoring algorithm to obtain the ratings. On a scale of one to ten, companies receive scores (the highest). The GMI score of each company is compared to the GMI universe and all other companies based in the same country. Each company initially received 14 ratings. The first is the GMI global rankings, comprising a total GMI score and individual scores for each of the six GMI research categories. The 2,100 firms in GMI's research universe, which includes those in the Russell 1000, S&P 500, S&P Mid-cap 400, TSX (Toronto Stock Exchange Index) 60, and Nikkei 225 indexes, are used to calculate global ratings. The following six basic types of analysis are included in the GMI study template. Subcategories are created by further subdividing these categories. Investor interest determines the weights for each subchapter and study area, and each indicator has a numerical value. The asymmetric geometric scoring method used by GMI amplifies the record of outliers. These consist of the best behaviours, which are subsequently given more praise, and the worst behaviours, which receive harsher punishment.

3.6 Research Variables

Independent and dependent variables are used in this research. If a variable causes changes in another variable, it is called an independent or causal variable. On the other hand, a variable that changes because of another variable is known as a dependent variable (DV). It is the variable that measures the effect of the independent variable. It can also be called the effect or outcome variable (Christensen et al., 2014). The justification and selection of the CSR, earnings management and earnings quality proxies were discussed in Chapter 4. However, for the rest of the variables, 65 prior research on a similar topic were looked at, and it found ROA was used 26 times as a measure of financial performance, Tobin’s Q 23 times, leverage 12 times and Size 10 times (see Appendix C)

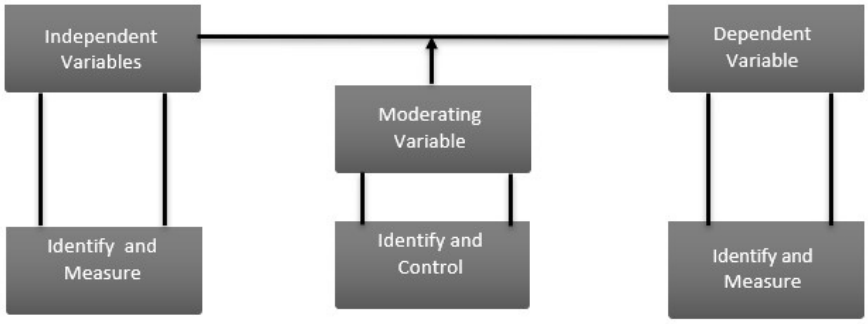

Figure 3-7 Types of Variables

Source: (Smith 2019:22)

The proposed autoregression model, adapted from Stock & Watson (2019) and implemented by Martínez-Ferrero et al. (2016) and Tulcanaza-Prieto et al. (2020), will be in the form.

$$Y_{it} = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \sum_{Y=2010}^{2019} \omega_y \, YEAR_i^y + \mathcal{E}_{it} \quad (32)$$

Where: Y_i = Dependent variable: X_{1t} = Independent Variable 1 at time t; X_{2t} = Independent Variable 2 at time t; X_{3t} = Independent Variable 3 at time t; X_{4t}= Independent Variable 4 at time t; $\sum_{k=1}^{n-1} \propto_y INDUSTRY_i^k$; $\sum_{Y=2010}^{2019} \omega_y \, YEAR_i^y$ = Industry and year dummies

$\mathcal{E}_i$ = The error term.

The error term $\mathcal{E}_i$ It can consist of various things, including omitted variables, measurement error and simultaneity. The parameters b_j correspond to the parameters of interest, the parameters in an underlying structural model. Whether this is the case depends on the application and the assumptions made. A component that systematically fluctuates with the independent variable *X* and the random error term contributes to explaining the dependent variable *Y*. The primary goals of the analysis of the econometric model are to forecast, Y_0 given an, X_0 and to explain how the dependent variable, Y_i changes when the independent variable, X_1 changes. The model will be helpful for estimation and prediction, in other words.

3.6.1 Instrument Variables and *Xtabond2* Syntax

This research will use lagged instruments to mitigate endogeneity. Endogeneity in econometrics occurs when an independent variable is correlated with the error term (ε), resulting in bias and inconsistency in the estimator. An instrumental variable (IV) or 'instrument' is a variable (Z) that affects the dependent variable (Y) only through the independent variable (X). IV-based estimations are standard in solving endogeneity issues for cross-sectional and panel datasets (Ullah et al., 2021; Villas-Boas, 1999). Instrumental variable regression (IV) divides variation of the endogenous variable (x) into two parts: (*i*) a part that might not be correlated with the error term (ε), and (*ii*) a part that might be correlated with the error term (ε) as illustrated in Figure 3-8.

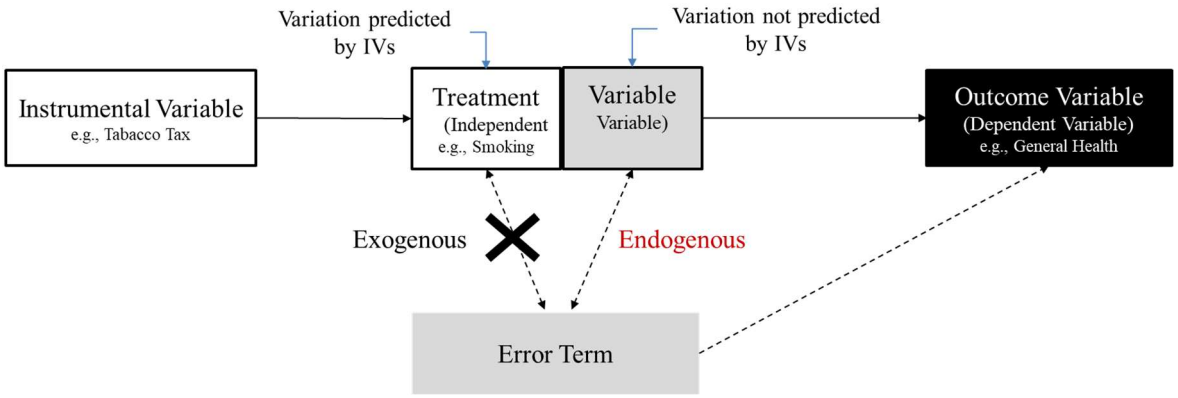

Figure 3-8 Taking Endogeneity Out: Instrument Variable
Source: Park (2023)

The instrument should satisfy the following conditions: (*i*) has a causal effect on X (relevance); (*ii*) Z affects the outcome variable Y only through X and Z does not have a direct influence on Y (exclusion restriction); (*iii*) There is no confounding for the effect of Z on Y(exchangeability) (Baum et al., 2003; Labrecque & Swanson, 2018). Not satisfying any condition results means the instrument is invalid, and the results are biased in the estimation. Bias can also be caused by valid but weak instruments observed through higher standard errors; weak instruments are instruments whose association with the independent variable is not strong. The bias size is positively related to the weakness of the instrument(s) and inversely related to the sample size.

The general method of moments estimators designed for general use in panel data analysis assumes that the regressors' lags can be used as instruments if good instruments are readily available within the data set. From the outset, it should be pointed out that using lagged instruments because they are readily available is not a compelling argument for their validity (Rossi, 2014). However, Li et al. (2021) argue that it may be advantageous to use lagged variables as instruments because it is typically challenging to create valid external instruments. In any case, the lagged values of variables satisfy the relevance and exogeneity conditions and therefore are valid IVs. The other advantage of lagged IVs is that they eliminate the need for external instruments, as the methodology relies on internal instruments within the panel (Wintoki et al., 2012).

The system GMM Stata syntax, which utilises instruments, is called xtabond2 and was introduced by Roodman (2009, p. 41) and is illustrated below.

(33)

$$\boldsymbol{xtabond2}\ y\ L.y\ w1\ w2\ w3\ i.t, gmm(L.y\ w2\ L.w3)\ iv(i.t\ w1)$$

Where:

y	dependent variable
$w1, w2$ and $w3$	independent variables
gmm ($varlist$)	Lagged values of endogenous or not strictly endogenous variables instruments. These are different variables for different observations.
iv ($varlist$)	Strictly exogenous variables, e.g., time. The same variable for all the observations)

According to the above equation, $w2$ and $w3$ are endogenous or not strictly endogenous variables. A lagged IV entails using a lag $w2_{it-1}$ of the variable of interest $w2_{it}$ as an IV for $w2_{it}$. The reasoning is that since $w2_{it-1}$ precedes $w2_{it}$ in time, the causality runs entirely from $w2_{it-1}$ to $w2_{it}$, and since there is presumably a high degree of autocorrelation in $w2$, $w2_{it-1}$ should be a valid IV for $w2_{it-1}$ (Wang & Bellemare, 2019). All lagged values of the exogenous variables are legitimate instruments in dynamic models (Li et al., 2021). Longer lags of the dependent variable can be used as additional instruments to improve the estimator's efficiency (Roodman, 2009).

Although Ullah et al. (2021) contend that IV-based estimation is useful in solving endogeneity issues for cross-sectional and panel datasets, fellow researchers cautioned against using lagged IV in regression. The use of lagged IV "often leads one to report coefficient estimates of questionable economic significance (because of the increased bias) and statistical significance (because of the greater likelihood of a Type I error) ... and will tend to lead one to conclude that a causal relationship exists where it does not" (Wang & Bellemare, 2019, p. 6). This is because lag-related explanatory variables lack the exogeneity that characterises natural experiments, and they have a simultaneous relationship with the unobserved confounding that affects the dependent variable and, as a result, seldom offer extra information necessary for causal inference. However, the efficiency of the estimation can be improved if the lag values are external to the system and adequately correlated with the simultaneously determined explanatory variable and do not themselves belong in the corresponding estimating equation (Reed, 2015). In dynamic panel models, the error term (ε) cannot be e independent of lagged values of the dependent variable (Davidson & MacKinnon, 2021)

3.6.2 Control Variables

In the absence of control variables (such as firm performance, firm size, and whether a firm has subsidiaries), investigations examining the relationship between earnings management and corporate social responsibility are more likely to run into heteroscedasticity and misspecification issues in the earnings management models (e.g., Habbash et al. (2014); Jaggi et al. (2009); Kothari et al. (2005)). As a result, in addition to the independent components discussed in the prior parts, control aspects are also examined in this study. Numerous studies have shown that control variables, such as firm leverage, cash flow from operating operations, firm subsidiaries, and business performance, are crucial to ensuring that the tests focus more narrowly on the variances caused by changes in corporate governance practises (e.g., Habbash et al. (2014), Alghamdi (2012), Rohaida (2011), and Dechow et al. (1995). The accrual-based models' fundamental flaw, as discussed in sections 3.5.5 and 3.5.4, is that they ignore other variables affecting accrual quality, like business size, growth, and debt (McNichols, 2002; Ronen & Yaari, 2008). Therefore, the research uses control variables to counter this weakness to simulate business performance, firm size, leverage (debt), and growth.

Table 3-2 Research variables by category

Categories	Acronym	Ratios	Formula/measurements
Dependent variables	***DACC***	Discretionary accrual of firm i at time t.	This is a measure of EM. The calculation is done in four steps. Step 1 – calculate total accruals (TACC_1) of firm i at time t. Step 2 -The Jones model assumes that normal accruals are related to changes in revenue/sales and by the level of plant, property and equipment (PPE). Therefore, this second step estimates the coefficient of normal accruals in the estimation period. Step 3 – The coefficients estimate from Step 2 are then applied to the event years to predict the normal accruals. Step 4 – is the regression of Steps 1 to 3. The result is then made absolute by removing all the negative signs (see Appendix C for SPSS code).
	EP	Earnings Persistence of firm i at time t	This a measure of EQ
	CSRi	Environmental, Social, and Governance (ESG) rating is used as a CSR score.	This part of the commonly used non-financial factors is part of the investor analysis process to identify material risks and growth opportunities. ESG metrics are not mandatory for financial reporting. However, companies are increasingly making disclosures in their annual report or a standalone sustainability report. The ratings range from 1-5 with 5 being the strongest adherence to ESG practices.
	ROA	Return on assets of firm i at time t	Return on total assets (ratio of net profit to total assets). The ROA is a proxy for the performance or profitability of a firm.
Independent Variables	***CFO***	Operating cash flow of firm i at time t.	Cash flows from operations (CFO/Beginning total assets)
	GRW	Percentage change in sales.	Sales growth= $Sales_t - Sales_{t-1}$
	EBITDA	Earnings before interest, taxes, depreciation, and amortisation are measures of a company's financial performance.	EBITDA = Net Income + Interest + Taxes + Depreciation + Amortization or EBITDA = Operating Profit + Depreciation + Amortization
	ECKELi		This is the Eckel index value for measuring income smoothing in earning management. It is calculated by dividing delta Net Income by delta Turnover ((Amina, 2018)
	GRM	The ratio of gross profit to revenue	Gross margin
	LIQ	Current ratio	Current asset/current liabilities
	Pen	Penman (2001) measure of EQ of firm i at time t.	The quality of earnings is measured as a ratio of cash flow from operations divided by the net income. The smaller the ratio, the higher the quality of earnings (Hejazi et al., 2012)
	ROE	Return on equity of firm i at time t.	It shows how much profit a firm earns compared to the total amount of shareholder equity reported on the balance sheet. A high return on equity indicates the ability of a firm to generate cash internally. The higher ROE indicates better firm performance.
	TorbinQ	The firm's Tobin's Q was computed one year ahead.	Tobin's Q is calculated as follows: (total assets – book value of equity + market value of equity) scaled by total assets.

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Categories	Acronym	Ratios	Formula/measurements
Control Variables	***LEV***	The ratio of total debt to total assets	Leverage measures the likelihood of bankruptcy
	SIZE	Total Assets is a proxy for the size of the company	Natural logarithm of the total assets of firm i at time t. or Natural log of the market value of equity. Size had a significant and positive relationship with earnings persistence; that is, the bigger the size of a company, the greater the earnings persistence, which was an index in the quality of financial reporting (Tariverdi, 2012).
	LOSS		An indicator equal to 1 if the form incurs a loss and 0 otherwise
Dummy Variables	***INDUSTRY***	A dummy variable according to the Industry Classification Benchmark (ICB).	Year fixed effects in regression, there are 11 ICB Classifications for this study - 10 Technology, 15 Telecommunications, 20 health Care, 30 Financials, 35 Real Estate, 40 Consumer Discretionary, 45 Consumer Staples, 50 Industrials, 55 Basic Materials, 60 Energy, and 65 Utilities.
	YEAR	dummy variable that indicates fiscal years	Year-fixed effects in regression

Source: Researcher Construction, 2023

3.6.3 Proxy variables

Researchers sometimes need help when data on an important variable is unavailable. In such a situation, researchers can substitute this variable with a variable highly correlated with the unavailable variable whose data is obtainable. Proxy variables, often known as proxies, refer to these substitution variables. One faces a conundrum when using the proxy, which causes measurement inaccuracy, and not using the proxy causes bias in the omitted variable (Moody, 2009). Both measurement inaccuracy and leaving out a crucial variable might result in accurate and consistent estimations. However, Monte Carlo simulations have shown that the bias often tends to be lower if a proxy is included than if a variable is completely removed. The bias that results from including unavailable data is strongly influenced by how closely tied a proxy is to it. An adequate proxy is better included. Because an unavailable variable cannot be observed, it is impossible to determine how strongly they are associated. In some circumstances, it might be possible to determine the relationship between the two variables in different settings, such as in different studies.

The coefficient estimate is created by combining the genuine 98 parameters that connect the dependent variable and the unavailable variable and the parameter connected to the proxy for the unavailable variable. Suppose that $Y = \alpha + \beta X$, but data on X is unavailable. So, available Z is used as a substitution and is related to X, resulting in equation $Y = \alpha + bZ$. Substituting for X in the original model yields $= \alpha + \beta X = \alpha + \beta(a + bZ) = (\alpha + \beta a) + \beta bZ$. If then the model $Y = c + dZ$ is estimated, the coefficient on Z becomes $d = \beta b$, the product of the true coefficient relating X to Y and the coefficient relating X to Z. Unless the value of b is known, there is no measure of the effect of X on Y (Moody, 2009).

However, the researcher is aware of the significance of the coefficient d and the expectedness of the sign. In other words, using the estimated coefficient, $\hat{d}$, the hypothesis that β is positive may tested if that b is positive is already known. The calculated coefficient can only establish signs and significance if the target variable is a proxy. In three studies on the connection between weapons and crime—two by Ludwig and Cook (2004) and one by Duggan (2001) - the issue of the employment of proxies is brought to light. The researchers utilised proxies because there is no accurate way to count the number of firearms. It is

impossible to conclude the elasticity of crime concerning guns from the coefficient on the proxy for guns (Moody & Marvell, 2003).

3.6.4 Omitted Variables, Measurement Error and Simultaneity.

In the proposed model, an explanatory variable, Y_i is referred to as endogenous if it correlates with the error term. If a variable is chosen as part of a model, it is endogenous. Although linked to conventional definitions, the term is used extensively in econometrics to refer to any circumstance in which an explanatory variable is correlated with the disturbance. In the suggested model, Y_i is referred to as exogenous if it is uncorrelated with -$\mathcal{E}_i$ (Wooldridge, 2010). If the zero conditional mean assumption is true, each explanatory variable must be exogenous. Consider the case where $E(y|\mathrm{x}, q)$ is the conditional expectation of interest, which may be expressed as a function that is additive in q and linear in the parameters. When q and x can be correlated, buthis has no bearing on $E(y|\mathrm{x}, q)$. This situation can be modelled as follows; $Y_i = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \cdots \beta_K X_K + u$ where q is part of the error term u. If q and x_j are correlated, then x_j is endogenous. Self-selection is a common cause of the association between explanatory variables and the unobservable; if agents choose the value of, x_j, this may depend on factors *(q)* that are not visible to the analyst. A salary equation where an individual's years of education are expected to relate to unobserved ability is an excellent illustration of omitted ability.

3.6.4.1.1 Omitted Variable Bias

Omitted variable bias is the bias in the OLS estimator caused by the regressor, X, associating with an omitted variable. Omitted variable bias must satisfy two conditions to occur: X must be correlated with the omitted variable, and the omitted variable must be a determinant of X. If the two above are combined, the resultant is a violation of the first OLS assumption $E(u_i|X_i) = 0$.

The observed values will not appear to adhere to a precise relationship if one or more of the variables in the relationship are measured with error, and the discrepancy will contribute to the disturbance term (Dougherty, 2011). To assess the (partial) impact of a variable in this situation, say x_K , a distorted estimate of it, say x_K can only be observed. When x_K is plugged in for x_K - thereby arriving at the estimable equation - $Y_i = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} +$

$\beta_3 X_{3t} + \beta_4 X_{4t} + \cdots \beta_K X_K + u$. A measurement error must always be added to u. Depending on the assumptions made regarding the relationships between and, x_K, u and x_K. may or may not be connected. For instance, even if x_K may reflect the marginal tax rate, only the average tax rate can be learnt (Wooldridge, 2010).

Simultaneity occurs when y and at least one explanatory variable are determined concurrently. In general, x_K and u are associated if, for example, x_K is determined in part as a function of y. For instance, if y represents the city's murder rate and x_K represents the size of the police force, then the murder rate somewhat influences the size. Though y and, x_K Are formed simultaneously in the data collected. Conceptually speaking, this is a more challenging condition to analyse since a scenario in which x_K It can be changed exogenously if needed.

3.6.5 Multicollinearity Test

Multicollinearity happens when there is collinearity between three or more variables, even when there is no highly correlated pair. The correlation matrix is not appropriate in this situation since it won't be able to identify every instance of collinearity. The amount to which the standard errors are inflated because of multicollinearity is indicated by the variance inflation factor (VIF). The tolerance level is stated as the inverse of $\frac{1}{1} - R^2$. Multicollinearity may arise if too many variables have been used that measure the same thing. The variance inflation factor (VIF) is frequently used in scientific literature to detect collinearity or the existence of linear correlations between two or more independent variables in the context of a multiple linear regression model (Salmerón et al., 2015).

Regression multicollinearity can also be determined by looking at the correlations and associations (nominal variables) between independent variables and looking for strong relationships. Running correlations between your variables will simplify identifying high bivariate correlations. You can eliminate one of the two variables if there are strong bivariate relationships. However, whether other variables are included in the model, the regression coefficients may only sometimes be sufficient. Add and then remove variables from your regression model to experiment with this. If multicollinearity is problematic, the regression coefficients' standard errors will be high. Statistical significance will not be attained by

predictor variables with well-established, strong links to the outcome variable. In this instance, neither may contribute to the model after the other is included. But when they work together, they have a big impact. The fit would be substantially worse if both variables were removed from the model. Therefore, the total model adequately describes the data, but neither of the X variables contributes significantly when introduced to your model last. Multicollinearity may exist when this occurs.

3.7 Summary

This quantitative study uses archival cross-sectional financial data gathered from Fame and the London Stock Exchange. When employing archive data in accounting research, it is assumed that it is at least as capable of addressing the topic as any other data. The FTSE-350 firms on the London Stock Exchange for the ten years 2010 to 2019 will make up the sample for this study. The 10-year time frame was chosen to avoid the effects of the 2008–2009 recession and the economic impact of COVID-19, which began impacting economies in January 2020. The data analysis approach will be panel data econometrics - the same method used in recent similar studies. The choice of variables for the research was based on the commonly used variables in similar studies. To assess the degree to which numerous independent variables (predictors) and dependent variables (responses) are linearly connected, multivariate regression is used.

The econometric procedure can be summarised as follows - The Pearson correlation coefficient will be used in Stata. A to demonstrate the relationship between each variable. Panel model selection between Fixed Effects and Random Effects models is then done using the Hausman Test. This step checks and then eliminates panel effects. Multiple regression analysis results will be validated by checking the *R*-square (coefficient of determination or explanatory power of the mode), *F*-test (goodness of fit test) for the model, t-test (individual significance test) for each independent variable, and observation of the influence of independent variables on the dependent variable for their respective beta coefficients, the desired results will be obtained. Checking for normalcy, multicollinearity, heteroskedasticity, and autocorrelation is important when using panel data. Suppose either the fixed or random effects models project the existence of either multicollinearity, endogeneity, or heteroscedasticity. In that case, the Generalised Method of Moments

(GMM) will be used instead, eliminating all the listed issues. Data analysis and results will be presented in the next chapter.

Chapter 4 : Data Analysis and Results

4.1 Introduction

The study's findings on whether corporate social responsibility (CSR) contributes to the quality of financial reporting and business performance are presented in this section. The empirical analysis will involve the estimation of a system General Methods of Moments (GMM) model, followed by diagnostic tests to ensure the validity and robustness of the results. The coefficients of the independent variables will be interpreted to assess the direction and magnitude of their impact on financial performance. The outcomes will be divided based on the hypothesis being tested. The results will be substantively interpreted and presented following APA standards. Multiple statistical techniques were used in this study's empirical inquiry. The Pearson correlation coefficient will show the relationship between all the variables. Initially, The Hausman Test will determine if fixed or random effects are present. Suppose endogeneity or heteroscedasticity issues are observed in the fixed or random effects models. In that case, the regressions will be run as system GMM fixed effects models, i.e., GMM estimators with first-difference differencing. The year dummy, i.year or y*, will treat year-fixed effects or time effects in the system. Xtabond2 system GMM is robust to unobserved effects when used with gmmstyle lagged instruments.

4.2 Sample Size

The study initially included all 350 companies listed on the FTSE-350 index. However, companies with less than ten years of financial data were excluded, resulting in a final sample size of 230 companies. This exclusion was necessary due to the limited availability of financial data for some companies. Additionally, companies outside the FTSE-350 index are often less willing to report on their Environmental, social, and governance (ESG) performance, leading to unbalanced data. Technology, Telecommunications, Healthcare, Financials, Real Estate, Consumer Discretionary, Consumer Staples, Industrials, Basic Materials, Energy and Utilities are the industries into which the corporations are divided. See **Table *4-1***. Several research studies have excluded heavily regulated sectors, e.g., Financial or controversial industries containing energy and tobacco companies. Companies with a significant environmental effect will typically perform better in terms of corporate

social responsibility and engage in earnings management to a lesser extent than companies in industries with a lower environmental impact (Kim et al., 2012).

Additionally, banks can have less incentive to manage earnings through greater openness in accounting disclosure and laws in the banking and financial sector (Gras-Gil et al., 2016). The generalised method of moments (GMM) regressions removes group characteristics, omitted variable bias, and concern for unobservable factors. They also partially or fully adjust for the effects of time-invariant variables with time-invariant variables (Allison, 2009). Generally, the consumer discretionary industry group has higher discretionary accruals, followed by the Financials industry, with utilities having the least discretionary accruals.

Table 4-1 Research data profile

ICB Industry Classification	Firms	Firm-year Obs.	% Of Sample	% Cum.
10 Technology	8	80	3.48	3.42
15 Telecommunications	4	40	1.74	5.52
20 Health Care	6	60	2.61	9.01
30 Financials	69	690	30	38.97
35 Real Estate	15	150	6.52	45.39
40 Consumer Discretionary	43	430	18.7	62.59
45 Consumer Staples	16	160	6.96	69.18
50 Industrials	43	430	18.70	86.96
55 Basic Materials	17	170	7.39	95.72
60 Energy	4	40	1.74	97.51
65 Utilities	5	50	2.17	100
	230	2300		

Source: Researcher construction, 2023.

4.2.1 Descriptive Statistics

Table *4-2*. contains descriptive statistics for all research variables. Most of the variables have 2,300 observations except for $EBIT$, $EBITDA$, GRM, GRW, LIQ, RSF, SOL and $TobinQ$ with 61, 53, 24, 81, 1, 13, 24, 1, and 1 missing value respectively. Corporate social responsibility performance has a mean of 0.5298, which indicates the strong corporate social responsibility of firms within the sample. The average ESG score for European countries is

0.5928 (Gonçalves et al., 2021); corporate social responsibility disclosure is not compulsory for UK firms, meaning some corporate social responsibility data was missing in the early years; therefore, a linear relation is assumed to fill in the data in the corporate social responsibility index following Salewski and Zülch (2014). The mean for discretionary accruals is close to that of Gras-Gil et al. (2016), who had 0.089, and Choi et al. (2013), with 0.0606 GRW of 0.1121 points to modest growth of less than 1% in sampled firms. The value for LEV of 0.264046 means sampled firms have close to four times the amount of assets compared to debts. Research has shown that leverage firms are prone to earnings management (Dang, 2021; Moratis & van Egmond, 2018; Tulcanaza-Prieto et al., 2020). $EBITDA$ on average is 31.25, indicating Earnings Before Interest, Taxes, Depreciation, and Amortization of around 31%. According to the ROA value, on average, for every pound of debt and equity the business takes on, it earns 8 pence. Financial performance is highly determined by the firm's size, i.e., ROA, ROE, TobinQ, etc and the industry, with the financials industry having higher gross margins than the other industries and accounting for more than half of the total gross margins.

The data for the variables have positive Kurtosis with a range of -1.2549 – 1,912.377 – meaning the data has a sharper peak and heavier tails than the normal distribution. The data is not asymmetrical, as the mean and median values are not similar. As a follow-up to the previous point, skewness is used to determine the extent to which the data is not asymmetrical. The data for 77.8% of the variables has positive skewness, meaning a positive or right-skewed distribution exists. However, for Ri, EP, PEN and $SIZE$ the data has a negative or left-skewed distribution. The data for the variable $SIZE$ is derived from the value of total assets, which have been transformed to their natural logarithms. The advantage of transforming the data to logs is that a log-linear model has all the values in the data set with constant elasticity, and logarithms can stabilise the variance. In addition, results from log data can be objectively interpreted without the need to convert them (**Figure 4.1**), with after-log transformation being easier to interpret trends.

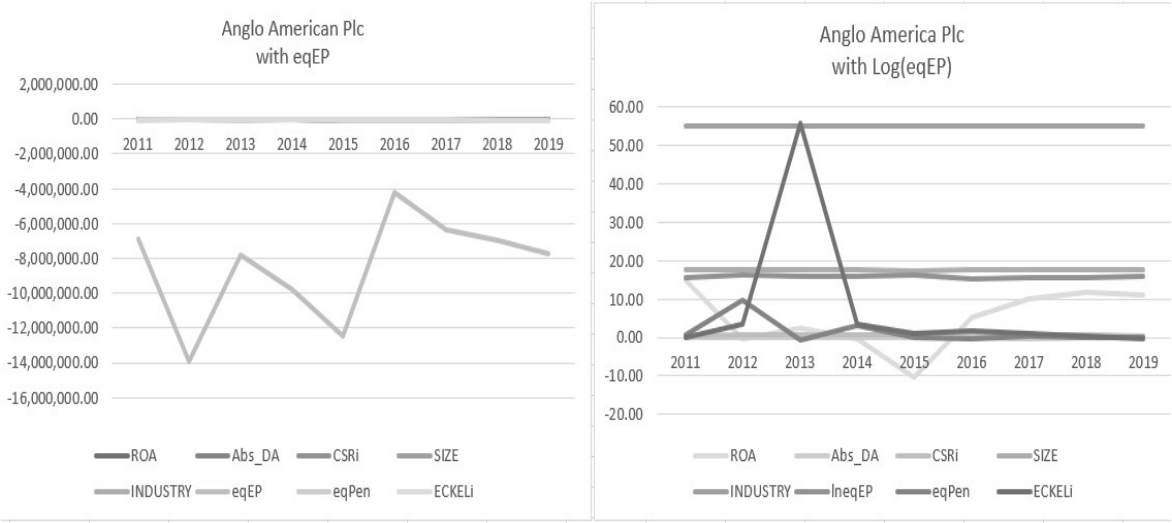

Figure 4-1 Comparison of data distribution before and after log

Source: Researcher construction, 2023.

Table 4-2 Descriptive Statistics for Explanatory Variables

Variable	N	Minimum	Maximum	Mean	Std. Error	Std. Dev.	Variance	Skewness	Kurtosis
Corporate Social Responsibility Score ($CSRi$)	2300	0.0417	0.95835	0.529805	0.004684	0.224655	0.05047	-0.24845	-1.2549
Discretionary Accrual ($DACC$)	2300	0	5.43579	0.103122	0.004102	0.196742	0.038707	11.9121	259.3422
Earnings before int. tax ($EBIT$)	2239	-93.1174	99.95599	28.44892	0.619516	29.31431	859.3285	1.034491	0.089582
Earnings before int, tax, depr. ($EBITDA$)	2247	-317.039	107.4533	31.28898	0.601016	28.48969	811.6627	0.03617	9.755266
Eckel index ($ECKELi$)	2300	-1208.33	1280	0.777207	1.16443	55.84408	3118.561	3.928058	349.9893
Earnings Persistence (EP)	2300	-1.8E-06	9.406207	8.956839	0.004081	0.195736	0.038313	-42.1353	1912.377
Fixed Assets Turnover (FAT)	2276	0.000146	310.4009	2.671984	0.206905	9.870909	97.43485	18.03133	467.1407
Gross margin (GRM)	2219	-317.039	99.90783	24.79613	0.620619	29.23502	854.6866	0.273158	8.528038
Sales growth (GRW)	2299	-0.93682	25.99188	0.11216	0.014605	0.700274	0.490384	25.91084	860.5703
Leverage (LEV)	2300	0.000138	1.318542	0.264046	0.004697	0.225238	0.050732	1.331781	1.77392
Liquidity (LIQ)	2287	0.027355	92.2108	2.146365	0.118098	5.647762	31.89722	8.62276	93.84101
Penman Earnings Quality (PEN)	2300	-810.559	195.6	-0.03173	0.406495	19.4948	380.0473	-31.5302	1328.986
Return on assets (ROA)	2300	-65.0962	104.8418	8.385103	0.192712	9.242162	85.41757	1.540211	9.593724
Return on equity (ROE)	2300	-136.948	404.1172	12.75553	0.356095	17.0777	291.6478	6.346791	126.5142
Return on Shareholders' Funds (RSF)	2276	-98.7484	753.0387	22.34031	0.74605	35.59215	1266.801	7.609032	108.2284
Total Assets ($SIZE$)	2300	0.0862	23.429	17.60229	0.062105	2.978438	8.871095	-0.32573	0.487183
Solvency (SOL)	2299	-37.037	99.98244	49.93354	0.574935	27.56692	759.935	0.066261	-0.77357
Firm's Tobin's Q ($TobinQ$)	2299	-0.37037	1.003496	0.499365	0.00581	0.278577	0.077605	0.075884	-0.81364

The table reports descriptive statistics for the main variables used in the analysis. Variables are defined in **Table *3-2***

Source: Researcher construction, 2023.

4.2.2 Diagnostics and Tests

The model specification validity (Hansen test) and serial correlation tests (Arellano-Bond test) were carried out as recommended by Roodman (2009) and Arellano and Bond (1991) and used in the same type of research by Andres and Vallelado (2008). The option $robust$ is used with the $xtabond2$ syntax - the system GMM regression command in Stata, to adjust for heteroskedasticity (Torres-Reyna, 2007), hence no requirement to test for heteroskedasticity. These tests are post-diagnostic tests. Pre-diagnostic tests were performed to check for multicollinearity, Pearson's matrix, and correlation and collinearity. Below are explanations of the tests' findings and their implications for the hypothesis.

A correlation is a measurement of how closely two variables are related. If the occurrence of one event results in the other, then there is a causal relationship between the two. However, the correlation ends if there is a causal relationship between two variables. Relationships between two variables are not necessarily causally related (MacKenzie, 2013). A sample correlation coefficient, denoted as r, obtained from the bivariate Pearson Correlation, measures the strength and direction of linear relationships between continuous data sets. The population correlation coefficient, often known as the Pearson correlation, or simply rho, assesses the statistical evidence supporting a linear relationship between similar population-level variables. Based on whether a one-tailed or two-tailed test is necessary, the null hypothesis $(\boldsymbol{H_o})$ and alternative hypothesis $(\boldsymbol{H_1})$ of the correlation significance test can be expressed in one of the following ways. The correlation coefficient for the population is 0 (there is no association); the two-tailed significance test, $\boldsymbol{H_1}$: $\rho \neq 0$ (the population correlation coefficient is not 0; a nonzero correlation could exist). One-tailed significance test: $\boldsymbol{H_o}$: $\rho = 0$ (the population correlation coefficient is 0; there is no association"); $\boldsymbol{H_1}$: $\rho > 0$ ("the population correlation coefficient is greater than 0; a positive correlation may exist"); or $\boldsymbol{H_1}$: $\rho <$: (the population correlation coefficient is less than 0; a negative correlation could exist). **Table 4-3** provides a stratification of the observed magnitude of correlation coefficients. However, when interpreting the results, it should be noted that a) Correlations do not describe the degree of agreement between two variables, and b) Two variables can have a high degree of correlation while also disagreeing significantly.

Correlation coefficients close to zero do not mean the variable is not related (Anesthesia & Analgesia, 2018)

Table 4-3 Correlation Coefficient Observed Magnitude

Correlation Coefficient	Interpretation
0.00 – 0.10	Negligible correlation
0.10 – 0.39	Weak correlation
0.40 – 0.69	Moderate correlation
0.70 – 0.89	Strong Correlation
0.90 – 1.00	Very strong correlation

Source: Anesthesia & Analgesia (2018)

A Pearson correlation matrix was produced to investigate the connections between firm performance, discretionary accruals, CSR, and earnings quality. A multicollinearity issue may arise when there is a higher degree of correlation across variables, especially when the correlation coefficients are more than 0.8 (e.g., Alghamdi (2012); Hair et al. (2010); Habbash (2010); Abdul Rahman et al. (2006)). Correlation refers to the relationship between variables. It indicates whether variables move in the same or opposite directions. If two variables move in the same direction, the correlation is called direct or positive. If two variables move in opposite directions, the correlation is called indirect or negative. The types of correlations in this research and how results are interpreted are found in **Table 4-4**. Regression models may make it difficult to determine the link between dependent and independent variables because of the multicollinearity problem, which could cause the results to be skewed.

Table 4-4 Types of Correlations

Effect on Variable X	Effect on Variable X	Type of Correlation	Value	Example
X increases in value	Y increases in value	Direct or positive	Positive, ranging from .00 to +1.00	Higher earnings quality results in higher financial performance
X decreases in value.	Y decreases in value.	Direct or positive	Positive, ranging from .00 to +1.00	The more a company embraces social responsibility, the higher its profitability.

X increases in value	Y decreases in value	Indirect negative	or	Negative, ranging from -1.00 to .00	Higher earnings management results in low EQ
X decreases in value.	Y increases in value.	Indirect negative	or	Negative, ranging from -1.00 to .00	The less a company embraces social responsibility, the higher its EM

Source: Salkind (2019) and Researcher, 2023.

The correlation matrix between variables is presented in **Table *4-5***; results indicate that the effect of earnings management practices on corporate social responsibility is positive and significant (r=-0.011, p<0.01). The correlation coefficient of LEV strongly negative relative to SOL (r=-0.665, p<0.01). The correlation coefficient of GRM with SOL is significantly positive (r=0.580, p<0.01) and significantly negative with $CSRi$ (r=-0.322, p<0.01).

As a rule, models should assume heteroskedasticity (Hayes & Cai, 2007; Stock & Watson, 2003). Stata, by default, assumes homoscedastic standard errors, so the model needs to be adjusted to account for heteroskedasticity because the presence of heteroscedasticity violates the Gauss-Markov assumptions. The regress command's $robust$ option is used to account for heteroskedasticity (Torres-Reyna, 2007). When heteroscedasticity is present, robust standard errors are a method for obtaining unbiased standard errors of GMM coefficients. These robust standard errors typically have greater sizes than conventional ones and go by various names, including White's Standard Errors.

Table 4-5 Pearson Correlation Matrix

	CSRi	DACC	ECKELi	EP	FAT	GRM	GRW	LEV	LIQ	LOSS	PEN	ROA	SIZE	SOL
Environmental, Social, and Governance rating (CSRi)	1													
Discretionary accrual (DACC)	0.011	1												
Eckel index (ECKELi)	0.002	0.033	1											
Earnings Persistence (EP)	-0.013	0.01	-0.009	1										
Fixed Assets Turnover FAT	-.047*	.121**	-0.002	0.004	1									
Gross Profit Margin (GRM)	-.322**	-.120**	-0.01	.243**	-.113**	1								
Growth (GRW)	-0.03	.440**	-0.002	0.013	0.003	-0.017	1							
Leverage (LEV)	.212**	.182**	0.01	0.015	.184**	-.401**	.043*	1						
Liquidity (LIQ)	-.197**	-0.03	-0.002	0.003	-.043*	.254**	-0.015	-.229**	1					
LOSS	.057**	0.025	0.014	-0.017	-0.016	-.208**	-0.036	.054**	-0.016	1				
Penman (PEN)	-0.016	0.01	0	0	-0.001	0.009	-0.003	-.075**	.052*	-0.001	1			
Return on Asset (ROA)	0.014	.140**	.081**	.097**	.212**	0.007	-0.011	0.026	-.069**	-.266**	0.011	1		
Total Assets (SIZE)	-.169**	-.080**	-0.014	-0.032	-.230**	.451**	-0.002	-.322**	.166**	-0.035	0.012	-.196**	1	
Solvency (SOL)	-.397**	-.115**	0.011	-0.001	-.056**	.580**	-0.031	-.665**	.282**	-.084**	.048*	.058**	.409**	1

Variables are defined in **Table *3-2***. The table shows Pearson correlation coefficients among the main variables involved in the analysis (dummy variables and other instrument variables are excluded) * p<0.10, **p<0.05, ***p<0.01

Source: Researcher construction, 2023.

Multicollinearity happens when there is collinearity between three or more variables, even when there is no highly correlated pair. The correlation matrix is inappropriate since it cannot identify every instance of collinearity. The amount to which the standard errors are inflated because of multicollinearity is indicated by the variance inflation factor (VIF). The tolerance level is stated as the inverse of $\frac{1}{1} - R^2$. Too many variables measuring the same thing might lead to multicollinearity. In scientific literature, the variance inflation factor (VIF) is frequently used to identify collinearity or the presence of linear correlations between two or more independent variables in a multiple linear regression model (Salmerón et al., 2015).

Values for VIF begin at 1, and there is no maximum. As a general rule, according to Frost (2020), a value of 1 denotes no correlation between the independent variable and any other predictors in the model. In reality, there is almost always some collinearity among the predictors (James et al., 2015). VIF readings between 1 and 5 show a moderate association but not one that justifies taking corrective action. When the coefficients are poorly approximated, and the p-values are in doubt, VIF values larger than 5 indicate critical levels of multicollinearity. However, Johnston et al. (2018) argue that VIFs of 2.5 or greater are indicative of significant collinearity, whilst Vittinghoff et al. (2012) and Allison (1999) argue that VIFs greater than 10 are a cause for concern and problematic. James et al. (2015) and Menard (2002) agree that VIF > 10 indicates a severe collinearity problem but also added that VIF > 5 is still a cause for concern. For this research, VIF > 5 will be considered problematic; in general, a VIF of 5 means that the variance of the co-efficiency of the predictor is five times more than what it should be if there is no collinearity. The main weakness of VIF is its inability to distinguish between several simultaneous multicollinearities. A VIF score larger than 5 indicates that an X variable should not be included in the fitted regression model because its interdependence with the other X variables is overly strong (Kutner et al., 2013).

Table *4-6* reports the results of the VIF multicollinearity test. Panel – earnings management and corporate social responsibility indicate mean VIFs of 1.12 and 1.25 with and without dummy variables, respectively, meaning the mean-variance of predictor variables $CSRi,$ $ROA,$ $LEV,$ $LOSS,$ $SIZE\ and\ ACCL1$ (i.e., their standard error) is 12% and 25% greater than would be the case with no collinearity effect. These percentages are derived by deducting the actual value of VIF from 1 (the value of VIF if there were no collinearity). The results can be alternatively interpreted by stating that the mean regression coefficients of the variables, $DACC,$ $CSRi, ROA,$ $LEV,$ $LOSS,$ $SIZE\ and\ ACCL,$ are 1.26, 1.23, 1.27, 1.1, 1.55, and 1.09 times greater than respectively than it would have been if each of the independent variables had been entirely non-related to other variables the model. The p-values and all the predictor variable coefficients can be trusted because the mean VIFs are all close to 1 or less, demonstrating that multicollinearity does not impact it.

Panel – earnings quality and earnings management indicate VIFs (dummies excluded) of 1.32, 1.16, 1.15, 1.17 and 1.26, representing $DACC,$ $ROA,$ $LEV,$ $LOSS,$ $SIZE\ and\ GRW$ respectively, meaning their variances are again all near one and less than 5, indicating an absence of multicollinearity in the panel's model. Panel- financial performance and earnings quality reports VIFs (dummies excluded) of 1.16, 1, 1.13, 1 and 1.07 for LEV, LOSS, $SIZE,$ $EP,$ $and\ LIQ$ respectively. Panel - financial performance and corporate social responsibility have 1.06, 1.15, 1.01. and 1.13 for $CSRi,$ $LEV,$ $LOSS, and\ SIZE$ respectively and the last panel indicates VIFs of 1.04, 1.06, 1.18, 1.01, 1.13, and 1 for $DACC, CSRi,$ $LEV,$ $LOSS,$ $SIZE\ and\ EP$ respectively. All reported VIFs are near one and less than 5, indicating an absence of multicollinearity in the panels' models. All the results, as stated, conform to the non-existed of multicollinearity, and all the predictor variables' coefficients can be trusted and p-values with no further action as supported by Johnston et al. (2018), James et al. (2015), Vittinghoff et al. (2012), Menard (2002), and Allison (1999)

Although there are no collinearity problems in the model, there are three identified situations, presented by O'Brien (2017) and Allison (1999), where collinearity is safe to ignore: When the variables are dummy variables that reflect variables with three or more categories, when one or more of the variables is a power of another variable included in the regression, and when the variables are control variables in a regression model whose

coefficients are not to be interpreted. However, if multicollinearity cannot be ignored, two possible solutions exist: a) drop one of the problematic variables from the regression or b) combine the offending variables into a single predictor; this involves creating a new variable (James et al., 2015).

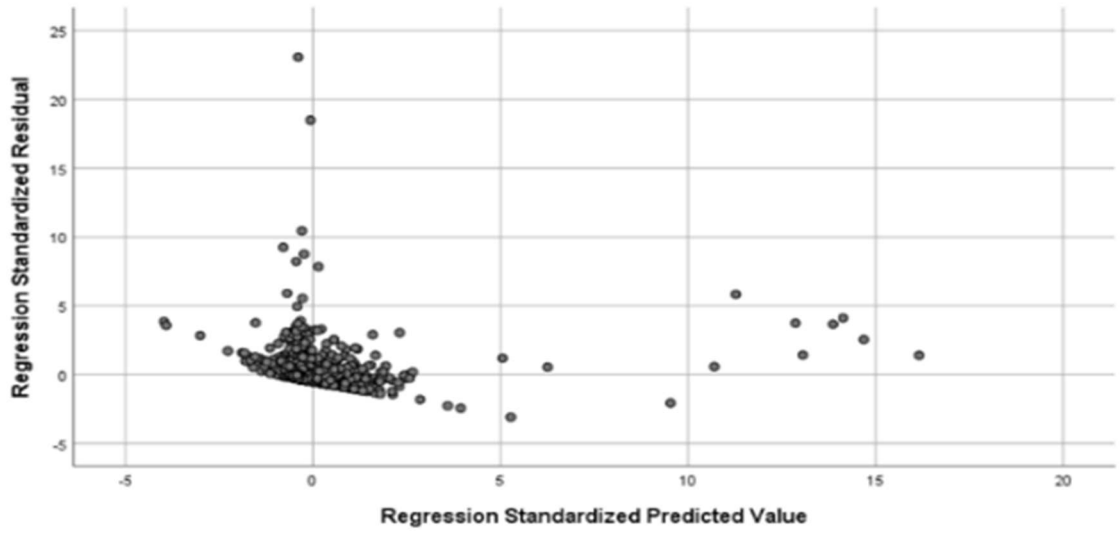

Figure 4-2 Scatterplot with Dependent Variable: DACC

Source: Researcher construction, 2023

A residual plot provides a visual image to check for heteroscedasticity. As evidenced by the scatterplots and descriptions below, the researcher found evidence of heteroscedasticity. System GMM with the syntax Robust can be used to overcome this issue. Scatterplot with dependent variable: DACC was constructed. **Figure 4-2 Error! Reference source not found.** shows a plot with the predicted values of the dependent variable on the X-axis and the regression residuals on the Y-axis. The scatterplot demonstrates that the residuals' vertical spread is comparatively small and is centred around zero. The expected level, however, appears to be less concentrated and more spread out, moving from left to right. From left to right concerning the scatter graph, the resultant image looks to be concentrated around zero, with only a few outliers branching out. As a result, there is heteroscedasticity because the variance of the residuals is not constant.

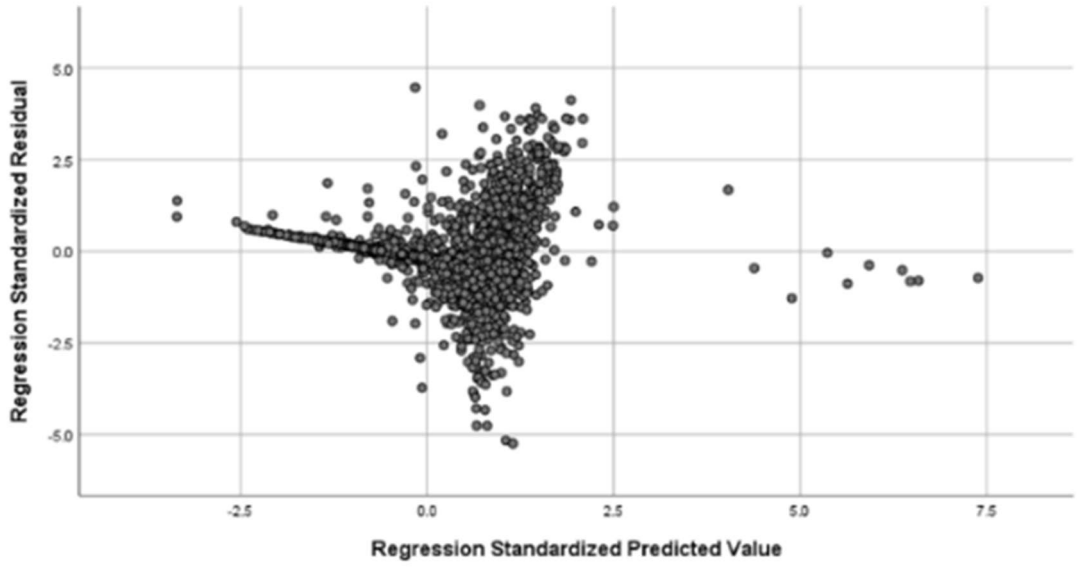

Figure 4-3 Scatterplot with Dependent Variable: EP

Source: Researcher construction, 2023

The dependent variable, earnings persistence, was then used to create a scatterplot to test for heteroscedasticity. **Figure 4-3** shows a figure with the projected values of the dependent variable on the X-axis and the regression's residuals on the Y-axis. The scatterplot demonstrates that the expected values are centred around zero and that the vertical spread of the residuals is relatively small. However, an increase in the vertical dispersion of the residuals is observed moving from left to right, and the expected level of fuel consumption rises. From left to right on the scatter graph, the resultant image looks concentrated around zero, with only a few outliers branching out. This indicates that there is evidence of heteroscedasticity because the variance of the residuals is not constant.

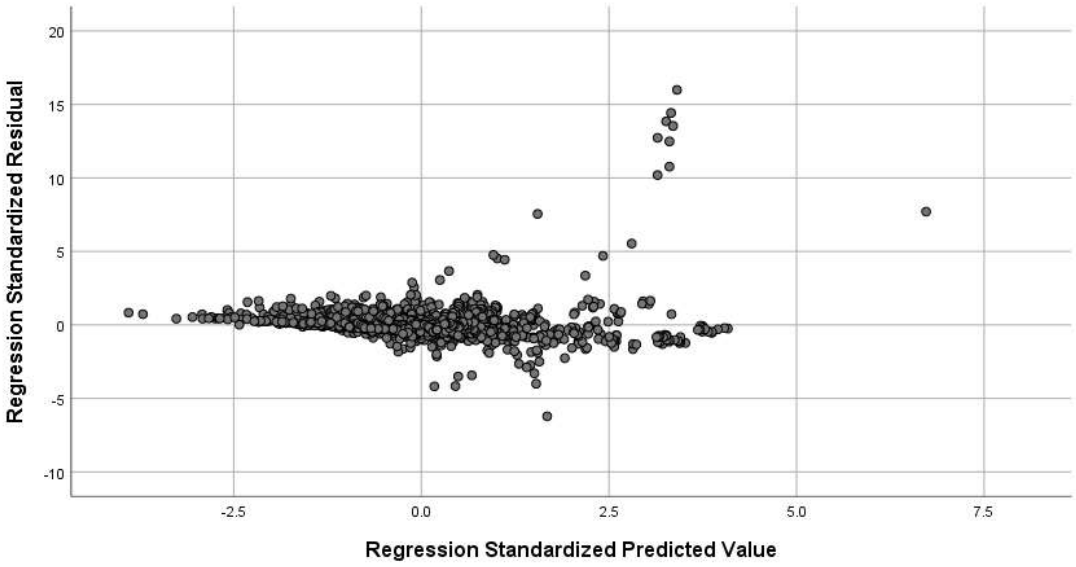

Figure 4-4 Scatterplot with Dependent Variable: ROA EP

Source: Researcher construction, 2023

A scatterplot containing the dependent variable ROA that was created to test for heteroscedasticity is shown in **Figure 4-4Error! Reference source not found.**. The table displays a plot with the projected values of the dependent variable on the X-axis and the residuals of this regression on the Y-axis. The scatterplot shows that the vertical spread of the residuals is minimal and centred at zero. Moving from left to right and the predicted level increases, the vertical dispersion of the residuals brought on by outliers becomes visible. The final image shows no sign of heteroscedasticity; hence, the residual variance is not constant.

Table 4-6 VIF Multicollinearity Tests

	EM vs CSR, VIF (1/VIF) DACC (dependent variable)		EQ vs EM, VIF (1/VIF) EP (dependent variable)		FP vs EQ, VIF (1/VIF) ROA (dependent variable)		FP vs CSR, VIF (1/VIF) ROA (dependent variable)		FP vs CSR, DACC & EP ROA (dependent variable)	
Variables	Dummies included	Dummies excluded	Dummies included	Dummies excluded	Dummies included	Dummies excluded	Dummies included	Dummies excluded	Dummies included	Dummies excluded
$DACC$			1.38 (0.72522)	1.32 (0.755286)					1.09 (0.916779)	1.04 (0.965161)
$CSRi$	1.06 (0.94086)	1.26 (0.794152)					1.23 (0.813278)	1.06 (0.94176)	1.23 (0.811506)	1.06 (0.940452)
ROA	1.14 (0.879833)	1.23 (0.811977)	1.28 (0.778653)	1.16 (0.859572)						
LEV	1.18 (0.845803)	1.27 (0.784697)	1.22 (0.820884)	1.15 (0.866355)	1.23 (0.810102)	1.16 (0.862481)	1.24 (0.807447)	1.15 (0.869396)	1.28 (0.784245)	1.18 (0.844926)
$LOSS$	1.09 (0.918302)	1.1 (0.907267)	1.11 (0.901314)	1.1 (0.912226)	1.02 (0.984474)	1 (0.996467)	1.02 (0.983325)	1.01 (0.99473)	1.02 (0.983325)	1.01 (0.994144)
$SIZE$	1.18 (0.846321)	1.55 (0.644213)	1.55 (0.643948)	1.17 (0.855592)	1.54 (0.650442)	1.13 (0.885811)	1.55 (0.647225)	1.13 (0.885365)	1.55 (0.647225)	1.13 (0.885365)
$ACCL1$	1.04 (0.962525)	1.09 (0.919034)								
GRW			1.27 (0.790276)	1.26 (0.795554)						
EP					1.01 (0.992518)	1 (0.996467)	0.996467		1.01 (0.992166)	1 (0.998202)
LIQ					1.14 (0.87728)	1.07 (0.937811)				
Mean VIF	1.12	1.25	3.11	1.19	3.17	1.07	3.26	1.09	3.09	1.07

The table reports VIF multicollinearity test results. Variables are defined in **Table *3-2*** The VIF (1/VIF) are displayed for each explanatory variable. Dummy variables: Industry effects and year effects

Source: Researcher construction, 2023.

Figure 4-5Error! Reference source not found. shows a scatterplot built with the dependent variable, ROA, to test for heteroscedasticity. The table displays a plot with the projected values of the dependent variable on the X-axis and the residuals of this regression on the Y-axis. The scatterplot demonstrates that the residuals' vertical spread is comparatively small and centred around zero. The vertical dispersion of the residuals caused by outliers can be seen when moving from left to right, and the expected level rises. The resulting graphic demonstrates heteroscedasticity, meaning the residual variance is not constant.

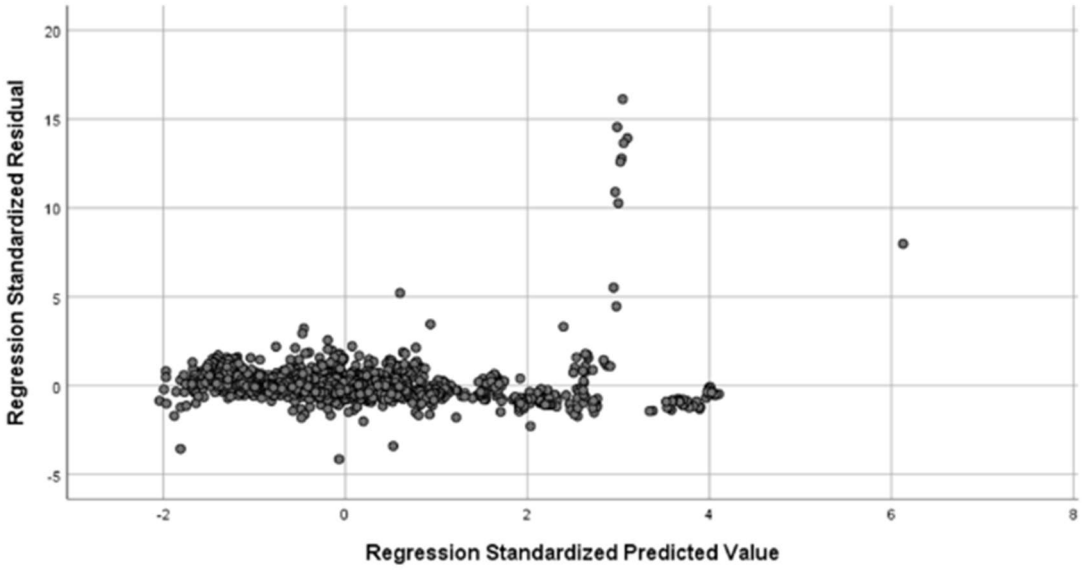

Figure 4-5 Scatterplot with Dependent Variable: ROA CSRi

Source: Researcher construction, 2023

4.2.2.1 Analysing Variables for Stationarity

Most economic variables are $I(I)$ variables, meaning they are non-stationary. Equilibrium theories require a combination of stationary $I(0)$ variables and lack; therefore, any deviation from equilibrium will not be temporary. The results of the panel unit root test are in **Table *4-7***. The Dickey-Fuller statistic determines if the panel data is stationary around its mean, and the Phillips-Perron is used to determine if the panel data is stationary around a linear time trend.

Panel Unit Root Test (Augmented Dickey-Fuller tests): The null and alternative hypotheses in the Unit Root Test are: $\boldsymbol{H_o}$**:** All panels contain unit root - nonstationary (>5%), $\boldsymbol{H_1}$: At least one panel is stationary (<5%). An Augmented Dickey-Fuller Unit Root test was carried out on the following main variables ROA, $DACC$, CSRi, EP, PEN, $ECKELi$, LEV, GRW and LIQ, to test the above Unit root hypothesis. The results in **Table *4-7***. Show that all variables meet the criteria at a 0.05 significance level (F=819.4320 – 1756.2314 and p<.0000). The Null hypothesis, therefore, is rejected, and the alternative is accepted, meaning at least one panel is stationary. This means the panel data conforms to the Equilibrium theories, which require a combination of stationary $I(0)$ variables.

Table 4-7 Augmented Dickey-Fuller Unit Root Tests

	No. of panels	No. of periods	Statistic (P)	Statistic (P)	p-value
ROA	230	10	-4.2331	908.1033	0.0000
DACC	230	10	-16.5812	1554.8135	0.0000
CSRi	230	10	-4.0775	656.3573	0.0000
EP	230	10	-18.9069	1756.2314	0.0000
GRW	230	10	-8.9395	910.7951	0.0000
PEN	230	10	-17.3706	1678.2484	0.0000
ECKELi	230	10	-15.1058	1476.8043	0.0000
LEV	230	10	-4.5628	819.4320	0.0000
LIQ	230	9.94	-4.3332	942.8689	0.0000

Results of the Fisher-type unit-root test, based on augmented Dickey-Fuller tests.

Source: Researcher construction, 2023.

4.2.3 Panel Model Selection

Panel model selection will begin with the Hausmann test to choose between random and fixed effects models. Regression will be done if any of the two is chosen, and the results will be tested for feasibility. If the results are affected by multicollinearity, endogeneity or heteroscedasticity, a more advanced model, e.g., Generalised Method of Moments (GMM) estimation, will be used to counter the mentioned problems.

The Hausman test principle states that the tests should be used if there are two model specifications and two estimators having the following characteristics: While often not efficient, the estimator $\hat{\theta}$ is consistent and efficient in the restricted model (null), yet the estimator $\hat{\theta}$ is inconsistent and consistent in the unrestricted model (alternative). If the alternative is true, the difference $q = \hat{\theta} - \tilde{\theta}$ should diverge, and if the null is true, it should converge to zero. Furthermore, q and $\hat{\theta}$ should not be correlated under the null hypothesis. The Hausman's Test's null and alternate hypotheses are as follows: If the p-value is more than 5%, the random effects model is consistent with $\boldsymbol{H_o}$. The fixed effects model is consistent with $\boldsymbol{H_1}$ (if the p-value is less than 5 per cent). The null hypothesis is rejected if the p-value is less than 5%, indicating that the fixed effects model is more reliable and preferable for the panel data. If the p-value is greater than 5%, the null hypothesis is accepted, indicating that the Random effects model is reliable and effective.

In the random effects model, the GLS-type Random Effects estimator is efficient by construction for Gaussian errors, the FE estimator is consistent by construction, and even the OLS estimator is consistent. In the Fixed-effects model, the Random Effects estimator is inconsistent due to the omitted-variable effect, whereas FE is consistent by construction. A Hausmann (1978) was conducted to select between Fixed-effect or random-effect panel data models examining the relationship between earnings management and corporate social responsibility. Table 5-3 displays the results. The P-value is 0.000 and less than 0.05 or 5%. Therefore, the $\boldsymbol{H_o}$ is rejected, meaning the Fixed effects model is consistent and preferred for the panel data.

A Hausmann (1978) was conducted to select between fixed-effect or random-effect panel data models examining the relationship between earning management and CSR. **Table *4-8***

displays the results. The P-value is 0.000 and less than 0.05 or 5%. Therefore, the $\boldsymbol{H_o}$, the null hypothesis, is rejected at the 0.05 level**.** The fixed effects model is consistent and preferred for the panel data. For selecting between fixed-effects or random-effect panel data models in examining the relationship between earnings quality and earning management, the Hausmann (1978) P-value is 0.0061 and less than 0.05 or 5%. Therefore, the $\boldsymbol{H_o}$ is rejected at the 0.05 level, meaning the Fixed effects model is consistent and preferred for the panel data.

A Hausmann (1978) was conducted to select between a Fixed-effect or Random-effect panel data model examining the relationship between Financial Performance and corporate social responsibility. **Table *4-8*** displays the results. The P-value is 0.9271 and greater than 0.10 or 10%. Therefore, the $\boldsymbol{H_o}$ is accepted**,** meaning the random effects model is consistent and preferred for the panel data. A Hausmann (1978) was conducted to select between fixed-effect or random-effect panel data models examining the relationship between Financial Performance, CSR, earnings management, and earnings quality. The P-value is 0.6687 and greater than 0.10 or 10%. Therefore, the $\boldsymbol{H_o}$ is rejected at, meaning the Fixed effects model is consistent and preferred for the panel data.

Table 4-8 Random Effects and Fixed Effects Regression Results

	EM vs CSR DACC (dependent variable)	EQ vs EM EP (dependent variable)	FP vs EQ ROA (dependent variable)	FP vs CSR ROA (dependent variable)	FP vs CSR, DACC & EP ROA (dependent variable)
$DACC$		.0007615 (0.978)			1.096506 (0.105)
$CSRi$	-.0377666 (0.220)			-.4263072 (0.637)	-.4503532 (0.614)
ROA	.0009103 (0.197)	.0055567 (0.000**)			
LEV	.0598813 (0.141)	-.0252862 (0.575)	-.1729948 (0.877)	-1.747083 (0.117)	-1.733203 (0.114)
$LOSS$	.0030853 (0.908)	.0558352 (0.059*)	-13.71884 (0.000**)	-13.82271 (0.000**)	-13.73211 (0.000**)
$SIZE$	.0349055 (0.000**)	.0032051 (0.701)	-.3176867 (0.025**)	.4532419 (0.001**)	-.4414516 (0.001**)
$ACCL1$	.0340489 (0.120)				
GRW		.0058402 (0.412)			
EP			4.321245 (0.000**)		4.309663 (0.000**)
LIQ			.0323137 (0246)		
Intercept	40.25044 (0.228)	20.564214.2.4 (0.576)	0 (--)	2068.918 (0.048**)	1889.552 (0.070*)
Hausman test	0.000** Fixed Effects	0.0061** Fixed Effects	0.9925 Random effects	0.9271 Random effects	0.6687 Random effect

Source: Researcher construction, 2023. The table reports Random effects and Fixed effects regression results. Variables are defined in **Table *3-2***. The coefficients and p-values (in brackets) are displayed for each explanatory variable. ** $p < 0.05$, * $p < 0.10$

4.3 Hypothesis 1: Relationship between Earnings Management and Corporate Social Responsibility

Autoregression using system GMM was conducted, see results in **Table *4-9***, to examine the Two-tail p-values testing the null hypothesis that each coefficient is different from 0 showing a range (P >| t | 0.000 - 0.512), the p-values for $CSRi$ (0.082), LEV (0.002), $SIZE$ (0.001 and GRW (0.061) are lower than 0.10 hence the null hypothesis is rejected and conclude, corporate social responsibility, leverage, company size and sales growth are statistically significant in explaining discretionary accruals. However, $LOSS$ (P >| t | 0.512) is greater than 0.10; hence, the null hypothesis is accepted, meaning whether a company makes a profit or not in a particular year is insignificant in explaining discretionary accruals.

The Hansen Test for joint validity of the instruments is a typical method for determining if the instrument variables are well-fitted. According to **Table *4-9***, the p-value for the Hansen test for Panel EM-CSR is 0.224, which is insignificant, indicating that the endogenous and instrument variables used are valid and justified in all panels. However, Roodman (2009) argues that a Hansen perfect p-value of 1.0 might indicate instrument variable overfitting endogenous variable, thereby failing to solve endogeneity problems if present and p-values less than 0.1 and those higher than 0.25 warrant a closer look.

Autocorrelation is tested using the Arellano-Bond test (AR^1) and in the second order (AR^2). The results are displayed in **Table *4-9***. Panels EM-CSR has AR^2 of 0.153 which is insignificant indicating the absence of autocorrelation. However, the AR^1 reporting at 0.01 is significant. Some degree of serial autocorrelation is expected due to first-difference transformations, hence the significance of AR^1 , but this does not invalidate the results. However, if AR^2 instead were significant, this would have invalidated the results as it would have signified omitted variables (Andres & Vallelado, 2008).

For one unit increase in a CSR, discretionary accruals are expected to increase by 0.129 units, holding all other variables constant (p<.0000). This result does not support $\boldsymbol{H_1}$ which states that engagement in corporate social responsibility is negatively associated with the degree of earnings management, and therefore, the hypothesis is rejected. Suppose the size of a company grows by one unit. In that case, earnings management decreases on average

by 0.022 units, holding all other variables constant (p<.0000). If a company increases its borrowing/ leverage by one unit, holding all other variables constant (p<.0000), earnings management decreases by 0.432. Even with zero CSR, zero debt, no leverage, and zero growth, each firm on the FTSE-350 Index is expected to decrease by 17.73 units. The proposed autoregression model, adapted from Stock & Watson (2019) and implemented by Almahrog (2018), Martínez-Ferrero et al. (2016) and Tulcanaza-Prieto et al. (2020), will be in the form.

(34)

$$DACC_{it} = \pm 17.73 + 0.13 * CSRi_{it} \pm 0.43.* LEV_{it} + 0.15 * GRW \pm 0.053 * LOSS_{it} \pm 0.023 * SIZE_{it} \pm 0.005 * INDUSTRY_{it} + \sum_{Y=2010}^{2019} \omega_y YEAR_i^y + \varepsilon_{it}$$

Where: $DACC_{it}$ The absolute value of discretionary accrual of firm i at time t., $CSRi_{it}$. ESG rating of firm i at time t, GRW_{it} Sales growth of firm i at time t., LEV_{it} Debt to equity ratio. Leverage measures the likelihood of bankruptcy, $SIZE_{it}$ Size of firm i at time a natural logarithm of total assets. $INDUSTRY$ is grouping firms according to the industry classification benchmark (ICB), $YEAR$ is a dummy variable that indicates the fiscal year, and ε_i is the error term.

Table 4-9 Dynamic Panel-Data Estimation, Two-step System GMM

		EM - CSR, Coeff (t-stat)	EQ - EM, Coeff (t-stat)	FP - EQ, Coeff (t-stat)	FP - CSR, Coeff	FP - CSR, DACC & EP (t-stat)
Explanatory	*DACC*		-.0027372 (0.000)			12.16242 (0.057)
	CSRi	0.128713 (0.082)			7.859847 (0.053)	7.031635 (0.028)
	LEV	-0.431505 (0.002)	-.0225841 (0.003)	-39.71023 (0.103)	-7.178949 (0.337)	-7.141913 (0.339)
	LOSS	-.0534943 (0.512)	- .0537658 (0.000)	-7.308413 (0.091)	-10.06573 (0.070)	-12.15768 (0.000)
	SIZE	-.0226116 (0.001)	-.0085154 (0.000)	-.00008 (1.000)	-.3926839 (0.441)	-.0872755 (0.745)
	GRW	0.1525563 (0.061)				
	EP			13.4784 (0.002)		15.85778 (0.000)
	INDUSTRY	-.0047515 (0.043)	.0005029 (0.000)	.1136915 (0.427)		-.0228143 (0.822)
Dummy – YEAR	Y2-2011	.0848936 (0.000)	-.0243224 (0.000)	1.001389 (0.236)	2.225239 (0.015)	2.543056 (0.004)
	Y3-2012	.0641303 (0.000)	.002233 (0.000)	-.051574 (0.879)	1.593606 (0.025)	1.151076 (0.030)
	Y4-2013	.0610926 (0.000)	.0060706 (0.000)	.3586479 (0.380)	1.769951 (0.010)	1.243343 (0.030
	Y5-2014	.0580948 (0.000)	. .004158 (0.000)	.686955 (0.139)	1.978158 (0.001)	1.063194 (0.068)
	Y6-2015	.0308016 (0.000)	-.0004873 (0.000)	.5573652 (0.224)	1.504634 (0.002)	.8273953 (0.080)
	Y7-2016	.0273645 (0.101)	.0065481 (0.000)	.5054328 (0.212)	1.415468 (0.000)	.508104 (0.246)
	Y8-2017	.0153666 (0.059)	.0065481 (0.000)	.8688895 (0.019)	1.668482 (0.000)	.9725121 (0.007)
	Y9-2018	.0057233 (0.616)	.0040587 (0.000)	.4419462 (0.168)	.9775745 (0.002)	-.5406435 (0.117)
	Intercept	-17.73093	9.934056	198.3386	12.17653	-136.8
Arellano-Bond test for AR (1)		0.010	0.016	0.036	0.023	0.018
Arellano-Bond test for AR (2		0.153	0.216	0.261	0.191	0.297
Sargan test		0.000**	0.000**	0.004**	0.125	0.000**
Hansen test		0.224	0.130	0.186	0.657	0.332

Source: Researcher construction, 2023. The table reports the Dynamic panel-data estimation two-step system GMM results. Variables are defined in **Table *3-2***.

4.4 Hypothesis 2: Relationship between Earning Quality and Earnings Management

Autoregression using the system GMM was conducted to examine the relationship between earnings quality and Earning Management, and the results are displayed in **Table *4-9*** above. Two-tailed p-values testing the null hypothesis that each coefficient differs from 0 show a range (P >| t | 0.000 - 0.003. $DACC$ (P >| t | 0.000), LEV (P >| t | 0.003), $SIZE$ (P >| t | 0.000) and $LOSS$ (P >| t | 0.000) are lower than 0.05 hence the null hypothesis is rejected and declare, discretionary accruals, leverage, sales growth and the size of a firm are significant in explaining earnings quality

The Hansen Test for joint validity of the instruments for Panel EQ-EM is 0.130, which is insignificant, indicating that the endogenous and instrument variables used are valid and justified in all panels. Autocorrelation is tested using the Arellano-Bond test (AR^1) and in the second order (AR^2). The results are displayed in **Table *4-9***. Panels EQ-EM has AR^2 of 0.216 which is insignificant indicating the absence of autocorrelation. However, the AR^1 reporting at 0.016 is significant.

For one unit increase in a discretionary accrual, earnings persistence is expected to decrease by 0.0027 units, holding all other variables constant (p<.0000). This result does support $\boldsymbol{H_2}$ which states that engagement in earning management is negatively associated with the degree of earnings quality; therefore, the hypothesis is accepted. If the debt increases by one unit, earnings persistence is expected to decrease on average by 0.023 units, holding all other variables constant (p<.0000), and if the size of a firm increases by one unit, holding all other variables constant (p<.0000), earnings persistence decreases by 0.0085. In case of zero discretionary accruals, zero debt, and zero growth, irrespective of their industry and year, each firm on the FTSE-350 Index is expected to have an increase of 9.93 units in earnings persistence, holding all other variables constant (p<.0000).

$$EP_{it} = 9.93 \pm 0.0027 * DACC_{it} + 0023.* LEV_{it} \pm 0.054 * LOSS_{it} \pm 0.0085 * SIZE_{it} + 0.114 * INDUSTRY + \sum_{Y=2010}^{2019} \omega_y YEAR_i^y + \varepsilon_{it} \quad (35)$$

Where: EP_{it} Earnings Persistence of firm i at time t, $DACC_{it}$ The absolute value of discretionary accrual of firm i at time t, $CSRi_{it}$ ESG rating of firm i at time t, LEV_{it} Debt to equity ratio, $SIZE_{it}$ Size of firm i at time t, $INDUSTRY$ Firm Industry Classification Benchmark (ICB), $LOSS_{it}$ is an indicator of profit or loss of firm i at time t, $YEAR$ is a dummy variable that indicates the fiscal year, and ε_i is the error term.

4.5 Hypothesis 3: Relationship between Financial Performance and Earning Quality

Autoregression using the system GMM was conducted to examine the relationship between Financial Performance and Earning Quality, and the results are tabulated in **Table *4-9***. Two-tail p-values testing the null hypothesis that each coefficient differs from 0 shows a range (P >| t | 0.000 - 1.000). The p-values for EP and $LOSS$ are lower than 0.10; hence, the null hypothesis is rejected and declare earnings persistence and the control variable of whether a firm has a profit or loss are statistically significant in explaining firm performance. However, LEV (P >| t | 0.103) and $SIZE$ (P >| t | 1.00) are greater than 0.10; hence the null hypothesis is accepted meaning liquidity, leverage and the size of the firm are insignificant in explaining firm performance.

The Hansen Test for joint validity of the instruments for Panel FP-EQ is 0.186, which is insignificant, indicating that the endogenous and instrument variables used are valid and justified in all panels. Autocorrelation is tested using the Arellano-Bond test (AR^1) and in the second order (AR^2). The results are displayed in **Table *4-9***. The AR^2 of 0.261 is insignificant, indicating the presence of autocorrelation. However, the AR^1 reporting at 0.016 is significant.

For one unit increase in earnings persistence, return on assets is expected to increase by 13.48 units, holding all other variables constant (p<.0000). This result does support the hypothesis that earning quality is positively associated with the degree of financial

performance and therefore, the hypothesis is accepted. In case of zero earnings persistence, zero leverage index, and zero natural logarithms of total assets, each firm on the FTSE-350 Index is expected to have an increase of 198.34 units in return on assets holding all other variables constant (p<.0000).

$$ROA_{it} = 198.34 + 13.48 * EP_{it} \pm 39.71 * LEV_{it} \pm 7.31 * LOSS_{it} \pm 0.00008 * SIZE_{it} \quad (36)$$
$$\pm 0.113 * INDUSTRY_{it} + \sum_{Y=2010}^{2019} \omega_y \, YEAR_i^y + \mathcal{E}_{it}$$

Where: ROA_{it} Return on assets of firm i at time t, EP_{it} Earnings Persistence of firm i at time t, LEV_{it} is the ratio of total debt to total assets of firm i at time t, $LOSS_{it}$ is an indicator of profit or loss of firm i at time t, $SIZE_{it}$ is the size of firm i at time t, $INDUSTRY$ A dummy variable according to Industry Classification Benchmark (ICB), $YEAR$ is a dummy variable that indicates the fiscal year, and $\mathcal{E}_i$ is the error term

4.6 Hypothesis 4: Relationship between Financial Performance and Corporate Social Responsibility

Autoregression using the system GMM was conducted to examine the relationship between Financial Performance and CSR, and the results are displayed in **Table *4-9*** above. Two-tail p-values testing the null hypothesis that each coefficient differs from 0 shows a range (P >| t | 0.000 - 0.441). The p-values for $CSRi$ and $LOSS$ lower than 0.10; hence, the null hypothesis is rejected and declares corporate social responsibility and the natural log of total assets are statistically significant in explaining firm performance. However, leverage (P >| t | 0.337) and $SIZE$ (P >| t | 0.441) are greater than 0.10; hence, the null hypothesis is accepted, meaning leverage is insignificant in explaining firm performance.

The Hansen Test for joint validity of the instruments for Panel FP-CSR is 0.657, which is insignificant, indicating that the endogenous and instrument variables used are valid and justified in all panels. Autocorrelation is tested using the Arellano-Bond test (AR^1) and in the second order (AR^2). The results are displayed in **Table *4-9***. The AR^2 of 0.191 is

insignificant indicating the absence of autocorrelation. However, the AR^1 reporting at 0.023 is significant.

For one unit increase in a CSR, return on assets is expected to increase by a massive 7.85 units, holding all other variables constant (p<.0000). This result does support $\boldsymbol{H_4}$ which states that engagement in corporate social responsibility is positively associated with the degree of Financial Performance, and therefore, the hypothesis is accepted. Suppose a firm has a profit in a specific year. In that case, the return on assets decreases on average by 10.07 units, holding all other variables constant (p<.0000). Even with zero CSR and no leverage, each firm on the FTSE-350 Index is expected to increase 12.17 units in return on assets, holding all other variables constant (p<.0000).

$$ROA_{it} = 12.18 + 7.86 * CSRi_{it} \pm 7.18 * LEV_{it} \pm 10.07 * LOSS_{it} \pm 0.39 * SIZE_{It} + \sum_{Y=2010}^{2019} \omega_y \, YEAR_i^y + \mathcal{E}_{it} \quad (37)$$

Where: ROA_{it} Return on assets of firm i at time t, $CSRi_{it}$ ESG rating of firm i at time t , $SIZE_{it}$ Size of firm i at time. $INDUSTRY$ A dummy variable according to Industry Classification Benchmark (ICB), $YEAR$ is a dummy variable that indicates the fiscal year. and $\mathcal{E}_{It\ isi}$ It is the error term.

4.7 Relationship between Financial Performance, Corporate Social Responsibility, Earnings Management and Earning Quality

Autoregression using the system GMM was conducted to examine the relationship between financial performance, CSR, earnings, management and earnings and the results are displayed in **Table *4-9***. Two-tailed p-values testing the null hypothesis that each coefficient differs from 0 shows a range (P>| t | 0.000-.0.822). The p-values of CSR, DACC, EP, and INDUSTRY are all lower than 0.10; hence, the null hypothesis is rejected and declares discretionary accruals, CSR, and earnings persistence are statistically significant in explaining firm performance.

The Hansen Test for joint validity of the instruments for Panel FP-CSR, DACC and EP is 0.332, which is insignificant, indicating that the endogenous and instrument variables used are valid and justified in all panels. Autocorrelation is tested using the Arellano-Bond test (AR^1) and in the second order (AR^2). The results are displayed in **Table *4-9***. The AR^2 of 0.297 is insignificant indicating the absence of autocorrelation. However, the AR^1 reporting at 0.018 is significant.

For one unit increase in discretionary accruals, return on assets is expected to decrease by a massive 12.16 units, holding all other variables constant (p<.0000). And if the CSRi increases by one unit, holding all other variables constant (p<.0000), return on assets increase by 7.03 units. For one unit increase in earnings persistence, return on assets is expected to increase by 15.86 units, holding all other variables constant (p<.0000). Even in the case of zero discretionary accruals, zero CSR, zero earnings persistence, and no leverage each firm on the FTSE-350 Index is expected to have a decrease by 136.8 units in return on assets holding all other variables constant (p<.0000). The researcher designed an econometric estimation model for predicting the impact of CSR, earnings management, and earnings quality on financial performance with ROA as the dependent variable stated as below.

$$ROA_{it} = \pm 136.8 + 7.03 * CSRi_{it} + 12.16 * DACC_{it} + 15.88 * EP_{it} \pm 7.14 * LEV_{it} \pm 0.088 * SIZE_{it} \pm 12.16 * LOSS_{it} \pm 0.023 * INDUSTRY_{it} + \sum_{Y=2010}^{2019} \omega_y YEAR_i^y + \varepsilon_{it} \quad (38)$$

Where: ROA_{it} Return on assets of firm i at time t, $CSRi_{it}$= ESG rating of firm i at time t, $DACC_{it}$ The absolute value of discretionary accrual of firm i at time t, EP_{it} Earnings Persistence of firm i at time t, $SIZE_{it}$ Size of firm i at time t. Natural logarithm of Total Assets. This is a control variable, and $INDUSTRY$ is a firm's Industry Classification Benchmark (ICB), and $YEAR$ is a dummy variable that indicates the fiscal year.

4.8 Robustness Tests

A sensitivity analysis of statistical models is carried out to determine how much a statistical model depends on a single observation or a series of observations (Fassò, 2012). Robustness is a lack of sensitivity to such factors. Sensitivity analysis searches for significant findings that primarily influence some or all the model's characteristics. Influential examples may highlight serious measuring, recording, or processing flaws. The discovery of numerous influential observations may imply that the model used is insufficient to capture the issue's essence. As earnings management and CSR's causal relationship, for example, could be simultaneous or reversed, corporate social responsibility and earnings management could also be determined endogenously, leading to simultaneity, reversed causality, or other endogeneity concerns in model estimation. Fixing these issues can be done in several ways, including using fixed effects, control variables, lag variables, and the generalised technique of moments (GMM)(Lu et al., 2021).

The robustness of the results will be verified using control variables, the system GMM and by substituting the earnings management proxy with the earnings quality proxy variable in the model and vice versa. A robustness test was run to ensure the accuracy of the findings of the system Generalized Method of Moments' sensitivity to alternative models' specifications, and the results are presented in **Table *4-10***. The financial performance measure (ROA) is substituted with TobinQ and ROE to determine if the results would change significantly. ROA as a dependent variable is substituted for TobinQ in the last three panels. Most coefficients changed with differing magnitudes but maintained their signs, suggesting nonlinear relationships in all the panels. In panel – FP-DACC, CSRi, the p-values decreased except for one, suggesting the relationship is even more probable.

In the first two panels- ROA as a control variable is substituted for TobinQ and ROE, respectively. In the first panel, CSRi remained significant with the same coefficient sign, although the control variables changed to insignificant. There were no significant changes in the second panel except for one control variable, which became significant. The overidentification test was done, and the results were reported in **Table *4-9.*** In this case, there was no need to run the Breusch-Pagan test to check for heteroskedasticity as part of the robustness tests. Heteroskedasticity violates the Gauss-Markov assumptions. Therefore,

heteroskedasticity is assumed in the model as a rule of thumb (Hayes & Cai, 2007; Stock & Watson, 2003). As a result, the option $robust$ with the $xtabond2$ syntax is used, which is the system GMM regression command in Stata, to adjust for heteroskedasticity (Torres-Reyna, 2007). Consequently, unbiased standard errors in the GMM coefficients were obtained; the robust standard errors are larger than conventional standard errors and are labelled as 'Corrected Std. Err.' In the Stata results output.

Table 4-10 Two-step System GMM Results for Robustness Check for Models.

	EM - CSR, Coeff (t-stat)	EQ - EM, Coeff (t-stat)	FP - EQ, Coeff (t-stat)	FP - CSR, Coeff (t-stat)	FP – DACC, CSR Coeff (t-stat)
$DACC$		-.0112062 (0.088*)			-.8837093 (0.177)
$CSRi$	.7705019 (0.073*)			-0.8747312 (0.001**)	-.8837093 (0.002**)
$TobinQ$	.1774719 (0.131)	.0005161 (0.000**)			
ROE		.0002445 (0.001*)			
LEV	.0893407 (0.124)	-.0032772 (0.0041)	-.698531 (0.616)	-.5480732 (0.000**)	-.5682134 (0.000**)
$LOSS$	.0384605 (0.156)	-0.0018383 (0.696)	-.0558175 (0.000**)	-.0341986 (0.276)	-.0495849 (0.000**)
$SIZE$	.0010637 (0.812)	.0005427 (0.007**)	.0436286 (0.658)	.0076505 (0.191)	-.5817041 (0.020**)
$ACCL1$	-.06212 (0.781)				
GRW		.003389 (0.048**)			
EP			0.0240302 (0.000**)		.0121989 (0.084*)
LIQ			.0023152 (0.000**)		

Source: Researcher construction, 2023. The table reports the Dynamic panel-data estimation, two-step system GMM results for Robustness check for Models by substituting ROA for TobinQ and ROE Variables are defined in **Table *3-2*** The coefficients and p-values (in brackets) are displayed for each explanatory and dummy variable. ** $p < 0.05$, * $p < 0.10$

4.9 Summary

The sample size encompasses the entire population of 350 companies on the FTSE-350 index. After excluding companies with less than ten years of financial data, the sample was reduced to 230. Descriptive statistics for all research variables revealed a minimum of 2219 observations of unbalanced data, which is enough for statistical significance. The Hausmann test was employed to choose between random and fixed effects models. The results for panels, earning management-CSR and earnings quality-earning management, were

statistically significant, and the fixed effects models were chosen. The results indicated that panels on earning management-CSR and earnings quality-earning management had statistically significant results, leading to the selection of fixed effects models. Conversely, the Hausman test results for panels on financial performance-earnings quality and financial performance-CSR were statistically insignificant, prompting the choice of random effects models. Both random and fixed effects models encountered endogeneity and heteroscedasticity issues, prompting the use of the Generalised Method of Moments (GMM) to address the problem. $Xtabond2$ syntax for system GMM was used in Stata with instrument variables to solve the endogeneity issue. Variance inflation factor (VIF) multicollinearity test was conducted on all the panels, and the mean VIFs of all the panels ranged from 1.07 – 3.11. All reported VIFs fell within the acceptable range of greater than one and less than 5, indicating the absence of multicollinearity in the panels' models, thereby establishing trust in the predictor variables' coefficients and p-values.

According to the Hansen tests, the instruments used are valid and justified. Autocorrelation was tested using the Arellano-Bond as performed. Arellano-Bond AR^2 results indicated the absence of autocorrelation in all the panels, validating the regression results. However, the Arellano-Bond AR^1 results were significant. This was expected due to first-difference transformations and did not invalidate the results. The robustness of the results was verified using control variables in the system GMM and by substituting the earnings management proxy with the earnings quality proxy variable in the model and vice versa. The results rejected **Hypothesis 1** - Engagement in CSR is negatively associated with the degree of earnings management, accepted **Hypothesis 2** - Engagement in earning management is negatively associated with the degree of earnings quality, accepted **Hypothesis 3** - Earning quality is positively associated with the degree of financial performance, and accepted **Hypothesis 4** - Engagement in CSR is positively associated with the degree of Financial Performance.

Chapter 5 : Discussion and Thesis Conclusion

5.1 Introduction

The study's findings on whether corporate social responsibility contributes to the quality of financial reporting and business performance, thereby increasing firm value, were presented in the previous chapter. This section provides a recap and explanation of the significant findings, and sub-conclusions are introduced. Findings will also be compared to previous similar studies. The correlation between earnings management, earnings quality and corporate social responsibility was examined to achieve the aim. From a theoretical framework, the researcher constructed a conceptual model of the link between earnings management, earnings quality, and corporate social responsibility. The findings from the previous Chapter are summarised in the paragraphs that follow and in **Table *5-1***

Table 5-1 Summary of Results on Hypotheses Tested

Nº	**Hypotheses**	**Results**
H_1	*Engagement in corporate social responsibility is negatively associated with the degree of EM.*	Not Supported
H_2	*Engagement in earnings management is negatively associated with the degree of earnings quality.*	Supported
H_3	*EQ is positively associated with the degree of Financial Performance.*	Supported
H_4	*Engagement in corporate social responsibility is positively associated with the degree of Financial Performance.*	Supported

Source: Researcher construction, 2023

5.2 Discussion of Findings (Relational findings)

5.2.1 Hypothesis 1: Relationship Between Earnings Management and Corporate Social Responsibility

The hypothesis tested was to find out whether engagement in corporate social responsibility is negatively associated with the degree of earnings management. This is a negative correlation – a higher commitment to corporate social responsibility results in lower levels of earnings management, and the opposite is also true. The GMM regression results model revealed that - for one unit increase in CSR and sales growth, earnings management increased by 0.13 and 0.15 units, respectively, holding all other variables constant ($p<.0000$). Although these results appear contrary to previous findings by Gao and Zhang (2015), Cho and Chun (2016), Ali and Zhang (2015); Almahrog (2018), Bozzolan et al. (2015), Hong and Andersen (2011), Barrena Martínez et al. (2016) and Ben Amar (2018), the results show the range of the impact of corporate social responsibility on earnings management from very small to insignificant, whilst Moratis and van Egmond (2018) and Katmon and Farooque (2017) found no relationship between earnings management and corporate social responsibility. The correlation between corporate social responsibility and earnings management in the correlation matrix (see.) reveals a positive relationship, although they also show their p-value (0.11, $p<0.001$) to be statistically significant.

The idea that a higher commitment to corporate social responsibility results in lower levels of earnings management has been debated in several studies, more on the motivations of managers to engage in both practices and whether corporate social responsibility activities lead to fundamental changes in corporations or whether this trend is driven by opportunism. Corporate social responsibility augments transparency and reduces the number of opportunities to manage earnings (Gras-Gil et al., 2016). Some studies found corporate social responsibility to be a means of defending a firm's legitimacy in the presence of earnings management practices (Gavana et al., 2017), studies that prove the so-called 'obfuscation hypothesis' where corporate social responsibility is an ideal way for deflecting stakeholders' attention for earnings management (Prior et al., 2008), and corporate social responsibility as a superior strategy compared to earnings management to obfuscate their true financial quality (Moratis & van Egmond, 2018).

5.2.2 Hypothesis 2: Relationship Between Earning Quality and Earnings Management

The hypothesis tested was whether engagement in earning management is negatively associated with the degree of earnings quality. The hypothesis presents a negative correlation: high earnings management results in low earnings quality and vice versa. According to the GMM regression results, earnings quality is expected to decrease by 0.0027 units with a unit increase in earnings management. Still, a one-unit increase in leverage, and the firm's size will decrease earnings quality by 0.023 and 0.008, respectively. A negative correlation supports the hypothesis and is similar to results from previous studies by Tariverdi (2012), who discovered that earnings management decreased the quality of financial reporting after studying 70 listed companies on the Tehran Stock Exchange. Li (2019) used earnings persistence as a proxy of earnings quality but found that the extent of real earnings management is negatively related to earnings persistence; however, he qualified his results by saying this effect was mainly achieved through the negative impact of real earnings management on cash flows rather than on accruals. The use of discretionary accruals as a proxy of earning management instead of cash flows is where the studies differ. There is a strong negative correlation between cash flow and accruals, which is another explanation for the strange results and a limitation of earnings quality measures (Dechow & Dichev, 2002; Ma & Ma, 2017). However, the results of the correlation matrix report a positive correlation of (0.01, $p<0.001$) between discretionary accruals and earnings persistence.

As discussed in the previous chapter, system GMM allows dummy variables but only omits the last dummy variable because of collinearity. **Table *4-1*** describes each dummy variable, linking them to their ICB classification. There was a general decrease of 0.024 units in earnings persistence for all the firms in 2011 and modest increases in earnings persistence of 0.007 and 0.0.004 units in 2017 and 2018, respectively. These results are beyond the scope of this research but, moreover, provide a window into the possible impact of firms' industry affiliation.

5.2.3 Hypothesis 3: Relationship Between Financial Performance and Earnings Quality

The hypothesis tested was to determine whether earning quality is positively associated with the degree of Financial Performance. The hypothesis presents a positive correlation. According to the GMM results, financial performance is expected to increase by 13.48 units for a unit increase in earnings quality, holding all other variables constant ($p<.0000$). The correlation matrix confirmed these results. The correlation coefficient of earnings persistence is positively related to Return on Assets (0.097, $p<0.001$). These results complement the same results by Huynh (2018), Li (2014) and Machdar et al. (2017), who also showed a positive relationship between earnings quality and financial performance. However, Islam et al. (2020) asserted that while the results and those of the researchers listed above might be true for advanced economies, earnings quality is a dominant predictor of financial flexibility with a negative relationship for emerging markets.

5.2.4 Hypothesis 4: Relationship Between Financial Performance and Corporate Social Responsibility

The hypothesis tested was to find out whether engagement in corporate social responsibility is positively associated with the degree of Financial Performance. The hypothesis presents a positive correlation; an increase matches an increase in corporate social responsibility in financial performance. The results revealed that for a unit increase in CSR, financial performance increased by 7.86 units, holding all other variables constant ($p<.0000$). If a firm has a loss, financial performance decreases by 10.07 units, holding all other variables constant ($p<.0000$). This is contrary to previous studies by Salama (2005), McGuire et al. (1988), Waworuntu et al. (2014), and Maqbool and Zameer (2018) all found a positive relationship between corporate social responsibility and financial performance results. However, the results of the correlation matrix suggested the opposite by finding a positive correlation of (0.014, $p<0.001$) between corporate social responsibility and return on assets.

Research has shown that socially and ethically responsible firms are often viewed as the most respected and profitable firms (Dubey et al., 2015), hence the hypothesis that engagement in corporate social responsibility is positively associated with the degree of

Financial Performance. Tichý et al. (2020) used evolutionary game theory in which a firm must choose between being socially responsible, where a fraction of its profits is committed to social projects, or non-socially responsible. The results revealed that it is only valid in an oligopoly that socially responsible firms have better financial performance. Still, as competition increases, the extra marginal profits of a socially responsible firm are reduced. Customers contribute to the financial performance of socially responsible firms by purchasing their products. They are also willing to pay premium prices for products supplied by socially responsible firms (Liu & Lu, 2021). Still, higher marginal costs counter this due to their socially responsible strategy, e.g., donations to charities or the costs to mitigate the environmental and social risks associated with the business, e.g., firms in oil and gas and mining. However, Hemingway and Maclagan (2004) and Jamali (2007) dispute this assertion, arguing that all strategic corporate social responsibility contributions are disguised profit-motivated expenditures. It can be argued that corporate social responsibility is positively associated with firm reputation, and in turn, it is positively associated with financial performance.

5.2.5 Conceptual Model: Relationship between Financial Performance, Corporate Social Responsibility, Earnings Management and Earning Quality

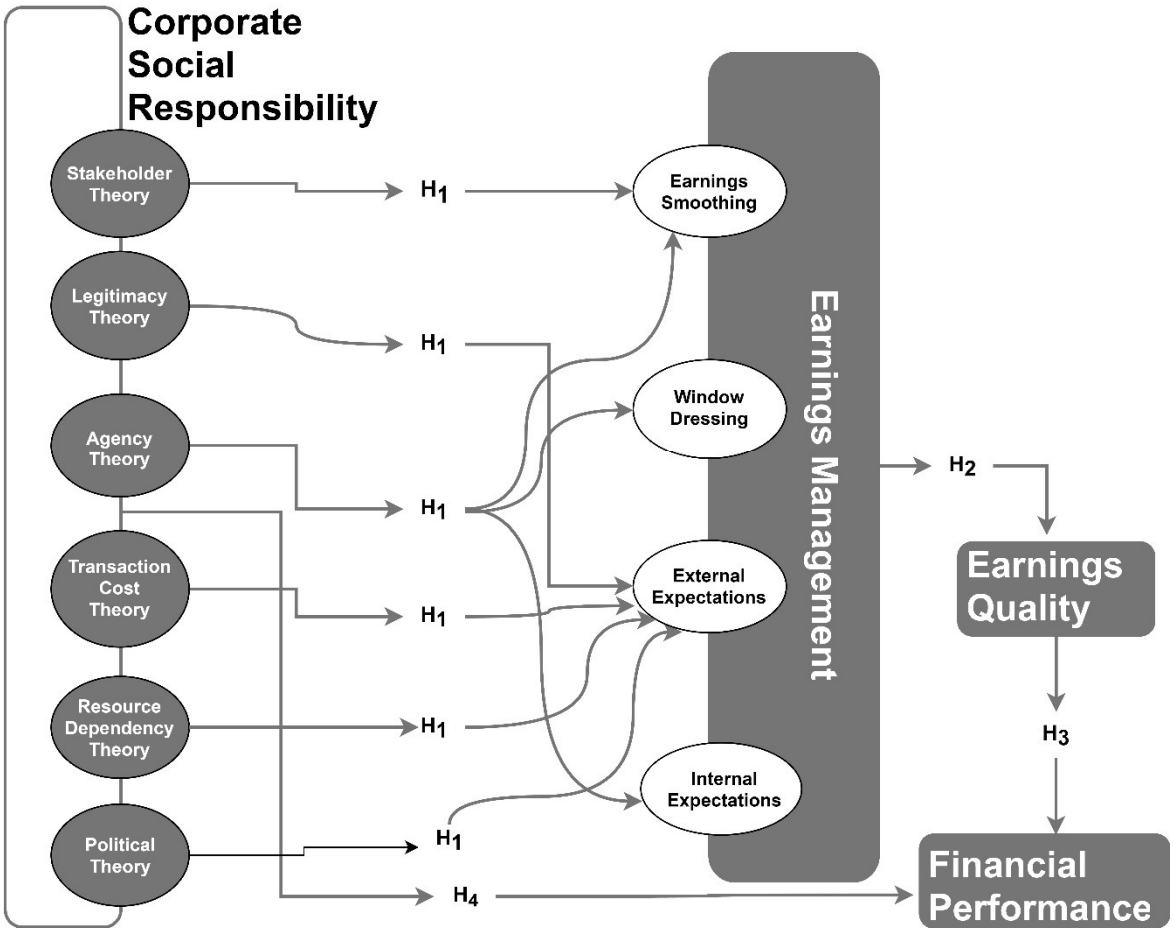

Figure 5-1 Conceptual Model: Financial Performance, Corporate Social Responsibility, Earnings Management and Earning Quality

Source: Researcher construction, 2023.

Objective 1 of this research involves developing a conceptual framework linking earnings management, earnings quality, corporate social responsibility, and financial performance. The conceptual model was developed using the theoretical framework in Chapter 2 and prior research in Chapter 3 (refer to **Figure 5-1)**. The model links theories of corporate social responsibility and their specific motivations for managing earnings. The conceptual model was further developed into an econometric model. According to the GMM regression model results, for one unit increase in earnings management, performance increases by 12.16 units. If corporate social responsibility increases by one unit, financial performance increases by

7.03 units. For one unit increase in earnings quality, financial performance increases by 15.86 units, holding all other variables constant (p<.0000). The impact of the size of the firm was also investigated. The researcher found that if the size of a company grows by one unit, financial performance decreases on average by 0.87 units, holding all other variables constant (p<.0000).

5.3 Contribution to Knowledge

The research contributes to the literature on earnings management, earnings quality, and corporate social responsibility and their impact on firm value. The researcher could only find a few UK studies on the topic, and none of these used the FTSE ESG index as a proxy for corporate social responsibility. The reason is that FTSE ESG rating information has only sometimes been available and has only become widely used in the past ten years. For instance, although ESG rating started in the 1960s mainly to penalise tobacco companies and those companies linked to the South African apartheid regime (MSCI, 2022), the FTSE4Good and the FTSE Emerging Indexes were only launched in 2001 and 2016 respectively (FTSE Russel, 2022). A study by Almahrog (2018) is one of the later studies that did not use FTSE ESG ratings but instead instituted content analysis and corporate social responsibility Disclosure (see **Appendix C**). Content analysis has reliability and validity issues (Almahrog, 2018; Aribi Zakaria & Gao, 2010). FTSE ESG ratings are a more objective measure that does not contain researcher bias and is the current yardstick used by stakeholders, including investors, for companies on the LSE with approximately 915 funds registered under European Union regulations actively promoting the ratings (Marsh, 2023).

None of the prior research combined CSR, earnings management, earnings quality, and financial performance simultaneously—most studies combined corporate social responsibility and one of the other concepts. Therefore, the research is unique in combining all the concepts linked to earnings management using the same data and methodology and is arguably one of the pioneers in filling this gap. This research also offers an expanded theoretical analysis of earnings management, earnings quality, and CSR, which includes a legal perspective of earnings management and financial crime and why it is so difficult to prosecute. Prior research points to a lack of consensus and understanding of how corporate social responsibility mitigates earnings management (Gras-Gil et al., 2016). Therefore, this

research will provide additional empirical evidence to understand better and build consensus on the subject.

Secondly, it offers empirical data on the long-term effects of corporate social responsibility on company value. Robins (2015) states that most business executives believe corporate social responsibility can increase firm value but need to be made aware of research substantiating some of those beliefs. This study will be able to respond to those executives' needs partially. Choi and Pae (2011) found that corporate responsibility and business ethics have long-lasting effects on future financial reporting quality. Therefore, the study used FTSE rating data covering ten years to encompass those long-term benefits. Prior studies used data for five years or less since ESG ratings are new and have only been widely used in the past ten years. Those studies can only speak to the short-term impact of CSR, but the research provides evidence for long-term and strategic corporate social responsibility investment. Moreover, previous research on corporate social responsibility for LSE companies has tended to use content analyses for corporate social responsibility data as ESG ratings were unavailable and sometimes very expensive – content analyses are inconsistent and subjective. LSE ESG ratings used in this research are now widely available (although still expensive), which adds value to the research and provides consistent empirical evidence.

Thirdly, the current research may assist in filling the gap in the literature and research concerning earnings management and corporate social responsibility from an accounting perspective. According to the Web of Science master journal list quoted in Santos-Jaén et al. (2021), only 37% of the articles investigating the influence of corporate social responsibility on earnings management and the relationship between corporate social responsibility and earnings management published between 2015 and 2021 were from purely accounting and finance Journals, e.g. the journal of corporate Finance, Accounting Review, Accounting Research Journal, Accounting and Finance journals (see **Table 1-3**). Most articles were from The Journal of Business Ethics. Therefore, this research will fill that gap with an accounting perspective.

In a previous study, Martnez-Ferrero et al. (2016) found that the market does not recognise when corporate social responsibility practices are employed to hide earnings management

and that corporate social responsibility can be strategically used against the unfavourable perception of earnings management. The model produced in this research can provide that answer to the market. The conclusions derived from this study will provide empirical evidence to company boards, management, and investors to assist them in making informed choices in the efficient allocation of resources. The study draws attention to common misconceptions regarding the reasons behind corporate social responsibility and how it adds to a company's value. One of the conclusions is that stakeholders should be aware of the distinction between the impact of substantive corporate social responsibilities and symbolic corporate social responsibility (genuine corporate social responsibility vs greenwashing) on firm value. Not all investments in corporate social responsibility will increase financial performance, and it is only valid in an oligopoly that socially responsible firms have better financial performance. Still, as competition increases, the extra marginal profits of a socially responsible firm are reduced. The definitions of earnings management mean different things to users of accounting information Standard setters, regulators, creditors, and auditors, e.g., the definition by Schipper (1989) analyses the ramifications and trade-offs associated with various research design decisions in earnings management research, whilst the definition offered by Healy and Wahlen (1999) is primarily from a perspective of standard setters. Awareness of this definition distinction will aid stakeholders in fostering their understanding of earnings management, thereby making informed decisions.

5.4 Practical Implications

Corporate Social Responsibility (CSR) has become increasingly popular among businesses in recent decades as companies have begun to recognise the importance of responsible behaviour to their stakeholders, the environment, and society at large. This trend has been accompanied by a growing body of research on the relationship between CSR and earnings management. This research has significant implications for researchers, policymakers, and practitioners alike.

Researchers: the implications of this research are twofold. First, it provides new opportunities to investigate the underlying mechanisms and determinants of CSR-earnings management relationships, as well as the implications of such relationships for corporate performance and the public good. Second, it presents the opportunity to explore the potential

of CSR-earnings management relationships to improve corporate sustainability and environmental stewardship. As such, this research presents an important avenue of inquiry for future research in the corporate social responsibility field. Academics and professionals (including investors, regulators, and auditors) are interested in the evidence of a systematic relationship between earnings manipulation and financial statement variables because it demonstrates how accounting information may be used to assess credibility. Earnings manipulation seems linked to decreased accrual quality, declining performance, a worse corporate governance system, weakened balance sheets and increased company leverage. The findings of this study have implications for how standard-setters and regulators should go with updating the guidelines and frameworks that help businesses produce high-quality financial reporting and corporate social responsibility disclosure. Dechow and Skinner (2000) make the case that while academics are reluctant to acknowledge the existence of earnings management or believe that most firms are actively practising it, practitioners and regulators see it as pervasive and problematic. As a result, empirical evidence from this research will help people understand that earnings management is a real problem.

Policymakers: Insights for developing regulatory frameworks that promote responsible corporate behaviour and protect investor interests**.** The insights into the effects of CSR on earnings management provided by this research can inform the design and implementation of corporate policies and regulations. It can help policymakers better understand the potential implications of CSR for corporate governance and financial reporting. Furthermore, by providing a better understanding of the motivations and benefits of CSR, this research can inform policymaking decisions regarding the incentives and rewards that should be used to encourage companies to adopt CSR practices. It can also assist stock market authorities in evaluating the current ESG criteria and how they affect the calibre of financial reporting. This work provides insights regarding some theoretical implications. The study's findings lend credence to the agency and signalling theories, which emphasise the quality of CSR reporting to reduce the information asymmetry between managers and stakeholders. Furthermore, decisions about CSR disclosure seem to be driven by more conventional concerns, like avoiding political scrutiny and the expenses that could be associated with that scrutiny, even if the quality of corporate social responsibility reporting is becoming more and more relevant in the corporate environment. The study's results lend

credence to the agency and signalling theories, which emphasise the quality of corporate social responsibility reporting to reduce information asymmetry between managers and stakeholders.

Additionally, although the quality of CSR reporting is becoming more crucial in the business environment, decisions regarding corporate social responsibility disclosure are driven by more conventional concerns, such as avoiding political scrutiny and the expenses that could be associated with that scrutiny. ESG metrics are not needed for financial reporting on the LSE, except for the environmental component, which will be mandated in 2022 under the Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022. A sustainability statement on climate-related disclosures must be included in an organisation's annual strategic report registered in the UK with more than 500 employees or sales of more than £500 million.

Practitioners: the research provides a better understanding of the relationship between CSR and earnings management; this research can help companies better manage their corporate social responsibility initiatives. It can help companies identify the most effective strategies for implementing CSR, as well as the potential benefits of doing so. Moreover, this research can also inform the design and implementation of corporate policies and resources to ensure that CSR initiatives are properly managed and monitored. The practitioners may comprehend the roles and significance of CSR in limiting earnings management and enhancing the accuracy of financial reporting. This result may be helpful when managers engage in CSR actions that lessen earnings management and raise the firm value and investor trust. Managers may also find the current study's findings helpful in evaluating their accountability and openness in financial reporting. The boards of corporations will also utilise the findings to assess the CSR investment methods that boost company value. The findings might provide more concrete data to back up the conclusions reached by stakeholders and shareholders when evaluating the accuracy and dependability of financial reporting combined with corporate social responsibility. The findings of this study are more likely to be used by financial experts to improve their profit projections. The ability of investors to assess future financial performance is enhanced by high-quality information by considering more precise earnings estimates.

5.5 The Limitation of The Study

The research is only confined to the top 350 firms on the London Stock Exchange by capitalisation. Therefore, research from other countries might yield different results and cannot be reliably used to study privately held companies. The researcher also acknowledges the limitation imposed upon the research by the database used for the financial information. Fame, the primary source, only provides financial indicators for ten years, which means the findings are also limited to 10 years- a concern also raised by Prior et al. (2008). The Fame database does not contain share price information, and as a result, the research was restricted to accounting-based financial indications, and no market indicators, e.g., Market-to-Book value, Price-to-Book value, and Stock returns, were used. The third limitation is that corporate social responsibility performance indexes tend to be subjective and differ according to the market in which a company is listed. UK-listed companies use the FTSE4Good ESG index, while US-listed firms use KL Domini – Domini 400 Social Index or Bloomberg ESG disclosure score or the MSCI ESG Stats Database, there is the Korean Corporate Governance Index in Korea, JSE SRI Index in South Africa, Brazil Corporate Governance Index whilst other researchers develop their corporate social responsibility indices. This makes it difficult to infer and compare corporate social responsibility performance across borders. A suggestion here is for central organisations like the World Bank to develop a corporate social responsibility performance index that can be used irrespective of the listing country.

The research does not contain all possible variables that influence earnings management. Several earnings management measures include the choice of discretionary accruals using the Jones Model. Although used in previous studies, instead of real earnings management, it might have influenced the results. The shortcomings of the accruals' estimates have been well documented. Hribar and Collins (2002) found a measurement error in accruals estimates when using the balance sheet approach. Any earnings management test using this method is potentially contaminated. Their ability to detect earnings management is low as they neglect some variables and have econometric flaws. The modified Jones model (1991) is preferred as Dechow used SEC data. Dechow et al. (1995), different viewpoints, different data, and various techniques are employed by Guay et al. (1996), Young (1999), Thomas and Zhang (2000) and Kothari et al. (2005) to detect earnings management; In addition, the

accruals-based models ignore several factors that will influence accruals. McNichols (2002), through her findings, argues that a firm's growth influences the quality of accruals, but the Jones model neglects this variable. Other variables associated with accrual levels, such as the size and debt of a company, have also been neglected, and there is much noise in these models. A significant noise component in abnormal accruals is generated by substantial heterogeneity.

5.6 Future Research

Future studies on earnings management should alternatively use cash flow as a proxy for earnings management rather than discretionary accruals. The UK government has recently started to regulate ESG and ESG rating agencies. This development will result in uniform and generally accepted ESG ratings, which are not subjective and costly. Therefore, I recommend revisiting this research in a few years and using the regulated ESG ratings to see if a different outcome can be achieved. All industries were included; some researchers in the field tend to exclude heavily regulated industries in the financial and energy sector; therefore, future research can exclude the 73 companies and see if they will achieve a different outcome. However, we accounted for the industry effect in the model. **Table 5-2** lists possible sub-hypothesis linking theories of CSR to earnings management and financial performance. This warrants a more nuanced investigation, which can be taken up for future research.

Prior research on earnings management has mostly ignored accruals in favour of discretionary accrual strategies. Therefore, future research can consider the specific accruals and how they can be used to spot earnings fraud. Other techniques, such as Benford's Law, the Beneish M-Score, the Altman Z-score, and the F-Score - Dechow New Fraud Model, can also identify profit manipulation. Professor Messod Beneish developed the Beneish M-Score, a ratio analysis exam, in 1999. Eight financial ratios are combined to detect profit manipulation and asset misappropriation. If the M-Score is less than or equal to 2.22, the corporation is not likely to be manipulating earnings; if it is greater than or equal to 2.22, this is likely the case. In its final year, Enron had a Beneish M-Score of -1.89. The researcher acknowledges that the database Fame used does not contain share price information, which restricted the research to accounting-based financial indicators rather than market indicators,

e.g., Market-to-Book value, Price-to-Book value, and Stock returns. It is then recommended that future studies consider market indicators.

5.7 Thesis Conclusions

The research investigated whether corporate social responsibility contributes to the quality of financial reporting and business performance, thereby increasing firm value. The main motivations of the study were the speech by Levitt (1998) and the research by Santos-Jaén et al. (2021). Levitt established the real pressure on companies to meet earnings targets and the consequences of failure by giving an instance of "a company that once failed to meet its earnings "numbers" by a penny and lost six per cent of its stock value in a day". Due to such pressure, managers will engage in earnings management to steer their earnings towards the target but, in the process, erode the quality of earnings; on the other hand, did a bibliometric review using earnings management and corporate social responsibility word searches on the Web of Science and found that only 37% of the publications published between 2015 and 2021 examined the impact of corporate social responsibility on earnings management and the connection between corporate social responsibility and earnings management were from accounting and finance journals. Such a low uptake can be attributed to a reluctance by accounting professionals, researchers, and academics to acknowledge earnings management as a problem, resulting in an inadequate accounting system that fails to provide an accurate picture of the financial conditions of the respective.

Objective 2 of the research is to examine the correlation between earnings management, earnings quality, and corporate social responsibility. The objective was achieved by successfully testing four hypotheses: Engagement in corporate social responsibility is negatively associated with the degree of earnings management. Subscript(H_1), Engagement in earnings management is negatively associated with the degree of earnings quality (H_2), Earning Quality is positively associated with the degree of Financial Performance (H_3), and Engagement in corporate social responsibility is positively associated with the degree of Financial Performance (H_4). The results confirmed the hypotheses, except the results revealed a positive relationship instead of a negative one, as predicted by the hypothesis. H_2 previous studies confirm the results by Li (2019), who also used earnings persistence as a proxy of earnings quality and found that the extent of real earnings management is

negatively related to earnings persistence. An explanation for such results is primarily due to the negative effect of real earnings management on cash flows rather than on accruals and the strong negative correlation between cash flow and accruals. We, therefore, recommend that future studies on the subject use cash flow as a proxy for earnings management rather than discretionary accruals.

Our empirical results show that CSR's impact on earnings management, earnings quality and performance appears to be exaggerated. They show that a high value of earnings management, which results in a high level of symbolic CSR, converts to the low financial performance of companies in the FTSE-350 index. Therefore, corporate social responsibility initiatives are only token efforts supported by managers to mask their profit-driven behaviour while simultaneously detracting from the company's performance. Stakeholders should know the difference between genuine corporate social responsibility and greenwashing (substantive vs. symbolic CSR) effects on firm performance. In other words, funding corporate social responsibility projects is expensive. It may hurt the bottom line in the short term but will generate high returns in the long term. However, funding corporate social responsibility projects to take advantage of opportunities is not strategic but short-sighted without expecting returns on those funds (Ruwanti et al., 2019). As explained before, A company may choose to be socially responsible for a variety of reasons, including the satisfaction it will derive from its contribution to the community, the enhancement of its reputation, the ability to attract talented employees searching for a sense of purpose, the ability to attract investors with sustainable investing strategies, and the ability to attract customers. Companies can generate new revenue streams, reduce energy costs, comply with regulations, and take steps to minimise risk by engaging in corporate social responsibility and environmental stewardship. Now that this backdrop has been established, it is evident why corporate social responsibility and earnings management have a weak relationship.

ExxonMobil, an oil and gas company, is in the top 10 of the S&P 500’s ESG index, but companies like Tesla are excluded as of September 2022. This has also put into question the methodology used in the ESG ratings. Some believe the wrong questions are being asked, resulting in inaccurate ratings. Companies believe that to correctly evaluate ESG ratings, the question to ask is, “Does the growth of this company have a positive impact on the world?”

instead of, “Does this ESG issue impact the profitability of the company?” (Tesla, 2021, p. 1). However, for an investor and other stakeholders and whether either question is asked, the conclusion is the same – profitability and growth are the same things, and the researcher contends that if corporate social responsibility is implemented strategically – it increases their value in the long run. The collapse of the Silicon Valley Bank (SVB) in March 2023 raised questions on the objectivity of the ESG ratings. The bank, one of the 20 biggest US banks by assets, was seized by regulators after a bank run caused by SVB’s failure to manage its exposure to rising interest rates. The governance ecosystem, which includes bond rating agencies, ESG rating agencies, and auditors, should have flagged the problems with SVB earlier. MSCI, one of the largest, had given SVB an “A” ESG rating before the bank’s collapse. Rajgopal further argues that SVB was a story of dodgy ‘G’. Governance, one of the three legs of ESG investing, is not being appropriately assessed and might be why ESG rating firms failed to spot the red flags at SVB. SVB concentrated on the wrong letter of the acronym ESG; it was a big lender to renewable energy companies and attracted ESG fund managers because of low carbon footprints, and less attention was placed on governance risks; fund managers seem to have been less attentive; hence, partly to blame at SVB.

Furthermore, a socially responsible image that covers up earnings management (greenwashing) cannot be maintained over time because of the negative impact on financial performance. In contrast, socially responsible businesses generate superior earnings and a more resilient economic performance. Some researchers argue that all strategic corporate social responsibility contributions are disguised profit-motivated expenditures and that a company that uses social responsibility activities on a strategic level rather than acting for accurate social responsibility management. Given the arguments above, the notion that corporate governance is the profit maximiser and corporate social responsibility sacrifices profits for social responsibility should be revised, resulting in corporate social responsibility proposals being popular in annual board meetings rather than the opposite. Firms can still fund corporate social responsibility (stakeholders) projects and subscribe to corporate governance (shareholders) as both, if strategically managed, will tend to increase firm value. However, the case of SVB is a cautionary tale. All corporate social responsibility issues and the environment must be balanced with good governance. SVB should have put more emphasis on corporate social responsibility and environmental issues and overlooked

governance. The bank had no official risk officer for eight months, during which the venture capital market faced challenges.

According to studies, companies that practise social responsibility and ethics are frequently seen as the most reputable and successful. Moreover, corporate social responsibility proposals do not appear to be popular in annual board meetings, claiming that corporate social responsibility proposals at the annual meeting might be symbolic (Flammer, 2015) or boardroom activism by just trying to shine a light on social issues to the management (Loss, 2004). However, there is concern that a shift from shareholder to stakeholder orientation will make it more difficult to institute discipline mechanisms, implement internal controls, and detect and punish self-serving managers hell-bent on increasing their power and emolument whilst pretending to serve stakeholder interests (Donaldson & Preston, 1995).

Table 5-2 Possible sub-hypothesis

Nº	**Sub-hypotheses**
$H_{1.1}$	*Engagement in corporate social responsibility based on the Stakeholder Theory is negatively associated with the degree of EM.*
$H_{1.2}$	*Engagement in corporate social responsibility based on the Legitimacy Theory is negatively associated with the degree of earnings management through Earnings External Expectations.*
$H_{1.3}$	*Engagement in corporate social responsibility based on the Agency Theory is negatively associated with the degree of earnings management through Earnings Smoothing, Window*
$H_{1.4}$	*Engagement in corporate social responsibility based on the Stewardship Theory is negatively associated with the degree of earnings management through Eternal Expectations.*
$H_{1.5}$	*Engagement in corporate social responsibility based on Political Theory is negatively associated with the degree of earnings management through External Expectations.*
$H_{1.6}$	*Engagement in corporate social responsibility based on the Resource dependency Theory is negatively associated with the degree of earnings management through External Expectations.*

Source: Researcher construction, 2023

Moreover, a culture change is needed for corporate social responsibility to mitigate earnings management. This leads to more complex issues. For Objective 1, The researcher developed a conceptual framework which indicated that the relationship between CSR, earnings

management, earnings quality, and financial performance is non-monotonic - as each leading characteristic/theory of corporate social responsibility responds differently to earnings management and earnings quality. The results of this research are supported by prior studies by Li (2019) and Hosseini et al. (2016). The implication is that – if earnings management is to be tackled, corporate social responsibility must be broken down or its proxies into its components because not all contribute to better business ethics or influence earnings management. For instance, in ESG ratings, the social component only makes up a third of ESG rating evaluations; the other two are environmental and governance. To reflect the monotonic nature of the components, **Appendix F** displays a version of the conceptual model and divides $\mathbf{H_1}$ into six possible sub-hypotheses (**Table 5-2**). Monotonic calculations are outside the scope of this research but offer a possible avenue for future studies. The study implies that the absence of a monotonic relationship between CSR, earnings management, earnings quality and financial performance limits the model's ability to predict (Hong & Yang, 2017) because one of the basic premises of linear regression analysis includes the monotonicity of the relationships between the dependent and independent variables over the entire range (Schechtman & Yitzhaki, 2010). Although sub-hypotheses, e.g., $\mathbf{H_{1.1}}$, were not explicitly tested in this study, splitting them while linking theory to motive gives explicit dynamics of the issues and the monotonic nature of the relationship.

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APPENDIX A - Statement of Purpose

BR Business Roundtable

Statement on the Purpose of a Corporation

Americans deserve an economy that allows each person to succeed through hard work and creativity and to lead a life of meaning and dignity. We believe the free-market system is the best means of generating good jobs, a strong and sustainable economy, innovation, a healthy environment and economic opportunity for all.

Businesses play a vital role in the economy by creating jobs, fostering innovation and providing essential goods and services. Businesses make and sell consumer products; manufacture equipment and vehicles; support the national defense; grow and produce food; provide health care; generate and deliver energy; and offer financial, communications and other services that underpin economic growth.

While each of our individual companies serves its own corporate purpose, we share a fundamental commitment to all of our stakeholders. We commit to:

- Delivering value to our customers. We will further the tradition of American companies leading the way in meeting or exceeding customer expectations.
- Investing in our employees. This starts with compensating them fairly and providing important benefits. It also includes supporting them through training and education that help develop new skills for a rapidly changing world. We foster diversity and inclusion, dignity and respect.
- Dealing fairly and ethically with our suppliers. We are dedicated to serving as good partners to the other companies, large and small, that help us meet our missions.
- Supporting the communities in which we work. We respect the people in our communities and protect the environment by embracing sustainable practices across our businesses.
- Generating long-term value for shareholders, who provide the capital that allows companies to invest, grow and innovate. We are committed to transparency and effective engagement with shareholders.

Each of our stakeholders is essential. We commit to deliver value to all of them, for the future success of our companies, our communities and our country.

Released: August 19, 2019
Signatures Updated: September 2019 and December 2019

APPENDIX B - Global Corporate Citizenship

GLOBAL CORPORATE CITIZENSHIP:
The Leadership Challenge for CEOs and Boards

This joint statement of a task force of World Economic Forum CEOs was developed in partnership with The Prince of Wales International Business Leaders Forum

APPENDIX C – Variable Selection – Prior Research

	Authors	Dataset	Study	Variables
1	Abdallah and Ismail (2017	Gulf Cooperative Council Companies (GCC) 2008–2012	CSR & P	Behavioural Assessment Score (GCC), Tobin's Q, ROA, ROE
2	Abdo and Fisher (2007)	JSE, all companies June 2003 to June 2006	CSR & P	G-score, author, SPR, EPS, M/BV
3	Alipour, M. (2019).	Tehran Stock Exchange (TSE)	CSR & EQ	Environmental Disclosure, SIZE, EP, AQ, LEV, GRW, ROA
4	Almahrog, Y. (2018	UK	CSR & EM	CSR Disclosure, ROA, CFO, SIZE, LEV, LOSS, YEAR, INDUSTRY
5	Ararat, Black and Yurtoglu (2017)	Turkish Publicly Listed Companies 2006–2012	CSR & P	Turkey Corporate Governance Index, Tobin's Q, Profitability
6	Balasubramanian, et al (2010)	Indian-listed companies 2006	CSR & P	Indian Corporate Governance Index, Tobin's Q
7	Bauer, et al (2004)	UK- and Eurozone-listed companies 2000–2001	CSR & P	Deminor Corporate Governance Ratings, Tobin's Q, ROE, NMP
8	Black, et al (2006)	Russian-listed companies 1999–2005	CSR & P	S&P Governance scores, Tobin's Q
9	Black, etal (2012)	Brazil-listed companies 2004 comparison with previous	CSR & P	Brazil Corporate Governance Index, Tobin's Q
10	Black, Jang and Kim (2006)	Korean-listed companies 2001	CSR & P	Korean Corporate Governance Index, Tobin's Q
11	Bozzolan et al (2015)		CSR & EQ	CSR -EIRIS dataset: EIRIS's CSR score, DACC -Jones, Tobin's Q, ROA, LEV, CFO, GRW
12	Braga-Alves and Shastri (2011)	Brazil-listed companies 2001–2005	CSR & P	Novo Mercado listing, Tobin's Q, ROA, Stock Returns
13	Brammer, et al (2006)	UK-listed companies 2002–2003	CSR & P	Sustainability Index, Stock Returns
14	Callan and Thomas (2009)	US-listed companies 2004–2005	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, Tobin's Q, ROA, ROE, ROS
15	CAO, et al. (2012)		P & EQ	MISSTATE, ROA, LEV, YEAR, INDUSTRY
16	Charlo, Moya and Muñoz (2015)	FTSE4Good IBEX Spanish Sustainability Index 2008–	CSR & P	FTSE4Good IBEX Spanish Sustainability Inde, Tobin's Q, ROE, EPS, P/BV, SPV
17	Chen et al. (2015)	GRI companies from the manufacturing industry 2012	CSR & P	GRI guidelines, ROE, GRW, Cash flow/sales ratio
18	Choi and Pae (2011)	South Korea 1998-2008	CSR & EQ	CSR Score, DACC -Jones, AQ
19	Da Silveira and Barros (2007)	Brazil-listed companies 2002	CSR & P	Index developed by the authors, Tobin's Q, P/BV
20	Drobetz, et al (2004)	German-listed companies 1998–2002	CSR & P	Index developed by the authors, Stock Returns
21	du Toit, et al (2018)	JSE, all companies 2009-2014	CSR & P	SRI listing yes or no (binary 1 or 0), ROE, Stock Returns, EPS
22	El Ghoul, et al (2011)	US-listed companies 1992–2007	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, COC
23	Elouidani and Zoubir (2015)	Casablanca Stock Exchange 2007–2010	CSR & P	index based on Carroll (1979, Tobin's Q, ROA, ROE, Ratio of Marris
24	Flammer (2015)	US-listed companies with RiskMetrics and	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, Tobin's Q, ROA, ROE, NPM

25	Francis, Jennifer, et al 2004		P & EQ	EP, AQ, Epr, ES, CFO, EBITDA, Sales, M/BV, SIZE
26	Gaio, C. and Raposo, C. (2011)		P & EQ	Tobin's Q, PPE, Sales, LEV
27	Galema et al. (2008)	US-listed companies 1992–2006	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, Stock Returns
28	Giovanna 2017		CSR & EM	DACC -Jones, ROA, SIZE, LEV, YEAR, INDUSTRY
29	Gras-Gil,	USA	CSR & EM	DACC -Jones, ROA, SIZE, LEV, LIST
30	Grougiou, V., et al. (2014)	USA	CSR & EM	CSR - KLD, DACC -Jones, EBIT, SIZE, M/BV, LEV, LOSS, CAP, LCO
31	Hong and Andersen (2011)	USA JBE 1995-2005	CSR & EQ	ABA, AQ
32	Hong and Andersen (2011)		CSR & EM	CSR - KLD, DACC -Jones, SIZE, SALES, Std. CFO, LOSS
33	Huynh (2008)		P & EQ	EP, AQ, Epr, ES, ROA, ROE
34	Katmon (2017)	UK	CSR & EM	FLSCORE, EBIT, SIZE, LEV, LOSS
35	Kim et al. (2012)	1991-2009	CSR & EQ	CSR Score, DACC -Jones, ABA
36	Klapper and Love (2004)	Companies from 14 countries 1999	CSR & P	CLSA corporate governance rankings, Tobin's Q, ROA
37	Laksmana and Yang (2009)	USA 2001-2002	CSR & EQ	ES, EP, AQ, Epr
38	Laksmi, A. C. and Z. Kamila (2018		CSR & EM	CSR- GRI (Global Reporting Initiatives), DACC -Jones
39	Leal and da Silva (2007)	Brazil-listed companies Chile-listed companies 1998–2002	CSR & P	Index developed by the authors, Tobin's Q, Stock Returns
40	Lins et al. (2017)	US-listed companies 2006–2009	CSR & P	MSCI ESG Stats Database, ROA, LTD/TA, Stock Returns
41	López-Quesada Martin, *et al* (2018)	US-listed companies 2004–2009	CSR & P	Aggregate index developed by the authors, Income
42	Luo and Bhattacharya (2006)	US-listed companies 2002–2004	CSR & P	Fortune America's most admired corporations, Tobin's Q, Stock Returns
43	Martínez-Ferrero, J., et al. (2016)		CSR & EM	CSR practices, DACC -Jones, SIZE, DEBT, INDUSTRY, WORKING CAPITAL
44	Michelon et al. (2013)	US-listed companies 2005–2007	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, CAPEX, M/BV, EBITDA
45	Mishra and Suar (2010)	Indian-listed companies 2003–2006	CSR & P	Index developed by the authors, ROA
46	Morey et al. (2009)	listed companies from 21 emerging-market countries	CSR & P	Tobin's Q, P/BV
47	Nelling and Webb (2009)	US-listed companies 1993–2000	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, ROA, Stock Returns
48	Nkomani (2013)	South African-listed companies 2002–2011	CSR & P	JSE SRI Index, ROA, ROE, EPS, NPM, M/BV, Stock Returns
49	Nollet, Filis and Mitrokostas (2016)	US-listed companies 2007–2011	CSR & P	Bloomberg ESG disclosure score, ROA, Stock Returns, ROC
50	Ntoi (2010)	South African-listed companies 2004–2010	CSR & P	JSE SRI Index, Stock Returns, EPS, P/BV

51	Prior et al. (2008)	Multi countries 2002-2004	CSR & EQ	CSR Score, DACC -Jones
52	Qiu et al. (2016)	UK-listed companies 2005–2009	CSR & P	Bloomberg disclosure scores for social and environmental performance, ROA, ROE, ROS
53	Rezaee et al (2020)		CSR & EQ	Rankin (RKS) CSR rating, Tobin's Q, ROA, LEV, CFO, LOSS, YEAR, INDUSTRY, AGE, STATE
54	Rodriguez-Fernandez (2016	Spanish-listed companies 2009	CSR & P	Dow Jones Sustainability Index company inclusion, Tobin's Q, ROA, ROE
55	Ruf et al. (2001)	US-listed companies 1991–1995	CSR & P	Index developed by the authors, ROA, ROE, GRW
56	Salewski 2014		CSR & EM	CSR- German consulting firm (KC)., DACC - Jones, Tobin's Q, GRW, SIZE, aq, LEV, LOSS
57	Scholtens, B. and Kang, F.-C. (2013)	139 firms in ten Asian countries	CSR & EM	ES, EA
58	Setyorini, and Sri Suranta (2015)	Indonesia Stock Exchange in 2008-2011	CSR & EM	CSR -CGM, Eckel Index (1981)., ROA, LEV
59	Srairi (2015)	commercial Islamic banks in the Middle East 2011–2013	CSR & P	Index developed by the author, Tobin's Q, ROA, ROE
60	Statman (2006)	US-listed companies 1990–2004	CSR & P	Domini 400 Social Index, Stock Returns
61	Van de Velde, et al (2005)	Eurozone companies 2000–2003	CSR & P	Vigeo corporate social responsibility scores, Stock Returns
62	Van der Laan, et al (2008)	US-listed companies 1997–2002	CSR & P	Kinder Lydenberg Domini – Domini 400 Social Index, ROA, ROE, EPS
63	Vander Bauwhede (2009)	FTSE Eurotop 300 index with a Deminor rating 2000–2001	CSR & P	(Deminor Rating) ratings, ROA, ROE, NPM
64	Zheka (2007)	Ukrainian-listed companies 2000–2002	CSR & P	Index developed by the author, Profitability