

**The impact of ESG disclosure and ESG performance on the
financial performance of the listed companies in Hong Kong**

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Declaration

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

Signed: Yuen Wai Kuen Date: 27 December 2024

STATEMENT 1

This thesis is the result of my own investigations, except where otherwise stated. Where correction services have been used the extent and nature of the correction is clearly marked in a footnote(s). Other sources are acknowledged by footnotes giving explicit references. A list of references is appended.

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ABSTRACT

The purpose of this research study is to examine the impact of ESG disclosure and ESG performance on the firm performance of property development, transport, public utilities and catering companies listed in Hong Kong covering the time span of three years (2017 to 2019). Quantitative technique based on secondary data were used in the study. Multiple regression and panel regression are used to analyse the results. The researcher uses statistical software to do the data analysis and the data is obtained from Bloomberg database. References are made to the annual reports and published financial reports of the listed companies. The research includes five independent factors (environmental social governance disclosure factor), (environmental social governance performance factor), (environmental performance factor), (social performance factor), (governance performance factor) as well as control variables (Size) measured by market capitalization and (IOB) as measured by Number of independent non- executive directors. The dependent variables are (Return on Asset), (Return on Equity) and (Earnings per share). Stakeholder theory is utilized to investigate the impact of the ESG performance on firm performance of the listed companies and their interrelationship. This research contributes to the broadening of the scope of research on the ESG performance in the listed companies in Hong Kong which might be the first study on the impact of ESG performance on the listed companies in Hong Kong which might be the first study on the impact of ESG performance on the listed companies in Hong Kong. The findings of this research show that generally there is no relationship between the ESG disclosure, the ESG performance and the respective ESG pillars (environmental, social and governance performance) on the financial performance of listed companies in Hong Kong as measured by Return on Asset, Return on Equity and Earnings per share. However, a relationship between ESG performance and ROA and

Social performance on EPS are noted. The stakeholder theory is used to analyse the established hypothesis. The finding will incentivize the corporation, investor and regulatory authorities for implementing effective ESG strategies of the listed companies in Hong Kong to enhance profitability and sustainability. The results are mostly aligned with the research that suggests a neutral relationship and further qualitative study of the interrelationship of the variables might bring in-depth analysis of the reasons of the insignificance of the variables.

Keywords- ESG disclosure, ESG performance, Firm Performance, Financial performance, Stakeholder theory, Panel regression model

Table of Content

ABSTRACT.....	3
Chapter 1 INTRODUCTION.....	9
1.1 Introduction.....	9
1.2 The convergence of CSR and ESG.....	11
1.3 Scope of Study.....	13
1.4 Research Objectives.....	14
1.5 Research Questions.....	15
1.6 Significance of the Study.....	16
1.7 Research Gap.....	17
1.8 Research Contributions.....	18
1.9 Limitation and Future Studies.....	19
1.10 Thesis Structure.....	21
1.11 Chapter Summary.....	22
Chapter 2 The EVOLUTION OF ESG DISCLOSURE REQUIREMENTS	24
2.1 Introduction.....	24
2.2 ESG requirement.....	25
2.3 Importance of Effective ESG Reporting.....	26
2.4 Growing Global mEmphasis on ESG Factors in Business decisions.....	27
2.5 United Nations ESG initiatives.....	29
2.6 Sustainable Development Reporting	30
2.7 SDG and ESG reporting	32
2.8 United Nations Principles for Responsible Investment (PRI)	33
2.9 The Taks Force on Climate-related Financial Disclosures (TCFD).....	35
2.10 The Stock Exchange of Hong Kong (SEHK)	37

2.11	International Sustainability Standards Board (ISSB)	39
2.12	HKEX's ESG Reporting Guide	42
2.13	ESG Reports	43
2.14	Current ESG Practices in Hong Kong.....	45
2.15	The Securities and Futures Commission (SFC).....	48
2.16	The Hong Kong Monetary Authority (HKMA).....	50
2.17	Difficulties in complying with ESG requirements.....	52
2.18	Chapter Summary.....	53
Chapter 3 LITERATURE REVIEW.....		54
3.1.	Introduction.....	54
3.2	Theoretical Background	55
3.3	ESG Disclosure.....	57
3.3.1	Sustainability Reports	58
3.3.2	Disclosure Quality.....	62
3.4	ESG - Firm Performance	64
3.4.1	Negative effects	66
3.4.2	Ambiguous or no effect	69
3.4.3	Positive effects	69
3.4.4	Mixed results	74
3.5.	Controlling Factors	75
3.5.1	Introduction	75
3.5.2	Proportion of INED.....	77
3.5.3	Firm Size.....	80
3.6	Stakeholder Theory.....	81
3.6.1	Introduction.....	81

3.6.2	Stakeholder Theory.....	82
3.7	Other Theories.....	85
3.7.1	Introduction.....	85
3.7.2	Agency Theory.....	85
3.7.3	Legitimacy Theory.....	88
3.7.4	Signaling Theory.....	89
3.8	Stakeholder Theory to explain ESG impact.....	90
3.9	Hypothesis Development.....	93
3.10	Conceptual Framework.....	93
3.11	Definition of Variables.....	94
3.12	ESG Disclosure and Firm Performance.....	95
3.13	ESG Performance and Firm Performance	96
3.14	ESG sub-components and Firm Performance.....	98
3.14.1	Environmental Performance and Firm Performance.....	98
3.14.2	Social Performance and Firm Performance.....	101
3.14.3	Governance Performance and Firm Performance.....	105
3.15	Chapter Summary.....	109
	Chapter 4 METHEDODOLOGY	110
4.1	Introduction.....	110
4.2	Research Method	113
4.3	Data Collection	115
4.4	Data Analysis.....	122
4.5	Dependent and Independent Variables.....	122
4.6	Control Variables.....	126
4.7	Assumptions.....	129

4.8	Limitations.....	131
4.9	Regression Model.....	133
4.10	Chapter Summary.....	141
Chapter 5 ANALYSIS AND RESULTS		<u>142</u>
5.1	Introduction.....	142
5.2	Descriptive Analysis.....	142
5.3	Correlation between variables.....	145
5.4	Excluded Outliners.....	148
5.5	Heteroscedasticity Test.....	148
5.6	Anova - Sector Comparison.....	150
5.7	Normality Test.....	155
5.8	Panel Regression and Specification.....	161
5.8.1	Testing the Hypothesis under Model 1	164
5.8.2	Testing the Hypothesis under Model 2	166
5.8.3	Testing the Hypothesis under Model 3	168
5.8.4	Testing the Hypothesis under Model 4	171
5.8.5	Testing the Hypothesis under Model 5	173
5.8.6	Testing the Hypothesis under Model 6	175
5.9	Summary of Test of Hypothesis.....	178
5.10	Findings on relationship with stakeholder theory.....	<u>182</u>
5.11	Chapter Summary.....	185
Chapter 6 CONCLUSION AND RECOMMENDATION.....		186
6.1	Conclusion and Implication.....	186
6.2	Recommendation.....	190
Reference and Appendix.....		195

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The interplay between Environmental, Social, and Governance (ESG) factors and firm performance has become a focal point of interest for both academic researchers and industry practitioners. Over the past two decades, ESG has gained substantial attraction in management practice and scholarly research (Bansal, 2002; Dyllick & Hockerts, 2002; Hart & Milstein, 1999). The ESG framework encompasses a wide array of issues, including but not limited to carbon emissions, waste management, labour practices, community engagement, board composition, and shareholder rights. There is a growing recognition among investors, regulators, and stakeholders that these factors can significantly impact a corporation's long-term viability and profitability. A study by J.R Evans and D. Peiris 2012 indicated that a significant and positive relationship existed between ESG and firms valuation indicating that firms with higher ESG will have good performance in their corporate financial performance..

The ESG concept, which gained prominence in the early 2000s, has its roots in earlier movements advocating for corporate social responsibility (CSR) and sustainable development. The financial crisis of 2008-2009 has triggered several reform measures to strengthen corporate governance and CSR in corporations. In recent years, ESG considerations have transitioned from being peripheral concerns to becoming integral components of corporate strategy and risk management. ESG credentials have become a global trend nowadays and are increasingly important for companies due to awareness of their responsibility for sustainable growth and their multi-dimensional impact on

society (Kaakeh & Gokmenoglu, 2022). This paradigm shift has been facilitated by the development of various ESG reporting frameworks and standards, such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), the International Sustainability Standards Board (ISSB), and the Task Force on Climate-related Financial Disclosures (TCFD).

ESG is a firm's obligation to enhance social welfare and create equitable, sustainable long-term wealth for stakeholders (Jamali et al., 2017; Turban & Greening, 1997). ESG criteria serve as operational standards that corporations and socially responsible investors use to identify suitable investment opportunities. Environmental criteria assess a company's performance in preserving and protecting nature and the planet. Social criteria examine how a company manages relationships with stakeholders such as employees, suppliers, customers, and local communities. Governance focuses on corporate leadership, executive compensation, audits, internal controls, and shareholder rights.

The emergence of ESG factors as critical considerations for investors, policymakers, and corporations reflects a growing emphasis on evaluating the long-term sustainability and societal impact of business operations. ESG disclosure enhances corporate transparency, fostering stakeholder trust and ensuring regulatory compliance. Buffo and Patalano (2020) noted that contemporary investors seek trust, transparency, ethical practices, environmental respect, and increased social responsibility in their investments. ESG performance can enhance risk management, drive cost savings, and stimulate innovation and competitiveness.

Firm performance, typically represented by metrics such as Return on Assets (ROA), Return on Equity (ROE), and Earnings per Share (EPS), is increasingly viewed through the lens of ESG factors. Investors and asset managers are integrating ESG considerations into their investment analysis and decision-making processes, recognizing that these factors can materially affect a company's performance and risk profile. Lee (2017) observes that investors particularly scrutinize ESG performance when investing in emerging markets, as companies with strong ESG practices tend to demonstrate robust risk management.

Corporate management increasingly recognizes that the integration of ESG practices can mitigate a firm's exposure to reputational, political, and regulatory risks, potentially leading to more stable cash flows and improved profitability. This evolving perspective underscores the growing importance of ESG in shaping corporate strategy and influencing financial outcomes in the modern business landscape.

1.2 The Convergence of CSR and ESG

CSR and ESG are closely interrelated and sometimes used interchangeably. Since the turn of the century, CSR has been expanded to encompass environmental, social and governance and economics responsibly. CSR has evolved into ESG and this development has been affected by the demands of society, government, investors and NGOs. CSR can be viewed as a subset or specific manifestation of ESG, often focusing on addressing environmental and social issues through specific initiatives. ESG, on the other hand, provides a more comprehensive framework for evaluating and reporting on a company's overall sustainability and responsible practices.

The ESG framework encompasses three central pillars of sustainability and responsible corporate practices. The mounting interest in ESG is driven by heightened awareness of sustainability issues and the recognition that companies must move beyond mere profit maximization. There is a growing trend towards integrating ESG factors into business strategies to ensure long-term sustainable growth and meet the diverse expectations of stakeholders, including investors, customers, employees, and regulators. The ESG concept, apart from derived from CSR, can also be traced to the three pillars of sustainability, the so-called “triple bottom line of sustainability” (Elkington, 1997; Kouaib et al., 2020), namely that environmental performance (planet), social performance (people) and the performance of corporate governance policies lead to an increase in the economic and firm performance of companies (profit).

The growing emphasis on corporate sustainability has led to increased demand for sustainable investing among institutional investors. Sustainable investing integrates ESG-related factors into the investment decision process (GSIA, 2018; MSCI, 2020). This approach is often used interchangeably with CSR in previous research, reflecting the convergence of these concepts in practice.

In conclusion, the convergence of CSR and ESG represents an evolving paradigm in corporate sustainability, with significant implications for firm performance. As these concepts continue to shape business practices and investment strategies, their impact on long-term corporate success and societal well-being remains a critical area of study and practice.

1.3 Scope of the Study

This research endeavours to examine the impact of ESG disclosure and performance on firm performance, while considering key controlling variables. Recognizing the complexity of analysing the entire economy with its diverse sectors and unique characteristics, this study adopts a focused approach by selecting four representative industry sectors in Hong Kong: property development, transport, public utilities, and catering. The researcher has considered the appropriate sectors which represents the economy and have significant contribution to Gross Domestic Product (GDP) of Hong Kong. The first criteria is the relevancy to the general public and the second consideration is the contribution to the GDP. It is generally considered that property investment and management (construction and real estate sector) is important as property development was the main motivator of economy in the past years and in particular during the years from 2017 to 2021. Transport sector is also relevant to the welfare of the public. Turning to the everyday necessities, the public utilities (electricity, water etc) and catering (food services) are important considerations. The researcher considered that it was relevant and appropriate to choose the aforementioned sectors for research purpose. With regard to GDP consideration, the statistics from Census and Statistics Department showed that the total contribution to GDP of the four sectors are about 15.8% for 2022 and 14.4 for 2023 (apart from financial services, import and export and public administration) which represents a significant portion of GDP of Hong Kong. Although some ESG issues, like climate change, board governance, and gender diversity, are similar across various sectors, the associated risks and priorities vary by industry. For instance, the ESG considerations for transport companies differ from those of catering companies, while public utilities face different challenges compared to property development firms. This targeted analysis allows for

a more nuanced understanding of ESG dynamics within specific business contexts.

The assessment of a company's ESG performance has become essential for investors, regulators, and other stakeholders in evaluating a company's sustainability, risk profile, and overall corporate responsibility. The integration of ESG disclosure and performance into strategic decision-making and corporate reporting is increasingly vital for companies aiming to enhance their long-term competitiveness, attract responsible investment, and contribute to sustainable development.

This comprehensive approach to ESG analysis within specific Hong Kong sectors aims to provide valuable insights into the relationship between ESG practices and firm performance in a nuanced, industry-specific context with particular reference to the determination of the Hong Kong regulatory authorities to align with new international standard, in particular the climate change policies.

1.4 Research Objectives

The primary goal of this study is to examine the influence of ESG disclosure and performance on the financial performance of Hong Kong-listed companies in four key sectors: property development, transport, public utilities, and catering, covering the period from 2017 to 2019. Our secondary objectives include analysing the relationship between individual ESG components (environmental, social, and governance) and specific financial indicators (Return on Assets, Return on Equity, and Earnings Per Share), while also considering the role of control variables such as market capitalization and board composition on impacting the financial performance of the companies.

This study attempts to investigate if there is any potential positive relationship between ESG disclosure, ESG performance, and firm performance across the four selected sectors. The sector comparison of the ESG performance among the four business sectors will also be explored. The current status of ESG implementation and its correlation with firm performance and sustainability would also be discussed. It also aims to identify and analyse any sectoral differences in ESG disclosure and performance among the four industries under study. Through these objectives, it is expected to provide actionable insights and recommendations for corporate decision-makers, investors, and policymakers in Hong Kong. The findings aim to inform ESG-related strategies, guide investment decisions, and contribute to the development of effective regulations in this critical area.

1.5 Research Questions

To comprehensively address the research objectives, the study will consider the following research questions:

1. What is the nature and strength of the relationships between ESG disclosure and firm performance among Hong Kong's listed companies?
2. How do the individual components of ESG performance (environmental, social, and governance) impact various firm performance indicators? And to what extent does ESG disclosure significantly influence a firm performance?
3. How does overall ESG performance affect a company's financial outcomes?

4. How does stakeholder theory help explain the observed relationships between ESG factors and firm performance?

1.6 Significance of the Study

This research is particularly timely and relevant given the Hong Kong Stock Exchange's (HKEX) proactive approach in promoting ESG reporting and integration through its comprehensive ESG Reporting Guide. As investors and businesses in Hong Kong increasingly prioritize ESG considerations to align with global sustainability trends and evolving regulatory landscapes, our study offers critical insights into the relationship between ESG practices and firm performance.

Hong Kong's position as a global financial hub and a major centre for listed companies in Asia makes this research particularly valuable. Hong Kong-listed companies can use these insights to refine their ESG practices and disclosure strategies. Investors can leverage our findings to make more informed decisions, particularly when considering companies with strong ESG performance.

Policymakers and regulators can use this empirical evidence to further develop and refine ESG-related regulations, guidelines, and policies that are tailored to Hong Kong's unique market conditions. By providing a detailed analysis of ESG factors and their impact on firm performance in Hong Kong, this study contributes to the broader global dialogue on sustainable business practices.

In essence, this research provides valuable empirical evidence that underscores the growing importance of ESG integration in Hong Kong's business and investment

landscape. It serves as a crucial resource for local and international stakeholders seeking to navigate the evolving ESG landscape in this key Asian financial centre.

1.7 Research Gaps

While extensive research has been conducted on the overall impact of ESG disclosure on firm performance, there is a notable scarcity of studies examining the individual effects of environmental, social, and governance aspects. Despite the growing interest in ESG factors, existing studies have yielded inconsistent results regarding the relationship between ESG disclosure, ESG performance and firm performance.. Moreover, the existing body of literature predominantly focuses on developed markets such as the United States, Europe, and more established Asian markets like Japan and Singapore. This creates a significant gap in our understanding of these relationships within the unique context of Hong Kong's major listed companies, which operate under distinct market dynamics, regulatory frameworks, and investor preferences.

Previous studies have often investigated either ESG disclosure or ESG performance in relation to financial outcomes, but few have comprehensively examined both aspects simultaneously. Given Hong Kong's rapidly evolving ESG landscape and the increasing emphasis on sustainability, there is a pressing need for up-to-date research that reflects current market conditions and regulatory developments. By addressing these gaps, our study aims to make a substantial contribution to the literature and provide valuable insights for stakeholders in Hong Kong's ever maturing ESG-focused business environment.

To the knowledge of the researcher, this study is the first research study on the impact of ESG on the firm performance of listed companies in Hong Kong. In fact, this might

be insightful for senior management of corporations in their decision for ESG initiatives despite the stringent ESG requirement in Hong Kong following the international trend on climate change and ESG concensus.

1.8 Research Contributions

By focusing on Hong Kong-listed companies, we provide concrete empirical evidence that either supports or challenges the theoretical linkages between ESG factors and firm performance in this unique market context. Our findings offer valuable insights for policymakers and regulators in Hong Kong, enabling them to develop and refine ESG-related guidelines, disclosure requirements, and policies tailored to the specific needs of the Hong Kong market. This study contributes to a broader understanding of ESG influence on firm performance, particularly in emerging and fast-evolving financial markets. The results can be compared with findings from other markets, enriching the global discourse on this crucial topic.

The researcher examines the relationship between ESG transparency and financial performance of listed companies in Hong Kong. The link between actual ESG performance (measured by the Bloomberg index) and financial results is evaluated. The researcher disaggregates overall ESG performance into its individual components (environmental, social, and governance) to analyse their differential impacts on firm performance. The issues such as the implications of alignment or misalignment between ESG disclosure and actual performance on financial outcomes were investigated. By addressing these objectives, our research provides robust empirical evidence on the ESG-firm performance relationship within the context of major listed companies in Hong Kong. The insights gained from this study have the potential to inform corporate

decision-making, shape investor preferences, and guide the development of ESG-related regulations and policies in the Hong Kong market.

1.9 Limitations and Future Studies

There are limitations in our study. This study focuses on four specific sectors: property development, transport, public utilities, and catering. While these sectors provide valuable insights, the findings may not be generalizable to other industries. In addition, the ESG and financial data used in this study, collected from Bloomberg and company websites for the period 2017-2019, may not fully reflect the organizational changes, economic fluctuations, or stock price variations in the prevailing periods.

It is important to note that the ESG data from Bloomberg is secondary information, potentially influenced by self-reporting biases and the proprietary nature of Bloomberg's ESG scoring methodology. Furthermore, smaller companies without ESG ratings were excluded from the study, which may affect the results. The choice of firm performance indicators (ROA, ROE, EPS), although widely accepted, represents only one of the approaches to measuring firm performance.

The researcher believes that future research could expand this study by exploring additional sectors such as information technology, virtual asset companies, and financial institutions. Other alternative ESG rating methodologies or data sources such as MSCI and Refinitiv could be explored for analysis. In addition, different theoretical frameworks such as qualitative or mixed-method approaches could be adopted to provide a more comprehensive understanding of ESG impacts.

This research findings also have other implications for the key stakeholders. From the perspective of the corporation, the study highlights the importance of aligning ESG disclosures with the firm's actual performance, potentially incentivizing greater transparency and credibility in ESG reporting. Also, findings on the differential impacts of environmental, social, and governance factors can guide more effective resource allocation across ESG dimensions.

Turning to the perspective of the investors, this research provides valuable insights for integrating ESG considerations into investment decision-making processes. It supports the development of more sophisticated ESG-focused investment strategies and engagement practices with corporations. The research will provide direction and ESG initiatives for the corporation in its decision making in investment and long-term development.

The study's findings can inform the development of ESG-related regulations, disclosure requirements, and policy initiatives. It contributes to efforts to enhance transparency and accountability in ESG reporting. The insights support the broader goal of developing Hong Kong as a leading sustainable finance hub. By addressing these implications, this research aims to significantly impact how corporations, investors, and regulatory authorities in Hong Kong approach and implement ESG strategies. Ultimately, it contributes to the development of a more sustainable and resilient financial ecosystem in Hong Kong. This comprehensive approach not only acknowledges the study's limitations but also provides a roadmap for future research and underscores the practical implications for key stakeholders in Hong Kong's ESG landscape.

1.10 Thesis Structure

This thesis is structured into six chapters, each addressing key aspects of our research on the relationship between Environmental, Social, and Governance (ESG) factors and financial performance in Hong Kong's listed companies. The following overview outlines the main themes of each chapter.

Chapter 1 lays the foundation for the study by providing background information and definitions of ESG concepts, highlighting the growing importance of ESG in corporate strategy. It also articulates the research problem, focusing on the impact of ESG initiatives on firm performance and outlining the study's objectives, identifying research gaps, and emphasising the unique contributions to the academic field.

Chapter 2 contextualises the research within the broader ESG landscape by examining the ESG reporting requirements for Hong Kong-listed companies and discussing relevant global ESG initiatives, including those by the United Nations and their implications for Hong Kong's companies.

Chapter 3 provides a comprehensive review of existing literature and theoretical foundations, including analysis of ESG disclosure and performance literature, a discussion of four key theories explaining ESG, with a particular focus on stakeholder theory and an exploration of the theoretical underpinnings of the relationship between ESG and firm performance. The conceptual model illustrating the impact of ESG disclosure, ESG performance on the firm performance and the respective relationship between the environmental, social, governance, ESG disclosure and ESG performance

and firm performance. The respective hypotheses are established to be tested under the ESG perspectives.

Chapter 4 focuses on Research Methodology, covering the research approach and its justification, sample collection methods and data sources, the research design, including variables, statistical methods, and analytical techniques employed to address our research questions.

Chapter 5 presents the results and analysis of our empirical study, providing detailed findings on the relationship between ESG factors and financial performance in Hong Kong's listed companies. By using panel regression analysis, the correlation between variables, heteroscedasticity test, normality test, Hausman test for choosing fixed model or random model, Anova to check sector comparison and the final testing of the established hypothesis for the six models.

Chapter 6 offers a discussion of these findings, their implications for various stakeholders, conclusions drawn from the research, and recommendations for future studies and policy considerations of the regulatory bodies.

1.11 Chapter Summary

This chapter discussed the concepts of environmental, social and governance (ESG) and their background, referring back from United Nations Global Compact to the derived frameworks from Sustainable Development Goals in the past. The research problem, the research questions with the significance of the problem and its objectives were analyzed. The research objectives, research gaps and contributions together with

limitation and delimitation of the study are also discussed. The reasons of the choice of the sectors are discussed and the framework of the chapters are briefly reviewed.

CHAPTER TWO

The EVOLUTION OF ESG DISCLOSURE REQUIREMENTS

2.1 Introduction

There is a general demand on sustainability reporting apart from financial reporting. Sustainability reporting is known by various names, including corporate social responsibility, corporate accountability, triple bottom line, and corporate citizenship reporting. According to Daub (2005), a sustainability report should include both qualitative and quantitative information on how a company has enhanced its economic, environmental, and social performance, integrating these aspects into its sustainability management system. It demonstrates how firms utilize their ESG resources to promote sustainability.

Sustainable business practices alone do not suffice in raising awareness and legitimacy, accountability for these practices is far more essential. The well-established link between sustainable development practices and corporate reputation or legitimacy in literature highlights that a strong reputation can enhance market or firm performance. Consequently, rigorous disclosure can lead to an improved reputation, translating into higher profit margins or easier access to capital. Conversely, inadequate disclosure can result in suspicion and a "greenwashed" reputation. Various frameworks have been developed to guide and standardize voluntary disclosure.

ESG factors are increasingly recognized as crucial indicators of a company's long-term sustainability, risk profile, and overall performance. This recognition has prompted companies to not only improve their ESG practices but also enhance their ESG disclosure and transparency. In Hong Kong, the ESG requirements for listed companies have evolved over time, aligning with international trends with the effort of Hong Kong Stock Exchange.

ESG rating (score) is an assessment of a firm's quality, standard or performance on environmental, social and governance issues and it aims to measure a firm's financial relevant ESG risks (MSCI 2020). All awareness of sustainability is reflected in legislation and all requirements (whether legal or not) were initiated by public authorities to promote ESG through mandatory measures. The concern for ESG impact was increasing in Europe and Asia. Since 2018, large companies have been required to report the financial and non-financial information in their reports helping the stakeholders to evaluate the firm's non-financial practices and encourage firms to conduct their business more responsibly (European Commission). Hong Kong, as a financial centre, has to follow the trend to integrate with the global movement in promoting sustainability.

2.2 ESG requirements in Hong Kong

As a global financial centre, Hong Kong has actively embraced the trend of ESG. The Hong Kong Stock Exchange (HKEX) has launched several initiatives to enhance ESG reporting and performance among listed companies. These efforts include the introduction of a Consultation Paper and the ESG Reporting Guide, which serve as

frameworks to help Hong Kong companies seize opportunities and effectively engage with stakeholders.

The initial ESG guide, released in 2012, introduced ESG initiatives with a mix of mandatory requirements and recommended best practices. By 2016, HKEX mandated that all listed companies publish an annual ESG report detailing their policies, practices, and performance. This regulatory action aimed to improve corporate transparency and accountability, allowing investors and stakeholders to better evaluate ESG-related risks and opportunities. The reporting requirements were further revised in 2015 requiring the listed issuers to issue more ESG information starting from 1 January 2026. With the determination of the HKEX to align with international standards on sustainability reporting, the ESG requirements were further enhanced in 2020 and 2023 where more stringent climate-change policies and board governance measures were introduced.

2.3 Importance of Effective ESG reporting

ESG factors can significantly impact a company's operations, reputation, and firm performance. Comprehensive ESG reporting allows companies to identify, assess, and mitigate these risks, enhancing overall resilience. Both institutional and individual investors are increasingly incorporating ESG considerations into their investment decisions, favouring companies with strong performance and transparent reporting.

ESG reporting enables companies to communicate their sustainability efforts and impacts to a wide range of stakeholders, including customers, employees, regulators, and local communities, thereby enhancing transparency and building trust. Addressing ESG-related issues such as energy efficiency, waste reduction, and employee well-

being can lead to cost savings and operational improvements. Companies that proactively manage and report on their ESG performance can differentiate themselves from their peers, potentially gaining a competitive edge in the market.

As ESG importance grows globally, robust and transparent ESG reporting by listed companies in Hong Kong is becoming increasingly critical. This research study aims to explore the relationship between ESG disclosure, ESG performance, and financial performance of major listed companies in Hong Kong, providing valuable insights for corporations, investors, and regulatory authorities.

2.4. Growing Global Emphasis on ESG Factors in Business Decisions

In recent years, the emphasis on ESG considerations has grown significantly in the corporate and investment landscape. Globally, governments and regulatory bodies have introduced new laws and guidelines to enhance transparency and accountability in ESG reporting. For instance, the European Union's Non-Financial Reporting Directive and the Corporate Sustainability Reporting Directive have established new benchmarks for ESG disclosure.

Institutional investors, including pension funds, asset managers, and wealth funds, are increasingly incorporating ESG criteria into their investment decisions. This shift is driven by the recognition that ESG factors can materially impact a company's long-term firm performance and risk profile, prompting investors to prioritize ESG initiatives in their evaluations.

Employees, customers, and the general public have elevated their expectations of companies, demanding that they address pressing environmental and social issues and demonstrate sound governance practices. If companies fail to meet these expectations can result in reputational damage and loss of public trust. The global financial community has responded to the growing emphasis on sustainability by developing new investment products, such as green bonds and ESG-focused funds, and launching initiatives to promote sustainable finance practices. In fact, the United Nations-supported Principles for Responsible Investment (PRI) have been adopted by a growing number of institutional investors worldwide.

The global emphasis on climate change, environmental protection, and sustainable development has increased scrutiny on the environmental impacts of corporate activities. This shift highlights the critical need for effective ESG management and reporting. As these trends converge, ESG factors have become integral to business strategy, operational decisions, and investment allocation across industries. Companies that successfully manage and communicate their ESG performance are better positioned to attract capital, maintain their social license to operate, and ensure long-term viability in a rapidly evolving business landscape. According to Cheng et al., 2014, ESG was found to facilitate the corporations' returns through lower cost of capital and lower borrowing terms leading to better access to finance.

2.5 United Nations ESG Initiatives

Corporate Social Responsibility (CSR) initiatives encourage corporations to adhere to predefined norms and values. The United Nations Global Compact, launched in 2000, provides a network for companies, trade unions, and NGOs, focusing on 10 principles related to human rights, labour rights, the environment, and anti-corruption.

In 2015, the UN General Assembly adopted a document called "Transforming Our World: The 2030 Agenda for Sustainable Development,". It represented a world plan for taking action by 2030 to tackle global challenges of environmental degradation and poverty (UN 2015; UNGA 2015). It includes 17 comprehensive goals (United Nations General Assembly, No. 2, 2015) aiming at ending poverty and hunger, protecting human rights, and safeguarding the planet (See Table 2.1 below). These Sustainable Development Goals (SDGs) replaced the Millennium Development Goals (MDGs) and involve a bottom-up approach engaging governments, international institutions, civil society, businesses, and academia. These SDGs take a bottom-up approach, involving all stakeholder groups, including governments, international institutions, civil society, business and academia (United Nations General Assembly, 2015, No. 52). Specifically, businesses are called upon to contribute to the achievement of the Sustainable Development Goals (United Nations General Assembly, 2015, No. 67), which are supported by 169 targets guiding their implementation. Although not legally binding, these goals provide a framework for sustainable efforts, allowing discretion in how they are achieved by governments and companies.

Table 1: United Nations’ 17 Sustainable Development Goals

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure the availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts*
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15	Protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Extract from “Transforming our World: the 2030 Agenda for Sustainable Development” Resolution adopted by General Assembly on 25 September 2015, P.14

2.6 Sustainable Development Reporting

Effective implementation of Sustainable Development Reporting (SDR) requires clear mechanisms to measure and assess progress, even in weak institutional settings. The management must ensure that goals and outcomes must be measurable, verifiable, and comparable to facilitate objective comparisons at both the firm and country levels (Biermann et al., 2017). A firm's competitive position is often reflected in its firm performance, such as sales growth, profit margins (EPS), and returns on investment (ROA, ROE).

Schramade (2017) suggests that the United Nations SDGs provide companies with opportunities to adopt sustainable business models and strategies. Various frameworks

have been developed to standardize and assist companies in implementing and reporting on the SDGs. The GRI Sustainability Reporting Standards offer international guidelines for sustainability reporting. The UN Global Compact, in collaboration with the Global Reporting Initiative (GRI) and the World Business Council for Sustainable Development (WBCSD), has introduced several guidelines, including the Sustainable Development Goals Guidelines, United Nations Global Compact Goals (2017), and Practical Guidelines for Defining Priorities and Reporting (2018). GRI is an international initiative that aims to provide consistent guidelines for sustainable reporting. GRI is an international organisation and its standards help companies harmonize reporting on their different ESG impacts.

A report issued by GRI in 2018 showed that 12,964 companies worldwide had issued 50,197 sustainability reports on voluntary basis, regarding various dimensions of ESG information disclosure. The SDG Guidelines provide companies with a general understanding of the SDGs, their importance and how corporate actions relate to them, while the latter two guidelines are specific to implementation and reporting. Specifically, the Objectives and Purposes Analysis provides a list of possible relevant business actions for each of the 169 objectives, as well as links to other international conventions and reporting standards (ILO, UNCAC, GRI, etc.), while the Practical Guidelines provide a structured approach to SDG implementation and reporting. First, the SDGs and their goals need to be understood and prioritized. Second, business objectives need to be defined, measured, and analysed. Third, effective reporting on SDRs must be implemented. The UN SDG framework was developed with stakeholders in mind.

2.7 SDG and ESG reporting

ESG is part of the elements of the corporate social responsibility or corporate sustainability reporting on a voluntary basis (Baron, 2014). The increasing demand for more systematic ESG led to the establishment of several global initiatives which include Global Reporting Initiatives and the United Nations Global Compact (Lydenberg, 2014). The United Nations Sustainable Development Goals (SDGs) offer a comprehensive blueprint for addressing global sustainability challenges, providing companies with concrete targets and metrics to guide their ESG reporting and sustainable development initiatives. By incorporating the SDGs into their ESG frameworks, organizations can effectively showcase their dedication to sustainable practices and quantify their contributions to global sustainability objectives.

The tripartite structure of ESG - environmental, social, and governance - directly corresponds to various SDGs. Environmental aspects of ESG reporting align with SDGs such as Climate Action (Goal 13), Life Below Water (Goal 14), and Life on Land (Goal 15). The social dimension of ESG correlates with SDGs like Good Health and Well-Being (Goal 3), Gender Equality (Goal 5), and Decent Work and Economic Growth (Goal 8). Governance aspects of ESG find resonance in SDGs related to corporate governance, peace, justice, and strong institutions (Goal 16).

To effectively integrate SDGs into their ESG strategy, corporate management should undertake a systematic approach. This involves identifying and prioritizing sustainability issues most pertinent to their business model and industry context.

Companies should then establish mechanisms to measure and monitor their progress towards these global sustainability targets. Regular communication of these efforts and achievements to key stakeholders - including investors, customers, and regulatory bodies - is crucial for fostering transparency and demonstrating long-term value creation. This strategic alignment of ESG reporting with SDGs not only enhances corporate sustainability efforts but also positions companies favourably in an increasingly conscientious global market.

2.8 United Nations Principles for Responsible Investment (PRI)

The United Nations Principles for Responsible Investment (UN PRI) is a global initiative that promotes the incorporation of environmental, social, and governance (ESG) factors into investment decision-making and ownership practices. The UN PRI has grown to become the world's leading proponent of responsible investment, with over 4,000 signatories representing more than \$121 trillion in assets under management as of 2022 since its launch in 2006.(PRI Bulletin) It provides a comprehensive framework and set of guidelines for investors to follow, covering areas such as active ownership, ESG integration, and collaborative initiatives. Specific principles are designed to help investors better understand and manage the risks and opportunities associated with ESG factors, ultimately contributing to more sustainable and responsible investment practices. The growing global adoption of the UN PRI reflects the increasing recognition among the investment community that ESG factors can have a material impact on long-term firm performance and investment risk. By aligning with the UN PRI, investors can demonstrate their commitment to sustainable investing and their contributions to the broader goals of sustainable development.

The UN PRI aims to promote transparency and accountability within the investment industry by requiring the companies to report on their progress of implementation. It helps to drive more meaningful ESG integration and disclosures and encourages collaboration among its companies and investors, facilitating the sharing of best practices, knowledge, and resources. This collaborative approach helps to amplify the impact of responsible investment initiatives and promote wider adoption of ESG integration.

In addition, the UN PRI helps to shape regulatory frameworks and policies that support and incentivize ESG integration. This includes initiatives such as promoting mandatory ESG disclosure requirements and sustainable finance taxonomies. Over the years, the UN PRI has helped to legitimize and mainstream responsible investment practices and has contributed to the significant growth in ESG-focused investment products, services, and strategies over the past decade. It also offers a range of educational resources, tools, and guidance to help investors develop the necessary knowledge and skills to effectively integrate ESG factors into their investment processes.

Overall, the UN PRI has been instrumental in driving the integration of ESG considerations into the global investment landscape. By establishing standards, promoting transparency, and facilitating collaborative action, the UN PRI has played a pivotal role in accelerating the adoption of responsible investment practices worldwide.

2.9 The Task Force on Climate-related Financial Disclosures (TCFD)

The Task Force on Climate-related Financial Disclosures (TCFD) is becoming important in current ESG reporting and disclosure guidelines as it is adopted globally as standard. It was established in 2015 by the Financial Stability Board, an international body that monitors and makes recommendations about the global financial system. The TCFD was created with the purpose of developing a set of consistent, voluntary climate-related financial risk disclosures for use by companies in providing information to lenders, insurers, investors, and other stakeholders.

The primary objectives of TCFD are to develop recommendations for more effective climate-related disclosures that could promote more informed investment, credit, and insurance underwriting decisions, and to enable stakeholders to better understand the concentrations of carbon-related assets in the financial sector and the financial system's exposures to climate-related risks.

The TCFD recognized that climate-related risks and opportunities are becoming increasingly important for organizations to consider in their strategic planning, risk management, and capital allocation decisions. However, the lack of standardized, comparable, and decision-useful climate-related financial information was hindering the ability of financial markets to accurately price climate-related risks and opportunities.

To address this gap, the TCFD developed a framework for climate-related financial

disclosures organized around four key areas: governance, strategy, risk management, and metrics and targets. The TCFD recommendations provide a structure for companies to disclose how they are assessing and managing climate-related risks and opportunities, helping to improve transparency and enable more informed decision-making by investors and other stakeholders. Many countries and jurisdictions are also moving towards mandatory climate-related financial disclosure requirements, further underscoring the importance of the TCFD framework in driving more transparent and consistent reporting on climate-related financial risks and opportunities.

The TCFD has developed a framework with four core elements that organizations should disclose to help stakeholders understand their climate-related risks and opportunities, namely governance, strategy, risk management and targets. Governance disclosure is referring to the organization's governance around climate-related risks and opportunities and the management's role in assessing and managing climate-related risks and opportunities. Strategy refers to the disclosure of the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning. risk management refers to the disclosure of how the organization identifies, assesses, and manages climate-related risks. The targets refer to the disclosure of the metrics and targets used to assess and manage relevant climate-related risks and opportunities and opportunities in line with its strategy and risk management process in relation to the disclosure of Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks. It also describes the targets used by the organization to manage climate-related risks and opportunities and performance against these targets.

The TCFD recommendations provide a standardized framework for organizations to disclose decision-useful, climate-related financial information to their stakeholders. By adopting these recommendations, organizations can enhance transparency, enable more informed decision-making, and support the transition to a low-carbon economy.

2.10 The Stock Exchange of Hong Kong (SEHK)

The Stock Exchange of Hong Kong (SEHK) is a wholly owned subsidiary of the Hong Kong Exchanges and Clearing Limited. It is the primary regulator responsible for setting the ESG reporting requirements for companies listed on the Hong Kong Stock Exchange. HKEX first introduced the ESG Reporting Guide in 2012, which set out recommended ESG disclosures for listed companies. The Guide was introduced as a recommended practice under the Listing Rules, in order to align with international trends noting the ESG information was increasingly required by stakeholders and investors. The HKEX ESG Reporting Guide is the primary regulation governing ESG disclosures for companies listed on the Hong Kong Stock Exchange. The guide sets out recommended disclosures across two "subject areas": Environmental and Social. Under each subject area, the guide outlines various "aspects" and "key performance indicators" (KPIs) that listed companies should report on.

The Hong Kong Stock Exchange (HKEX) has implemented mandatory ESG reporting requirements for listed companies since 2016. These requirements have been updated and expanded over time, leading to increased disclosure and transparency around environmental, social, and governance (ESG) performance. The ESG reporting requirements cover a broad range of topics, including environmental impacts, social responsibility, and corporate governance. Companies are required to disclose both

quantitative and qualitative information related to their ESG practices and performance.

The ESG Reporting Guide has been revised and expanded in 2015 when the SEHK amended the Main Board Listing Rules chapter 13.91 and the ESG Reporting Guide in Appendix 27. The disclosure level was amended from a merely recommended compliance to a “Comply or Explain” approach. It was amended in two different phases: the upgrade of the General Disclosures to “Comply or Explain” effective for financial years on or after 1 January 2016 while upgrade of the KPIs in the Environmental Subject Area came into effective for financial years on or after 1 January 2017. The subsequent update was in 2020. From 1st July 2020, the disclosure of governance structure, reporting principles and reporting boundary will be upgraded to mandatory, while “comply or explain” approach will be required for all provisions (Both General Disclosures and KPIs) contained in the Guide.

The HKEX ESG Reporting Guide sets out mandatory disclosure requirements for listed companies in Hong Kong. The mandatory disclosures include Governance structure for ESG matters, identification of the board's oversight of ESG issues, description of the board's ESG management approach and strategy, disclosure of significant climate-related issues and reporting of Scope 1 and Scope 2 greenhouse gas emissions.

The HKEX Listing Rules and Corporate Governance Code also include provisions related to ESG disclosures. Listed companies are required to disclose information on their ESG policies, risks, and performance in their annual reports. The Corporate Governance Code also encourages companies to report on their ESG practices and risk management. These regulations and initiatives have been instrumental in driving the

adoption of ESG reporting and sustainable finance practices in Hong Kong, with the aim of enhancing transparency, risk management, and the transition to a more sustainable economy.

HKEX announced in November 2023 their commitments to achieving both carbon neutrality by 2024 and net zero by 2040. HKEX Chairman, Laura M. Cha, said: “The latest UN Climate Change report shows that the world remains “massively off track” on climate action. Time is of the essence and we must do more to ensure a sustainable future for our children, their children and our planet. I’m pleased today to be sharing HKEX’s plans to accelerate its net zero and carbon neutrality goals. Our commitment to achieve net zero by 2040, 10 years ahead of our original target, reflects our ongoing determination to address climate change in a timely manner. We urge others across our community to join HKEX, in charting the way forward to address climate change. Our planet simply cannot afford to wait.”

2.11 International Sustainability Standards Board (ISSB)

In June 2023, the International Sustainability Standards Board (ISSB) published the IFRS S1 General Requirements for Disclosure of Sustainability-related Financial Information (IFRS S1) and the IFRS S2 Climate-related Disclosures (IFRS S2), together, the IFRS Sustainability Disclosure Standards (ISSB Standards).

In July 2023, The International Organization of Securities Commissions (IOSCO) determined that the ISSB Standards offer a useful global framework for capital markets to produce sustainability-related financial information. This also helps financial markets around the world accurately identify important sustainability risks and

opportunities. The HKEX is committed to enhance listed issuers' climate-related disclosures with reference to IFRS S2, being the global baseline for sustainability disclosures as a member of the Green and Sustainable Finance Cross-Agency Steering Group. With effect from 1 January 2025, the HKEX's Environmental, Social and Governance Reporting Code¹ ("ESG Code") will require issuers to make climate-related disclosures in phases. The enhancement of climate-related disclosures under the ESG Code reflects HKEX's commitment to drive ESG and sustainability agenda amongst listed issuers, and to prepare listed issuers for sustainability and climate reporting in accordance with the local sustainability standards to be developed for Hong Kong based on the ISSB Standards.

The Stock Exchange adopts a phased approach for implementation of the Climate Change policy. The implementation of the New Climate requirement for large cap, main board issuers and GEM issuers are different. The timelines for various company categories are shown in Table 1.

Table 2: Disclosure obligation and effective date for the New Climate

Requirements

	New Climate Requirements effective date	
	Scope 1 and Scope2 GHG emissions	Other New Climate Requirements
Large Cap Issuers	Mandatory Financial years commencing on or after 1 Jan 2025	Comply or explain Financial years commencing on or after 1 Jan 2025 Mandatory Financial years commencing on or after 1 Jan 2026
Main Board Issuers (Other than Large Cap Issuers)		Comply or explain Financial years commencing on or after 1 Jan 2025
GEM Issuers		Voluntary Financial years commencing on or after 1 Jan 2025

Implementation Guidance for Climate Disclosures under HKEX ESG reporting 2024

IFRS S1 establishes a basis for decision-useful and comparable reporting of sustainability-related financial information that complements an issuer's financial statements. It therefore requires the application of some established practices from financial reporting. IFRS S1 key concepts comprises quality of information, reporting entity, timing of reporting, location of disclosure, materiality, value chain concepts, statement of compliance and interaction with legislation. As regards the quality of

information, relevancy, faithful representation, comparability, verifiability, timeliness and understandability should be considered.

2.12 HKEX's ESG Reporting Guide

The HKEX Listing Rules and Corporate Governance Code mandate certain ESG-related disclosures. Listed companies must disclose information on their ESG policies, risks, and performance in their annual reports. The Corporate Governance Code also requires companies to report on their ESG practices and risk management. These mandatory reporting requirements are designed to enhance transparency, drive better risk management, and support Hong Kong's transition towards a more sustainable financial system.

The HKEX ESG Reporting Guide covers reporting scope on various area. Environmental and social aspects as outlined in the ESG Reporting Guide covers the activities, products, and services under the reporting organization's control or influence. Annual reporting in the company's ESG report or annual report following the "comply or explain" approach with clear metrics and KPIs.

The HKEX has implemented comprehensive requirements and guidelines for Environmental, Social, and Governance (ESG) reporting for listed companies in Hong Kong. All companies listed on the HKEX are required to publish an annual ESG report. The report must cover the company's policies, initiatives, and performance on material ESG issues. The report should focus on issues that are important to the business and its stakeholders. As regards quantitative aspect, companies should disclose key performance indicators (KPIs) and provide contextual information to explain the data.

Reports should provide a balanced account of both positive and negative ESG performance. Reporting methodology and KPIs should be consistent over time to enable meaningful comparisons. The introduction of mandatory ESG reporting requirements in Hong Kong represents a significant shift in the regulatory landscape. This change reflects growing global awareness of the importance of ESG factors in investment decisions and corporate governance. The mandatory nature of these disclosures is expected to increase transparency and comparability of ESG data across firms. Potentially influence corporate behaviour towards more sustainable practices. Provide investors with more comprehensive information for decision-making.

2.13 ESG Reports

All ESG reports of Hong Kong listed companies must cover two subject areas: Environmental and Social. Each subject area has various "Aspects" that companies must report on, such as emissions, water, and employment. Companies are required to disclose information on the Mandatory Disclosure Requirements and comply with the "comply or explain" provisions. The HKEX encourages companies to obtain independent assurance on their ESG reports to enhance credibility and reliability.

Assurance providers must follow recognized assurance standards, such as ISAE 3000 or AA1000. The HKEX regularly reviews and updates the ESG Reporting Guide to keep pace with evolving ESG trends and best practices. Recent updates have focused on areas like climate change, biodiversity, and supplier management.

Overall, the HKEX's ESG reporting framework aims to promote transparent and consistent disclosure of ESG information by listed companies, enabling stakeholders to better assess and compare their sustainability performance.

Hong Kong has not mandated the use of any specific ESG reporting framework, leading to a lack of consistency and comparability across companies. Companies often adopt different reporting standards, such as GRI, TCFD, or SASB, which can make it difficult for investors and stakeholders to compare ESG performance across firms. In addition, there are often gaps in the availability of reliable and verifiable ESG data, especially for smaller companies or those with operations in multiple jurisdictions. The quality and accuracy of ESG data reported by companies can be uneven, as there are limited assurance and verification requirements.

Companies may face challenges in allocating sufficient human, financial, and

Hong Kong's ESG reporting regulations are still evolving, with the Hong Kong Stock Exchange (HKEX) gradually strengthening its disclosure requirements. The lack of clear and consistent regulatory guidance can create uncertainty for companies in terms of their ESG reporting obligations and best practices. The effective engagement with diverse stakeholders, such as investors, customers, employees, and local communities, to understand their ESG concerns and priorities can be a significant challenge for Hong Kong companies. Balancing the often-competing interests of various stakeholder groups in the ESG reporting process can be complex.

The companies can find difficulties of identifying and prioritizing the most material ESG issues that are relevant to the company's business and stakeholders can be a complex and subjective exercise. The lack of a standardized approach to materiality assessment can lead to inconsistencies in the ESG information reported by companies. Addressing these challenges will be crucial for Hong Kong companies to improve the

quality, transparency, and usefulness of their ESG reporting, which is essential for attracting responsible investors and meeting the evolving expectations of various stakeholders.

2.14 Current ESG Reporting Practices in Hong Kong

A leading accounting organization recently released a report on the ESG reporting practices of 100 listed companies in Hong Kong (KPMG, 2023). It assesses how these companies are performing in terms of ESG (environmental, social, and governance) disclosure and reporting. The Report shows that 91% of the top 100 Hong Kong companies published a standalone sustainability report in 2022, up from 88% in 2021. 95% of companies disclosed their carbon emissions data, a significant increase from 86% in the previous year. 92% reported on their energy consumption, up from 88% in 2021. 87% of companies conducted a materiality assessment to identify their most significant ESG issues, compared to 84% in 2021. The top material topics were climate change, employee wellbeing, and corporate governance. 81% of companies aligned their sustainability reporting with the GRI Standards, the most widely used framework globally. Adoption of other standards, such as TCFD (Task Force on Climate-related Financial Disclosures) and SASB (Sustainability Accounting Standards Board), also increased.

The report, as conclusion, suggests that Hong Kong's leading companies are making steady progress in enhancing their sustainability reporting and disclosure practices. However, there is still room for improvement, particularly in the areas of target setting, progress tracking, and alignment with emerging global reporting frameworks. Hong Kong's ESG Reporting Guide references and encourages the use of international frameworks such as the Global Reporting Initiative (GRI) Standards and the Task Force

on Climate-related Financial Disclosures (TCFD) recommendations. This helps Hong Kong companies to adopt reporting practices that are recognized and widely used globally. Hong Kong has made progress in promoting the importance of independent assurance and verification of ESG reports. The HKEX now requires the disclosure of information on the level of assurance obtained for ESG reports. This helps to improve the reliability and credibility of ESG disclosures. Hong Kong has been actively promoting investor engagement and stewardship practices, which are crucial for driving improved ESG performance.

Hong Kong's ESG reporting requirements do not directly mandate the disclosure of a company's alignment with the UN SDGs. However, many Hong Kong companies voluntarily report on their contributions to the SDGs as part of their ESG reporting.

The Hong Kong Stock Exchange's ESG Reporting Guide requires companies to disclose information on employment practices, labour standards, and human rights.

This aligns with the principles outlined in the UN Guiding Principles on Business and Human Rights. The UN Global Compact's ten principles cover areas such as human rights, labour, environment, and anti-corruption. While Hong Kong's ESG reporting requirements do not explicitly reference the UN Global Compact, many of the principles are reflected in the disclosure requirements. The Hong Kong Stock Exchange has encouraged listed companies to adopt the ISSB which incorporated TCFD recommendations on a voluntary basis. This aligns with the UN's support for the TCFD and its aim to improve climate-related financial disclosures.

In March 2024, the Hong Kong Government announced its vision to align local sustainability disclosure requirements with the IFRS Sustainability Disclosure

Standards (ISSB Standards), with the ultimate goal of requiring ISSB-aligned sustainability reporting by listed issuers and regulated financial institutions. Reference can be made to the vision statement of the Hong Kong Government on the implementation of Climate Change policies for Hong Kong listed companies. After the ISSB Standards were published in June 2023 as the global benchmark for sustainability reporting, the Government unveiled a vision statement in March 2024 aimed at creating a comprehensive sustainability ecosystem in Hong Kong. The key initiatives include:

1. Establishing local sustainability disclosure standards that align with ISSB Standards (referred to as HK Standards), with HKIPA serving as the sustainability standard setter.
2. Implementing HK Standards across various sectors, including listed companies and regulated financial institutions.
3. Introducing new climate requirements from HKEX as an initial step for listed issuers to prepare for sustainability reporting in line with HK Standards.
4. Tasking CASG members with developing a complete roadmap for the adoption of ISSB Standards by 2024 (the Hong Kong Roadmap).

The Stock Exchange published a Consultation Paper in April 2023 proposing to mandate all issuers to make climate-related disclosures in their ESG reports, and introduce new climate-related disclosures aligned with the International Sustainability Standards Board (ISSB) Climate Standard. The ISSB Climate Standard builds on the principles of the TCFD recommendations, and sets out detailed climate disclosures. The HKEX is committed to mandatory TCFD-aligned disclosures by 2025. The conclusion

document was issued in April 2024. In October 2022, HKEX established Core Climate – the only carbon marketplace that offers Hong Kong Dollar and Renminbi settlement for the trading of international voluntary carbon credits, further facilitating companies' net-zero journey.

The key features of the New Climate Requirements are that they are developed based on International Sustainability Standards Board's IFRS S2. Implementation reliefs including proportionality and scaling-in measures are introduced to address concerns over the reporting challenges that some issuers may face. The amended Listing Rules will come into effect on 1 January 2025 and a phased approach is adopted for the implementation of the New Climate Requirements.

2.15 The Securities and Futures Commission (SFC)

There are other regulatory authorities that oversee the ESG initiatives of the listed companies in Hong Kong. Securities and Futures Commission (SFC) is Hong Kong's securities regulator, responsible for regulating the securities and futures markets. The SFC has been actively promoting the integration of ESG considerations into the investment decision-making process. In 2021, the SFC issued the "Consultation Conclusions on the Management and Disclosure of Climate-related Risks by Asset Managers", which set out new requirements for asset managers to manage and disclose climate-related risks. This new regulation requires asset managers to assess and disclose the climate-related risks and opportunities in their investment portfolios. Asset managers are required to make disclosures regarding their governance, investment and risk management processes in relation to climate-related risks. Similar to HKEX's listing rules requirement, they also need to disclose their Scope 1, Scope 2, and, where

appropriate, Scope 3 greenhouse gas emissions. The reporting scope of SFC Requirements on Climate-related Disclosures focus on Climate-related risks and opportunities in the asset manager's investment portfolios with the recommendation to follow the Task Force on Climate-related Financial The disclosure should be clear, comprehensive, and comparable.

The Hong Kong Securities and Futures Commission has issued the Principles of Responsible Ownership to encourage investors to be more active in monitoring and engaging with companies on ESG issues. Hong Kong companies are increasingly adopting global sustainability reporting frameworks, such as the GRI Standards and TCFD recommendations, in their ESG disclosures. This demonstrates a growing alignment with international best practices and a commitment to transparency. Hong Kong has been actively involved in capacity-building initiatives, such as the HKEX's Sustainability and ESG Academy, to help companies enhance their ESG reporting and performance. These efforts contribute to the overall improvement of ESG reporting standards in Hong Kong.

While Hong Kong has made significant progress in meeting global ESG reporting standards, there is still room for further enhancement, particularly in areas such as mandatory climate-related disclosures, deeper integration of ESG into corporate governance, and the development of industry-specific ESG reporting guidelines.

The ESG reporting requirements have led to greater transparency and accountability for Hong Kong companies, as they are required to disclose their ESG performance and practices. This can enhance stakeholder trust and reputation, but also increases scrutiny

and the need for robust data management and reporting systems. Businesses need to integrate ESG considerations into their overall business strategy, operations, and decision-making processes. This can drive innovation, efficiency improvements, and the development of sustainable business models.

ESG reporting requirements provide investors with more comprehensive and standardized information to assess the long-term value and sustainability of companies. This can lead to better-informed investment decisions and the integration of ESG factors into investment strategies. Investors can use ESG data to identify and manage material risks, such as those related to climate change, supply chain issues, or regulatory compliance. This can help investors better understand and price the risks associated with their investments. The growing focus on ESG reporting can unlock new sustainable investment opportunities, such as green bonds, impact investing, and the financing of innovative sustainable solutions. Investors are becoming more active in engaging with companies on ESG issues and using their voting rights to drive positive change. This can lead to improved corporate governance and the integration of ESG considerations into business operations. Overall, the implications of Hong Kong's ESG reporting requirements are far-reaching, affecting both businesses and investors. While they present challenges, they also create opportunities for enhanced transparency, risk management, and the alignment of financial and non-financial performance.

2.16 The Hong Kong Monetary Authority (HKMA)

The Hong Kong Monetary Authority (HKMA) is the de facto central banking institution of Hong Kong, responsible for maintaining monetary and banking stability. Similar to HKEX and SFC, the HKMA has been working to promote sustainable banking and

finance, including issuing guidance on climate risk management for banks. In 2020, the HKMA announced the launch of the Green and Sustainable Finance Cross-Agency Steering Group to coordinate the management of climate and environmental risks in the financial sector.

The HKMA has been actively promoting the management of climate and environmental risks in the financial sector. In 2020, the HKMA launched the Green and Sustainable Finance Cross-Agency Steering Group to coordinate the efforts of various regulators. The HKMA has also issued guidance and requirements for banks to enhance their climate risk management practices and disclosures. It has issued guidance for banks to enhance their climate risk management practices. Banks are required to identify, measure, monitor, and report on their exposure to climate-related risks and integrate climate-related risks into their overall risk management framework. They need to disclose their climate-related risk management strategies and performance.

The reporting scope of HKMA Guidance on Climate Risk Management focus on the exposure to climate-related risks and the management of such risks on annual basis following the TCFD framework. Listing Rules and Corporate Governance Code with reporting scope in SG policies, risks, and performance on an annual basis and disclosures should be clear, concise, and in accordance with the ESG Reporting Guide. The reporting scope, frequency, and format are designed to ensure consistency, comparability, and transparency in ESG reporting across Hong Kong's listed companies and financial institutions.

2.17 Difficulties in complying with ESG requirements

There are challenges faced by companies in meeting ESG reporting requirements

Gathering, verifying, and consolidating ESG data from various sources across the organization can be a significant challenge. Companies often lack robust data management systems and processes to ensure the reliability and consistency of ESG information. Identifying and prioritizing material ESG issues that are relevant to the business and its stakeholders can be a complex and subjective process. Companies may struggle to balance the breadth of ESG topics and the depth of disclosure required. Many companies, especially smaller and medium-sized enterprises, lack the internal expertise, skills, and resources to effectively implement and maintain comprehensive ESG reporting. This can lead to difficulties in setting targets, developing strategies, and implementing ESG initiatives.

The lack of a single, universally accepted ESG reporting standard can make it challenging for companies to ensure the comparability and consistency of their disclosures. This can hinder benchmarking and limit the usefulness of ESG information for investors and other stakeholders. Obtaining independent assurance or verification of ESG data and disclosures can be resource-intensive and requires specialized expertise. Companies may face challenges in ensuring the reliability and credibility of their ESG reporting.

Some listed companies might find difficulties of integrating ESG considerations into corporate governance structures, decision-making processes, and executive

compensation. Companies may struggle to balance the varying expectations and information requirements of different stakeholder groups. Collaboration with industry peers, regulators, and service providers can also help companies overcome these challenges. Hong Kong's implementation of mandatory ESG reporting requirements aligns with the UN's global push for greater corporate accountability and transparency. By requiring listed companies to disclose their environmental, social, and governance performance, Hong Kong is taking a proactive step towards integrating sustainability considerations into the heart of business decision-making and operations.

2.18 Chapter Summary

The Chapter summarizes the ESG reporting requirements in Hong Kong and its regulatory framework and its relevant implications among the listed companies in Hong Kong. The 17 sustainable development goals developed by United Nations were explored. The adoption of the TCFD by Hong Kong Stock Exchange, in particular the climate-related policies, further encourage the development of ESG initiatives by the listed companies.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

The intricate relationship between environmental, social, and governance performance and financial outcomes has become a focal point in contemporary corporate research. This literature review synthesizes diverse findings to explain the complex interplay between these critical aspects of modern business. While various theories attempt to explain this relationship there is still conflicting ideas on which theories are more convincing to explain the relationship between ESG and firm performance. The evolving landscape of corporate sustainability has prompted researchers to delve deeper into the potential links between ESG factors and financial outcomes. By effectively managing ESG-related risks, fostering strong stakeholder relationships, and capitalizing on ESG-driven business opportunities, companies can potentially enhance their firm performance.

Empirical studies exploring the ESG-firm performance link have yielded diverse results, reflecting the complexity of this relationship. Some studies, such as that conducted by Friede et al. (2015) and Eccles et al. (2014), have identified a positive correlation, suggesting that robust ESG practices can lead to superior financial outcomes. These studies attribute this positive relationship to improved operational efficiency, enhanced risk management, and better access to capital.

Conversely, other studies have reported neutral or negative relationships between ESG and financial performance (Brammer et al., 2006; Barnett & Salomon, 2012). These

findings highlight the potential trade-offs and costs associated with implementing ESG initiatives, as well as the challenges in accurately measuring and valuing ESG performance and practices.

Recent research has sought to reconcile these conflicting results by examining boundary conditions and contingency factors that may influence the ESG-financial performance relationship. Studies by Trumpp & Guenther (2017) and Oikonomou et al. (2012) have explored how factors such as industry, firm size, and corporate governance may moderate this complex relationship.

This chapter will delve into empirical studies that have explored the ESG-firm performance link, revealing a spectrum of outcomes including positive, neutral, and negative relationships. We will examine these diverse findings to provide a nuanced understanding of the factors that may influence this complex relationship, including industry-specific considerations, firm size, and governance structures.

By critically analysing both theoretical frameworks and empirical evidence, this literature review aims to provide a comprehensive overview of the current state of knowledge regarding the impact of ESG performance on financial outcomes, setting the stage for further research and practical applications in corporate strategy and policy-making.

3.2 Theoretical Background

The concept of Environmental, Social, and Governance (ESG) reporting has its roots in the groundbreaking work of Edward Freeman (1984). This theory marked a

significant shift in corporate thinking, expanding the focus beyond shareholders to include a broader range of stakeholders.

As global awareness of climate change, social inequality, and corporate governance issues grew, so did the understanding of the interconnectedness between social and environmental factors in business operations. A pivotal moment in this evolution came with the publication of the "Brundtland Report" by the United Nations in 1987. This report, formally titled "Our Common Future," introduced the concept of sustainable development, defining it as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs."

Freeman's Stakeholder Theory (1984) emphasized that corporations have responsibilities beyond maximizing shareholder value. It argued that companies should consider the interests of employees, communities, and other stakeholders in their decision-making processes. This perspective challenged the traditional shareholder-centric model of corporate governance. The role of corporate managers has evolved in line with these changing perspectives. Managers now act not just as agents for shareholders, but as stewards with legitimate obligations to implement ESG initiatives, often mandated by various legislative frameworks. This shift reflects a growing recognition that long-term corporate success is intrinsically linked to sustainable practices and stakeholder engagement.

The traditional view that prioritized short-term financial returns for shareholders has given way to a more holistic approach. Modern corporate leaders increasingly acknowledge the importance of integrating sustainability strategies into their core

business practices. This includes the disclosure of environmental, social, and governance information to a wide range of stakeholders, reflecting a more transparent and responsible approach to business management.

This evolution in corporate thinking and practice underscores the growing importance of ESG considerations in today's business landscape. It represents a fundamental shift from a narrow focus on financial metrics to a broader understanding of corporate responsibility and sustainable value creation.

3.3 ESG Disclosure

The landscape of ESG disclosure has undergone a significant transformation, driven by increasing demands from governments, regulatory bodies, and stock exchanges. This shift has elevated ESG reporting from a voluntary practice to a critical aspect of corporate communication and compliance. As stakeholders, investors, and regulatory authorities intensify their focus on sustainable business practices, companies face growing pressure to provide comprehensive and transparent ESG disclosures.

There is evidence to suggest that ESG disclosures reduce information asymmetry and improve investors' perception and recognition of the firm's investment strategies (Fatemi et al., 2018). The ESG score is able to quantify the company's voluntary disclosure in terms of their environmental, social and governance (ESG) information. The public is concerning how to assess the quality of the ESG reports or sustainability reports as UN, GRI etc trying to develop the performance indicators for assessing the ESG reports. Firms that engage in ESG disclosures are recognised as being the leading and most admired firms in the market (Jeffrey et al., 2019)

3.3.1 Sustainability Reports

The Global Reporting Initiative (GRI) has emerged as a leading framework for ESG reporting, providing guidelines that many companies adopt to communicate their environmental, social, and governance performance (Vigneau, Humphreys and Moon, 2015). The GRI's recommendation for third-party assurance underscores the importance of credibility in ESG reporting. Concurrently, the Integrated Reporting Initiative (IRI) has made strides in developing standardized reporting frameworks, as evidenced by its 2013 international framework (Cheng, Ioannou and Serafeim, 2014; Eccles et al., 2014).

The motivations behind ESG reporting are multifaceted and often strategic. The voluntary disclosure theory, proposed by Verrecchia (1983) and Dye (1985), suggests that companies with positive ESG performance are more likely to report their activities in detail, while those with negative performance may disclose less. This theory aligns with the concept of signalling, where companies use ESG reporting to differentiate themselves from poor performers and potentially lower their cost of capital (Akerlof, 1970).

However, the relationship between ESG performance and disclosure is not always straightforward. Companies may use ESG reporting as a reputation management tool, increasing disclosure in response to negative events or to restore legitimacy (Brown & Deegan, 1998; Cho & Patten, 2007). The phenomenon of "greenwashing" – where companies present themselves as more ESG-conscious than they actually are – further complicates the landscape of ESG reporting.

Interestingly, some companies with positive ESG performance may choose to underreport their activities, a practice known as "excessive modesty" or "whitewashing" (Kim & Lyon, 2015). This counterintuitive approach may stem from concerns that highlighting ESG investments could be perceived as cost-inefficient by certain stakeholders.

The diversity in ESG reporting practices has led to the development of professional ESG ratings and databases, such as those compiled by Bloomberg, which aim to provide standardized assessments of companies' ESG performance and disclosure quality. These tools have become increasingly important for researchers and investors seeking to analyse the relationship between ESG practices and firm performance.

As the field of ESG reporting continues to evolve, companies must navigate the complex interplay between regulatory requirements, stakeholder expectations, and strategic considerations. The challenge lies in striking a balance between transparent disclosure and strategic communication, all while ensuring that ESG reporting accurately reflects a company's commitment to sustainable and responsible business practices.

The relationship between Environmental, Social, and Governance (ESG) performance and ESG disclosure has been a subject of extensive research, yielding a complex and sometimes contradictory body of evidence. While this study does not directly investigate the impact of ESG disclosure on ESG performance, understanding the interplay between these factors is crucial for contextualizing our research.

Empirical studies have produced a spectrum of results regarding the nature of the ESG performance-disclosure relationship. Early research by Freedman & Wasley (1990), Ingram & Frazier (1980), and Wiseman (1982) found no clear correlation between companies' ESG performance and the robustness of their ESG disclosures. This lack of a definitive relationship suggests that high-performing companies in ESG matters do not necessarily provide more comprehensive disclosures, and vice versa.

Intriguingly, some studies have reported a negative correlation between environmental performance and environmental disclosure (Hughes, Anderson and Golden, 2001; Patten, 2002). This counterintuitive finding might indicate that companies with poorer environmental performance may engage in more extensive disclosure as a form of legitimacy management or to pre-empt stakeholder concerns.

However, more recent research has painted a different picture. Studies by Gelb and Strawser (2001), Al-Tuwaijri et al. (2004), Clarkson et al. (2008, 2011), Dhaliwal et al. (2011), Lyon and Maxwell (2011), and Gao et al. (2016) have reported positive correlations between ESG performance and disclosure. These findings suggest that companies with stronger ESG performance may be more inclined to disclose their activities, possibly to signal their superiority or to capitalize on their positive performance.

The inconsistency in these results can be attributed to several factors. First, methodological issues regarding imperfect or inappropriate research methods may lead to conflicting outcomes. Second, the measurement challenges leading to difficulties in

accurately quantifying both ESG performance and the extent of ESG disclosure can skew results. Third, the sample selection bias regarding choice of companies or industries studied can significantly impact findings. Lastly, insufficient control for relevant factors resulting in failure to account for important variables may lead to misleading correlations.

Clarkson et al. (2008) highlighted that some elements included in disclosure indices used in these studies may be inconclusive, further complicating the interpretation of results. The observed negative relationship between ESG performance and disclosure in some studies could potentially be explained by increased disclosure requirements stemming from emerging environmental issues, rather than reflecting a true inverse relationship between performance and transparency.

It is worth noting that the relevance of ESG disclosures themselves remains a topic of debate, with earlier literature reviews (Kouhy and Lavers, 1995) indicating inconclusive evidence on their significance to stakeholders. This diverse body of empirical evidence underscores the complexity of the ESG performance-disclosure relationship. It highlights the need for nuanced interpretation of ESG disclosures and cautions against simplistic assumptions about the relationship between a company's ESG performance and its disclosure practices. Future research in this area should aim to address methodological challenges and consider a wide range of contextual factors to provide a more comprehensive understanding of this intricate relationship.

3.3.2 Disclosure Quality

The quality and consistency of sustainability reports have been a subject of ongoing concern among stakeholders. Dawkins and Lewis (year) revealed that a significant proportion of analysts, investors, and journalists find corporate sustainability performance disclosures inadequate. Despite companies' efforts to enhance transparency, the lack of standardized reporting requirements across sectors and the tendency towards selective disclosure hinder meaningful comparisons of ESG performance.

The issue of selective disclosure, where companies prioritize positive information that bolsters their image while potentially omitting negative impacts, undermines the credibility of ESG reporting. To address this, third-party assurance has emerged as a tool to enhance report reliability. De Villiers and Van Staden's study (2010) on shareholder preferences regarding environmental information disclosure found a strong appetite for mandatory, verified environmental disclosures published in both annual reports and company websites.

Data inconsistencies across companies further complicate the landscape of ESG reporting. The Carbon Disclosure Project (CDP), a prominent platform for reporting greenhouse gas emissions, illustrates this challenge. Depoers, Jeanjean and Jerome (2016) noted that companies often decouple their CDP disclosures from corporate report figures by excluding Scope 3 emissions or altering emission source categorizations. This discrepancy between CDP requirements and company-specific reporting standards highlights the need for greater standardization in ESG disclosure

practices.

Despite these challenges, a comprehensive study by NYU Stern Center for Sustainable Business and Rockefeller Asset Management in 2021 (NYU Stern Centre for Sustainable Business), analysing over 1,000 research papers from 2015-2020, provides compelling evidence of the positive relationship between ESG performance and financial outcomes. Key findings noted that 58% of corporate studies showed a positive relationship between ESG and financial metrics like ROE, ROA, or stock price whereas only 8% of studies indicated a negative relationship.

In climate change-focused studies, 57% demonstrated positive outcomes, with only 6% showing negative results. The study's six main conclusions offer valuable insights into the evolving landscape of ESG and firm performance:

1. Longer time horizons tend to reveal improved firm performance.
2. ESG integration strategies outperform negative screening approaches.
3. ESG investing provides downside protection during socio-economic crises.
4. Corporate sustainability initiatives drive firm performance through improved risk management and innovation.
5. Managing for a low-carbon future correlates with enhanced firm performance.
6. ESG disclosure alone does not drive firm performance, suggesting the importance of substantive action beyond mere reporting.

The reports also highlights a critical challenge in ESG research: the lack of standardization in ESG data. The reliance on diverse third-party ESG scores across studies complicates comparative analysis. This issue is further emphasized by Eccles et

al. (2017), who identified the scarcity of high-quality data on material ESG factors as the primary barrier to ESG integration among institutional investors.

These findings collectively underscore the need for more standardized, comprehensive, and reliable ESG reporting practices. While the positive link between ESG performance and financial outcomes is increasingly evident, the variability in reporting quality and consistency remains a significant hurdle. Addressing these challenges will be crucial for enhancing the credibility and utility of ESG disclosures, ultimately facilitating more informed decision-making by investors and other stakeholders.

3.4 ESG-Firm Performance Relationship

Environmental, Social, and Governance (ESG) performance has emerged as a critical metric in assessing corporate responsibility and sustainability. It encompasses a company's efforts in environmental stewardship, social responsibility, and ethical governance practices. The environmental aspect focuses on resource efficiency, carbon emission reduction, and climate change mitigation. Social considerations include employee relations, diversity and inclusion, and community engagement. Governance factors cover board diversity, executive compensation, and ethical business practices.

A central debate in ESG literature revolves around the relationship between corporate responsibility choices and firm performance. This complex relationship raises questions about causality: does superior ESG performance lead to enhanced financial outcomes, or do financially robust companies have more resources to invest in ESG initiatives?

Theoretical studies have proposed various mechanisms through which ESG activities

might create shareholder value. First, ESG initiatives can attract socially conscious customers and boost employee productivity, potentially increasing revenue and operational efficiency. Second, Investors may derive additional value from owning stakes in responsible companies, even if cash flows are comparable to less responsible firms.

However, counter-arguments suggest that ESG activities might reflect governance issues, with managers potentially engaging in these practices for personal benefit rather than shareholder welfare. This perspective aligns with the free cash flow hypothesis, suggesting that higher-performing firms may allocate excess resources to ESG activities.

The empirical landscape reflects this complexity. A meta-analysis by Friede, Busch and Bassen (2015), examining over 2,000 studies, found that approximately 90% of studies reported non-negative relationships between ESG and firm performance, with a majority indicating positive correlations.

Financial studies employ diverse methodologies to assess this relationship, considering variables such as operating performance, stock returns, and Tobin's Q. The results are nuanced, reflecting the multifaceted nature of ESG impacts on business outcomes. Key considerations in analysing the ESG-firm performance relationship include considering the causality direction, section effects and variable considerations. As concerning causality Direction, it refers to the determining whether superior ESG performance leads to better financial outcomes or vice versa remains a significant econometric challenge. As highlighted by Hong, Kubik and Sheinkmann (2012), the selection effect

in ESG studies may outweigh direct effects, particularly when considering macroeconomic conditions and access to finance. The complexity in assessing and measuring ESG performance, along with potential mediating variables, adds layers of intricacy to these analyses. The relationship between ESG initiatives and firm performance may differ in short-term versus long-term perspectives.

The ongoing debate since the 1970s on the ESG-firm performance relationship underscores the need for nuanced, context-specific analyses. While the majority of studies indicate a positive or neutral relationship, the variability in methodologies, metrics, and contexts necessitates cautious interpretation of these findings. As the field evolves, future research should aim to address these complexities, potentially through more sophisticated econometric techniques, standardized ESG metrics, and longer-term studies. This continued exploration will be crucial in providing stakeholders with a more comprehensive understanding of how ESG performance interacts with and influences corporate financial outcomes.

3.4.1 Negative effects

A growing body of empirical research challenges the notion that Environmental, Social, and Governance (ESG) or Corporate Social Responsibility (CSR) activities primarily serve shareholder interests, instead suggesting these initiatives may stem from institutional issues. This critical perspective offers valuable insights into the complex relationship between ESG performance and financial outcomes.

Hong, Kubik, and Sheinkman's study (2012) provides compelling evidence that firm performance may be a precursor to increased ESG activities, rather than a result. Their research, focusing on the impact of performance shocks on firms with varying financial

constraints, revealed that unconstrained firms experienced temporary improvements in ESG performance following positive shocks like the internet bubble. Conversely, constrained companies showed ESG improvements correlated with unique stock returns. This finding supports the notion that ESG initiatives may be a consequence of financial success rather than its cause.

Di Giuli and Kostovetsky (2014) offer another critical perspective, examining the relationship between ESG scores (using KLD metrics) and firm performance over three-year periods. Their findings reveal that no significant correlation between ESG scores and sales growth and a negative relationship between changes in ESG scores and changes in Return on Assets (ROA) or stock returns.

These results suggest that while ESG activities may benefit stakeholders, they might come at the cost of direct shareholder value. The authors posit that expanded ESG policies could lead to future stock underperformance and reduced long-term ROA, interpreting share price weakness as a direct market response to perceived changes in CSR policies.

Buchanan, Cao, and Chen (2018) utilize Bloomberg ESG ratings to assess ESG disclosure quality. Their study, focusing on the 2008 financial crisis, concludes that Inter-institutional conflict increased during the crisis and companies with higher ESG scores experienced a greater decline in enterprise value, potentially due to over-investment in ESG activities. This finding challenges the notion that strong ESG performance universally provides downside protection during economic crises.

Additional studies further nuance our understanding of ESG impacts: Masulis and Reza (2015) found negative stock market reactions to corporate charitable giving announcements, suggesting investors may not value certain types of ESG activities.

Servais and Tamayo (2013) discovered that the relationship between ESG characteristics and firm value is contingent on advertising levels. Their research indicates that in companies with low advertising, ESG investments show no significant impact on or relationship with enterprise value.

These critical perspectives collectively highlight several key points. The relationship between ESG activities and firm performance is not uniformly positive or straightforward. Institutional factors and financial constraints play significant roles in determining a company's engagement with ESG initiatives. The market's response to ESG activities can vary based on factors such as the type of initiative, the company's financial health, and its visibility to consumers. The timing and context of ESG investments are crucial in determining their impact on firm performance.

These findings underscore the need for a more nuanced approach to ESG strategy and evaluation. While ESG activities can provide various benefits, companies and investors should consider the specific context of the firm, including its financial constraints and market position, the types of ESG activities that are most relevant and impactful for their industry and stakeholders, the potential short-term costs versus long-term benefits of ESG initiatives and the importance of effective communication and transparency in ESG reporting to align investor expectations with corporate strategy.

As the field of ESG research continues to evolve, these critical perspectives serve as important counterpoints to more optimistic views, encouraging a balanced and context-

specific approach to ESG strategy and implementation. Future research should aim to further disentangle the complex causal relationships between ESG activities, firm performance, and institutional factors to provide more targeted guidance for corporate decision-making and investor assessment.

3.4.2 Ambiguous or no effect

In their survey of state-owned enterprises, Hsu, Liang and Matos (2018) conclude that these environmental choices of firms are not significantly correlated with shareholder value using Tobin's Q or long-term profitability measures. Humphrey, Lee and Shen (2012), using a proprietary database of CSP ratings of UK companies, conclude that there is no significant difference in the risk-adjusted performance of UK companies with higher or lower CSP ratings. Investors and managers concluded that CSP investments or business strategies could be implemented without significant financial costs (or benefits) in terms of risk or return.

3.4.3 Positive effects

The relationship between Environmental, Social, and Governance (ESG) performance and financial outcomes has been the subject of extensive research, yielding a diverse array of findings. This synthesis aims to consolidate key insights from various studies, highlighting both the positive correlations and the nuanced perspectives that have emerged.

A number of studies have shown a positive correlation between a company's ESG rating and firm performance or measures that define value. Gillan, Hartwell, Koch and Starks

(2010) investigated the association between a company's ESG rating and its performance using seven KLD categories, showing that companies with higher ESG ratings perform better Tobin's Q. Borghesi, Houston and Naranjo (2014) found that companies with higher KLD scores companies. Firms with significant free cash flow, using six of the seven KLD categories (excluding corporate governance, community, diversity, employee relations, environment and product), Gao and Zhang (2015) find a positive correlation between firm-level ESG scores and Tobin's Q. Ferrell, Liang and Reboot (2016) ESG scores and firm values and extend the analysis to improve ESG performance and weaken the negative correlation between management enhancement and values. Ilya and Ross (2020) estimate that an increase in ESG activity in director-led companies leads to an improvement in ROA and other firm performance indicators.

A study by Services and Tamayo (2013) found that ESG performance only creates value for companies with high advertising costs. Albuquerque, Koskinen and Zhang (2018) also found a relationship between corporate value and the ESG attributes of advertising companies. This was interpreted as being consistent with the idea that companies with high product differentiation benefit from ESG activities. An alternative approach to the value question is Chang, Chen, Chen and Peng (2019) who examine whether high ESG firms have higher cash holding costs than low ESG firms. They found that for each additional dollar of cash, companies with higher ESG scores had a greater change in enterprise value than those with lower scores, and they concluded that ESG activity increased their enterprise value. Liang and Renneboog (2017a) find that charitable giving leads to higher corporate value and operational performance using a global sample of firms and an instrumental variables approach (using peer giving as a tool for giving to focal firms).

Evidence from several studies is consistent with the view that ESG campaigns create value by demonstrating that companies with higher ESG scores are more valuable and therefore have lower future stock returns. Hong and Kacperczyk (2009) examined the differences in returns between owners, valuations and sin stocks (such as alcohol, tobacco or gaming-related stocks). The so-called sin stocks (stocks with low ESG/CSR) had low valuation ratios and high returns. This is consistent with the pricing effect of market segmentation, as some investors avoid guilty stocks due to social norms. Amiraslani, Lins, Servaes and Tamayo (2017) found that bonds of high ESG companies have high values and low returns. Bolton and Kaperchik (2020) found that companies with low CO₂ emissions intensity had lower returns on their stocks. They attributed their results to a 'local mindset' and concluded that ESG companies have a lower cost of capital. Other studies have come to similar conclusions about the positive impact of ESG, but have found a positive correlation with returns to equity. For example, Dimson, Karakas and Li (2015) reported positive returns following investor contracts that successfully addressed ESG issues.

Edmans (2011) investigated the idea that ESG supports action to create value while examining equity returns, and he found a positive relationship between returns and ESG performance. In particular, they examine the performance of ESG firms in crisis situations where confidence in the business is low, and they find that ESG firms perform better than other firms in periods of low trust, generating higher returns. Cornett, Erhemjamts, and Teheranian (2016) examined a sample of US banks and found that ESG scores are positively related to returns on equity.

Statman and Glushkov (2009) examined whether portfolios of higher rated companies outperformed those of lower rated companies, meaning they tested ESG ratings and firm value. Using KLD ratings for a sample of US companies, the authors found a positive correlation between ESG ratings and robust performance. These results should be contrasted with the results of Humphrey, Lee and Shen (2012) mentioned earlier. They show that there is no difference between high ESG ratings and companies with strong firm performance in the UK stock market.

Barko, Cremers and Renneboog (2018) examine the corporate returns targeted by active shareholders who promote ESG improvement. The study shows that companies with ESG contracts receive higher returns than other companies without ESG contracts. Several papers estimate the ESG value relationship by examining the market's short-term response to ESG events. Kruuger (2015) analyses stock market reactions to positive and negative sustainability events for over 2,000 US companies and identifies important differences between the two types of events. In particular, his analysis concluded that negative sustainability events lead to the strongest negative market reactions to environmental or community-related events. He did not find any significant market reactions to these positive events. However, he also found that the message content of positive and negative sustainability events differed significantly. A systematic textual analysis found that negative events contained more legal and quantitative information and contained more difficult information than positive events. He concludes that his results are consistent with the view that unsustainable business practices are costly for shareholders.

Flammer (2015) investigates the inventory response to ESG proposals using a

regression discontinuity design (RDD) and finds that such proximate proposals are associated with positive non-stationary returns. Flammer's further analysis leads him to conclude that these shareholders advocate value creation through the impact on labour productivity and sales. Deng, Kang and Low (2013) address the issue of value effects by examining the returns to merger announcements for firms with high and low ESG. The authors argue that merger announcements are a surprise event and that researchers can use the announced returns to potentially mitigate the problem of inverse causality between ESG and firm value that is common in the literature. They also argue that a company's reputation for fulfilling default contracts should be correlated with a company's ESG reputation and should be reflected in the merger process itself. Based on the positive market response to companies with high ESG scores, the authors conclude that ESG increases firm value. Both studies used a methodology to examine the stock market returns of corporate green bond issues (fixed income securities issued to finance environmental projects). Although these bonds contribute to environmental and corporate ESG ratings, they need not be issued by companies with high ESG ratings. Tang and Chang (2018) examine whether issuing green bonds benefits existing shareholders of a company. The authors find that the stock market reacts positively to companies that announce green bond issues, thereby increasing stock liquidity and institutional ownership. In line with these results, Flammer (2020) concludes that green bond issuance is associated with positive stock market reactions and changes in actual ESG activities of companies.

3.4.4 Mixed Results

Overall, the corporate finance literature on ESG and corporate values and performance shows some mixed results. Many, if not all, papers conclude that there is a positive relationship between a company's ESG performance and its corporate value or firm performance. However, even among the papers with similar overall findings, there are some papers that draw conclusions from opposite results. For example, researchers conclude that ESG has a positive causal relationship, with the result that ESG creates high value and low future returns. Others draw positive implications from outcomes that represent low value today and high returns in the future. These conflicting conclusions highlight an example of the common assumption problem that exists in the subject of this study. Conclusions often require assumptions about the validity of ESG-related information in terms of price. It is also often necessary to make assumptions about the correlation between risk and ESG attributes or between risk models and ESG attribute errors. These issues exist in the ESG literature, in addition to more common issues such as reverse causality and r sources of tolerance to measure.

Apart from direct relationship between ESG factors and firm performance indicators, the researcher would study the different industries and sectors separately in the study. This is evidenced by recent literature highlighting such need (Endrikat et al., 2014). Different industries face different challenges in relation to their own internal and external environment under different levels of competition, stakeholder interest, regulatory measures and market condition creating pressure and requirement compelling the corporation to involve with CSR initiatives and their effect on financial performance (Basch & Hoffmann, 2011 Endrikat et al., 2014, Godfrey & Hatch 2007)

3.4.5 Conclusion

In summary, the findings of prior studies regarding the ESG-FP link can be categorized as positive, negative or insignificant. It is interesting to note that most of the reviewed literature indicates a positive relationship. The researcher wishes to investigate that the current study reveals any other implications on the dynamic relationship of FP measurements and the different measurements used to quantify ESG initiatives. The inter-relationship with several stakeholders, such as consumers, employees, shareholders, suppliers, the community and the environment, is important in the studied literature. This synthesis underscores the complex and multifaceted nature of the ESG-financial performance relationship. While the preponderance of evidence suggests a positive association, the variation in findings highlights the need for nuanced, context-specific approaches to both research and practical implementation of ESG strategies.

3.5 Controlling Factors

3.5.1 Introduction

As mentioned earlier, the presence of the independent non-executive directors (INED) will have positive impact on governance aspect of the corporation. Although the number of INEDs represents the level of involvement of the independent board, there is no definite result showing that INED has a positive impact on firm performance in the previous studies. However, it is generally agreed that INED will enhance board effectiveness. Large companies, with their abundant internal resources, are often better positioned to promote and implement ESG strategies compared to their smaller counterparts (Udayasankar, 2008).

In addition to examining the direct relationship between governance performance and firm performance, it is crucial to consider potential moderating or confounding factors. Therefore, we propose to explore the influence of two key control variables:

Firm Size: The size of a company can significantly impacts both its governance structures and its firm performance. Larger firms may have more resources to implement robust governance practices but may also face greater complexity in doing so.

Proportion of Number of Independent Non-Executive Directors: The presence of independent directors on a company's board is often seen as a key indicator of good governance. Their role in providing oversight and independent perspective may influence the relationship between governance practices and financial outcomes.

The preponderance of evidence suggests a positive relationship between governance performance and firm performance. As regulatory environments evolve and stakeholder expectations continue to rise, understanding and leveraging this relationship will become increasingly crucial for corporate success. Future research in this area will play a vital role in guiding corporate governance strategies, informing policy decisions, and shaping the future of responsible business practices.

By incorporating control variables such as firm size and proportion of IOB in board composition, this research aims to provide a more nuanced understanding of the complex interplay between governance practices and financial outcomes. This approach will contribute to a more comprehensive and actionable body of knowledge in the field of corporate governance and performance management. These control

variables will be incorporated into the analysis to ensure a more comprehensive understanding of the governance-performance relationship.

3.5.2 Proportion of INED

The concept of board independence has emerged as a central tenet in corporate governance literature and practice. This section provides a comprehensive analysis of the role of board independence in shaping corporate performance, both financial and non-financial, drawing on agency theory, stakeholder theory, and empirical evidence.

Board independence, as noted by Cucari et al. (2018), is a fundamental aspect of board structure. It refers to the presence of directors who are not affiliated with the company beyond their board role, ensuring objectivity and impartiality in decision-making processes.

Under the Agency theory perspective, it posits that boards should include independent members to mitigate opportunism and reduce agency costs (Shaukat et al., 2016). This theoretical framework suggests that independent directors are better positioned to align management actions with shareholder interests, thereby enhancing overall corporate performance.

Fama and Jensen (1983) argue that boards with a high proportion of independent members are likely to be more objective in their decision-making and more effective in their oversight and audit functions. This increased objectivity is expected to lead to better governance practices and, consequently, improved firm performance.

Likewise, Stakeholder theory extends the concept of board independence beyond shareholder interests. Ahmed et al. (2006) and Cheng and Courtenay (2006) posit that board independence can help reduce conflicts of interest among various stakeholders, promote transparency, and maximize long-term company value. This broader perspective acknowledges the role of independent directors in balancing the needs of diverse stakeholder groups.

Ortas et al. (2017) emphasize that independence is crucial for effective control and audit activities. Independent directors, being free from potential conflicts of interest, are better positioned to critically evaluate management decisions and corporate practices. Birindelli et al. (2018) argue that independent managers facilitate effective oversight of board practices by making more objective judgments about management performance. This objectivity is particularly valuable in assessing long-term strategies and non-financial performance metrics.

Unlike internal members, independent directors' compensation is typically not tied to short-term firm performance. This structure allows them to focus on long-term value creation and the fulfilment of broader social responsibilities (Ibrahim et al., 2003; Ahmed et al., 2006; Cheng and Courtenay, 2006; Jizi et al., 2014). Zahra and Stanton (1988) and Haniffa and Cooke (2005) suggest that independent directors are more likely to respect the needs of diverse stakeholders as they develop their identity and status within the company. This broader perspective can lead to more balanced and sustainable corporate strategies.

Board independence emerges as a critical factor in shaping effective corporate governance and, by extension, overall firm performance. While theoretical arguments strongly support the value of independent directors, the complex nature of corporate governance necessitates a nuanced approach to implementation and evaluation. As corporate governance practices continue to evolve, understanding the multifaceted role of board independence will be crucial for researchers, practitioners, and policymakers alike. Future research should aim to provide more granular insights into the mechanisms through which board independence influences various aspects of corporate performance, considering both financial and non-financial outcomes. The rationale being that degree of board independence may influence both ESG practices and firm performance, serving as an important governance indicator.

In future research, the academics might investigate the ideal balance between independent and non-independent directors for different types of companies and industries. They may explore methods to assess the true independence of directors beyond formal classifications, considering factors such as tenure, network connections, and expertise. Other consideration may lead to examine how national and organizational culture influences the effectiveness of independent directors. The researchers may analyse how the presence of independent directors affects board decision-making processes and group dynamics due to good corporate governance. The views of different stakeholder groups perceive and value board independence are also important.

3.5.3 Firm Size

The inclusion of firm size, as measured by market capitalization, is a critical consideration in analysing the relationship between Environmental, Social, and Governance (ESG) factors and firm performance. This section explores the theoretical underpinnings and empirical evidence supporting the use of market capitalization as a control variable in ESG-firm performance studies.

Market capitalization represents the total market value of a publicly traded company's outstanding stock (Albu, Lupu, & Cain, 2014). It is calculated by multiplying the total number of outstanding shares by the current market price per share. This metric provides a comprehensive measure of a firm's size from an investor's perspective, reflecting both tangible and intangible assets.

The resource-based view of the firm suggests that larger companies, as indicated by higher market capitalization, have access to more resources. These resources can be deployed towards ESG initiatives, potentially leading to better ESG performance and, consequently, improved financial outcomes. Larger firms often benefit from economies of scale, which can influence both their ESG practices and firm performance. The ability to spread fixed costs over a larger production base can lead to cost efficiencies, potentially freeing up resources for ESG initiatives. Larger firms, by virtue of their size and visibility, often face greater scrutiny from a diverse range of stakeholders. This increased attention may motivate these firms to invest more heavily in ESG practices to maintain their social license to operate and protect their reputation.

The rationale being that larger firms may have more resources to invest in ESG

initiatives and may benefit from economies of scale, potentially influencing the ESG-firm performance relationship. In future research, researchers might investigate whether there are threshold effects in the relationship between firm size and ESG-financial performance linkages and explore how the moderating effect of firm size varies across different industries. Other consideration might focus on long-term studies to understand how changes in firm size over time affect the ESG-financial performance relationship. The academics might compare the effectiveness of market capitalization with other measures of firm size, such as total assets or number of employees. There is also a perspective of examining how firm size differentially affects the relationship between specific ESG components (environmental, social, and governance) and financial performance.

3.6 Stakeholder Theory

3.6.1 Introduction

Stakeholder theory offers a revolutionary perspective on corporate responsibility, asserting that companies must consider the interests of all stakeholders, not just shareholders, in their decision-making processes. This theory is particularly pertinent in the context of Environmental, Social, and Governance (ESG) practices, as it underscores the importance of environmental and social responsibilities alongside traditional governance practices. By employing stakeholder theory, this research investigates the intricate relationship between ESG performance and financial outcomes, taking into account the broad spectrum of stakeholder interests.

The evolution from shareholder theory to stakeholder theory marks a significant shift in corporate philosophy. While shareholder theory, as articulated by Friedman (1970),

posited that a business's sole social responsibility was to increase profits within legal boundaries, stakeholder theory broadens this perspective. It recognizes that a company's success is intrinsically linked to its ability to satisfy and balance the needs of various stakeholders (Freeman, 2010; Roy and Goll, 2014; Gallego-Alvarez and Ortas, 2017).

3.6.2 Stakeholder theory

Stakeholder theory encompasses a wide range of entities beyond shareholders, including managers, creditors, customers, suppliers, employees, governments, and other interest groups (Roy and Goll, 2014; Gallego-Alvarez and Ortas, 2017). This inclusive approach extends to institutions and societies at large (Mitchell et al., 1997). The theory posits that by addressing stakeholder concerns, organizations can generate substantial benefits. For instance, companies focusing on environmental aspects are better equipped to manage environmental risks and drive innovations in renewable energy, potentially leading to competitive advantages and improved financial performance (Hart, 1995).

The stakeholder approach has introduced a paradigm shift in management thinking, suggesting that shareholder needs cannot be fully met without addressing the needs of other stakeholders (Foster and Jonker, 2005; Hawkins, 2006; Jamali, 2008; Parmar et al., 2010). This shift has expanded corporate goals beyond mere profit maximization to include socially and environmentally sustainable practices (Longo et al., 2005). The theory emphasizes the importance of ethical and honest interactions with all stakeholders (Donaldson and Preston, 1995; Jones, 1995; Vasconcelos et al., 2012).

The Stakeholder Theory, pioneered by Freeman (1984), posits that companies must

balance the interests of all stakeholders - including employees, customers, suppliers, communities, and the environment - to achieve sustainable success. This holistic approach, as argued by Surroca et al. (2010), can lead to enhanced long-term financial performance and organizational resilience.

In the context of sustainability, stakeholder theory provides a crucial framework for understanding how companies should meet stakeholders' information needs (Chen and Roberts, 2010; Smith et al., 2005). It enables business leaders to address growing concerns about sustainable development and communicate their contributions to societal well-being (Chen and Roberts, 2010). This approach necessitates that companies improve their economic, social, and environmental performance while maintaining transparency with stakeholders.

The theory advocates for value creation for all stakeholders (Freeman, 2010), with Corporate Social Responsibility (CSR) reporting serving as a vital tool for stakeholder dialogue. Companies utilize social and environmental reporting to engage openly with stakeholders, addressing their concerns and contributions (Gray et al., 1995; Preston and Donaldson, 1999). This engagement can lead to improved environmental, social, and economic outcomes (Arayssi et al., 2016).

Board members, including independent directors, play a crucial role in this framework. They are tasked with making consistent decisions on environmental, economic, and social issues, regardless of the company's size, to enhance overall performance (Liao et al., 2015). The theory suggests that integrating stakeholder demands, interests, and expectations into the decision-making process can generate intangible benefits that

enhance company results.

Stakeholder theory has become instrumental in defining the formal relationship between business and society (Maon, Lindgreen, & Swaen, 2010). Minoja (2012) identifies key assumptions of the theory: viewing firms through their relationships with key stakeholders, understanding the firm's purpose as creating and distributing value to various stakeholders, and recognizing the importance of stakeholder cooperation.

This theory, which emphasizes the importance of considering all stakeholders rather than just shareholders, offers a robust explanation for how ESG initiatives can enhance a company's long-term sustainability and firm performance. The theory is commonly analysed through three interconnected lenses: descriptive, instrumental, and normative. The descriptive lens examines how managers perceive and respond to stakeholder needs and corporate values. The instrumental lens focuses on the outcomes of meeting those needs, while the normative lens explores the capability of managers to establish an ethical corporate framework. Effective stakeholder management involves identifying, prioritizing, and understanding the interests of various stakeholder groups from these perspectives.

In conclusion, stakeholder theory provides a comprehensive framework for understanding the complex interplay between corporate governance, ESG practices, and firm performance. It challenges traditional notions of corporate responsibility and offers a more holistic approach to business management, aligning closely with the principles of sustainable development and responsible business practices.

3.7 Other Theories

3.7.1 Introduction

Apart from the traditional stakeholder theory, there are other theories commonly used by academics, namely Agency theory, legitimacy theory and signaling theory indicating different perspectives in explaining the relationship among ESG disclosure, ESG performance, the management and the various stakeholders as explained in the following paragraphs.

3.7.2 Agency Theory

Agency theory, developed by Jensen and Meckling (1976), focuses on the potential conflicts of interest between principals (shareholders) and agents (managers). In the ESG context, this theory suggests that ESG disclosures can reduce information asymmetry between managers and shareholders. Strong ESG performance may indicate effective management and lower agency costs. Governance mechanisms can align manager interests with those of shareholders, potentially improving firm performance.

Agency theory provides a crucial framework for understanding the complex dynamics between corporate management and shareholders, particularly in the context of ESG initiatives. This theory posits that information asymmetry between managers (agents) and shareholders (principals) can lead to conflicts of interest, where managers may prioritize their personal objectives over the organization's best interests (Jensen and Meckling, 1976). The theory seeks to analyse these conflicts and develop mechanisms to mitigate them, ensuring alignment between managerial actions and shareholder value.

In the realm of corporate governance, the composition and diversity of the board of

directors, along with the presence of specialized committees, are identified as key factors in enhancing governance effectiveness. Companies with robust governance and internal control systems are better positioned to conduct thorough oversight and audit activities through their boards (Carter et al., 2003). This enhanced governance structure can potentially reduce agency conflicts and positively impact both financial and non-financial firm performance (Erhardt et al., 2003).

However, the application of agency theory to ESG activities introduces additional complexities. From a traditional agency perspective, ESG initiatives may be viewed as potential sources of agency problems. This viewpoint suggests that ESG-related expenditures might not align with shareholder interests, as they represent a direct outflow of capital that could potentially reduce profits (Peng and Isa, 2020; Allouche and Laroche, 2005; Brown et al. 2006; Schuler and Cording, 2006).

Several studies have explored this tension between ESG activities and shareholder value maximization. Barnea and Rubin (2010) and Borghesi et al. (2014) argue that managers might over-invest in ESG initiatives to build personal reputations as good corporate citizens, potentially at the expense of shareholder returns. Kao et al. (2018) further investigate how managerial incentives influence corporate social responsibility (CSR) decisions, finding that equity-based compensation can help align manager and shareholder interests in ESG contexts.

However, it's important to note that the agency theory perspective on ESG is not universally accepted. Recent research has begun to challenge the notion that ESG activities necessarily create agency problems. For instance, Bao et al. (2018) suggests

that ESG initiatives can create long-term value for shareholders by improving stakeholder relationships, enhancing reputation, and mitigating risks.

To reconcile these perspectives, we can consider an expanded agency theory framework that incorporates both short-term and long-term shareholder interests. In this view, effective governance mechanisms should ensure transparency in ESG decision-making processes and align managerial incentives with both short-term profitability and long-term sustainability goals, implement robust monitoring and reporting systems for ESG activities, encourage board diversity to bring varied perspectives on ESG issues and establish clear ESG performance metrics linked to overall corporate strategy.

By adopting this nuanced approach to agency theory, organizations can strive to balance the potential short-term costs of ESG initiatives with their long-term benefits, thereby aligning managerial actions with comprehensive shareholder interests.

In conclusion, while agency theory highlights potential conflicts between managers and shareholders in ESG contexts, it also provides a framework for developing governance mechanisms that can align these interests. As ESG considerations become increasingly central to corporate strategy, a refined understanding of agency theory that accommodates both financial and non-financial performance metrics will be crucial for effective corporate governance.

3.7.3 Legitimacy Theory

Legitimacy theory is considered one of the most common theories in the disclosure literature (Campbell et al., 2003; Deegan 2002; Zamil et al., 2021). Legitimacy theory, as described by Suchman (1995), posits that organizations continually seek to ensure that they operate within the bounds and norms of their respective societies. In relation to ESG, ESG disclosures can be seen as a tool for maintaining organizational legitimacy. Strong ESG performance may enhance a company's social license to operate. Firms may engage in ESG activities to conform to societal expectations and avoid reputational risks. Legitimacy theory states that firms must act in accordance with social values and norms in order to maintain their current existence (Dowling and Pfeffer, 1975). First, the basis of legitimacy theory lies on a "social contract" between business and society. It is believed that society provides business with the means and environment to survive and in return, business is committed to run its activities. Second, the public considered that supporting a business means ensuring that corporation will act in line with society's values and standards. When societal expectations are not fulfilled, and the company's actual or perceived behaviour is inconsistent with societal values and norms, there will be divergent views on business in the society.

As far as the theory of legitimacy is concerned, companies in certain industries are more socially visible in the eyes of the public and the government. The companies are under considerable social and political pressure to operate in a highly socially acceptable manner and more inclined to provide ESG-related information. Board members can help the management to gain cooperation from its stakeholders. The experience of the board members and stakeholder connections influence how they perceive the importance of stakeholder requirements and how they obtain resources to focus on

important requirements (Goodstein and Boeker, 1991; Mitchell et al., 1997). Board directors also play an important and diverse role when dealing with stakeholder relationships. In this connection, the present study attempts to examine the relationship between the number of independent directors on a board and firm performance.

3.7.4 Signaling Theory

The Signaling Theory is quite similar to the Legitimacy Theory as it suggests that one of the main goals of the Company is to deliver a “signal” to external parties regarding the goodwill of the companies. According to Caesaria and Basuki 2017, the goodwill can be shown by disclosing information related the companies’ sustainable development. According to signaling theory, companies with good news tend to provide more information (signals) to outsiders to differentiate themselves from other bad news of companies (Connelly, Certo, Ireland and Reutzel 2011). As per Razaee and Tuo (2017), firms signal their good news and performance by releasing ESG reports to distinguish themselves from their competitors. While signaling theory focus on positive signals that the company will give to information users, it does not test the effect of unintentional negative signals (Connelly et al., 2011). When viewing stakeholder theory and agency theory, companies provide voluntary social disclosures to provide positive signal to fulfil stakeholders’ expectation under stakeholder theory whereas the provision of such disclosures under the agency theory can reduce biased or false information to the agents or senior management and shareholders. These factors may have impact on voluntary/mandatory disclosure.

3.8 Stakeholder theory to explain ESG impact

The evolution of corporate responsibility has led to the emergence of various theories explaining the relationship between businesses and society. Among these, stakeholder theory has gained prominence as a comprehensive framework for understanding the complex dynamics of corporate governance, environmental, social, and governance (ESG) practices, and firm performance. This theory provides a nuanced perspective that integrates elements from other theories while offering a more holistic approach to corporate responsibility.

Stakeholder theory, as proposed by Freeman (1984), posits that a company's success is intrinsically linked to its ability to create value for all its stakeholders, not just shareholders. This perspective has become increasingly relevant in the context of ESG considerations, as it provides a framework for understanding how companies can balance their economic objectives with environmental and social responsibilities.

While various theories attempt to explain this connection, the stakeholder theory, as proposed by Freeman (1984), has emerged as a dominant framework for understanding the complex dynamics between corporate social responsibility (CSR), ESG performance, and financial results. The researcher would propose the use of the stakeholder theory as the theoretical viewpoint that could provide an understanding of the relationship between ESG factors and firm performance as well as rationalise the possible effect from market capitalisation and independent board on firm performance of the sectors under review.

In contrast with Agency Theory, Stakeholder theory presents a stark contrast to the classical principal-agent theory (Ross, 1973; Jensen and Meckling, 1976). While the

latter focuses primarily on the relationship between shareholders (principals) and management (agents), stakeholder theory broadens the scope to include a wider range of interested parties. Stakeholder theory expands this view, recognizing that a company's responsibilities extend beyond shareholder wealth maximization to include the interests of employees, customers, suppliers, communities, and the environment

The stakeholder approach necessitates effective sustainability management to consistently meet stakeholder expectations. This involves balancing and prioritizing potentially conflicting demands from various stakeholders. Sustainability management activities serve a dual purpose: they help in meeting stakeholder expectations and act as an effective tool for stakeholder communication.

ESG Performance and Stakeholder Communication:

Research suggests a positive connection between stakeholder power, sustainable achievement, and sustainability reporting (Roberts, 1992). As stakeholders increasingly prioritize sustainable business practices, improved ESG reporting can lead to better CSR performance measures, such as enhanced CSR ratings and improved reputational aspects (Clarkson et al., 2008).

When compared with Legitimacy Theory, Stakeholder theory is better to show its concern for the stakeholders. Legitimacy theory suggests that companies disclose ESG information to maintain their social license to operate. However, it primarily focuses on avoiding negative consequences rather than proactively creating value. Stakeholder theory goes further by emphasizing the potential for positive impacts through effective ESG management

Lastly, while signaling theory recognizes the importance of ESG disclosure in attracting socially responsible investors, it doesn't fully capture the broader range of stakeholders interested in a company's ESG performance. Stakeholder theory provides a more comprehensive framework for understanding these diverse interests.

Stakeholder Theory and ESG Integration:

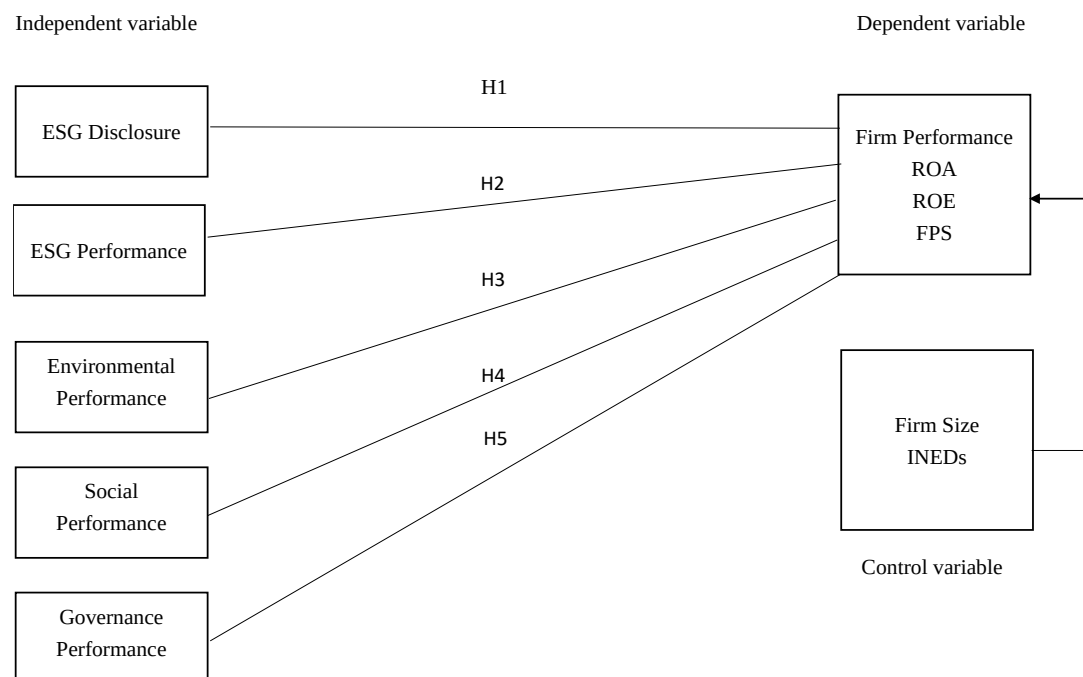
Elkington's (1988) concept of the triple bottom line aligns closely with stakeholder theory, emphasizing the equal importance of economic development, social equity, and environmental integrity (Venkatraman & Nayak, 2015). Companies that effectively manage and disclose their ESG performance can create value across their stakeholder ecosystem, enhancing competitive advantage and improving long-term firm performance. Managers should address company activities from an accountability perspective, considering all stakeholders (Donaldson and Preston, 1995).

In conclusion, Stakeholder theory offers a more comprehensive and nuanced approach to understanding corporate responsibility in the context of ESG considerations. By integrating elements from other theories and emphasizing the importance of creating value for all stakeholders, it provides a powerful framework for guiding corporate strategy and operations. As ESG factors continue to gain prominence in the business world, stakeholder theory is likely to play an increasingly crucial role in shaping corporate governance and sustainability practices.

3.9 Hypothesis Development

The concept of ESG relates to behaviour and operational practices of corporation on environmental, social and governance matters. (Bassen & Kovacs, 2008). ESG disclosure and ESG performance have impact on firm performance. Durren et al. (2016) noted that effective ESG management affects the technology, resources and society in the long run. According to Barnett 2007, with the perception of the stakeholders, an association between ESG performance and firm performance of corporation. The relationship between the individual ESG factors, namely, environmental, social and governance factors with firm performance will be explored.

3.10 Conceptual Framework



3.11 Definitions of Variables

Table 3 Operationalization of variables

Variable	Name	Variable	Type	Operationalization	Source
CFE	Return on Assets	ROA	Ratio	Indicator of how profitable a company is relative to its total assets, in percentage calculated as (Net Income / Average Total Assets) * 100	Bloomberg
	Return on Equity	ROE	Ratio	Measure of a corporation's profitability calculated as: (T12 Net Income Available for Common Shareholders / Average Total Common Equity) * 100	Bloomberg
	Earnings per share	EPS	Ratio	Ratio of the market value of a firm over the number of the issued share capital of the company	Bloomberg
CSP	ESG-Score	ESGD	Numeric	Proprietary Bloomberg Disclosure score ranging from 0 to 100 based on the extent of a company's Environmental, Social, and Governance (ESG) Disclosure	Bloomberg
	ESG-Score	ESGP	Numeric	Proprietary Bloomberg performance score ranging from 0 to 10 based on the extent of a company's Environmental, Social, and Governance (ESG) performance	Bloomberg
IS	E-Score	EP	Numeric	Proprietary Bloomberg performance score ranging from 0 to 10 based on the extent of a company's environmental performance as part of Environmental, Social, and Governance (ESG) data	Bloomberg
	S-Score	SP	Numeric	Proprietary Bloomberg performance score ranging from 0 to 10 based on the extent of a company's social performance as part of Environmental, Social, and Governance (ESG) data	Bloomberg
	G-Score	GP	Numeric	Proprietary Bloomberg	Bloomberg

				performance score ranging from 0 to 10 based on the extent of a company's social performance as part of Environmental, Social, and Governance (ESG) data	
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3.12 ESG Disclosure and Firm Performance

Crifo et al. (2019) highlighted the potential for effective ESG communication to reduce perceived risks and improve investor confidence. Their research suggests that transparent and comprehensive ESG disclosure can help bridge performance gaps and enhance stakeholder trust.

The growing body of research on ESG disclosure and firm performance provides compelling evidence for the importance of sustainable business practices. As ESG considerations continue to gain prominence in the corporate world, understanding the nuanced relationships between ESG factors and various measures of firm performance will be crucial for businesses, investors, and policymakers alike. Future research in this field will play a vital role in shaping sustainable business practices and investment strategies in the years to come.

Based on the cumulative evidence from these studies, a general consensus emerges that ESG disclosure tends to have a positive impact on firm performance. This leads to the formulation of the following hypotheses:

H1a: There is a relationship between ESG Disclosure and firm performance as

measured by Return on Assets (ROA).

H1b: There is a relationship between ESG Disclosure and firm performance as measured by Return on Equity (ROE).

H1c: There is a relationship between ESG Disclosure and firm performance as measured by Earnings Per Share (EPS).

These hypotheses provide a framework for further empirical investigation into the specific mechanisms through which ESG disclosure influences various aspects of firm performance. The rationale of the hypothesis Enhanced transparency through ESG disclosure may lead to improved stakeholder trust, reduced information asymmetry, and better firm performance.

3.13 ESG Performance and Firm Performance

The ultimate consequence of effective ESG management and communication is the potential for improved firm performance. Increased stakeholder trust can lead to better financial and non-financial circumstances, potentially resulting in enhanced stock market performance.

Chelawat et al. (2016) corroborated earlier findings, confirming that companies demonstrating good ESG performance often exhibit favourable firm performance. This positive correlation supports the notion that sustainable business practices can contribute to long-term financial success. While empirical studies analysing the ESG performance-firm performance (ESGP-FP) link have produced mixed and sometimes contradictory results (Orlitzky et al., 2003), a majority of studies have found a positive relationship (Godfrey et al., 2009; Barnett and Salomon, 2006), aligning with

stakeholder theory predictions. Meta-analyses (Wu, 2006) and literature reviews (Beurden and Goessling, 2008; Margolis and Walsh, 2003) generally support this positive association.

Based on stakeholder theory and the preponderance of empirical evidence, we propose the following hypotheses:

H2a: There is a relationship between ESG performance and firm performance as measured by Return on Assets (ROA).

H2b: There is a relationship between ESG performance and firm performance as measured by Return on Equity (ROE).

H2c: There is a relationship between ESG performance and firm performance as measured by Earnings Per Share (EPS).

The growing body of evidence supporting a positive relationship between ESG performance and financial outcomes underscores the importance of stakeholder-centric approaches to corporate management. As ESG considerations continue to gain prominence in the business world, understanding the nuanced relationships between ESG factors and various measures of firm performance will be crucial for businesses, investors, and policymakers alike. Investigating the long-term effects of ESG performance on firm performance could provide insights into the sustainability of this relationship over time. The rationale of the hypothesis is that strong ESG performance may indicate effective management of risks and opportunities, leading to improved firm performance.

3.14 ESG sub-components and Firm Performance

3.14.1 Environmental Performance and Firm Performance

The relationship between environmental performance and firm performance (FP) has been a subject of increasing interest in both academic research and corporate practice. As global awareness of environmental issues grows, companies are under increasing pressure to adopt sustainable practices while maintaining profitability. This section examines the extensive body of literature exploring this relationship, synthesizing findings from various studies and proposing hypotheses for further investigation.

The exploration of the link between environmental performance and FP gained momentum in the late 1990s. Hai et al. (1998) conducted a pioneering study using a sample of listed companies in Singapore, revealing a positive correlation between higher environmental disclosure scores and superior FP. This finding laid the groundwork for subsequent research in this field. Building on early studies, Gozali et al. (2002) corroborated the positive impact of environmental performance on FP. Murphy (2002) extended this concept, suggesting a reciprocal relationship where better environmental performance positively influences FP, and improved FP, in turn, enables better environmental practices. This cyclical relationship highlights the potential for a virtuous cycle of sustainability and profitability.

Wagner et al. (2001) provided more granular insights, demonstrating that enhanced environmental performance led to improved Return on Equity (ROE). This finding is particularly significant as it links environmental practices directly to a key metric of shareholder value. Al Tuwaijri et al. (2004) further reinforced the positive association between good environmental performance and overall FP.

Derwall et al. (2005) conducted a longitudinal study examining the share price relationship of companies between 1995 and 2003 in relation to their corporate environmental performance. Their findings indicated that companies with superior environmental performance generated higher returns over time, suggesting that environmental practices can have a lasting impact on market valuation.

Clarkson et al. (2008) introduced the concept of Product Company Promotion (PCP), showing that organizations with positive environmental performance enjoy superior PCP in the marketplace. Conversely, firms with poor environmental records suffer from negative PCP. This finding underscores the importance of environmental performance in shaping market perception and competitive positioning.

Griffin and Sun (2013) provided insights into shareholder perspectives, demonstrating that investor's view companies' voluntary environmental disclosures as positive news. This finding suggests that transparency in environmental practices can directly influence investor sentiment and potentially impact stock performance.

Kumar and Firoz (2018a) extended the research to emerging markets, surveying 44 Indian companies from 2011 to 2015. Their study revealed that companies with higher environmental disclosure scores achieved higher Returns on Investment (ROI), indicating that the positive relationship between environmental performance and FP holds across diverse economic contexts.

Several studies have proposed mechanisms through which environmental sustainability

can enhance FP. As regards Competitive Advantage, study shows that environmentally sustainable practices can lead to enhanced competitive positioning (Tate et al., 2013).

As regards Product Quality, research shows that improved environmental practices often correlate with higher product quality (Klassen and McLaughlin 1996).

Sustainable practices can lower production costs through reduced usage of raw materials, water, and energy (Wagner et al., 2002; Porter and van der Linde, 1995).

Strong environmental performance can improve corporate reputation (Branco and Rodrigues, 2006). As regards Innovation, study shows that Environmental challenges can drive innovation, leading to new products and processes (Rondinelli and Berry, 2000; Yu et al., 2014). Proactive environmental practices can reduce costs associated with fines and charges for regulatory non-compliance (Gimenez et al., 2012; Branco and Rodrigues, 2003; Shrivastava 1995).

Based on the comprehensive literature review, which consistently indicates a positive relationship between environmental performance and various measures of FP, we propose the following hypotheses:

H3a: There is a relationship between Environmental performance and firm performance as measured by Return on Assets (ROA).

H3b: There is a relationship between Environmental performance and firm performance as measured by Return on Equity (ROE).

H3c: There is a relationship between Environmental performance and firm performance as measured by Earnings Per Share (EPS).

The preponderance of evidence suggests a positive relationship between environmental

performance and firm performance. As environmental concerns continue to gain prominence globally, understanding and leveraging this relationship will become increasingly crucial for corporate success. Future research in this area will play a vital role in guiding corporate environmental strategies and informing policy decisions aimed at promoting sustainable business practices. The rationale of the hypothesis is that effective environmental management may lead to cost savings, improved reputation, and better firm performance.

3.14.2 Social Performance and Firm Performance

The relationship between corporate social performance (CSP) and corporate financial performance (CFP) has been a subject of extensive research over the past few decades. This section provides a comprehensive review of the literature exploring this relationship, synthesizing findings from various studies and proposing hypotheses for further investigation.

The exploration of the CSP-CFP link gained significant traction in the early 2000s, with numerous studies consistently reporting a positive relationship (Mishra and Suar, 2010; Bihari and Pradhan, 2011; Uadiale and Fagbemi, 2012; Singh, 2014; Fernandez, 2016). This body of research has not only established a correlation but also delved into the mechanisms through which social performance influences financial outcomes.

Ruf et al. (2001) conducted a seminal study examining 496 companies from 1992 to 1997, demonstrating that companies with superior social outcomes achieved higher firm performance. This finding was further corroborated by Orlitzky et al. (2003), whose meta-analysis of 52 post-1991 research articles confirmed a positive relationship

between social performance and firm performance.

As per Tsoutsoura (2004) this research is extended to specific market indices, revealing a positive link between corporate social responsibility (CSR) and the profitability of S&P 500 and Domini 400 Social Index companies. This study highlighted the relevance of social performance across different market segments.

Mahoney and Roberts (2007) provided insights into the relationship between social performance and institutional ownership. Their study of 300 Topix firms from 1997 to 2000 revealed a positive correlation between social performance and the number of institutions holding shares in a company. This finding suggests that social performance may influence investment decisions at an institutional level.

Brammer and Millington (2008) introduced a temporal dimension to the CSP-CFP relationship. Their research indicated that while companies with poor social performance might outperform in the short term, those with good social performance tend to excel in the long run. This finding underscores the importance of considering time horizons when evaluating the impact of social initiatives regarding short-term and long- term performance.

The concept of socio-efficiency, introduced by Dyllick and Hockerts (2002), describes the relationship between social sustainability and firm value. Subsequent research by Gimenez et al. (2012) and Lambeti and Letteri (2009) expanded on this concept, demonstrating that social sustainability activities not only yield financial benefits but also enhance company reputation and attract new customers.

Bedi (2009) examined the dependency of Corporate Social Efficiency (CSE) on annual profits, using a sample of 37 companies listed by Karmyog (an NGO). The regression analysis revealed a strong dependency of social spending on firm performance, alongside a positive correlation between CSR and profit sharing.

Viewing under cost of capital and social performance, Ghoul et al. (2011) conducted an extensive study of 2,009 companies from 1992 to 2007, finding that organizations with better CSR practices benefit from lower costs of capital. This research also indicated that companies with superior social performance tend to have higher value and lower risk profiles.

Bihari and Pradhan (2011) focused on the Indian financial industry, identifying a positive correlation between CSR and firm performance within this specific sector. Such sector-specific studies provide valuable insights into how the CSP-CFP relationship may vary across different industries.

Chen and Wang (2011) approached the topic from a management perspective, analysing responses from 141 senior managers of Chinese companies in the Guangdong region. Their findings supported the positive impact of CSR on firm performance, providing insights from a practitioner's viewpoint.

Uadiale and Fagbemi (2012) extended the research to emerging markets, analysing 40 companies listed on the Nigerian Stock Exchange. Their results demonstrated a positive and significant impact of CSR on firm performance in this context.

Albertini (2013) conducted a comprehensive meta-analysis of 52 research papers spanning 35 years, confirming a positive correlation between social performance and firm performance. This long-term analysis provides robust evidence for the consistency of the CSP-CFP relationship over time. Bolanle et al. (2012) provided a quantitative perspective, reporting that for every one-unit increase in CSR spending, profit after tax increases by 0.945. This finding offers a tangible metric for evaluating the financial impact of CSR initiatives.

Servaes and Tamayo (2013) introduced the concept of customer awareness as a moderating factor in the CSR-firm value relationship. Their study of S&P 500 and Domini 400 Social Index companies from 1991 to 2000 found that CSR and company value are positively associated when customer awareness is high, as validated by advertising expenditure.

Recent research by Fernandez (2016), surveying 107 Spanish companies in 2009, suggested a bidirectional positive association between social and firm performance. This finding implies that not only does social performance drive financial success, but financial success also enables greater investment in social initiatives.

Hypotheses Development:

Based on the comprehensive literature review, which consistently indicates a positive relationship between social performance and various measures of firm performance, we propose the following hypotheses:

H4a: There is a relationship between social performance and firm performance as measured by Return on Assets (ROA).

H4b: There is a relationship between social performance and firm performance as measured by Return on Equity (ROE).

H4c: There is a relationship between social performance and firm performance as measured by Earnings Per Share (EPS).

The extensive body of literature overwhelmingly supports a positive relationship between corporate social performance and firm performance. As social responsibility continues to gain prominence in the business world, understanding and leveraging this relationship will become increasingly crucial for corporate success. Future research in this area will play a vital role in guiding corporate social strategies, informing policy decisions, and shaping the future of sustainable business practices. The rationale of the hypothesis is that strong social performance may enhance employee productivity, customer loyalty, and community support, potentially improving financial outcomes

3.14.3 Governance Performance and Firm Performance

The relationship between governance performance and financial performance (FP) has been a subject of intense scrutiny in recent years. This section provides a comprehensive review of the literature exploring this relationship, synthesizing findings from various studies and proposing hypotheses for further investigation.

Corporate governance refers to the system of rules, practices, and processes by which a company is directed and controlled. As Esteban-Sanchez et al. (2017) note, it represents an organization's code of conduct ensuring that board members and

executives act in the interests of stakeholders. This definition underscores the critical role of governance in aligning corporate actions with stakeholder expectations.

A significant body of literature has consistently reported a positive relationship between superior corporate governance practices and financial performance (Esteban-Sanchez et al., 2017; Jamali et al., 2008; Velte, 2017). Soana (2011) provided early evidence of this relationship, demonstrating a significant positive impact of corporate governance performance on FP. Ntim et al. (2013) extended this research by exploring the mechanisms through which governance impacts performance. Their study revealed that firms with strong corporate governance practices could effectively reduce stakeholder-manager conflicts, thereby enhancing overall organizational efficiency and performance.

Mirasro Rodríguez et al. (2015) approached the topic from an agency theory perspective. Their research indicated that firms with poor governance practices face high agency conflicts and, consequently, lower profitability. This finding highlights the role of effective governance in mitigating agency costs and aligning management actions with shareholder interests.

Under the risk management perspective, Sassen et al. (2016) conducted an extensive study examining the relationship between Environmental, Social, and Governance (ESG) factors and various types of organizational risk across 8,752 listed companies in Europe from 2002 to 2014. While their findings showed that improved environmental performance significantly reduced organizational risk, the impact of governance enforcement on risk was less clear-cut. This nuanced result suggests that the

relationship between governance and risk may be more complex than previously thought.

Rose (2016) provided insights into the governance-performance relationship within a specific national context, finding a positive correlation between corporate performance and FP in Danish companies. This study underscores the importance of considering national legal and cultural frameworks when evaluating governance practices.

Turning to return on equity, Duen et al. (2016) offered a more granular analysis, specifically examining the impact of corporate governance on Return on Equity (ROE). Their finding of a positive relationship between governance performance and ROE provides valuable insights for shareholders and investors.

Diner et al. (2014) explored another dimension of the governance-performance relationship, demonstrating that good corporate governance practices can reduce the cost of capital. This finding has significant implications for corporate finance strategies and investment decisions.

More recent research by Esteban-Sanchez et al. (2017) has reaffirmed the significant positive relationship between corporate governance performance and FP. Furthermore, they noted that new legislation has strengthened the reputation of corporate boards, highlighting the evolving nature of governance practices in response to regulatory changes.

Hypotheses Development:

Based on the comprehensive literature review, which consistently indicates a positive relationship between governance performance and various measures of firm performance, we propose the following hypotheses:

H5a: There is a relationship between governance performance and firm performance as measured by Return on Assets (ROA).

H5b: There is a relationship between governance performance and firm performance as measured by Return on Equity (ROE).

H5c: There is a relationship between governance performance and firm performance as measured by Earnings Per Share (EPS).

The rationale of the hypothesis being robust governance practices may lead to better decision-making, reduced risks, and improved firm performance.

In considering the ESG pillars and the firm performance, future research may develop and validate standardized metrics for assessing, environmental, social and governance performance to enable more robust cross-study comparisons. Also, study may focus on how the relationship between environmental, social and governance performance and Firm performance varies across different industries. The researcher can also examine how different stakeholder groups' perceptions of environmental, social and governance practices affect financial performance of listed companies and analyse the long-term impacts of environmental, social and governance initiatives on Firm performance over extended periods.

3.15 Chapter Summary.

This chapter reviews the theoretical background of ESG and then discusses the three major theories explaining the relationship between the business and the society, namely, stakeholder theory, agency theory and legitimacy theory. The ESG reporting becomes mandatory nowadays and Hong Kong has introduced mandatory requirement in the disclosure of ESG data for the information of the public

This chapter presents a comprehensive theoretical framework underpinning the relationship between Environmental, Social, and Governance (ESG) factors and firm performance. It develops five key hypotheses and introduces two control variables to elucidate this complex relationship. The chapter is structured as follows:

This chapter lays the theoretical foundation for examining the complex relationships between ESG factors and firm performance. By grounding the research in well-established theories and developing clear hypotheses, this study aims to contribute meaningful insights to both academic literature and practical decision-making in the realm of sustainable finance and corporate responsibility.

Chapter 4 Methodology

4.1 Introduction

This chapter outlines the quantitative research methodology employed to investigate the relationship between Environmental, Social, and Governance (ESG) factors and firm performance in the context of Hong Kong-listed companies. The quantitative approach, as defined by Babbie (2010) and Muijs (2010), involved the systematic collection and analysis of numerical data to test hypotheses and examine relationships among variables. This method is particularly well-suited for our study, as it allowed for rigorous statistical analysis of the complex interplay between ESG metrics and financial outcomes.

The reason the researcher used quantitative methods to conduct the research due to the fact that it provides an objective framework for analysing the ESG-firm performance relationship, minimizing researcher bias. By using a large sample of Hong Kong-listed companies, our findings could be more readily generalized to the broader population of firms in similar contexts. The quantitative approach allowed for formal testing of our proposed hypotheses, providing clear evidence for or against our theoretical predictions. Numerical data facilitated comparisons across different companies, industries, and time periods, enhancing the robustness of our findings. The structured nature of quantitative research enhanced the potential for future studies to replicate and build upon our findings.

Our study followed a systematic research process, consisting of the steps including

problem identification, research objectives definition, literature review, methodology definition, data collection and analysis, results presentation and conclusion and recommendation.

For Problem Identification, it recognized the gap in the literature regarding the ESG-firm performance relationship in the Hong Kong context and identify the need for a comprehensive analysis of ESG factors' impact on various financial metrics. The research objectives clearly articulated the aims of the study, focusing on examining the relationships between ESG disclosure, ESG performance (overall and individual components), and firm performance metrics (ROA, ROE, EPS). The scope of the research, including the time frame and sample selection criteria would be established.

A comprehensive review of existing literature on ESG factors, firm performance, and their interrelationships would be conducted and key theories (stakeholder theory, agency theory, legitimacy theory) would be identified for our research framework.

The researcher would synthesize previous findings to develop our hypotheses and research questions.

The researcher selected appropriate data collection methods, including sources for ESG ratings and financial data and determine suitable statistical techniques for hypothesis testing and data analysis. In addition, criteria for sample selection and data cleaning procedures was established . The researcher gathered ESG data and firm performance data from Bloomberg and make reference to the company reports.

The research had allied statistical techniques such as multiple regression analysis, panel

data methods, or structural equation modelling as appropriate. Robustness checks and sensitivity analyses to ensure the reliability of our findings were applied. The research work used software packages (Eviews and Jamovi) for efficient and accurate analysis and present findings in clear, concise tables and figures. As a final analysis, the researcher interpreted results in the context of our hypotheses and existing literature and discuss implications for theory and practice, summarising key findings and their significance, discussing limitations of the study and potential areas for future research and provide actionable recommendations for practitioners, policymakers, and researchers.

The analysis covered descriptive Statistics, correlation analysis, multiple regression and panel analysis and robust checks. Descriptive analysis provided an overview of the sample characteristics and distribution of key variables. Correlation Analysis examined the preliminary relationships between ESG factors and firm performance metrics. Multiple Regression Analysis tested our hypotheses while controlling for firm size and board independence. Panel Data analysis reviewed potential time-fixed effects and unobserved heterogeneity across firms. Robustness focuses on tests for multicollinearity, heteroscedasticity, and endogeneity to ensure the validity of our findings.

In connection with ethical consideration, the researcher would consider the data privacy to ensure that any non-public data would be handled confidentially and in compliance with data protection regulations. In addition, all data sources, methodologies, and analytical procedures would be clearly reported. Lastly, the researcher would ensure impartiality in data analysis and interpretation of results and report all findings,

including those that may not support our hypotheses.

This quantitative research methodology provided a robust framework for examining the complex relationships between ESG factors and firm performance in Hong Kong-listed companies. By employing rigorous data collection and statistical analysis techniques, the researcher aimed to contribute meaningful insights to the growing body of literature on sustainable finance and corporate responsibility. The structured approach outlined in this chapter ensured transparency, replicability, and reliability in our research process, enhancing the value of our findings for both academic and practitioner audiences.

4.2 Research Method

This study employed a quantitative research methodology to investigate the relationship between Environmental, Social, and Governance (ESG) disclosure, ESG performance, and firm performance among Hong Kong-listed companies. The choice of a quantitative approach is driven by the study's primary objective: to identify and analyse the relationships between these variables using statistical methods. This section outlined the rationale behind the chosen research method, the statistical tools employed, and the theoretical foundations underpinning the research design.

The study aimed to establish quantifiable relationships between ESG factors and firm performance, necessitating a method that could measure and analyse numerical data. The research was built around five hypotheses derived from existing theories, aligning with the deductive approach characteristic of quantitative research (Bryman & Bell, 2015). Quantitative methods offered a degree of objectivity and the potential for generalizable findings, which are crucial for contributing to the broader body of

knowledge in ESG and firm performance research.

The study followed a deductive reasoning approach, as described by O'Reilly (2012). The study will develop hypotheses based on existing theories (stakeholder theory, agency theory, legitimacy theory), collected relevant data and analysing the data to test the stated hypotheses. Thereafter the study utilized panel data regression models to examine the five developed hypotheses. This approach allowed for analysing of both cross-sectional and time-series dimensions of the data, control of unobserved heterogeneity across firms and examination of dynamic relationships between ESG factors and firm performance

Two statistical software packages were employed to ensure robust analysis. Jamovi ,and Eviews will be used for analysing descriptive statistics and preliminary analyses and panel data analysis and advanced regression techniques. The research constructed models, and hypotheses were grounded in solid theoretical and conceptual findings from existing literature. This approach ensured that the study builds upon and contributes to established knowledge in the field, the hypotheses were theoretically justified and empirically testable and the findings can be interpreted within the context of existing theories and prior research

Quantitative methods provided a structured, objective approach to data analysis. Findings from a large sample of Hong Kong-listed companies might be generalizable to similar contexts. Advanced statistical techniques allowed for robust hypothesis testing and control of confounding factors. However, Quantitative methods might not capture the full complexity of ESG implementation and its impact on firm performance.

The reliability of findings depended on the quality and accuracy of available ESG and financial data. While relationships could be established, causal inferences should be made cautiously.

The chosen quantitative research method, grounded in deductive reasoning and employing panel data regression models, provided a robust framework for investigating the relationships between ESG factors and firm performance in Hong Kong-listed companies. By utilizing advanced statistical software and basing the research design on established theoretical foundations, this study aimed to contribute meaningful, empirically-supported insights to the growing body of literature on ESG and firm performance. The structured approach outlined in this section ensures transparency, replicability, and reliability in the research process, enhancing the value of the findings for both academic and practitioner audiences.

4.3 Data Collection

This section outlines the data collection process, sample selection criteria, and the justification for using specific data sources in our study of ESG disclosure, ESG performance, and firm performance among Hong Kong-listed companies.

Financial data were collected for the fiscal years 2017, 2018, and 2019. The dataset were screened for outliers and missing values. Companies with incomplete data for the study period will be excluded from the analysis. Financial measures will be normalized to account for industry-specific differences. A random sample of the collected data were cross-checked with companies' annual reports to ensure accuracy.

The data used in this study were taken from Bloomberg Terminal in a year-to-year basis and get the quantitative data and transform them into a panel data format for analysis. The secondary data from the website of the companies and annual reports and bulletins were collected. The researcher used Bloomberg database to collect ESG data. In order to review the impact of ESG performance on firm performance, multiple regression were performed based on panel data analysis. Panel data was defined as data set constructed from cross sectional and over time data. Both the independent and dependent variables were measured by regression analysis. ROA, ROE and EPS were chosen as dependent variables whereas the individual pillar of ESG are the independent variables for the research and analysis. Regression were run to evaluate the correlation between the dependent and independent variables.

There is no single collectively universally accepted ESG measurement in the academic world. Several research institutes measured ESG measurement using different approaches and methodology including Thompson Reuters, Bloomberg ESG metrics and Morgan Stanley Environmental, Social and Governance (MSCI ESG) Index. The Thompson Reuters Corporate Responsibility Index is a dynamic rating based on Thomson Reuters ASSET4 ESG Database. The database rated the ESG practices covering 4,600 companies worldwide in 226 key indicators of ESG performance (Thompson 2015)

In Hong Kong, MSCI and Bloomberg are most popular ESG rating agencies. MSCI is a leading provider of decision tools to investors including global equity indices performance analysis and governance tools. The MSCI index shows how well the companies manage its risks on long term value that may not be evaluated by traditional

financial reporting (e.g. annual reports).

Bloomberg has worked to establish the legitimacy of their ESG reporting. Both commercial and academic circle would often use the ESG information for investigating the corporate sustainability and ESG reporting. The financial data of Bloomberg is also current and accurate as they have international database and updated on regular basis. The researcher selected different rating companies for assessing the ESG disclosure and performance of list companies in Hong Kong and Bloomberg was chosen as the source for collecting data for analysis. Bloomberg is a reputable organization, which has timely information of the global stock price and ESG information. The financial data of Bloomberg is also current and accurate as they have international database and updated on regular basis. After obtaining the ESG data and the financial data including ROA, ROE and EPS from Bloomberg, the researcher would continue to analyse if there were any relationship of the ESG score with the firm performance of the 202 companies from the four sectors of industries. Statistical software including Eviews and Jamovi were be used to collect the descriptive data such as the means, standard deviation, t-test and p-test. Multiple regression were used to examine the relationship between ESG disclosure and firm performance.

According to the Bloomberg Terminal, the scores included as reported data and derived ratios as well as sector and country-specific data points. The data source was mainly from annual reports, sustainability reports, press releases and third-party research. Bloomberg provides ESG data organized into more than 2000 fields that span several key sustainability topics, including but not limited to

Air Quality

Climate Change, Water & Energy Management

Materials & Water

Health & Safety

Audit Risk & Oversight

Compensation

Diversity

Board Independence, Structure & Tenure

Shareholders Rights

The independent variables, EP, SP, GP, ESG were measured using the ESG rating published in the Bloomberg's database. The ESG sub-criteria for all data sets were labelled as E (Environmental), S (Social) and G (Governance) whereas the total ESG score includes all three factors. The Bloomberg database rates the ESG performance using firm performance scores that summarise a company's level of performance on E, S and G and overall ESG performance. All the performance scores were between the range of 0.1 (for companies that disclose minimal performance) to 100 (for companies all data of performance).

Bloomberg Terminal is a powerful and flexible financial data platform for obtaining real-time and up-to-date financial news and analytics (Bloomberg Finance, 2015). Apart from providing real time pricing and economic data and analysis, Bloomberg also provides ESG score. The Bloomberg ESG disclosure database launched in 2009. It provides ESG coverage for over 11,000 companies in more than 100 countries. Bloomberg offers a wide range of professional services that are used by 325,000 of the world's most influential actors of the financial industry (Bloomberg 2018)

The Bloomberg ESG disclosure score consists of three major dimensions: environmental, social and governance. The environmental disclosure score consists of (a) total greenhouse gas, (b) emissions, (c) total energy, (d) consumption, (e) water consumption, (f) hazardous waste, (g) total waste, and (h) environmental fines. The social disclosure score includes (a) the total number of employees, (b) the percentage of women in the workforce (c) the percentage of women in management (d) the percentage of women in the workforce, and percentage of minorities in management. The government disclosure scores reflect: (a) the size of the Board (b) independent directors: (c) percentage of independent directors (d) board duration (e) the number of board meeting (f) board meeting attendance, and (g) political campaign contributions and donations.

The study population consists of more than 1,000 listed companies in Hong Kong with ESG information consisting of four industry sectors having a market capitalization of at least HK\$5 billion and a Bloomberg ESG rating. Under the Bloomberg classification that meet the aforementioned criteria, there are 62 property developing companies, 44 transport companies, 40 public utilities companies and 56 catering companies were included in the sample. The total number of the sample companies is 202. The study will compare the ESG ratings of those firms with the firm performance indicators. The ESG scores of the target companies were measured for five years period from 2017 to 2021 and the firm performance figures.

After reviewing the data collected, the researcher noted that there were many missing data from the ESG scores in particular for ESGP and the three pillars of ESG for 2020

and 2021, This might due to the fact that some listed companies could not provide the ESG data to Bloomberg on a timely basis due to the reason of COVID 19 as some of their operating businesses had been suspended and slowed down. The ESG data might also not reliable as the resources of the companies had been directed to cater for the prevention of spread of epidemic and ESG might not be their priority. In this connection, the researcher has decided to reduce the sample companies from 202 to 178 and the period of study from 2017 to 2021 to 2017 to 2019.

Table 4 Data Selection

Description	Sample	Observation
Companies listed in Hong Kong Stock Exchange	2,200	1,279
Companies with ESG score information from 4 sectors	1,000	180

After obtaining the number of sample companies from the Stock Exchange and Bloomberg Terminal, the researcher has chosen four commercial sectors for analysis of the impact of ESG factors on their firm performance and the comparison of the achievement and analysis of the respective sectors.

Table 5 Number of Companies selected for research

Sector	Total # of research	Among which # companies with ESG related scores	Companies finally chosen for analysis
Property Development	388	62	47
Transport	257	44	42
Public Utilities	243	40	40
Catering	391	56	49
Total	1,279	202	178

The data used in the research are secondary as they were collected from financial statements of the target companies and Bloomberg Terminal. Sample used were companies listed in Hong Kong and the financial information for 2017-2019. Firm Performance is one of the key predictor variables in the research. Companies with high firm performance may have substantiated investments in social programmes (Wang et al. 2016). There are two sources of financial information to measure the firm performance, by referring to stock market returns and accounting-based measures (McGuire, Sundgren & Schneeweis,1988).

The data collection process and sample selection for this study had been carefully designed to ensure reliability and relevance to the research objectives. By utilizing the comprehensive Bloomberg ESG disclosure database and focusing on a specific set of Hong Kong-listed companies across four key industries, this study aimed to provide robust insights into the relationship between ESG factors and firm performance. The

adjustment of the sample size and time period in response to data limitations demonstrated a commitment to maintaining data integrity and reliability. This approach, combined with the use of panel data analysis and multiple regression techniques, positioned the study to contribute meaningful findings to the growing body of literature on ESG and firm performance in the context of Hong Kong's capital markets.

4.4 Data Analysis

In order to evaluate the impact of environmental, social and governance disclosure and performance on the financial performance indicators, multi-regression were performed based on panel data analysis. Panel data is defined as data set constructed from cross sectional and over time data. Regression were run to evaluate the correlation between the dependent and independent variables considering their various time dimensions (K. Yilmaz 2013) The independent variables are the ESG disclosure, ESG performance and the individual E, S and G pillars based on Bloomberg ESG data . The dependent variables are ROA, ROC and EPS. The ESG scores of the companies were measured for three years period from 2017-2019 as well as financial performance data.

4.5 Dependent and Independent Variables

This section detailed the selection and justification of dependent and independent variables used in our study to examine the relationship between ESG factors and firm performance among Hong Kong-listed companies. The choice of variables was grounded in established financial and ESG literature, ensuring the robustness and relevance of our analysis.

The independent variables represent ESG (aggregate), environmental, social and governance performance and ESG disclosure. The researcher used ESG scores from Bloomberg Terminal database. As defined in the model of this study, the dependent variables represented firm performance. The measure used accounting and market performance. ROA and ROE were used to measure accounting performance and EPS to measure market performance. Although some researcher used Tobin's Q to measure market performance, the researcher, however, valued the use of EPS a direct and straightforward review of the market performance. It is a metric to estimate a company's value as the stock price shows how the company earn per share of its stock. Investors are more inclined to invest in companies with high EPS values as both shareholders and stakeholders would expect to receive higher profits from those stocks with higher EPS value.

The researcher used accounting-based measures to review the relationship between ESG and firm. Accounting-based measures are less subject to short-term market fluctuations compared to stock market returns (McGuire, Sundgren & Schneeweis, 1988). These measures reflected the internal efficiency and profitability of the company, which were more directly influenced by management decisions, including ESG initiatives. Accounting measures allowed for easier comparison across different companies and industries, as they based on standardized financial reporting principles. Companies with high financial performance may have more resources to invest in social and environmental programs (Wang et al., 2016), making these measures particularly relevant for studying the ESG-financial performance relationship.

In fact, different accounting practices across companies may affect the comparability

of these measures. These measures may not fully capture long-term value creation, which is often associated with ESG initiatives. The relevance and interpretation of these financial measures may vary across industries, necessitating careful analysis and interpretation. The accounting -based measures represented by return on asset, return on equity and earnings per share are chosen in this study.

Return on Assets (ROA)

Definition: $\text{Net Income} / \text{Total Assets}$

It is crucial for managers and investors to evaluate how effectively a company converts its resources into profit. It can be viewed as a return on investment measure, as capital assets are key indicators of investments (Selling and Stickney, 1989). It used to measure the effectiveness of a corporation in earning returns on its invested assets and allows for comparison across companies of different sizes. Measures the effectiveness of a company in utilizing its assets to generate profits. It is considered the widely used in ESG-financial performance studies (**Alareeni & Hamdan, 2020**). ROA is used to measure the effectiveness of the corporation by using its property (Prastowo, 2002). It is computed by net profit divided by total assets.

Return on Equity (ROE)

Definition: $\text{Net Income} / \text{Average Shareholder Equity}$.

It is considered one of the most important financial ratios. Average market ROE is typically around 10%. It is widely used in studies examining the relationship between financial performance and corporate social performance (Besso et al., 2013; Deng et al., 2013; Ioannou & Serafeim, 2014; Luo et al., 2013). ROA reflected the company's efficiency in generating profits from shareholders' investments. ROE was selected as

the accounting-based measurement in the study as it is one of the most popular methods to measure firm performance (Griffin & Mahon 1997) also pointed out that ROE is the single most important indicator for investors to measure firm's performance.

Earnings Per Share (EPS)

Definition: $\text{Net Income} / \text{Number of Outstanding Shares}$. ROE provides the most straightforward illustration of a company's market value. Higher EPS generally generates expectations of higher company value. EPS is widely recognized and valued by investors as it allows for simple comparison across various industries. EPS is the most straight forward ratio showing the earnings of the corporation and can have a simple comparison of the various industries

Table 6 Definition of abbreviation:

Variables	Types	Definition
ROA	Dependent	Return on Asset
ROE	Dependent	Return on Equity
EPS	Dependent	Earnings per share
ESGD	Independent	Firm ESG disclosure level
ESGP	Independent	Firm ESG performance level
EP	Independent	Firm Environmental performance level
SP	Independent	Firm Environmental performance level
GP	Independent	Firm Governance performance level

By including both overall ESG performance and individual pillar scores, we can analyse

the impact of specific ESG components on firm performance. The inclusion of ESG disclosure as a separate variable allowed us to examine the effect of transparency on financial outcomes. ROA and ROE provided accounting-based measures of performance, reflecting operational efficiency and profitability.

EPS offers a market-based perspective, indicating how the market values the company's earnings potential. The chosen variables were consistent with those used in seminal ESG-firm performance studies, enabling comparisons with existing literature. These metrics were widely recognized and valued by investors, managers, and other stakeholders in the financial community.

The selection of dependent and independent variables in this study provided a comprehensive framework for examining the relationship between ESG factors and firm performance. By incorporating both accounting-based and market-based financial metrics, along with detailed ESG performance and disclosure scores, this research aimed to offer a nuanced understanding of how ESG practices relate to various aspects of corporate financial success. The use of established metrics from a reputable source (Bloomberg) ensured the reliability and comparability of our findings with existing literature, while also providing valuable insights for investors, managers, and policymakers in the Hong Kong market context.

4.6 Control Variables

Including control variables enhances the accuracy of our analysis and helps mitigate omitted variable bias (Garcia-Castro et al., 2010; Lu et al., 2014; Aouadi & Marsat, 2018). Firm size is included because larger companies tend to face greater stakeholder

pressure to adopt CSR measures and may benefit from economies of scale in implementing ESG initiatives (Michelon, Besso, & Kumar, 2013). Board independence is included as it can influence both ESG practices and firm performance.

Firm size, which measures the market capitalization, is one of the variables. Larger companies, with the pressure from the stakeholders, tend to adopt CSR measures and economies of scale will benefit the implementation of CSTR initiatives (Michelon, Besso, & Kumar, 2013). In measuring the corporate social performance scores and ESG controversies, firm size is also controlled (Aouadi and Marsat, 2018). In addition, the researcher will also use the presence of number of independent directors in the board as another control variable in the study.

The variables in the study were environmental, social and governance (ESG) scores and the firm performance variables. The research framework of the study was built on the stakeholder theory perspective. The stakeholder theory states that the company needs to satisfy internal and external stakeholders' demands. ESG initiatives are effort of management to satisfy stakeholders' demand to gain better firm performance.

A regression model was used to determine the relationship of ESG disclosure, ESG performance to financial results of return on asset, return on equity and earnings per share. The variables were tested for the correlation for the same year as well as in subsequent one, to and three years. The relationship were tested for statistical significance (p values less than 0.05 and 0.01). Bloomberg offers four disclosure scores, for overall ESG, as well as Environmental, Social, and Governance. The ranking ranges from 1 to 99; with 99 being the best. Hong Kong has seen the most growth from the

average ESG Disclosure Score of 17% in 2010 to over 40% in 2020, leading other markets in the APAC region.

Quantitative studies are generally conducted based on a large sample to increase the level of certainty (Boslaugh, 2007). In this case, the researcher conducted review of the ESG scores and firm performance indicators from Bloomberg Terminal. By grounding the research in stakeholder theory and employing a comprehensive set of variables and analytical techniques, this study aimed to contribute valuable insights to the growing body of literature on ESG and corporate firm performance in the Asian context.

As the stock market returns are subject to constant volatility (Zhang et al., 2016) accounting-based information are used to measure firm performance. ROA, ROE and EPS are selected as firm performance indicators. ROE is one of the most important financial ratios. It is calculated by using wealth of earnings divided by average shareholder equity. The average ROE is normally 10% in the market. ROE is a financial performance used by to evaluate relationships between firm performance and corporate social performance (Besso et al. 2013, Deng et al. 2013, Ioannou & Serafeim, 2014, Luo et al., 2013).

ROA is always an important variable to measure firm performance. ROA ratio is used by managers and investors to examine how well the company to convert its resource into profit. ROA might also treat as return on investment as capital assets is one of the key indicators of investments (Selling and Stickney, 1989) ROA measures how effectively corporation may earn return on its investment assets. EPS is the most straightforward illustration of the market value of the companies and higher EPS would

generate expectation of higher value of the companies.

The selection of ROE, ROA, and EPS as firm performance measures provided a comprehensive view of a company's profitability, efficiency, and market valuation. By focusing on accounting-based measures and utilizing data from a reputable source like Bloomberg, this study aimed to provide robust insights into the relationship between ESG factors and firm performance among Hong Kong-listed companies. The careful selection of both the sample and the performance measures enhanced the reliability and relevance of the study's findings for investors, managers, and policymakers in the Hong Kong market context.

4.7 Assumptions

It is understood that unlike firm performance, the measurement of ESG disclosure and ESG performance is very complex and involve complicated procedure of reviewing the reporting practices and the verification of the accuracy of the information provided by companies. The researcher had enhanced with difficulties of selecting suitable rating companies for collecting ESG data for comparison and analysis purpose. Bloomberg was chosen as the source as Bloomberg provides updated and prevailing ESG and financial data sources for researchers and investment professionals who would want to measure SR and ESG (Scott et al., 2016).

The financial data and ESG scores provided by Bloomberg Terminal are assumed to be accurate and reliable. It was acknowledged that some ESG data may be self-reported by companies, which could introduce potential biases. Bloomberg's ESG disclosure and performance scores were assumed to be suitable measures for assessing companies'

ESG practices and transparency. The complex nature of ESG measurement was recognized, and Bloomberg's methodology was assumed to adequately capture the multifaceted aspects of ESG performance.

It is assumed that companies with available ESG data are not systematically different from those without such data, in ways that would bias the study's results. The measurement of ESG disclosure and performance involves complex procedures and subjective judgments. The study relied on Bloomberg's methodology, which might not capture all nuances of ESG practices. While Bloomberg is a reputable source, using a single data provider may introduce potential biases or limitations in ESG scoring methodologies.

The study was limited to companies with available ESG data, which may introduce selection bias. The focus on four sectors might limit the generalizability of findings to other industries. The study covered a three-year period (2017-2019), which might not capture long-term trends or effects of ESG practices. The research also limited to Hong Kong-listed companies, which might limit the applicability of findings to other markets or regions. While ROA, ROE, and EPS are widely used, they may not capture all aspects of firm performance. Other metrics, such as Tobin's Q, could provide additional insights but are not included in the primary analysis. The study could establish correlations but might not definitively prove causality between ESG factors and firm performance. Macroeconomic conditions, regulatory changes, or other external factors that might influence both ESG practices and firm performance was not explicitly controlled for in the study.

ROE, ROA, and EPS were assumed to be appropriate and comprehensive measures of firm performance. These metrics were widely accepted in both academic research and by investment professionals. The sample size of 178 companies from four sectors was assumed to be sufficient for conducting meaningful statistical analyses. The selected companies were assumed to be representative of their respective sectors in the Hong Kong market.

By explicitly acknowledging these assumptions and limitations, and implementing strategies to mitigate their impact, this study aimed to provide a balanced and rigorous analysis of the relationship between ESG factors and firm performance among Hong Kong-listed companies. The transparent discussion of these issues enhanced the credibility of the research and provides a foundation for future studies to build upon and address remaining gaps in our understanding of ESG impacts in the Hong Kong market context.

4.8 Limitations

The first limitation was that ESG disclosure and ESG performance scores from Bloomberg were collected from the respective companies, and there might be errors and misrepresentation of the data as they were collected from companies and no other third parties to verify the data. Second, there was no universally acceptable method to assess the ESG and financial information of the companies. The researcher used the Bloomberg Terminal to collect the ESG scores and financial information of the companies. However, there were other rating companies having different ESG data such as MSCI, Russell 100 and Thompson Reuters. Although there was no universal approach to measure firm performance, the researcher chose ROA, ROE and EPS as

the firm performance indicators for assessing the firm performance and believed that those criteria showed a realistic picture of the financial information of the companies.

The research project had its own delimitation. The companies selected were those listed in Hong Kong Stock Exchange and were included in Bloomberg's ESG rating system. There might be other companies which were not included in Bloomberg's system. The research covered only four sectors, namely: property development, transport, public utilities, catering, and no generalization can be made to other commercial sectors. Although the researcher believed that the data for both ESG and financial information for three years are sufficient, the research had its own limitation on the time spent and the number of years chosen analysis. In addition, the researcher believed that the impact of ESG Disclosure and Performance could be analysed by quantitative research and assume that the methodologies used were appropriate for the study.

By explicitly acknowledging these enhanced limitations and detailing the sample selection process, this study provided a transparent and nuanced examination of the relationship between ESG factors and firm performance among Hong Kong-listed companies. The rigorous methodology, combined with a clear understanding of its constraints, enhanced the reliability and applicability of the research findings. Future studies might build upon this work by addressing the identified limitations, potentially expanding the sector coverage, time frame, or incorporating alternative ESG rating methodologies.

4.9 Regression Model

The study employed a combination of multiple regression and panel data analysis to investigate the relationship between ESG factors and firm performance. This approach allowed for a robust examination of both cross-sectional and time-series effects in the dataset. The main regression analyses were employed to test whether ESG performance and its sub-components (EP, SP, GP and ESGP) had relations with firm performance (ROA, ROE and EPS) and whether the control variables such as proportion of independent board and firm size had any impact on the firm performance. The researcher tested the assumptions of regression using on linearity, homoscedasticity of residue, normal distribution of error term and multicollinearity.

This researcher used panel data which is a combination of time series and cross-section data. According to Gujarati and Porter (2009), data are time series if the variables are in a set of times, while data are cross-section if there are many subjects but are at the same point in time. Panel regression is often used in analysing datasets containing different participants and time spans showing how the data evolve over time. Panel data is a longitudinal data which measures variables observed for a number of entities across time. Ordinary least square (OLS) model is used. Although pooled ordinary least squares can be used on panel data, it might not provide optimum results. A constant or a random variable can be used in the variation in time and cross-sections to develop panel data regression models like fixed effects model and the random effect model

As the dataset for the study of three panel data, data for 178 companies measured over 3 years, panel data regression were used to estimate the hypotheses. In order to determine whether to use fixed effect model or a random effect mode, Hausman test

was used. The null hypothesis of Hausman's test assumes that the ordinary least-squares (OLS) estimation is consistent meaning that the random effect model should be used. The alternative hypothesis assumes that OLS estimation is inconsistent meaning fixed effect model is more suitable. RE model assumes that the variation between entities is random and unrelated to the model's independent variables showing its ability to include variables that remain constant across time. The pooled OLS is a highly restrictive model as it imposes a common intercept and slope for all cross-sections disregarding heterogeneity. On the other hand, the fixed model assumes that the predictor has common slopes and variance but with company-specific intercepts. The random effect is assumed to have common intercept and is applied where the variation across a company is assumed to be random and unrelated with variables included in the model. The researcher also tested the correlation results using Pearson correlation matrix for the dependent, independent as well as the control variables.

The research also used multiple regression to measure the effect of an independent variable to the dependent variable (Sekaran & Bougie, 2016). Three independent variables were used in this research, namely, Environmental, Social and Governance disclosure, Environment performance, Social performance, Governance performance, Environmental, Social and Governance performance. This researcher used Return on Asset, Return on Equity and Earnings per share as dependent variables with firm size as control variables. A positive impact of ESG performance on firm performance with moderating effect of firm size and independent board was assumed in the regression analysis. The three pillars of Environmental, Social and Governance together with the aggregate ESG were separated for analysis purpose.

According to Cohen et al. (2013), five key assumptions are applicable to multiple regression analysis namely multicollinearity, normality, linearity, homoscedasticity and independence of residuals. Multicollinearity test, heteroscedasticity test and normality test are conducted to reduce the potential biases which may appear in regression model to confirm the validity of the data that will be used in regression study.

The researcher used a 95% confidence interval for our analyses with $p\text{-value} < 0.05$ indicates statistical significance. The coefficients with $p < 0.05$ is interpreted as evidence of a significant relationship (positive or negative) between the independent and dependent variables.

To estimate the hypotheses, the study used panel regression for the analysis. Based on the studies cited above, six models were built using econometric equations with the following multiple regression models.

The general form of the model is as follows:

$$FP_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 ESGP_{it} + \beta_3 EP_{it} + \beta_4 SP_{it} + \beta_5 GP_{it} + \beta_6 Size_{it} + \beta_7 IOB_{it} + \varepsilon_{it}$$

Where:

FP_{it} represents the financial performance measure (ROA, ROE, or EPS) for firm i in year t

$ESGD_{it}$, $ESGP_{it}$, EP_{it} , SP_{it} , and GP_{it} represents the ESG variables

Size_it and IOB_it are the control variables

α is the intercept, β_1 - β_7 are the coefficients, and ε_{it} is the error term

Relationships were tested for statistical significance, with p-values less than 0.05 and 0.01 considered significant. The data was collected from Bloomberg's ESG scoring methodology and focus on large-cap companies in specific sectors. The duration was limited to three years, which might not capture long-term trends. There might be potential bidirectional relationship between ESG and financial performance

Given the panel structure of our data, we employed a systematic approach to determine the most appropriate regression model for each of our six specifications. Our process involved the following steps. First, we began with Ordinary Least Squares (OLS) regression for each model, regressing our financial performance measures (ROA, ROE, and EPS) against the ESG factors and control variables.

Thereafter we conducted a Lagrange Multiplier (LM) Test to determine whether panel effects are present, which would indicate that OLS is not appropriate and that either Fixed Effects (FE) or Random Effects (RE) models should be used. Finally, for models where the LM test indicated panel effects, we performed Hausman tests to choose between Fixed Effects and Random Effects models.

To test our hypotheses, we employed panel data regression analysis. We ran six models, each focusing on different aspects of the relationship between ESG factors and financial performance. The results are presented in Tables 9, 10, and 11.

To be more specific, the first two models showcased the models for panel regression using the three ESG pillars and ESG disclosure and ESG performance with firm performance measure reflected in Return on Asset.

We estimated six models:

$$ROA = f(ESGP, ESGD, Size, IOB)$$

$$ROE = f(ESGP, ESGD, Size, IOB)$$

$$EPS = f(ESGP, ESGD, Size, IOB)$$

$$ROA = f(EP, SP, GP, Size, IOB)$$

$$ROE = f(EP, SP, GP, Size, IOB)$$

$$EPS = f(EP, SP, GP, Size, IOB)$$

Six econometric models are proposed:

First Sector

Models 1, 2 and 3 (ESGD and ESGP as independent variables):

$$ROA_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 ESGP_{it} + \beta_3 IOB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \text{ (Model 1)}$$

$$ROE_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 ESGP_{it} + \beta_3 IOB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \text{ (Model 2)}$$

$$EPS_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 ESGP_{it} + \beta_3 IOB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \text{ (Model 3)}$$

The first three models showcased the models for panel regression using the three ESG disclosure and ESG performance with firm performance measure reflected in return on asset, return on equity and earnings per share.

Second Sector

Models 3 , 4 and 5 (EP, SP and GP as independent variables):

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 SP_{it} + \beta_3 GP_{it} + \beta_4 IOB_{it} + \beta_5 SIZE_{it} + \varepsilon_{it} \text{ (Model 4)}$$

$$ROE_{it} = \alpha + \beta_1 EP_{it} + \beta_2 SP_{it} + \beta_3 GP_{it} + \beta_4 IOB_{it} + \beta_5 SIZE_{it} + \varepsilon_{it} \text{ (Model 5)}$$

$$EPS_{it} = \alpha + \beta_1 EP_{it} + \beta_2 SP_{it} + \beta_3 GP_{it} + \beta_4 IOB_{it} + \beta_5 SIZE_{it} + \varepsilon_{it} \text{ (Model 6)}$$

The second three models showcased the models for panel regression using the three ESG pillars including environmental performance, social performance and governance performance with firm performance measure reflected in return on asset, return on equity and earnings per share.

Description:

α = intercept

β = Regression Coefficient

i = company i

t = period t

ESGD = Environmental, Social and Governance disclosure

EP = Environment performance

SP = Social performance

GP = Governance performance

ESGP = Environmental, Social and Governance performance

ROA = Return on Asset

ROE = Return on Equity

EPS = Earnings per share

Size = Firm size

IOB = Independent board

ε = Error

The sample of 178 companies over 3 years (2017-2019) which combined time series and cross-sectional data and allows for analysis of how variables evolve over time across different entities. Hausman test was used to determine between fixed effect and random effect models. Random effect model was appropriate (OLS estimation is consistent) Alternative hypothesis: Fixed effect model is appropriate (OLS estimation is inconsistent)

This comprehensive statistical methodology combined panel data analysis with multiple regression techniques to provide a robust examination of the relationship between ESG factors and firm performance. By employing various models and rigorous testing procedures, the study aimed to produce reliable and insightful results that contribute to the understanding of ESG impacts in the Hong Kong market context. The use of both individual ESG components and aggregate scores allowed for a nuanced analysis of how different aspects of ESG performance related to various financial metrics.

The researcher analysed the statistical, correlations and associations that exists. In this research, six models were proposed and tested. For each of our six models, we followed the process. First, we estimated the OLS regression and conduct LM test. If the result was significant, we proceeded to Hausman test. If the result is not significant, the OLS model would be retained. If the Hausman test is significant, Fixed Effects model would be used. In the contrary, Random Effects model would be adopted.

The first model (Model 1) analysed the relationship between ESGP and ESGD and the firm performance reflected in ROA to test hypothesis H1a and H2a. . The second model (Model 2) analysed the relationship between ESGP and ESGD and the firm performance reflected in ROE to test hypothesis H1b and H2b. The third model (Model 3) analysed the relationship between ESGP and ESGD and the firm performance reflected in EPS to test hypothesis H1c and H2c. The fourth model (Model 4) analysed the relationship between the three ESG pillars- EP, SP and GP and the firm performance of the listed companies in Hong Kong reflected in ROA to test hypotheses H3a ,H4a and H5a. In order to test Hypothesis H3b, H4b and H5b, the fifth model (Model 5) analysed the relationship between the three ESG pillars- EP, SP and GP and the firm performance reflected in ROE. The sixth and final model (Model 6) analysed the relationship between the three ESG pillars- EP, SP and GP and the firm performance reflected in EPS with the aim to test hypotheses H3c, H4c and H5c.

Table 6 Components of the six models

Model	Dependent Variable	Independent Variable	Hypotheses
Model 1	ROA	ESGP ESGD	H1a, H2a
Model 2	ROE	ESGP ESGD	H1b, H2b
Model 3	EPS	ESGP ESGD	H1c, H2c
Model 4	ROA	EP SP GP	H3a, H4a, H5a
Model 5	ROE	EP SP GP	H3b, H4b, H5b
Model 6	EPS	EP SP GP	H3c, H4c, H5c

In the following section, we will present the results of these final models, interpreting the coefficients, significance levels, and overall model fit in light of our research questions and hypotheses about the relationship between ESG factors and financial performance in Hong Kong listed companies.

4.10 Chapter Summary

This chapter described the methodology used in the research study. It also stated the data collection method and the research method and data model used to analyse the impact of ESG on the firm performance of listed companies in Hong Kong.

CHAPTER 5

ANALYSIS AND RESULTS

5.1 Introduction

Before performing a panel regression to test the research hypothesis, the descriptive statistics for all independent variables of the ESG scores and the dependent variables of the firm performance indicators are presented. It depicts the number of observations, mean, median, standard deviation, minimum, maximum of the variables used and skewness. The various ESG factors including EP, SP, GP, ESGD and ESGP are shown with the two control variables, IOB and Size, demonstrating the sustainability performance of the listed companies during 2017 to 2019. The equally weighted ESG disclosure scores range between 0 and 100 with higher scores demonstrating higher ESG disclosure. None of the companies have the highest 100 score for ESG disclosure. The ESG disclosure scores has mean value of 48.11 and ranges from 10.33 to 80.52. The median score for ESG disclosure is 48.1 indicating a level of underperformance. This result matches with the finding of Alsayegh et al. (2020) saying that the median score for EES performance is below 50% in Asia.

5.2 Descriptive statistics

Table 7 presents the descriptive statistics for all variables in our study, based on a sample of 178 companies with 534 firm-year observations from 2017 to 2019, after eliminating outliers. The table includes mean, median, maximum, minimum values, standard deviation, skewness, and Jarque-Bera probability for ESG factors (EP, SP, GP, ESGP, ESGD) and firm performance indicators (ROA, ROE, EPS), along with control variables (IOB and Size). Covariance indicates the direction of the linear relationship

between two variables. A positive covariance suggests that as one variable increases, the other tends to increase as well, while a negative covariance indicates an inverse relationship.

Table 7 Descriptive Statistics

	SECTOR	ESGD	ESGP	EP	SP	GP	ROA	ROE	EPS	SIZE	IOB_R
Mean	2.511236	48.11124	2.913427	3.327903	3.640019	3.754457	4.837509	12.54848	1.269944	2.453184	3.882022
Median	2.500000	48.10000	2.790000	3.250000	3.630000	3.680000	3.820000	10.81500	0.520000	2.000000	4.000000
Maximum	4.000000	80.52000	8.690000	8.730000	8.610000	9.370000	31.70000	115.2200	17.34000	10.00000	8.000000
Minimum	1.000000	10.33000	0.230000	0.340000	0.350000	0.720000	-13.87000	-61.86000	-1.240000	1.000000	1.000000
Std. Dev.	1.153698	8.943586	1.412889	1.537556	1.206677	1.162521	4.881176	12.77523	2.170799	1.769202	1.708366
Skewness	-0.005398	-0.384521	0.763759	0.491212	0.238279	0.934818	1.394889	2.180109	4.048933	2.044908	0.828042
Kurtosis	1.562904	5.374778	3.906413	3.491666	4.000629	6.007888	7.782845	22.59717	24.36572	7.807172	2.872917
Jarque-Bera	45.95428	138.6397	70.19649	26.85336	27.33114	279.0801	682.1508	8968.097	11616.04	886.3399	61.38256
Probability	0.000000	0.000000	0.000000	0.000001	0.000001	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1341.000	25691.40	1555.770	1777.100	1943.770	2004.880	2583.230	6700.890	678.1500	1310.000	2073.000
Sum Sq. Dev.	709.4326	42633.46	1064.005	1260.054	776.0849	720.3256	12699.20	86989.00	2511.693	1668.330	1555.567
Observations	534	534	534	534	534	534	534	534	534	534	534

The Environmental performance has an average value of 2.91 with a standard deviation of 1.41. The Social performance and the governance performance have the mean values of 3.64 and 3.75 and with standard deviation of 1.21 and 1.16 respectively. The highest average pillar score is governance implying that governance improvement is ongoing under the current atmosphere of mandatory and regulatory pressure. The environmental performance score is the lowest among the 3 pillars explaining the reason why global trend on implementation of measures to cope with climate change. The EP requires attention from the government and the corporations and has room for improvement. The median for all ESG indicators is relatively low and improvement can be made in view that the maximum value of all ESG factors is higher than 8. The average (mean) of ROA assets in 2017-2019 is 4.84 with a standard deviation of 4.88.

From the table, the standard deviation exceeding the mean indicates data are roughly not homogeneous nor evenly distributed data for ROA, ROE and EPS. EPS shows extreme results, reflecting economic fluctuations during the period. The maximum and minimum value of ROA is 31.7 and -13.87. This shows that the economic performance of the companies fluctuated during the period. For both ROE, it also shows extreme results between 115.22 and -61.86.

Skewness refers to a deviation from normal distribution curve and measure of lack of symmetry in data distribution. Normal distribution has a skewness equal to zero. Kurtosis measures how fat the tails on either left or right side of distribution. High kurtosis indicates heavy tails- display data that exceeds the normal distribution whereas low kurtosis indicates the opposite – light tails closer to normal distribution. As Size, ROA ROE and EPS show a high skewness, (more than +1 or less than -1), these variables show substantially skewed distribution.

In conducting the review of the average ESG during 2017 to 2019, it was noted that average environmental & social scores have increased respectively. However, the increase of governance scores increased substantially. The possible explanation might be that the increasing demand for ESG reporting. The result also in line with the suggestions of stakeholder, which highlights the focus on ESG performance, and the demand of the different stakeholders.

5.3 Correlation between variables

Next, we will proceed with the correlation analysis and regression results to further examine the relationships between these variables and test our hypotheses. The results of the correlations between all the ESG variables and three pillared variables (EP, SP and GP) as an independent variable; ROA, ROE and EPS as dependent variables and IOB and Size as control variables are shown in Tables 8. Table 9 table shows the Pearson's pairwise correlation coefficients between all of the variables used in our model. Correlation gives evidence of a linear relationship between two variables. A coefficient of 1.00 indicates positive correlation. If the coefficient is less than -1.0 , the data is negatively related. These correlations provide insights into the linear relationships between our variables of interest.

Table 8 Correlation Statistics

Sample: 1 534
Included observations: 534

Covariance Correlation t-Statistic	ESGD	ESGP	EP	SP	GP	ROA	ROE	EPS	SIZE	IOB R
ESGD	79.83793 1.000000 -----									
ESGP	3.418810 0.271062 6.495259	1.992518 1.000000 -----								
EP	3.683026 0.268334 6.424788	0.583666 0.269178 6.446558	2.359651 1.000000 -----							
SP	2.922334 0.271295 6.501265	0.289980 0.170406 3.988764	0.205843 0.111155 2.579783	1.453343 1.000000 -----						
GP	1.331429 0.128298 2.983866	0.362584 0.221164 5.230693	0.117183 0.065682 1.518248	0.175130 0.125079 2.907792	1.348924 1.000000 -----					
ROA	-0.281767 -0.006466 -0.149153	0.070663 0.010265 0.236783	-0.412347 -0.055045 -1.271559	0.034241 0.005824 0.134342	-0.206242 -0.036414 -0.840446	23.78126 1.000000 -----				
ROE	-0.632401 -0.005545 -0.127905	0.504317 0.027992 0.645902	-0.658813 -0.033603 -0.775492	1.230978 0.080003 1.851207	0.371247 0.025044 0.577830	40.96686 0.658194 20.16516	162.9008 1.000000 -----			
EPS	2.679944 0.138296 3.220754	-0.221728 -0.072428 -1.674957	-0.127034 -0.038132 -0.880148	0.032435 0.012406 0.286157	-0.212836 -0.084496 -1.955914	1.270705 0.120148 2.791438	2.110811 0.076256 1.763995	4.703544 1.000000 -----		
SIZE	3.362623 0.212914 5.026121	0.267286 0.107128 2.485232	0.182861 0.067348 1.556929	0.200048 0.093881 2.174991	0.067868 0.033060 0.762945	2.072646 0.240457 5.713813	1.678833 0.074418 1.721224	1.231748 0.321321 7.826336	3.124213 1.000000 -----	
IOB R	1.513067 0.099216 2.299766	-0.053229 -0.022094 -0.509721	-0.182026 -0.069428 -1.605247	0.027755 0.013489 0.311157	0.176612 0.089095 2.063189	0.274182 0.032942 0.760219	-1.802763 -0.082757 -1.915365	0.183739 0.049638 1.146320	0.090919 0.030138 0.695444	2.913048 1.000000 -----

It shows that correlation coefficients are less than 0.5 indicating that there is an absence of significant relationship among most of the independent variables (Yang & Baasandorj 2017). Contrary to prior research, EP, SP, and GP are not positively related with ROA, ROE, and EPS at the 5% significance level. The absence of correlation coefficients exceeding 0.8 suggests that multicollinearity is not a significant concern in our models.

Table 9 Pearson Correlation Table

Variable	ESGD	ESGP	EP	SP	GP	ROA	ROE	EPS	SIZE	IOB
ESGD	1.000	0.271	0.268	0.271	0.128	-0.006	-0.005	0.138	0.213	0.099
ESGP	0.271	1.000	0.269	0.170	0.221	0.010	0.028	-0.072	0.107	-0.022
EP	0.268	0.269	1.000	0.111	0.066	-0.055	-0.034	-0.038	0.067	-0.069
SP	0.271	0.170	0.111	1.000	0.125	0.005	0.080	0.012	0.094	0.013
GP	0.128	0.221	0.066	0.125	1.000	-0.036	0.025	-0.084	0.068	0.089
ROA	0.006	0.010	-0.055	0.005	-0.036	1.000	0.658	0.120	0.240	0.033
ROE	-0.005	0.028	-0.034	0.080	0.025	0.658	1.000	0.076	0.074	-0.083
EPS	0.138	-0.072	-0.038	0.012	-0.084	0.120	0.076	1.000	0.321	0.050
SIZE	0.213	0.107	0.067	0.094	0.068	0.240	0.074	0.321	1.000	0.091
IOB_R	0.099	-0.022	-0.069	0.013	0.089	0.033	-0.083	0.050	0.091	1.000

EP is negatively influenced with all firm performance indicators for ROA, ROE and EPS. GP is negatively related with ROA and EPS whereas SP has positive impact on all ESG factors (although a bit mild). Turning to the relationship between ESGP, ESGD, and financial performance, the data shows that ESG Performance (ESGP) is negatively correlated with EPS. ESG Disclosure (ESGD) shows a negative relationship with ROE, but a positive relationship with ROA and EPS. The interrelationship between the control variables and financial performance is vary. Independent Board (IOB) has a negative influence on ESGP, EP and ROE. Firm Size is positively related to all firm performance indicators; however, the effect is minimal.

The lack of strong positive correlations between ESG factors and financial performance metrics, contrary to some prior research, suggests that the relationship between ESG practices and financial outcomes in Hong Kong listed companies may be more complex than previously thought. This underscores the importance of our regression analyses, which will provide a more comprehensive understanding of these relationships while controlling for other factors.

5.4 Variation Inflation Factor

Before presenting the regression results, we conducted several diagnostic tests to ensure the validity of our models. Therefore, we will proceed with our regression analyses to further investigate these relationships while accounting for multiple variables simultaneously. The VIF test could help to reveal whether or not there are multicollinearity issues in the six models.

After presenting all models, provide a summary of the key findings and their implications for our hypotheses and research questions. To assess potential multicollinearity issues, we calculated the Variance Inflation Factor (VIF) for each predictor variable in our models. The results for the model with ROE as the dependent variable are as follows:

Table 10- Variation Inflation Factor

Model	Mean VIF
Model 1	1.07
Model 2	1.07
Model 3	1.07
Model 4	1.02
Model 5	1.02
Model 6	1.02

As seen from above regarding EPS as dependent variable, the result shows the range of VIF statistics that lies between 1.02 and 1.07. As there is no VIF less than 1 and more than 10, multicollinearity is not supposed to affect our analysis. The VIF value for each predictor variable is within acceptable limits. It shows that all tolerance level is greater than 0.1 . The model does not show any collinearity problem. Prior to the regression analysis, a SW Test (Shapiro-Wilk test) was conducted for the major variables to test the normal distribution. The result showed that the P-value is less than 0.05, meaning that the variables are not evenly distributed and matching with the findings in the correlation analysis. Therefore, we can conclude that our model does not suffer from collinearity problems, and the predictor variables are sufficiently independent of each other.

5.4 Excluded Outliners

The text samples exclude the extreme outliners for analysing the assumption and carry out the regression analysis. As these outliners affect our regression model and coefficients, the researcher have decided to exclude them from the study. We set restriction so that the regression includes observations for 534. As 98% of the scores are within this range, the researcher consider that this would accurately represent the ESG scores for the three- year period.

5.5 Heteroscedasticity Test

The classical linear regression model assumes that the disturbance appeared in the regression function should be homoscedastic meaning all of them have the same variance. To ensure the reliability of our regression models, we conducted

heteroscedasticity tests using the Breusch-Pagan test. Heteroscedasticity occurs when the variance of the error terms is not constant across observations, which can lead to biased standard errors and inefficient estimators (Brooks, 2014).

The Breusch-Pagan general test for heteroscedasticity and adjustment is needed. According to Breusch-Pagan test, the null hypothesis of heteroscedasticity should be rejected. Table 18 summaries the results for the six models as follows.

Table 11 Heteroscedasticity Test

Model	p
Model 1	0.619
Model 2	0.526
Model 3	0.087
Model 4	0.396
Model 5	0.884
Model 6	0.229

In order to validate the visual assumption of heteroscedasticity, the aforementioned Breusch-Pagan test was applied to all 6 models. The findings from Breusch-Pagan test suggest that model 1 to 6 have no problem of heteroscedasticity

As per Nachrowi and Usman (2006), the research meets the requirement of the RE model with the number of companies (N) greater than time) in view of 178 companies and 3 years review period is involved.

5.6 Anova -Sector comparison

Table 12– Sector Comparison

	1		2		3		4		F value	p value	Games- Howell Post- Hoc Test
	N=141		N=126		N=120		N=147				
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
ESGD	49.02	8.73	47.54	9.26	49.36	9.496	46.71	8.226	2.76	0.043	ND*
ESGP	2.7	1.284	3.03	1.458	3.33	1.247	2.68	1.539	6.96	< .001	3 > 1,4
EP	3.14	1.499	3.41	1.739	3.67	1.283	3.16	1.543	4.18	0.006	3 > 1,4
SP	3.68	1.146	3.59	1.262	3.93	0.941	3.41	1.357	5.02	0.002	3 > 4
GP	3.4	1.119	4.11	1.422	3.66	0.864	3.86	1.069	8.04		2 > 1,3; 4 > 1
* No subgroup differences were found											

Analysis of ESG Performance Across Different Sectors in Hong Kong

The findings presented indicate a comparative analysis of Environmental, Social, and Governance (ESG) performance across four sectors in Hong Kong: property, public transport, utilities, and catering. The data includes means, standard deviations (SD), F-values, p-values, and results from the Games-Howell post-hoc test, which provide insights into the differences in ESG performance metrics among these sectors.

For ESG Disclosure (ESGD), the mean scores for Property are 49.02 (SD = 8.73), Public Transport is 47.54 (SD = 9.26), Utilities: 49.36 (SD = 9.496) and Catering: 46.71 (SD = 8.226). The F-value of 2.76 with a p-value of 0.043 indicates a statistically significant difference in ESG disclosure across the sectors. However, the Games-Howell post-hoc test did not reveal any subgroup differences, suggesting that while there are variations in mean scores, they are not statistically significant when comparing specific pairs of sectors.

In respect of ESG Performance (ESGP), the mean scores for Property are 2.7 (SD = 1.284), Public Transport: 3.03 (SD = 1.458), Utilities: 3.33 (SD = 1.247) and Catering:

2.68 (SD = 1.539). The F-value of 6.96 with a p-value of < 0.001 indicates a highly significant difference in ESG performance. The Games-Howell post-hoc test reveals that utilities (3.33) perform significantly better than both property (2.7) and catering (2.68), suggesting that the utilities sector excels in ESG performance compared to the other sectors.

Turning to Environmental Performance (EP), the mean scores for property are 3.14 (SD = 1.499), Public Transport: 3.41 (SD = 1.739), Utilities: 3.67 (SD = 1.283) and Catering: 3.16 (SD = 1.543). The F-value of 4.18 with a p-value of 0.006 indicates a significant difference in environmental performance across sectors. The post-hoc test shows that utilities (3.67) outperform both property (3.14) and catering (3.16), highlighting the utilities sector's strong commitment to environmental sustainability.

As regards, Social Performance (SP), the mean scores of Property are 3.68 (SD = 1.146), Public Transport: 3.59 (SD = 1.262), Utilities: 3.93 (SD = 0.941) and Catering: 3.41 (SD = 1.357). The F-value of 5.02 with a p-value of 0.002 indicates a significant difference in social performance. The post-hoc test reveals that utilities (3.93) have a higher social performance score compared to catering (3.41), suggesting that utilities are more effective in addressing social issues

For Governance Performance (GP), the mean scores of Property are 3.4 (SD = 1.119), Public Transport: 4.11 (SD = 1.422), Utilities: 3.66 (SD = 0.864) and Catering: 3.86 (SD = 1.069). The F-value of 8.04 indicates significant differences in governance performance. The post-hoc test shows that public transport (4.11) performs significantly better than property (3.4) and that catering (3.86) also outperforms

property. This suggests that governance practices are notably stronger in the public transport sector.

As a conclusion, the analysis reveals that the utilities sector consistently demonstrates superior ESG performance across multiple dimensions, particularly in ESG performance, environmental performance, and social performance. The public transport sector also shows strong governance performance. In contrast, the property and catering sectors lag in ESG performance metrics, particularly in environmental and social aspects.

These findings suggest that companies in the utilities sector are effectively integrating ESG considerations into their operations, which may enhance their financial performance and stakeholder trust. Conversely, the property and catering sectors may need to improve their ESG strategies to remain competitive and meet the growing expectations of investors and consumers regarding sustainability and corporate responsibility. Overall, this analysis underscores the importance of sector-specific strategies in enhancing ESG performance and the potential implications for financial performance in Hong Kong's corporate landscape.

Sector Comparison of ESG Performance

Based on the findings presented, a comparative analysis of Environmental, Social, and Governance (ESG) performance across the four sectors—property (Sector 1), public transport (Sector 2), utilities (Sector 3), and catering (Sector 4)—reveals distinct differences in their performance metrics.

1. ESG Disclosure (ESGD)

Sector 1 (Property): Mean = 49.02, SD = 8.73

Sector 2 (Public Transport): Mean = 47.54, SD = 9.26

Sector 3 (Utilities): Mean = 49.36, SD = 9.496

Sector 4 (Catering): Mean = 46.71, SD = 8.226

The utilities sector (49.36) exhibits the highest ESG disclosure score, followed closely by the property sector (49.02). The public transport sector (47.54) and catering sector (46.71) lag behind, indicating that while all sectors are making efforts in ESG disclosure, utilities and property are leading in transparency in disclosure.

2. ESG Performance (ESGP)

Sector 1 (Property): Mean = 2.7, SD = 1.284

Sector 2 (Public Transport): Mean = 3.03, SD = 1.458

Sector 3 (Utilities): Mean = 3.33, SD = 1.247

Sector 4 (Catering): Mean = 2.68, SD = 1.539

The utilities sector again leads with a mean score of 3.33, indicating strong overall ESG performance. Public transport follows at 3.03, while property (2.7) and catering (2.68) show significantly lower performance levels. The substantial difference highlights the utilities sector's effective integration of ESG practices compared to the other sectors.

3. Environmental Performance (EP)

Sector 1 (Property): Mean = 3.14, SD = 1.499

Sector 2 (Public Transport): Mean = 3.41, SD = 1.739

Sector 3 (Utilities): Mean = 3.67, SD = 1.283

Sector 4 (Catering): Mean = 3.16, SD = 1.543

It is noted that Utilities sector leads in environmental performance with a mean score of 3.67, followed by public transport (3.41). The Property sector (3.14) and catering (3.16) show similar scores but are notably lower than the utilities sector. This indicates a strong commitment to environmental sustainability in the utilities sector.

4. Social Performance (SP)

Sector 1 (Property): Mean = 3.68, SD = 1.146

Sector 2 (Public Transport): Mean = 3.59, SD = 1.262

Sector 3 (Utilities): Mean = 3.93, SD = 0.941

Sector 4 (Catering): Mean = 3.41, SD = 1.357

The utilities sector again excels with a social performance score of 3.93, indicating effective social responsibility initiatives. Property (3.68) and public transport (3.59) show comparable performance, while catering (3.41) falls behind, suggesting a need for improvement in social engagement and responsibility.

5. Governance Performance (GP)

Sector 1 (Property): Mean = 3.4, SD = 1.119

Sector 2 (Public Transport): Mean = 4.11, SD = 1.422

Sector 3 (Utilities): Mean = 3.66, SD = 0.864

Sector 4 (Catering): Mean = 3.86, SD = 1.069

Public transport leads with a governance performance score of 4.11, significantly higher than the other sectors. Utilities (3.66) and catering (3.86) show moderate governance

performance, while property (3.4) ranks lowest. This suggests that public transport companies may have more robust governance structures in place compared to their peers.

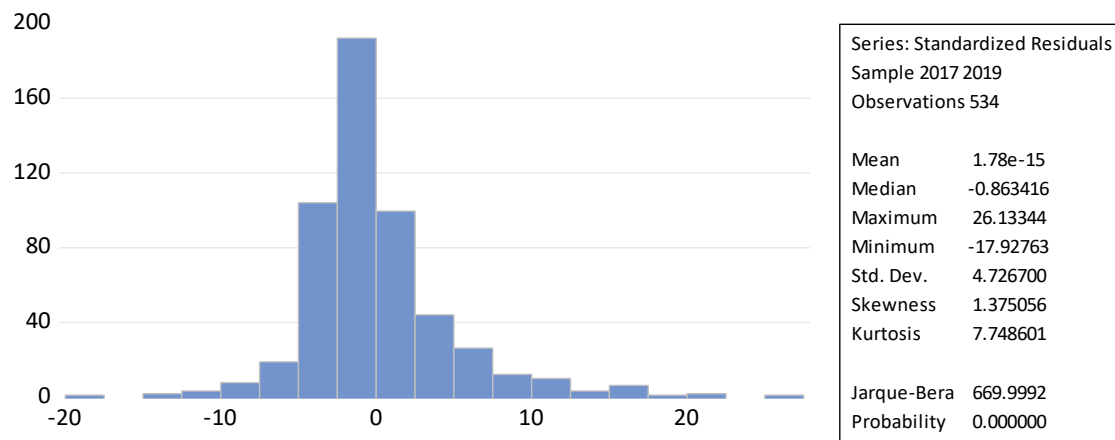
In sum, the comparative analysis of ESG performance across the property, public transport, utilities, and catering sectors reveals that the utilities sector consistently outperforms the others in ESG performance metrics, particularly in environmental and social dimensions. Public transport excels in governance performance, indicating a strong commitment to responsible corporate practices. In contrast, the property and catering sectors show lower performance levels across various ESG indicators, highlighting potential areas for improvement.

5.7 Normality Test

The researcher then conducts test to check the normality of the error variables of the model and a histogram of the residuals was prepared to see whether error variable is normally distributed

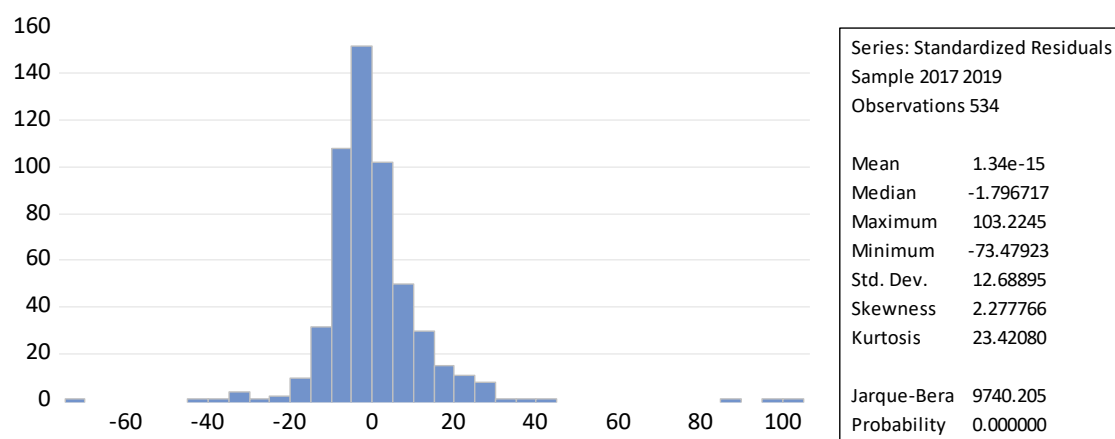
To assess the normality of the error terms in our regression models, we conducted a visual inspection using histograms of the residuals for each model. The normality of residuals is an important assumption in regression analysis, as it affects the validity of hypothesis tests and confidence intervals.

Model 1



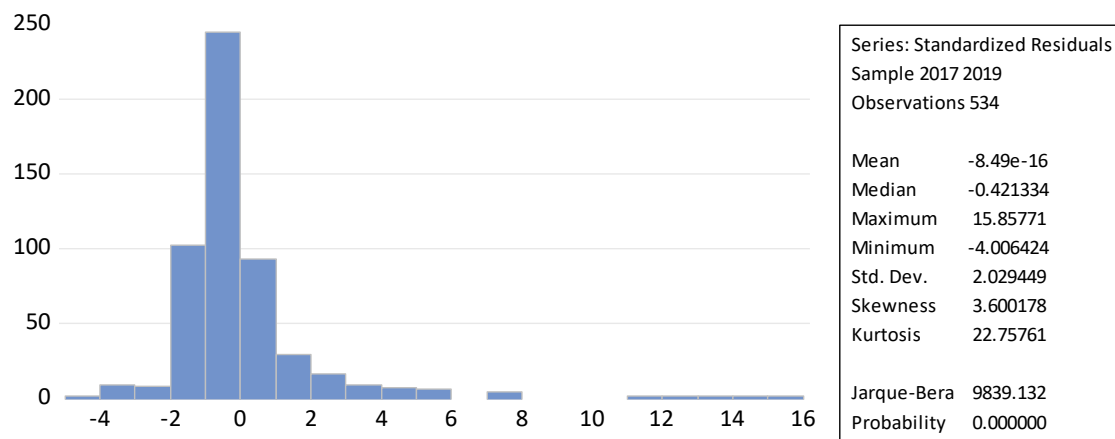
The distribution of error term of the dependent variable ROA with the independent variables ESGP and ESGD in the form of histogram. The residuals of the regression have a mean of $1.78e-15$ which is very close to 0. Therefore, the assumption of a conditional mean of zero holds.

Model 2



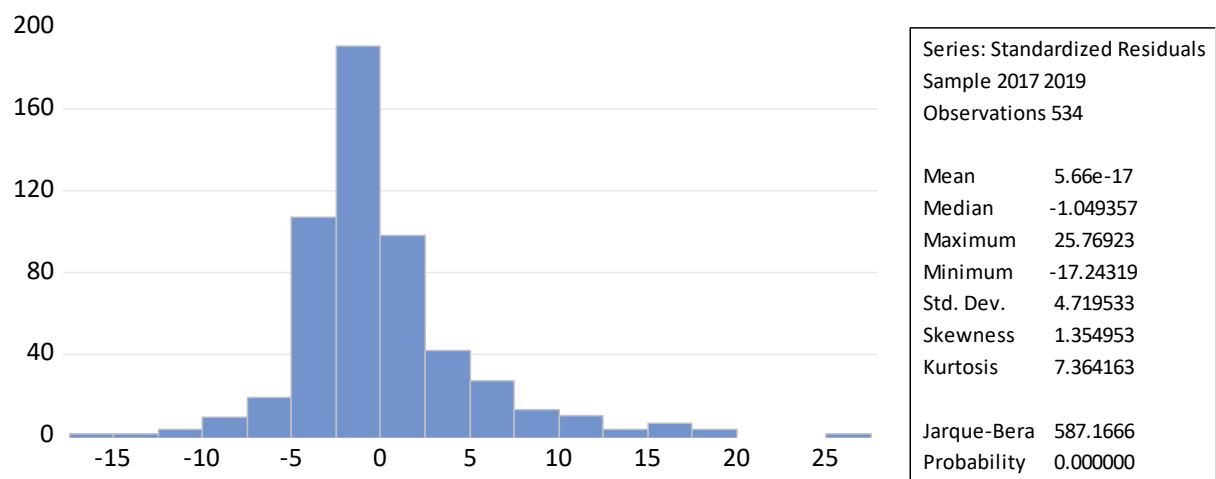
The distribution of error term of the dependent variable ROE with the independent variables ESGP and ESGD in the form of histogram. The residuals of the regression have a mean of $1.34e-15$ which is very close to 0. Therefore, the assumption of a conditional mean of zero holds.

Model 3



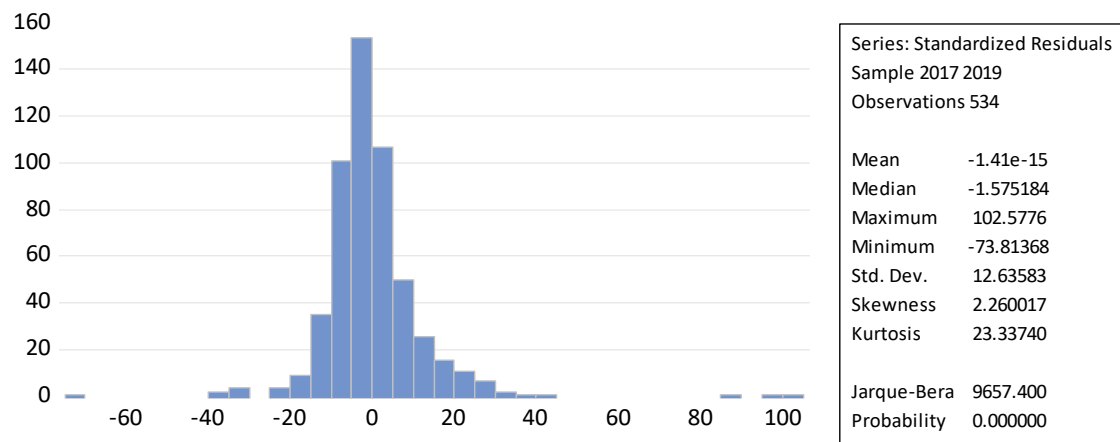
The distribution of error term of the dependent variable EPS with the independent variables ESGP and ESGD in the form of histogram. The residuals of the regression have a mean of -8.49e-16 which is very close to 0. Therefore, the assumption of a conditional mean of zero holds.

Model 4



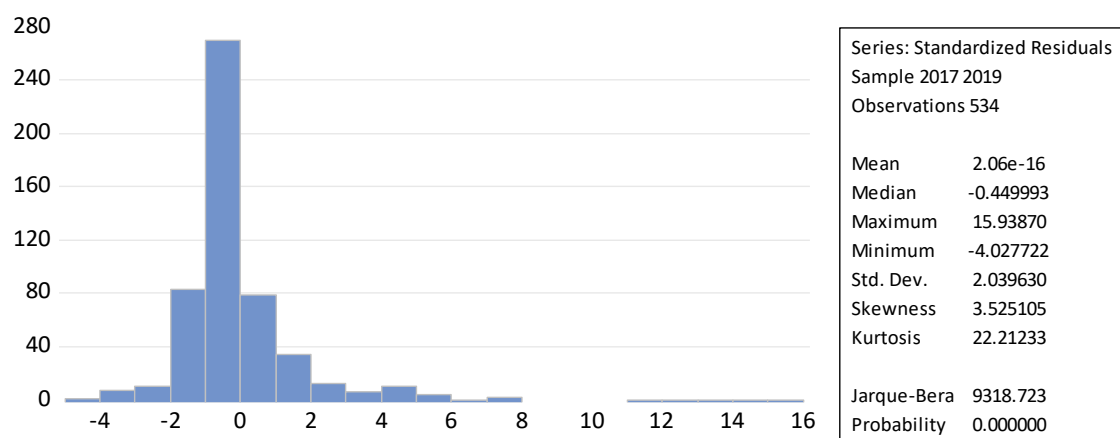
The distribution of error term of the dependent variable ROA with the independent variables EP, SP and EP in the form of histogram. The residuals of the regression have a mean of 5.66e-17 which is very close to 0. Therefore, the assumption of a conditional mean of zero holds.

Model 5



The distribution of error term of the dependent variable ROE with the independent variables EP, SP and EP in the form of histogram. The residuals of the regression have a mean of -1.41e-15 which is very close to 0. Therefore, the assumption of a conditional mean of zero holds.

Model 6



The distribution of error term of the dependent variable EPS with the independent variables EP, SP and GP in the form of histogram. The residuals of the regression

have a mean of $2.06e-16$ which is very close to 0. Therefore, the assumption of a conditional mean of zero holds.

To assess the normality of our major variables, we conducted a Shapiro-Wilk (SW) test. The results show that P-values are less than 0.05 for the major variables. This indicates that the variables are not normally distributed, which is consistent with our findings in the correlation analysis. This non-normality of our data has implications for the interpretation of our results and may influence our choice of additional robustness checks.

From the analysis finding, the research might include non-parametric tests or robust regression techniques and potential transformation of variables in future analyses and require careful interpretation of p-values and confidence intervals. With these considerations in mind, the researcher proceeds to present and interpret the results of our regression models. These models will allow us to test our hypotheses and draw more robust conclusions about the impact of ESG factors on financial performance in our sample of Hong Kong listed companies, while acknowledging the limitations imposed by the non-normality of our data.

For all six models, the mean of the residuals is very close to zero . This satisfies the assumption of a conditional mean of zero for the error terms, which is a key requirement for unbiased estimation in regression analysis.

The distribution shapes across all models are

Models 1, 2, 3, and 4 show approximately normal distributions with slight deviations.

Models 5 and 6 exhibit more pronounced deviations from normality, with skewness

The satisfaction of the zero mean assumption supports the validity of our coefficient estimates across all models. The approximate normality in Models 1-4 suggests that our t-tests and F-tests for these models are likely to be reliable. The deviations from normality in Models 5 and 6, particularly for EPS as the dependent variable, suggest that we should be more cautious in interpreting the significance tests for these models. This aligns with our earlier findings of heteroscedasticity in these models.

For Models 5 and 6, given the deviations from normality and the previously identified heteroscedasticity, we might consider additional robust estimation techniques or non-parametric tests to verify our findings.

If the regression model chooses Random Effect to analyse the models, it might help mitigate some concerns about non-normality, as it is generally more robust to violations of the normality assumption compared to OLS.

Overall, these normality tests provide support for the validity of our regression analyses, particularly for Models 1-4. For Models 5 and 6, while the zero mean assumption holds, the deviations from normality reinforce the need for cautious interpretation and potentially additional robustness checks.

These findings will be taken into account as the researcher proceeds to interpret our regression results and draw conclusions about the relationships between ESG factors and financial performance measures in our sample of Hong Kong listed companies

5.8 PANEL REGRESSION & SPECIFICATION

After conducting the correlation analysis provides initial insights into the relationships between our variables and the assumption test, we will proceed with regression analyses in the next section to test our hypotheses and control for other factors

As mentioned above, there are three panel regression models, namely the pooled OLS regression model, the fixed effects panel regression model and the random effects panel regression model. The regression test was conducted three times in this regression: firstly, to test ESG factors against ROA; secondly, to test ESG factors against ROE; and thirdly, to test ESG factors against EPS. The researcher first used the OLS regression method and Lagrange Multiplier Tests to test if the OLS was stable or a FEM/REM was more appropriate. The test of OLS is a most common model for linear models. The researcher runs the OLS between Firm performance as dependent variables (ROA, ROE and EPS) and five independent variables of ESG to measure any relation exists among the variables as summarized in Table 6 to Table 10. If the test shows that OLS is not stable and a fixed effect method or a random effect method would be more appropriate. A Hausman test will then be conducted to see if FEM or REM would be more suitable for doing the panel regression analysis which is required for comprehending the unobserved error component and the relevant FEM/REM test will be conducted to ascertain if there are any relationship exists between the independent variables and dependent variables.

The linear equation for the Hausman Test is stated below

$$Y_{it} = a_i + b_t$$

‘a’ is the constant that represents the slop and b represents the beta coefficient.

In order to test whether there is relationship between the ESG variables and the firm performance, the researcher run the regression analysis. The regression has been performed with a confidence interval of 95%. This shows that the p value for the various variables in the regression must be less than p-value at 0.05 to be interpreted as statistically significant. If the p value is less than 0.05, it is treated as the independent variable has a significant relationship either positive or negative in relation to the dependent variables (at 95% confidence level). The researcher would test the six models one by one to get the regression result testing whether any relation between the dependent and independent variables exists.

To test our hypotheses, we employed panel data regression analysis. There are six models, which consisted of three dependent variables . Two sectors separating the independent variables of ESGD and ESGP as one group and EP, SP and GP as another group measured with the firm performance represented by ROA, ROE and EPS. Sector A shows the former and Sector B shows the latter as mentioned before. The results are presented in Tables 15, 16, and 17.

Table 13 Breusch-Pagan Lagrange Multiplier (LM) Test

Model	Chilbar2	p-value
Model 1	299.40	0.00
Model 2	204.70	0.00
Model 3	397.90	0.00
Model 4	297.08	0.00
Model 5	200.28	0.00
Model 6	395.40	0.00

After doing the LM test for all models, the results have shown all models are appropriate for using random effect methods. The researcher proceeds to run the six models to analyse the data results and test the hypothesis as method in the previous chapters.

Table 14 Hausman test

Model	p-value	FEM/REM
Model 1	0.60	REM
Model 2	0.35	REM
Model 3	0.43	REM
Model 4	0.68	REM
Model 5	0.07	REM
Model 6	0.34	REM

Hausman tests were performed for all models and it was noted that random effect models were appropriate for the research. The researcher then analysed the six models using random effect models.

Sector A

5.8.1 Testing the Hypothesis under Model 1

This regression model seeks to examine the impact of ESGP and ESGD on Firm performance reflected in ROA.

$$ROA_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 ESGP_{it} + \beta_3 IOB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \text{ (Model 1)}$$

The first model's regression shows that none of the independent variables are statistically significant related to ROA on a 95% level. The p value of ESGD is 0.152 ESGP has p value of 0.089. Since all these p values are higher than 0.05 , the null hypothesis cannot be rejected on a 95% confidence level. However, ESGP has a p value of 0.089, which is less than 0.10 and the null hypothesis for ESGD on ROA can be rejected at the 90% level. Thus, the regression result shows that hypothesis under H1a and H2a are rejected at 0.05. The R squared in model 1 shows that independent variables ESGP and ESGD explains 0.035 of the dependent variable ROA. However, regarding the regression, it still decided that H1a and H2a are rejected. This result is supported by the study of Tarmuji, Maelah, and Tarmuji (2016) that showed only Corporate Governance Disclosure has a significant impact on economic performance. However, other dimensions of the ESG show no significant influence.

A coefficient of -0.04 suggests a negative relationship between ESGD and ROA. ESGP also shows a negative coefficient of -0.177 with ROA. None of the independent variables (EP, SP, GP, SIZE) show a statistically significant relationship with ROA at the conventional 0.05 significance level. This implies that based on this model, none of these factors reliably predict ROA

The high significance of SIZE aligns with expectations that larger companies may have different ROA profiles. These results partially support the notion that ESG factors influence financial performance, but the relationship appears complex and not straightforward. The findings align with Tarmuji, Maelah, and Tarmuji (2016), who found limited ESG impact on financial performance measures.

Sample: 2017 2019
Periods included: 3
Cross-sections included: 178
Total panel (balanced) observations: 534
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.139871	1.518793	3.384182	0.0008
ESGD	-0.039686	0.027667	-1.434398	0.1520
ESGP	-0.177344	0.104086	-1.703826	0.0890
SIZE	0.725042	0.186503	3.887552	0.0001
IOB R	0.088865	0.192314	0.462085	0.6442
Effects Specification				
			S.D.	Rho
Cross-section random			4.147622	0.7552
Idiosyncratic random			2.361556	0.2448
Weighted Statistics				
R-squared	0.034579	Mean dependent var	1.510699	
Adjusted R-squared	0.027279	S.D. dependent var	2.391851	
S.E. of regression	2.359001	Sum squared resid	2943.825	
F-statistic	4.736926	Durbin-Watson stat	1.628880	
Prob(F-statistic)	0.000920			
Unweighted Statistics				
R-squared	0.059256	Mean dependent var	4.837509	
Sum squared resid	11946.69	Durbin-Watson stat	0.401378	

5.8.2 Testing the Hypothesis under Model 2

This regression model seeks to examine the impact of ESGP and ESGD on Firm performance reflected in ROE

$$ROE_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 ESGP_{it} + \beta_3 IOB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \text{ (Model 2)}$$

The second model's regression shows that none of the independent variables are statistically significant related to ROA on a 95% level. The p value of ESGD is 0.60 and p value of ESGP is 0.36. Since all these p values are higher than 0.05 or 0.1, the null hypothesis cannot be rejected on a 95% and 90% confidence level. Thus, the result indicates that H1b and H2b are rejected.

Model 2 shows the lack of significant relationships between ESGP, ESGD, and ROE suggests that neither overall ESG performance nor ESG disclosure have a clear impact on return on equity for the sampled companies. This result is consistent across both composite ESG measures, indicating a uniform lack of influence on ROE. The results of Model 2 are consistent with those of Model 5, reinforcing the finding that ESG factors (whether individual pillars or composite scores) do not significantly influence ROE in this sample.

The findings suggest that the market's valuation of companies (as reflected in ROE) is not significantly influenced by their ESG performance or disclosure practices.

This result contradicts the expectations of signaling theory, as the ESG-related signals sent by companies through their sustainable development activities and sustainability reporting do not appear to yield positive market responses as measured by ROE.

The findings align with Velte (2017), who found an insignificant relationship between ESG scores and Tobin's Q (a market-based performance measure). This consistency across different studies, measures (ROE in this study, Tobin's Q in Velte's), and model specifications (individual pillars in Model 3, composite scores in Model 4) strengthens the argument that the ESG-firm performance link might not be as straightforward as sometimes assumed, especially in certain markets.

Model 2 provides evidence that neither ESG Performance (ESGP) nor ESG Disclosure (ESGD) have a significant relationship with ROE. This reinforces the findings from Model 5 and suggests that, in the context of the study, ESG factors are not key drivers

of market-based firm performance as measured by ROE. The findings highlight the complexity of the ESG-firm performance relationship and the importance of considering market-specific factors in ESG research. They also underscore the need for a nuanced understanding of how ESG factors might influence different aspects of firm performance across various market contexts

Sample: 2017 2019

Periods included: 3

Cross-sections included: 178

Total panel (balanced) observations: 534

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16.28489	4.174119	3.901395	0.0001
ESGP	-0.307458	0.332560	-0.924518	0.3556
ESGD	-0.041973	0.079379	-0.528761	0.5972
SIZE	0.651069	0.476586	1.366112	0.1725
IOB R	-0.622996	0.488764	-1.274635	0.2030
Effects Specification				
			S.D.	Rho
Cross-section random			10.13167	0.6279
Idiosyncratic random			7.799609	0.3721
Weighted Statistics				
R-squared	0.008308	Mean dependent var	5.096557	
Adjusted R-squared	0.000810	S.D. dependent var	7.805017	
S.E. of regression	7.801856	Sum squared resid	32199.68	
F-statistic	1.107989	Durbin-Watson stat	1.485641	
Prob(F-statistic)	0.351918			
Unweighted Statistics				
R-squared	0.009877	Mean dependent var	12.54848	
Sum squared resid	86129.85	Durbin-Watson stat	0.555408	

5.8.3 Testing the Hypothesis under Model 3

This regression model seeks to examine the impact of ESGP and ESGD on Firm performance reflected in EPS.

$$EPS_{it} = \alpha + \beta_1 ESGP_{it} + \beta_2 ESGD_{it} + \beta_3 IOB_{it} + \beta_4 SIZE_{it} + \varepsilon_{it} \text{ (Model 3)}$$

Model 3 provides evidence of a significant relationship between overall ESG performance and EPS, while ESG disclosure shows no significant impact. This nuanced finding suggests that the market may be valuing actual ESG performance more than ESG disclosure when it comes to earnings expectations. The results underscore the complexity of the ESG-firm performance relationship and highlight the importance of distinguishing between ESG performance and disclosure in both research and practice.

These findings, combined with the results from previous models, paint a complex picture of ESG impact on firm performance in the sampled companies. While some aspects of ESG (such as social performance and overall ESG performance) show significance for EPS, other relationships are not significant. This suggests that the impact of ESG factors on firm performance may vary depending on the specific performance metric used and the aspect of ESG being considered.

The third model's regression shows that none of the independent variables are statistically significant related to EPS on a 95% level. The p value of ESGD is 0.258. Since the p value of ESGD is higher than 0.05 or 0.1, the null hypothesis cannot be rejected on a 95% and 90% confidence level. The result shows that Hypothesis H1c should be rejected. ESGP captures p value of 0.0014, which is less than 0.05 and is acceptable under the 95% confidence level. The Hypothesis H2c should be accepted. However, in reality, it does not yield any return to the companies. According to the findings of the analysis, ESG and its sub-dimensions of Environmental, Social, and Corporate Governance have no statistically significant impact on firm performance (ROA and ROE). In other words, the regression analyses performed in the determined

sector and observation period revealed that the ESG performances of the companies have no impact on their firm performance.

ESG Performance (ESGP) shows a highly significant relationship with EPS, suggesting that overall ESG performance may influence earnings per share. ESG Disclosure (ESGD) does not show a significant relationship with EPS, indicating that merely disclosing ESG information might not impact earnings per share.

The significant relationship between ESGP and EPS partially supports signaling theory, suggesting that overall ESG performance may be valued by the market. However, the lack of significance for ESGD contradicts signaling theory, indicating that mere disclosure of ESG information doesn't necessarily translate into market value as reflected in EPS.

The significance of ESGP for EPS suggests that the market may be valuing overall ESG performance, even if individual components (as seen in previous models) don't always show significance. The lack of significance for ESGD might indicate that the market values actual performance over disclosure in these sampled countries.

Sample: 2017 2019
Periods included: 3
Cross-sections included: 178
Total panel (balanced) observations: 534
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.099408	0.600042	-0.165669	0.8685
ESGD	0.011309	0.009995	1.131490	0.2584
ESGP	-0.107987	0.033607	-3.213227	0.0014
SIZE	0.396864	0.082615	4.803793	0.0000
IOB R	0.042841	0.086135	0.497371	0.6191

Effects Specification		S.D.	Rho
Cross-section random		1.909765	0.8686
Idiosyncratic random		0.742772	0.1314

Weighted Statistics			
R-squared	0.063758	Mean dependent var	0.278239
Adjusted R-squared	0.056679	S.D. dependent var	0.764599
S.E. of regression	0.742615	Sum squared resid	291.7314
F-statistic	9.006267	Durbin-Watson stat	1.500051
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.120565	Mean dependent var	1.269944
Sum squared resid	2208.869	Durbin-Watson stat	0.198116

Table 15 Panel Regression Table- Model 1 -3

	ROA		ROE		EPS	
Variables	β	t-Statistic	β	t-Statistic	β	t-Statistic
Constant	5.1399	3.3842	16.2849	3.9014	-0.0994	-0.1657
Independent variables						
ESGD	-0.0396	-1.1434	-0.0420	-0.5288	0.0113	1.1315
ESGP	-0.1773	-1.7038	-0.3075	-0.9245	-0.1080	-3.2132
Control variables						
Firm Size	0.7250	3.8876	0.6511	1.3661	0.3969	4.8038
IOB	0.0889	0.4621	-0.6230	-1.2746	0.0428	0.4974
R-squared	0.0346		0.0083		0.0638	
Adjusted R-squared	0.0272		0.0008		0.0567	
F-statistic	4.7369		1.1080		9.0063	

Sector B

5.8.4 Testing the Hypothesis under Model 4

This regression model seeks to examine the impact of EP, SP, GP on Firm performance reflected in ROA.

$$ROA_{it} = \alpha + \beta_1 EP_{it} + \beta_2 SP_{it} + \beta_3 GP_{it} + \beta_4 IOB_{it} + \beta_5 SIZE_{it} + \varepsilon_{it} \text{ (Model 4)}$$

The fourth model's regression shows that none of the independent variables are statistically significant related to ROA on a 95% level. The p values of EP, SP, GP equal to 0.091, 0.942 and 0.607 respectively. Size has a p value of 0.003 showing it has great impact on ROA and is significant under 95% confidence level. Since all these p values are higher than 0.05, the null hypothesis cannot be rejected on a 95% confidence level. It is interesting to note that EP is significant at 90% level showing the importance of environmental measures taken by corporation to enhance return on asset. Thus, the regression result shows that H2a H3a, H4a are rejected. This result is supported by the study from Ahmed, Islam, and Hasan (2012) who analyzed the relationship between CSR and Firm Performance indicators such as Operational Performance (ROA). The reason might due to public's expectation that any ESG initiatives might bring additional benefits in asst accumulation. The R squared in model 4 shows that independent variables EP SP and GP explains 0.03 of the dependent variable ROA. The model explains 3% of the variance in ROA, which suggests a low explanatory power. This relatively low R-squared value indicates that ESG factors (EP, SP, GP) and our control variables (IOB, SIZE) do not have high influence on ROA, The relatively low explanatory power of the model aligns with some previous research findings that suggest ESG initiatives might not bring substantial additional benefits in asset accumulation.

A coefficient of -0.1459 suggests a negative relationship between environmental performance and ROA. A coefficient of 0.0085 suggests a positive relationship between social performance and ROA. A coefficient of 0.0654 suggests a positive relationship between governance performance and ROA. None of the independent variables (EP, SP, GP, SIZE) show a statistically significant relationship with ROA at the

conventional 0.05 significance level. This implies that based on this model, none of these factors reliably predict ROA.

Sample: 2017 2019

Periods included: 3

Cross-sections included: 178

Total panel (balanced) observations: 534

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.163974	1.215298	2.603455	0.0095
EP	-0.145941	0.086219	-1.692680	0.0911
SP	0.008582	0.118118	0.072657	0.9421
GP	0.065389	0.127208	0.514029	0.6074
SIZE	0.672463	0.184183	3.651054	0.0003
IOB R	0.059968	0.191978	0.312371	0.7549

Effects Specification		S.D.	Rho
Cross-section random		4.145045	0.7533
Idiosyncratic random		2.372038	0.2467

Weighted Statistics			
R-squared	0.031880	Mean dependent var	1.517597
Adjusted R-squared	0.022712	S.D. dependent var	2.395592
S.E. of regression	2.368231	Sum squared resid	2961.297
F-statistic	3.477383	Durbin-Watson stat	1.637052
Prob(F-statistic)	0.004215		

Unweighted Statistics			
R-squared	0.061109	Mean dependent var	4.837509
Sum squared resid	11923.16	Durbin-Watson stat	0.406587

5.8.5 Testing the Hypothesis under Model 5

This regression model seeks to examine the impact of EP, SP, GP on Firm performance reflected in ROE.

$$ROE_{it} = \alpha + \beta_1 EP_{it} + \beta_2 SP_{it} + \beta_3 GP_{it} + \beta_4 IOB_{it} + \beta_5 SIZE_{it} + \epsilon_{it} \text{ (Model 5)}$$

The fifth model's regression shows that none of the independent variables are statistically significant related to ROE on a 95% level. The p values of EP, SP, GP

shows the figures of 0.364, 0.617 and 0.362. Since all these p values are higher than 0.05 , the null hypothesis cannot be rejected on a 95% confidence level. Thus, the regression result shows that H3b, H4b and H5b are rejected. The control variables (IOB, SIZE) do not have high influence on ROE.

A negative relationship between environmental performance and ROE with coefficient -0.248. A coefficient of 0.186 suggests a positive relationship between social performance and ROE. A positive relationship between governance performance and ROE with coefficient of 0.364. None of the independent variables (EP, SP, GP, SIZE) show a statistically significant relationship with ROE at 0.05 significance level. This implies that based on this model, none of these factors reliably predict ROE.

Model 5 is lack of significant relationships between EP, SP, GP, and ROE suggests that individual ESG pillars do not have a clear impact on return on equity for the sampled companies. This result is consistent across all three ESG dimensions, indicating a uniform lack of influence on ROE. The findings suggest that the market's valuation of companies (as reflected in ROE) is not significantly influenced by their participation in sustainable development activities. This could indicate that investors may not be factoring ESG performance into their valuation models or investment decisions, at least not in a way that significantly affects ROE.

The lack of significance might be attributed to the level of ESG awareness and integration in the financial markets of the sampled countries. It is possible that the concept of sustainable development and its potential financial implications are not yet widely recognized or valued by investors in these markets.

Sample: 2017 2019
Periods included: 3
Cross-sections included: 178
Total panel (balanced) observations: 534
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.54761	3.326058	3.772516	0.0002
EP	-0.248416	0.273343	-0.908806	0.3639
SP	0.185986	0.371824	0.500200	0.6171
GP	0.364140	0.399228	0.912110	0.3621
SIZE	0.574050	0.460947	1.245371	0.2135
IOB R	-0.676146	0.478679	-1.412525	0.1584
Effects Specification				
			S.D.	Rho
Cross-section random			9.895081	0.6152
Idiosyncratic random			7.825143	0.3848
Weighted Statistics				
R-squared	0.010573	Mean dependent var	5.211794	
Adjusted R-squared	0.001203	S.D. dependent var	7.863993	
S.E. of regression	7.859261	Sum squared resid	32613.50	
F-statistic	1.128409	Durbin-Watson stat	1.472971	
Prob(F-statistic)	0.344111			
Unweighted Statistics				
R-squared	0.017852	Mean dependent var	12.54848	
Sum squared resid	85436.08	Durbin-Watson stat	0.562277	

5.8.6 Testing the Hypothesis under Model 6

This regression model seeks to examine the impact of EP, SP, GP on Firm performance reflected in EPS.

$$EPS_{it} = \alpha + \beta_1 EP_{it} + \beta_2 SP_{it} + \beta_3 GP_{it} + \beta_4 IOB_{it} + \beta_5 SIZE_{it} + \varepsilon_{it} \text{ (Model 6)}$$

The sixth model's regression shows that none of the independent variables are statistically significant related to EPS on a 95% level. The p values of EP is -0.024. The p values of SP and GP equal to 0.040 and -0.019 respectively. Since all these p values are higher than 0.05 or 0.1 for GP and SP, the null hypothesis cannot be rejected on a

95% and 90% confidence level. Thus, that result indicates that H3c, H4c and H5c. This result is not in line with signaling theory as the signal delivered by companies in the form of disclosure of their sustainable development activities and sustainability report does not yield a positive return from the public. Previous research from Velte (2017) supports this result, who also used ESG Score as an indicator of ESG Performance and Tobin's Q as an indicator of market-based performance, and shows an insignificant relationship

Environmental Performance (EP) and Social Performance (GP) do not show significant relationships with EPS. However, the lack of significance for EP and SP still indicates that not all aspects of ESG performance are equally valued or recognized by the market in terms of EPS. This might indicate that governance issues are more prominent in Hong Kong due to stringent regulatory measures. This could reflect cultural, regulatory, or market-specific factors that prioritize social performance over environmental or governance aspects.

While the results partially align with Velte (2017) in terms of the overall limited impact of ESG factors, the significance of SP for EPS provides a nuanced difference. Companies in these markets might benefit from focusing on governance performance aspects, as these seem to have a more direct relationship with EPS. The study reveals different patterns for different firm performance metrics (ROE vs. EPS), suggesting the need for a multi-faceted approach to assessing ESG impact. Mere disclosure of ESG information without corresponding performance improvements may not be sufficient to impact financial performance as measured by EPS.

This suggests that the impact of ESG factors on firm performance may vary depending on the specific performance metric used. The findings underscore the importance of a nuanced approach to ESG research and highlight the potential value of governance performance in market valuation as reflected in EPS.

Finally, there are two control variables used in this research namely: IOB and SIZE. SIZE shows a significant influence on ROA and EPS. The significant influence of size on ROA and EPS suggests that larger companies may have advantages in terms of operational efficiency (ROA) and market valuation (EPS). The lack of significant impact of ESG scores (EP, SP, GP, ESGP, ESGD) on profitability indicators (ROA, ROE, EPS) across most models challenges the assumption that ESG initiatives directly drive firm performance.

Whilst, IOB depicts a significant effect on EPS. Those companies which focus on good governance concern whether their directors and senior management act in the best interest of all stakeholders. The effective management of the board diversity, risk management, anti-corruption and employee rights will improve corporate governance and the company's firm performance pursuant to the stakeholder theory. It was noted that there is no significant relationship between number of independent directors and the firm performance indicators in ROA and ROE . Despite the fact that there are stringent measures on the number of independent directors globally and in particular in Hong Kong (at least one third of the board should be INEDs), the importance of independent board is not well respected. In fact, the independent directors could not carry out the control function. The Hong Kong listing rules requiring additional INEDs for long-serving boards (appointed for more than 9 years) reflect an attempt to ensure

board independence. However, the results suggest that these measures may not be translating into clear firm performance benefits. This finding raises questions about the effectiveness of independent directors in their control function, despite regulatory requirements

The dynamic panels' results show that the impact of the ESG score including EP, SP, GP, ESGP and ESGD on all the profitability indicators (ROA, ROE and EPS) is statistically insignificant. This has the implication that ESG initiatives are not the significant determinant of firm profitability and investors' investment. However, many empirical studies concluded a positive association between ESG score and profitability based on the pooled OLS results.

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The results partially support stakeholder theory, particularly in the case of governance performance's impact on EPS (Model 6). However, the overall lack of significant ESG impact challenges the broader application of stakeholder theory in this context. The results generally do not support signaling theory, as ESG disclosures and most performance measures don't significantly impact financial indicators. This suggests that ESG signals may not be effectively communicated or valued in the market context of the study.

Companies should be cautious about expecting direct short-term financial benefits from ESG initiatives. The focus should be on long-term value creation and potential indirect benefits of ESG practices. The limited impact of board independence on firm performance suggests a need to reassess how independent directors contribute to corporate governance and value creation.

This comprehensive analysis reveals a complex and often insignificant relationship between ESG factors and firm performance in the context studied. While some specific aspects show significance (e.g., governance performance and overall ESG performance for EPS), the general trend suggests that ESG initiatives may not directly drive short-term financial outcomes. These findings challenge prevailing assumptions about ESG impact and highlight the need for nuanced, context-specific approaches to ESG strategy and research. Future studies should focus on understanding the mechanisms through which ESG might create value over time and in different market contexts.

Sample: 2017 2019

Periods included: 3

Cross-sections included: 178

Total panel (balanced) observations: 534

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.100026	0.493636	0.202630	0.8395
EP	-0.023981	0.028158	-0.851674	0.3948
SP	0.039676	0.038768	1.023439	0.3066
GP	-0.018716	0.041831	-0.447418	0.6548
SIZE	0.400337	0.082343	4.861812	0.0000
IOB R	0.049838	0.086562	0.575743	0.5650
Effects Specification				
			S.D.	Rho
Cross-section random			1.921162	0.8679
Idiosyncratic random			0.749552	0.1321
Weighted Statistics				
R-squared	0.049061	Mean dependent var		0.279070
Adjusted R-squared	0.040056	S.D. dependent var		0.765414
S.E. of regression	0.749928	Sum squared resid		296.9428
F-statistic	5.448110	Durbin-Watson stat		1.491414
Prob(F-statistic)	0.000067			
Unweighted Statistics				
R-squared	0.107150	Mean dependent var		1.269944
Sum squared resid	2242.566	Durbin-Watson stat		0.197481

Table 16 Panel Regression Table – Model 4-6

	ROA		ROE		EPS	
Variables	β	t-Statistic	β	t-Statistic	β	t-Statistic
Constant	3.1640	2.6035	12.5477	3.7725	0.1000	0.2026
Independent variables						
EP	-0.1459	-1.6927	-0.2484	-0.9088	-0.0240	-0.8517
SP	0.0086	0.0727	0.1860	0.5002	0.03968	1.0234
GP	0.0654	0.5140	0.3641	0.9121	-0.0187	-0.4474
Control variables						
Firm Size	0.6725	3.6511	0.5741	1.2454	0.4003	4.8618
IOB	0.0599	0.3124	-0.6761	-1.4725	0.0498	0.5757
R-squared	0.0319		0.0106		0.0491	
Adjusted R-squared	0.0227		0.0012		0.0401	
F-statistic	3.4774		1.1284		5.4481	

5.9 Summary of Tests of Hypothesis

Table 18. Summary of hypotheses.

Hypothesis Result

H1a: A relationship exists between environmental, social and governance disclosures as measured by ROA.	Rejected
H1b: A relationship exists between environmental, social and governance performance as measured by ROE.	Rejected
H1c: A relationship exists between environmental, social and governance disclosures as measured by EPS.	Rejected
H2a: A relationship exists between environmental, social and governance performance as measured by ROA.	Rejected*
H2b: A relationship exists between environmental, social and governance performance as measured by ROE.	Rejected
H2c: A relationship exists between environmental, social and governance performance as measured by EPS.	Accepted
H3a: A relationship exists between environmental performance as measured by ROA	Rejected*
H3b: A relationship exists between environmental performance as measured by ROE	Rejected
H3c: A relationship exists between environmental performance as measured by EPS	Rejected
H4a: A relationship exists between social performance as measured by ROA	Rejected

H4b: A relationship exists between social performance as measured by ROE	Rejected
H4c: A relationship exists between social performance as measured by EPS	Rejected
H5a: A relationship exists between governance performance as measured by ROA	Rejected
H5b: A relationship exists between governance performance as measured by ROE	Rejected
H5c: A relationship exists between governance performance as measured by EPS	Rejected

Where $p < 0.05$ * represents $p < 0.10$

From the above table, it is noted that all hypothesis under 95% confidence level are rejected except H2c. However, both H2a and H3a are accepted under the 90% confidence level.

5.10 Findings on the relationship with Stakeholder theory

The results of this study present a complex picture regarding the relationship between ESG performance, firm performance, and stakeholder theory. The study finds only limited support for stakeholder theory in the context of ESG and firm performance.

Only two hypotheses show significant relationships, while the majority of the hypotheses are not supported by the data. Governance Performance (GP) and overall ESG Performance (ESGP) show some positive impact on Earnings Per Share (EPS).

This limited positive relationship suggests that certain aspects of stakeholder management, particularly in the social domain, may have some influence on market perceptions and earnings expectations.

The findings suggest that shareholders may not have strong incentives to invest in ESG measures, prioritizing financial gains over ESG improvements. This observation aligns more closely with shareholder primacy theory rather than stakeholder theory, highlighting a potential disconnect between ESG initiatives and perceived shareholder value. The results indicate a possible focus on short-term financial outcomes among company management, potentially at the expense of long-term ESG considerations. This short-term orientation might be driven by immediate performance metrics used for evaluations and compensation, which may not fully capture the potential long-term benefits of ESG initiatives.

The volatile economic environment mentioned could be a significant factor influencing the prioritization of immediate financial returns over ESG considerations. This context might lead companies to focus on short-term survival and profitability, potentially at the expense of broader stakeholder concerns. The limited support for the hypotheses challenges the broad applicability of stakeholder theory in this specific context.

It suggests that the relationship between stakeholder management (as represented by ESG performance) and financial outcomes may be more complex or indirect than often assumed.

The use of regression analysis may capture linear relationships but might miss more complex, non-linear, or long-term effects of ESG on firm performance. This limitation

points to the need for more diverse and sophisticated analytical approaches in future research. The lack of strong relationships might be due to genuine absence of short-term financial benefits from ESG initiatives, market inefficiencies in valuing ESG efforts, inadequate measurement or implementation of ESG practices and a time lag between ESG investments and financial returns not captured in the study.

It would be beneficial and constructive for future research to investigate potential non-linear or lagged relationships between ESG and firm performance. In addition, the researcher might explore qualitative aspects of stakeholder management that might not be captured in quantitative ESG scores. It is meaningful to examine how different stakeholder groups perceive and value ESG efforts and conduct longitudinal studies to capture potential long-term effects of ESG initiatives.

Companies may need to reconsider how they communicate the value of ESG initiatives to shareholders and other stakeholders. There might be a need for better alignment between ESG strategies and firm performance metrics to create more tangible incentives for ESG investments. Policymakers and regulators might need to consider how to create frameworks that better incentivize long-term stakeholder value creation.

The findings of this study present a challenge to the straightforward application of stakeholder theory in the context of ESG and firm performance. While there is some limited support for the theory, particularly in relation to environmental, social and governance performance and EPS, the overall results suggest a more complex relationship. This complexity highlights the need for a more nuanced understanding of

how ESG initiatives create value, potentially over longer time horizons or through indirect mechanisms not captured in short-term financial metrics.

These results call for a re-evaluation of how stakeholder theory is applied in practice and researched in academic studies. They also underscore the importance of considering contextual factors, such as economic conditions and market maturity, in understanding the ESG-firm performance relationship. Future research should aim to develop more sophisticated models that can capture the multifaceted nature of stakeholder value creation and its relationship to both ESG performance and financial outcomes.

5.11 Chapter Summary

This chapter discussed the descriptive statistics of the eight variables, namely Environmental performance. Social performance. Governance performance. ESG performance, ESG disclosure as dependent variables and Return on Asset, Return on equity and Earnings per share as independent variables. The multicollinearity test, the heteroscedasticity test and the normality test were conducted prior to the panel regression analysis to test the six models regarding the relationship between ESG and its three pillars on the firm performance of the listed companies.

CHAPTER SIX

6.1 Conclusion and Implications

This study aims to prove that ESG performance as measured by Bloomberg's ESG Score has a relationship with Operational Performance (ROA), Financial Performance (ROE) and Market value (EPS) and Market Value. The data used were mostly obtained from the Bloomberg Database for the period 2017 to 2019. There are 178 companies and 534 observations as the final samples. The independent variables of the study are ESG Score (ESG) and the dependent variable is Firm Performance which is using three criteria namely Operational Performance (ROA); Financial Performance (ROE); and Market Value (EPS). The purpose of this study is first setting up a ESG model and check its influence on the firm performance and reviewing the individual influence of EP, SP, GP, ESGP and ESGD on firm performance of the listed companies in the sample. Regression test results showed that the majority of the proposed hypotheses were rejected because no positive or significant relation or association exists in all six models. The results empirically show that there is no significant relationship between individual and combined factors of ESG and firm's ROA, ROE and EPS except the relation shown between ESGP on EPS. The insignificant relationship implies that more ESG information or effort cannot improve performance either in ROA, ROE or EPS. It also implies that companies with more or less ESG information will perform similar to those poorly managed companies. ESG is not perceived to be an important factor or initiative to enhance firm value i.e., they are similarly valued in the market. The ESG performance in aggregate shows positive influence on ROA.

There are generally two perceptions of how the ESG impact on the firm performance. First, it will incur additional cost and expenses to run the companies and thus reduce the firm performance. Second ESG will increase the competitive advantage of the companies and thus enhance firm performance. According to the study, no generalization can be made to state that there is a relation between ESG and firm performance. However, the combined score of ESG, the ESGP positively and significantly influences the EPS, but individually, none of the factors of ESG is significant in influencing the firm performance indicators except the impact of governance performance on EPS. ESG data may not be used extensively by the capital market in determining the cost of capital and other market performance indicators. Another reason might due to the short period of study of 3 years may not yield significant statistical results as compared to prior literatures that used longer periods of study. Eccles et. Al. (2014) argued that the relationship of sustainability and firm performance is only significant in the long term and not the short term. However, as explained above, the data of the ESG for 2020 and 2021 have not been used for analysis due to the missing of quite a large amount of data in particular for 2021 which might due to the prevailing epidemic and time lag for the dissemination of ESG data from the companies and incorporation and calculation of ESG score from Bloomberg (since the time of collection of the data is in mid-2022)

Majority of hypotheses rejected due to insignificant relationships. Only positive relationship between ESGP and EPS were noted. No significant relationship between individual ESG factors and firm performance indicators in most cases. ESG performance in aggregate shows positive influence on ROA. ESG efforts do not generally improve short-term firm performance. Companies with varying levels of ESG information perform similarly. ESG is not perceived as a crucial factor for enhancing firm value in the short term. The study doesn't support a generalization about the ESG-

firm performance relationship. In addition, short study period (3 years) may not capture long-term effects and ESG data may not be extensively used by the capital market. There might be potential time lag between ESG initiatives and financial outcomes.

Regulators can use findings to create benchmarks for ESG performance grouping. Investors may require companies to integrate ESG performance indicators. Companies should consider long-term ESG initiatives despite short-term non-significance. Industries with environmental impact should focus on ESG practices. In fact, the findings show limited support for stakeholder theory, particularly in social activities influencing EPS and ESGP influencing ROA.

It is apparent that longer-term studies are required to capture potential delayed effects of ESG initiatives and exploration of industry-specific ESG impacts and strategies. The academic world can further investigate on how capital markets incorporate ESG data into decision-making.

The results of this study can be useful for several stakeholders such as regulators or the government and the investors. This research can be a reference for the government to create benchmarks for grouping companies based on ESG performance. The implication of this research for investors is to require companies to inform and integrate ESG performance indicators as part of company performance

Although each ESG pillar yields different results, social activities influence EPS and ESGP on ROA that would enhance the motivation of the companies to launch ESG initiatives to improve the ESG performance. These findings align with stakeholder theory, which argues

that good governance activities for customers, suppliers, and employees strongly impact the companies' profitability and market value.

Firms operating in Transport and Public Utilities industries perform better in overall ESG performance and individual dimension of ESG performance. Property development and catering focus more on social and governance. The companies in Public Utilities have the overall better ESG score with Transport sector has better environmental score. . In fact, these companies are leaders in ESG performance, in particular in the area of social performance. The findings also correspond to the stakeholders' theory, stating that those companies focusing on climate change and environmental risk and would put more effect on ESG practices to ensure sustainable development. They have more pressure to take actions to implement ESG practices and to be leader in sustainable development. Transport sector has higher ROA and ROE.

Firms from property development and catering command lower environmental performance and focus more on social and governance performance (Amor Esteban et. al. 2018).

With the global concern on the ESG policies and disclosure, in particular, in climate change, emission control and mandatory ESG reporting, the listed companies should pay more attention to ESG initiatives despite the finding shows a non-significant relationship between ESG and firm performance.

Our study provides valuable insights into the complex relationship between ESG performance and firm performance. While the results largely show non-significant relationships in the short term, they highlight the need for nuanced, long-term

approaches to ESG research and implementation. The industry-specific findings and the exceptions (SP on EPS, ESGP on ROA) offer interesting avenues for future research. Our work contributes to the ongoing dialogue about the role of ESG in corporate strategy and firm performance, emphasizing the need for continued research and refined methodologies to fully understand these relationships.

6.2 Recommendation

The study shows that the ESG performance has been improved during the years from 2017 to 2019 with the implementation of the stringent ESG regulations and the consensus of the public on the importance of ESG in particular from the investing circle. There are two important indicators evaluating the quality of listed companies i.e. firm performance and corporate governance. The Governance element incorporates the corporate perspective and ROA ROE shows measures of financial measurement.

Based on the study's findings and the evolving landscape of ESG practices, several recommendations are proposed for various stakeholders the companies, the investors, the policy makers and the researcher. As regards management of companies, they should develop and implement long-term ESG strategies despite the lack of short-term financial impact, companies. They should focus on integrating ESG initiatives into core business operations rather than treating them as separate activities. The management should tailor ESG strategies to industry-specific challenges and opportunities, particularly in sectors like Transport and Public Utilities where ESG performance is already strong. Property development and catering companies should consider enhancing their environmental performance to match their social and governance

efforts.

In addition, management should implement a balanced scorecard that includes both financial and ESG metrics to provide a more comprehensive view of company performance. They also need to enhance the quality and consistency of ESG reporting to provide more reliable data for stakeholders and researchers and if possible, consider adopting standardized ESG reporting frameworks to improve comparability across companies and industries.

From the angle of investors, they should consider ESG performance as a potential indicator of long-term value creation and risk management, even if short-term financial impacts are not evident. They should also engage with companies to understand their ESG strategies and how these align with long-term value creation and encourage companies to improve ESG disclosures and performance. The investors should develop more sophisticated methods to integrate ESG factors into investment analysis, considering both quantitative and qualitative aspects.

For regulators and policymaker, it would be desirable for them to work towards standardizing ESG reporting requirements to improve comparability and reliability of ESG data and consider developing industry-specific ESG guidelines to account for sector differences. Moreover, regulators should explore policy measures that incentivize long-term ESG performance, such as tax incentives or preferential treatment in government contracts and consider expanding mandatory ESG reporting requirements, ensuring they are meaningful and not overly burdensome.

There are also some recommendations for the researchers. They should conduct longer-term studies to capture the potential delayed effects of ESG initiatives on firm performance and focus on industry-specific ESG impacts and best practices to provide more targeted insights. They should explore potential non-linear relationships between ESG factors and firm performance using more advanced statistical techniques or adopting different research methods. The researcher might conduct quantitative studies with qualitative research to understand the decision-making processes behind ESG initiatives and their perceived value.

It is advisable for the ESG Rating Agencies to improve transparency in ESG scoring methodologies to enhance understanding and trust in ESG ratings and refine industry-specific ESG criteria to better reflect the material ESG issues in each sector. In respect of universities and tertiary institutions, they should incorporate ESG concepts and analysis into business and finance curricula to prepare future leaders for the increasing importance of ESG in corporate strategy. There are also recommendations for all Stakeholders to foster collaboration between companies, investors, regulators, and researchers to develop more effective ESG strategies and measurement approaches. They should shift focus from short-term financial metrics to long-term value creation that incorporates both financial and ESG considerations.

These recommendations aim to address the complex relationship between ESG performance and financial outcomes revealed in your study. They emphasize the need for a long-term, nuanced approach to ESG integration across various stakeholder groups. By implementing these recommendations, stakeholders can work towards a more sustainable and value-creating approach to business that balances firm

performance with environmental, social, and governance considerations.

Based on the findings, companies should take the initiative to strengthen their disclosure of ESG-related information in order to attract investors from the market. If companies can increase their investment in environmental protection, social responsibility and timely and accurate disclosure of the ESG information, they will regain the confidence of the investors in the decision-making process. Corporate management should also focus on improvement in ESG rating to promote company's image, compliance of the increasing stringent regulatory measures in the global recognition of the importance of ESG and convince the shareholders the importance of ESG performance on the long-term benefit of ultimate firm performance.

With the study showing that those ESG factors have immaterial impact on the firm performance, the motivation to senior management to take further initiatives would be minimal. The reason of implementing the ESG measures mainly due to the regulatory pressure. Most companies expressed their concern on the relevant cost and unexpected return on investment on ESG. It is recommended that the Hong Kong Stock Exchange continue to align with TCFD's recommendation and make the relevant amendment to the listing rules to ensure that all listed companies will take a proactive attitude in ESG measure in particular, the climate change policy. This will not only let the listed companies to fulfil their duty of global citizen to protect the environment and the earth but to create an environment encouraging ESG investment for the long-term interest of the stakeholders of the companies.

The aim of this study was to investigate the impact of environmental, social and governance performance on firm performance for the four sectors of industries in Hong Kong. Overall, the empirical evidence supports that some sort of association exists between ESG performance and firm performance. We conclude on a discussion of the results highlighted in the previous sections. The researcher summarises findings from the analysis and review the stated hypotheses built upon previous literature and tries to link the research with established hypothesis to draw the conclusions.

The objective of the study involved providing research-based evidence to executives through the use of quantitative research and stakeholder theory to explain the correlation of impact of ESG performance on financial performance. By adopting other methodologies and conceptual models would generate different findings

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APPENDIX

Bloomberg ESG Disclosure Score

Pool of ESG Issues – Environmental

Topic	Field Description	Units
Air Quality	● Nitrogen Oxide Emissions ● VOC Emissions ● Carbon Monoxide Emissions ● Particulate Emissions ● Sulphur Dioxide / Sulphur Oxide Emissions	Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes
Climate Change	● Emissions Reduction Initiatives ● Climate Change Policy ● Climate Change Opportunities Discussed ● Risks of Climate Change Discussed ● Direct CO2 Emissions ● Indirect CO2 Emissions ● ODS Emissions ● GHG Scope 1 ● GHG Scope 2 ● GHG Scope 3 ● Scope 2 Market Based GHG Emissions ● Scope of Disclosure ● Carbon per Unit of Production	Y/N Y/N Y/N Y/N Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes CO2e Thousand Metric Tonnes CO2e Thousand Metric Tonnes CO2e Thousand Metric Tonnes CO2e Thousand Metric Tonnes CO2e Nominal (1-3) Metric Tonnes/Unit of Production
Ecological & Biodiversity Impacts	● Biodiversity Policy ● Number of Environmental Fines ● Environmental Fines (Amount) ● Number of Significant Environmental Fines ● Amount of Significant Environmental Fines	Y/N Count Million Reporting Currency Count Million Reporting Currency

Bloomberg ESG Disclosure Score

Pool of ESG Issues – Environmental

Topic	Field Description	Units
Energy	● Energy Efficiency Policy ● Total Energy Consumption ● Renewable Energy Use ● Electricity Used ● Fuel Used - Coal/Lignite ● Fuel Used - Natural Gas ● Fuel Used - Crude Oil/Diesel ● Self-Generated Renewable Electricity ● Energy Per Unit of Production	Y/N Thousand Megawatt Hours Thousand Megawatt Hours Thousand Megawatt Hours Thousand Metric Tonnes Thousand Cubic Meters Thousand Cubic Meters Thousand Megawatt Hours Megawatt Hours/Unit of Production
Materials & Waste	● Waste Reduction Policy ● Hazardous Waste ● Total Waste ● Waste Recycled ● Raw Materials Used ● % Recycled Materials ● Waste Sent to Landfills ● Percentage Raw Material from Sustainable Sources	Y/N Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes Thousand Metric Tonnes Percentage Thousand Metric Tonnes Percentage
Supply Chain	● Environmental Supply Chain Management	Y/N
Water	● Water Policy ● Total Water Discharged ● Water per Unit of Production ● Total Water Withdrawal ● Water Consumption	Y/N Thousand Cubic Meters Liters/Unit of Production Thousand Cubic Meters Thousand Cubic Meters

Bloomberg ESG Disclosure Score

Pool of ESG Issues – Social

Topic	Field Description	Units
Community & Customers	● Human Rights Policy ● Policy Against Child Labour ● Quality Assurance and Recall Policy ● Consumer Data Protection Policy ● Community Spending ● Number of Customer Complaints ● Total Corporate Foundation and Other Giving	Y/N Y/N Y/N Y/N Million Reporting Currency Count Million Reporting Currency
Diversity	● Equal Opportunity Policy ● Gender Pay Gap Breakout ● % Women in Management ● % Women in Workforce ● % Minorities in Management ● % Minorities in Workforce ● % Disabled in Workforce ● Percentage Gender Pay Gap for Senior Management ● Percentage Gender Pay Gap Mid & Other Management ● Percentage Gender Pay Gap Employees Ex Management ● % Gender Pay Gap Top Empl Including Management ● % Women in Middle and or Other Management	Y/N Y/N Percentage Percentage Percentage Percentage Percentage Percentage Percentage Percentage Percentage Percentage
Ethics & Compliance	● Business Ethics Policy ● Anti-Bribery Ethics Policy ● Political Donations	Y/N Y/N Million Reporting Currency

Bloomberg ESG Disclosure Score

Pool of ESG Issues – Social

Topic	Field Description	Units
Health & Safety	● Health and Safety Policy ● Fatalities - Contractors ● Fatalities - Employees ● Fatalities - Total ● Lost Time Incident Rate ● Total Recordable Incident Rate ● Lost Time Incident Rate - Contractors ● Total Recordable Incident Rate - Contractors ● Total Recordable Incident Rate - Workforce ● Lost Time Incident Rate - Workforce	Y/N Count Count Count Lost Time Incidents/200,000 Hours Worked or 100 Full Time Employees Recordable Incidents/200,000 Hours Worked or 100 Full Time Employees Lost Time Incidents Contractors/200,000 Hours Worked or 100 Contractors Recordable Incidents Contractors/200,000 Hours Worked or 100 Contractors Recordable Incidents/200,000 Hours Worked or 100 Employees & Contractors Lost Time Incidents/200,000 Hours Worked or Employees & Contractors
Human Capital	● Training Policy ● Fair Remuneration Policy ● Number of Employees - CSR ● Employee Turnover % ● % Employees Unionized ● Employee Training Cost ● Total Hours Spent by Firm - Employee Training ● Number of Contractors	Y/N Y/N Count Percentage Percentage Million Reporting Currency Hours Count
Supply Chain	● Social Supply Chain Management ● Number of Suppliers Audited ● Number of Supplier Audits Conducted ● Number Supplier Facilities Audited ● Percentage of Suppliers in Non-Compliance ● Percentage Suppliers Audited	Y/N Count Count Count Percentage Percentage

Bloomberg ESG Disclosure Score

Pool of ESG Issues – Governance

Topic	Field Description	Units
Audit Risk & Oversight	● Audit Committee Meetings ● Years Auditor Employed ● Size of Audit Committee ● Number of Independent Directors on Audit Committee ● Audit Committee Meeting Attendance Percentage	Count Years Count Count Percentage
Board Composition	● Company Conducts Board Evaluations ● Size of the Board ● Number of Board Meetings for the Year ● Board Meeting Attendance % ● Number of Executives / Company Managers ● Number of Non-Executive Directors on Board	Y/N Count Count Percentage Count Count
Compensation	● Company Has Executive Share Ownership Guidelines ● Director Share Ownership Guidelines ● Size of Compensation Committee ● Num of Independent Directors on Compensation ● Number of Compensation Committee Meetings ● Compensation Committee Meeting Attendance %	Y/N Y/N Count Count Count Percentage
Diversity	● Board Age Limit ● Number of Female Executives ● Number of Women on Board ● Age of the Youngest Director ● Age of the Oldest Director	Years Count Count Years Years

Bloomberg's Environmental and Social Scores provide a data-driven measure of corporate environmental and social performance that investors can use to quickly evaluate performance across a range of key issues. Bloomberg's industry-specific materiality frameworks are the result of Bloomberg Intelligence research and Terminal data collected from company sources. Environmental and Social scoring peer groups are based on the Bloomberg ESG Classification System (BECS) reflective of its materiality frameworks. Resulting Field Scores will range from 0 to 10 and 10 is better.

Disclosure factor will be applied to populated ES scores if any component fields are missing for ES indicators.

ENVIRONMENTAL

Air Quality

Air Emissions

Air Emissions Policies

Climate Exposure

Transition Risk

Ecological Impact

Ecosystem Protection

Environmental Fines

Environmental Incidents

Energy Management

Energy Consumption

Renewable Energy Use

Environmental Supply Chain Management

Sustainable Sourcing

GHG Emissions Management

GHG Emissions

GHG Emissions Policies

GHG Regulation

GHG Target

Sustainable Product

Green Product

Waste Management

Hazardous Waste Generation

Hazardous Waste Recycling

Waste Generation

Waste Recycling

Water Management

Wastewater

Water Use

Water Use Policies

SOCIAL

Community Rights & Relations

Community & Human Rights

Community Relations

Ethics & Compliance

Business Ethics

Competitive Behavior

Legal & Regulatory Management

Labor & Employment Practices

Labor Actions

Organized Labor

Training

Occupational Health & Safety Management

Fatalities

Health & Safety Fines

Health & Safety Policies

Safety Incidents

Operational Risk Management

Operational Incidents

Operational Preparedness

Product Quality Management

Product Quality & Safety

Social Supply Chain Management

Supplier Social Compliance

Bloomberg has developed Governance scores for more than 4,300 global companies across all sectors and regions. Combining data from the Bloomberg Terminal with insights from Bloomberg Intelligence (BI) and Bloomberg Law, Bloomberg Governance scores offer quantitative, transparent analyses. Under the Governance pillar, currently the themes of Board Composition, Executive Compensation, and Shareholder Rights touch on a number of core ESG Issues that can have material impact on company performance, as research shows.

Possible reasons why G score is missing: Currently G score doesn't apply disclosure factor, meaning G pillar is not populated if any component fields are missing. Meanwhile ES score has disclosure factor applied, therefore the pillar scores are populated.

BOARD COMPOSITION

Director Roles

CEO Roles

Chair Roles

Board Roles

Diversity

Age Diversity

Gender Diversity

Independence

Board Leadership Independence

Board Independence

Refreshment

Board Refreshment

Chair Refreshment

EXECUTIVE COMPENSATION

Incentive Structure

CEO Incentive Plan Design

Executive Incentive Plan Design

Executive Pay Equity

Executive Pay Linkages

Pay Governance

Compensation Board Oversight

Gender Diversity

Say on Pay

Pay Policies

Pay for Performance

Fixed Pay Alignment

Variable Pay Performance

SHAREHOLDER RIGHTS

Shareholder Policies

Takeover Defense

Voting Rights

Director Election Policies

Director Voting

Director Terms

Director Support

Audit theme is to be composed of 3 issues:

- Audit outcome
- Audit committee
- External Auditor.

Details of how Bloomberg is looking at sub-topics under each issue have not been officially came out.

Morgan Stanley Capital International (MSCI) is an American provider of comprehensive financial information including equity, fixed assets, hedge funds and stock market indexes. It has 40 years of ESG rating experience.

The MSCI ESG ratings are designed to help investors identify ESG risks and opportunities across their portfolios and assess exposure and risk management relative to peers through standardized methods. The MSCI ESG ratings do not represent companies' absolute performance but aim to provide results comparable to industry standards and peer performance.

Sustainability Index	Assessment Method
	Evaluates a company's sustainability performance based on environmental, social and governance criteria. It relies on publicity materials including sustainability reports. The score is also based on the ESG risks and opportunities of the company's core business and industry issues.

CCC	B	BB	BBB	A	AA	AAA
LAGGARD		AVERAGE			LEADER	

MSCI ESG Rating

Pool of ESG Issues

Environmental	Social	Governance
● Carbon Emissions ● Product Carbon Footprint ● Climate Change Vulnerability ● Financing Environmental Impact ● Water Stress ● Biodiversity & Land Use ● Raw Material Sourcing ● Toxic Emissions & Waste ● Packaging Material & Waste ● Electronic Waste ● Opportunities in Clean Tech ● Opportunities in Green Building ● Opportunities in Renewable Energy	● Labour Management ● Health & Safety ● Human Capital Development ● Supply Chain Labour Standards ● Product Safety & Quality ● Chemical Safety ● Consumer Financial Protection ● Privacy & Data Security ● Insuring Health & Demographic Risk ● Responsible Investment ● Community Relations ● Controversial Sourcing ● Access to Communications ● Access to Finance ● Access to Health Care ● Opportunities in Nutrition & Health	● Governance ● Ownership & Control ● Board ● Pay ● Accounting ● Business Ethics ● Tax Transparency

