# Sustainable Finance: The Economic Impacts of Environmental, Social and Governance (ESG) Factors on Stock Price, Brand Value and Executive Compensation

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# Abstract

Environmental, social, and governance (ESG) disclosure is increasingly important for listed companies, representing a key factor that contributes to sustainable finance. However, whether and how the inclusion of ESG scores in investment decisions affects stock prices remains uncertain; the effect of ESG on intangible assets is a neglected area of investigation, and not all executives in global capital markets respond to ESG issues. Moreover, how each of the three dimensions of ESG affects the value of a company has yet to be fully determined. For the first time, this study takes Chinese listed companies from 2014 to 2018 as a sample to examine the impact of ESG on stock price, brand value, and executive compensation. These three main research objectives constitute three independent papers of this DPhil thesis, which address the motivation to engage in ESG disclosure and provide insight into the important role of ESG in financial markets, as well as how investors, entrepreneurs, and board members consider ESG strategies.

Quantitative techniques are employed in this empirical research approach. While existing popular theories have limitations in explaining and predicting the impact of ESG on enterprise value, this study proposes a new theoretical framework, namely the reputation ecosystem. The *reputation ecosystem* is similar to Adam Smith's "invisible hand" metaphor that maintains a healthy economic order. To enhance the accuracy and efficiency of ESG data collection and scoring, language models and artificial intelligence (AI) are utilized. To address the inherent conflict of interest in ESG data collection and scoring, this study adopts an investor-paid model instead of the issuer-paid model of mainstream rating agencies. The study employs multivariate regression analysis on Chinese stock panel data to investigate their relationship with ESG performance across the E, S, and G dimensions, as well as stock return, brand value, and executive compensation. Cross-listing samples are used in the stock return analysis. Granger causality tests are employed in all three papers for causal analysis.

The thesis identifies positive relationships between ESG performance and stock returns, brand value, and executive compensation, with additional tests suggesting these relationships are causal. Additionally, these positive relationships hold true for all three ESG dimensions, but their effects are not synchronized. It also demonstrates that firms with higher state ownership and those in a more competitive environment tend to have better stock performance and higher executive compensation with better ESG performance. The positive relationship between ESG and brand value only exists for firms in B2C industries, firms with higher state ownership, and firms located in economically developed regions. Specifically, in the mainland China and Hong Kong markets, every one-unit increase in score for overall ESG performance can increase the average annual stock return by 0.022 and 0.017, respectively; every one-percent increase in ESG score increases average brand value by approximately 0.354%; and the average

executive compensation increases by approximately 2.65% with every one-unit increase in the total ESG score.

Overall, these three substantive papers verified the new theoretical framework of the *reputation ecosystem*, proving that the impact of ESG on corporate value occurs through this *reputation ecosystem* mechanism, which in turn affects the realization of corporate revenue by improving brand value. Creating a framework for the *reputation ecosystem* and discovering the mechanism of ESG influence on a firm's performance is my theoretical contribution, while using an investor-paid model and AI for ESG data collection and scoring is my methodological contribution. The new data and theory presented in this thesis also contribute to various literature streams, such as those concerning ESG, sustainable finance, financial geography, corporate finance, responsible investment, executive compensation, and brand management.

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# List of Abbreviations

2SLS: Two-Stage Least Squares Model
AI: Artificial Intelligence
B2B: Business to Business
B2C: Business to Consumer
CAA: Clean Air Act
CAPM: Capital Asset Pricing Model
CSP: Corporate Social Performance
CSR: Corporate Social Responsibility
DAR: Debt-to-Assets Ratio
ESG: Environmental, Social, and Governance
EVA: Economic Value Added
GIR: Gross Income Ratio
GMM: Generalized Method of Moments
GPT: Generative Pre-trained Transformers
NPR: Net Profit Ratio
NRSRO: Nationally Recognized Statistical Rating Organization
PPF: Pension Protection Fund
PT: Particular Transfer
PVAR: Panel Vector Autoregression
ROE: Return on Equity
TOA: Return on Assets
TQ: Tobin's Q
SEC: Securities and Exchange Commission
SOE: State-Owned Enterprise
SOI: State-Owned Investor
SRI: Socially Responsible Investing
SST: Southern Song Territory
ST: Special Treatment
SWF: Sovereign Wealth Fund
UNEP: United Nations Environment Programme
UNPRI: United Nations Principles for Responsible Investment
VIF: Variance Inflation Factor
WBL: World Brand Lab

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# Chapter 1 | Introduction

## 1.1 Introduction

In contrast to Friedman (1962), scholars such as Elkington (1997) and Schwartz and Carroll (2003) argue that, in addition to generating profit, corporations are also responsible for considering the environmental, social, legal, and ethical outcomes of their actions. Since the Industrial Revolution, companies, motivated by the pursuit of profit, have driven rapid economic growth; however, in doing so, they have harmed the environment and exacerbated the unequal distribution of resources (Panayotou, 2000). Today, 92% of people worldwide breathe polluted air; this fact challenges Friedman's argument that companies should be primarily responsible for pursuing profit (UNEP, 2019). Sustainable financing is pivotal to achieving ecologically, economically, and socially sustainable development (Cowan, 1999; Labatt & White, 2003). Sustainable finance can help the world transition to a low-carbon economy (Wara, 2007), improve companies' reputations (Chami et al., 2002), and help ameliorate social polarization (Clarke et al., 2006). Additionally, sustainable practices can improve investment performance (Clark et al., 2015a). However, stock returns for socially responsible companies do not exceed those of socially irresponsible companies (Galema et al., 2008), and investment banks do not avoid companies with poor environmental, social, and governance (ESG) performance (Urban & Wójcik, 2019).

The continued development of sustainable finance faces global challenges, such as market externalities and information asymmetry, and these challenges greatly undermine the enthusiasm of participants in the global investment chain to engage in sustainable finance. ESG information disclosures, however, are fundamental to building an open, transparent, and sustainable financial system (Nelson, 2017). ESG factors can enhance transparency, investor confidence, and capital market integrity (Martínez-Ferrero, 2016),

and ESG disclosures are increasingly important for public companies because investors use ESG scores to evaluate investment risk and potential benefits (Hübel & Scholz, 2020). Globally, investors are increasingly recognizing a firm's ESG rating as a primary criterion for making investment decisions, and therefore, I contend that the importance of ESG information disclosures will continue to increase. By the end of 2021, 3,826 global asset management companies had signed the Principles for Responsible Investment, which are supported by the United Nations (UNPRI, 2022), and by 2025, ESG assets are expected to reach $53 trillion (Bloomberg, 2021).

Not only are investors increasingly making investment decisions on the basis of ESG information (McCabe, 2020), but ESG has also become an increasingly popular financial research topic (Knill et al., 2021). However, many unanswered questions remain in the field of ESG research (Clark et al., 2015b; Fulton et al., 2012). Since the onset of the COVID-19 pandemic, debate over whether ESG can truly immunize investments has intensified (Broadstock et al., 2021; Demers et al., 2020; Takahashi & Yamada, 2021). Not all executives take action to bolster their companies' ESG performance. In quarterly teleconferences held by companies listed on the S&P 500 index, only about 5% of executives mentioned ESG issues (Langley, 2019). Globally, this figure was 2.5% (Sardon, 2021). Despite the expanding body of in-depth research and theories focused on this topic, definite conclusions regarding the impact of ESG remain elusive (Friede et al., 2015). Scholars have produced a variety of findings concerning the relationship between ESG performance and overall company performance, with some identifying a positive relationship (Orlitzky et al., 2003) and others finding a negative relationship (Clark et al., 2018); some scholars have found no relationship at all (McWilliams et al., 2006). In addition, many studies have focused on only one or two of the three dimensions of ESG (E, S, and G) when assessing the impacts of ESG disclosures on listed companies (Clark & Wójcik, 2003; Lyon et al., 2013; McElroy, 2012).

The motivation for companies to disclose ESG information arises from three factors: external pressure, internal motivation, and core competencies (Amel-Zadeh & Serafeim, 2018; Aureli et al., 2020; Borghesi et al., 2014; Dyck et al., 2019). These motivations correspond to stock price, executive compensation, and brand value, respectively, forming the three central chapters of my DPhil thesis. Firstly, regarding stock prices, Freeman (1984) argues that shareholders are among the most important corporate stakeholders. As shareholders can exert considerable influence on a company's social and environmental behavior through their voting rights on social responsibility resolutions (Hirst, 2017), understanding the impact of ESG performance on stock prices is critical in shaping investor decision-making. Secondly, ownership and management rights are distinct according to principal-agent theory (Jensen & Meckling, 1976), and the interests of executives and shareholders frequently differ. Compensation influences executives' risk tolerance and work productivity, which in turn affects corporate performance (Haubrich, 1994). Thus, both principals (shareholders, creditors, etc.) and agents (executives) have an incentive to comprehend the impact of ESG factors on executive compensation to gain added rewards. Finally, in the era of globalization and the knowledge-based economy, intellectual property rights are a central and unresolved issue (Thurow, 2000). Intellectual property, frequently represented by brand equity, is a company's core competency that cannot be easily replicated by competitors (Hamel & Prahalad, 1990). Therefore, demonstrating that ESG performance positively affects corporate performance by enhancing the intangible asset of brand value will highlight the value of adopting ESG as a business strategy and reinforce a company's competitive advantages.

The perplexing results of ESG-related empirical studies can be attributed to three main factors. Firstly, ESG information is non-financial and lacks a consistent global standard for preparation, making it difficult to measure and compare. Secondly, mainstream ESG rating agencies utilize an issuer-paid model, which leads to conflicts of interest and

compromises the impartiality of ratings. To overcome this limitation, I adopted an investor-paid ESG scoring model, which is a novel approach in the academic literature on ESG ratings. To enhance the accuracy and efficiency of ESG data collection and scoring, I employed artificial intelligence (AI) and language models, such as GPT (Generative Pre-trained Transformer). Thirdly, due to the absence of a consensus on the economic impact mechanisms of ESG, various theories exist, but none are definitive. The participants in the ESG ecosystem operate under the principles of the survival of the fittest, and the various stakeholders are governed by an "invisible hand," as Adam Smith coined it. Drawing inspiration from Darwin's theory of evolution, I developed the business ecosystem theory, integrated stakeholder theory, and reputation theory, and created the *reputation ecosystem* as the theoretical foundation of this thesis.

In developed markets, ESG-related theoretical research and products are relatively mature; in China, however, they are still in the early stages of development. Most ESG research has focused on markets in the United States and Europe. For example, Clark and Wójcik (2003) identified a systematic connection between corporate governance and stock prices, and Clark and Hebb (2005) found that brand reputation risk can be mitigated by improving ESG standards. Considering the current limitations of existing literature, my research focuses on the following three urgent and understudied aspects of ESG: (1) Many studies have examined the relationship between ESG and stock prices. However, there are few studies on the change in a stock's price in different markets following an ESG information disclosure. I found no such research on Chinese companies. (2) There is no relevant literature on how brand value or executive compensation changes after the disclosure of ESG information by Chinese listed companies. (3) In particular, I attempted to clarify which of the three ESG factors most affected stock prices, executive compensation, and brand value. There is little literature on this question.

In conclusion, this thesis is the first work to examine the impacts of ESG factors on the stock prices of cross-market, quantitative brand value, and executive compensation for Chinese-listed companies in different industries and regions on the basis of a unique data set. I designed the first *reputation ecosystem* theoretical framework for this thesis and adopted the first investor-paid data collection methodology. In addition to contributing to the literature streams on corporate finance, responsible investment, executive compensation, brand management, and sustainable finance, my DPhil thesis has important implications for the development of financial geography—chiefly, my research will enrich the field of financial geography. Research on enterprises conducted from the perspective of financial geography has mainly concentrated on corporate finance. By contrast, this project extends financial geography to the management (executive compensation) and marketing (brand value) sectors. Second, this study uses new financial geography analytic methods and instruments. The investor-paid data collection method used in this study differs from the methods typically used to collect data for academic research. This method was proposed during the 2008 financial crisis, but it has not been widely adopted. Finally, this study addresses the intersections of financial geography with gender, age, and race—topics likely to become popular in future research.

## 1.2 Background, Research Gap and Objectives

In recent years, sustainable finance has received significant attention from both academics and policymakers. Since the Industrial Revolution, the average global temperature has increased by 1.1 ℃; if this increase in global temperature reaches 2 ℃, the climate may reach one or more major tipping points (Lenton et al., 2019). To prevent this degree of warming, carbon dioxide emissions must be halved by 2030. China—the world's largest carbon dioxide emitter—has pledged to achieve carbon neutrality by 2060, with plans to reduce emissions within the next 10 years. However, to achieve carbon neutrality, China must overcome several daunting economic and technological challenges

(Normile, 2020). Following major crises, such as the 2008 financial crisis and the 2020 COVID-19 pandemic, scholars have emphasized the need for governments and corporations to follow a "green recovery" path (Stiglitz, 2020; Stiglitz & Stern, 2009) to achieve sustainable growth and promote a low-carbon economy. The development of sustainable finance is related to a broader agenda, which is referred to as financialization (Epstein, 2005). Some scholars criticize these developments, primarily for exacerbating social inequality and macroeconomic instability (Clark, 2013; Mader et al., 2020; Van der Zwan, 2014). However, to complement research on financialization, I believe that it is critical to find solutions that integrate sustainable development into finance.

As a data foundation for sustainable finance, the concept of ESG has taken root in global capital markets. During the year 2021, ESG information became increasingly integrated into company disclosures. For example, ESG information is increasingly included in earnings calls, trading announcements, proxy statements, and press releases. Investors have also displayed support for an unprecedented number of ESG proposals that address issues such as climate change, labor rights, diversity, and inclusion (Silk et al., 2022). Two major trends have driven the rise of ESG investment. The first is the ongoing shift in the value systems of the younger generation of investors. For example, 77% of millennial investors in the United States rank ESG performance as their first consideration when making investment decisions (DeVere Group, 2019). The second trend is that ESG investment strategies have received increased attention in academia. As a result, scholars have increasingly observed a positive relationship between corporate financial performance and corporate ESG indicators (Alareeni, 2020; Fatemi et al., 2018; Yoo et al., 2022). Indeed, ESG disclosures can reduce information asymmetry between market traders (Amihud & Mendelson, 1986), attract loyal consumers (Hillman & Keim, 2001), provide significant management benefits to shareholders (Brammer & Millington, 2008), and improve a firm's access to finance (Ioannou & Serafeim, 2015).

Why is ESG becoming more popular? And why is corporate social responsibility (CSR) starting to wane in popularity? Although ESG and CSR disclosures are both concerned with non-financial information, they are not identical. First, they represent different perspectives. CSR emphasizes the perspectives of multi-stakeholders, which is a diverse category that includes company employees, citizen groups, suppliers, customers, investors, and media organizations. ESG mainly focuses on the relationship between corporate social performance and shareholder returns from the perspective of investors in the capital market. Second, CSR and ESG are applied to achieve different objectives. The application scenarios of CSR are relatively broad and may appear in the areas of enterprise supply chain management, brand marketing, community communication, and employee management. The application scenario of ESG focuses on the capital market, particularly the relationship between investors and listed companies. Generally, an investor relations management department is responsible for ESG initiatives.

Although the concept of business ethics has existed in China for more than 2,500 years (Confucius, 500 B.C.), for the last 30 years, Chinese entrepreneurial culture has consistently focused on business models, financing, and the scale of income while ignoring and undermining the importance of the ethical behavior of entrepreneurs. Nor has Chinese entrepreneurial culture been concerned with environmental damage, social injustice, or actions taken to break the bottom line in corporate governance and compliance. Chinese media outlets have spread a culture of "the winner rules" by reporting on so-called "successful" business figures. Neither Tencent, Alibaba, nor Baidu—all of which are internationally renowned Chinese technology companies—have performed well from an ESG perspective. This is the fundamental reason they have been prevented from entering international markets, especially the European and US markets. These three companies have all implemented the "996" working hour system (working 9 a.m. to 9 p.m., six days a week), exploiting workers and not paying them overtime. Such anti-ESG workplace cultures are hindering China’s sustainable economic growth.

Despite the long-standing advocacy for ESG disclosures, there are still several challenges to their widespread adoption internationally. First, different agencies apply divergent standards (Berg et al., 2019). Second, information transparency is lacking. Third, there is no agency that provides a "one-stop" ESG solution. Fourth, a comprehensive ESG score database is currently absent. Finally, state-owned investors (SOIs), particularly large investors like sovereign wealth funds (SWFs) and public pension funds (PPFs), who managed a total of $27 trillion in assets in 2020 (Megginson et al., 2021), have not played a significant role in promoting ESG investment. SOIs should naturally lead the way in promoting ESG in investee companies, but the ESG performance of these funds is less than impressive. For instance, Global SWF (2022) found that 39% of state-owned funds failed their sustainability and governance tests. The Norwegian Government Pension Fund Global (Norway GPFG), the world's largest SWF, with more than $1.4 trillion in assets under management in 2021, is one of the most transparent institutions of its kind, aiming to combine long-term investment with ethical commitment (Clark & Monk, 2010a). However, the media still accuses them of not being ethical leaders, citing their involvement in arms, tobacco, and fossil fuels (Curtis, 2009).

China continues to face difficulties in achieving a sustainable financial market and making environmental information disclosures available. These difficulties include (1) external resistance, such as a lack of incentives for establishing policies and regulations and a lack of motivation among financial institutions and listed companies, and (2) internal resistance. Regarding internal resistance, some executives believe that ESG information disclosures increase costs and cause trade secrets to be leaked. Even large investors such as China's SWFs and PPFs are still in the early stages of development compared to those in developed countries (Yin, 2017). The second-largest SWF, China Investment Corporation (CIC), with total assets of more than $1.2 trillion, is in the standard-setting and exploration phases of its ESG investments. At present, there are no

laws or regulations concerning ESG information disclosures in China. Apart from the ESG reporting guidelines issued by the Hong Kong Stock Exchange in 2012, no specific guidelines have been issued by a market institution. The relevant disclosure requirements are reflected mainly in social responsibility reports. In comparison to measures instituted in Western countries such as the United Kingdom, France, and the United States, China's ESG information disclosure has major obstacles to overcome, including limitations regarding the topics and content of disclosures, a lack of disclosure standards, and irregular disclosure frequency. The overall information structure for sustainable finance is insufficient. Thus, it is difficult to effectively supervise information disclosure.

The amount of research on ESG disclosures, and on environmental information disclosures in particular, has gradually increased through qualitative and quantitative methods, and this research has primarily focused on the characteristics of corporate environmental information disclosures, disclosure channels, disclosure methods, disclosure incentives, differences between national and industry disclosures, and disclosure functions. However, few empirical studies have highlighted the impacts of ESG factors on listed companies; even fewer studies have considered the impacts of ESG information disclosures on cross-market stock price volatility, brand value, and executive compensation. I also found that there is little research on the comparative impacts of each individual ESG element on microeconomics. Margolis and Walsh (2001) found that there are many studies on environmental governance, social responsibility, and the economic effects of information disclosures. However, they also state that the conclusions drawn from these studies are highly controversial and vary widely. These variations are caused by differences in research samples and the methodologies employed.

To effectively promote ESG disclosures, the impact of ESG factors on company performance must be widely understood so that ESG disclosures are perceived by executives and investors not only as an obligation but also as a strategy. My research aims

to promote a more comprehensive understanding of the impact of ESG on China's listed companies, particularly by providing evidence to support the following research goals:

1. To examine the impact of ESG factors on stock prices and compare the reactions of different markets;
2. To investigate the impact of ESG performance on brand value and explain how ESG initiatives affect firm performance through the channel of brand value; and
3. To explore the impact of ESG performance on executive compensation and determine whether this relationship is influenced by the nature of the firm and the heterogeneity of executives.

To achieve these goals, the following specific questions are posed in the three core chapters of this thesis, thus also identifying the research gaps to be filled.

In Chapter 3, I ask the following questions: Is there a relationship between ESG performance and stock prices? Is this relationship causal? What is the path by which ESG disclosures affect stock prices? Among the three factors of environment, social, and governance, which factor has a stronger relationship with stock price? Is there a difference in the reflection of the same company's stock in different markets after ESG disclosure? Does the impact of an ESG disclosure on the stock price differ according to the industry and nature of the company? Scholars have reached various conclusions regarding the relationship between ESG factors and stock returns. Currently, scholars have identified neutral, positive, and negative relationships between ESG performance and stock returns. Therefore, it is clear that the nature of this relationship and the mechanism of influence remain controversial in the literature. Most current research is limited to US and European markets, with less focus on emerging markets. The Chinese stock market is a typical emerging capital market with considerable activity (Wang et al., 2006; Zhang, 2005). This is the first study to examine the impact of ESG disclosure on

a single company's share price in two different markets—an emerging market and a mature market. Therefore, this study will offer comprehensive and important results.

In Chapter 4, I aim to answer the following questions: Is there a relationship between ESG performance and brand value? Is this relationship causal? What is the path by which ESG performance affects brand value? Of the three factors of environment, social, and governance, which has a stronger relationship with brand value? Is there any difference in the impact of ESG performance on brand value by industry and the nature of the company? Corporate reputation can be understood as referring to the overall public impression of a company, and it is an intangible asset that can facilitate sustainable competitiveness (Castro et al., 2006; Schnietz & Epstein, 2005). ESG performance has become an essential metric for measuring corporate reputation (Haddock-Fraser & Tourelle, 2010; Melo & Garrido-Morgado, 2012), and corporate brand value is a critical tool for quantifying corporate reputation. However, although previous studies have analyzed the impact of CSR performance on corporate reputation and brand value, these studies have focused on qualitative analysis and lacked the support of quantitative brand values. Additionally, previous research has been predominantly conducted in Europe and North America. In China, ESG disclosures that are unfavorable to large companies are often concealed. Therefore, it remains necessary to focus research efforts on China to reexamine the impacts of ESG disclosures on corporate reputation.

Chapter 5 addresses the following questions: Is there a relationship between ESG factors and executive compensation? Is this relationship causal? Of the three factors of environment, social, and governance, which has a stronger relationship with executive compensation? Are there any differences in the impact of ESG performance on executive compensation by industry and nature of the company? From the perspective of internal motivation, the impact of corporate ESG performance on executive compensation remains controversial. Mahoney and Thorn (2006) found a significant

positive relationship between corporate social performance (CSP) and executive compensation. However, Miles et al. (2013) explored potential conflicts between companies with better CSP and higher levels of executive compensation. Most existing research has focused on the relationship between ESG performance and CEO compensation. Many scholars have focused on one or two of the three dimensions of ESG when discussing the impacts of specific factors on executive compensation. This is the first study to compare and analyze both the individual and comprehensive impacts of environmental, social, and corporate governance initiatives on executive compensation. Previous studies have focused only on one or two of the three dimensions of ESG or have considered only CEOs as executives while excluding other CXOs (CFOs, CMOs, CTOs, and others).

The present project is the first to examine the overall level of ESG performance in China and the impacts of ESG performance on the stock prices of cross-market companies, quantitative brand value, and executive compensation in different industries and regions. This study contributes to research on economic and financial geography as well as interdisciplinary research on sustainable finance. More importantly, I investigate existing economic, financial, geographical, and management theories in the context of China's political system, economy, and enterprise characteristics. In conclusion, the three aforementioned topics, which are covered in the three core chapters of this thesis, will be presented as three independent papers. The research questions, methodologies, structures, and sources for each chapter are described individually in the following sections.

## 1.3 Methodological Approach and Data

In this research project, I examine the impact of ESG performance on stock performance, brand value, and executive compensation in the Chinese context. Regression analysis was

performed on the panel data, and Granger causality analysis was used to investigate this relationship. While ESG data has proliferated in recent years, investors continue to express concerns about the quality of publicly available data. Indeed, ESG scores issued by different rating agencies vary widely, creating problems for ESG initiatives and academic research. To increase the reliability of the data and its analysis, I adopted two measures. The first measure was to resolve the conflict-of-interest problem. Unlike the "issuer-paid" model adopted by mainstream ESG rating agencies, I adopted an investor-paid ESG scoring model that has not yet been introduced in the academic literature on ESG ratings. Second, when designing evaluation methods, I followed Edmund Phelps's recommendations to separate historical assessments and future forecasts of ESG information and disclose my rating methods and results (Frydman & Goldberg, 2011). Thirdly, one of the significant challenges of ESG data collection is the large volume of information available, making manual collection and analysis difficult. Therefore, artificial intelligence (AI), specifically language models like GPT, was utilized to enhance the accuracy and efficiency of ESG data collection and scoring.

All ESG data for this study was sourced from SuperFinance, a sustainable financial data provider that supplies investors with ESG research and ratings. I am an investor, majority shareholder, and current chairman of this company. I chose SuperFinance instead of other mainstream rating agencies, such as MSCI, for the advanced nature of its investor-paid model. Many studies have documented that the ratings provided by investor-paid rating agencies are timelier and can predict defaults better than those provided by issuer-paid rating agencies (Bhattacharya et al., 2019; Bruno et al., 2016). Additionally, SuperFinance has become the leading ESG data provider in China due to its use of AI technology, including GPT, for information collection and analysis.

In Chapter 3, to investigate the relationship between ESG performance and stock price, I first reviewed existing studies and then developed a new ESG disclosure and stock price

relationship model. The relationship model provided deep insight into how ESG factors and stock prices relate to each other through stakeholders. Meanwhile, an empirical analysis was conducted on the panel data of Chinese companies that were cross-listed in both the A-share (mainland) and H-share (Hong Kong) markets to provide more evidence about this relationship. A fixed-effect regression model was used to investigate the relationship between stock performance and ESG disclosure as well as each ESG dimension. The model results for the mainland Chinese A-share market and the Hong Kong market were compared to clarify the different impacts of ESG disclosure on the two markets. In addition, to determine how different firm characteristics (state ownership versus market competition) influence the relationship between ESG disclosure and stock performance, regression analysis was conducted on different subsamples with different firm characteristics. I also used Granger causality analysis to examine whether this relationship is causal. The endogeneity problem was addressed using a Panel Vector Autoregression (PVAR) model with the *generalized method of moments (*GMM) estimator. All quantitative analyses and tests were implemented with Stata.

This chapter mainly used panel data consisting of ESG data, stock performance data, and company financial data from 2014 to 2018 for Chinese companies that were cross-listed in both the A-share and Hong Kong markets. A total of 400 observations covering 80 companies were included in the sample. The ESG evaluation score data used in this study came from SuperFinance's ratings of listed companies in China. The sample companies' stock prices as well as financial metrics were retrieved from the Datayes database.

In Chapter 4, to examine the relationship between ESG performance and brand value, I first reviewed existing literature and then developed a new ESG performance and brand value relationship model that provides insights into this relationship from the perspective of stakeholders. An empirical analysis was conducted on the panel data of public Chinese companies that are listed in the mainland China A-share market and are

included in the list of "China's 500 Most Valuable Brands," which was published by the World Brand Lab (WBL) from 2014 to 2018. A fixed-effects regression model was applied to investigate the relationship between brand value and ESG performance as well as each ESG dimension. The causality of the relationship was investigated using the Granger causality analysis method. To determine the impacts of firm characteristics on this relationship, I analyzed it in the context of companies with different ownership, end-users, and regional development. The endogeneity problem was addressed using a PVAR model with the GMM estimator. All quantitative analyses were implemented with Stata.

In this chapter, the regression analysis was based on panel data composed of 375 observations covering 94 public companies, and the data included ESG performance scores, brand values, and financial metrics from 2014 to 2018. The ESG performance score data used in this study came from SuperFinance's ESG evaluation scores. SuperFinance uses the investor-paid rating model to avoid conflicts of interest. Brand values were provided by the WBL, which has the largest brand valuation database in China. The financial metrics covering the period 2014–2018 were retrieved from the Datayes database.

In Chapter 5, I investigated the relationship between ESG factors and executive compensation by first reviewing the existing literature and then developing an ESG performance and executive compensation relationship model. The relationship model incorporated different aspects of stakeholders and provided insights into how ESG performance and executive compensation related to each other. The empirical analysis was conducted on the panel data of Chinese listed companies in ESG-sensitive industries using a fixed effect regression model to investigate the relationship between executive compensation and ESG performance as well as each ESG dimension. The causality of the relationship was also clarified using Granger causality analysis. Moreover, to determine

how the relationship differs according to changes in such firm characteristics as state ownership and market competition, the relationship was further analyzed using different subsamples and the same regression model. The moderating effects of executive heterogeneity by age and gender were also considered to further examine the relationship between ESG performance and executive compensation. The endogeneity problem was addressed by implementing a two-stage regression model with instrumental variables. All quantitative analyses and tests were implemented with Stata.

This chapter mainly used panel data consisting of ESG data, executive compensation data, and financial metrics from 2014 to 2018. The data contained 481 observations covering 110 Chinese-listed companies in 11 industries where ESG concerns have gained increased attention. The data on ESG performance scores used in this study came from SuperFinance's ESG evaluation score database. SuperFinance uses the investor-paid rating model to avoid conflicts of interest. The data on executive compensation and financial metrics were retrieved from the Datayes database.

The different research perspectives lead to differences in the sample of firms studied in the three separate papers (Chapters 3 through 5) of this thesis. Specifically, Chapter 3 examines the impact of ESG on cross-market share prices. Although there are currently 135 companies listed in both A-shares (Mainland) and H-shares (Hong Kong), only 80 companies have consistently published ESG-related reports since 2014. In Chapter 4, in examining the impact of ESG on brand value, the sample consists of the list of "China's 500 Most Valuable Brands" released annually by the World Brand Lab (WBL), yet the number of listed companies in this list is 234, and only 94 have consistently issued ESG-related reports since 2014. In Chapter 5, when studying the impact of ESG on executive compensation, 11 ESG-sensitive industries (e.g., including construction, chemical, machinery, steel, etc.) are screened, and 110 listed companies that have consistently issued ESG-related reports since 2014 are selected.

## 1.4 Thesis Structure and Review of Findings

This thesis is structured in accordance with the three-paper approach to submitting the DPhil thesis. I adopted the three-paper route for two reasons. First, the economic impacts of ESG initiatives are broad. In terms of macroeconomic impact, there is less controversy—that is, the overall macroeconomic impacts of ESG initiatives are positive. However, there is considerable controversy concerning the impacts of ESG initiatives on the microeconomy, especially on listed companies. Different microeconomic impacts, though intersecting, are all worthy of independent empirical research. Second, the impact of ESG information disclosure after the various types of participants in the global sustainable financial chain have different perspectives: investors are more concerned about share prices; executives are more concerned about compensation; and entrepreneurs are more concerned about brand value. Therefore, it is necessary to study them separately. Moreover, the importance of these three papers is that they address the issue of motivation for ESG participation in three different ways, providing an empirical basis for future research. Specifically, this thesis is made up of an introduction (Chapter 1), a general literature review (Chapter 2), three separate research papers (Chapters 3–5), and a conclusion (Chapter 6). The structure and initial findings of the general literature review (Chapter 2) and research papers (Chapters 3–5) are described below.

Chapter 2 provides the conceptual and theoretical foundation for the empirical research in this thesis. This chapter introduces several studies that guide the development of the chapters of this thesis, and two core themes (sustainable finance and ESG) were selected from the relevant conceptual literature for further review. This discussion not only identifies gaps in the literature, which this study seeks to fill, but also provides context for the three subsequent substantive chapters and establishes an overarching theme between them, namely the drivers and implications of ESG disclosure. I examine the significance

of sustainable finance and the need for its development in the context of financialization and globalization, paying particular attention to the process, theoretical basis, drivers, and rules of ESG disclosures in the context of sustainable finance. Based on the traditional theories that underpin this thesis, I integrate stakeholder theory and reputation theory, inspired by evolutionary theory, to proliferate the theory of the business ecosystem and finally propose a *reputation ecosystem* framework for the first time.

Chapter 3 is titled "How does ESG performance affect stock price? Evidence from China's Cross-Listed Companies." This chapter is the first study to focus on the causal relationship between the three elements of ESG and stock prices in a cross-market context, using Chinese listed companies as the research target. The study first proposes an ESG disclosure and stock price model based on stakeholder theory and demonstrates the mechanism by which ESG behavior impacts stock prices. By applying a fixed effect regression model to the panel data of cross-listed Chinese companies for over 5 years (from 2014 to 2018), I found that ESG performance and the performance of each individual ESG dimension are all positively correlated with stock returns. In the mainland Chinese market, assuming all factors are the same, every one-unit score increase in corporate governance will increase average annual stock returns by 1.46%. Meanwhile, every one-unit score increase for the environmental and social factors will increase annual stock returns by 0.97% and 0.43%, respectively. In the Hong Kong market, however, the coefficients of each individual ESG dimension are all smaller than those in the mainland market, suggesting that ESG has less of an impact on stock performance in the Hong Kong market.

To explore this relationship in the context of companies with different company or industry characteristics, the study divided the sample and found that a positive relationship exists for both state-owned and non-state-owned companies, as well as for companies in both monopoly and non-monopoly sectors. To address the problem of

endogeneity, the study further used the Granger causality test and a regression model with GMM estimators and found that ESG performance can unidirectionally enhance stock returns. This study provides new insight into the mechanisms by which ESG impacts stock prices based on stakeholder theory and the motivations for executives to increase ESG investments. This paper is currently under peer review at *The Journal of Finance*.

Chapter 4 is titled "How does ESG create brand value? Evidence from China's listed companies This chapter is the first study to examine brand value as the core representative of intangible assets and analyze the causal relationship between the three elements of ESG and intangible assets in the context of Chinese listed companies. The study proposes an ESG performance and brand value model based on stakeholder theory and demonstrates the mechanism by which ESG behavior impacts brand value. By applying a fixed effect regression model to the panel data on Chinese listed companies from 2014 to 2018, the research found that ESG performance and the performance of each individual ESG dimension are all positively related to brand value. The impact of governance (G) was the largest among the individual ESG dimensions, while the impact of environmental performance (E) on brand value was the smallest. Moreover, if the coefficients of SDG dimensions are compared with the coefficients of the overall ESG score, every one-unit score increase in ESG ultimately leads to higher brand values than those produced by the same level of increase in individual ESG dimensions. When treating ESG as a whole concept, for every 1% increase in ESG score, the brand value will increase by 0.354%, given that all other factors remain constant.

In terms of ownership, the study divided the sample and found that for both state-owned and non-state-owned companies, the relationship was positive and significant. The study also explored the relationship between ESG performance and brand value in the context of companies with different industry or geographic characteristics and found that there is a positive relationship between ESG performance and brand value for

business-to-consumer companies as well as companies in economically developed regions of China. Finally, the research assessed the causal relationship between ESG performance and brand value using a Granger causality test. The findings suggest that better ESG performance can increase brand value. The endogeneity problem was addressed using a regression model with GMM estimators. This study provides valuable insight into the mechanisms by which ESG impacts firm brand equity based on the theory of reputation and the motivations for executives to increase ESG investments. This paper is currently under peer review at the *Journal of Business Ethics*.

Chapter 5 is titled "Can ESG factors impact executive compensation? Evidence from China's listed companies This chapter first examines the causal relationship between ESG and executive compensation by focusing on the motivations of special stakeholders—that is, executives at Chinese listed companies—to disclose ESG information. This paper first proposes an ESG and executive compensation model based on stakeholder theory and demonstrates the mechanism by which ESG performance impacts executive compensation. By analyzing the fixed effect regression model for panel data on 102 Chinese companies listed in the A-share market from 2014 to 2018, this paper found that ESG performance and the performance of the three ESG dimensions are positively correlated with executive compensation. Although the coefficients of the three dimensions were all positive, their impacts were different. The coefficient of the social (S) dimension was 0.0177, which was the largest among the three dimensions, while the coefficient of the environmental (E) dimension was the smallest. Because my study used a natural logarithm transformation for average executive compensation, these results can be interpreted to mean that, for all listed companies in China, assuming all other factors are equal, every one unit increase in the social (S) score will increase average executive compensation by approximately 1.77%.

To examine the relationship with different company or industry types, the results demonstrate that the relationship between ESG performance and executive compensation is significant for state-owned enterprises, non-state-owned enterprises, and non-monopoly industries. My study also examined whether an executive's age or gender can affect the relationship between ESG factors and executive compensation. My findings show that executive age heterogeneity had a negative moderating effect and that gender heterogeneity had no moderating effect. Finally, to address the problem of endogeneity, this study used Granger causality analysis and a dynamic GMM regression model. I found that ESG performance can unidirectionally cause executive compensation. This study not only deepens the upper echelons theory but also provides evidence that can motivate company executives to increase ESG investments to achieve higher compensation. This paper is currently under peer review at the *Review of Financial Studies.*

Finally, Chapter 6 presents the main conclusions of this thesis. It summarizes the main findings of this study and highlights its broader implications. It also presents recommendations for policymakers, investors, and entrepreneurs and outlines possible avenues for future research.

# Chapter 2 | General Literature Review

This chapter is a general literature review and presents a prototype of a new theoretical framework for the *reputation ecosystem*, outlining the key themes that underpin the discussion and findings presented throughout this thesis, including the connotation, evolution, theory, and rules of sustainable finance and ESG impacts. More specific literature reviews of ESG performance impacts on listed companies (e.g., stock price, executive compensation, and brand value) can be found in three empirical papers in chapters 3–5. I will review and comment on the extant literature from the following five aspects: financialization, financial globalization, and ESG; the connotations and impacts of sustainable finance; the process, motivations, and rules of ESG disclosure; the theoretical basis of ESG information disclosure; and the review summary and research gap in the literature. Finally, the *reputation ecosystem*, a new theoretical framework, is discussed. Given the haphazard explanatory and predictive theories of ESG, inspired by Darwin's theory of evolution, I proliferated the business ecosystem theory, integrated stakeholder theory, and reputation theory and put forward this new theory framework.

## 2.1 Financialization, Financial Globalization, and ESG

Globalization is a complex and variable set of processes that occur unevenly across space and time (Dicken, 2003). Use of the term "globalization" in its modern sense began in the 1970s (O'Rourke & Williamson, 2002), and economic globalization has been intensifying for the past 40 years or so. Globalization began to stagnate in 2018 with the onset of the U.S.-China trade war, and has been showing signs of reversal since the start of the COVID-19 pandemic in 2020 and the Russian invasion of Ukraine in 2022. Globalization has led to economic inequalities and imbalances (Stiglitz, 2012). It contributed to the industrial shift and the rise of neoliberalism in Europe and the United

States, followed by financial reforms in Europe and the United States, a process that saw the rise of financialization and the global expansion of the ideology of financial capitalism.

Financialization refers to the process by which finance permeates all aspects of modern economic activity, with financial markets and financial institutions playing an increasingly important role in the functioning of national economies (Epstein, 2005), and becoming a powerful force that changes social institutions (Davis & Kim, 2015). In other words, more and more wealth is created through financial channels and activities, not only for the country as a whole but also for businesses, individuals, and households. Against this backdrop, corporate financialization has also become increasingly entrenched, i.e., corporate profits are increasingly derived from investments and capital operations in non-production operations, pursuing pure capital appreciation rather than operating profits (Krippner, 2005). A large number of companies worldwide have achieved rapid growth by becoming integrated into global capital markets (Wójcik & Burger, 2010).

Financial globalization refers to the process of expanding trade linkages for financial assets on a global level (Stulz, 2005), and represents a manifestation of financialization on a worldwide scale. The emergence of the euro can be regarded as a significant milestone in the globalization of finance, despite not yet reaching the international currency status that Robert Mundell, the father of the euro, predicted it would achieve on par with the dollar (Mundell, 1998). The increasing financial integration resulting from financial globalization has generated stronger and deeper financial connections among advanced economies, developing countries, and emerging markets, causing a rapid expansion in the scale of capital flows between countries (Lane & Milesi-Ferretti, 2008). This situation has given rise to the theory of the end of geography first put forward in the 1990s: that geographical location is no longer important in finance, or less

important than before (O'Brien, 1990, 1992), due to the speed of information exchange diminishing the importance of space. However, the global integration of finance has not really been achieved, and Clark (2005) argues that the spatial heterogeneity of institutions is one important reason for this. Clark clearly hints that global finance flows like mercury and there is a clear geographical preference for the pooling and movement of capital. Clark and Wojcik (2003) empirically demonstrate that financial geography remains an important component of global investment strategies.

The impact of financialization on ESG has faced broad criticism. First, addressing the aspect of corporate governance, Karmel (2020) concluded that financialization in corporate governance shifts the focus of corporate managers from long-term earnings to short-term stock market prices. Epstein (2015) also argued that financialization has resulted in financial activities being assigned greater importance in the determination of executive compensation. One major reason for this change is the significance of stock options in top managers' compensation packages. This compensation component associated with the company's stock motivates executives to find ways to raise stock prices, leading in turn to a dramatic shift in corporate strategy (Lazonick, 2015) and earnings dispersion among workers (Freeman, 2010). One possible solution could be the inclusion of ESG and employee practices in compensation determination (Strine & Smith, 2020). Second, from the stakeholder perspective, the negative aspects of financialization are thought to stem from the conflict between stakeholder value and shareholder value (Jones & Nisbet, 2011). Cupertino et al. (2019) stated that shareholder value maximization has led to business objectives being developed solely for the short term, at the expense of capital accumulation. Their study found that financialization exhibits a negative relationship with corporate real investment, while ESG factors can positively impact corporate capital accumulation. To address the problem and make finance "more moral", long-term relationships among stakeholders are encouraged (Dembinski, 2009).

Financial globalization is arguably more characterized by financial "glocalization", in that, although ESG is still advocated globally, the differences in standards, institutions, and laws lead to cross-country regulatory arbitrage, as occurs with other financial activities (Wójcik, 2012). This can also facilitate greenwashing. The geographic characteristics of ESG investments are manifested in two ways: First, with respect to corporate performance, empirical observations show that financial geography plays an important role in the relationship between ESG and stock price. Ortas et al. (2015) concluded that geographical locations play a moderator role between companies' ESG performance and their financial performance. Duque-Grisales and Aguilera-Caracuel (2021) argued that geographic diversification is having a moderating effect on the relationship between ESG scores and firms' financial performance. Second, with respect to executive compensation, a growing number of firms have recently included ESG metrics in executive compensation, and geographic location strongly affects a company's tendencies in this regard (Cohen et al., 2022). Chin et al. (2013) concluded that geographical attributes have an influence on CEOs' political ideology, which in turn has an effect on a company's ESG activities. One major reason that geographic factors affect this relationship is that geographic location directly affects CEO compensation (Bouwman, 2012).

Overall, despite some debate surrounding its impact, financialization still has potential as it is an inherently spatial phenomenon (Aalbers, 2015). For this reason, it is important to integrate the analysis of financialization into the framework of economic geography. Pike and Pollard (2010) concluded that the economic geography of financialization can contribute to a more socialized account of financial geography by creating wider and deeper social relations. However, deficiencies in methodological disclosure in financial geography undermine the reliability and replicability of the study (Wójcik, 2021). Moreover, mainstream journals of economic geography rarely publish ESG-related empirical papers. In addition, as the importance of ESG continues to rise, ESG activities

and ESG reports are being utilized to boost companies' reputations (Sethi et al., 2016). However, the effect of geography on the relationship between ESG and brand value or reputation has been relatively neglected and under-researched, while the contribution of the financialization of intangible assets, such as brands, to contemporary market value has been growing (Willmott, 2010).

## 2.2 Meanings and Impacts of Sustainable Finance

Although financialization may have increased inequality, insecurity, and the erosion of trust (Dore, 2008), sustainable development cannot happen without finance. Robert Coase proposes a market-based solution to ESG problems as a "third way" between regulation and taxation to address "negative externalities" (Coase, 1960). Virtually all countries that pursue rapid economic growth experience severe environmental pollution and ecosystem degradation. Meadows et al. (1972) assert that global economic growth will peak sometime this century owing to food shortages and environmental degradation. This has led to the emergence of important tools for industrial restructuring, such as responsible investment, a low-carbon economy, and green finance. The benefits of environmental investment have been proven over several years. For example, between 1970 and 1990, the total benefits derived from the implementation of the Clean Air Act (CAA) in the USA were estimated at $5.6–49.4 trillion (central estimate: $22.2 trillion), with costs of $0.52 trillion (US EPA, 1997). Despite the emergence of green finance theory in the 1980s, a universal understanding of the meaning and scope of green finance has eluded experts in the field. Salazar (1998) describes green finance as a necessary financial innovation for environmental protection and an important bridge connecting the financial sector with the environmental industry. Labatt and White (2002) also contend that green finance refers to financial instruments that use the market as a basis for research to improve environmental quality and transfer environmental risks.

Sustainable finance, which is derived from the concept of sustainable development, primarily refers to financial means and systems that enable sustainable economic and social development. I argue that sustainable finance is an interdisciplinary approach that spans across theories related to sustainable development and financial theory. Finance is a necessary contributor to sustainable development. The main task of the financial system is to allocate capital productively. Compared to green finance, sustainable finance not only emphasizes the E component of the ESG factors, but also extends its focus to social responsibility and corporate governance. The use of sustainable finance in 18th-century Europe was primarily associated with faith-based investment. Some Western churches have formulated a series of strict investment guidelines for believers. These guidelines prioritized human rights and peace and restricted the abuse of capital through unethical transactions. When stock exchanges were established, some churches barred believers from investing in "sin stocks," such as those related to alcohol, tobacco, gambling, and pornography (Schwartz, 2003). Quakers in North America strongly rejected the industries of war, which were very profitable at the time. In a sermon titled "The Use of Money," John Wesley, the founder of the Methodist church, established the principle that Christians should not invest in activities that can damage the health of the body and mind (Gillet & Salaber, 2015). This investment philosophy was later referred to as socially responsible investing (SRI). Financial support for sustainable development was confirmed by the United Nations Environment Program (UNEP) in 1992. The UNEP Finance Initiative (UNEP FI) was launched during the Earth Summit in Rio de Janeiro, Brazil, to incorporate ESG factors into decision-making processes and leverage the power of finance for promoting sustainable development. Today, ESG factors are considered valuable indicators of sustainable development.

Analyses of the economic impacts of sustainable finance are often carried out at two levels: macroeconomic and microeconomic. Considering macroeconomic impacts, since Goldsmith (1969) first proposed the theory of financial development, academia has

conducted in-depth research on the relationship between financial development and economic growth and obtained significant results. McKinnon and Shaw (1973) conducted theoretical and empirical analyses of the contribution of finance to economic development. Levine (1997) explains the problem from the perspective of the functions of finance. In general, scholars agree that there is a significant interaction between financial development and economic growth. However, there is relatively little in-depth research on green finance and sustainable economic development. In the West, Panayotou (2003) suggests that the volume of carbon emissions and economic growth have an inverted "U" shape over the long term. Dietz and Adger (2003) analyze the relevant panel data on economic growth, biodiversity, and environmental protection. Their results indicate that economic growth and biodiversity fit the environmental Kuznets curve. Most scholars believe that sustainable finance plays a positive role in a low-carbon economy (Wara, 2007). In China, Ren (2009) analyzes the relationship between finance, environmental protection, and sustainable development, highlighting the importance and basic ideas of building a green financial system.

From the perspective of microeconomic impacts, first, considering research on the impacts of green finance on financial institutions, Chami et al. (2002) contend that the development of green finance by financial institutions not only improves their reputation in the industry but also helps financial companies exercise risk control. Caldecott and McDaniels (2014) assert that the environment may affect the value and stability of financial assets, institutions, and systems. Clark et al. (2015) observe that prudent sustainability practices have a positive influence on investment performance. However, Galema et al. (2008) argue that, owing to the diversification of financial instruments and the differentiation of investment needs, assuming or ignoring social responsibility does not affect the returns and risks of financial institutions. Urban and Wójcik (2019) also argue that investment banks do not avoid companies with poor ESG performance. Second, considering research on the impacts of green finance on

enterprises, Cortazar et al. (1998) demonstrate that companies that experience significant price fluctuations are more willing to increase investment in environmental protection technologies. Meanwhile, Ye (2008) argues that Chinese commercial banks lack the professional, institutional, and governmental support required to implement green credit policies. Some highly polluting enterprises use informal financing methods, thereby weakening the ability of green credit to restrict such enterprises. Third, considering research on the impacts of green finance on individuals, based on fund return data for 1987–2009, Climent and Soriano (2011) observe that the rate of return from environmental mutual funds is lower than that from other types of funds. Nevertheless, investors tend to prefer environmental mutual funds when considering social reputation, the sustainability of future development, and other factors.

Although there is currently no universally agreed-upon definition of sustainable finance within academia, there is a growing consensus on the need to develop sustainable finance at the macroeconomic level. Over the past four decades, governments and international organizations have introduced various policies and measures aimed at promoting sustainable finance. For instance, in 1974, Germany established the world's first policy-oriented environmental bank, while in 2002, IFC and ABN AMRO jointly proposed the "Equator Principles," which require the evaluation of a project's environmental and social impacts before issuing credit. From an economic perspective, sustainable financial policy involves directing sufficient social funds towards sustainable development projects through policy and institutional arrangements aimed at achieving the goal of sustainable development. However, at the microeconomic level, scholars have not reached consistent conclusions regarding the positive aspects of sustainable finance through either qualitative or quantitative analyses. In my opinion, this lack of consensus may impede the theory and practice of sustainable finance, which could potentially undermine its market credibility.

## 2. 3 The Process, Motivations and Rules of ESG Disclosure

ESG disclosure has a long history that dates back to the early 1970s. For more than 50 years, companies in developed countries have voluntarily disclosed social and environmental information through various reports, such as employee reports, social and environmental reports, and triple bottom line reports (Buhr, 2007; Tilt, 2001). These disclosures include news, announcements, annual reports, and independent environmental reports. The disclosure of ESG information is not only useful for investors and analysts to evaluate and predict a company's risk, but it also provides the basis for effective environmental management by the government and self-interest protection by the public. For companies, ESG disclosure is both a requirement of external financial markets and an opportunity to enhance their reputation (Michelon, 2011).

In China, environmental degradation and violations of labor rights have become increasingly pressing social issues. The Chinese government is promoting ESG disclosure to ensure sustainable economic development (Xu et al., 2012). However, ESG disclosure by listed Chinese companies is still in its early stages. Companies lack awareness of voluntary disclosure, particularly with regard to environmental information disclosure (Luo et al., 2019; Qi et al., 2013). Corporate social responsibility reports mostly contain "soft information" related to environmental disclosure, and there is very little "hard information" on environmental performance indicators. This phenomenon is also common in many other developed countries where environmental information is voluntarily disclosed, despite its linkage to executive compensation (Campbell et al., 2007).

In the literature investigating sustainable finance's effectiveness and mechanisms, scholars have argued that the impact of sustainable finance on the capital market is often reflected through stock prices or investor returns. For investors, ESG information is a

critical factor in making sustainable investments. Numerous studies have shown that company information disclosure positively impacts stock liquidity. For instance, Amihud and Mendelson (1986) suggest that information disclosure can reduce the degree of information asymmetry among market traders and enhance liquidity. Similarly, Diamond and Verrecchia (1991) reveal that information disclosure can decrease the degree of information asymmetry, lower a company's capital cost, and improve its performance. Additionally, Welker (1995) emphasizes that improving information disclosure quality can lead to greater liquidity in a company's stock.

There may be many different motivations for ESG information disclosure. Solomon and Lewis (2002) conclude that the motivations for corporate environmental information disclosure can be grouped into four types: market, social, political, and corporate social responsibility. However, many researchers describe these as external pressures. For example, Liu and Anbumozhi (2009) find that the environmental information strategies of listed companies in China may exist solely to meet government requirements, and shareholders and creditors have very little influence on the same. However, De Villiers and Van Staden (2010) survey individual stakeholders in Australia, the United Kingdom, and the United States and find that the disclosure of environmental information is a necessity for shareholders and that corporate management should be accountable to shareholders regarding environmental impacts.

Some scholars posit that ESG disclosure is based on the consideration of corporate reputation in the market. For example, Buhr (2002) argues that the external image of a company affects its product’s competitiveness. Therefore, maintaining a good public image is essential for companies to ensure that their products are in a favorable competitive position. Thus, it is necessary for companies to disclose environmental accounting information externally. After considerable debate, Clarkson et al. (2013) conclude that because external factors such as the media exert pressure for the

disclosure of environmental accounting information, companies sometimes need to use the media to disclose environmental accounting information to enhance their corporate reputation.

Research on the influence of internal dynamic factors on ESG disclosure has become increasingly comprehensive and includes the type of industry and size of the company, corporate governance, and financial status. Grossman (1981) and Milgrom (1981) find that to ease adverse selection, reduce financing costs, and increase the company's stock price, company executives are motivated to disclose non-financial information, including ESG information. On this basis, they formed the capital market transaction motivation hypothesis. Bragdon and Marlin (1972) highlight that pollution control and profit coexist, and that the environmental rating of papermaking companies is positively correlated with the company's price-to-earnings ratio. A large number of studies demonstrate that the type of industry and size of the company are significant factors affecting corporate environmental information disclosure (Cormier & Gordon, 2001; Wang, 2008). The nature of corporate ownership as well as the characteristics of the board of directors, the board of supervisors, and senior management have a substantial impact on corporate environmental information disclosure (Iatridis, 2013).

Given all this, the question arises why so many listed companies are unwilling to disclose ESG-related information. Gray et al., (2001) argue that the demand for information is not strong enough, the disclosure cost is too high, and organizations do not pay sufficient attention to this area. One of the most widely known explanations is the proprietary cost motivation hypothesis (Amel-Zadeh & Serafeim, 2018; Eliwa et al., 2021). Wagenhofer (1990) analyzes the impacts of proprietary costs on voluntary disclosures and argues that in a competitive industry, on the one hand, a company's disclosure of the information is conducive to the market's ability to accurately ascertain its value. On the other hand, competitors may access the company's information and take actions that are detrimental

to the company's interests. Proprietary costs are indirect costs. However, there is no direct empirical evidence to support this hypothesis (Beyer et al., 2010). An important reason for the lack of empirical evidence is the difficulty of measuring proprietary costs directly.

During the evolution of ESG, rules for ESG information disclosure have been a key source of controversy. First, scholars have yet to reach an agreement on whether disclosure should be voluntary or compulsory. As company executives will intentionally conceal private information that can improve the overall welfare of society (Pae, 2002), some scholars suggest that companies be forced to disclose important non-financial information. However, compulsory disclosure has its drawbacks. Institutions that formulate compulsory disclosure standards will be subject to political pressure, which will cause standards to deviate from optimal and become tools to safeguard the interests of certain groups (Ramanna, 2008). On the other hand, even if the institution responsible for the mandatory disclosure standards is independent and impartial, mandatory disclosure may not be in line with the overall cost-effectiveness principle of society. Second, regarding ESG scoring methods, subjective scoring of the disclosure content and semantics is currently in common use. Because of the diversity of languages in different countries, ESG's semantic scoring standards cannot be uniform. Bozzolan et al. (2009), Muslu et al. (2012), and others used the number of sentences of disclosed information to measure non-financial information. Although this approach can avoid subjective errors to some extent, whether a larger number of sentences means disclosure of more non-financial information is debatable.

## 2.4 Theoretical Grounding of ESG Practices

ESG is a new concept, but the concept of social responsibility (the "S" in ESG) was proposed by Sheldon (1924) in his book *Management Philosophy*. He states that

enterprises should not regard economic benefits as their sole goal. While making profits, enterprises should also consider the interests of groups inside and outside the enterprise. Bowen (1953), also known in academic circles as the "Father of Corporate Social Responsibility," defined and explained corporate social responsibility (CSR) for the first time as the obligation of managers to make policies, make decisions, and take actions based on social standards and values.

The concept of CSR has quite an expansive literature (Mosca & Civera, 2017). Although CSR has been studied for a long time, scholars disagree about its definition and classification of CSR. Carroll (1999) argues that corporate citizenship should include economic, legal, ethical, and charitable perspectives, emphasizing that in addition to economic performance and legal compliance, active contribution to society should be at the core of CSR. Meanwhile, Lantos (2001) divides CSR into three categories: ethical CSR, altruistic CSR, and strategic CSR. Aravossis et al. (2006) posit a similar view, stating that the CSR evaluation structure can be divided into three steps: CSR target analysis, CSR execution, and CSR result evaluation. Unlike the stakeholder dimension of CSR, which considers stakeholders that are both internal and external to the company, corporate governance pays more attention to the internal management of the enterprise and is the embodiment of the internal responsibility of the enterprise.

Comparing ESG and CSR reflects the transition from a conceptual discussion to the business practice of sustainable development. CSR is still in its conceptual stage after decades of development and faces obstacles to putting it into practice. Although many scholars discuss the different dimensions of CSR, there is little discussion about how CSR should be applied to business practice. ESG, by contrast, provides more accurate guidelines for measuring corporate behavior. CSR emphasizes a multi-stakeholder perspective and focuses on a broad range of groups, while ESG focuses on the relationship between corporate social performance and shareholder returns from the

perspective of investors in the capital markets. The ESG application scenario focuses on the capital market, especially between investors and listed companies.

The starting point of theoretical research on ESG disclosure is the criticism of the "useful view of decision-making" and the agreement with the "trusted responsibility view." The useful view of decision-making refers to the perspective that accounting should provide useful information for the decision-making processes of various stakeholders in an enterprise. In 1953, Staubus first proposed the idea that the goal of financial accounting is to improve decision-making (Staubus, 1958; 2013). Laughlin and Puxty (1983) refute this idea from the perspective of the neoclassical economics that traditional accounting theory relies on, and Lehman (1995) argues that the useful view of decision-making, which emphasizes market efficiency, also neglects fairness and justice. Accounting not only transmits a set of numbers but also conveys information about fiduciary responsibilities and clarifies the reasons for using social resources and the environment. Gray (1992; 2001) analyzes the two purposes of the concept of fiduciary responsibility: establishing closer social relations and returning rights to the public, and increasing the transparency of the organization. He concludes that fiduciary responsibility does not necessarily need to be reflected in financial measurement units and that fiduciary duties are concerned with identifying responsibilities and providing information about these responsibilities to those who have the right to such information.

Current theories that explain the motivation for ESG disclosure remain controversial. Gary et al. (1996) summarize the theories of the previous literature into three types: decision theory, agency theory, and social and political theory. The theoretical debate suggests that ESG disclosure has complex motivations. However, the widely accepted motivation for ESG disclosure is based mainly on the following five theoretical foundations: legitimacy theory, asymmetric information theory, stakeholder theory, business ecosystem theory, and reputation theory.

**Legitimacy Theory:** An increasing number of researchers believe that the legitimacy theory can be used to explain the motivation of ESG disclosure (Cho & Patter, 2007; Clarkson et al., 2008; Deegan, 2002). Legitimacy theory is based on the concept of the "social contract." According to the theory, there is a "social contract" between the company and society. The society gives the company legal status, the right to own and use natural resources, and the right to hire labor. The company then uses these social resources to produce goods or provide services to society and discharge waste into the external environment. When society considers the company's business model unacceptable and "illegal," the company's survival is threatened. According to the legitimacy theory, companies endeavor to reflect the expectations of society (Patten, 1991), i.e., they want to convince the public that their activities are legal and attempt to reduce public pressure on them by disclosing environmental information. Legitimacy theory is the most common way for scholars to explore the theory of corporate social and environmental reporting (Deegan et al., 2000). Cho and Patten (2007) examine the legitimacy theory of environmental information disclosure as a function of public pressure on firms in a socio-political environment.

**Asymmetric Information Theory:** To avoid the "adverse selection" problem, companies with better ESG performance will pass their non-financial information to external entities for economic purposes, to reduce information asymmetry. Several studies in the extant literature support this hypothesis. For example, Verrecchia (1983) and Dye (1985) find that companies with "good news" are motivated to disclose information and separate themselves from companies with "bad news." ESG information disclosure can make up for external information asymmetry. Creditors are plagued with this asymmetry when making investment decisions. They are confused by the asymmetry of corporate risk information, and loans may tend to be issued to companies with high environmental risks (Healy & Palepu, 2001). However, some

scholars contend that even if the ESG information is transparent, creditors may have no use for it. For example, Urban and Wójcik (2019) argue that although financial institutions accept the idea of sustainable entry as a business opportunity, they have not done anything relevant. The authors analyze nearly 500,000 debts and stock underwriting transactions from 2005 to 2017 and conclude that investment banks do not avoid companies with poor ESG performance.

**Stakeholder Theory**: Edith Penrose, in her 1959 book *The Theory of the Growth of the Firm*, proposes that the enterprise is a collection of human assets and interpersonal relationships (Penrose, 2009). This laid the foundation for the formulation of stakeholder theory. Freeman (1984) argues that enterprises can be seen as a collection of related stakeholders, and enterprise managers need to manage and coordinate them. The central idea of the stakeholder theory is that the success of a corporation is dependent on its relationships with key stakeholders, including owners (shareholders), managers, the local community, customers, employees, and suppliers (Freeman, 2001). In recent years, modern stakeholder theory has also been widely connected with the literature on corporate sustainability because it can provide a framework to explain the relationship between business and society (Ayuso et al., 2014). The finding that stakeholder power can predict corporate social disclosure provides support for the connection between CSR and stakeholder theory (Roberts, 1992). Clarkson (1995) first argues that the best way to incorporate CSR into business objectives is to change intangible ESG issues into tangible stakeholder interests. Based on this, researchers have applied stakeholder theory to the study of ESG. For example, stakeholders can impose pressure on firms to adopt environmental practices (Darnall et al., 2010; Delmas & Toffel, 2004) so that the proactive actions can bring larger future cash flows (Cordeiro & Tewari, 2015) and financial benefits (Ruf et al., 2001).

**Business Ecosystem Theory**: A business ecosystem is the concept of an ecosystem in biology that is applied to the field of business management. Moore (1993) was the first to introduce the term "business ecosystem" and suggested that it should replace the concept of "industry" because many economic activities today are not carried out in a single industry, but across industries. Moore (1993) refers to a wide range of "business ecosystems" that include companies, customers, suppliers, major producers, competitors, and other stakeholders. Thus, business ecosystems cannot be separated from a complex structure (Lawton & Brown, 1993), without a core, and without clear boundaries (Snehota & Hakansson, 1995). Iansiti and Levien (2004) argue that business ecosystems are characterized by a large number of loosely connected players, all of whom share the same fate. Therefore, the overall health of the business ecosystem is of paramount importance. In summary, ecosystems are viewed as a complex network of actors, each with different backgrounds, attributes, decision-making principles, and purposes (Tsujimoto et al., 2018). While a large literature on business ecosystems has emerged (Jacobides et al., 2018), this research has been characterized by fragmentation, but it can be broadly divided into three lines: considering ecosystems as a community of firms and stakeholders (Teece, 2007); seeing the ecosystem as a channel for innovation (Adner, 2006); and focusing on the platforms built by a specific set of technologies (Cennamo & Santalo, 2013).

**Theory of Reputation:** Kreps and Wilson (1982) are the first to use game-theoretic models to explain reputational effects in organizations. They argue that a monopoly may act aggressively to acquire the reputation of being "tough" in order to use it to the organization’s advantage in competitions. Fombrun (1996) further proposes the definition of corporate reputation as a perceptual representation of a company’s past actions and future prospects that describe the firm’s appeal to all of its key constituents, and that a corporation’s reputation can reflect the overall attractiveness of all stakeholders (Fombrun & Van Riel, 1997). Such definitions connect the theories of reputation and

stakeholder theory (Lin-Hi & Blumberg, 2018). The relationship between corporate sustainability and corporate reputation has also been investigated in previous studies. Kim (2019) finds that the positive effects that CSR information has on the relationship between corporations and consumers can be long-lasting, regardless of consumers' identification levels with a company. Lin-Hi and Blumberg (2018) further prove that the positive relationship between CSR and corporate reputation is causal and come to the conclusion that the individual corporation can increase its reputation by "avoiding bad." In addition, entrepreneurial (or executive) reputation is also defined as a capital asset, an intangible asset that generates income for the firm (Gaines-Ross, 1997). The typical characteristics of an entrepreneurial reputation are twofold. First, it has a wide range of influence (Ranft et al., 2006); the influence of entrepreneurial reputation goes beyond the boundaries of the company and can affect a wide range of stakeholders. Second, it has a long duration of influence (Agarwal et al., 2009); the entrepreneurial reputation has a continuous influence on the development of a company.

## 2.5 Review Summary and Research Gap in Literature

After reviewing the extant literature, it is not difficult to observe that scholars have yet to reach a conclusion on the relationship between sustainable finance and ESG information disclosure. There are four propositions in this regard: no significant relationship; a negative relationship; a positive relationship; and a U-shaped relationship. Most of the research on sustainable finance and ESG is based mainly on mature capital markets in countries such as the United States and the United Kingdom. There has been little research on emerging markets and the impact of the disclosure of sustainable financial information on these markets. As emerging markets significantly differ from mature capital markets in governance and property rights, it will be biased and inappropriate to apply the research results of mature capital markets directly to emerging ones. For example, state capitalism and the relationship economy play a vital role in the process of Chinese market transactions, which is different from the Western contract economy. A

good relationship network has been considered by many scholars as the core competitiveness of Chinese enterprises. If the relationship network plays a vital role in the process of market resource allocation, then it is questionable as to how much incremental revenue can be raised by the disclosure of ESG information.

From the perspective of the economic consequences of ESG information disclosure, there is scarce literature on cross-market stock prices, brand value quantification, and executive compensation. These are the questions to be addressed in this study. In addition, notwithstanding sustainable finance or ESG information disclosure, there is little first-hand research data, and this has mainly been gathered from developed countries in Europe and America. For example, in the United States, the main reason for which millennials and Gen-X are interested in investing in ESG is that the pursuit of material aspects is no longer their main goal in life; they are eager to give back to society and protect the planet that will be home to future generations. This is also a reasonable way for pension planning consultants to attract young clients. However, in China and other emerging market countries, there is currently no literature on how young people and retirees consider ESG.

Although scholars have made significant strides in exploring the theory and motivation behind ESG disclosure, there are still research gaps that require attention in future studies. Currently, ESG information is predominantly measured using subjective scoring methods. While this approach allows for the selection of indicators with high relevance to the research topic, the selection of indicators and the assignment of weights are highly subjective, which reduces the explanatory power and verifiability of the research. Additionally, this method requires a considerable amount of time to read numerous annual reports and temporary announcements, resulting in a smaller research sample and increasing the likelihood of sampling errors, thereby decreasing the reliability of the estimation results.

Scholars' views on the theory of corporate ESG disclosure are not wholly consistent. The literature analysis above reveals that various motivations and theories are complementary to each other rather than contradictory and competing. For example, corporate reputation theory is based on stakeholder theory. Fombrun and Rindova (1996) state that corporate reputation can be used to measure the relative position of a firm in relation to all its stakeholders, as well as the competitive and institutional environment of the firm. Wartick (2002) argues that corporate reputation is the sum of individual stakeholders' perceptions of the firm, and this perception measures how well the firm responds to the needs and expectations of its many stakeholders. However, each theory has its limitations. For example, the stakeholder theory has obvious flaws and deficiencies. First, traditional business theory holds that the primary goal of an enterprise is to "maximize economic profit." The emergence of stakeholder theory has expanded the business goals of enterprises; in addition to fulfilling economic goals, enterprises must also assume social and political responsibilities. This is likely to lead to a deadlock in "corporate-run society." Second, the definition of stakeholders is too broad—what are the boundaries? Although many scholars have expressed their views on the definition and division of stakeholders, most do not go beyond the stage of exploration and hypothesis. Thus, Wartick (2002) believes that the lack of definitions and data has led to the underdevelopment of theories related to corporate reputation.

Finally, the current literature on ESG scoring methods and standards is scarce. At present, ESG information is measured mainly through subjective scoring. Although this method can be tailored by selecting relevant indicators according to research content, it involves subjective index selection and weight assignment, reducing the explanatory power and verifiability of research. Additionally, the lack of unified ESG indicators across countries leads to variation in calculation methods between different companies

or even the same company during different periods, negatively impacting the comparability and accuracy of empirical results.

## 2.6 Reputation Ecosystem: A New Theoretical Framework

ESG disclosure and impact are not interpreted in the same way under different theoretical frameworks. Legitimacy theory is based on the concept of the social contract, but laws are costly to enforce and ultimately require reputation systems to maintain them. Meanwhile, stakeholder theory emphasizes that a company's success depends on its relationships with key stakeholders, but stakeholders are defined as possessing low operability—they do not have fixed property, and stakeholder interests are inherently competing. Business ecosystems use natural ecosystems as metaphors, emphasizing symbiosis and networking among firms; however, they ignore the role of individuals, governments, and nonprofit organizations, and are not sufficiently persuasive in explaining the mechanisms of influence among the various ecological niches.

Existing reputation theory explains the information effect (Diamond, 1989), the asset effect (Cripps et al., 2004), and the maintenance effect (Tadelis, 1999) of reputation in an environment of information asymmetry. It emphasizes competitiveness and adopts a predominantly static perspective, ignoring symbiosis and dynamic perspectives. Especially in the ESG ecosystem, where various factors interact to overemphasize chaotic phenomena and randomness, we must develop nonlinear systems to solve the problem of complexity. The *reputation ecosystem* is based on this kind of thinking.

Market participants are engaged in a competition akin to the "survival of the fittest," and all stakeholders involved in the market are subject to the influence of an intangible entity—the *reputation ecosystem*. Drawing inspiration from Darwin's theory of evolution, I have developed the business ecosystem theory, integrated stakeholder

theory, and reputation theory into a new framework. This framework posits that stakeholders are situated within an invisible *reputation ecosystem*. Similar to the business ecosystem, the reputation ecosystem is multifaceted and interconnected, but unlike the former, it functions as an unseen force that governs business, society, and politics.

In 1948, Samuelson argued that Adam Smith discovered the mysterious principle of an invisible hand guiding the order in the economic system, which I believe is synonymous with the reputation ecosystem. Although Smith's metaphor has been interpreted in numerous ways (Grampp, 2000) , including price mechanisms, competition, evolutionary processes, and mutual advantage in exchange, I contend that only the concept of reputation can connect the various "invisible hands" circulating in academic discourse and unify them as the individual parameters of a single overarching model.

When thinking about the causes of biodiversity in *The Origin of the Species*, Darwin was inspired by Adam Smith's *The Wealth of Nations* (Mlodinow, 2016)—that is, Smith's metaphorical invisible hand is based on the idea of an ecosystem. Smith believed that the interests of merchants and manufacturers were fundamentally opposed to the interests of society as a whole. However, if the fruits of a society's development cannot be shared with the public, it will be morally unpopular and risky, because it is destined to threaten social stability. People entrust their lives to doctors, their property, and even their reputation to lawyers, which can only be realized in a society with a good reputation system. This kind of moral inference and moral concern is also the theoretical basis for promoting the need to establish a *reputation ecosystem* and the concept of ESG.

Reputation is a universal feature of human social interaction (Milinski, 2016). A *reputation ecosystem*, then, is a dynamic network ecosystem involving stakeholders such as individuals, companies, institutions, and governments. The reputation capital

accumulated from the beliefs, views, and evaluations of the stakeholders in the system is the common currency for stakeholder interaction. Within an ESG ecosystem, reputation serves as a signal of a stakeholder's quality and demonstrates their behavioral attributes and type to other stakeholders. A healthy *reputation ecosystem* is like a healthy human circulatory system—a cycle of capital driven by various dynamics.

*Reputation ecosystem*s also have the following characteristics: integrity, intangibility, and dynamic equilibrium. These are elaborated on below.

**Integrity**. A *reputation ecosystem* has a well-developed system structure that seeks survival information from the environment and realizes asset value through that environment. Thus, it is an open system with extensive connections to the external environment. Within the framework of a *reputation ecosystem*, the development of any company is inseparable from the input or participation of various stakeholders, with the enterprise pursuing the overall interests of all stakeholders, not just those of certain subjects.

**Intangibility**. Two systems are needed to maintain market operation: the tangible legal system and the intangible reputation system. With the popularization of the ESG concept and the increasing disclosure of ESG information, stakeholders currently rely primarily on laws and regulations. However, intangible reputation is a more valuable mechanism than tangible law. Indeed, the legal system itself cannot operate without a reputational foundation.

**Dynamic equilibrium**. The different combinations of the *reputation ecosystem*'s elements in space, time, and capital must alter with the external environment, maintaining sensitive adaptability to the outside world. At the same time, they must maintain the dynamic balance of the system—that is, the elements of the system must uphold the

corresponding symbiotic relationships within each link. Otherwise, the system will be out of balance and unable to function normally.

According to evolutionary theory, every element in the world has a life cycle of birth, growth, maturity, aging, and death, and enterprises are no exception (Adizes, 2004). Reputation, which is dependent on the company and other stakeholders, therefore also has a life cycle. When a firm dies, its accumulated reputation will eventually die out, along with the corresponding brand, if not grafted onto another corporate entity.

Given that ESG activities such as ethical consumption have been considered an innovation trend (Ganglmair-Wooliscroft et al., 2016; Lundahl, 2014), I posit that the development of firms demonstrates a skewed bell-shaped curve through the diffusion of innovation theory (Moore & McKenna, 1999; Rogers, 1976; Rogers et al., 2014). In this curve, legal liability is the lower bound of a company's reputation. Companies with such a low reputation that they are unable to keep up with legal liability will vanish. The highest standards of reputation, such as quality, ethics, and social responsibility, define the upper bound of a company's reputation value. At the same time, the law is the lower bound of the lag, amid the constant tinkering to eliminate the inability to keep up, while reputation is the pioneer and will be faster to maximize benefits or maintain a competitive advantage.

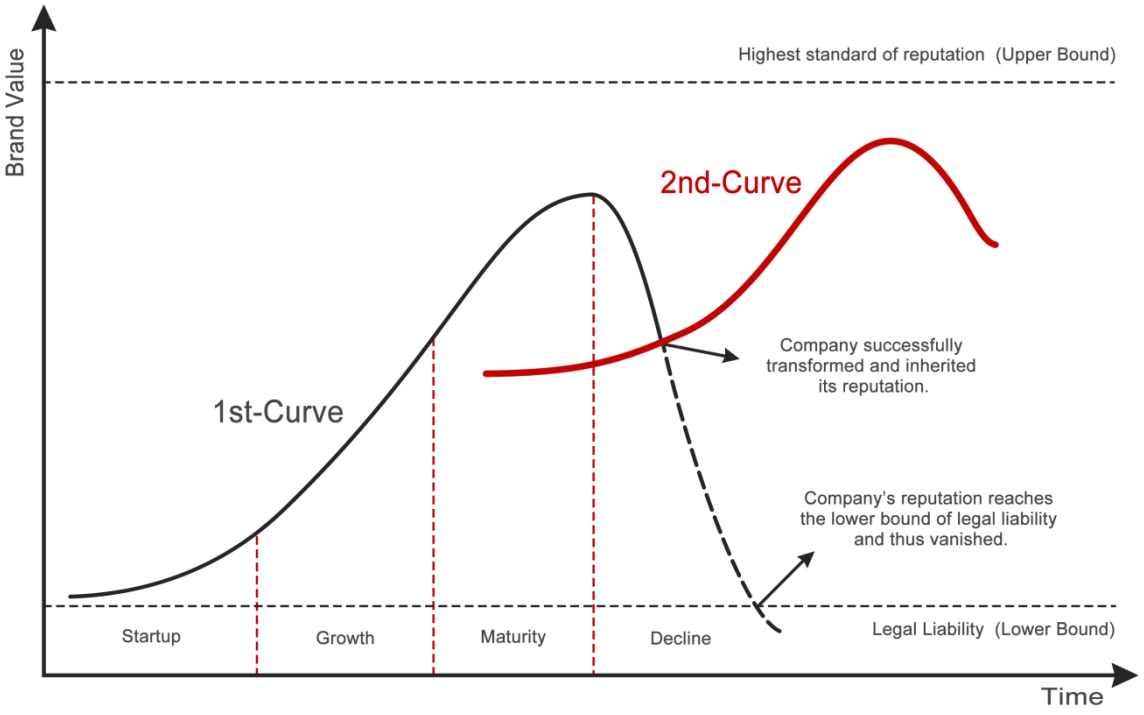


**Figure 2.1**. **Reputation Curve: ESG-Driven Growth.**
This figure presents the growth of corporate brand value under the *reputation ecosystem*. The bottom dashed line denotes the lower bound of the curve, which is defined by legal liability. The top dashed line denotes the upper bound of the curve, which is defined by the highest standards of reputation, such as quality, ethics, and social responsibility. The red curve on the right denotes the succession of a brand if the company makes successful changes.
**Source:** Figure created by author

Currently, ESG is evaluated via a score or rating of ESG performance. A shortcoming of such evaluation methods is that they do not measure the total amount of positive feedback accumulated through ESG actions. To demonstrate how this totality could be considered in ESG ratings, I take the idea of GDP and regard the total positive feedback that ESG ratings incur as "Gross ESG." The dynamic model in the attached figure reflects the evolving relationship between the interval difference between the Gross ESG, the reputation curve, and the legal bottom line.

In this context, brand equity stands for a set of assets (e.g., positive word of mouth) and/or liabilities (e.g., negative reviews) in the form of brand associations and customer loyalty (Aaker, 1992)—that is, an emotional and functional commitment on the

customer's part (Ghodeswar, 2008). Brand value pertains to the financial worth of the brand (Aaker, 1992); the brand itself is a customer-centric concept, i.e., focusing on promises made to customers; and reputation is a company-centric concept, i.e., focusing on promises to all stakeholders in the economic ecology (Ettenson, 2008).

To facilitate my empirical analysis, I replace "Gross ESG" with a reputation curve and brand value with the financial worth of brand equity (and the "Gross ESG" behind it). Just as Darwinian evolution is at work in markets, reputation controls the market ecosystem. When a company begins to decline and its reputation starts to fade, the organization must change. A company that succeeds in doing so initiates the second reputation curve, which resembles the double S-curve diffusion model (Handy, 2016; Morrison, 1998). If it fails, it falls into decline and death. Hence, I posit that companies' ESG actions play two roles: (1) creating reputation to increase brand value-added and (2) maintaining legitimacy to meet regulatory requirements.

The current pertinent theoretical circle has lagged in terms of gauging ESG factors' mechanisms of motivations and influences; in other words, none of the many theories within its boundaries have been able to comprehensively grasp, explain, or predict ESG behavior. This thesis establishes a new theoretical framework for the *reputation ecosystem and* then verifies it through three empirical studies. Such a framework aims to explain how reputation, including corporate reputation and executive reputation, can influence the business market. The growth curve in the reputation framework points to how a company gains and loses intangible assets (brand value) due to its social reputation. The impact of ESG on corporate behavior can be explained based on this reputation framework, as outlined in the subsequent paragraphs.

First, the perspective provided by the framework has been instrumental in developing research hypotheses on the relationship between ESG and stock prices, executive

compensation, and brand value. The hypotheses put forth in the three papers are grounded in a review of the current literature on ESG and knowledge of the capital market. To provide a robust theoretical foundation for these hypotheses, the reputation framework is drawn upon to propose three impact models of ESG on stock prices, executive compensation, and brand value. These impact models, derived from the reputation framework, highlight the impact paths of corporate ESG behaviors. For example, in the paper on ESG and stock price, the impact model presents three levels of the impact of ESG behavior, with reputation playing a critical role in bridging the different relationships.

Second, the *reputation ecosystem* framework helps fill the research gap by providing impact mechanisms via causal analysis. As even the results of regression analysis did not lead to concrete evidence for causal relationships, I employed the reputation framework to address the problem via the latter's provision of theoretical implications for the relationships. Combining the causal analysis with the regression results, I am then able to explain how ESG impacts the stock market and why the impacts of ESG dimension performance differ.

Finally, the present framework offers unique insights into the impact mechanisms of ESG that stakeholders can apply in a practical sense. I link my empirical research results with practical suggestions under the framework of reputation. In short, the framework strengthens my findings with practical implications, which can inspire corporate managers, policymakers, and investors alike.

# Chapter 3 | How Does ESG Performance Affect Stock Price? Evidence from China's Cross-Listed Companies


## Abstract

Drawing on new data and theory, this paper examines the impact of environmental, social, and governance (ESG) performance and its three dimensions on stock prices across different markets. The study presents a theoretical framework for a *reputation ecosystem*, which asserts that ESG factors can influence a firm's reputation, brand value, financial performance, and ultimately, its stock price. The empirical study uses a unique ESG dataset scored according to an investor-paid model and artificial intelligence (AI) to analyze a sample of Chinese companies with cross-listings in emerging and developed markets (mainland China and Hong Kong, respectively) from 2014 to 2018. The study concludes that ESG performance has a positive effect on stock prices and provides evidence to suggest a causal relationship. Specifically, in mainland China and Hong Kong markets, a one-unit increase in the overall ESG performance score can raise the average annual stock return by 0.022 and 0.017, respectively. The positive relationship is present across all three ESG dimensions, though their effects are not simultaneous. Additionally, the study finds that this positive relationship holds true for state-owned enterprises (SOEs) and non-SOEs, as well as companies in both monopoly and non-monopoly sectors.



**Keywords:** *ESG, cross-listings, stock price, investor-paid model, reputation ecosystem*
**JEL classification:** G11, G14, G32, M14, Q01

## 3.1 Introduction

The impact of Environmental, Social, and Governance (ESG) factors on stock prices is a controversial topic. Whether ESG performance can be expressed through stock prices is directly related to the core interests of investors, shareholders, and executives. The two main views surrounding the issue are in opposition to one another. The positive view is that companies with a strong sense of social responsibility tend to disclose more non-financial information, thus improving their transparency and reducing their risk of stock price collapse (Kim et al., 2014). ESG investments will not be at the expense of investment returns but rather will increase share value (Clark & Hebb, 2004), resulting in higher returns on ESG investments (Jackson, 2019). The negative view is that social responsibility fulfillment raises costs and imposes risks that companies would not otherwise take (Aupperle et al., 1985). Management tends to use social responsibility as a cover-up tool and for enhancing its professional reputation, which increases the risk of stock price collapse (Petrovits, 2006).

Possible reasons for the contrasting research results and market noise are as follows: First, ESG data can be very confusing to general investors, and its performance measures lack transparency and attention because they are non-financial (Chatterji et al., 2009). ESG ratings are not consistent across raters, and there is increasing concern about inconsistencies among ESG databases (Berg et al., 2019; Berg et al., 2020). Second, the geography of finance remains a vital component of global investment strategies (Clark & Wójcik, 2003), yet previous studies have been limited to a single market and have made few cross-market comparisons, thus leading to unconvincing results. Cross-listed firms have greater analyst coverage and forecast accuracy than non-cross-listed domestic firms (Lang et al., 2003). Third, explanations of the impact of ESG on stock prices have focused on market characteristics, ownership characteristics, firm risks, and causal

effects (Gillan et al., 2021), but there is a lack of research on the mechanisms by which ESG affects stock prices.

To reconcile these opposing views, this paper develops the theoretical framework of a *reputation ecosystem* that elucidates the mechanisms by which ESG investments affect firm value. My theory explains how market participants are involved in a "survival of the fittest" contest and how all stakeholders involved in the market are controlled by an invisible hand—the *reputation ecosystem*. This study examines the relationship between ESG performance and stock prices by selecting a sample of 80 cross-listed companies from 2014 to 2018 and comparing the differential impact across markets. In contrast to the issuer-paid approach utilized by major global ESG rating agencies (Krugman, 2010), I employ an investor-paid model and artificial intelligence (AI) for data collection and ESG scoring to address its limitations and enhance the overall rating quality, providing an informational edge (Beaver et al., 2006; Bhattacharya et al., 2019). I discover that the impact of ESG is attained by influencing a firm's reputation, which subsequently impacts brand value, financial performance, and ultimately, stock price. Fixed-effects regression analysis reveals a significant and positive unidirectional relationship between ESG performance and stock performance in both mainland China and Hong Kong markets. The study also identifies significant and positive relationships between individual ESG factors, including environment, social, and governance, and stock performance. Notably, this positive relationship extends to companies with diverse characteristics, such as state-owned enterprises (SOEs) and non-SOEs, and monopoly and non-monopoly companies.

This study contributes to the streams of literature on corporate social responsibility (CSR), ESG, corporate finance, and impact investing in a number of ways. First, this study is related to several studies that have examined the relationship between CSR and firm value. Jo and Harjoto (2011) studied how CSR affects firm value through the dimension

of corporate governance (G). Lins et al. (2017) studied how CSR (S) intensity affected stock returns during the financial crisis. Buchanan et al. (2018), from an institutional ownership perspective (IO), assessed how CSR activity (S) affects firm value. Garel and Petit-Romec (2021) examined the relationship between environmental score (E) and stock returns during COVID-19 shocks. In contrast to previous studies, I pose a different research question—how ESG affects stock prices—and reveal that ESG has a positive impact on stock prices even in the absence of a crisis.

Second, how do the environmental (E), social (S), and governance (G) factors affect stock prices individually? This study contributes to the empirical literature by investigating the relationship between stock performance and ESG from the perspective of separate dimensions. Although there have been many articles studying the impact of ESG (Patel et al., 2021; Statman & Glushkov, 2009) or simply one dimension (Afrin et al., 2021; Flammer, 2021; Garel & Petit-Romec, 2021) on stock performance, as far as we know, only a minority of recent studies have discussed and compared the impact of the three ESG dimensions on stock performance, especially in emerging markets. This research fills this gap with both regression and causal analysis. The results are consistent with previous literature (Gompers et al., 2003; Semenova et al., 2010) and confirm the significant relationship between ESG dimensions and stock performance.

Third, this study discusses the relationship between ESG factors and stock performance after controlling firm characteristics, including company ownership and market competition. The impacts of corporate ownership (Córdoba-Pachón et al., 2014; Lin & Li, 2004) and market competition (Graf & Wirl, 2014; Martins, 2022) on social responsibility have been investigated in prior studies. Nevertheless, the impact on the relationship between ESG scores and stock performance for firms with different characteristics has not yet been addressed. Lin et al. (2021) found that ESG has a positive moderating effect on the relationship between state ownership and firm innovation, but

the question remains whether ESG can bring better stock performance. Although Truong and Berrone (2022) concluded that environmental innovation can lead to higher market value, the question still needs to be addressed because ESG and the three dimensions are all-important. My results bridge these studies and provide evidence about the relationship between ESG and the stock performance of firms with different ownerships. Qiu et al. (2020) and Yuan et al. (2022) focused on the impact of corporate ownership on stock price and ESG disclosure, respectively, but this study is different because I investigate the direct relationship between ESG and stock performance, which can provide more relevant suggestions for stakeholders.

Finally, and most importantly, my data is unique. Data from other empirical studies on ESG impact in the past has been collected under the issuer-paid model, where data and rating quality cannot be guaranteed (Chatterji et al., 2016). In addition, the information has proven to have very low validity for international mainstream rating data, such as MSCI and Bloomberg (Dorfleitner et al., 2015). Not only do academic institutions such as the MIT Sustainability Initiative question the "aggregate confusion" of their ESG data (Berg et al., 2019), but industry players such as Tesla and its CEO Elon Musk criticize their metrics as having "fundamental flaws" (Kishan, 2022). The methods that this study adopts are based on data and ratings collected from the investor-paid model and AI, avoiding conflicts of interest. In addition, compared with other studies, the companies in my sample are listed across markets, which means that cross-listed firms can have significant advantages over domestic firms in terms of information accuracy (Lang et al., 2003). Although prior studies (Fernandes & Ferreira, 2008; Foucault & Gehrig, 2008) have discussed the effects of cross-listing on information, their studies only examined financial information. No prior studies have yet considered ESG information.

The remainder of the paper is structured as follows: Section 2 introduces the topic and its theoretical foundations, creates a theoretical framework for the *reputation ecosystem*, and

presents the research hypotheses. This section also reviews the literature concerning the relationship between ESG performance and stock prices. Section 3 explains the methodology of the research, including the sample selection and data sources, the model settings and variable descriptions, the model building and descriptive statistics, and the correlation analysis. Section 4 presents the empirical results with a discussion of the regression results. In Section 5, this presents the robustness tests. In the final section, I present the conclusions, contributions, limitations, and suggestions for further research.

## 3.2 Literature, Theory and Research Hypothesis

While ESG is gaining popularity in the global capital markets, CSR is beginning to fade into history. ESG and CSR disclosures both involve non-financial information, but they are not the same. First, CSR's emphasis is on multi-stakeholders, such as employees, citizens, suppliers, customers, investors, and the media; ESG, on the other hand, mainly focuses on investors. Second, the application scenarios of CSR are relatively broad and may appear in the areas of supply chain, marketing, communications, employee management, etc., while ESG's focus is on the capital market. Although CSR has a fairly long and extensive presence in the literature (Mosca & Civera, 2017), it is still in the conceptual stage. ESG, by contrast, provides more accurate guidelines for measuring corporate behavior. However, in this study, no strict distinction is made between ESG and CSR in the context of the general discussion, except for a distinction in distinguishing the three facets of ESG.

This section covers three aspects: first, this study presents a review of the literature on ESG performance and stock prices; second, I propose a new theoretical framework—the *reputation ecosystem*—to explain the impact of ESG on stock prices; and third, the research hypotheses are developed based on my new theoretical framework.

### 3.2.1 ESG Performance and Stock Price

The relationship between ESG performance and a firm's stock price is often difficult to analyze, both theoretically and empirically. This difficulty is mainly due to the multidimensional nature of ESG concepts and the unrelated instability of stock prices. Ohlson (1979) developed the theorem, based on the empirical research of Beaver (1968) and Patell and Wolfson (1979), that corporate disclosures often lead to increased volatility in stock prices. Similarly, Roll (1988) and Wurgler (2000) also found that individual stock price fluctuations increase as more CSR information is published, reducing stock price synchronization. In the last 20 years, many studies have found a positive relationship between ESG reporting and stock returns. Most empirical evidence suggests that holding a stock portfolio of firms reporting high ESG scores is more likely to deliver abnormally high returns (Albitar et al., 2020; Derwall et al., 2005; Sassen et al., 2016; Statman & Glushkov, 2009). However, these studies either focus on the social dimension of ESG and do not delve into the other two dimensions, are limited to a single market, or do not provide causal analyses.

Some studies have found negative relationships. Brammer et al. (2006) used environmental, employee, and community relations as ESG variables to find that social responsibility and stock returns are negatively correlated. Some socially sensitive industries, such as alcohol, gambling, tobacco, guns, the military, and the nuclear industry, are likely to achieve positive returns (Hong & Kacperczyk, 2009). Research by Garcia et al. (2017) on the relationship between corporate ESG performance and systemic risk in emerging markets, such as Brazil, Russia, India, China, and South Africa, presents an inverted U-shaped curve. Meanwhile, other empirical research has failed to find a significant relationship between stock risk levels and corporate social performance (CSP), such as Alexander and Buchholz (1978), or has concluded that a contradiction exists between environmental performance and stock prices (Cohen et al., 1997).

It is clear that ESG's influence on stock prices and the mechanism of this influence, have yet to be identified in the literature. This might be the product of several methodological shortcomings across these studies. First, ESG evaluation methods are not uniform, making estimates of the economic consequences of disclosing ESG information inconsistent. From a global perspective, the evaluation of ESG performance is often confusing and difficult to reconcile across international datasets. Many ESG rating agencies (such as MSCI) do not disclose their rating indicators and weighting structures, making it difficult for investors to understand the authenticity, accuracy, and value of such ratings. Second, most of the research to date has been limited to US and European markets; there have been relatively few studies conducted in emerging markets that often have significantly different governance and legal systems, and it may be the case that the impact of ESG on stock prices may vary across different economic and political environments. Third, many of the existing studies tend to evaluate the impact of a single dimension (E, S, or G) and thereby fail to present a comprehensive and holistic picture. The three dimensions of ESG demonstrate three different perspectives on corporate sustainability. Although they may relate to each other, it is meaningful to investigate the impact of these activities separately on corporate performance, given that the corporate strategies and behaviors related to each dimension are quite different. Finally, most previous studies adopted several different theories, such as stakeholder theory, legitimacy theory, reputation theory, and so on, which often led to different interpretations of phenomena according to the theory adopted, thereby drawing completely different conclusions.

Perhaps the most important gap in the literature, however, is cross-market sample studies, which, to date, are relatively scarce; those that do exist tend to find that cross-listed firms exhibit superior performance over firms that are not cross-listed. This superior performance includes better CSR performance (Boubakri et al., 2016; Shi et al., 2018), better employee compensation (Liu, 2017), greater access to capital (Lins et al., 2005),

greater stock liquidity (Foerster & Karolyi, 1999), and better corporate governance (Reese & Weisbach, 2002). However, it appears that there are no prior studies that have explored the impact of ESG performance on the stock price of cross-market listed companies, and none that have compared the stock price performance of monopolistic and competitive firms after ESG disclosure in both emerging and developed markets. This paper aims to fill these gaps in the literature. Moreover, considering the slow progress of ESG disclosure in China, selecting cross-listed companies as a research sample could help us improve the quality of research data without sacrificing too much regarding the generalizability of samples.

### 3.2.2 The Reputation Ecosystem Drives Stock Performance

ESG disclosure and impact are interpreted differently under different theoretical frameworks. Legitimacy theory, which is based on the concept of the social contract, is the most common way to explain the motivations behind ESG disclosure (Deegan et al., 2000; Cho & Patten, 2007; Clarkson et al., 2008). However, laws are costly to enforce and ultimately require reputational systems to maintain them. Meanwhile, stakeholder theory can provide a framework to explain the relationship between business and society (Ayuso et al., 2014; Cordeiro & Tewari, 2015; Freeman & Phillips, 2002), but stakeholders do not have fixed property, and their interests are inherently in competition with one another. Moore (1993) points out that the biological concept of ecosystems was adopted by business, where they are characterized by involving many loosely connected players (Iansiti & Levien, 2004), yet even ecosystems are unable to provide an explanation of how ESG may be a mechanism for influencing financial performance and stock prices.

Corporate reputation is a perceptual representation of a company's past actions and prospects that describes their appeal to key constituents and reflects the company's

overall attractiveness to all stakeholders (Fombrun & Van Riel, 1997). Reputation theory mainly explains the information effect (Diamond, 1989), the asset effect (Cripps et al., 2004), and the reputation maintenance effect in an asymmetric information environment (Tadelis, 1999), and may therefore partially explain the impact mechanisms of ESG. However, reputation theory currently has no fixed structure or framework because economists, sociologists, and management scholars disagree on the precise definitions, extensions, and connotations of reputation. Furthermore, reputation theory emphasizes competitiveness from a relatively static perspective and ignores symbiotic relationships, dynamic perspectives, and sustainable development.

Given the interplay of factors in the ESG ecosystem, with an overemphasis on chaotic phenomena and randomness, it is clear that the development of nonlinear systems is needed to address complexity. The theoretical framework of the *reputation ecosystem* is formally based on this thinking. Market participants are involved in a contest of the "survival of the fittest," and all stakeholders involved in the market are controlled by an invisible hand——the *reputation ecosystem*. To address the flaws of previous theories, I have considered the business ecosystem theory, the integrated stakeholder theory, and the reputation theory; in this paper, I put forward a new framework. This framework situates stakeholders in an invisible *reputation ecosystem*. Like the business ecosystem, the *reputation ecosystem* is diverse and reticulated; however, unlike the former, the latter resembles an invisible hand that controls business, society, and political functioning.

*Reputation ecosystems* also have the characteristics of integrity, intangibility, and dynamic equilibrium. A *reputation ecosystem* has integrity because it has a well-developed structure that captures survival information from the environment and realizes asset value in that same environment, making it an open system with extensive connections to the external environment. The *reputation ecosystem* also utilizes the

intangible reputation system and the tangible legal system, which cannot operate without the reputation foundation. Furthermore, elements of the *reputation ecosystem* must maintain a dynamic equilibrium in the ecosystem. That is, the elements of the system must uphold the corresponding symbiotic relationships within each link; otherwise, the system will become imbalanced and incapable of functioning normally. For example, with an advertising budget of zero, Tesla has nonetheless achieved a miraculous number of electric car sales, and its stock price has been climbing over the years (Koetsier, 2019). So, consumers and investors have bought into Tesla's business vision of improving the planet's living environment. Within Tesla's strong *reputation ecosystem*, stakeholders in its global supply chain and capital chain are involved in the ESG race for survival. Even if Tesla's cars are more expensive than others, consumers are willing to pay the higher amount. Some investors are even willing to forgo financial performance to invest according to their social preferences (Riedl & Smeets, 2017).

However, even companies with centuries-old reputations can see their stock prices collapse and go bankrupt if the *reputation ecosystem* is disrupted. For example, if they had continued to focus on their *reputation ecosystem*, the 158-year-old Lehman Brothers would not have engaged in reckless activities, and their executives would not have regularly used cosmetic accounting gimmicks at the end of each quarter (Trumbull, 2010). Even in the context of the crisis caused by the bankruptcy of Lehman Brothers, the social performance of other firms was positively correlated with short-term financial performance (abnormal returns) (Mio & Fasan, 2012), which validates the effectiveness of the *reputation ecosystem*. Dick Fuld, CEO of Lehman Brothers, famously demanded the loyalty of everyone around him (Green, 2013), and MacDonald (2010), a senior trader, disclosed that Fuld's burning jealousy of Goldman Sachs and other competitors caused Lehman to lose the support of Wall Street. Even though Warren Buffett wanted to come to Lehman's aid, based on its once lofty reputation (Sorkin, 2010), Fuld's greed and hesitation squandered all of Lehman's reputation. At the time of declaring bankruptcy,

Lehman Brothers had debts of $613 billion against total assets of $639 billion (Lee, 2011), indicating that Lehman's tangible assets were greater than its liabilities, but its intangible assets, especially its reputation, were negative.

Reputation, which depends on the business and other stakeholders, also has a life cycle similar to the stages of business growth. When a firm ceases to exist, its accumulated reputation will vanish along with it if another entity does not inherit its reputation and corresponding brand. Given that ESG activities, like ethical consumption, have been considered an innovative trend (Ganglmair-Wooliscroft & Wooliscroft, 2016; Lundahl, 2014), it can be theorized that the development of firms demonstrates a skewed, bell-shaped curve through the diffusion of innovation theory (Moore & McKenna, 1999; Rogers, 1976; Rogers et al., 2014).

As presented in Figure 3.1, legal liability is the lower bound of a company's reputation curve. Companies with such a low reputation cannot keep up with their legal obligations and will eventually disappear. On the other hand, the highest reputational standards, such as quality, ethics, and social responsibility, define the upper bound of a company's reputation value, where companies will maintain their reputation near the highest point of value maximization. As Darwinian evolution applies to markets, reputation controls the market ecosystem. When a company begins to decline and its reputation starts to decrease, the organization must change in order to survive. A company that successfully changes initiates the second reputation curve, which resembles the double S-curve diffusion model (Handy, 2016; Morrison, 1998). If it fails, it will continue downward into decline and failure. Based on this, this author proposes that a company's ESG actions serve two purposes: (1) building a reputation to increase brand value; and (2) maintaining legitimacy and meeting regulatory requirements.

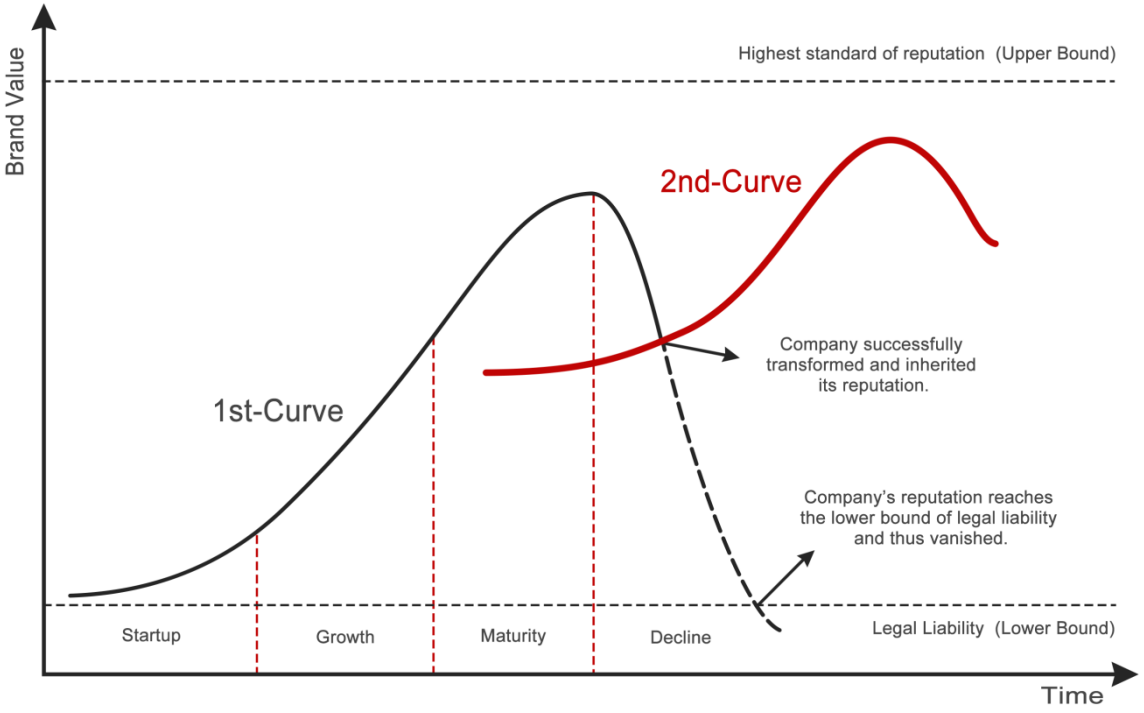


**Figure 3.1: Reputation Curve: ESG-Driven Growth.**

The curve presents the growth of corporate brand value within the framework of the *reputation ecosystem*. The bottom dashed line is the lower boundary of the curve defined by legal liability. The top dashed line is the upper boundary of the curve and is defined by the highest standards of reputation, such as quality, ethics, and social responsibility. Finally, the red curve represents the succession of brands if the company makes successful changes.

The theoretical framework of the *reputation ecosystem* also extends the theory of investment that was developed in the 1950s, namely, the modern portfolio theory (Markowitz, 1952), which has two basic assumptions. The first is that people are perfectly rational and do not exhibit herding effects when making investment decisions. However, financiers have found that people are not entirely rational, and this assumption had to be softened to develop behavioral finance. The second assumption is that investment is maintained under two degrees of space—the space of risk and reward. Here, financiers have gradually found that investment is no longer only focused on short-term risk and return. Instead, many investors hope to drive social change through capital and have gradually developed ESG investments, which are called investments under three degrees of space. Notably, investments should not be viewed in a two- or

three-dimensional framework. Instead, investment is a decision-making behavior in a multidimensional, reticulated, and ecological *reputation ecosystem*. Finally, investors also need to be committed, by focusing not only on the ESG performance of the invested target but also on their own ESG.

### 3.2.3 Research Hypotheses

The direction of the relationship between ESG and financial performance is still unclear from the extant literature (Orlitzky et al., 2003; Margolis et al., 2009): previous studies have found both positive (Derwall et al., 2005; Statman & Glushkov, 2009) and negative relationships (Derwall & Verwijmeren, 2007; Wurgler, 2000) between the two. The reputation ecosystem concept supports the belief that ESG performance retains value because reputation is a universal feature of human social interaction (Milinski, 2016). A reputation ecosystem is a dynamic ecological network that involves stakeholders such as individuals, companies, institutions, and governments. Reputation capital accumulated from stakeholders' shared beliefs, perceptions, and evaluations is the common currency for stakeholder interaction in this ecosystem. When ESG is incorporated into such an ecosystem, reputation serves as a signal of a stakeholder's characteristics and represents their behavioral patterns to other stakeholders.

The impact of ESG factors on company stock prices via reputation can be divided into three main levels. First, ESG behavior builds a company's reputation, which affects investors' and analysts' investment confidence and modifies their investment decisions. Second, ESG behavior affects customers' brand perceptions, creating brand equity. This, in turn, affects the company's brand value (which can be used to represent the positive feedback that a company receives from its ESG behavior), financial performance, and, ultimately, its stock price. Third, ESG behavior influences the perceptions of other stakeholders, including the community, government, and suppliers. Such perceptions

impact brand equity and brand value, as well as the stock price through financial performance.

Based on the *reputation ecosystem*, the impact of ESG on stock prices can be explained from different angles. Whether based on shareholder theory or stakeholder theory (Frederick et al., 1988), shareholders are the primary interest group of listed companies, and stock price fluctuations are directly related to their core interests. In this vein, I propose the ESG impact model on stock price to better demonstrate the relationship between ESG and stock price in the *reputation ecosystem*. The model incorporates factors such as corporate ESG behavior, stakeholders' expectations, corporate intangible assets (brand equity), corporate financial performance, and capital market performance (stock price). Figure 3.2 below illustrates how the model reflects the complex, hierarchical relationships and interactions linking all these factors.

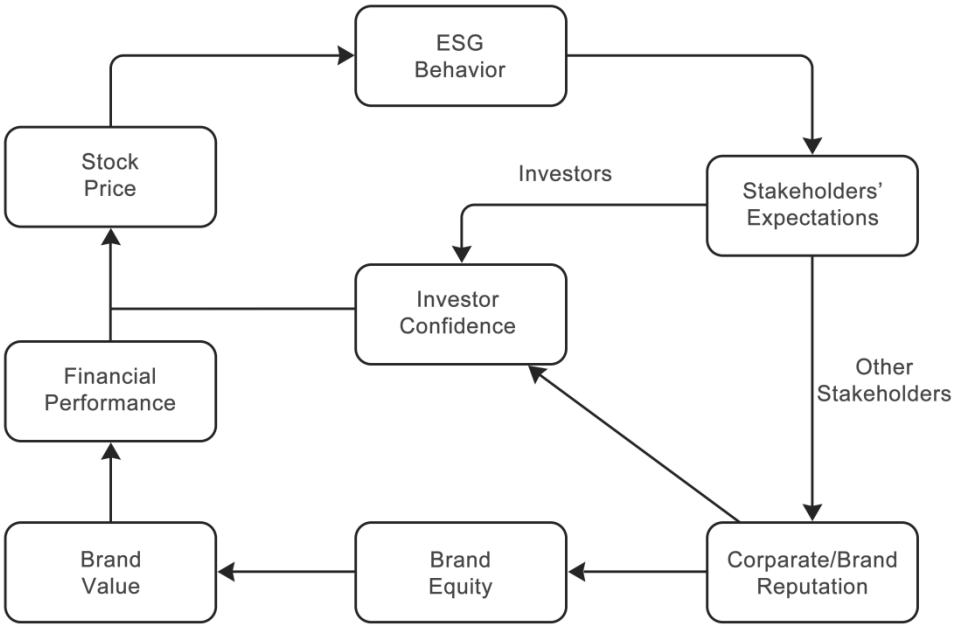


**Figure 3.2: ESG Impact Model for Stock Price**

This impact model presents how ESG factors impact stock prices within the framework of the *reputation ecosystem*. The arrows represent the impact paths and directions between nodes.

By acting on ESG issues, a firm's internal management recognizes long-term development challenges and embraces a mentality of social responsibility, which goes hand in hand with the firm's valuation. The disclosure of ESG information also attracts the attention of analysts, and such attention increases the synchronization of companies' stock prices (Chan & Hameed, 2006). In particular, the stock prices of emerging markets are considered to be noisier than those of other markets (Dasgupta et al., 2010). In the Chinese stock market, where noise is the main driver of stock price movements, the disclosure of firm-level ESG information helps to reduce uncertainty about firms' future development, thereby attenuating the effect of noise on stock prices. Accordingly, I propose the following hypothesis:

*Hypothesis 1: There is a positive relationship between a company's ESG performance and its stock performance in the A-share market.*

Given the background of market segmentation, the differences in the performance of homogeneous stocks in different markets are an important topic of financial geography that deserves further investigation. Many scholars have recognized the existence of information asymmetry in the valuation of the same asset by investors (Brennan & Cao, 1997; Stulz & Wasserfallen, 1995). Some researchers argue that foreign investors are at an informational disadvantage relative to Chinese investors due to language barriers and different accounting standards (Chakravarty et al., 1998). Others argue that foreign investors have an informational advantage resulting from more advanced analytical techniques and greater access to relevant information, as domestic investors operate under the Chinese government's censorship of mass media (Chui & Kwok, 1998). As the existence of information asymmetry under market segmentation is undeniable, investment decisions made after obtaining ESG information are relevant to my research. Using cross-listed firms as research samples allows us to reveal the potentially different roles of ESG in these markets by comparing the markets' responses to ESG

performance through regression techniques. It is also meaningful to examine the effect of the reputation ecosystem in different markets. Therefore, the following hypothesis is proposed:

*Hypothesis 2: There is a positive relationship between a company's ESG performance and its stock performance in the overseas market.*

There are different opinions on the impact of environmental performance on stock prices. On the one hand, improved green innovations and the environmental performance of a firm can lead to an increase in the market value of the firm and thus greater returns for equity investors (Yamaguchi, 2008; Semenova et al., 2010). Some studies also conclude that pollution control does not necessarily harm a firm's profits (Bragdon & Marlin, 1972), and environmental investments can be rewarded through an improved reputation. On the other hand, some find that news related to environmental performance fails to explain changes in market reactions (Lorraine et al., 2004) or has a negative impact on the market value of firms (Hassel et al., 2005). When compliance with environmental regulations is costly and may reduce a firm's profitability, Lyon et al. (2013) conclude that such environmental accolades may fail to gain stock market recognition but can lead to the firm developing good relations with the government. Such contradictory conclusions may be caused by the complex relationship between environmental performance and stock performance (Cohen et al., 1997). I argue that environmental violations can pose legitimacy and reputational threats to firms, which, according to the reputation ecosystem framework, drive down the brand value and cause the stock price to drop. Improved environmental performance will reward firms with a better reputation among stakeholders. Consequently, this study proposes the following research hypothesis:

*Hypothesis 3: There is a positive relationship between a company's environmental performance and its stock performance in both the A-share and overseas markets.*

Research on the economic consequences of social responsibility disclosure has focused on two dimensions: the investment decision value and the cost of capital. Some scholars suggest that corporate social responsibility (CSR) disclosure has a positive impact on analysts' earnings forecasts (Dhaliwal et al., 2012), while others argue that such disclosure has no investment decision value (Patten, 2002). In terms of the cost of capital, some argue that CSR disclosure leads to a decrease in the cost of capital (Rodriguez et al., 2006), while others reach the opposite conclusion (Richardson & Welker, 2001). I believe that the reason past studies have not been able to reach a consensus is that the reputation factor has been overlooked. While labor rights are a core component of social responsibility, there is an "invisible hand" beyond the labor contract: the psychological contract (Okun, 2011). Psychological contract theory was pioneered by Argyris (1960) and Schein (1965) and is an expected aspect of the relationship between employees and employers (Hiltrop, 1995). However, the theory is too implicit (Kotter, 1973) and fails to provide insights for related stakeholders. I argue that in this context, reputation plays the role of the psychological contract as the "invisible hand." Some literature also supports the view that CSR disclosure can increase corporate value, thus causing a positive stock market reaction (Anderson & Frankle, 1980). Thus, the following research hypothesis is proposed:

*Hypothesis 4: There is a positive relationship between a company's social performance and its stock performance in both the A-share and overseas markets.*

The literature verifies the impact of ownership structure (Chau & Gray, 2010), board governance (Vafeas, 2000), and executive incentives (Warfield et al., 1995) on price informativeness. However, there is little consensus in the literature regarding the

relationship between corporate governance and firm performance (financial performance, value, stock returns, risk, etc.). The empirical results vary from finding that corporate governance and firm performance are unrelated (Core et al., 2006; Johnson et al., 2009) to finding a positive relationship between them (Gompers et al., 2003). One of the main reasons for the nonsignificant impact of corporate governance on stock prices is the convergence of corporate governance across countries and industries (Goergen et al., 2005; Wójcik, 2006). According to behavioral finance theory, investor sentiment is an important factor influencing stock price and return volatility (Brown & Cliff, 2005). Higher trading activity occurs when investor confidence soars (Meier, 2018). Contrary to the convergence of corporate governance, the market power of a product is more influential in investors' predictions of future stock prices (Peress, 2010). Companies with strong brands have strong pricing power, a competitive advantage (Datta et al., 2011), and can increase stock liquidity (Kale & Loon, 2011). According to the reputation ecosystem framework, once the minimum requirements according to law have been met, corporate governance performance will be helpful in improving corporate reputation, which results in an increase in stock performance. Based on the above analysis, I propose the following hypothesis:

*Hypothesis 5: There is a positive relationship between a company's governance performance and its stock performance in both the A-share and overseas markets.*

To further explore the relationship between ESG and stock market performance, this study also investigates the role of corporate ownership. The Chinese capital market is unique in its high proportion of state-owned entities (SOEs). SOEs have a greater social responsibility burden than non-SOEs (Lin & Li, 2004). At the same time, SOEs are favored by investors due to their stability (Deng & Cheng, 2019). In SOEs, the state is a powerful stakeholder as a representative, guarantor, and shareholder of the public interest. While ESG factors can reduce a firm's level of corporate distress, they are not

as effective for SOEs as they are for the private sector (Shahab et al., 2019). Therefore, SOEs must adopt a more proactive and dynamic view of CSR (Córdoba-Pachón et al., 2014). However, if increasing the level of ESG in SOEs can attract investment decisions and increase stock prices as a political achievement, managers should actively promote it. For this reason, I investigate whether state ownership affects the relationship between ESG performance and stock price returns.

*Hypothesis 6: The relationship between a company's ESG performance and its stock performance is significant and positive for both SOEs and non-SOEs in both the A-share and overseas markets.*

According to neoclassical economics, monopolists can take advantage of their monopoly position to extract excess profits by limiting production and raising prices without risking failure through innovation. Empirical studies find that monopoly is negatively related to innovation (Acs & Audretsch, 1988; Blundell et al., 1995). Policies in China's monopolistic industries include industry entry restrictions and price controls. Entry policies are often associated with restrictions on the type of ownership, giving SOEs a de facto administrative monopoly position in these industries. However, these industries often assume the highest level of social responsibility and are characterized by strong public interest. For example, electricity supply, water supply, heat supply, gas supply, and public transportation are operated in a nationalized manner. These industries can be regarded as an extension of government functions and an institutional arrangement for the provision of public goods. Especially in the key areas of energy conservation and pollution reduction, SOEs have an inescapable responsibility to reduce emissions and protect the natural environment. In particular, environmental risks and opportunities are embedded in every business and investment portfolio decision to varying degrees (Labatt & White, 2011). In this study, all Chinese monopolies are SOEs, but it is still worth comparing the results of monopolies and non-monopolies. Therefore, this paper also

examines the relationship between ESG performance and stock returns for monopoly and non-monopoly companies.

*Hypothesis 7: The relationship between a company's ESG performance and its stock performance is significant and positive for both monopoly and non-monopoly companies in both A-share and overseas markets.*

## 3.3. Research Design

### 3.3.1 Sample Selection and Data Sources

***Sample Selection***

The companies selected to investigate the hypotheses include public Chinese companies that are cross-listed in both mainland, or A-Share, markets (Shanghai or Shenzhen) and overseas markets (Hong Kong). The aim of this study is to compare the responses of different markets to ESG performance. In addition, the sample needs to meet the following requirements: (1) The selected companies should have been listed for more than five years to ensure that each sample has sufficient data and to avoid the instability of newly listed companies. (2) The selected companies should not be under trade suspension, and companies under special treatment (ST) or particular transfer (PT) should be excluded to avoid the influence of extreme financial values.

Based on these criteria, I selected 80 companies listed under the two Chinese markets (Mainland and Hong Kong), 12 of which are also listed in New York and/or London. The initial sample of 115 listed companies included 32 other companies that did not meet the selection criteria, and three companies with missing variables. The final sample size includes 80 companies, with a total of 400 observations over five years.

***Data Sources***

This study employs ESG evaluation data, including scores for the three dimensions, sourced from SuperFinance's rating of China's listed companies (SuperFinance, 2021). SuperFinance is a sustainable financial data provider that offers ESG research and ratings to investors. I chose SuperFinance over mainstream rating agencies like MSCI due to the transparency of its investor-paid model and the sophistication of its AI data mining. Prior research that compares the accuracy and timeliness of credit ratings issued by investor-paid and issuer-paid rating agencies is considered given the informational similarities between credit ratings and ESG ratings. Several studies have found that investor-paid rating agencies provide more timely ratings and better predict defaults than issuer-paid rating agencies (Beaver et al., 2006; Bhattacharya et al., 2019; Bruno et al., 2016; Cornaggia & Cornaggia, 2013).

The sample companies' stock prices were acquired from the Datayes Financial Big Data database (Datayes, 2021), and from stock exchanges. Annual reports and social responsibility reports were extracted from companies' official websites and Cninfo. Financial data such as closing prices, return on assets, net profit margin, total assets, price-earnings ratio, and other basic company indicators were obtained from the Datayes database.

This study considers the nature of each firm in order to further explore the relationship between ESG performance and share price changes. In general, firms can be classified into SOEs and private firms in terms of equity characteristics. More specifically, in this study, SOEs include state-holding enterprises and wholly-SOEs, which are based on the classifications defined in the Datayes database. From the perspective of the degree of market competition, firms can be divided into monopolistic and competitive firms. The classification of monopolistic industries is based on previous studies by Dai (2014), Liu

and Liao (2011), and Liu (2017). Classification into either monopolistic or non-monopolistic sectors was determined according to three criteria, namely the industry concentration ratio, the Lerner index, and compulsory administrative licensure. Monopolistic industries include oil and gas extraction, tobacco products, gas production and supply, electricity and heat production and supply, all types of mining, public utilities, and telecommunication services.

I find that all Chinese monopolies are SOEs, which may raise concern about the legitimacy of studying monopolies. However, for Hypotheses 6 and 7, the relationship between different groups is more important than causal analysis, or the source of such relationships. In other words, even though it is possible that the influence exhibited by monopolies is due to the fact that they are SOEs, it is still necessary to separate the studies because the two hypotheses are from two different perspectives: company-level and industry-level. Among the 67 SOEs in the sample firms, ten are classified as monopolies. The industry classifications are based on the Shenwan classification method.

### 3.3.2 Model Settings and Variable Description

In this study, the stock performance is measured as the cumulative annual return from the release date of the annual social responsibility report or annual report, whichever is earlier. This date is chosen because it is when most of the ESG-related information is disclosed to the public, so the market can respond to the information. Using SuperFinance's methodology, the ESG score is calculated from these reports to evaluate performance in the past year. Therefore, the stock performance's time span will differ from that of the ESG score and financial metrics. The equation in the next section illustrates the difference.

The ESG data used in this study was obtained from SuperFinance, whose scoring system includes 11 primary indicators and 35 secondary indicators. Each secondary indicator has various quantitative and non-quantitative indicators based on questionnaires and its rating model. All indicators are divided into three levels: environmental (E), social (S), and governance (G), reflecting the effort level, professionalism, and actual ESG performance of listed companies. In the final computation of the ESG score, environmental level and governance level each account for 35% of the total score, and social level accounts for 30%. SuperFinance's ESG score ranges from 0 to 100 points, with higher values indicating better performance.

To control for factors that have been shown to affect corporate performance, several indicators were selected to reflect corporate profitability and risk level. These include the return on assets, price-to-book ratio, total assets, net profit ratio, Tobin's Q, and the holding proportion of the largest shareholder. The definitions of these variables are provided in Table 3.1.

**Table 3.1：Model variables**

| Type | Variable | Abbreviation | Explanation |
|---|---|---|---|
| Dependent | Annual Return | SP | Cumulative annual return from the release date of the social responsibility report |
| Independent | ESG Score | ESG | ESG scores of listed companies obtained from SuperFinance |
| Control | Return on Assets | ROA | The ratio of net profit to total assets |
| Control | Price-to-Book Ratio | PB | The ratio of company market value to equity attributable to the parent company |
| Control | Natural Log of Total Assets | ASSI | The natural logarithm of the company's total assets |
| Control | Net Profit Ratio | NPR | Company's net profit ratio |
| Control | Tobin's Q | TQ | The Tobin's Q value, which equals the market value divided by total assets |
| Control | Shareholding Concentration | SHARE | The holding proportion of the largest shareholder |

This table lists explanations for the variables in the regression model.

### 3.3.3 Model Building

This research builds a panel data regression model to examine the relationship between ESG scores and stock returns. The equation of the model on the panel data is as follows:

$$SP_{i,t\sim t+1} = \beta_1 ESG_{i,t} + \beta_2 ROA_{i,t} + \beta_3 PB_{i,t} + \beta_4 ASSI_{i,t} + \beta_5 NPR_{i,t} + \beta_6 TQ_{i,t} + \beta_7 SHARE_{i,t} + \delta_i + \mu_i + \epsilon_{i,t}$$

where *t* represents the time dimension and $\varepsilon_i$ is the error term. To capture the unobserved effect, I employ a fixed effect model in which $\delta_i$ controls the year effect, and $\mu_i$ controls the firm effect. In addition, preliminary research results reveal that the Hausman test produces a significant value, suggesting the need to include fixed effects in the estimator instead of using the random effects estimator. Further, the Wald test for heteroskedasticity produces a significant value, suggesting the existence of heteroskedasticity. Therefore, the robustness test is also applied to the standard errors of the coefficients to avoid problems in the regression analysis.

## 3.4. Discussion of Results

### 3.4.1 Descriptive Statistical Analysis

The descriptive statistical analysis of the dependent and independent variables is performed to better understand the characteristics of these variables. As discussed above, sample companies are classified as SOE or non-SOE, as well as monopoly or non-monopoly. This analysis finds that 67 companies (83.75% of the total sample) are classified as SOEs, while only 13 companies (16.25%) are classified as non-SOEs. In addition, 10 companies belong to monopolistic industries (12.5% of the total sample), mainly distributed within the three sectors of energy, public utilities, and telecommunications services.

Table 3.2 gives an overview of the ESG scores of the sample companies and the descriptive statistical analysis of their sub-levels. The sample size of the study is 80 listed companies across 50 time periods, for a total of 400 data points. The average ESG score across the entire sample is 46.41. The lowest ESG total score is 19.00, and the highest is 78.48, which reflects a large gap in terms of the ESG performance of listed companies. The lowest scores for both environmental and social dimensions are 0, indicating that many listed companies still do not disclose any environmental or social information at all.

**Table 3.2: Descriptive statistics of overall and individual ESG scores**

| Variable | N | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| ESG | 400 | 46.41 | 10.93 | 19.00 | 78.48 |
| E | 400 | 24.84 | 17.54 | 0.35 | 85.16 |
| S | 400 | 43.19 | 17.30 | 0.00 | 80.30 |
| G | 400 | 71.21 | 6.65 | 38.83 | 83.53 |

This table presents the descriptive statistics of the performance of ESG and the three dimensions. The variable *ESG* is defined in Table 3.1. The variables *E, S* and *G* represent the pillar scores of environmental, social and governance, respectively. The sample consists of 80 firms over five years, which yields 400 data points.

Looking at the overall trend over the past five years, the ESG performance of listed companies has improved consistently in general. This improvement may be caused by both internal and external forces. According to the data disclosed by the China Securities Index (2021), the number of listed A-share companies in China that disclosed ESG-related reports from 2009 to 2021 increased from 371 to 1112 by the end of June 2021. The data suggests that more listed companies now choose to follow systematic guidelines on ESG information disclosure, which has greatly improved information transparency as well as ESG scores. At the same time, according to SuperFinance, many industries have, in the last few years, implemented policies to strengthen environmental protection, which has improved these industries' mandatory ESG reporting quality.

**Table 3.3: Overall ESG score and individual dimension score by year**

| Year | ESG | E | S | G |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 2015 | 40.36 | 13.18 | 40.67 | 67.24 |
| 2016 | 45.56 | 23.61 | 40.80 | 72.26 |
| 2017 | 46.43 | 24.12 | 42.96 | 72.23 |
| 2018 | 49.94 | 32.16 | 45.27 | 72.39 |
| 2019 | 49.77 | 31.12 | 46.25 | 71.95 |

This table reports the trend of scores of ESG and the three dimensions from 2015 to 2019. The variable *ESG* is defined in Table 3.1. The variables *E, S* and *G* represent the dimension scores of environmental, social and governance, respectively.

From the perspective of company type and characteristics, as presented in Table 3.4, the difference between the average ESG scores of SOEs and non-SOEs is 0.48. From an industry perspective, the average ESG performance of monopolistic industries exceeds that of non-monopolistic industries, especially in the environmental and social dimensions. This could be due to several factors, including different distributions in terms of company size and sectors, which could potentially lead to differences in ESG investment and strategies for monopolistic and non-monopolistic companies.

**Table 3.4: Overall ESG scores and individual dimension scores for subsamples**

| | ESG | E | S | G |
|---|---|---|---|---|
| Non-SOE | 46.01 | 24.14 | 43.55 | 70.35 |
| SOE | 46.49 | 24.97 | 43.12 | 71.38 |
| | | | | |
| Non-monopoly | 45.49 | 23.11 | 42.29 | 71.07 |
| Monopoly | 52.89 | 36.97 | 49.49 | 72.22 |

This table reports the performance of ESG and the three dimensions for subsamples according to state ownership (SOE and non-SOE) and market competition (monopoly and non-monopoly). The variable *ESG* is defined in Table 3.1. The variables *E, S* and *G* represent the dimension scores of environmental, social and governance, respectively.

The descriptive analysis of the dependent variable and control variables is presented in Table 3.5. The sample companies have a large asset range from 19.51 to 31.01 in terms of the natural logarithm of total assets. The stock performance also varies greatly, with the best firm experiencing a 165% increase and the worst losing 82%.

**Table 3.5: Descriptive analysis of dependent and control variables**

| Variable | N | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| SP | 400 | -0.05 | 0.28 | -0.82 | 1.65 |
| ROA | 400 | 0.03 | 0.07 | -1.13 | 0.31 |
| PB | 400 | 4.50 | 31.51 | -12.09 | 570.46 |
| ASSI | 400 | 25.75 | 2.29 | 19.51 | 31.01 |
| NPR | 400 | 0.08 | 0.64 | -12.09 | 0.65 |
| TQ | 400 | 0.95 | 1.58 | 0.04 | 14.66 |
| SHARE | 400 | 39.83 | 15.02 | 5.41 | 86.35 |

This table presents the descriptive statistics of the dependent variable and control variables in the regression model. These variables are defined in Table 3.1. The sample consists of 80 firms over five years, and yielding 400 data points.

### 3.4.2 Correlation Analysis

Before performing the regression analysis, I conducted the correlation analysis on the variables, the results of which are shown in Table 3.6. The correlation matrix shows that the correlation between ESG scores and financial variables is relatively low. However, NPR and ROA have a relatively high positive correlation. As each variable reflects corporate profitability from a different dimension (revenue vs. assets), and the correlation is less than 0.9, both variables are retained for the subsequent analysis. Further, the correlations between the dependent variable and independent variables are also comparatively low. Some other preliminary procedures were taken to ensure that the data were suitable for the empirical study, including the detection of outliers and a heterogeneity test.

**Table 3.6: Correlation matrix**

| | SP | ESG | ROA | PB | ASSI | NPR | TQ | SHARE |
|---|---|---|---|---|---|---|---|---|
| SP | 1.0000 | | | | | | | |
| ESG | 0.2922* | 1.0000 | | | | | | |
| ROA | 0.0074 | 0.1505* | 1.0000 | | | | | |
| PB | 0.2336* | -0.0894 | -0.0533 | 1.0000 | | | | |
| ASSI | 0.0349 | 0.2240* | 0.0285 | -0.1904* | 1.0000 | | | |
| NPR | 0.0353 | 0.0621 | 0.8494* | 0.0017 | 0.2421* | 1.0000 | | |
| TQ | 0.0324 | -0.1741* | -0.1293* | 0.3460* | -0.5899* | -0.2636* | 1.0000 | |
| SHARE | -0.0335 | 0.2274* | 0.0223 | 0.0050 | 0.1987* | 0.0064 | -0.0877 | 1.0000 |

This table shows the correlation analysis of the variables. All variables are defined in Table 3.1. The symbol * indicates significance at the 5% level or $p < 0.05$. Correlations without the symbol * indicate non-significance.

This study uses the VIF (variance inflation factor) to test the multicollinearity between variables. Table 3.7 reveals that the VIF values of the variables are all lower than 5, indicating that there is no obvious multicollinearity between model variables.

**Table 3.7: VIF of independent variables**

| | VIF |
|---|---|
| NPR | 4.89 |
| ROA | 4.63 |
| ASSI | 1.86 |
| TQ | 1.74 |
| PB | 1.2 |
| ESG | 1.18 |
| SHARE | 1.09 |

This table presents the VIF checks for multicollinearity between regression variables. All variables are defined in Table 3.1.

### 3. 4.3 Empirical Analysis

#### 3.4.3.1 Mainland (A-Shares) Market Regression Analysis

To examine Hypothesis 1, I performed the regression analysis on the panel data. As presented in column (1) of Table 3.8, the coefficient of ESG performance is 0.0222, which is positive and significant. The result supports Hypothesis 1, suggesting that ESG performance has a positive and significant relationship with stock performance for firms listed in the A-share market. The results are consistent with some previous studies (Derwall et al., 2005; Statman & Glushkov, 2009).

**Table 3.8: Mainland (A-shares) market regression model coefficients**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | SP | SP | SP | SP |
| ESG | 0.0222*** | | | |
| | (0.00282) | | | |
| E | | 0.00970*** | | |
| | | (0.00121) | | |

| | | | | |
|---|---|---|---|---|
| S | | | 0.00433* | |
| | | | (0.00183) | |
| G | | | | 0.0146*** |
| | | | | (0.00306) |
| ROA | -2.144** | -1.909** | -2.345** | -2.235** |
| | (0.711) | (0.694) | (0.751) | (0.690) |
| PB | 0.00210*** | 0.00209*** | 0.00237*** | 0.00239*** |
| | (0.000462) | (0.000500) | (0.000618) | (0.000556) |
| NPR | 0.182* | 0.161* | 0.201** | 0.201** |
| | (0.0707) | (0.0689) | (0.0742) | (0.0695) |
| ASSI | -0.0490 | -0.0495 | -0.0226 | -0.0304 |
| | (0.103) | (0.115) | (0.111) | (0.0980) |
| SHARE | 0.00148 | 0.00115 | 0.00109 | 0.00124 |
| | (0.00346) | (0.00360) | (0.00387) | (0.00353) |
| TQ | 0.00967 | 0.0110 | 0.0252 | 0.0142 |
| | (0.0156) | (0.0160) | (0.0203) | (0.0180) |
| Constant | 0.135 | 0.923 | 0.173 | -0.425 |
| | (2.699) | (3.012) | (2.913) | (2.605) |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 400 | 400 | 400 | 400 |
| *Adj.* $R^2$ | 0.462 | 0.459 | 0.290 | 0.341 |

This table reports the regression results for the effect of performance of ESG and the dimensions on the stock returns in the A-share market. The dependent variable is the annual stock returns. *ESG* is the ESG scores obtained from the SuperFinance database. *E*, *S* and *G* are the dimension scores of environmental, social and governance, respectively. All other variables are explained in Table 3.1. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% level, respectively. The values in parentheses are corresponding values of robust standard errors.

The relationship between the three dimensions of ESG and firm stock performance is also examined through fixed effects regression analysis. As shown in columns (2) to (4), the coefficient estimates for environmental, social, and governance performance are 0.00970, 0.00433, and 0.0146, respectively, and they are all positive and significant. These results support Hypotheses 3, 4, and 5 and are consistent with the findings of overall ESG performance. The findings imply that firms with better performance at the environmental, social, and governance levels tend to have higher stock returns. The findings are consistent with the *reputation ecosystem*, which states that better ESG performance can

result in an increase in reputation and eventually an increase in stock market performance.

Comparing the coefficients of ESG and the three dimensions in the regression models shows that the coefficient of the governance dimension is larger than the environmental and social dimensions. The result indicates that, if all other factors are the same, every one-unit increase in the corporate governance score can help increase the average annual stock returns by 1.46%, which is higher than the environmental score (0.97%) and social score (0.43%). This finding provides insights into ESG investment strategy in terms of resource allocation and efficiency of investment in the three dimensions.

The next step of the analysis examines firms with different ownership. The total sample was divided into two subsamples based on whether the firm is state-owned or privately owned. Columns (1) and (2) in Table 3.9 present the coefficient estimates from the two regression models on the two subsamples. The coefficient of ESG is 0.0225 for SOEs and 0.00656 for non-SOEs; both are positive and significant, which supports Hypothesis 6. The result indicates that ownership does not affect the positive relationship between ESG and stock performance in the A-share market, and both SOEs and non-SOEs have the motivation to increase their ESG investment in order to improve their stock market performance.

**Table 3.9: Mainland (A-shares) market regression model coefficients for subsamples**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | SP (SOE) | SP (Non-SOE) | SP (Monopoly) | SP (Non-monopoly) |
| ESG | 0.0225*** | 0.00656* | 0.00712** | 0.0250*** |
| | (0.00297) | (0.00238) | (0.00216) | (0.00321) |
| ROA | -1.929** | -6.463 | -3.135** | -1.948* |
| | (0.701) | (3.661) | (0.849) | (0.937) |
| PB | 0.00211*** | 0.0388 | -0.0503 | 0.00209*** |
| | (0.000491) | (0.0567) | (0.212) | (0.000468) |
| NPR | 0.161* | -0.613 | 0.584* | 0.162 |
| | (0.0697) | (1.286) | (0.206) | (0.0925) |

| | | | | |
|---|---|---|---|---|
| ASSI | -0.0435 | -0.586 | -0.254 | -0.0625 |
| | (0.106) | (0.388) | (0.387) | (0.116) |
| SHARE | -0.000124 | 0.0132 | 0.00591 | 0.00215 |
| | (0.00350) | (0.0120) | (0.00424) | (0.00435) |
| TQ | 0.00564 | -0.0691 | 0.0862 | 0.00709 |
| | (0.0175) | (0.194) | (0.373) | (0.0155) |
| Constants | 0.0388 | 15.35 | 5.973 | 0.355 |
| | (2.761) | (10.37) | (10.23) | (3.047) |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 335 | 65 | 50 | 350 |
| *Adj. $R^2$* | 0.475 | 0.529 | 0.470 | 0.471 |

This table reports the regression results for the effect of the performance of ESG and the dimensions on the stock returns for subsamples in the A-share market. The dependent variable is the annual stock return. *ESG* is the ESG score obtained from the SuperFinance database. *E*, *S* and *G* are the dimension scores of environmental, social and governance, respectively. All other variables are explained in Table 3.1. Columns (1) and (2) are the results of samples for SOE and non-SOE, respectively. Columns (3) and (4) are the results of samples for monopoly and non-monopoly, respectively. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% levels, respectively. The values in parentheses are the corresponding values of robust standard errors.

Similarly, the sample was divided into two groups: 50 observations of firms operating in a monopoly market and 350 observations of firms operating in non-monopoly markets. Columns (3) and (4) of Table 3.9 reveal that the coefficient of ESG is 0.00712 for monopoly and 0.0259 for non-monopoly; both are positive and significant. These results support Hypothesis 7, that ESG performance has a positive impact on stock values for both monopoly firms and non-monopoly firms in the A-share market.

#### 3.4.3.2 Overseas Stock Market Regression Analysis

To examine Hypothesis 2 in terms of overseas markets, I performed a regression analysis on the same sample firms using the stock returns in overseas markets (Hong Kong) in the same time period. It shows in Table 3.10 that the coefficients are 0.0168, 0.00745, and 0.0105 for ESG activities, environmental-level activities, and governance-level activities,

respectively, which are all positive and significant. The coefficient in the social dimension is 0.00303; it's still positive but not significant.

**Table 3.10: Overseas stock market regression model coefficients**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | SP | SP | SP | SP |
| ESG | 0.0168*** | | | |
| | (0.00248) | | | |
| E | | 0.00745*** | | |
| | | (0.00118) | | |
| S | | | 0.00303 | |
| | | | (0.00222) | |
| G | | | | 0.0105*** |
| | | | | (0.00273) |
| ROA | -2.693*** | -2.511*** | -2.840*** | -2.762*** |
| | (0.645) | (0.623) | (0.650) | (0.659) |
| PB | -0.000248 | -0.000263* | -0.0000408 | -0.0000307 |
| | (0.000134) | (0.000124) | (0.000151) | (0.000130) |
| NPR | 0.267*** | 0.251*** | 0.281*** | 0.281*** |
| | (0.0635) | (0.0617) | (0.0648) | (0.0657) |
| ASSI | -0.103 | -0.104 | -0.0833 | -0.0890 |
| | (0.0710) | (0.0759) | (0.0739) | (0.0730) |
| SHARE | 0.00262 | 0.00237 | 0.00232 | 0.00243 |
| | (0.00346) | (0.00336) | (0.00339) | (0.00343) |
| TQ | 0.00347 | 0.00433 | 0.0152 | 0.00721 |
| | (0.0141) | (0.0141) | (0.0121) | (0.0136) |
| Constant | 1.695 | 2.298 | 1.732 | 1.296 |
| | (1.814) | (1.964) | (1.907) | (1.854) |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 400 | 400 | 400 | 400 |
| *Adj.* $R^2$ | 0.500 | 0.501 | 0.425 | 0.445 |

This table reports the regression results for the effect of the performance of ESG and the dimensions on the stock returns in the Hong Kong market. The dependent variable is the annual stock return. *ESG* is the ESG score obtained from the SuperFinance database. *E, S* and *G* are the dimension scores of environmental, social and governance, respectively. All other variables are explained in Table 3.1. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% levels, respectively. The values in parentheses are the corresponding values of robust standard errors.

The same approach reported in Table 3.9 is applied using Hong Kong market data to examine the relationship between ESG and stock performance for different types of companies. As before, columns (1) and (4) in Table 3.11 reveal that the coefficient estimates for SOE and non-monopolistic firms are 0.0172 and 0.0198, respectively, both of which are positive and significant. However, columns (2) and (3) reveal that the coefficients for non-SOE and monopolistic firms are 0.00450 and 0.00150, which are still positive but insignificant.

It is possible that investors in Hong Kong have fewer choices than Mainland Chinese firms, which comprise a significantly larger portion of SOEs. The stock performance of "minorities" (non-SOEs or monopolies) would bear the risk of less liquidity and less attention from investors, and eventually fail to reflect the relationship with ESG. According to the *reputation ecosystem*, in the Hong Kong market, these "minority" stocks fail to maintain the property of dynamics because they get less attention from stakeholders. Therefore, these firms need to put more effort into ESG to improve their general reputation in the ecosystem.

**Table3. 11: Overseas stock market regression model coefficients for subsamples**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | SP (SOE) | SP (Non-SOE) | SP (Monopoly) | SP (Non-monopoly) |
| ESG | 0.0172*** | 0.00450 | 0.00150 | 0.0198*** |
| | (0.00269) | (0.00352) | (0.00340) | (0.00274) |
| ROA | -2.621*** | -2.054 | -2.664 | -2.167** |
| | (0.652) | (3.934) | (1.537) | (0.811) |
| PB | -0.000247 | 0.0586 | 0.102 | -0.000208 |
| | (0.000133) | (0.0286) | (0.0688) | (0.000151) |
| NPR | 0.261*** | -0.354 | 0.209 | 0.215** |
| | (0.0643) | (1.001) | (0.475) | (0.0790) |
| ASSI | -0.105 | -0.345 | -0.377 | -0.0969 |
| | (0.0722) | (0.387) | (0.170) | (0.0815) |
| SHARE | 0.00122 | 0.0134 | 0.00153 | 0.00464 |
| | (0.00325) | (0.00893) | (0.00487) | (0.00423) |
| TQ | 0.000411 | -0.0957 | -0.0104 | -0.00155 |
| | (0.0140) | (0.104) | (0.235) | (0.0128) |

| | | | | |
|---|---|---|---|---|
| Constants | 1.747 | 8.618 | 9.426 | 1.335 |
| | (1.809) | (10.36) | (4.674) | (2.077) |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 335 | 65 | 50 | 350 |
| *Adj.* $R^2$ | 0.499 | 0.572 | 0.755 | 0.500 |

This table reports the regression results for the effect of the performance of ESG and the dimensions on the stock returns for subsamples in the Hong Kong market. The dependent variable is the annual stock return. *ESG* is the ESG score obtained from the SuperFinance database. *E, S* and *G* are the dimension scores of environmental, social and governance, respectively. All other variables are explained in Table 3.1. Columns (1) and (2) are the results of samples for SOE and non-SOE, respectively. Columns (3) and (4) are the results of samples for monopoly and non-monopoly, respectively. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% levels, respectively. The values in parentheses are the corresponding values of robust standard errors.

## 3.5. Robustness Test

### 3.5.1 Endogeneity

The presence of endogeneity in the data can complicate forming a conclusion for this study. Firstly, the relationship between stock performance and ESG can be bidirectional. On the one hand, a higher ESG score suggests that a company is better managed, which leads to a positive response from the market and higher stock returns. On the other hand, better stock market performance can provide a firm with more capital and resources for conducting ESG activities, which leads to higher ESG scores. Secondly, it is possible that there are omitted variables that can be correlated with ESG, creating potential bias when estimating the coefficients.

While the fixed effect regression specification used in this analysis can reduce the impact of omitted variables, it is worth determining the relevant risk of endogeneity. The *reputation ecosystem* provides a framework with which to discuss the causal relationship between ESG and stock performance. To investigate the existence of bidirectional causality, I apply a panel vector autoregression (PVAR) method within a

Granger causality test to uncover any dynamic causality (Sassen et al., 2016). The PVAR regression equation is as follows:

$$SP_{i,t\sim t+1} = \beta_0 + \beta_1 SP_{i,t-1\sim t} + \beta_2 SP_{i,t-2\sim t-1} + \beta_3 ESG_{i,t-1} + \beta_4 ESG_{i,t-2} + \epsilon_{i,t}$$
$$ESG_{i,t} = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 ESG_{i,t-2} + \beta_3 SP_{i,t-1\sim t} + \beta_4 SP_{i,t-2\sim t-1} + \epsilon_{i,t}$$

For the generalized method of moments (GMM) estimator, the standard errors are robust at the individual level to mitigate the heteroscedasticity problem. The forward orthogonal deviation transformation (Love & Zicchino, 2006) is used because the method can remove the fixed effects. In addition, the two-year lag is chosen following previous studies on the Granger test (Love & Zicchino, 2006; Wooldridge, 2010), which indicate that it is suitable for annual panel data. The model estimates are then passed for the Granger causality Wald test. The test results are shown in Table 3.12.

**Table 3.12: Wald test for Granger causality results**

| Equation | Excluded | Chi2 (df) | p-value | Direction |
|---|---|---|---|---|
| SP | ESG | 22.075 | <0.001*** | unidirectional |
| ESG | SP | 4.732 | 0.094 | |
| SP | E | 18.606 | <0.001*** | bidirectional |
| E | SP | 6.654 | 0.036* | |
| SP | S | 14.709 | 0.001*** | unidirectional |
| S | SP | 4.733 | 0.094 | |
| SP | G | 3.678 | 0.159 | independent |
| G | SP | 1.126 | 0.569 | |

This table shows the Wald test results for the Granger causality analysis on the sample. *ESG* is the ESG scores obtained from the SuperFinance database. *E, S* and *G* are the dimension scores of environmental, social and governance, respectively. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% level, respectively.

The excluded factors can Granger-cause the equation factor if the test result is significant. The results show that the causal relationship between stock performance and ESG is unidirectional. ESG performance can Granger-cause stock performance, while stock performance cannot Granger-cause ESG performance.

In terms of the separate dimensions, only the social dimension (S) shows the same relationship as ESG. That is, the social-level performance can Granger-cause the stock performance, and such a relationship is unidirectional. According to the Granger causality test, the relationship between environmental dimensions and stock performance is bidirectional. Environmental performance can help improve the public image of firms and increase their exposure, leading to an increase in stock returns, and the increased stock performance will push the firm to continue to undertake environmental activities and improve its environmental information disclosure.

The bidirectional relationship for E may come from the special situation in China, where environmental disclosure has been made mandatory for many sectors. The Chinese government has implemented several strict policies on environmental protection, and the China Securities Regulatory Commission has introduced regulations on environmental information disclosure, providing mandatory and uniform disclosure guidelines. Due to these mandatory regulations, firms with better stock performance tend to improve their environmental performance as well.

However, for social and governance dimensions, there are not yet any mandatory regulations on corporate behaviors or information disclosures in China. The governance-level score seems to not have an impact on stock performance, according to the Granger test result. From the perspective of the *reputation ecosystem*, corporate behaviors in the governance dimension are employed primarily to comply with regulatory and legal requirements, rather than to enhance brand value. Such a mechanism may produce an independent causal relationship between governance performance and stock performance.

Nevertheless, many Chinese companies that have been the subject of governance scandals have not suffered stock market losses. For example, Moutai, the company with the top market capitalization in the A-share market as of April 8, 2021, is a state-owned non-monopoly with a low corporate governance score. The company's former chairman, Renguo Yuan, and eight other executives were arrested in May 2019 for corrupt practices, including bribery (Reuters, 2019). However, instead of falling due to the corporate governance scandal, Moutai's stock price continued to rise for the next year. Analysts' explanations for the rising price of Moutai's stock revolve around the scarcity, value retention, and investment nature of Moutai's products. The outlook for Moutai's future is also focused on production capacity and price. As long as there is no product quality or environmental crisis, the negative impact on the stock price is limited, despite the company's management changes due to the scandals. This situation is common in China, which makes causal analysis harder to align with actual businesses. It is also important for us to be aware that the short time span of the panel data may hamper our ability to obtain a robust result when using the Granger causal test.

It is worth noting that stock returns can be dynamic. Previous stock returns can have an impact on later ones, because investors tend to buy well-performing stocks and sell poorly performing ones. Therefore, I propose a new regression model that includes the value of lagged stock performance (Chebbia et al., 2020) to consider dynamics within the relationship. The lagged stock performance can also help address the problem of simultaneity. Instead of using the fixed effect regression model, which is not suitable for dynamic panel data, the generalized method of moments (GMM) is used to reduce the biases. The equation is as follows:

$$SP_{i,t\sim t+1} = \beta_1 SP_{i,t-1\sim t} + \beta_2 ESG_{i,t} + \beta_3 ROA_{i,t} + \beta_4 PB_{i,t} + \beta_5 ASSI_{i,t} + \beta_6 NPR_{i,t} + \beta_7 TQ_{i,t} + \beta_8 SHARE_{i,t} + \delta_{\mathrm{i}} + \mu_i + \epsilon_{i,t}$$

The GMM estimator is implemented with similar settings as in the PVAR approach,

including robust standard errors and the application of the forward orthogonal deviation transformation. The regression results appear in Table 3.13. The coefficients of ESG, E, S and G are all positive and significant, which is congruent with my previous conclusions using the fixed-effects specification. The AR (1) and AR (2) test results show significant and nonsignificant values, respectively. This suggests the second-order serial correlation does not exist. The Hansen's J test of overidentification and the Difference-in-Hansen test on exogeneity indicate that ESG and the three dimensions are exogenous.

**Table 3.13: Mainland (A-shares) market GMM regression model coefficients**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | SP | SP | SP | SP |
| L.SP | -0.0350 | -0.00407 | -0.0772 | -0.0634 |
| | (0.0607) | (0.0576) | (0.0659) | (0.0612) |
| ESG | 0.0102*** | | | |
| | (0.00141) | | | |
| E | | 0.00704*** | | |
| | | (0.000886) | | |
| S | | | 0.00226* | |
| | | | (0.00111) | |
| G | | | | 0.00932** |
| | | | | (0.00298) |
| ROA | -0.694 | -0.386 | -0.155 | -0.265 |
| | (0.533) | (0.517) | (0.519) | (0.512) |
| PB | -0.000264 | -0.000254 | -0.000622** | -0.000276 |
| | (0.000175) | (0.000182) | (0.000192) | (0.000164) |
| ASSI | 0.00145 | -0.00162 | 0.0114 | 0.00787 |
| | (0.0116) | (0.0109) | (0.0121) | (0.0111) |
| NPR | 0.0671 | 0.0340 | 0.0206 | 0.0310 |
| | (0.0536) | (0.0520) | (0.0514) | (0.0514) |
| TQ | -0.00648 | -0.0138 | -0.00431 | -0.00795 |
| | (0.0136) | (0.0117) | (0.0132) | (0.0121) |
| SHARE | -0.00185 | -0.00251* | -0.000826 | -0.000502 |
| | (0.000998) | (0.000980) | (0.000883) | (0.000887) |
| Constants | -0.619* | -0.235 | -0.328 | -1.014*** |
| | (0.285) | (0.281) | (0.288) | (0.280) |
| *N* | 320 | 320 | 320 | 320 |
| *AR (1) test (p-value)* | -3.82*** | -3.60*** | -3.96*** | -3.99*** |
| *AR (2) test (p-value)* | 0.85 | 0.94 | 0.79 | 0.66 |
| *Hansen's J test (p-value)* | 75.42 | 73.02 | 69.69 | 71.24 |

| | | | | |
|---|---|---|---|---|
| *Difference-in-Hansen test (p-value)* | 5.46 | 3.10 | 2.17 | 5.27 |

This table presents the results of the PVAR regression model with GMM estimators for the effect of the performance of ESG and the dimensions on the stock returns in the A-share market. The dependent variable is the annual stock returns. *L.SP* is the lagged term of the dependent variable. *ESG* is the ESG scores obtained from the SuperFinance database. *E, S* and *G* are the dimension scores of environmental, social and governance, respectively. All other variables are explained in Table 3.1. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% level, respectively. The values in parentheses are the corresponding values of robust standard errors.

### 3.5.2 Variable Substitution

In the previous regression models, I used *ROA* to control profitability, *ASSI* to control company size, and *SHARE* to control share concentration. To examine the robustness of the model's results, I substituted these three variables with return on equity (*ROE*), logarithm of market capitalization (*LCAP*), and the total holding proportions of the second to tenth largest shareholders (*SHARE10*), respectively, to examine the robustness of the model conclusion.

The results of the new specification appear in Table 3.14. The variable substitutions still present coefficient estimates with a significant and positive relationship between ESG and stock performance. Taken together, these results create evidence supporting the robustness of this analysis.

**Table 3.14: Mainland (A-shares) market regression model coefficients with variable substitutions**

| | (1) | (2) | (3) |
|---|---|---|---|
| | SP | SP | SP |
| ESG | 0.0208*** | 0.0215*** | 0.0221*** |
| | (0.00266) | (0.00281) | (0.00282) |
| ROE | -0.731** | | |
| | (0.275) | | |
| LCAP | | -0.118 | |
| | | (0.0773) | |
| SHARE10 | | | 0.000406 |

| | | | |
|---|---|---|---|
| | | | (0.00296) |
| PB | 0.00137 | 0.00209*** | 0.00210*** |
| | (0.000736) | (0.000395) | (0.000460) |
| NPR | 0.403*** | 0.159* | 0.181* |
| | (0.0845) | (0.0684) | (0.0690) |
| ASSI | -0.0648 | | -0.0480 |
| | (0.0989) | | (0.102) |
| SHARE | 0.00114 | 0.00146 | |
| | (0.00395) | (0.00347) | |
| TQ | -0.0211 | 0.0283 | 0.00986 |
| | (0.0324) | (0.0159) | (0.0155) |
| ROA | | -1.896** | -2.142** |
| | | (0.706) | (0.693) |
| Constants | 0.630 | 1.872 | 0.158 |
| | (2.623) | (2.060) | (2.659) |
| *N* | 395 | 400 | 400 |
| *Adj. $R^2$* | 0.468 | 0.468 | 0.462 |

This table presents the regression results for the effect of the performance of ESG and the dimensions on the stock returns in the A-share market, with some variables substituted. The dependent variable is the annual stock returns. *ESG* is the ESG scores obtained from the SuperFinance database. *E*, *S* and *G* are the dimension scores of environmental, social and governance, respectively. *ROE* is the return on equity as the substitution of *ROA*. *LCAP* is the logarithm of market capitalization as the substitution for *ASSI*. *SHARE10* is the total holding proportions of the second to tenth largest shareholders as the substitution of *SHARE*. All other variables are explained in Table 3.1. The symbols ***, **, and * indicate significance at the 0.1%, 1%, and 5% level, respectively. The values in parentheses are the corresponding values of robust standard errors. Because of missing data on ROE, the first regression only has 395 data points.

## 3.6. Discussion and Conclusions

Despite the rapid advancement of ESG practices in the financial markets, there are no widely agreed-upon conclusions about the relationship between ESG performance and stock performance. In particular, there is no evidence in the extant literature that demonstrates whether or not the three facets of ESG and stock price volatility are in step with one another. There are three possible reasons for this. First, the correlation between different ESG ratings is low, and the mainstream ESG rating data and scoring models are potentially compromised by conflicts of interest. Second, existing ESG impact studies

either focus on the risk perspective (Krüger, 2015) or the legal perspective (Minor, 2015), neither of which can explain how ESG affects financial performance and investor confidence. Third, the theories that have been applied to ESG studies, such as legitimacy theory, stakeholder theory, and business ecosystem theory, all fall short in that they fail to explain how ESG generates added value and drives sustainable corporate growth.

In this study, a new theoretical framework is proposed, the *reputation ecosystem*, that is designed to address the above issues and explains that ESG drives stock prices to the upside by enhancing brand value and investment confidence through the reputation mechanism. The dataset used in this study is unique as the collection and scoring were carried out under the investor-paid model and AI data mining, as opposed to the issuer-paid model that is common elsewhere. This study examines the relationship between ESG and stock performance using a sample of 80 Chinese cross-listed companies (listed on both the A-share and Hong Kong markets) from 2014 to 2018. A model of ESG actions affecting stock prices is proposed based on the theoretical framework of the *reputation ecosystem*. The model explains that ESG behavior affects share prices via three mechanisms: investor confidence, brand equity, and corporate reputation. Once the hypotheses were developed and a fixed effect regression model was built, it was found that the relationship between ESG performance and stock market returns is significantly positive in both the A-share and Hong Kong markets, indicating that companies with better ESG performance tend to perform better in both markets.

To further investigate this relationship, this study also examines the relationship between stock performance and the three dimensions of ESG. I found that the performance of the three dimensions is positively related to stock performance in the mainland market. However, in the Hong Kong market, only the environmental and governance dimensions are positively related to stock performance; the coefficient for the social dimension is positive but not significant. When comparing the coefficients of

ESG overall and the three dimensions separately, I found that, although all the coefficients are positive, their individual impacts differ. Based on the regression results, in both the mainland and Hong Kong markets, the coefficient of governance performance is the largest among the three dimensions, while the social score coefficient is the lowest. Moreover, the coefficient of overall ESG performance is larger than any single dimension.

In the mainland market, all other factors being equal, every one-unit score increase in overall ESG performance can increase the average annual stock return by 2.22%, while the average increases for every unit of governance, environmental, and social score are 1.46%, 0.97%, and 0.43%, respectively. In the Hong Kong market, however, the coefficients of ESG and the three dimensions are all smaller than those in the mainland market. With all other factors once again assumed to be equal, every one-unit score increase in overall ESG performance can increase the average annual stock return by 1.68%, while the average increases for every unit of governance and environmental score are 1.05% and 0.75%, respectively. This suggests that improvements in overall ESG performance, rather than just one dimension, can lead to better stock performance. These findings are helpful for managers who can create a more suitable allocation strategy for ESG resources and for policymakers to balance the impact of strict regulations and stock market fluctuations.

This study builds upon previous research conducted by Blundell et al. (1995), Deng and Cheng (2019), and Lin and Li (2004) by examining the impact of both industry sectors and corporate ownership structures on ESG performance. Our findings indicate that in the mainland market, the ESG performance coefficient is 0.0225 for state-owned enterprises (SOEs) and 0.00656 for non-SOEs, demonstrating a positive and significant impact for both. This suggests that in the mainland market, all else being equal, a one-unit increase in ESG performance can lead to a 2.25% increase in the average

annual stock return of SOEs and a 0.66% increase for non-SOEs. In contrast, in the Hong Kong market, the relationship between ESG performance and stock return is positive and significant only for SOEs, with a one-unit increase in ESG performance leading to a 1.72% increase in the average annual stock return of SOEs.

Regarding industry competitiveness, we find a positive and significant relationship between ESG performance and stock returns for both monopoly and non-monopoly industries in the A-share market. Specifically, a one-unit increase in ESG performance can lead to a 0.71% increase in the average annual stock return of monopolistic companies and a 2.50% increase for non-monopolistic companies, assuming all other factors remain constant. In contrast, in the Hong Kong market, the relationship between ESG performance and stock returns is positive and significant only for non-monopoly industries, with a one-unit increase in ESG performance leading to a 1.98% increase in the average annual stock return of non-monopoly companies. Overall, our results suggest that in the Chinese market, ESG performance serves as a mechanism for complying with legal obligations, demonstrating political awareness, and accumulating social capital. This dynamic *reputation ecosystem* impacts the share price of both SOEs and non-SOEs, as well as monopolies and non-monopolies. However, in the more developed Hong Kong market, investors may have less confidence in the reputation of Chinese private companies and express a distaste for monopolies, which could explain the partial error in our results.

The contributions of this study are fourfold: method, literature, theory, and practice.

First, I consider the methodological contributions. These findings overturn a significant number of studies that found no evidence that ESG ratings affect market returns (Bae et al., 2021; Dorfleitner et al., 2015; Humphrey et al., 2012). This is partly due to flaws in their datasets that led to errors in the results. However, one of the main reasons for the

confusion in the empirical findings on ESG and stock prices is that the current mainstream ESG rating agencies use an issuer-paid model, which leads to conflicts of interest and invalidates the independent quality of the ratings (Krugman, 2010). To address this limitation, this paper adopts an investor-paid ESG scoring model, which is the first time this has been introduced into the academic literature regarding ESG rating results and causal analysis of executive compensation. According to recent studies (Wang et al., 2021; Zhang et al., 2022), the mainstream issuer-paid model does not apply to the A-share market in China because the validity of a set of factors is tested based on whether it can lead to excess returns or an improved risk-return balance. Several studies report that investor-paid raters provide more timely ratings that more accurately predict defaults than is the case with issuer-paid raters (Beaver et al., 2006; Bruno et al., 2016; Bhattacharya et al., 2019), and the current empirical study validates the rationality of collecting data using an investor-paid model.

Second, I also make literature contributions to the ESG study. Most previous studies have either focused on the relationship between ESG and stock performance only and failed to either discuss the causal relationship (e.g., Derwall et al., 2005; Statman & Glushkov, 2009) or assess the causal relationship for each dimension of ESG performance (Margolis et al., 2009). This paper uses the Granger causality test to address the endogeneity problem and explore the causal relationship between ESG and stock performance. Shackleton et al. (2022) empirically demonstrate that poorer stock market performance increases management efforts in environmental (E) and social (S) activities, while this paper finds strong evidence that all three dimensions (E, S and G) have a positive impact on stock prices. Consumers committed to sustainability can carry this commitment across to their investments (Brunen & Laubach, 2022), and, in the context of a strong reputation ecosystem, ESG amplifies corporate overvaluations and drives stock prices higher than the fundamentals can justify. Tesla is a classic example of a company whose users are powerfully focused on the environment.

Third, I make theoretical contributions by establishing a theoretical framework for ESG impact mechanisms. Many theories lie within the boundaries of ESG research, but none can explain, predict, or understand ESG behavior alone, including how ESG directly affects stock performance. This study introduces the reputation ecosystem, a dynamic network ecosystem used to explain how reputation impacts stakeholders' behaviors and company growth. A company's ESG activities are the best way to accumulate social capital and, indeed, are a good proxy for social capital, as ESG activities generate trust and build reputation, leading to an increase in brand equity. Within the reputation ecosystem, stakeholders are more likely to deal with companies with high ESG scores in order to maintain their own reputations. For example, banks are more likely to lend to borrowers with similar ESG profiles (Houston & Shan, 2019). Shareholders will then react positively to ESG behaviors and drive stock prices higher. The empirical results herein shed light on the impact of ESG performance on stock price performance from multiple perspectives and validate the effectiveness of the reputation ecosystem impact mechanism.

Fourth, this study offers practical contributions for ESG investors that could be used to create stock investment strategies, particularly around stock selection and timing, which is precisely what the market considers the source of excess returns for ESG investment. Although the coefficients of all three ESG dimensions are positive, the impact of the three dimensions differs. Based on regression results, the coefficient of governance performance is the largest among the three, and the social score coefficient is the lowest in both the mainland and Hong Kong markets. In the mainland market, assuming all other factors are equal, every one-unit increase in the corporate governance score can increase the average annual stock return by 1.46%, while the average increases for every unit of environmental and social scores are 0.97% and 0.43%, respectively. In the Hong Kong market, however, the coefficients of the three dimensions are all smaller

than those in the mainland market, suggesting a lower impact of ESG on stock performance. Moreover, in both markets, the coefficients of overall ESG scores are larger than those of the three dimensions individually. This suggests that improvements in overall ESG performance, rather than just in one dimension, can lead to better stock performance. These findings are helpful for managers who can create a more suitable allocation strategy for ESG resources and for policymakers to balance the impact of strict regulations and stock market fluctuations.

Overall, this study presents the first evidence on how ESG and its three facets affect stock value separately, but it also suffers from certain limitations. First, even though almost all cross-market listed Chinese companies are included, the sample is still very small, an issue that may be unavoidable since the aim is to compare ESG performance in developed and developing markets. Second, despite taking the ethical high ground by adopting an investor-paid model of data collection and scoring, ESG is still a complex disclosure system, and it is difficult to scientifically aggregate and weight when different units are used. The ideal form would be to use monetary metrics in order to ultimately merge financial and non-financial information about a company into a more comprehensive view of the value that each entity is adding to society. This opens up new possibilities for future research.

# Chapter 4 | How Does ESG Create Brand Value? Evidence from China's Listed Companies


## Abstract

Despite the growing interest in environmental, social, and governance (ESG) strategies, there is a limited understanding of their impact on intangible assets. This paper examines the impact of ESG factors on a firm's brand value using new data and theory. First, a theory is proposed that suggests market participants and stakeholders are controlled by the *reputation ecosystem*. Using a unique ESG dataset scored with an investor-paid model and artificial intelligence (AI) data mining, this paper tests associated hypotheses with a sample of Chinese-listed companies from 2014 to 2018. The findings reveal a positive association between ESG performance and brand value, with additional tests indicating a causal relationship. Specifically, a one-percent increase in ESG score increases average brand value by approximately 0.354%. The positive relationship holds true for all three ESG dimensions, but their effects are not synchronized. Additionally, positive and significant relationships are found only for state-owned enterprises (SOE). Lastly, the study finds a positive relationship between ESG performance and brand value for both business-to-consumer (B2C) companies and companies in economically developed regions. The theoretical contribution of this paper is discovering the mechanism of ESG influence on brand value, while the methodological contribution is using an investor-paid model to collect data.



**Keywords:** *ESG, Brand value, Intangible asset, Investor-paid model, Reputation ecosystem*
**JEL classification:** G24, G30, M14, M30, Q01

## 4.1 Introduction

In the last 20 years, as environmental, social, and governance (ESG) has had a growing impact on the global investment chain (Clark & Hebb, 2004; Gillan et al., 2021; Lins et al., 2017), intangible assets have emerged as a significant feature in global capital markets. In 2009, investment in intangible assets surpassed tangible assets globally for the first time (Haskel & Westlake, 2017). Since then, the gap between the two investment types has increased to the point where intangible assets have evolved into a major consideration for investors. From 1975 to 2018, the value of intangible assets, as a percentage of the market capitalization of all S&P 500 companies, increased from 17% ($122B) to 84% ($21.03T) (Aon, 2019; Ponczek, 2020). The COVID-19 pandemic has accelerated this upward trend in the value of intangible assets, which now represent over 90% of the S&P 500 market capitalization (Ocean Tomo, 2020). I argue that to determine whether the share prices of public companies can become immune because of ESG, it is first necessary to understand the impact of ESG factors on intangible assets because the phenomenon of increasing share prices is significantly related to intangible assets (Bessen, 2016). Additionally, I argue that brand value can be used as a substitute for quantifying intangible assets.

However, the current literature regarding how ESG affects intangible assets, especially brand value, is still vague and even controversial. Studies analyzing the impacts of ESG mainly focus on market characteristics, ownership characteristics, corporate risk, and firm risk (Gillan et al., 2021), and there is a lack of research on the mechanisms by which ESG affects firm performance. Some previous studies have examined the relationship between ESG performance and brand value, but they have several disadvantages. For example, the research has focused on qualitative brand analysis rather than quantitative brand value (Hur et al., 2014; Singh & Verma, 2018) and on just one dimension of ESG (First & Khetriwal, 2010; Tuan, 2014); or they have relied on

small sample sizes (Lai et al., 2010; Loh & Tan, 2020). Moreover, ESG data can be confusing, and there has been a lack of transparency regarding them (Chatterji et al., 2009). ESG ratings are not consistent across prominent raters (Chatterji et al., 2016), and there is increasing concern about inconsistencies among ESG databases (Berg et al., 2019; Berg et al., 2020). These data quality problems may, in turn, cause inaccuracies in ESG empirical studies.

To address these problems, this study first proposes a new theoretical framework named the *reputation ecosystem*, which explains how market participants are involved in a "survival of the fittest" contest and how all stakeholders involved in the market are controlled by an invisible hand, i.e., reputational factors. By incorporating stakeholder theory with the theory of reputation, the *reputation ecosystem* framework can explain the mechanisms by which ESG investments affect corporate brands, and I argue that the impacts of ESG on the performance of listed companies are eventually realized in terms of brand equity and brand value. The ESG actions of each company in the *reputation ecosystem* have two effects: (1) to create the company's reputation (Clark & Hebb, 2005), which is associated with brand value; and (2) to meet regulatory requirements to maintain legitimacy even while generating no added value (McElroy, 2012). In other words, high brand equity from ESG-generated social capital increases brand loyalty, enhances brand premiums (Aaker, 1996; Park & Srinivasan, 1994), and ultimately contributes to increased sales, profits, and stock values (Ailawadi et al., 2003; Gupta et al., 2004).

This study analyzes the relationship between ESG performance and brand value and, in doing so, validates the theoretical framework of the *reputation ecosystem* using a sample of 94 Chinese-listed companies from 2014–2018. To overcome the drawbacks of the issuer-paid approach adopted by major global ESG-rating agencies (Krugman, 2010), I adopt an investor-paid model and artificial intelligence (AI) for data collection and ESG scoring, which exhibits better overall rating quality and has an informational advantage

(Beaver et al., 2006; Bhattacharya et al., 2019). This research has four major findings: (1) The ESG performance of listed companies shows a significant and positive relationship as well as a unidirectional causal relationship with their brand values, every one percent increase in ESG score will increase the average brand value by approximately 0.354%; (2) the positive relationship between the performance of all three dimensions of ESG and brand value is positive and significant, with governance factors having the greatest impact and social factors having the least; (3) the relationship between ESG and brand value is significant for state-owned enterprises (SOEs) but not for non-SOEs; and (4) there are industrial and regional differences in the relationship between ESG performance and brand value, with the relationship being significant for business-to-consumer (B2C) companies and companies in economically developed regions.

This study contributes to the literature concerning corporate social responsibility (CSR), ESG, intangible assets, impact investing, and brand value in several ways. First, past literature suggests that the importance of physical assets has been decreasing while intangible assets are becoming increasingly important (Belo et al., 2022). As a primary form of intangible capital, brand capital plays a significant role in the valuation and risk of public companies (Belo et al., 2014) because the influence of intangible assets in corporate financial management is mainly achieved by reducing corporate risk through brand perception (Larkin, 2013). However, the importance of corporate intangible assets is still not fully understood by the market (Edmans, 2011). The importance of ESG investments in strategies aiming to enhance intangible assets is already comparable to other major investments such as research and development (R&D) and advertising and marketing (Gardberg et al., 2006). Nonetheless, previous studies did not elaborate on ESG as a pathway to influence intangible assets. Moreover, their common view of advertising spending as a proxy for brand capital is overly simplistic because the brand capital generated by the same advertising investment often varies widely. In particular,

companies concerned with ESG, like Tesla, which spends zero of its budget on advertising, can still accumulate huge brand equity.

Second, some previous studies (Heikkurinen & Ketola, 2012; Matute-Vallejo et al., 2011) discussed the impacts of CSR on corporate brands from the perspective of reputation and customer loyalty. Some studies (Bardos et al., 2020; Green & Jame, 2013; Larkin, 2013) have concluded that brand conception can impact corporate financial performance. However, these studies do not verify the causal relationship between ESG and brand value, and they also do not consider the quantification or monetization of brand value. That is, past research has focused on the relationship between ESG and brand equity rather than brand value. Brand equity refers to a set of assets or liabilities in the form of brand awareness, brand association, and customer loyalty, which are essentially emotional and functional commitments to the customer (Ghodeswar, 2008). Brand value, on the other hand, is the financial value of a brand. (Aaker, 1996, 2009). To determine the brand value, companies need to estimate the value of the brand in the market, or essentially, how much consumers will pay for the brand. Although Dai et al. (2021) did not discuss how ESG affects brand value, their findings support my model: ESG can enhance corporate effectiveness through brand value and reputation.

Third, this study is the first to discuss the impact of ESG on brand value while also considering firm and industry characteristics, e.g., corporate ownership and regional development. The impacts of corporate ownership (Córdoba-Pachón et al., 2014; Lin and Li, 2004) and market competition (Martins, 2021; Muhmad et al., 2021; Graf and Wirl, 2014) on social responsibility have been investigated by prior studies. However, how these characteristics impact the relationship between ESG and brand value has not been comprehensively discussed. The relationship has been discussed by Kim et al. (2021), but only partially since they only considered the environmental dimension of ESG. My study finds that the relationship between ESG and brand value can vary for firms with different

characteristics in terms of corporate ownership, regional development, and market competition.

Finally, and most importantly, my data is unique. The team at MIT's Sustainability Initiative found that the correlation among ESG ratings of six mainstream agencies was on average 0.61 (Berg et al., 2019). This result indicates that decision-makers receive relatively noisy information from ESG rating agencies. Kotsantonis and Serafeim (2019) also showed different ESG results obtained using the same ESG metric. These conflicting results confuse investors and imply that the accuracy and credibility of ESG data and scores are currently far from adequate. From criticism of ESG rating transparency (Walter, 2020) to questions about the low relevance of ESG rating results (Gibson Brandon et al., 2021), the gradual popularity of the ESG topic has increased the confusion in the marketplace regarding ESG data. For instance, public skepticism from industry leaders is subverting the rosy vision of ESG. For example, Tesla and its CEO, Elon Musk, have criticized the ESG metrics as "fundamentally flawed" (Kishan, 2022). I argue that data from previous empirical studies on ESG impact have been collected under the issuer-paid model, where data and rating quality cannot be guaranteed (Chatterji et al., 2016). The methods that this study adopts are based on data and ratings collected from the investor-paid model, avoiding conflicts of interest.

The paper is organized as follows: Section 2 introduces the topic and its theoretical foundations, creates the theoretical framework of the *reputation ecosystem*, and presents the research hypotheses. The section also reviews the literature regarding the relationship between ESG performance and brand value. Section 3 explains the research methodology, including sample selection, data sources, model settings, variable description, model building, descriptive statistics, and correlation analysis. Section 4 presents the empirical results and discusses them. Section 5 presents an evaluation of uncertainty based on

robustness tests. Finally, Section 6 discusses the conclusions, limitations, and possible avenues for future studies.

## 4.2 Literature, Theory and Research Hypothesis

Ideas on brand value have developed sequentially from brand equity theory to the theory of customer value to the theory of stakeholder value. Brand equity theory emerged in the context of frequent brand mergers and acquisitions in the capital market from the 1980s, which emphasizes the premium of the brand as the core component of the intangible assets of the company (Hutton, 2005). Customer value theory, meanwhile, emphasizes the functional and emotional values of a brand for customers, founded on the belief that a strong brand is not only a symbol to identify the manufacturer and seller of a product but also a promise and guarantee of the functions and features of a product for consumers (Kotler and Armstrong, 1991). The theory of stakeholder value then emphasizes branding as a promise to achieve stakeholder value, underscoring how it is no longer sufficient to consider customer and competitive factors alone (Winkler, 1999), since a brand is present in the hearts and minds of stakeholders (Schultz and De Chernatony, 2002), and as such, brand value is essentially the integration of stakeholder values (Foley and Kendrick, 2006).

This section covers three aspects: firstly, the relationship between ESG performance and brand value; secondly, a proposal for a new theoretical framework, the *reputation ecosystem*, to explain the impact of ESG on brand value; and, thirdly, the research hypotheses based on the proposed new theoretical framework.

### 4.2.1 Literature Review on ESG and Brand Value

Literature on the relationship between ESG and brand value is, so far, relatively scarce. Related research on CSR and firm value began to be produced in the 1970s, and in general, a significant and positive relationship was found to exist between CSR performance and firm value (Mishra, 2017; Schadewitz & Niskala, 2010). The impact of CSR on brand value, meanwhile, concerns improving the brand's reputation (Johnson et al., 2019), as CSR can produce positive feedback about products (Brown & Dacin, 1997). Accordingly, CSR can be used as a strategy to help firms maintain a competitive advantage (Fry et al., 1982). Empirical studies on the relationship between brand value and CSR have been conducted in India (Sharma et al., 2019), South Korea (Hur et al., 2014), and Singapore (Loh & Tan, 2020). However, they either focused only on consumers or did not quantify or monetize brand value.

Some research has been undertaken on the relationship between brand value and environmental dimension performance (E), but findings differ on the relationship. Based on studies in the strategic management domain, First and Khetriwal (2010) investigated whether a firm's environmental orientation influences corporate brand value. The results were not conclusive. Based on consumer behavior theory and the resource-based view, respectively, Khojastehpour and Johns (2014) and Rahman et al. (2021) concluded that companies with better environmental CSR also had higher brand value. Nonetheless, these studies did not present a composite picture of the impact mechanism or of stakeholder and corporate behavior.

The impact of the social (S) dimension on brand value has been studied mainly from the perspective of reputation (Harjoto & Salas, 2017). Findings generally show a positive relationship. For example, some studies found a positive impact of social responsibility on brand equity from the perspective of different stakeholders (e.g., customers, shareholders, and employees) (Torres et al., 2012). Based on stakeholder theory, Kim et al. (2021) and Yang and Basile (2018) investigated the impact of specific indicators of

social performance, including product, employee, and diversity, and each found positive relationships. Some other studies found synergies between social responsibility and brand equity (Rahman et al., 2017). Yet, despite these empirical conclusions, all studies failed to explain the mechanism of the relationship.

This review of the literature suggests that there is a lack of empirical research on the relationship between corporate governance (G) and brand value. Several studies argue that corporate governance can improve brand performance (Tuan, 2014), but they fail to quantify brand value. Ünlü and Yagli (2016) concluded that the relationship between corporate governance rating scores and brand value is not significant, but their research sample was too small for the results to be convincing.

Although previous studies have added to the body of literature, gaps remain in the current work on the relationship between ESG and brand value. Firstly, earlier studies based their research on a number of common theories, such as stakeholder theory, reputation theory, and consumer behavior theory. However, these studies either failed to explain the impact mechanism of ESG or did not present the whole picture, e.g., by failing to consider corporate behavior, reputation, stakeholders, and corporate performance. Such missed opportunities could have resulted in different conclusions being drawn and caused confusion about the application of ESG. Secondly, most empirical studies failed to discuss the flaws of current ESG evaluation methods. Many ESG rating agencies apply the 'issuer-paid' business model and do not disclose important information about their rating methods, including indicators and weights. The lack of transparency and independence of rating agencies can cause inaccuracies in the rating results and, thus, inconsistencies in the conclusions drawn. Thirdly, the current literature focuses on one or two dimensions of ESG and does not compare the ways in which the three ESG dimensions affect brand value.

### 4.2.2 The Reputation Ecosystem Creates Brand Value

Researchers often exclude intangible capital when testing various investment theories for public companies, though it has long been more important than tangible assets. There are two potential reasons for this. First, intangible assets cover a wide range, including, but not limited to, human capital, innovation, brands, patents, software, customer relationships, and databases. Measuring the full range of intangible assets is complex, and the results are often highly biased. Second, many disciplines, such as economics, finance, marketing, organizational behavior, and human capital, can explain the mechanism of intangible asset generation, but with no unified theory to manage them, the explanations of different disciplines and theories result in varied conclusions, which presents a challenge for empirical research. I believe that brand equity is the core element of intangible assets. Therefore, in this study, I use brand value specifically, instead of the broader category of intangible assets on which to base my empirical evidence. Unlike intangible assets (such as patents, software, and data), which are mainly derived from investments in knowledge capital, intangible assets (such as brand value) are mainly derived from a firm's reputation as reflected in their social capital, which requires investment in ESG.

Potential flaws appeared when previous theories attempted to explain the impact of ESG. For example, theoretical studies rooted in neoclassical economics propose that the only social responsibility of management is to maximize profits. A firm's ESG efforts unnecessarily increase its costs and, thus, put it at a competitive disadvantage (Friedman, 2007). The neoclassical view then misses a number of key elements to consider: 1) not only are social realities ignored (Lawson, 1997) but also non-commodities, such as sunlight and air, with only tangible commodities valued; 2) only internal costs are valued, while the social costs of economic activities go unconsidered; 3) the critical role

of power in the economic and political system is ignored (Piketty, 2020); 4) consumer variability and the impacts of cost on goods choice are disregarded. In contrast, the socioeconomic view contends that corporate sustainability efforts can positively impact firms in three major ways: 1) ESG activities have significant management benefits for the company's shareholders; 2) ESG creates value through the stakeholders' enhancement of the corporate reputation at all levels (Freeman et al., 2007; Fomrun, 2005); and 3) similar to advertising, ESG can also play a role in reducing consumer price sensitivity (Sen & Bhattacharya, 2001). Yet, fundamental flaws in the debate are scholars' failure to examine how ESG actually creates value and which final paths affect financial performance.

To address the problems inherent in prior theories, this paper proposes a novel framework, the *reputation ecosystem*. This framework is derived from the natural ecosystem, in which components are compared in a contest for the "survival of the fittest." I posit that in the market, all stakeholders are involved in a similar contest controlled by an "invisible hand," i.e., their reputation. The *reputation ecosystem* proliferates the business ecosystem and integrates previous theories, such as stakeholder theory and reputation theory. The ecosystem situates stakeholders in an invisible reputation framework that controls the functioning of business, society, and politics. Stakeholder theory emphasizes the key role that stakeholders play in corporate operations. Nevertheless, stakeholders cannot be viewed simply as a unified concept given the conflicts of interest that exist among different stakeholder groups. The framework of the business ecosystem, derived from the ecological ecosystem, ignores the roles of individuals, governments, and nonprofit organizations, meaning it cannot persuasively explain the impact paths of various niches. Furthermore, while reputation and competition are emphasized in reputation theory, it is static and ignores the dynamic relationships among constituent factors. Faced with the ecological limits of economic growth (Fleurbaey & Blanchet, 2013; Weitzman, 2009) and an economy in a

state of perpetual flux (Beinhocker, 2006), I propose that stakeholders in the market are diverse but ultimately driven by the *reputation ecosystem*.

Every company can have its own *reputation ecosystem*. For example, Tesla's vision is to accelerate the global shift to sustainable energy, and for that, it has earned a lofty reputation. Within Tesla's *reputation ecosystem*, stakeholders in its global chain collaborate to achieve this vision. Rather than selling cars to customers, Tesla works with all stakeholders (including customers) and encourages them to drive electric cars and thereby create a better planet. Even though this sounds utopian, Tesla has achieved it, building a superbrand in the process without an advertising budget (Koetsier, 2019). As an alternative, ESG investments may be far more efficient than advertising. This is because stakeholders (especially fans) are responsible for a company's reputation, especially in terms of increasing the brand's value. For example, Tesla's ESG-driven reputation is transmitted to its investors, which strengthens their confidence, and the stock market reacts positively to the firm's eco-friendly behavior (Flammer, 2013; Krüger, 2015). Some investors are even willing to put aside a focus on their financial performance to invest according to their social preferences (Riedl & Smeets, 2017).

In the *reputation ecosystem*, reputation has a life cycle similar to the growth stages of a business, as shown in Figure 4.1. In the *reputation ecosystem*, according to the diffusion of innovation theory, brand development has a skewed, bell-shaped curve (Moore & McKenna, 1999; Rogers, 1976; Rogers et al., 2014). In this curve, reputation develops with the growth or decline of a firm and its brands. The lower bound of reputation, which is also the vanishing line, is determined by legal liability, and reputation vanishes if the corresponding brand vanishes (Fombrun & Shanley, 1990). At the opposite end, companies with the highest standards of reputation, such as those that focus on quality, ethics, and social responsibility, have the best brand reputation, which determines the upper bound of the curve. Rational firms pursue a peak reputation to maximize their

profits (Barney & Hansen, 1994). Competition also plays an important role in the *reputation ecosystem*. If a company loses out in market competition and enters the decline stage, its reputation will also decrease. Such a change in the company will drive it to make strategy changes, and if successful, the company will reach the second curve (red in Figure 4.1). This process resembles that of the double S-curve diffusion model (Morrison, 1998; Handy, 2016). ESG can be incorporated into this framework, playing two roles in general: (1) forging a reputation as a reward for good corporate standards and then increasing the brand value; and (2) helping maintain legitimacy by meeting regulatory requirements, which change with time (Brammer et al., 2016).

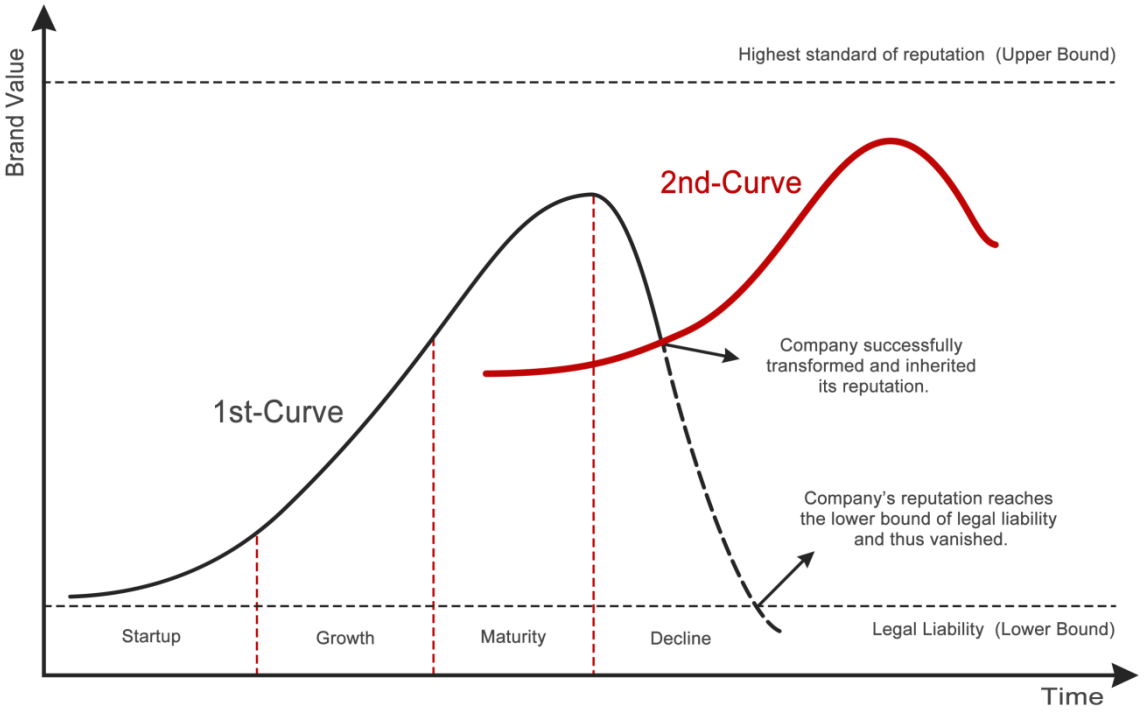


**Figure 4.1: Reputation Curve: ESG-Driven Growth.**

Figure 4.1 presents the growth of corporate brand value under the *reputation ecosystem*. The bottom dashed line denotes the lower bound of the curve, which is defined by legal liability. The top dashed line denotes the upper bound of the curve, which is defined by the highest standards of reputation, such as quality, ethics and social responsibility. The red curve on the right denotes the progress of a brand if the company makes successful changes.

The *reputation ecosystem* controls and regulates the economic operation and firm development of a country or region (Brammer et al., 2016). Under the influence of the

long-term reputation mechanism, different regions form geographical brands with varying degrees of reputation. For commodities, place-of-origin information has a brand-like function that influences consumers' cost choices and behaviors to different extents, forming a place-of-origin branding effect. High average ESG performance of enterprises in a region results in the accumulation of regional reputation, forming a geographic brand that ultimately influences consumers' overall impression and evaluation of products from the region. The link between origin and commodity success was discovered approximately 60 years ago (Dichter, 1962), and the interaction between "made in..." and brand value has since been validated, particularly for premium or niche products (Bucher-Edwards et al., 2021; Swaminathan et al., 2007; Verlegh & Steenkamp, 1999). In the *reputation ecosystem*, economic limitations arise from a lack of mutual trust, whereas trust is positively correlated with the level of economic development (Arrow, 1972; Knack & Keefer, 1997). Brand equity corresponds to the brand's place-of-origin recognition (Martín & Cerviño, 2011). However, the sales volumes of many goods do not necessarily translate into happiness if a country or region only emphasizes the importance of GDP, thereby disrupting the *reputation ecosystem* (Komlos, 2019; Raworth, 2017; Stiglitz et al., 2009). This is because, in the 21st century, the quantity of goods is no longer a significant desire (Frijters & Krekel, 2021); instead, consumers consider the identity of the brand behind the products.

### 4.2.3 Research Hypotheses

Reputation is a universal feature of human social interaction (Milinski, 2016). From the company's point of view, reputation is an overall cognitive judgment of groups about a firm's past behavior (Herbig & Milewicz, 1993); that is, it is the overall estimation of the firm by its stakeholders (consumers, investors, employees, the general public, etc.) (Fombrun, 1996). A *reputation ecosystem*, then, is a dynamic network ecosystem that involves a variety of stakeholders, such as individuals, companies, institutions, and

governments. The reputation capital accumulated from the beliefs, views, and evaluations of stakeholders in the system is the common currency for stakeholder interaction. Within an ESG ecosystem, reputation serves as a signal of stakeholder quality and demonstrates their behavioral attributes and type to other stakeholders. A healthy *reputation ecosystem* is comparable to a healthy human circulatory system, i.e., a cycle of capital driven by various dynamics.

According to the *reputation ecosystem*, the impact of ESG performance on reputation is mainly reflected in two aspects. First, future ESG-related legal and regulatory risks can be mitigated by good ESG performance. Therefore, investor and stakeholder confidence in the company will increase overall, thus enhancing its reputation. Second, good ESG performance reflects a company's sense of responsibility to its stakeholders, such as customers, suppliers, communities, and governments, which, in turn, positively influences stakeholder perceptions of the company's external image and ultimately improves its reputation. To better demonstrate the relationship between ESG and brand value, I propose the ESG impact model on brand value (Figure 4.2) based on my analysis of previous literature and theories. The model integrates corporate ESG behavior, stakeholder expectations, intangible corporate assets (brand equity), and corporate financial performance, and, therefore, it reflects the complex hierarchical relationships and interactions involved therein. Based on this impact model, the brand value of a company, which quantifies its comprehensive corporate reputation, increases with the company's reputation as it engages in more ESG-related activities. Although financial performance is not discussed in the paper, it is included in this model to present a complete interaction loop.

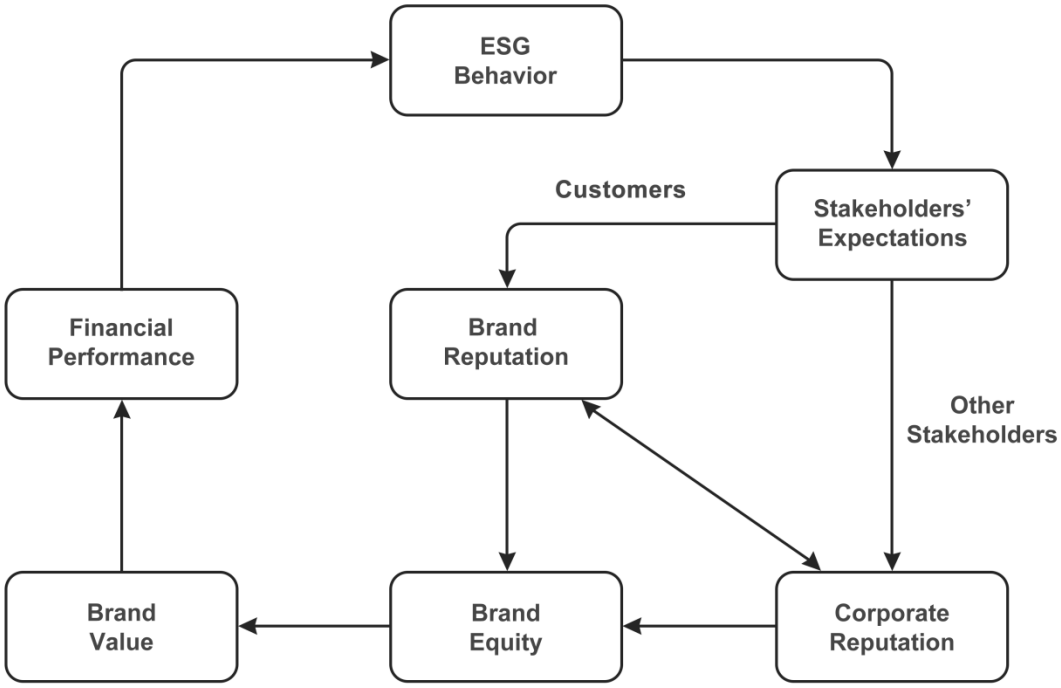


**Figure 4.2: ESG Impact Model for Brand Value.**

This impact model represents how ESG factors impact brand value under the *reputation ecosystem*. The arrows represent the impact paths and directions between nodes.

On the basis of the reputation ecosystem in general, being socially responsible improves customer loyalty (Matute-Vallejo et al., 2011) and enhances corporate reputation (Heikkurinen & Ketola, 2012), thus improving brand equity. Violating regulations and social norms can provoke negative public perceptions, thereby damaging corporate reputation (Philippe & Durand, 2011) and brand image. Based on previous studies that concluded the relationship between ESG and a broad concept of reputation (Bardos et al., 2020; Boghesi et al., 2014; Zhang et al., 2021), I reconsider the relationship between ESG factors and brand value under the framework of the reputation ecosystem. Therefore, this paper proposes the following research hypothesis based on the above analysis:

*Hypothesis 1: There is a positive relationship between a company's ESG performance and its brand value.*

To continue an in-depth exploration of the relationship between ESG performance and brand value, this study will consider the impact of the three dimensions of ESG on brand value. The three dimensions of ESG demonstrate three different perspectives on corporate sustainability. Although they may relate to each other, it is meaningful to investigate the impact of these activities separately on corporate performance, given that the corporate strategies and behaviors related to each dimension are quite different. Corporate environmental responsibility is not only an external social pressure but also an internal corporate demand. Owing to the increased emphasis on environmental protection and sustainable development, corporate environmental performance and fulfillment of the related social responsibility are important aspects of corporate reputation (De Castro et al., 2006; Philippe & Durand, 2011). Corporate environmental violations not only demonstrate poor environmental performance but also violate social norms and stakeholder expectations, creating negative public perceptions of the company and resulting in the loss of corporate reputation. For example, the emission of toxic chemical gases has a significant impact on the intangible value of a listed company, whereas the reduction of toxic gas emissions increases its market value (Konar and Cohen, 2001).

In the *reputation ecosystem*, the individuals in the ecosystem are driven to interact with each other by "invisible hands"; therefore, changing customer perception can also affect corporate behavior. Consumers are increasingly concerned about the impact of their behavior on the planet and the environment (Wang et al., 2009); consequently, companies establish beneficial images of corporate citizenship in the minds of consumers by assuming environmental responsibility, improving consumer attitudes toward companies and brands, enhancing brand competitiveness, and promoting brand value. Based on this analysis, this paper proposes the following hypothesis:

*Hypothesis 2: A positive relationship exists between the environmental (E) performance of a company and its brand value.*

The concept of CSR has been evolving since the early 20th century and has faced criticism from traditional economic liberals for almost a century. Nevertheless, CSR has gained increasing support from scholars and policymakers. The school of business diplomacy, with Professor Adolf Berle as its most famous spokesperson, expects corporate managers to fulfill corporate responsibilities beyond their traditional obligations to shareholders, thus acting as good corporate citizens (Manne, 1962). Acts of social responsibility are essentially acts of due diligence by companies that safeguard the rights and interests of their stakeholders, including suppliers, consumers, and creditors, while pursuing profits. Therefore, the fulfillment of social responsibilities is consistent with the fulfillment of stakeholder rights contracts (Porter & Kramer, 2006).

The resource-based view suggests that maintaining positive relationships with crucial resource providers is vital to the existence of an organization, and companies must consider the interests of their stakeholders (Drees & Heugens, 2013). A commitment to social responsibility influences the consumer perception of a company (Pomering & Johnson, 2009), and the fulfillment of social responsibility activities can have positive impacts on the image of a company (Vazifehdust et al., 2014). According to the reputation ecosystem, if a company exhibits poor social responsibility, for example, by manufacturing or selling low-quality products, behaving irresponsibly toward its suppliers, or failing to fulfill its community responsibilities, its image will be severely affected. Therefore, companies can improve stakeholder relationships by behaving responsibly towards their stakeholders, which in turn enhances the resources available to increase the brand value of the company.

*Hypothesis 3: A positive relationship exists between the social (S) performance of a company and its brand value.*

Although the differences in governance at the global regulatory level have decreased owing to the adoption of international financial reporting standards (IFRS), the differences in corporate governance practices across different countries and industries still exist (Wójcik, 2006). In previous studies on the effects of different governance levels on the performance of organizations, scholars have primarily focused on four factors: the board structure, equity structure, management compensation incentives, and leadership structure. First, considering the board structure, the higher the proportion of independent directors on the board of a company, the more comprehensive its ESG information disclosures (Chen & Jaggi, 2000). Second, considering the equity structure, there are various conclusions regarding the relationship between equity concentration and firm performance, including a positive relationship (Jensen & Meckling, 1976), a negative relationship (Means, 2017), and the lack of any relationship (Demsetz, 1983). Third, effective compensation incentives can inspire the management of an organization to assess the current efficiency and efficacy of various processes while focusing on long-term profit growth (Jensen & Meckling, 1976). Finally, the leadership structure of a company reflects the independence of its board of directors and the freedom of its executive management to drive innovation.

In general, corporate governance is not only a solution to agency problems but also a reputational investment. In the *reputation ecosystem*, when a business vanishes, its accumulated reputation disappears if its reputation and brand are not inherited by another entity. Therefore, management problems can lead to the decline of a company, with a corresponding decrease in its reputation. The exposure of negative events owing to corporate governance failures deprives firms of the rental benefits of a good reputation (Pfarrer et al., 2008), causes them to suffer market penalties, and reduces their value

(Paunov, 2016). Effective corporate governance reduces operational risks and internal moral hazards (Roberts & Dowling, 2002), while attracting high-quality employees (Joseph, 2002) and enhancing the reputation of the company, thereby increasing its brand value.

*Hypothesis 4: A positive relationship exists between the governance (G) performance of a company and its brand value.*

For ESG disclosure purposes, the shareholder structure is inconsequential. ESG factors enhance the reputation and brand value of both state-owned and private firms, thereby improving their business performance. However, it has been argued that the nature of corporate equity impacts the existence of ESG disclosures (Haskins et al., 2000). SOEs are dominant in China, and this dominant role is reflected more in the direction of guidance and behavior demonstration. In general, it is believed that state-owned capital bears greater social responsibility and is more likely to disclose ESG information than private capital, and that society has higher expectations of SOEs. Some studies have also suggested that the degree of voluntary disclosure by listed companies is directly related to the percentage of government ownership in the company (Eng & Mak, 2003).

In China, SOEs tend to be subjected to several policy-level and consumer-level regulations, prompting them to exhibit exemplary behavior in ESG disclosure and performance. For example, as of early November 2021, the total number of ESG reports disclosed by Chinese listed companies was 1,101. Notably, the disclosure rates of SOEs were much higher than those of non-SOEs. Central and local enterprises achieved disclosure rates of 53% and 37%, respectively, whereas the disclosure rate of non-SOEs was less than 35%. To avoid the problem of adverse selection, firms with better ESG performance are economically motivated to disclose their non-financial information to the outside world to reduce information asymmetry. Several studies have supported the

hypothesis that firms with 'good news' are incentivized to disclose non-financial information to distinguish themselves from firms with 'bad news' (Dye, 1985; Verrecchia, 1983). For SOEs that are considered examples of firms with poor transparency, ESG disclosures can be used to improve their image. Based on this discussion, it is meaningful to examine the effect of the *reputation ecosystem* on different types of companies. Therefore, I propose the following hypothesis:

*Hypothesis 5: The relationship between ESG performance and brand value is significant for SOEs but insignificant for non-SOEs.*

Considering the nature of transactions, brands can be classified into either business-to-business (B2B) or business-to-consumer (B2C) firms; in the former, the buyer is another firm (B), whereas in the latter, the buyer is a consumer (C). Although the industrial market is much larger than the consumer market, branding theory developed in the consumer market, and the differences between B2B and B2C brands lie not in the products that they sell but in the buying agents (Webster & Keller, 2004). Although 37% of corporate buyers are brand conscious (Mudambi, 2002), corporate buyers are generally more rational than consumers when making purchase decisions and consider various factors such as product performance, quality, delivery, service, and price (Shipley & Howard, 1993). Bendixen et al. (2004) also revealed that brand is secondary to price and delivery in industrial product-purchase decisions. Brand is an irrational component and has a negligible impact on the corporate market, where purchase decisions are based on rational judgments (Rosenbröijer, 2001).

Consequently, B2B firms lack sufficient confidence in brand building and do not allocate adequate resources to ESG building, which may lower their brand value. According to the *reputation ecosystem*, companies that gain more positive feedback from stakeholders by improving their ESG performance have a better reputation. Compared to B2B companies,

B2C companies are more likely to receive public and media attention and are more willing to invest in ESG projects. This is because a higher ESG performance can lead to a higher positive feedback volume through direct impacts on the customer, resulting in a better corporate reputation, and ultimately enhancing the brand value of the company. Based on this discussion, I propose the following hypothesis:

*Hypothesis 6: The relationship between ESG performance and brand value is significant for B2C firms but insignificant for B2B firms.*

The economic center of China is gradually shifting south (Economist, 2021). In the Chinese business world, the saying "Invest, but not north of the Shanhai Pass" began circulating 20 years ago. Essentially, it advises against investing in China in the region north of the Great Wall. Over the last 10 years, the saying "Don't invest outside the territory of the Southern Song dynasty" has become popular. Since the era of the Southern Song dynasty, the 'Qinling Mountain-Huaihe River Line' has been recognized as an extremely important demarcation line in China, dividing the northern and southern regions of the country (Zhang, 2019). The Qinling-Huaihe Line is rich in integrated economic, cultural, and geographic relationships, as there are distinct spatial differences between the south and north of China (Jiang et al., 2020). Studies on the Qinling-Huaihe Line have tended to focus on the physical geography of the region (Li et al., 2018), and few scholars have explored its economic and social aspects. Since the economic reforms of 1978, unbalanced development between the north and south of China has gradually increased (Fan & Wang, 2019). The spatial distribution of economic development in China—strong in the south and weak in the north—has accelerated migration from the north to the south (Liu et al., 2020), thereby leading to a further increase in the economic disparity between the two regions.

The economic disparity between southern and northern China dates back to the Southern Song dynasty. Needham (1956) argued that the development of civilization is the result of interactions among science, society, and the environment. More than half of the most important inventions in Chinese history occurred during the Song dynasty. The Southern Song period was the most relaxed ideological and cultural environment in feudal society, objectively playing a positive role in promoting economic, social, and cultural development. Merchants in the Southern Song territory were more observant of commercial contracts and paid attention to their reputation, contributing to the economic prosperity of the dynasty. This inherited social capital exists to this day; that is, regions with a good reputation ecosystem accumulate social capital and social trust, which drive economic growth (Forte et al., 2015). Herein, the Southern Song territory is used to simplify the geographical division of China, representing the current state of economic development rather than attempting to link the past with the present. Based on this discussion, I propose the following hypothesis:

*Hypothesis 7: The relationship between ESG performance and brand value is only significant in the economically developed regions of China and the Southern Song territory (SST).*

## 4.3 Research Methodology

### 4.3.1 Sample Selection and Data Sources

#### 4.3.1.1 Sample Selection

To investigate the hypotheses, this study selected public Chinese companies listed as mainland China A-Shares based on the 2015–2019 "China’s 500 Most Valuable Brands" list published by the World Brand Lab (WBL). In addition, the sample companies had to meet the following requirements: (1) The companies must have been listed for more than

five years to avoid the instability associated with newly listed companies. (2) The companies are listed normally. Companies showing abnormal or incomplete data, as well as special treatment (ST) and particular transfer (PT) companies, were excluded to avoid the influence of extreme financial conditions. (3) Each company must have a brand value of no less than 20 billion yuan, a market capitalization of no less than 10 billion yuan, and at least two appearances in the "Most Valuable Brands" list, published by the WBL, to reduce the bias caused by the abnormal fluctuations of companies that are too small.

In the paper, 94 listed companies were ultimately selected. The initial sample was made up of 196 companies. Of these, 92 companies did not meet the above requirements. Ten further companies with missing variables were excluded. The final sample size was therefore 94 companies, with a total of 375 observations.

#### 4.3.1.2 Data sourcing

Data for this study were collected from three independent databases, which were then combined to generate a composite dataset to test the model. The three databases are: WBL's brand valuation data, which measures brand equity; the SuperFinance database, which evaluates a company's ESG performance; and Datayes, which provides data on a company's financial performance and indicators. As the world's leading consultant in brand valuation and marketing strategy, WBL has the largest brand valuation database in China. The WBL's Chinese brand value database has been widely used in academic research (He & Catulli, 2014; Lin, 2018; Nan, 2010; Yang et al., 2015; Yao et al., 2021; Yu & Yan, 2010). According to Baidu Scholar (xueshu.baidu.com), more than 2200 academic papers have cited WBL as the data source. Its brand value assessment methodology closely resembles that of Financial World, a pioneering independent third-party brand value assessor whose brand value list is considered authoritative (Kerin & Sethuraman, 1998) and well-known (Fernandez et al., 2002). Financial World's

methodology was comparatively open in its details (Meschi, 1995) and highly operational (Haigh & Perrier, 1997) and was therefore widely adopted by many scholars (Barth et al., 1998; Keller, 1993; Seetharaman et al., 2001).

Like Financial World, WBL uses the present earnings value method, which evaluates the expected future earnings of brand assets and converts them into present value to determine the value of a brand. WBL determines the current profitability of a company using the Economic Value Added (EVA) method. The "Brand Value Added Toolbox" (BVA Tools) is used to calculate the contributions of a brand to revenue. The formula for brand value can be expressed as the multiplication result of adjusted annual income (BE), brand value added index (BI), and brand strength coefficient (BS). In this formula, BE is the operating income derived by applying discount factors to the operating income of the previous three years and the projected income of the next two years; BI is the proportion of brand contributions to current revenue calculated with BVA tools; and BS represents the brand strength, which is determined by WBL's methodology.

SuperFinance's ESG data and ratings are more transparent and fairer than those of many mainstream rating agencies because, in contrast to the "issuer-paid" model adopted by mainstream ESG rating agencies, SuperFinance adopts an investor-paid ESG rating model that has not yet been introduced in the academic literature on ESG ratings. Given the similarity of the information functions of ESG ratings and credit ratings, the existing literature has compared the accuracy and timeliness of credit ratings issued by issuer-paid versus investor-paid rating agencies. Several studies have argued that investor-paid rating agencies provide more timely ratings that better predict defaults than issuer-paid agencies (Beaver et al., 2006; Bruno et al., 2016; Bhattacharya et al., 2019; Cornaggia & Cornaggia, 2013). SuperFinance's ESG rating covers all listed companies in China. SuperFinance uses advanced technologies such as AI and machine learning to assess complex data sets and provide objective ESG scores for listed

companies. SuperFinance's ESG scoring system aims to present the performance of listed companies at the ESG level in a transparent and objective manner. Their scoring system includes 11 primary indicators and 35 secondary indicators, divided into three dimensions: environmental, social, and governance. The indicators are weighted differently in the calculation process, resulting in a score ranging from 0 to 100. To collect financial data for listed companies, the author utilized Datayes, a financial data provider in China that offers APIs for easy data collection and cleaning.

### 4.3.2 Model Settings and Variable Description

This study focuses on corporate brands rather than product brands. It is limited to corporate brands because the focus is on firm-level performance. Product-level brands were excluded from the analysis mainly because the ESG data obtained is at the corporate level, and the study needs to align the brand equity data with the companies' ESG data. The dependent variable in the model is the quantitative brand values, and the data on brand values is obtained directly from the WBL database.

Referring to those factors that affect corporate performance mentioned in most of the literature, this paper selects several indicators that can reflect corporate profitability and risk level in a comprehensive manner, including the debt-to-asset ratio, market capitalization, operating profit margin, PB ratio, return on assets, gross income ratio, the proportion of the largest shareholder, etc. See Table 4.1 for detailed variables and their explanations.

Based on the aforementioned hypotheses, this study also introduces the variable of company characteristics. Listed companies can generally be divided into SOEs and non-SOEs. In this study, SOEs include state-holding companies and wholly-owned SOEs, with the source of classification criteria being the Datayes database. Of the 375 samples, 229 are state-owned and 146 are non-state-owned.

This study also classifies the sample into three categories based on their customers: B2C, B2B, and Other, according to the industry classification of each sample company. The B2C sample includes 11 industries: automobile, real estate, transportation, communication, food and beverage, light manufacturing, household appliances, medicine and biology, leisure services, commercial trade, and textiles and garments. The B2B sample includes nine industries that have business customers as their main service targets: construction materials, electrical equipment, machinery and equipment, construction decoration, chemical, mining, iron and steel, agriculture, forestry, animal husbandry, fishery, and comprehensive. The other sample includes banks and non-banking finance, which are excluded from this part of the study because both have general consumers and commercial customers as customer groups. The number of data points for the three samples is 210, 102, and 63, respectively.

To investigate the relationship between ESG and brand value for firms in different regions, the study divided the sample into two sub-samples according to the province of incorporation of the listed companies: the Southern Song territory and the non-Southern Song territory, with 199 and 176 data points, respectively. The provinces, municipalities, and SARs included in the Southern Song territory are Shanghai, Zhejiang, Anhui, Fujian, Jiangxi, Jiangsu, Hubei, Hunan, Guangdong, Guangxi, Hong Kong, Hainan, Macau, Sichuan, Guizhou, and Chongqing. Firms registered in other areas are classified in the non-Southern Song territory sample.

**Table 4.1: Variable explanations**

| Type | Variable | Abbreviation | Explanation |
|---|---|---|---|
| Dependent | Brand Value | BV | Brand values retrieved from World Brand Lab |
| Independent | ESG Score | ESG | ESG scores of listed companies obtained from SuperFinance |
| Control | Return on Assets | ROA | The ratio of net profit to total assets |

| | | | |
|---|---|---|---|
| Control | Price-to-Book Ratio | PB | The company market value to equity attributable to the parent company |
| Control | Logarithm of Market Capitalization | LCAP | Natural logarithm of the company's market capitalization |
| Control | Net Profit Ratio | NPR | Company's net profit ratio |
| Control | Debts Asset Ratio | DAR | The debts asset ratio which is the ratio of the total debts to total assets |
| Control | Gross Income Ratio | GIR | The gross income ratio which is the ratio of gross income to total income |
| Control | Shareholding Concentration | SHARE | The holding proportion of the largest shareholder |

This table presents the explanations of variables in the regression model.

### 4.3.3 Model Building

Based on the characteristics of the panel data, a regression model is built to examine the relationship between brand values and ESG performance. The equation of the regression model is as follows:

$$LBV_{i,t} = \beta_1 LESG_{i,t} + \beta_2 LROA_{i,t} + \beta_3 LPB_{i,t} + \beta_4 LCAP_{i,t} + \beta_5 LNPR_{i,t} + \beta_6 LDAR_{i,t} + \beta_7 LGIR_{i,t} + \beta_8 LSHARE_{i,t} + \delta_i + \mu_i + \epsilon_{i,t}$$

where *t* represents time and i represents the index of firm samples. The regression model also considers the unobserved effect by adding fixed-effect terms $d_i$ and $m_i$, which control the effects of time and individual firms, respectively. To test the credibility of the fixed effect model against the random effect model, the Hausman test will be performed. The modified Wald test for groupwise heteroskedasticity was performed in advance for the fixed-regression model, and the result indicated the existence of heteroskedasticity. The problem was addressed in two ways: by applying the robust test for standard errors and by applying the natural logarithm transformation to all variables. If the variable can be zero, such as the ESG score, the logarithm transformation will be applied to the variable plus 1. For variables that have negative values, such as ROA, the logarithm transformation of such variables is calculated as where *x* represents the variable and *sign* is the function to get the sign of *x*. The advantage of the transformation is that the negative direction can

also be maintained. Variables with a logarithmic transformation will have an *"L"* as the first letter in their abbreviations.

## 4.4 Discussion of Results

### 4.4.1 Descriptive analysis

Table 4.2 gives an overview of the ESG scores of the sample companies. Of the 375 samples, the minimum ESG score is 23.63, and the highest is 72.06. The performance of the sample companies varies widely in terms of environmental and social dimensions, indicating poor information disclosure and a lack of mandatory regulation.

**Table 4.2: Descriptive statistics of overall and individual ESG scores**

| Variable | N | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| ESG | 375 | 42.60 | 9.82 | 23.63 | 72.06 |
| E | 375 | 33.57 | 20.91 | 2.51 | 92.85 |
| S | 375 | 28.44 | 9.38 | 5.65 | 70.27 |
| G | 375 | 63.78 | 7.65 | 35.82 | 88.18 |

This table presents the descriptive statistics of the performance of ESG and the three dimensions. The variable *ESG* is defined in Table 4.1. The variable *E, S, G* represents the dimension scores of environmental, social and governance, respectively. The sample contains 375 data points over 5 years.

In Table 4.3, I present the descriptive analysis of other variables for the sample. The research sample covers both large and small companies in terms of brand value and market capitalization. It is helpful for this study to avoid selection bias in terms of size.

**Table 4.3: Overview of descriptive analysis of other variables**

| Variable | N | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| BV | 375 | 728.77 | 618.48 | 200.84 | 4156.79 |
| ROA | 375 | 0.05 | 0.06 | -0.06 | 0.29 |
| PB | 375 | 2.36 | 1.80 | 0.63 | 11.54 |
| LCAP | 375 | 25.05 | 1.46 | 21.58 | 28.45 |
| NPR | 375 | 0.12 | 0.13 | -0.11 | 0.52 |
| DAR | 375 | 0.61 | 0.21 | 0.12 | 0.94 |
| GIR | 375 | 0.30 | 0.19 | 0.01 | 0.95 |
| SHARE | 375 | 37.54 | 18.52 | 0.45 | 86.35 |

This table presents the descriptive statistics of the dependent variable and control variables in the regression model. These variables are defined in Table 4.1. The sample contains 375 data points over 5 years.

### 4.4.2 Correlation analysis

Before conducting regression analysis on the independent and dependent variables, I first performed a correlation test between the variables. The results of the correlation test are shown in Table 4.4. It can be found that ESG and brand values have a relatively high correlation with each other. For the other dependent variables, the correlations are not particularly high.

**Table 4.4: Correlation matrix of variables**

| | LBV | LESG | LROA | LPB | LCAP | LNPR | LDAR | LGIR | LSHARE |
|---|---|---|---|---|---|---|---|---|---|
| LBV | 1.0000 | | | | | | | | |
| LESG | 0.6673* | 1.0000 | | | | | | | |
| LROA | -0.1076* | -0.0886 | 1.0000 | | | | | | |
| LPB | -0.1403* | -0.1769* | 0.6085* | 1.0000 | | | | | |
| LCAP | 0.5350* | 0.5707* | -0.0220 | -0.0795 | 1.0000 | | | | |
| LNPR | 0.2114* | 0.0826 | 0.2501* | -0.0695 | 0.6017* | 1.0000 | | | |
| LDAR | 0.0633 | 0.0167 | -0.7027* | -0.3800* | 0.1964* | -0.0091 | 1.0000 | | |
| LGIR | 0.1122* | 0.0297 | 0.2740* | 0.1578* | 0.1939* | 0.6445* | -0.2434* | 1.0000 | |
| LSHARE | 0.2567* | 0.2117* | 0.0777 | 0.0231 | 0.1770* | -0.0512 | -0.1410* | 0.0393 | 1.0000 |

The table presents the correlations among variables. Variables with an "L" as the first letter in their abbreviations are transformed by the logarithm transformation to address heteroskedasticity. All variables are defined in Table 4.1. The symbol * indicates significance at the 5% level, or $p < 0.05$. Correlations without the symbol * indicate nonsignificance.

In this paper, the multicollinearity between the variables is tested by the VIF (variance inflation factor). As shown in Table 4.5, the values are all below 5, suggesting low multicollinearity among the dependent variables. Some other preliminary procedures were taken to ensure that the data were suitable for the empirical study, including the detection of outliers and a heterogeneity test.

**Table 4.5: VIF of independent variables**

| | VIF |
|---|---|
| LROA | 3.67 |
| LNPR | 3.52 |
| LCAP | 2.64 |
| LESG | 2.55 |
| LDAR | 2.20 |
| LPB | 2.08 |
| LGIR | 1.82 |
| LSHARE | 1.13 |

The table presents the VIF checks for multicollinearity between regression variables. Variables with an "L" as the first letter in their abbreviations are transformed by the logarithm transformation to address heteroskedasticity. All variables are defined in Table 4.1.

### 4.4.3 Regression results

#### 4.4.3.1 Overall ESG performance

Table 4.6, column (1) presents the coefficients of the regression model when considering overall ESG performance. The coefficient of the LESG, representing the ESG score, is 0.354 and statistically significant, indicating a positive relationship between ESG performance and brand values. The Hausman test supports the fixed effect regression model over the random effect model; therefore, the fixed effect model will be used for subsequent analysis. These results support Hypothesis 1, indicating that companies with better ESG performance can be expected to have higher brand values. This finding aligns with the *reputation ecosystem* mechanism, whereby firms with better ESG performance receive more positive feedback from stakeholders, resulting in an increased brand reputation. This improved reputation translates into intangible brand equity, which can be quantified by brand values.

#### 4.4.3.2 Individual ESG dimensions

The study also examined the relationship between the three dimensions of ESG and brand value in the same sample. As shown in columns (2) to (4) in Table 4.6, the coefficients of E, S, and G are all positive and significant. The coefficients of environmental (E), social (S), and governance (G) scores are 0.0532, 0.0866, and 0.141, respectively, which are all

positive and significant. The results suggest that brand values have positive relationships with corporate performance in environmental, social, and governance dimensions, which supports Hypotheses 2, 3, and 4. The findings are consistent with the *reputation ecosystem* framework and assumptions that indicate that performance in environmental, social, and corporate governance can improve a company's corporate public image (Pfarrer et al., 2008; Vazifehdust et al., 2014; Wang et al., 2009). Corporate image plays a key role in the process of building brand equity (Kim & Hyun, 2011), and the improvement of ESG performance will eventually increase brand values via reputation.

**Table 4.6: Regression model coefficients**

| | (1) LBV | (2) LBV | (3) LBV | (4) LBV |
|---|---|---|---|---|
| LESG | 0.354*** | | | |
| | (0.129) | | | |
| LE | | 0.0532** | | |
| | | (0.0262) | | |
| LS | | | 0.0866* | |
| | | | (0.0499) | |
| LG | | | | 0.141* |
| | | | | (0.0751) |
| LROA | 0.0623 | 0.161 | 0.0667 | 0.200 |
| | (0.369) | (0.380) | (0.404) | (0.399) |
| LPB | -0.0215 | -0.0210 | -0.0146 | -0.0201 |
| | (0.0371) | (0.0371) | (0.0361) | (0.0365) |
| LCAP | 0.0779* | 0.0797* | 0.0769* | 0.0798* |
| | (0.0407) | (0.0420) | (0.0410) | (0.0417) |
| LNPR | -0.00567 | -0.0669 | -0.0237 | -0.155 |
| | (0.225) | (0.240) | (0.254) | (0.243) |
| LDAR | 0.0225 | 0.0235 | 0.0159 | -0.000409 |
| | (0.0658) | (0.0694) | (0.0724) | (0.0732) |
| LGIR | -0.00648 | -0.0124 | -0.00203 | -0.00652 |
| | (0.0251) | (0.0293) | (0.0286) | (0.0285) |
| LSHARE | 0.0326 | 0.0375 | 0.0341 | 0.0395 |
| | (0.0253) | (0.0283) | (0.0280) | (0.0285) |
| Constant | 2.635** | 3.697*** | 3.661*** | 3.255*** |
| | (1.179) | (1.114) | (1.133) | (1.181) |
| Firm FE | Yes | Yes | Yes | Yes |

| | | | | |
|---|---|---|---|---|
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 375 | 375 | 375 | 375 |
| *Adj. $R^2$* | 0.882 | 0.877 | 0.876 | 0.876 |
| *Hausman chi2 (p-value)* | 150.27*** | | | |

This table presents the regression results for the effect of the performance of ESG and the dimensions on the brand value. The dependent variable is the logarithm of brand value. Variables with an "L" as the first letter in their abbreviations are transformed by the logarithm transformation to address heteroskedasticity. *ESG* is the ESG score obtained from the SuperFinance database. *E, S, and G* are the dimension scores of environmental, social, and governance, respectively. All other variables are defined in Table 4.1. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

From the regression results, it can also be seen that although the three dimensions of ESG are all significant to brand value, the impact of the three dimensions can be different. According to the regression coefficients, we can interpret that the impact of governance is the largest among all three dimensions, while the impact of environmental performance on brand value is the smallest. And if we compare the coefficients of dimensions with the coefficients of the overall ESG score, every one unit increase in ESG can ultimately lead to higher brand values than the same change in dimensions alone. In this study, because both the dependent and independent variables are logarithm transformed, for every 1% increase in ESG score, the brand value will increase by 0.354%, given all other factors are constant. The finding can help managers have a deeper understanding of the impact of ESG and make more scientific and efficient decisions on resource allocation during ESG engagement.

#### 4.4.3.3 By firm nature

Considering the important market positions of the listed Chinese companies and the generally prominent size of SOEs, the study will attempt to analyze whether there is a significant relationship between brand value and ESG performance of SOEs as well as non-SOEs. As shown in columns (1) and (2) in Table 4.7, the coefficient of ESG is positive and significant for SOEs (0.297). For non-SOEs, the coefficient of ESG (0.357)

is still positive but nonsignificant, which supports hypothesis 5. This finding provides further evidence that SOEs tend to utilize ESG disclosure as a shortcut to improve their image (Eng & Mak, 2003).

#### 4.4.3.4 By industry nature

In order to test Hypothesis 6, which discusses the relationship from the perspective of industry nature, following the classification demonstrated above, the same regression models are performed on the subsamples. The results are presented in columns (3) and (4) in Table 4.7, and I observed similar variations on the two subsamples. The coefficient of ESG is positive and significant in the study of B2C samples and positive but nonsignificant for B2B samples. The results are consistent with Hypothesis 6, which states that the positive relationship between ESG and brand value is significant only in B2C sectors. As concluded in some previous studies (Mudambi, 2002; Shipley & Howard, 1993), the brand perception of consumers varies between the two sections. Therefore, the results can be explained by the *reputation ecosystem* that B2C firms can have a direct relationship with customers who are significant in determining the corporate reputation in the market.

#### 4.4.3.5 By region

Based on the background discussion and analysis of Hypothesis 8, the study divided the sample into two subsamples according to the province of incorporation of the listed companies: Southern Song territory (SST) and non-Southern Song territory (non-SST), with 199 and 176 data points, respectively. Similarly, the same regression model approach was used to analyze the relationship between the two samples. According to the coefficients presented in columns (5) and (6) in Table 4.7, the coefficient of ESG performance for SST is 0.491, which indicates the relationship between brand value and ESG performance is positive and significant in SST, while the coefficient for non-SST (0.256) is positive but not significant. Therefore, these findings are in line with

Hypothesis 8 in that the relationship between ESG and brand value is only significant in economically developed regions. One explanation for the results may be that customers in these regions have more bargaining power over brands, which in turn gives the brands more motivation to maintain good corporate reputations. Therefore, firms with better reputations often have higher brand values. These findings are important for policymakers because they offer evidence of regional differences in ESG and encourage them to provide distinguished policies for the development of different regions.

**Table 4.7: Regression model coefficients for subsamples**

| | (1) LBV (SOE) | (2) LBV (Non-SOE) | (3) LBV (B2C) | (4) LBV (B2B) | (5) LBV (SST) | (6) LBV (Non-SST) |
|---|---|---|---|---|---|---|
| LESG | 0.297** | 0.357 | 0.464*** | -0.0686 | 0.491** | 0.256 |
| | (0.137) | (0.241) | (0.147) | (0.284) | (0.213) | (0.163) |
| LROA | 0.737 | 0.0154 | 0.149 | 0.245 | -0.165 | 1.174 |
| | (0.457) | (0.642) | (0.383) | (1.286) | (0.284) | (0.789) |
| LPB | 0.0422 | -0.0624 | 0.00972 | 0.0428 | 0.0514* | -0.0945 |
| | (0.0444) | (0.0596) | (0.0435) | (0.0445) | (0.0299) | (0.0563) |
| LCAP | 0.0250 | 0.112 | 0.0251 | 0.0556 | 0.0319 | 0.0957** |
| | (0.0436) | (0.0676) | (0.0380) | (0.0517) | (0.0356) | (0.0452) |
| LNPR | -0.616* | 0.0444 | -0.00791 | -0.610 | 0.0598 | -1.264** |
| | (0.337) | (0.179) | (0.212) | (0.665) | (0.186) | (0.482) |
| LDAR | -0.00958 | 0.0471 | 0.0406 | -0.00494 | -0.0818 | 0.139 |
| | (0.0627) | (0.150) | (0.0810) | (0.161) | (0.0742) | (0.116) |
| LGIR | -0.00385 | -0.0399 | 0.0477 | 0.00144 | 0.0760*** | -0.0546** |
| | (0.0213) | (0.0460) | (0.0337) | (0.0289) | (0.0259) | (0.0226) |
| LSHARE | -0.000284 | 0.0503 | 0.0209 | -0.0286 | 0.0304 | 0.0277 |
| | (0.0201) | (0.0395) | (0.0169) | (0.0247) | (0.0320) | (0.0254) |
| Constant | 4.307*** | 1.597 | 3.571*** | 4.914*** | 3.210** | 2.793** |
| | (0.989) | (2.105) | (1.029) | (1.620) | (1.365) | (1.162) |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| *N* | 229 | 146 | 210 | 102 | 199 | 176 |
| *Adj.* $R^2$ | 0.915 | 0.865 | 0.907 | 0.899 | 0.883 | 0.893 |

This table presents the regression results for the effect of the performance of ESG on the brand value for subsamples. The dependent variable is the logarithm of brand value. Variables with an "L" as the first letter in their abbreviations are transformed by the logarithm transformation to address heteroskedasticity. *ESG* is the ESG scores obtained from the SuperFinance database. *E, S, and G* are

the dimension scores of environmental, social, and governance, respectively. All other variables are defined in Table 4.1. Columns (1) and (2) are the results of samples for SOE and non-SOE, respectively. Columns (3) and (4) are results of samples for B2C and B2B firms, respectively. Columns (5) and (6) are results of samples for firms in SST and non-SST, respectively. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

## 4.5 Robustness Test

### 4.5.1 Endogeneity

So far, I have investigated the relationship between ESG performance and brand values. However, I cannot draw any further conclusions about the causal relationship. The *reputation ecosystem* framework provides us with the impact mechanism required for the causal analysis to help us better understand the relationship between ESG and brand value. It is possible that companies with better ESG performance will have better corporate management and, therefore, higher company profits and brand values. Meanwhile, companies with high brand values can have more reasons to improve their ESG performance to maintain their good public image. Such bi-directional causality cannot be neglected in a relationship study.

To investigate the existence of bi-directional causality, the panel vector autoregression (PVAR) method is applied with the Granger causality test so that dynamic causality can be explored (Sassen et al., 2016). The PVAR regression equation is as follows:

$$LBV_{i,t} = \beta_0 + \beta_1 LBV_{i,t-1} + \beta_2 LBV_{i,t-2} + \beta_3 LESG_{i,t-1} + \beta_4 LESG_{i,t-2} + \epsilon_{i,t}$$
$$LESG_{i,t} = \beta_0 + \beta_1 LESG_{i,t-1} + \beta_2 LESG_{i,t-2} + \beta_3 LBV_{i,t-1} + \beta_4 LBV_{i,t-2} + \epsilon_{i,t}$$

For the GMM estimator, standard errors are robust at individual level to mitigate the problem of heteroskedasticity. The forward orthogonal deviation transformation (Love and Zicchino, 2006) is used because the method can remove fixed effects. Additionally, a two-year lag is chosen, following previous studies of the Granger test (Love & Zicchino,

2006; Wooldridge, 2010) which indicate that it is suitable for annual panel data. The model estimates then undergo the Granger causality Wald test. The test results are shown in Table 4.8.

**Table 4.8: Wald test for Granger causality results**

| Equation | Excluded | Chi2 (df) | p-value | Direction |
|---|---|---|---|---|
| LBV | LESG | 5.530 (2) | 0.063* | unidirectional |
| LESG | LBV | 0.867 (2) | 0.648 | |
| LBV | LE | 4.744 (2) | 0.093* | unidirectional |
| LE | LBV | 2.666 (2) | 0.264 | |
| LBV | LS | 4.893 (2) | 0.087* | bidirectional |
| LS | LBV | 4.787 (2) | 0.091* | |
| LBV | LG | 1.012 (2) | 0.603 | independent |
| LG | LBV | 0.630 (2) | 0.730 | |

This table presents the Wald test results for the Granger causality analysis using a PVAR regression model with a GMM estimator. The model has a two-year lag, and the forward orthogonal deviation transformation is used. *BV* is the quantitative brand value obtained from the World Brand Lab. *ESG* is the ESG scores obtained from the SuperFinance database. *E, S, and G* are the dimension scores of environmental, social, and governance, respectively. *LBV, LESG, LE, LS,* and *LG* are the logarithm transformations of each corresponding variable. *The* symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The results suggest that the ESG performance can Granger-cause the brand value, but the brand value cannot Granger-cause the ESG performance. The unidirectional relationship supports Hypothesis 1, which I discussed previously. To further investigate the relationship, the relationship between brand value and the three dimensions of ESG is also explored with the PVAR method. As shown in Table 4.8, the environmental dimension can Granger-cause the brand value, while brand value cannot Granger-cause the environmental performance. The social dimension can Granger-cause the brand value, and brand value can Granger-cause the social performance as well. The governance dimension and the brand value cannot Granger-cause each other, suggesting an independent relationship.

The environmental performance of a company reflects the company's efforts in environmental sustainability. For the Chinese market, an important trend is the rising social concern for environmental sustainability and the protection of ecology (Oddsson, 2020), so companies that can make a difference in the environmental dimension can also achieve increased brand value through efficient brand marketing. This result supports the *reputation ecosystem* framework, which states that firms with better quality ESG performance can have higher brand values because of improved reputation. However, due to the high financial cost of environment-related initiatives, it is doubtful whether companies that expect higher brand values will choose green activities, instead of other more efficient strategies to achieve their goals. Excessive financial costs and other uncertainties in brand building are important potential factors that prevent this reverse causality from being established.

Since most of the ESG evaluation indicators at the social level are directly related to employees, the supply chain, and consumers, a company's performance at the social level has a direct impact on its image in the industry and society as a whole. Improving social performance can therefore significantly and directly enhance the company's brand value. And according to the reputation ecosystem, the enhancement is realized by reputation. At the same time, companies with higher brand values also need to maintain their good image in the market competition, and improving social-level performance is the most efficient way to achieve it because of the direct link between social dimension and brand building. Theoretically, this can be explained by the fact that the social dimension has indicators related to consumers and employees, which are two essential stakeholders in the internal and external brand building processes.

In contrast, the Chinese market pays less attention to corporate governance, and cases where companies with governance problems can still achieve good market performance

are common (e.g., the case of Moutai executives caught because of corruption). The main reason is the complexity of the relationship between the Chinese government and local companies, which creates a mismatch between corporate status in the market and corporate governance capabilities. And for publicly listed companies in China, much corporate governance information is required to be disclosed by the authorities. From this perspective, the governance dimension can be viewed as the measure to meet the legal requirements, which determine the lower bound of brand value. Although firms with higher governance performance tend to have higher brand values, the causal relationship does not necessarily hold because of the different motivations of the governance dimension than those of the environmental or social dimension. According to these findings from causality analysis, firms with better performance in overall ESG activities, or environmental- and social-level activities, can have higher brand values; at the same time, firms with higher brand values will have the motivation to pursue better performance in social-level activities to improve their public image (Hillman et al., 2017).

Although the results from causality analysis are consistent with the findings from regression analysis, it is still worth noticing that the findings are somewhat different for the relationship between brand value and performance in E and G. Meanwhile, the endogeneity problem has not been fully addressed. In this study, the endogeneity problem can be caused by several sources. The fixed-effect model in the regression analysis can reduce the impact of omitted variables, which could cause bias in the coefficients. The causal analysis has addressed the problem of a bi-directional causality relationship and revealed that ESG performance can affect corporate brand value in a unidirectional way. However, there is still one problem that needs to be addressed. The panel data on brand value and ESG performance can be dynamic. This means that brand value can be affected by value in previous years, which makes sense in real life. The fixed-effects regression model cannot help solve the problem. Therefore, I propose the

dynamic generalized method of moments (GMM) regression model to address two questions: the different results for E and G and the endogeneity problem that could be caused by dynamic data. The GMM model is constructed following the equation:

$$LBV_{i,t} = \beta_1 LBV_{i,t-1} + \beta_2 LESG_{i,t} + \beta_3 LROA_{i,t} + \beta_4 LPB_{i,t} + \beta_5 LCAP_{i,t} + \beta_6 LNPR_{i,t} + \beta_7 LDAR_{i,t} + \beta_8 LGIR_{i,t} + \beta_9 LSHARE_{i,t} + \delta_i + \mu_i + \epsilon_{i,t}$$

The GMM estimator is implemented with similar settings to the PVAR approach, including robust standard errors and the application of the forward orthogonal deviation transformation. Regression results are shown in Table 4.9. The coefficients of lagged brand values are all significant, indicating that the panel data is dynamic and that values in previous years can affect values in the current year. The coefficients of ESG, E, and S are positive and significant. The results show that performance in the environmental dimension can affect brand value when I consider the lagged brand value at the same time. The coefficient of corporate governance is positive but insignificant, however. It is possible that corporate governance does not affect brand value in a dynamic way. Brand value represents customers' perceptions of brands. It makes sense that such perception does not directly result from how good the corporate governance is because corporate governance is a relatively high-level concept and has no direct impact on the customer relationship, even though it has a direct impact on company management. In other words, similar to the causal analysis of governance performance, legal liability has a higher priority for firms when making relative governance-related decisions.

To address the endogeneity problem, some necessary tests are performed. The AR (1) and AR (2) test results are reported and show significant and insignificant values, respectively, which suggest that second-order serial correlation does not exist. The Hansen's J test of overidentification and the difference in the Hansen test on exogeneity are also performed, which indicates that ESG and the three dimensions are exogenous.

**Table 4.9: GMM regression model coefficients**

| | (1) LBV | (2) LBV | (3) LBV | (4) LBV |
|---|---|---|---|---|
| L.LBV | 0.929*** | 0.938*** | 0.897*** | 0.973*** |
| | (0.0339) | (0.0321) | (0.0399) | (0.0237) |
| LESG | 0.143** | | | |
| | (0.0681) | | | |
| LE | | 0.0395** | | |
| | | (0.0194) | | |
| LS | | | 0.196** | |
| | | | (0.0961) | |
| LG | | | | -0.0391 |
| | | | | (0.0551) |
| LROA | 0.0303 | 0.0417 | 0.0911 | 0.164 |
| | (0.378) | (0.387) | (0.326) | (0.348) |
| LPB | 0.0558** | 0.0602** | 0.0457* | 0.0417 |
| | (0.0268) | (0.0276) | (0.0230) | (0.0263) |
| LCAP | 0.000876 | -0.000937 | 0.00897 | 0.0125 |
| | (0.0117) | (0.0127) | (0.00901) | (0.0109) |
| LNPR | 0.104 | 0.112 | -0.0800 | -0.104 |
| | (0.152) | (0.171) | (0.151) | (0.155) |
| LDAR | 0.0495 | 0.0495 | 0.0376 | 0.0335 |
| | (0.0439) | (0.0454) | (0.0337) | (0.0385) |
| LGIR | 0.00447 | 0.00245 | 0.0151 | 0.0112 |
| | (0.0225) | (0.0207) | (0.0185) | (0.0175) |
| LSHARE | 0.00314 | 0.00599 | -0.00349 | -0.00664 |
| | (0.0156) | (0.0156) | (0.0129) | (0.0134) |
| Constants | 0.0288 | 0.403 | -0.0510 | 0.222 |
| | (0.247) | (0.267) | (0.210) | (0.275) |
| *N* | 277 | 277 | 277 | 277 |
| *AR (1) test (p-value)* | -1.80* | -1.78* | -1.79* | -1.75* |
| *AR (2) test (p-value)* | -1.01 | -1.02 | -1.08 | -1.18 |
| *Hensen's J test (p-value)* | 75.34 | 78.79 | 78.13 | 83.33 |
| *Difference-in-Hensen test (p-value)* | -3.54 | -0.96 | -0.04 | 2.33 |

This table presents the regression results for the effect of the performance of ESG and the dimensions on the brand value using GMM estimators. Variables with an "L" as the first letter in their abbreviations are transformed by the logarithm transformation to address heteroskedasticity. The dependent variable is the logarithm of brand value. *L.LBV* is the one-year lagged term of the *LBV* variable. *ESG* is the ESG scores obtained from the SuperFinance database. *E, S, and G* are the dimension scores of environmental, social, and governance, respectively. All other variables are defined in Table 4.1. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels,

respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed effect terms are not reported for brevity.

### 4.5.2 Variable substitution

Variable substitution is one of the most important methods for testing robustness. In this study, *LCAP*, *ROA*, and *SHARE* are used to control for the size, profitability, and share concentration of a company, respectively. To test the robustness of the model findings, I substituted the three variables with the natural logarithm of total assets (*ASSI*), return on equity (*ROE*), and the total holding proportions of the second to tenth largest shareholders (*SHARE10*), respectively. The logarithm transformation is also applied to the three variables following the same method as stated previously. The model results presented in Table 4.10 show that the positive relationship between ESG and brand value remains significant despite the substitution of variables. Therefore, we can conclude that the findings are robust.

**Table 4.10: Regression model coefficients of variable substitutions**

| | (1) | (2) | (3) |
|---|---|---|---|
| | LBV | LBV | LBV |
| LESG | 0.356*** | 0.369*** | 0.372*** |
| | (0.129) | (0.130) | (0.138) |
| LROE | -0.0746 | | |
| | (0.0760) | | |
| ASSI | | 0.0705* | |
| | | (0.0387) | |
| LSHARE10 | | | 0.00599 |
| | | | (0.0128) |
| LPB | -0.0203 | 0.0539* | -0.0126 |
| | (0.0360) | (0.0290) | (0.0349) |
| LCAP | 0.0801** | | 0.0670* |
| | (0.0394) | | (0.0376) |
| LNPR | 0.118 | -0.00336 | -0.00871 |
| | (0.202) | (0.232) | (0.208) |
| LDAR | 0.0178 | -0.0319 | 0.0445 |
| | (0.0615) | (0.0670) | (0.0666) |

| | | | |
|---|---|---|---|
| LGIR | -0.00526 | -0.00915 | 0.00687 |
| | (0.0243) | (0.0255) | (0.0195) |
| LSHARE | 0.0332 | 0.0266 | |
| | (0.0250) | (0.0243) | |
| Constant | 2.566** | 2.654** | 2.954*** |
| | (1.131) | (1.157) | (1.104) |
| Firm FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| *N* | 375 | 375 | 375 |
| *Adj. $R^2$* | 0.882 | 0.881 | 0.880 |

This table presents the regression results for the effect of the performance of ESG and the dimensions on the brand value, with some variables substituted for the robustness test. Variables with an "L" as the first letter in their abbreviations are transformed by the logarithm transformation to address heteroskedasticity. The dependent variable is the logarithm of brand value. *ESG* is the ESG scores obtained from the SuperFinance database. *ROE* is the return on equity as a substitution for *ROA*. *ASSI* is the logarithm of total assets as a substitution for *LCAP*. *SHARE10* is the total holding proportions of the second to tenth largest shareholders, as a substitution for *SHARE*. All other variables are defined in Table 4.1. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

## 4.6 Discussion and Conclusions

The continuing boom in the intangible economy will lead to significant changes in financial architecture; moreover, investors are increasingly incorporating ESG scores into their portfolios. However, the impact of ESG on intangible assets, particularly brand value, has not been discussed in terms of its mechanism. This paper examines the impact of ESG performance on brand value using a research sample of companies listed in China. The regression results show that ESG performance is positively related to brand value, suggesting that companies with better ESG performance tend to have higher brand value. This suggests that engagement in ESG can help companies improve their public image. The effects of the three dimensions of ESG on brand value were further investigated. The findings suggest that brand value has positive relationships with corporate performance at the environmental, social, and governance levels.

When comparing the coefficients of ESG and the three dimensions, although all the coefficients are positive and significant, their impacts differ. According to the regression results, the impact of governance is the largest among all three dimensions, while the impact of environmental performance on brand value is the smallest. Furthermore, when comparing the coefficients of the dimensions with the coefficient of the overall ESG score (0.354), every one-unit increase in ESG score can ultimately lead to higher brand values than the same change in dimensions alone. An interpretation of the coefficients indicates that, for listed companies in China, every one percent increase in ESG score, given that all other factors are the same, will increase the average brand value by approximately 0.354%. The average increases for every percent of governance, environmental, and social scores are 0.141%, 0.087%, and 0.053%, respectively. This finding suggests that if the investment efficiency is the same for all three dimensions for the same amount of investment, investment in corporate governance can lead to a higher increase in brand value than investments in environmental or social dimensions. It also indicates that improving overall ESG performance can have the best results in brand value improvement.

In terms of the relationship between brand value and ESG performance, this study also considers state ownership, industry characteristics, and regional development. By nature of company ownership, the relationship between ESG performance and brand value is positive and significant only for SOEs. The regression result indicates that every one percent increase in ESG will increase the average brand value by approximately 0.297% for SOEs. These findings are consistent with previous studies' conclusions (e.g., Eng & Mak, 2003; Shipley & Howard, 1993) that ESG can improve corporate image and that customers' perceptions of a corporate image can determine the results of ESG investment. By competitive characteristics, the relationship between ESG performance and brand value is positive and significant only for the B2C industry. The regression

results indicate that every one percent increase in ESG score will increase the average brand value by approximately 0.464% for B2C companies. This can be explained by the fact that B2C firms bear more pressure from reputation, resulting in more motivation to improve their quality in ESG.

Previous studies (e.g., Ajour El Zein et al., 2019; Rahman et al., 2017) on the relationship between ESG and brand value have focused on developed regions and ignored regional differences. In this study, based on the finding of unbalanced regional development between the north and south of China (Fan & Wang, 2019; Jiang et al., 2020), we divided the sample into two subsamples and assessed the impact of ESG on brand value for companies from within and without the Southern Song Territory. It was found that the positive relationship only holds for firms in the Southern Song Territory, which is the most economically developed region in China. The coefficient of ESG performance is 0.491, which indicates that every one percent increase in ESG score will increase the average brand value by approximately 0.491% for companies in the Southern Song Territory.

The contributions of this study are realized through four aspects: theory, literature, method, and practice. First, I discuss the theoretical contributions of this study to ESG and brand value. The modern economy is dominated by intangible assets rather than tangible assets; however, because investments in intangible assets, including ESG, tend to incur sunk costs, current theoretical explanations for the impact of ESG are often limited to the risks and legal dimensions. Yet, several ESG-oriented companies, such as Tesla and Apple, have clearly achieved significant brand value, a crucial intangible asset. To discuss the impact of ESG more holistically, I propose a new theoretical framework for a *reputation ecosystem*, which is a dynamic network ecosystem involving different stakeholders, such as individuals, companies, institutions, and governments. Within the ecosystem of ESG, reputation indicates a stakeholder's quality and demonstrates their

behavioral attributes and type to other stakeholders. In this context, I present the development of firms in the form of a skewed bell-shaped curve. On this curve, legal liability is the lower bound of a company's reputation. The highest standards of reputation, such as quality, ethics, and social responsibility, define the upper bound. My empirical results shed light on the impact of ESG performance on brand value from multiple perspectives and validate the effectiveness of the *reputation ecosystem* impact mechanism.

Secondly, I make contributions to the literature on ESG, reputation, and brand value. My findings are consistent with previous studies on the relationship between ESG and reputation (Borghesi et al., 2014; Zhang et al., 2021). Bardos et al. (2020) found that market perception is a channel through which CSR impacts firm value, but the statement is still ambiguous in terms of the impact path. My study presents a clearer picture of the whole ecosystem. I find that brand value has a positive relationship with ESG performance only for SOEs or B2C companies. These findings are consistent with those of previous studies (e.g., Eng & Mak, 2003; Shipley & Howard, 1993) that ESG can improve a company’s corporate image and that customers' perceptions of the corporate image can determine the results of ESG investment. Some literature maps advertising and brand marketing initiatives to capital markets and financial theory (Chemmanur & Yan, 2017; Grullon et al., 2004) to explore the impact of advertising on firm valuation and stock prices. This study argues that ESG investments are more effective than advertising investments in strengthening reputation and brand value. These findings also provide more empirical evidence for the *reputation ecosystem* and show that companies with better ESG performance can gain a better reputation among stakeholders, thereby increasing brand equity. It follows that the *reputation ecosystem* is a part of an intangible infrastructure built on trust and social capital.

Thirdly, I make methodological contributions. It has been shown that ESG scores influence investors' portfolios. However, a growing body of literature finds that the impact of ESG performance on stock prices and company value is unclear. The current mainstream ESG rating agencies have adopted an issuer-paid model, which leads to conflicts of interest and nullifies the independent quality of ratings (Krugman, 2010). A listed company or bond issuer most likely consults all rating agencies initially, asks for a "pre-evaluation," and then chooses the highest-rated rater. Therefore, rating agencies often raise their rating scores for profit. To address this limitation, I adopted an investor-paid ESG scoring model, which had not yet been introduced into the academic literature on ESG rating results and causal analysis of intangible assets and brand value. According to recent papers (Wang et al., 2021; Zhang et al., 2022), the mainstream issuer-paid model does not apply to the A-share market because the validity of a set of factors is tested based on whether it can lead to excess returns or an improved risk-return balance. The current empirical study validates the rationale of collecting data using an investor-paid model, as several studies have reported that investor-paid raters provide more timely ratings that better predict defaults than issuer-paid raters (Beaver et al., 2006; Bhattacharya et al., 2019; Bruno et al., 2016).

Finally, this study makes a practical contribution to intangible assets and brand value investment by linking ESG investments, financial decisions, and branding practices. Although the three dimensions of ESG are all significant to brand value, it is worth noting that the regression results, together with the causality results, suggest that the ESG dimensions do not necessarily contribute in the same way to brand value and company growth. The impact of governance (G) is the largest among the three dimensions, whereas the impact of environmental (E) performance on brand value is the smallest. When treating ESG as a full concept, for every 1% increase in the ESG score, the brand value will increase by 0.354% (provided that all other factors are constant). Therefore, it can also be strategic for companies to adjust the investment weights for the three dimensions

of ESG to pursue higher ESG benefits. Furthermore, given that the developed region of Southeast China (i.e., the Southern Song territory) has a better reputational ecosystem and, therefore, generates more social capital and a higher geographic brand reputation, locating a company's headquarters within the Southern Song territory tends to achieve higher brand value for the same amount of ESG investment.

Thus, this study provides the first body of evidence on the overall impact of ESG and the individual impact of its three dimensions on brand value. However, it has a few limitations. Firstly, there are very few mainstream organizations worldwide that engage in monetizing brand value, and although the largest sample of brands listed in China was selected, the data remains limited. Future research could expand the research perspective from one country to multiple countries for comparison. Secondly, this study does not consider ESG risk transfer. Over the past 20 years, multinational companies have been transitioning from production expansion to brand expansion to repair the damage to their brand reputation due to ESG malpractices during their production expansion phase. Apple, Nike, and other global superbrands have now chosen the "factoryless manufacturing" business model. Moreover, there may be ESG risks for local Chinese brands moving from developed to backward regions. Thirdly, the new international division of labor brought by globalization has led to a much-discussed global production network whose boundaries were later extended by the global financial network (Coe et al., 2014; Ernst and Kim, 2002; Krugman et al., 1995; Wójcik & Camilleri, 2015). The global brand network is a neglected topic in the global value chain, even though brands account for a higher proportion of GVC profits than production (Aggarwal, 2017; Meng et al., 2020). These areas also offer the potential for future research.

# Chapter 5 | Can ESG Factors Impact Executive Compensation? Evidence from China's Listed Companies


## Abstract

Not all executives in the global capital markets respond to environmental, social, and governance (ESG) issues, which may be attributed to the vague relationship between the three ESG dimensions and executive compensation. To address this issue, this paper establishes a theoretical framework for the *reputation ecosystem*, which explains how ESG influences executive compensation. Using a unique ESG dataset scored using an investor-paid model and artificial intelligence (AI), an empirical study of 102 Chinese-listed companies from 2014 to 2018 supports this novel framework. The study concludes that ESG performance is positively associated with executive compensation, with further tests suggesting a causal relationship. Specifically, a one-unit increase in ESG score leads to an average increase of approximately 2.65% in executive compensation. This positive relationship holds true for all three ESG dimensions, although their effects are not synchronized. Company characteristics, such as state ownership and market competition, have varying degrees of influence on this relationship. Furthermore, the study indicates a negative moderating effect of executive age heterogeneity but no moderating effect of gender heterogeneity on the relationship between ESG performance and executive compensation. This study provides evidence for the *reputation ecosystem* theory, indicating that ESG performance can influence the reputation of firms and executives, ultimately impacting executive compensation.



**Key words:** *ESG, CEO, executive compensation, investor-paid model, reputation ecosystem*
**JEL classification:** G30, J33, M12, M14

## 5.1 Introduction

Since investors can use environmental, social, and governance (ESG) scores to assess investment risks and potential benefits, disclosure of ESG information has become increasingly important for listed companies (Hübel & Scholz, 2020). The number of United Nations Principles for Responsible Investment (PRI) signatories increased from 86 in 2006 to 3,038 in 2020. Assets under management have also increased from US$6.5 trillion to US$103.4 trillion (UN PRI, 2020). However, as economic globalization has continued to advance, solutions for issues of ESG have not only lacked progress but have also continued to regress. As a result, 92% of the world's population does not have clean air to breathe (WHO, 2016). A major reason for this regression is that many executives in the global capital markets are not responsive to ESG issues. In the quarterly teleconference of companies in the S&P 500 Index, only approximately 5% of executives actively mentioned ESG (Langley, 2019), with a global proportion of only 2.5% (Sardon, 2021).

Given that coordinated support from senior executives for ESG initiatives is key to success (Rangan et al., 2015), understanding the connection between executive behavior, compensation incentives, and ESG performance is particularly important. However, academic research on the relationship between ESG and executive compensation has yielded mixed conclusions (Cai et al., 2011; Cai et al., 2021; Hong et al., 2016; Ikram et al., 2019; Radu & Smaili, 2021). The different viewpoints stem from the characteristics of ESG disclosure and the ways in which executive compensation is measured. First, ESG disclosure contains non-financial information that is difficult to quantify or compare due to a lack of agreed-upon global standards, which also creates mistrust. Second, no global standard exists for the scope of disclosed information about executive compensation or the composition of that compensation. In developed markets like Europe, the corporate governance landscape remains diverse (Wójcik, 2006). In

emerging markets like China, the executives of state-owned enterprises (SOEs) often have dual roles as executives and administrative officials, which increases the complexity of measuring their salaries. Third, all of the current mainstream ESG rating agencies have adopted the issuer-paid model, which leads to conflicts of interest and removes independence from ratings (Krugman, 2010).

Executive compensation is experiencing its own governance crisis. First, the existing systems for tracking executive compensation have major loopholes. For example, during the global financial crisis triggered by the subprime mortgage crisis in the United States, executives exposed their companies to excessive risks in order to increase profits in the next quarter (Samuelson & Stout, 2009). Second, the current executive compensation system lacks social acceptance. The Economic Policy Institute (2020) found that the compensation ratio of CEOs to typical workers in 2019 was 320-to-1 under the realized measure of CEO pay. This represents an increase from 293-to-1 in 2018 and a massive increase from 21-to-1 in 1965 and 61-to-1 in 1989. Third, although gender diversity is financially beneficial in corporate governance (Carter et al., 2017; Groening, 2018) and investment earning (Huang & Kisgen, 2013), several studies have found that gender inequality and a lack of diversity persist with regard to executive compensation (Schneider et al., 2021; Wójcik & Cojoianu, 2018).

An increasing number of companies have begun to link their executive compensation to ESG-related goals. Meanwhile, the causal relationship between ESG performance and executive compensation remains ambiguous, with a research gap in analyzing the impact of the three ESG dimensions on executive compensation. To address this issue in the current literature, I developed the theoretical framework of a *reputation ecosystem*. The framework explains the mechanism by which ESG activities affect the reputation of companies and executives, placing market participants in an invisible *reputation ecosystem* controlled by an invisible hand. Integrating the stakeholder theory and the

reputation theory, this framework lays out the path of ESG performance as it impacts corporate reputation, financial performance, and stock price, and shows the eventual impact on executive compensation. Executives have a significant interest in their company's reputation, which affects not only financial performance but also the stock price, which determines executives' incentive compensation (Clark & Hebb, 2005). In the *reputation ecosystem*, a company's ESG actions increase the social capital of not only the company but also its executives. Executives' social capital forms the basis of their reputation, which plays a vital role in the development of enterprises (Burt & Opper, 2017; Peng & Luo, 2000). Particularly in the Chinese market, trust networks based on executive reputation (often referred to as guanxi) provide access to additional business resources as well as government support (Burt & Burzynska, 2017).

Using Chinese companies listed from 2014 to 2018 as samples, this study analyzes the relationship between ESG performance and executive compensation and verifies the theoretical framework of the *reputation ecosystem*. To overcome the drawbacks of the issuer-paid approach adopted by the major global ESG rating agencies (Krugman, 2010), I adopt an issuer-paid model for data collection and ESG scoring with better rating quality and informational advantages (Beaver et al., 2006; Bhattacharya et al., 2019; Cornaggia & Cornaggia, 2013). This research shows that: (1) ESG performance of listed companies is positively related to executive compensation, and the sample companies have positive relationships with executive compensation for each dimension of ESG. The Granger causality test finds that ESG performance can improve executive compensation, and the causality relationship is unidirectional; (2) the positive relationship between ESG performance and executive compensation is also significant for SOEs and non-SOEs, as well as for companies in non-monopoly industries; (3) a more competitive environment can drive executives to tie their compensation to corporate performance, including ESG performance; and (4) the moderating effect of executive age heterogeneity is negative and significant, but the moderating effect of

gender heterogeneity is not significant.

This study contributes to the literature on CSR, ESG, corporate governance, and compensation systems in several ways. First, previous studies focused on the relationship between ESG and only one other factor, like executive compensation, brand equity, and company reputation (Aluchna et al., 2022; Cai et al., 2020; Cai et al., 2021; McGuire et al., 2003; Radu and Smaili, 2021; Stanwick and Stanwick, 2001). Further, Focke et al. (2017) found a negative relationship between CEO compensation and corporate reputation but did not consider ESG factors in their study. Based on the notion of the *reputation ecosystem*, I expanded upon previous studies and proposed an ESG impact model of executive compensation. This impact model shows how ESG behavior impacts executive compensation under the framework of the *reputation ecosystem*, which explains the interconnectedness of various factors.

Second, although research has explored the relationship between ESG and executive compensation (Dunbar et al., 2020; McGuire et al., 2003; Murphy, 1985; Radu and Smaili, 2021; Wójcik, 2006), few studies have delved into the relationship between the three dimensions of ESG and executive compensation. The three dimensions of ESG demonstrate three different perspectives on corporate sustainability. Although they may relate to each other, it is meaningful to investigate the impact of these activities separately on corporate performance, given that the corporate strategies and behaviors related to each dimension are quite different. From this perspective, my study contributes to existing empirical research by providing theoretical support for the practice of compensation incentives.

Third, previous studies have included executive attributes in their models to analyze the relationship between executive compensation and ESG performance (Husted & de Sousa-Filho, 2019). Past research has also covered the impact of institutional ownership

on CEO compensation (Khan et al., 2005). But the impact of institutional ownership on the relationship between ESG performance and executive compensation is still unknown. Perryman et al. (2016) posited a moderating role for executive gender with regard to ESG influence on executive compensation. However, my empirical results contradict this conclusion, as I found that only cognitive diversity in teams improves team effectiveness (Reynolds & Lewis, 2017) and enhances firm performance (Kilduff et al., 2000). Race, gender, and education, among other characteristics, did not show such an impact. Moreover, my study further considers firm characteristics, such as state ownership and industry competition, and investigates whether the ESG performance of SOEs and monopolies is related to pay incentives. Introducing and exploring these variables improves the theoretical model for executive compensation, contributing fresh analysis and empirical data to the literature on corporate governance and sustainable finance.

Finally, the quality of mainstream data and ratings cannot be guaranteed (Chatterji et al., 2016). Not only do academic institutions such as the MIT Sustainability Initiative question the "aggregate confusion" of ESG data (Berg et al., 2019), but members of the industry, such as Tesla CEO Elon Musk, criticize the metrics as having "fundamental flaws" (Kishan, 2022). Rating agencies play two important roles in the capital markets: one is to provide information and valuation to market participants, and the other is to reveal credit risk to help both sides of a contract transaction. However, they have clearly failed to carry out these two functions (Frost, 2007). The shift since 1970 in the business model of mainstream rating agencies from issuer-paid to investor-paid contributed to the subprime mortgage debacle and the associated financial crisis (White, 2010). To avoid conflicts of interest, this study employs the investor-paid model and leverages technologies such as AI and machine learning for data collection and ratings.

The remainder of this paper is structured as follows: Section 2 introduces the topic and its theoretical foundations, creates a theoretical framework for the *reputation ecosystem*, and

presents the research hypotheses. This section also reviews the literature concerning the relationship between ESG performance and executive compensation. Section 3 explains the research methodology, including sample selection, data sources, model settings, variable description, model building, descriptive statistics, and correlation analysis. Section 4 presents the empirical results and subsequently analyzes them. Section 5 discusses the robustness tests that were performed. The final section presents the discussion, conclusions, and limitations of the study.

## 5.2 Literature, Theory and Research Hypothesis

The existing literature utilizes different connotations and denotations regarding the term ‘corporate executives'. For McGuire et al. (2003), corporate executives are CEOs. Murphy (1985) expanded the scope of the term to include managers having powers of attorney from shareholders for five consecutive years. I believe that the executives of listed companies comprise all the senior executives disclosed in annual or quarterly reports, including the chairperson, CEO, president, vice president, and all ‘C-suite’ senior executives, such as the CFO, CTO, and CMO. Meanwhile, executive compensation generally includes short-term incentive income, long-term incentive income, and deferred incentive income, in addition to base salary, bonuses, stock options, and other forms. ESG performance is becoming indispensable to the design of executive incentive packages; the senior management team has a significant influence on voluntary ESG disclosures because its members both create and execute the ESG information-disclosure systems. This section covers three aspects: First, the main factors affecting executive compensation, and the relationship between ESG performance and executive compensation. Second, I propose a new theoretical framework, the reputation ecosystem, to explain the impact of ESG on executive compensation. Third, the research hypotheses are developed based on my new theoretical framework.

### 5.2.1 ESG Performance and Executive Compensation

There are many factors that affect executive compensation. Past literature has focused on both firm and executive perspectives. From the firm's perspective, the factors influencing executive compensation broadly consist of two aspects: operating performance and corporation size. Most of the literature indicates that there is a positive relationship between executive compensation and firm performance (Banker et al., 2009; Liu et al., 2003). Others, however, have found a weak relationship or none at all (Jensen & Murphy, 1990; Song, 2006). Corporation size is one important factor among many that affect executive compensation (Stanwick & Stanwick, 2001). Executive compensation has a positive relationship with firm size (Gabaix & Landier, 2008). This is because larger firms are more complex to manage (Gayle & Miller, 2009). However, Frydman and Saks (2010) have emphasized that before the 1970s, the relationship between wages and firm size was not significant.

From the perspective of executives, the factors that influence their compensation cover two areas: executive characteristics and managerial power. In terms of executive characteristics, the older the average age of executives, the higher their average salary (Hogan & McPheters, 1980). The stronger the competence, including reputation, professional experience, and educational background, of the CEO, the higher their monetary compensation (Falato et al., 2015). Other research has found that the broader the CEO's social network, the higher their monetary compensation (Engelberg et al., 2013). Regarding managerial power, Bebchuk and Fried (2003) observed that the equity concentration of a firm affects the extent of its management's power. As equity concentration declines, executives have a stronger voice in the design and decision-making process regarding executive compensation.

Overall, executive compensation is often the result of a combination of factors, including environmental reputation, firm size, and financial performance (Stanwick & Stanwick,

2001). It may also be affected by corporate culture (Graham et al., 2012), restrictions on insider trading (Roulstone, 2003), and confidentiality agreements (Erkens, 2011). The literature findings specific to the relationship between ESG performance and executive compensation are also inconsistent. (1) *Positive relationship*: Based on stakeholder theory, Callan and Thomas (2011) have shown that CSR performance is one of the determinants of executive compensation and that the two have a significant and positive relationship. (2) *Negative relationship*: Coombs and Gilley (2005) have found that stakeholder management has a significant and primarily negative effect on CEO compensation. The reduction of executive compensation was conducive to the improvement of CSR performance. Rekker et al. (2014) have confirmed that CSR activities would reduce CEO compensation. (3) *Weak relationship*: Based on reputation theory, Stanwick and Stanwick (2001) have asserted that, although the coefficient between CEO total compensation and a company's environmental reputation is significant, the regression results show CEO compensation to be affected mainly by company size and financial performance. Cordeiro and Sarkis (2008) have posited that industry-adjusted environmental performance indicators mean that environmental performance does not affect executive compensation.

In general, the promotion of executives is one of the key factors influencing companies' acceptance of ESG as a strategy. On the one hand, this can be explained as ESG increasing company value and then rewarding executives (Arora & Alam, 2005; Berrone & Gomez-Mejia, 2009). On the other hand, it can be explained as ESG presenting a type of agency problem, causing executives to pursue better ESG performance for the sake of higher compensation and private interests, ultimately reducing total company value (Cai et al., 2011). The contradiction in this interpretative path may arise from various hidden assumptions about corporate governance capabilities as well as the theories employed in these studies, such as business ecosystem theory, integrated stakeholder theory,

reputation theory, and entrepreneurial reputation theory, having certain flaws and weaknesses.

Previous research on ESG and executive compensation exhibits several disadvantages. First, most of the research on the relationship between ESG performance and executive compensation is focused on CEO compensation, which may result in bias: When CEOs are also major shareholders or founders, they receive low cash compensation and maintain an income from the sale of stocks. Second, very few studies use samples from developing countries or global statistics. Furthermore, there is scant literature investigating ESG performance, executive compensation, and ownership in the context of national or regional systems (Jacoby et al., 2019; Tsang et al., 2021). Third, in terms of research object distribution, early research primarily focused on certain industries or environmentally sensitive companies (Campbell et al., 2007; Cordeiro & Sarkis, 2008; Russo & Harrison, 2005). Fourth, although many scholars believe there is a relationship between ESG performance and executive compensation, comparative research on the individual impacts of E, S, and G remains scarce. Lastly, previous studies have adopted certain theories that contain flaws and do not provide complete theoretical support for my conclusions. In the following sections, my study will propose the theoretical framework of the *reputation ecosystem* to explain the mechanisms by which ESG affects executive compensation and use samples from Chinese listed companies to fill these research gaps.

### 5.2.2 The Reputation Ecosystem Encourages Executive Compensation

There are no convincing theories regarding how ESG, particularly at the corporate governance level, affects executive compensation. To reduce the adverse selection and moral hazard of information asymmetry, the principal-agent theory turns to the relationship between shareholders and executives in corporate management. There are two theoretical approaches to reducing agency costs and maximizing corporate value:

optimal-contract theory and managerial-power theory. However, my review of existing studies on factors that influence compensation reveals that neither theory fully accounts for the changes in compensation. Optimal-contract theory cannot fully explain changes in executive compensation. For example, after 1980, executive compensation in the United States increased by 600%; however, less than 33% of this increase can be attributed to the expansion of companies (Nagel, 2010). Management-power theory also cannot explain this abnormal increase in executive compensation. Corporate governance has improved dramatically over the past 30 years, and executive compensation has increased by an even greater percentage. These results contradict the conclusions of management-power theory. If the social norms constraining the compensation of top executives have changed, then the compensation of executives who are not CEOs should have also increased significantly. However, the pay gap for executives is gradually widening (Kaplan & Rauh, 2013).

Executive compensation has been increasing rapidly worldwide in recent decades. In the United States, CEO compensation has increased by 940% since 1978, whereas worker compensation has increased only by 12% over the same period (Mishel & Wolfe, 2019). Two studies, one by Lucas (1978) and another by Murphy and Zabojnik (2007), conducted decades apart, found that the increase in executive compensation, especially CEO compensation, is driven by competition among companies to hire top executives. Top executives are considered scarce resources for companies. According to Gabaix and Landier (2008), the reason for the increase in CEO compensation is not that CEOs have become more talented but that their talents have become more critical. This increase in the importance of talent is a result of executives' social capital guiding firm strategy and transformation (Harris & Wheeler, 2005). Additionally, executives, in their roles as coordinators and agents of firm resources, often bring their personal reputations and social connections to the company. These aspects of social capital subsequently become valuable strategic assets for the firm (Hite & Hesterly, 2001) and drive entrepreneurial

firm growth (Stam et al., 2014). Hence, it can be inferred that CEOs contribute reputational value-added, and a CEO with an excellent reputation usually multiplies firm value. On the other hand, most employees are seen as mere additions to corporate value.

ESG disclosure has significant implications for both companies and executives, and it requires a careful balance. Various theoretical frameworks offer different perspectives on the impact of ESG on firms and their leaders. Legitimacy theory argues that businesses and society have a social contract, and companies can build their image and secure legitimacy by disclosing their social responsibility. However, this may come at a high implementation cost, and a reputation system is essential to support their ongoing operations. In contrast, stakeholder theory highlights the importance of companies paying attention to their stakeholders for success. But, stakeholders' interests are inherently competitive, and their needs are continually evolving. The business ecosystem framework models itself on natural ecosystems and emphasizes the symbiotic relationships and networks among firms, ignoring the roles of individuals, governments, and non-profit organizations. However, this approach fails to adequately explain the impact mechanisms of different ecological niches. The existing reputation theories tend to overemphasize competition, assuming a static perspective, and ignoring the symbiotic and dynamic perspectives, especially in the ESG ecosystem. Various factors are continually interacting with each other, leading to chaos and randomness, requiring a dynamic system to solve complex problems. To address these limitations, I propose a new theoretical framework, the *reputation ecosystem*.

I argue that in the market, all stakeholders are controlled and restricted by an invisible hand: the *reputation ecosystem*. The *reputation ecosystem* integrates many past theoretical frameworks and addresses gaps in current theories. The *reputation ecosystem*, like other ecosystems, is diverse and reticulated. However, unlike in other systems, in the *reputation ecosystem*, all stakeholders, including enterprises, entrepreneurs, and

consumers, use the same currency, namely reputation. Moreover, all stakeholders are correspondingly restricted by reputation. Tesla's mission, for example, is to accelerate the world's transition to sustainable energy. This aggressive ESG action has given Tesla and its CEO, Elon Musk, an extremely valuable social asset and a positive reputation. The overlay of company and CEO reputations has driven geometric growth in company performance and market value. Tesla has created not just a global supply chain but also a global *reputation ecosystem* based on Tesla. Musk had already accumulated entrepreneurial experience and nurtured a positive professional reputation prior to taking over Tesla. Such social capital can help executives optimize their ability to access other resources (Oh et al., 2006), including information, influence, and sponsorships (Adler & Kwon, 2002), in turn enabling them to enhance the legitimacy of the firm (Elfring & Hulsink, 2003). In particular, a relationship of trust between major shareholders and executives forms an important social capital bond and influences their common goals, which, in turn, affects firm performance (Zhang et al., 2020).

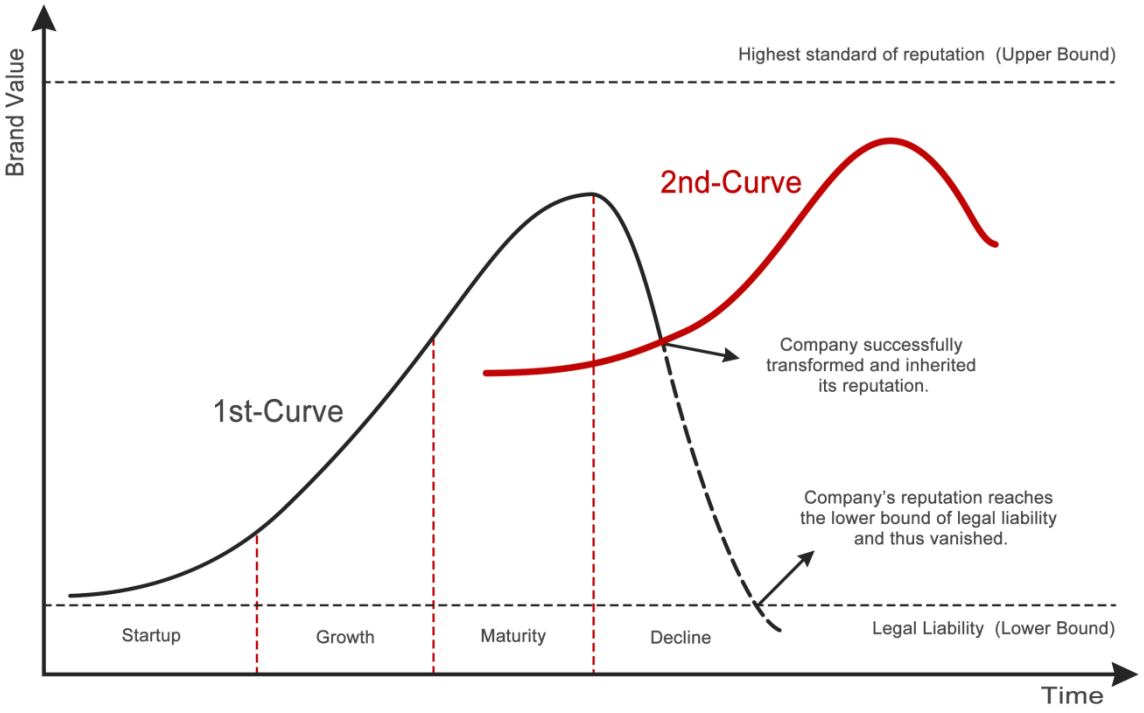


**Figure 5.1: Reputation Curve: ESG-Driven Growth.**

This figure presents the growth of corporate brand value according to the *reputation ecosystem*

framework. The bottom dashed line is the lower bound of the curve, which is defined by legal liability. The top dashed line is the upper bound of the curve, and it is defined by the highest standards of reputation, such as quality, ethics, and social responsibility. The red curve on the right represents the succession of brands if the company makes successful changes.

The reputation life cycle, which is dependent on all market participants, shares similarities with the growth stages of a business. Figure 5.1 illustrates this cycle, which follows a skewed bell-shaped curve, drawing inspiration from the diffusion of innovation theory (Moore and McKenna, 1999; Rogers, 1976; Rogers et al., 2014). For firms, the lower limit of corporate reputation is defined by legal liability, while the upper limit is determined by brand value derived from quality, morality, and social responsibility. Positive feedback from stakeholders is a crucial source of corporate reputation for entrepreneurs and enterprises. This feedback is created through the investment of companies and decision-makers in social responsibility. Initially, companies focus on complying with the most basic legal requirements and then enhance their reputation by continuously investing in their ESG development. To maintain their reputation at the highest level of value maximization, companies strive to increase their social responsibility investments. If a company's reputation is declining, decision-makers must determine the next course of action. When entrepreneurs activate their CSR image by prioritizing ESG performance, they can boost the firm's reputation beyond its previous peak by launching a second reputation curve. This curve resembles the double S-curve diffusion model (Handy, 2016; Morrison, 1998). The ESG-related actions of each company on this curve serve two purposes: (1) to accumulate the most valuable social capital for companies and executives, i.e., reputation, and (2) to help enterprises avoid regulatory risks and remain above the lower boundary. However, if corporate decision-makers choose to ignore declining corporate reputation, the enterprise will "die" due to a decline in its reputation.

Samuelson (1948) asserts that Smith discovered that in an economic system, order is guided by the mysterious principle of the “invisible hand,” which I believe to be

synonymous with the *reputation ecosystem* because Smith presents an informal theory of rational trust which is broadly similar to the concept of the "reputation ecosystem" in *Lectures on Jurisprudence*: "The English are more so than the Scotch, but much inferior to the Dutch, and in some remote parts of this country they are far less so than in the more commercial parts of it" (1763/1978, pp. 538–539). Smith argues that trustworthy reputations are transmitted through networks of trading relationships; the denser the network of trading relationships, the greater the value of the reputation. Adam Smith's metaphor has been interpreted in various ways by scholars (Grampp, 2000), and it encompasses several relatively independent factors, such as price mechanisms, competition, evolutionary processes, and mutual advantage in exchange. However, I believe that only the concept of reputation can connect these dozens of "invisible hands" currently circulating in academic discourse. Darwin's discussion of the causes of biodiversity in *The Origin of the Species* was inspired by Adam Smith's *The Wealth of Nations* (Mlodinow, 2016); that is, Smith's metaphorical invisible hand is based on the idea of an ecosystem.

Smith's assessment of merchants' differing degrees of trust can be corroborated by examining the history of China: There are often shadows of merchant groups with regional characteristics behind private enterprises. A merchant group can be a loose or close network of merchants with geography at the center and both blood relationships and nostalgia ties. Since the beginning of the Ming Dynasty, more than 10 mainstream merchant groups—including the Jin merchants, Hui merchants, Zhe merchants, Su merchants, and Lu merchants—have emerged, and they have existed in China for over 500 years. The different merchant groups have often demonstrated divergent business cultures and values. These different cultures have been historically important in determining institutional structures and economic development (Greif, 1994). Within the reputation ecosystem, there is a structural hole between the firm and various stakeholders, and executives are the nodes that connect the firm to all parties. Therefore,

they fill in this gap, possess information, and facilitate access to resources (Burt, 1995). Given that reputation binds firms and executives together, most CEOs cite "brand, trust, and reputation" as the first factors driving them to act on sustainability issues, while they cite revenue growth or cost reduction as the second factor (Lacy et al., 2010).

### 5.2.3 Research Hypotheses

Based on previous studies, the association between environmental, social, and governance (ESG) factors and executive compensation remains unclear, including how and why they are related. In the past, some scholars have found a positive relationship (Berrone & Gomez-Mejia, 2009; Callan & Thomas, 2011; Murphy, 1985) between ESG and executive compensation, whereas other scholars have observed a negative relationship (Coombs & Gilley, 2005; Deckop et al., 2006). By examining the possible mechanisms operating in the relationship between ESG and executive compensation, the framework of the *reputation ecosystem* demonstrates that ESG performance influences this relationship.

Moreover, in the *reputation ecosystem*, there is a close relationship between stakeholders. For example, corporate policymakers are directly associated with corporate ESG performance. When corporate decision-makers make policies conducive to corporate ESG performance, they receive more positive feedback from other stakeholders, thus enhancing corporate financial performance and the reputation of corporate decision-makers.

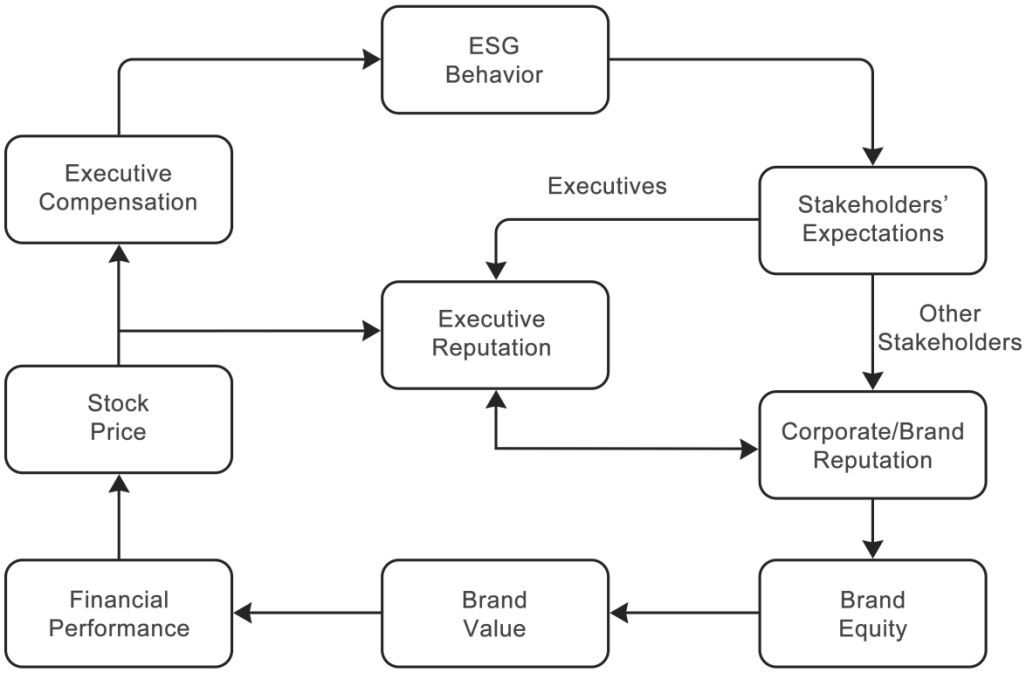


**Figure 5.2: ESG Impact Model for Executive Compensation.**

This impact model presents how ESG factors impact executive compensation under the framework of the *reputation ecosystem*. The arrows represent the impact paths and directions between nodes.

To depict the relationship between ESG and executive compensation more clearly, I propose an ESG impact model for executive compensation (Figure 2) based on the *reputation ecosystem*. This model incorporates factors such as corporate ESG behavior, stakeholders' expectations, intangible corporate assets (brand equity), corporate financial performance, and incentives regarding executive reputation. According to the *reputation ecosystem*, the impact model argues that the influence of a firm's ESG behavior on executive compensation via stakeholders can be divided into three main steps. First, ESG behaviors influence the reputation of both corporations and executives within the framework of the *reputation ecosystem*. Second, an improved reputation can result in higher brand equities and brand values, which can increase financial performance (Miller et al., 2020; Van der Laan et al., 2008; Wang & Berens, 2015) and stock market performance. Third, improved corporate financial performance and higher stock prices award executives with higher compensation. This impact model also applies to

companies in the start-up stage, during which corporate financial performance is inferior to growth opportunities. Under these circumstances, reputation, particularly the reputation of individual executives (Ebbers & Wijnberg, 2012; Taeuscher, 2019), affects brand equity and brand values, which will have a direct impact on executive compensation.

When the reasons behind the behaviors of agents are difficult to prove, it is reasonable to use the reputation effect as an explanation for their motivation. Thus, Fama (1980) proposes the concept of "ex-post settling-up" for executive decisions. In the long term, executives must be held responsible for their decision-making behavior. Even without salary incentives, executives need to consider multiple parties' interests when attempting to improve their reputations in the workplace. Holmstrom (1982a) models this idea and shows that the reputation effect can alleviate the agency problem to a certain extent. Furthermore, the favorable reputation of executives can generate real returns. For example, there is a positive relationship between executive reputation and stock returns (Milbourn, 2003) and CSR performance (McGuire et al., 2003). Van der Laan et al. (2008) also conclude that corporate social performance can lead to higher financial performance, and the effect is mediated by reputation. Under the pressure of public attention, executives also need to pay special attention to ESG, maintaining their company's reputation and image, as well as their levels of compensation. Although fulfilling ESG commitments generally increases a company's immediate costs, the company can improve its social image and public-private relationships, increase corporate social capital, and enhance the reputation of its executives by fulfilling these commitments. Based on the above analysis, I propose the following research hypothesis:

*Hypothesis 1: There is a positive relationship between ESG performance and executive compensation.*

Some scholars studying the impact of ESG performance on executive compensation focus their research on one or two of the three dimensions of ESG, thus discussing the impact of specific factors on executive compensation. For example, it has been demonstrated that executive compensation is closely related to corporate environmental reputation, company size, and financial performance (Stanwick & Stanwick, 2001). This is because good environmental performance can represent the success of the CEO and lead to increases in their salary, particularly in environmentally sensitive industries where a company's reputation relies heavily on mitigating environmental impact (Berrone & Gomez-Mejia, 2009). Conversely, other studies suggest that environmental performance is negatively related to executive compensation. For example, Francoeur et al. (2017) find that companies with good environmental performance provide less compensation to their CEOs; however, this study ignores the fact that the impacts of environmental performance on executive reputation and compensation are delayed. This is why Fama (1980) proposes the ex-post settling-up approach. Therefore, I believe it is more important to consider that poor environmental performance can negatively impact a company's reputation, and thereby, executives can also be impacted since they are key participants in the overall *reputation ecosystem*, which can affect their compensation. Thus, I propose the following research hypothesis:

*Hypothesis 2: There is a positive relationship between environmental (E) performance and executive compensation.*

According to stakeholder theory (Freeman, 1984), the implementation of social responsibility maximizes the benefits to employees, creditors, customers, suppliers, and other stakeholders. In addition, executives, as the proxies of corporate stakeholders, are the most prominent decision-makers and facilitators of CSR (Hill & Jones, 1992), and they should be rewarded accordingly (Porter & Kramer, 2006). Furthermore, Jouber

(2019) finds a significant positive relationship between CSR performance and executive compensation. Here, social (S) indicators, as important non-financial indicators of ESG and executive performance, motivate executives to safeguard the benefits of stakeholders, reduce agency costs, and promote the synergistic growth of executive compensation and corporate performance. This proposal is also consistent with the *reputation ecosystem* theory, which states that a company's social performance has a direct impact on its reputation and, thus, on the reputation of its stakeholders, including executives. Therefore, I propose the following hypothesis:

*Hypothesis 3: There is a positive relationship between social (S) performance and executive compensation.*

The establishment of the modern corporate system, which separates management and ownership, has greatly improved the economic benefits of enterprises and promoted general economic progress. However, it has also led to divided interests and conflicts between operators and owners, resulting in the principal-agent problem (Means, 2017). Therefore, linking executive compensation with corporate performance has been an effective incentive mechanism. That is, it is generally believed that improved corporate governance can encourage a CEO to work harder (Hermalin, 2005) while increasing the risk of a CEO being dismissed (Kaplan & Minton, 2012). However, since external directors can evaluate the talents of executives more fairly, decisions about executive compensation should be entrusted to them (Fama, 1980). Furthermore, Core et al. (1999) find that differences in board and ownership structures could explain variations in CEO compensation, while Bebchuk and Fried (2003) find that an executive's control over the board of directors is the primary reason for a substantial increase in executive compensation. In summary, different corporate governance structures lead to different power allocations, which in turn, affect executive compensation differently. However, when the level of corporate governance is improved, the design of an executive

compensation contract can play an effective role. According to the *reputation ecosystem* theory, corporate governance performance is the necessary foundation for companies to meet the minimum legal requirements. After the minimum legal requirements are met, additional governance performance enhances the company's and stakeholders' reputations, and ultimately increases the level of executive compensation. According to the above analysis, I propose the following research hypothesis:

*Hypothesis 4: There is a positive relationship between corporate governance (G) performance and executive compensation.*

Ownership type is one of the key factors affecting corporate environmental information disclosure (Celik et al., 2006). As Healy et al. (1999) point out, an increase in information disclosure is related to an increase in the number of shares that institutions hold. Additionally, SOEs are more likely to receive state support to better achieve their political and social goals. In contrast, non-SOEs have stronger incentives to keep investors and other stakeholders informed to reduce financing costs through voluntary disclosure (Botosan, 1997) and improve stock liquidity (Sengupta, 1998). Furthermore, in China, SOEs occupy a dominant position in the national economy and capital market. On the 2020 Fortune Global 500 list, for example, the number of Chinese companies (including those in Hong Kong) reached 124. Of these, 92 were SOEs, and 48 were directly under the control of the central government. Although company performance is not an important determinant of state ownership (Wei & Varela, 2003), I believe that in China, SOEs play an important and strategic ESG role because they maintain the reputation of the government. Moreover, SOEs and their executives are politically connected. Political affiliation is a universal phenomenon (Faccio, 2006) and is considered a scarce but vital resource for firms (Xin & Pearce, 1996). Executive compensation is less driven by market-based forces in regulated economies like China (Liang et al., 2015); however, Chinese SOE executives tend to improve ESG

performance both for financial compensation and for political promotion because of these political affiliations. Therefore, I propose the following research hypothesis:

*Hypothesis 5: There is a positive relationship between ESG performance and executive compensation for both SOEs and non-SOEs.*

Industry competition is another important variable that affects corporate activities and significantly impacts corporate strategic activities. Smith's (1776) theory of free competition argues that competition is a natural and useful incentive because the process and results of competition reveal information most economically. Therefore, Friedman (1953, 2007) strongly argues that market competition represents a Darwinian process similar to "survival of the fittest", which rewards entrepreneurs who pursue profit maximization most rationally. Later, Holmstrom (1982b) and Nalebuff and Stiglitz (1983) found that the more firms that are competing in a market, the less they suffer from the effects of asymmetric information. Moreover, executives are better motivated since their compensation becomes more closely linked to relative performance and individual effort. Moreover, Scharfstein (1988) and Schmidt (1997) find that, because the market simultaneously affects all firms, if there are many firms in the market, then performance comparisons among firms can mitigate the effects of market fluctuations, allowing owners to assess the ability and effort of executives. However, monopoly companies are more likely to exaggerate the results of their executives as agents of change. For example, John et al. (2000) believe that, compared to executive compensation in competitive firms, executive compensation in monopoly companies is less sensitive to corporate performance. Hence, based on the *reputation ecosystem*, for monopoly companies, an increase or decrease in reputation within a certain range does not affect the company's sales or financial performance, which makes the reputation cycle of monopolies different from that of competitive companies. Thus, I propose the following research hypothesis:

*Hypothesis 6: There is a positive relationship between ESG performance and executive compensation for competitive companies only.*

Executive heterogeneity represents differences in the demographic characteristics of a company's top management teams or executives, which may cause differences in the formation of corporate values, policies, and strategies (Li & Wu, 2017). For example, women may be more willing to take risks and less willing to violate business ethics than men (Van der Walt & Ingley, 2003). However, there is a lack of literature regarding the impact of heterogeneity on CSR performance, particularly concerning the moderating effects of heterogeneity, ESG, and executive compensation. Hart et al. (2015) examine the impact of corporate heterogeneity in compensation on CSR performance and conclude that a compensation structure with low diversity leads to higher social responsibility performance. Additionally, Karim (2021), in a study on Malaysian listed companies, concludes that the relationship between executive compensation and CSR activities is weak and that gender diversity on the board exhibits negative and insignificant moderating effects on the relationship between CEO compensation and CSR and between corporate executive compensation and CSR, respectively. From a theoretical perspective, it is unclear whether the degree of executive age and gender diversity can moderate the relationship between executive compensation and ESG. On the one hand, firms may use diversity as a tool to improve CSR performance rather than basing it on an executive's skills (Khaoula & Moez, 2019). On the other hand, diversity can reinforce a firm's competitive advantages in terms of cost management, corporate incentives, etc. (Richard, 2000), thus acting as a positive moderator. Furthermore, in the Chinese market, age heterogeneity can affect the ESG decisions and policies of a firm because executives of different ages can have different attitudes toward ESG. For instance, young executives tend to care more about the strategic effect of ESG policy, whereas older executives tend to focus on profitability. Thus, diversity in age may cause

conflicts and negatively affect the relationship between ESG and executive compensation. Gender heterogeneity, however, does not have a sufficient influence on ESG because many Chinese companies are still dominated by male executives. Therefore, this paper proposes the following hypothesis:

*Hypothesis 7: Executive age heterogeneity has a significant moderating effect on the relationship between executive compensation and ESG performance, while executive gender heterogeneity has no moderating effect on this relationship.*

## 5.3. Research Design

### 5.3.1 Sample Selection and Data Sources

#### 5.3.1.1 Sample Selection

This study selects a sample of A-share listed companies relevant to ESG. The sample companies are selected from environmentally sensitive industries as defined in the Environmental Information Disclosure Guidelines for Listed Companies by the Ministry of Ecology and Environment of China (including construction, petrochemicals, energy, machinery, iron and steel, building materials, and tire manufacturing), as well as industries in which social and governance factors play an important role (including finance, real estate, airline services, and food and beverage industries). In addition, the sample must meet the following requirements: (1) The selected samples have been listed for more than 5 years to ensure sufficient data and avoid the unstable factors of newly listed companies; (2) in order to avoid the influence of extreme financial values, the selected sample companies are not under trade suspension, special treatment (ST), or particular transfer (PT).

The study selected the 110 listed firms that met the criteria, producing an initial sample of

500 observations. Nineteen samples are excluded because they have missing variables, resulting in a final sample of 102 firms and 481 observations.

#### 5.3.1.2 Data Sources

The ESG performance data used in this study, including the scores of the three dimensions, come from SuperFinance's database of ESG ratings. SuperFinance is a sustainable financial data provider that furnishes investors with ESG research and ratings. SuperFinance's scoring system includes 11 primary indicators and 35 secondary indicators. Below the secondary indicators are quantitative and non-quantitative indicators based on questionnaires. All indicators are divided into three levels of analysis: environment, society, and governance, reflecting the efforts, professionalism, and actual performance of listed companies in ESG, respectively. In the final computation of the ESG score, the environment and governance levels both account for 35% of the total score, while the social level accounts for 30%. SuperFinance's ESG score ranges from 0 to 100 points.

There are several reasons why we chose to use SuperFinance instead of other mainstream rating agencies, such as MSCI. The first reason is the advanced nature of its investor-paid model. Considering the similarity in information function between ESG ratings and credit ratings, the existing literature compares the accuracy and timeliness of the credit ratings given by issuer-paid and investor-paid rating agencies. Many studies have documented that the ratings provided by investor-paid rating agencies are timelier and can predict defaults more accurately than those provided by issuer-paid rating agencies (Beaver et al., 2006; Bhattacharya et al., 2019; Bruno et al., 2016; Cornaggia & Cornaggia, 2013). SuperFinance also utilizes public information, including annual reports and annual sustainability reports, to evaluate the ESG performance of listed companies. The transparency of its methodology is clearly superior to competitors. Another reason why we used SuperFinance is because its coverage of ESG data meets

the requirements of this study, whereas most major rating agencies still have low coverage in China.

The executive compensation data and financial metrics of the sample companies are obtained from the Datayes database, a financial data provider in China with easy-to-use APIs that simplify the process of collecting and cleaning the data.

### 5.3.2 Variables Description

The dependent variable is the natural logarithm of the average executive compensation. The data on executive compensation in the research period is obtained from the Datayes database, and the average compensation is calculated for each company each year. The average compensation is heavily skewed to the right and does not follow the normal distribution. Therefore, the logarithm transformation is applied to the variable in accordance with the assumption of regression analysis.

Control variables are used in the model to control for the size of the company, its profitability, and other characteristics of the firm. This article selects some of the factors from Table 5.1 to represent the control variables. This study considers two additional firm characteristics in order to further explore the relationship between ESG performance and executive compensation. Generally, firms fall into two categories: state-owned and private firms, depending on the equity of their characteristics. As far as the degree of market competition is concerned, firms can be divided into monopolistic firms on the one hand and competitive firms on the other. More specifically, in this study, state-owned enterprises (SOEs) include state-holding enterprises and wholly-owned SOEs, definitions that are based on the classification system of state ownership in the Datayes database. The rest of the samples are classified as non-SOEs.

Regarding the question of whether the firms should come from monopolistic industries,

this study follows the methods and conclusions of previous studies (Dai, 2014; Liu, 2017). According to three criteria: industry concentration (concentration ratio), Lerner index, and compulsory administrative license, the industries involved are classified as monopolistic or non-monopolistic sectors. Monopolistic industries include oil and gas extraction, tobacco products, the production and supply of gas, the production and supply of electricity and heat, coal mining, other mining, non-ferrous metal mining, non-metal mining, ferrous metal mining, public utilities, and telecommunication services. We find that in the sample, all Chinese monopolies are SOEs. Among the 85 SOEs in the sample firms, twelve are also classified as monopolies. The industry classifications are based on the Shenwan Classification method.

**Table 5. 1：Model variable explanations**

| Type | Variable | Abbreviation | Explanation |
|---|---|---|---|
| Dependent | Executive Compensation | LAC | The natural logarithm of the average executive compensation |
| Independent | ESG Score | ESG | ESG scores of listed companies obtained from SuperFinance |
| Control | Return on Assets | ROA | The ratio of net profit to total assets |
| Control | Price-to-Book Ratio | PB | The ratio of company market value to equity attributable to the parent company |
| Control | Total Assets | ASSI | Natural logarithm of the company's total assets |
| Control | Debts Asset Ratio | DAR | The debts asset ratio which is the ratio of the total debts to total assets |
| Control | Total Assets Grow Rate | TAGR | The gross income ratio which is the ratio of gross income to total income |
| Control | Operating Profit Ratio | OP | Operating profit ratio which is the ratio of operating profit to total revenue |
| Control | Tobin's Q | TQ | Tobin's Q value which equals the market value divided by the total assets |
| Control | Shareholding Concentration | SHARE | The holding proportion of the largest shareholder |

This table presents the explanations of variables in the regression model.

### 5.3.3 Model Building

Based on the characteristics of the panel data, a regression model is built to examine the relationship between executive compensation and ESG performance. The equation of the regression model is as follows:

$$LAC_{i,t} = \beta_1 ESG_{i,t} + \beta_2 ROA_{i,t} + \beta_3 PB_{i,t} + \beta_4 ASSI_{i,t} + \beta_5 DAR_{i,t} + \beta_6 TAGR_{i,t} + \beta_7 OP_{i,t} + \beta_8 TQ_{i,t} + \beta_9 SHARE_{i,t} + \delta_i + \mu_i + \epsilon_{i,t}$$

where *t* represents time and *i* represents the index of firm samples. The regression model also considers unobserved effects by adding the fixed effect terms $\delta_i$ and $\mu_i$, which control the effects of time and each firm, respectively. The robust test for standard errors is applied to address the problem of heteroskedasticity.

## 5.4. Discussion of Results

### 5.4.1 Descriptive Analysis

First, we perform a descriptive statistical analysis of the dependent and independent variables used in the model. As discussed above, in this study, sample companies are classified into SOE/non-SOE and monopoly/non-monopoly. In terms of distribution, 85 companies in the sample are SOEs, accounting for 83.3% of the total, while only 17 companies are not state-owned. In addition, 12 companies in the sample belong to monopolistic industries, distributed mostly between the three industries of energy, public utilities, and telecommunications services.

Table 5.2 provides an overview of the ESG scores of the sample companies and the descriptive statistical analysis of the three dimensions. Among 481 data points, the average ESG score is only 38.69. The lowest scores for both environmental and social dimensions are almost 0, indicating the poor disclosure of information on the part of some

companies. The lowest ESG total score is 16.12, and the highest is 78.57, which reflects the significant range in ESG performance among listed companies.

**Table 5. 2: Descriptive statistics of overall and individual ESG scores**

| Variable | Obs. | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| ESG | 481 | 38.69 | 11.83 | 16.12 | 78.57 |
| E | 481 | 29.05 | 18.30 | 1.46 | 88.58 |
| S | 481 | 43.64 | 18.10 | 1.25 | 85.64 |
| G | 481 | 44.10 | 13.01 | 16.70 | 97.99 |

This table presents the descriptive statistics of the performance of ESG and the three dimensions. The variable *ESG* is defined in Table 5.1. The variables *E, S, and G* represent the dimension scores of environmental, social, and governance, respectively. The sample contains 481 data points over 5 years.

As far as company characteristics are concerned, Table 5.3 shows the gap between SOEs and non-SOEs in ESG performance is not large, but it should be noted that on balance, non-SOEs tend to have higher ESG scores than SOEs. As far as industry is concerned, the average ESG performance of monopoly industries is similar to that of non-monopoly industries, but the performance of the three dimensions varies. There could be a number of explanations, such as the different distributions of the size and sector of the company. Such differences could potentially lead to disparities in ESG investment and ESG strategy for monopolistic and non-monopolistic companies.

**Table 5.3: Average ESG scores by company nature**

| | | ESG | E | S | G |
|---|---|---|---|---|---|
| State-Owned | No | 46.07 | 33.12 | 49.30 | 56.23 |
| | Yes | 37.11 | 28.17 | 42.42 | 41.50 |
| Monopoly | No | 38.57 | 27.69 | 43.17 | 45.51 |
| | Yes | 39.68 | 40.00 | 47.43 | 32.72 |

The table presents the performance of ESG and the three dimensions for subsamples according to state ownership (SOE and non-SOE) and market competition (monopoly and non-monopoly). The variable *ESG* is defined in Table 5.1. The variables *E, S, and G* represent the dimension scores of environmental, social, and governance, respectively.

In Table 5.4, we provide a descriptive analysis of the executive compensation and financial indicators of the selected sample companies. The average executive

compensation of the sample companies is 0.74 million yuan, and the logarithmic value is 13.16. The salary range of the sample companies is also relatively large. Meanwhile, the minimum average salary is only 0.09 million, while the highest is 4.8 million.

**Table 5.4: Descriptive analysis of other variables**

| Variable | Obs. | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| LAC | 481 | 13.16 | 0.82 | 11.45 | 15.38 |
| ROA | 481 | 0.03 | 0.07 | -1.13 | 0.31 |
| PB | 481 | 4.11 | 28.75 | -12.09 | 570.46 |
| ASSI | 481 | 25.57 | 2.17 | 19.51 | 31.01 |
| DAR | 481 | 0.62 | 0.21 | 0.11 | 1.66 |
| TAGR | 481 | 0.12 | 0.20 | -0.31 | 1.69 |
| OP | 481 | 0.12 | 0.25 | -2.52 | 0.80 |
| TQ | 481 | 0.95 | 1.48 | 0.04 | 14.66 |
| SHARE | 481 | 38.65 | 15.07 | 2.18 | 86.35 |

This table presents the descriptive statistics of the dependent variable and control variables in the regression model. All variables are defined in Table 5.1. The sample contains 481 data points over 5 years.

### 5.4.2 Correlation Analysis

Before performing the regression analysis of the independent and dependent variables, we first conduct the correlation test between the variables. Table 5.5 indicates no strong or significant correlations. Therefore, it can be concluded that the correlation between the independent variables in this model will not affect the reliability of the model.

**Table 5.5: Correlation matrix**

| | LAC | ESG | ROA | PB | ASSI | DAR | TAGR | OP | TQ | SHARE |
|---|---|---|---|---|---|---|---|---|---|---|
| LAC | 1.0000 | | | | | | | | | |
| ESG | 0.7781* | 1.0000 | | | | | | | | |
| ROA | 0.1595* | 0.1722* | 1.0000 | | | | | | | |
| PB | -0.1191* | -0.1155* | -0.0498 | 1.0000 | | | | | | |
| ASSI | 0.3704* | 0.3944* | 0.0132 | -0.1774* | 1.0000 | | | | | |
| DAR | 0.2585* | 0.1323* | -0.4684* | 0.0998* | 0.5737* | 1.0000 | | | | |
| TAGR | 0.2067* | 0.1190* | 0.1856* | 0.0320 | 0.0237 | 0.1076* | 1.0000 | | | |
| OP | 0.2300* | 0.1673* | 0.6521* | -0.0544 | 0.4061* | -0.0371 | 0.1970* | 1.0000 | | |
| TQ | -0.2507* | -0.2335* | -0.0687 | 0.3409* | -0.5576* | -0.3080* | 0.0091 | -0.2852* | 1.0000 | |
| SHARE | -0.2238* | -0.0557 | 0.0119 | 0.0118 | 0.1883* | -0.1093* | -0.1287* | -0.0245 | -0.0501 | 1.0000 |

The table presents the correlations among variables. All variables are defined in Table 5.1. The symbols * indicates significance at the 5% level or $p < 0.05$. Correlations without symbol * indicates nonsignificance.

This paper uses the VIF (variance inflation factor) to test the multicollinearity between model variables. Table 5.6 shows that the VIF values of the variables are all lower than 5. Therefore, there is no obvious multicollinearity between model variables. Some other preliminary procedures were taken to ensure that the data were suitable for the empirical study, including the detection of outliers and a heterogeneity test.

**Table 5.6: VIF of independent variables**

| | VIF |
|---|---|
| ASSI | 3.55 |
| DAR | 3.02 |
| ROA | 2.88 |
| OP | 2.63 |
| TQ | 1.63 |
| ESG | 1.33 |
| PB | 1.28 |
| SHARE | 1.26 |
| TAGR | 1.15 |

The table presents the VIF checks for multicollinearity between regression variables. All variables are defined in Table 5.1.

### 5.4.3 Regression Results

#### 5.4.3.1 Overall ESG Analysis

Based on the research hypotheses and research models, we use regression models to explore the relationship between ESG performance scores and executive compensation. The independent variable is the overall corporate ESG score. From the model results, as presented in column (1) of Table 5.7, we can see that the coefficient of ESG is 0.0265, which is positive and significant. The findings are consistent with the *reputation ecosystem*, which states that better ESG performance can result in an increase of company reputation. A better company reputation in turn enhances the reputation of its

stakeholders, including executives, and eventually leads to an increase in executive compensation. Hypothesis 1 is thus supported, and better ESG performance can increase executive compensation.

#### 5.4.3.2 Individual ESG Dimension Analysis

We used the same method to analyze the relationship between executive compensation and the three separate dimensions of E, S, and G. The results of the regression models, as presented in columns (2) to (4) in Table 5.7, show that all three of the dimensions have significant and positive coefficients, meaning that E, S, and G all have a positive relationship with executive compensation. The coefficients for the three dimensions of ESG are 0.00429, 0.0177, and 0.0100, respectively. Therefore, Hypotheses 2, 3, and 4 are all supported. The findings remain the same for all three dimensions, suggesting that executives can have more motivation to engage in all ESG-related activities, which can all lead to an increase in their compensation. From the perspective of the *reputation ecosystem*, the findings can be explained by the fact that ESG-related activities can contribute to the improvement of brand reputation. Executives, as the agents of stakeholders, will then receive their rewards in salary (Cordeiro & Sarki, 2008; Riahi-Belkaoui, 1992).

**Table 5.7: Regression model coefficients**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | LAC | LAC | LAC | LAC |
| ESG | 0.0265*** | | | |
| | (0.00467) | | | |
| E | | 0.00429** | | |
| | | (0.00206) | | |
| S | | | 0.0177*** | |
| | | | (0.00369) | |
| G | | | | 0.0100*** |
| | | | | (0.00382) |
| ROA | 0.126 | 0.0122 | -0.0591 | 0.0800 |
| | (0.874) | (1.049) | (0.848) | (0.890) |
| PB | 0.0000507 | 0.000310 | 0.000410 | 0.000412 |

| | | | | |
|---|---|---|---|---|
| | (0.000350) | (0.000456) | (0.000362) | (0.000401) |
| ASSI | 0.175 | 0.267* | 0.256** | 0.331*** |
| | (0.119) | (0.139) | (0.123) | (0.125) |
| DAR | -0.400 | -0.689 | -0.667 | -0.676 |
| | (0.408) | (0.566) | (0.445) | (0.482) |
| TAGR | 0.0769 | 0.102 | 0.118 | 0.0944 |
| | (0.0866) | (0.0994) | (0.0955) | (0.0889) |
| OP | -0.116 | -0.135 | -0.145 | -0.197 |
| | (0.339) | (0.370) | (0.303) | (0.327) |
| TQ | -0.0325 | -0.0400 | -0.0316 | -0.0331 |
| | (0.0216) | (0.0252) | (0.0247) | (0.0294) |
| SHARE | 0.00192 | 0.00241 | 0.00208 | 0.00289 |
| | (0.00286) | (0.00312) | (0.00295) | (0.00292) |
| Constant | 7.938** | 6.645* | 6.282** | 4.608 |
| | (3.036) | (3.623) | (3.163) | (3.252) |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 481 | 481 | 481 | 481 |
| *Adj* $R^2$ | 0.240 | 0.132 | 0.243 | 0.141 |

This table presents the regression results for the effect of the performance of ESG and the dimensions on executive compensation. The dependent variable is the logarithm of average executive compensation. *ESG* is the ESG scores obtained from the SuperFinance database. *E, S, and G* are the dimension scores of environmental, social, and governance, respectively. All other variables are defined in Table 5.1. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

The regression results also indicate that the combined impact of ESG and the three dimensions on executive compensation are not the same. The coefficient of the social dimension (*b*=0.0177) is larger than the coefficients of both the environmental (*b*=0.00429) and governance (b=0.01) dimensions. All things being equal, executive compensation will therefore increase to its maximum extent, along with an equivalent increase in social performance in contrast to levels of environmental and governance performance. This finding can provide insight into what motivates executives when they allocate resources among ESG dimensions and help stakeholders identify the best interests of firms.

### 5.4.3.3 Other Samples

To further investigate the variations in the relationship between corporate state ownership and industry competition, we still divided the sample companies into SOEs and non-SOEs (396 and 85 data points, respectively), as well as monopoly and non-monopoly companies (including 53 and 428 data points, respectively). By analyzing the relationship between corporate ESG performance and executive compensation in subdivided samples, we try to explain the respective roles that corporate nature and industry nature play. Through regression model analysis, the coefficients are presented in Table 5.8, where the independent variables are overall ESG scores. The coefficients of ESG are positive and significant for subsamples of SOEs (0.0276), non-SOEs (0.0148), and non-monopoly companies (0.0288), and are positive but nonsignificant for the subsample of monopoly companies (0.0149). These results support Hypotheses 5 and 6 and suggest that a positive relationship between executive compensation and ESG performance exists for both SOEs and non-SOEs, but it exists only for companies in non-monopoly industries. The results emphasize that competition is decisive when determining executive compensation, as the salary can be less sensitive in a less competitive environment.

**Table 5.8: Regression model coefficients for subsamples**

| | (1) LAC (SOE) | (2) LAC (Non-SOE) | (3) LAC (Monopoly) | (4) LAC (Non-monopoly) |
|---|---|---|---|---|
| ESG | 0.0276*** | 0.0148** | 0.0149 | 0.0288*** |
| | (0.00585) | (0.00637) | (0.00964) | (0.00523) |
| ROA | 0.160 | 4.464 | 0.850 | 0.273 |
| | (0.895) | (3.375) | (2.344) | (0.835) |
| PB | -2.18e-08 | 0.0711 | -0.674** | 0.000143 |
| | (0.000335) | (0.157) | (0.258) | (0.000338) |
| ASSI | 0.138 | 0.336 | -0.0680 | 0.137 |
| | (0.129) | (0.517) | (0.584) | (0.127) |
| DAR | -0.343 | -0.162 | 4.478** | -0.490 |
| | (0.403) | (1.776) | (2.032) | (0.372) |
| TAGR | 0.100 | -0.191 | -0.989 | 0.113 |
| | (0.102) | (0.237) | (0.682) | (0.0882) |
| OP | -0.140 | 0.571 | 0.643 | -0.197 |

| | | | | |
|---|---|---|---|---|
| | (0.336) | (1.578) | (0.417) | (0.333) |
| TQ | -0.0248 | -0.487 | 0.846* | -0.0396* |
| | (0.0229) | (0.401) | (0.453) | (0.0208) |
| SHARE | 0.00236 | 0.0135 | -0.00276 | 0.00211 |
| | (0.00316) | (0.0134) | (0.0147) | (0.00315) |
| Constant | 8.682*** | 3.910 | 12.48 | 8.959*** |
| | (3.216) | (13.26) | (15.91) | (3.217) |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| *N* | 396 | 85 | 53 | 428 |
| *Adj* $R^2$ | 0.279 | 0.123 | 0.109 | 0.281 |

This table presents the regression results for the effect of ESG performance and the dimensions on executive compensation for subsamples. The dependent variable is the logarithm of average executive compensation. *ESG* is the ESG scores obtained from the SuperFinance database. All other variables are defined in Table 5.1. Columns (1) and (2) are the results of samples for SOE and non-SOE, respectively. Columns (3) and (4) are results of samples for monopoly and non-monopoly firms, respectively. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

#### 5.4.3.4 Moderating Effect

The regression analysis will be conducted to examine the possible moderating effect of executive heterogeneity on the relationship between executive compensation and ESG performance. Following the studies of Karim (2021) and Li and Wu (2017), executive heterogeneity is measured along two axes: the gender and age distributions of the executive team. To this end, we employ the widely used measurement of the Herfindahl-Hirschman index (Blau, 1977; Talke et al., 2010):

$$hhi = 1 - \sum_{i}^{n} p_i^2$$

where $p_i$ represents the proportion ratio of classification $i$ with respect to the whole sample, and $n$ is the number of classifications in each perspective. The original Herfindahl-Hirschman index is not deducted from 1 as the equation above, and a higher index value indicates a lower heterogeneity. For the sake of clarity, we deducted the index value from 1 so that a higher index value could represent higher heterogeneity. The two perspectives on executive heterogeneity are explained in Table 5.9.

**Table 5.9: Explanations of heterogeneity variables**

| Heterogeneity Perspective | Variable Name | Explanations |
|---|---|---|
| Gender | HGender | 2 classifications: male, female |
| Age | HAge | 5 classifications: under 40, 40 ~ 50, 50 ~ 60, 60 ~ 70, above 70 |

This table presents the explanations of the heterogeneity variables of gender and age.

The moderating effect of heterogeneity variables may indicate that the relationship between executive compensation and ESG performance changes according to the different values of the heterogeneity variables. To measure this effect, the interaction terms of the heterogeneity variables and ESG performance are added to the previous regression model:

$$LAC_{i,t} = \beta_1 ESG_{i,t} + \beta_2 HH_{i,t} + \beta_3 ESG_{i,t} \times HH_{i,t} + \beta_4 ROA_{i,t} + \beta_5 PB_{i,t} + \beta_6 ASSI_{i,t} + \beta_7 DAR_{i,t} + \beta_8 TAGR_{i,t} + \beta_9 OP_{i,t} + \beta_{10} TQ_{i,t} + \beta_{11} SHARE_{i,t} + \delta_i + \mu_i + \epsilon_{i,t}$$

where *HH* represents the heterogeneity variable. From the model results presented in Table 5.10, I can see that the coefficient of age heterogeneity (2.654) is positive and significant, and the coefficient of the interaction term of age heterogeneity and ESG (-0.0528) is negative and significant. These results indicate that executives can have higher or lower compensation depending on their age. Although ESG performance is positively related to executive compensation, however, the relationship is decreased by the age heterogeneity among executives. In other words, young and old executives may have different opinions about the role of ESG. The coefficient of gender heterogeneity (0.334) is positive and nonsignificant, while the coefficient of the interaction term between ESG and gender heterogeneity (0.000148) is positive but nonsignificant. Therefore, I cannot draw firm conclusions regarding any moderating effect of gender heterogeneity on the relationship between executive compensation and ESG performance. Hypothesis 7 is thus supported by the model results.

**Table 5.10: Regression model coefficients with heterogeneity variables**

| | (1) | (2) |
|---|---|---|
| | LAC | LAC |
| ESG | 0.0555*** | 0.0266*** |
| | (0.0156) | (0.00677) |
| HAge | 2.654*** | |
| | (0.855) | |
| ESG×HAge | -0.0528** | |
| | (0.0251) | |
| HGender | | 0.334 |
| | | (0.790) |
| ESG×HGender | | 0.000148 |
| | | (0.0201) |
| ROA | 0.406 | 0.0687 |
| | (0.665) | (0.892) |
| PB | -0.000116 | 0.00000474 |
| | (0.000405) | (0.000362) |
| ASSI | 0.221* | 0.162 |
| | (0.116) | (0.118) |
| DAR | -0.250 | -0.410 |
| | (0.306) | (0.413) |
| TAGR | 0.0554 | 0.0858 |
| | (0.0765) | (0.0877) |
| OP | -0.161 | -0.130 |
| | (0.264) | (0.342) |
| TQ | -0.0268 | -0.0321 |
| | (0.0234) | (0.0206) |
| SHARE | 0.000876 | 0.00194 |
| | (0.00257) | (0.00280) |
| Constants | 5.260* | 8.205*** |
| | (3.022) | (3.040) |
| Firm FE | Yes | Yes |
| Year FE | Yes | Yes |
| *N* | 481 | 481 |
| *Adj* $R^2$ | 0.259 | 0.240 |

This table presents the regression results for the effect of heterogeneity on the relationship between executive compensation and the performance of ESG and the dimensions. The dependent variable is the logarithm of average executive compensation. *ESG* is the ESG scores obtained from the SuperFinance database. *HAge* and *HGender* are the heterogeneity variables that explain the diversity of executives and are explained in Table 5.9. All other variables are defined in Table 5.1. The symbol × represents the interaction term between variables. The symbols ***, **, and * indicate significance

at the 1%, 5%, and 10% level, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

## 5.5 Robustness Test

### 5.5.1 Endogeneity

Since ESG information disclosure is a voluntary act that companies in the Chinese capital market are not obligated to perform, many actions occur behind closed doors when a company decides to disclose ESG information. Consequently, this study uses a fixed effects model to address the problem of omitted variables. Another source of endogeneity is bidirectional causality. Thus far, we have only investigated the relationship between ESG performance and executive compensation. However, we cannot draw conclusions based on an analysis of the causal relationship alone. The *reputation ecosystem* framework provides us with the impact mechanism and causal analysis to understand the relationship between ESG and executive compensation. As far as endogeneity is concerned, it is possible that ESG and executive compensation exhibit bidirectional causality. That is, companies with better ESG performance are able to reward executives with higher compensation; simultaneously, higher executive compensation can motivate executives to engage in ESG-related activities and improve their corporate image.

To study the causal relationship, a panel vector autoregression (PVAR) is applied along with the generalized method of moments (GMM) estimator and the Granger causality test to ensure that dynamic causality is explored (Sassen et al., 2016). The PVAR regression equation is as follows:

$$LAC_{i,t} = \beta_0 + \beta_1 LAC_{i,t-1} + \beta_2 LAC_{i,t-2} + \beta_3 ESG_{i,t-1} + \beta_4 ESG_{i,t-2} + \epsilon_{i,t}$$
$$ESG_{i,t} = \beta_0 + \beta_1 ESG_{i,t-1} + \beta_2 ESG_{i,t-2} + \beta_3 LAC_{i,t-1} + \beta_4 LAC_{i,t-2} + \epsilon_{i,t}$$

For the GMM estimator, the standard errors are robust at the individual level to mitigate the heteroscedasticity problem. A forward orthogonal deviation transformation (Love &

Zicchino, 2006) is used to remove the fixed effects. Moreover, the two-year lag is chosen, following previous studies on the Granger test (Love & Zicchino, 2006; Wooldridge, 2010) that indicate its suitability for annual panel data. The model estimates are then passed for the Granger causality Wald test. The test results are shown in Table 5.11.

**Table 5. 11: Wald test for Granger causality results**

| Equation | Excluded | Chi2 (df) | p-value | Direction |
|---|---|---|---|---|
| LAC | ESG | 5.998 (2) | 0.050** | unidirectional |
| ESG | LAC | 2.287 (2) | 0.310 | |
| LAC | E | 8.458 (2) | 0.015** | unidirectional |
| E | LAC | 0.886 (2) | 0.642 | |
| LAC | S | 2.308 (2) | 0.315* | independent |
| S | LAC | 1.510 (2) | 0.470* | |
| LAC | G | 1.329 (2) | 0.515 | independent |
| G | LAC | 0.613 (2) | 0.736 | |

Notes: This table presents the Wald test results for the Granger causality analysis using a PVAR regression model with a GMM estimator. The model has a two-year lag, and the forward orthogonal deviation transformation is used. *LAC* is the logarithm of average executive compensation. *ESG* is the ESG score obtained from the SuperFinance database. *E, S,* and *G* are the dimension scores of environmental, social, and governance measures, respectively. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

The results show that ESG can Granger-cause executive compensation, but executive compensation cannot Granger-cause ESG performance. Therefore, the causality between ESG performance and executive compensation is unidirectional. This unidirectional relationship supports Hypothesis 1, discussed previously, and the *reputation ecosystem*. To further explore this relationship, the connections between executive compensation and the three dimensions of ESG are also examined. The results indicate that environmental-level performance can Granger-cause executive compensation and that this causality is unidirectional; however, neither social- nor governance-level performance has a similar effect.

The results also indicate that investments in environmental-level activities can affect executive compensation. The *reputation ecosystem* may explain this result insofar as social and governance indicators are closely related to essential stakeholders, such as employees, executives, and customers. The term *reputation ecosystem* applies to a company with a dynamic network ecosystem involving all stakeholders, where its reputation serves as a signal of its value to stakeholders. Higher executive compensation would thus indicate better social and governance performance.

Another important source of endogeneity comes from the dynamic characteristics of the panel data. In other words, executive compensation may be affected by the compensation levels from previous years, making the conclusions in the previous analysis inconsistent. Following Cui et al. (2018) and Wintoki et al. (2012), a dynamic GMM regression model is applied to address this problem. The GMM model is constructed following the equation:

$$LAC_{i,t} = \beta_1 LAC_{i,t-1} + \beta_2 ESG_{i,t} + \beta_3 ROA_{i,t} + \beta_4 PB_{i,t} + \beta_5 ASSI_{i,t} + \beta_6 DAR_{i,t} + \beta_7 TAGR_{i,t} + \beta_8 OP_{i,t} + \beta_9 TQ_{i,t} + \beta_{10} SHARE_{i,t} + \delta_i + \mu_i + \epsilon_{i,t}$$

This model adds a one-year-lag executive compensation variable as an independent variable. The other variables are drawn from the fixed-effects regression model. As for the GMM estimator, the model is implemented with similar settings to the PVAR approach, including robust standard errors and the application of the forward orthogonal deviation transformation. The regression results are presented in Table 5.12. We note that the coefficient of the lagged executive compensation variable is positive and significant, suggesting that higher previous compensation tends to lead to higher compensation in the next year. The coefficients of ESG and its three dimensions are all positive and significant, indicating the same conclusion as the fixed effects model. Specifically, after considering the dynamic characteristics of the compensation figures, a positive relationship still exists between ESG performance and executive compensation.

Additional tests are also performed to address the endogeneity problem. As presented in Table 5.12, the AR(1) and AR(2) test results show significant and insignificant values, respectively, which suggest that second-order serial correlation does not exist. The Hansen's J test of overidentification and the difference in the Hansen test on exogeneity are also performed, which indicates that ESG and its three dimensions are exogenous.

**Table 5.12: GMM regression model coefficients**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | LAC | LAC | LAC | LAC |
| L.LAC | 0.665*** | 0.789*** | 0.754*** | 0.591*** |
| | (0.0733) | (0.0558) | (0.0759) | (0.0797) |
| ESG | 0.0193*** | | | |
| | (0.00372) | | | |
| E | | 0.00417** | | |
| | | (0.00190) | | |
| S | | | 0.00702*** | |
| | | | (0.00181) | |
| G | | | | 0.0177*** |
| | | | | (0.00269) |
| ROA | 1.224** | 1.351** | 1.267** | 0.807 |
| | (0.518) | (0.520) | (0.532) | (0.542) |
| PB | -0.00180* | -0.00134 | -0.00183* | -0.00144 |
| | (0.000937) | (0.00101) | (0.00109) | (0.00108) |
| ASSI | -0.0133 | 0.0193 | 0.00876 | 0.0628** |
| | (0.0294) | (0.0327) | (0.0279) | (0.0255) |
| DAR | 0.273 | -0.0144 | 0.122 | -0.263 |
| | (0.352) | (0.375) | (0.368) | (0.297) |
| TAGR | 0.218** | 0.306*** | 0.299*** | 0.334*** |
| | (0.0998) | (0.0962) | (0.0977) | (0.0846) |
| OP | -0.105 | -0.214 | -0.135 | -0.146 |
| | (0.181) | (0.156) | (0.178) | (0.187) |
| TQ | 0.00938 | 0.0148 | 0.0199 | 0.0159 |
| | (0.0189) | (0.0180) | (0.0176) | (0.0188) |
| SHARE | -0.00370** | -0.00500*** | -0.00461** | -0.00162 |
| | (0.00183) | (0.00187) | (0.00205) | (0.00190) |
| Constants | 3.988*** | 2.392** | 2.838*** | 3.337*** |
| | (1.025) | (0.968) | (1.017) | (0.905) |
| *N* | 377 | 377 | 377 | 377 |
| *AR (1) test* | -3.12*** | -2.98*** | -3.00*** | -2.99*** |

| | | | | |
|---|---|---|---|---|
| *(p-value)* | | | | |
| *AR (2) test* | 1.21 | 1.02 | 1.00 | 1.21 |
| *(p-value)* | | | | |
| *Hensen's J test* | 81.58 | 82.60 | 80.19 | 89.70 |
| *(p-value)* | | | | |
| *Difference-in-He* | 1.11 | -1.04 | 1.29 | -2.15 |
| *nsen test* | | | | |
| *(p-value)* | | | | |

Notes: This table presents the regression results for the performance effects of ESG and its three dimensions on executive compensation using GMM estimators. The dependent variable is the logarithm of average executive compensation. *L.LAC* is the one-year lagged term of the *LAC* variable; *ESG* is the ESG scores obtained from the SuperFinance database; and *E, S,* and *G* are the dimension scores of environmental, social, and governance, respectively. All other variables are defined in Table 5.1. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed-effect terms are not reported for brevity.

### 5.5.2 Variable Substitution

In this study, *ROA*, *ASSI*, and *SHARE* are used to control for the profitability, size, and share concentration of the firm, respectively. To test the robustness of the model findings, we substituted the three variables with the natural logarithm of market capitalization (*LCAP*), return on equity (*ROE*), and the total holding proportions of the second to tenth largest shareholders (*SHARE10*), respectively. According to the results shown in Table 5.13, the model coefficients of ESG with variable substitution are still positive and significant, suggesting a positive relationship between ESG and executive compensation. Therefore, the regression model result is robust.

**Table 5.13: Regression model coefficients with variable substitutions**

| | (1) | (2) | (3) |
|---|---|---|---|
| | LAC | LAC | LAC |
| ESG | 0.0251*** | 0.0276*** | 0.0264*** |
| | (0.00440) | (0.00449) | (0.00466) |
| ROE | 0.816*** | | |
| | (0.291) | | |
| LCAP | | 0.00633 | |
| | | (0.0612) | |

| | | | |
|---|---|---|---|
| SHARE10 | | | 0.00181 |
| | | | (0.00278) |
| ROA | | 0.346 | 0.161 |
| | | (0.933) | (0.857) |
| PB | 0.00249*** | -0.000195 | 0.0000282 |
| | (0.000851) | (0.000447) | (0.000338) |
| ASSI | 0.110 | | 0.177 |
| | (0.136) | | (0.123) |
| DAR | -0.377 | -0.227 | -0.371 |
| | (0.590) | (0.447) | (0.393) |
| TAGR | 0.0625 | 0.0997 | 0.0784 |
| | (0.0815) | (0.0845) | (0.0863) |
| OP | -0.365 | -0.119 | -0.123 |
| | (0.255) | (0.344) | (0.336) |
| TQ | -0.0746** | -0.0350 | -0.0317 |
| | (0.0326) | (0.0251) | (0.0210) |
| SHARE | 0.00287 | 0.00237 | |
| | (0.00297) | (0.00298) | |
| Constant | 9.590*** | 12.07*** | 7.914** |
| | (3.455) | (1.555) | (3.112) |
| Firm FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| *N* | 476 | 481 | 481 |
| *Adj* $R^2$ | 0.264 | 0.234 | 0.239 |

Notes: This table presents the regression results for the performance effects of ESG and its three dimensions on executive compensation, with some variables substituted for a robustness test. The dependent variable is the logarithm of executive compensation. *ESG* is the ESG score obtained from the SuperFinance database. *ROE* is the return on equity, a substitution for *ROA*. *LCAP* is the logarithm of market capitalization, which substitutes for *ASSI*. *SHARE10* is the total holding proportions of the second to tenth largest shareholders, a substitute for *SHARE*. All other variables are defined in Table 5.1. The symbols ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. The values in parentheses are the corresponding values of robust standard errors. Coefficients of fixed effects terms are not reported for brevity. There are some missing values for ROE, causing fewer data points in column (1).

## 5.6 Discussion and Conclusions

Do the performance of ESG and its three dimensions affect executive compensation? To answer this question, this study first examines the effects of ESG performance on executive compensation using the Chinese market as its research sample. I find that

executive compensation is significantly affected by corporate ESG performance, which is consistent with prior studies. For instance, Dunbar et al. (2020) concluded that as a firm's CSR improves, its risk-taking capacity will increase and enhance risk-taking incentives, while Gan et al. (2020) found that non-financial performance measures and compensation are positively related. However, their research ignored the relationship between the three dimensions of ESG and executive compensation and failed to explain the impact path of how ESG affects executive compensation. Cai et al. (2021) discussed the relationship between executive compensation and affiliated donations but ignored the link between social reputation and directors' behavior as well. The fact that I consider the relationship within the framework of the *reputation ecosystem* may make it easier for stakeholders to understand the impacts of ESG engagement.

As for the three dimensions of ESG, my findings suggest that companies tend to have higher average executive compensation when they demonstrate improved performance at the environmental, social, and governance levels. These results are consistent with some previous studies (e.g., Hong et al., 2016). When comparing the coefficients of ESG and the three dimensions, although the coefficients are all positive and significant, their impacts are different. The coefficient of the social dimension is 0.0177, which is the largest among the three dimensions, while the coefficient of the environmental dimension (0.00429) is the smallest. Moreover, the coefficient of overall ESG performance (0.0265) is larger than any single dimension. Since our study uses a natural logarithm transformation for average executive compensation, this result can be interpreted as indicating that for listed companies in China, with all other factors remaining the same, every one-unit increase in ESG score will increase the average executive compensation by approximately 2.65%. Meanwhile, the average increases for every unit of the environmental, social, and governance scores are 0.43%, 1.77%, and 1.00%, respectively. These results also suggest that executives' leading motivation for improving social performance is to receive more compensation.

Some studies, including those by Mahoney and Thorn (2006), Cai et al. (2011), and Francoeur et al. (2017), found that ESG dimensions had negative effects on compensation, but their research framework did not consider non-monetary factors, such as reputation, and failed to establish a foundation of impact mechanisms based on market characteristics when proposing hypotheses. Taking into account the relevant differences between companies and the special circumstances of the Chinese markets, I also assessed the relationship between ESG and executive compensation for different groups of companies in terms of their state ownership and industry competition. By nature of company ownership, my result is consistent with H5 and H6, which suggests that the positive relationship between executive compensation and ESG performance exists for both SOEs and non-SOEs. The coefficient of ESG performance is 0.0276 for SOEs and 0.0148 for non-SOEs. This indicates, assuming all other factors remain the same, that every one-unit increase in ESG score will increase the average executive compensation by approximately 2.76% and 1.48% for SOEs and non-SOEs, respectively.

By competitive characteristics, the relationship between ESG performance and executive compensation is positive and significant only for non-monopoly industries. The regression result indicates that every one-unit score increase in ESG score will increase average executive compensation by approximately 2.88%. In conclusion, according to my ESG and executive compensation model, executives from SOEs and non-monopoly firms will be rewarded more by gains in reputation and financial performance, which are the result of better ESG behavior. The findings are also consistent with my prior assertion that SOEs play a strategic role for the government in ESG, and they similarly support previous studies (John et al., 2000) that conclude that executive compensation in monopoly companies is less sensitive to corporate performance. Thus, my study provides

evidence that state ownership and market competition can affect the motivations of executives to promote ESG and earn rewards.

This conclusion also supports the *reputation ecosystem*. Essentially, the *reputation ecosystem* theory works for SOEs and non-SOEs. Both have a reputation cycle, and as a company's reputation improves, the company grows. Having said this, in the *reputation ecosystem*, the importance of reputation varies with the nature of the company. In a non-monopoly market, an increase in executive compensation can reduce the short-sighted means of making profits in the market, thereby motivating executives to focus on policies that provide longer-term returns and that enhance their reputation, such as improving their ESG performance. However, for monopoly enterprises, due to the smaller connection between their financial performance and their reputation, increasing executive compensation cannot effectively motivate decision makers to pay attention to their ESG performance.

The contributions of this study are realized through four aspects: literature, method, theory, and practice.

First, I would like to highlight the contributions of my work to the existing literature. Although the topic of ESG relationships has only become popular in the last 10 years, CSR has a history that stretches back decades, during which thousands of relevant studies have been produced. However, research that discusses how the three dimensions of ESG affect executive compensation is rare. Indeed, previous studies have only considered one or two of the three dimensions of ESG, and they studied relevance rather than causality (McGuire et al., 2003). Therefore, I performed the Granger causality test to explore the causal relationship between ESG performance and executive compensation. The *reputation ecosystem* also provides the framework for the causal relationship between ESG and stock market performance. I was able to detect a

unidirectional causal effect of ESG performance, which suggests that ESG and executive compensation are connected by reputation. Companies with better ESG performance will have a better reputation, according to the *reputation ecosystem*. Shareholders, including executives, will also benefit from increased reputation, which is ultimately reflected in the level of executive compensation. Moreover, the causal effect of environmental-level performance on executive compensation is significant, whereas the causal effect of social- and governance-level performance on executive compensation is not significant.

Including state ownership and industry competition in the study also provides new perspectives on the research on ESG development in the Chinese market. Prior studies (Khan et al., 2005; Li et al., 2021) have investigated the role of institutional ownership in the relationship between ESG and executive compensation, but the role of state ownership has rarely been discussed. Furthermore, competitiveness can improve corporate social performance (Dupire & M'Zali, 2018), but whether it can impact the relationship between ESG and executive compensation has not been discussed. This paper helps to fill the research gap and provides insights regarding ESG.

Based on previous studies (Li and Wu, 2017; Van der Walt & Ingley, 2003) that found that executive diversification can affect corporate strategies, I extend my research to examine the moderating role of executive heterogeneity in the relationship between executive compensation and ESG performance. I find that the moderating effect is negative and significant for executive age heterogeneity, while the moderating effect of gender heterogeneity is not significant. This suggests that executives of different ages can have different attitudes toward the importance of ESG policy and that their conflicting opinions can negatively affect the impact of ESG on executive compensation. The cognitive diversity of the team is very important, but I argue that cognitive diversity is not determined by externally visible classification methods such as religion, gender,

age, and culture but rather displayed by the executives who can think independently or raise objections to the team.

Second, I also make methodological contributions. There are two main reasons for the mixed results of empirical research on ESG and executive compensation. The current mainstream ESG rating agencies have adopted an issuer-paid model, which leads to conflicts of interest and nullifies the independent quality of ratings (Krugman, 2010). To address this limitation, I have adopted an investor-paid ESG scoring model, which before now had not been introduced into the academic literature on ESG rating results and causal analysis of executive compensation. According to recent papers (Wang et al., 2021; Zhang et al., 2022), the mainstream issuer-paid model does not apply to the A-share market because the validity of a set of factors is tested based on whether it can lead to excess returns or an improved risk-return balance. The current empirical study validates the rationality of collecting data using an investor-paid model. Several studies report that investor-paid raters provide more timely ratings that more accurately predict defaults than issuer-paid raters do (Beaver et al., 2006; Bhattacharya et al., 2019; Bruno et al., 2016).

Third, this paper contributes to the current literature on the theoretical framework of ESG. Many theories lie within the boundaries of ESG research, but none can explain, predict, or understand ESG behavior alone, including how ESG directly affects executive compensation. This study therefore introduces the *reputation ecosystem*, which is a dynamic network ecosystem used to explain how reputation impacts stakeholder behavior and company growth. The framework assumes that all stakeholders involved in the market, including individuals, firms, institutions, and governments, are controlled by the invisible hand of the *reputation ecosystem*. The *reputation ecosystem* posits that the development of a firm exhibits a skewed bell-shaped curve under the assumption that ESG can be viewed as an innovation.

Given that ESG performance ultimately translates into cash flow (Clark et al., 2015), in this ecosystem, ESG activities can enable enterprises and decision makers to obtain more positive feedback from stakeholders, thus improving personal and corporate reputation, brand value, financial performance, and stock price, which in turn causes executive compensation to rise.

Fourth, the study makes practical contributions that will benefit executives, governments, and stakeholders. My findings encourage executives to improve their corporate ESG performance, which can lead to an increase in their compensation. They can utilize the growth curve from the *reputation ecosystem* and adjust related ESG strategies in time to avoid the loss of reputation. I argue that any one of the three dimensions of ESG can contribute to an increase in executive compensation, thus providing greater motivation for executives to engage in ESG-related activities. Based on the regression results, although the coefficients of the three dimensions are all positive, their impacts differ. The coefficient of the social dimension is 0.0177, which is the largest among the three dimensions, while the coefficient of the environmental dimension is the smallest. Since my study uses a natural logarithm transformation for average executive compensation, and given that all other factors remain the same, this result indicates that every one-unit increase in the social score will increase the average executive compensation by approximately 1.77%. This result also suggests that executives can be motivated to improve social performance primarily by rewarding them with better compensation.

Although this article contributes to the literature by examining the relationship between executive compensation and ESG performance in theory and data, it is important to acknowledge its limitations. One limitation is that I did not include executive education level and religious background as moderating factors because they are difficult to identify in the Chinese capital market and are not mandatory to disclose. Another

limitation is that the sample was restricted to 102 large companies in ESG-sensitive industries to ensure the integrity of their management teams and the continuity of their corporate governance. This approach may have overlooked smaller firms, particularly emerging technology firms, which could affect the accuracy and generalizability of the results. Moreover, the study only focuses on Chinese markets due to the lack of prior research in these markets and because the Chinese economy represents global emerging markets. However, it is crucial to examine other regions, particularly other emerging markets, to determine the generalizability of the findings.

# Chapter 6 | Conclusions

## 6.1 Introduction

The contemporary world is currently at a critical juncture in various aspects such as politics, economics, finance, technology, and culture. While these domains are interconnected, my thesis in this DPhil dissertation highlights that the globe is at a financial crossroads. At this juncture, there is a choice to be made regarding the best path to follow and what solutions can be implemented to achieve sustainable finance. In this dissertation, I argue that sustainable finance is the optimal solution among the various options available. I explore this argument in three distinct papers. While there are multiple approaches to attaining sustainable finance, I contend that environmental, social, and governance (ESG) are the most effective strategies, even though they have faced criticism and skepticism from several stakeholders.

In many people's eyes, including those of Milton Friedman, social responsibility and economic interests seem to be a natural contradiction. If we want to protect the environment, we will damage economic interests. To prioritize economic interests, we will damage ESG concerns. The answer to this thesis's apparent conflict of interests is: not so. Based on the newly established *reputation ecosystem* theoretical framework and according to the empirical causal analyses of ESG performance on stock value, brand value, and executive compensation, this thesis proves that both the overall ESG and its three dimensions have a positive impact on stock value, brand value, and executive compensation, although the degree of impact is different for each. This reveals that in a society where the *reputation ecosystem* can operate normally, the investment in ESG will benefit all stakeholders of the company, including but not limited to investors and executives. The influence mechanism of ESG involves enhancing the brand value by

bolstering the company's reputation, which ultimately improves its financial performance.

A reputation ecosystem refers to a dynamic system in which market participants interact based on company reputation. Although stakeholders have different functions in a business ecosystem, they are controlled and regulated by an "invisible hand", that is, the reputation mechanism. ESG participants operate in an invisible and boundless business ecosystem. Stakeholders include individuals, enterprises, organizations, and governments. The scope of influence includes tangible laws, regulations, and financial statements, as well as intangible assets such as brand value. The ESG actions of each company in the *reputation ecosystem* play two roles: (1) create a reputation to increase brand value; and (2) meet regulatory requirements to maintain legitimacy but generate no added value. Tesla and Lehman Brothers are two prime examples of creating and destroying reputation ecosystems.

Tesla and its CEO, Elon Musk, whose operation is based on the ESG concept, continue to open patents to deal with environmental changes and to promote the application of new technologies to create an environment-friendly automobile industry. Thus, it continuously renews and upholds its reputation. The traditional automobile manufacturers represented by Detroit, on the other hand, only maintain environmentally friendly standards just above the legal bottom line. In contrast to Tesla, Lehman Brothers, would not have engaged in reckless activities if it were concerned about its reputation, which reflects public perception. Lehman was able to stand for 158 years precisely because it was concerned for the *reputation ecosystem*, but because the executives at Lehman, led by Dick Fuld, abandoned this perception, they engaged in risky behavior and made enemies of other stakeholders. The *reputation ecosystem* was completely destroyed, and they eventually went bankrupt.

In response to competitor pressure, consumers, investors, policymakers, and company executives will seek a dynamic balance between the legal bottom line and the reputation curve. If an enterprise only meets the minimum standards of the law, it will not build its ESG reputation and thus not get a return on investment in ESG. Companies can only maintain dynamic competitiveness when they adopt ESG as one of their core missions and make innovations to their technology and business model to improve ESG performance. Investors will increasingly incorporate ESG perspectives into their portfolios, and company executives will likewise integrate ESG strategies into their internal management systems. In short, many investors and executives aim to have an ethical company that promotes good corporate behavior because only in this way can they maximize their interests. The adoption of ESG can help them do this. My three independent empirical articles in Chapters 3–5 consolidate my perspective on this research.

## 6.2 Principal findings

Under the theoretical framework of the *reputation ecosystem*, the impact of ESG on stock price, brand value, and executive compensation is realized through a reputation mechanism. This mechanism involves not only the company but also all the relevant stakeholders in the economic ecosystem, such as executives, investors, consumers, and the government.

The findings make a case for sustainable finance and echo the growing research on financialization and financial globalization. Financialization has been heavily criticized since the global financial crisis in 2008; one criticism is that, from the perspective of corporate governance, financialization has shifted the focus of corporate managers from long-term earnings to commodity markets and stock market prices, especially index funds (Basak & Pavlova, 2016; Davis, 2017; Tang & Xiong, 2012; Karmel, 2020). My

research points to a significantly positive relationship between ESG performance and stock returns. These results complement prior research on financialization, suggesting that ESG activities and investment—which have positive externalities to society—could be an alternative solution to the problem of financialization while fulfilling the expectations of corporate executives.

Since the early 2000s, financialization has increased the importance of financial activities in determining executive compensation, while simultaneously decreasing employee bargaining power (Epstein, 2015; Palladino, 2021; Van der Zwan, 2014). Whereas studies on financialization tend to neglect non-financial activities and indicators such as ESG performance, my research shows that corporate ESG performance significantly influences executive compensation. Financialization has led to a dramatic shift in corporate strategy (Lazonick, 2015) and has significant effects on income inequality (Lin & Tomaskovic-Devey, 2013). The findings of my research can be meaningful in this field of inquiry as they indicate that the inclusion of ESG practices in compensation could solve the problems caused by financialization.

Although intangible assets form the basis for financialization (Seo et al., 2012), few scholars have paid attention to the relationship between financialization and investment in intangible assets (Watkins, 2017). Nevertheless, the rise of financialization has encouraged a reorientation from intangible asset management to the revaluation of brand equity as a way of adding value for shareholders. The increasing contribution of the financialization of intangible assets (e.g., brands) to market capitalization (Willmott, 2010) is consistent with my results, which also demonstrate a positive relationship between the ESG performance of a company and its brand value. Causality tests reveal that enhanced ESG performance can increase brand value, whereas poor ESG engagement or performance can damage brand image and corporate reputation. Therefore,

ESG engagement can serve as a significant corporate strategy for achieving higher corporate value, despite the lure of unethical financialization behaviors.

The following pertains to the principal findings from this study's three core chapters:

In **Chapter 3**, I examined the impact of ESG performance on stock prices and compared market reactions. My analysis focused on a sample of 80 Chinese companies with cross-listings in emerging markets (Shanghai and Shenzhen) and developed markets (Hong Kong, New York, and London) from 2014 to 2018. Overall, there were three major results. (1) A positive relationship exists between a listed company's ESG performance and stock returns, regardless of whether it is listed in the mainland market or an overseas market. (2) Moreover, ESG performance (and its three dimensions) are positively related to stock performance, but they are not synchronized: In both markets, the coefficients of overall ESG scores are larger than those of the dimensions. In other words, a more significant positive relationship exists between stock return and governance factors than environmental or social factors. In particular, for the mainland market, if all other factors are the same, every one-unit increase in the corporate governance score can help increase the average annual stock return by 1.46%, whereas the average increase for every unit of environmental and social scores is 0.97% and 0.43%, respectively. In the Hong Kong market, however, the coefficients of the three dimensions are all smaller compared with the mainland market, suggesting a lower impact of ESG on stock performance. (3) Finally, in the mainland market, the relationship between ESG performance and stock returns is positive for SOEs, non-SOEs, monopolies, and non-monopolies. In the Hong Kong market, for SOEs and non-monopolies, the relationship between ESG performance and stock returns is positive, whereas for non-SOEs and monopolies, the relationship between ESG performance and stock returns is insignificant.

In **Chapter 4**, I empirically investigated the relationship between ESG performance and brand value based on a sample of 94 Chinese-listed companies from 2014 to 2018. Overall, there were four main findings. (1) Firm ESG performance is positively related to brand value. In particular, in this study, both dependent and independent variables underwent logarithmic transformation, and, therefore, for every 1% increase in ESG score, the brand value increased by 0.354%, given all other factors were constant. This finding can help managers develop a deeper understanding of the impact of ESG and thus make more scientific and efficient decisions on resource allocation during ESG engagement. (2) Moreover, all three ESG dimensions have a positive impact on brand value, but their effects are not synchronized. The impact of governance is the largest among all three dimensions, whereas the impact of environmental performance on brand value is the smallest. (3) In addition, the relationship between ESG and brand value is significant for SOEs and business-to-customer firms but not for non-SOEs and business-to-business firms. (4) Finally, the relationship between ESG performance and brand value differs among industries and regions. Given that the developed region of Southeast China (i.e., the Southern Song territory) has a better reputational ecosystem and thus generates more social capital and a higher geographic brand reputation, company headquarters in this area have a higher brand value for the same amount of ESG investment.

In **Chapter 5**, I used a sample of 102 Chinese companies listed in the A-share market and examined the relationship between ESG performance and executive compensation from 2014 to 2018. My findings indicate that (1) the listed companies' ESG performance is positively correlated with executive compensation. (2) Moreover, all three ESG dimensions have a positive impact on executive compensation, but their effects are not synchronized. In particular, the coefficient of the social dimension is 0.0177, which is the largest among the three dimensions, while the coefficient of the environmental dimension is the smallest. Since I used a natural logarithmic transformation for average executive

compensation and all other factors were constant, this result indicates that every one-unit increase in the social score will increase the average executive compensation by approximately 1.77%. The result also suggests that executives can be motivated mostly by improving social performance to obtain more rewards in compensation. (3) In addition, the impact of ESG performance on executive compensation is positive for SOEs, non-SOEs, and companies in competitive industries but not for monopolies. (4) Finally, in examining the moderating role of executive heterogeneity in the relationship between executive compensation and ESG performance, it is evident that the moderating effect is negative and significant for executive age heterogeneity but not for gender heterogeneity.

## 6.3 Contributions

Research on the relationship between ESG and company performance dates back to the 1970s. At that time, the term ESG was not in use, and research focused on environmental, social, or governance aspects separately or on CSR. In 1970, Friedman published an article in *The New York Times Magazine* discussing the relationship between CSR and business profits. Over the past forty years, many in-depth studies have addressed this topic (Friede et al., 2015). For example, the relationship between CSR and company performance has been found to be neutral (McWilliams et al., 2006), positively related (Orlitzky et al., 2003), and even contradictory (Clark et al., 2018). Moreover, many previous studies have focused on only one or two of the three dimensions of ESG to discuss their impacts on listed companies. There is currently scant literature that has aggregated the ratings or performances on all three ESG dimensions and then analyzed their impacts on listed companies.

The research on ESG, particularly on environmental information disclosure, has been growing through both qualitative and quantitative methods. These studies have primarily focused on the characteristics of corporate environmental information disclosure,

disclosure channels, methods, incentives, national and industry differences in disclosure, and disclosure functions. However, few empirical studies have investigated the impacts of ESG information disclosure on listed companies, specifically on cross-market stock price volatility, brand value, and executive compensation. Margolis and Walsh (2001) noted that while several studies exist on environmental governance, social responsibility, and the economic effects of information disclosure, the conclusions drawn from these studies are highly controversial and varied due to the different research samples and methodologies employed.

From the perspective of my contribution to the literature, several gaps are obvious. 1) Many studies have examined the relationships between ESG and stock prices. However, studies on the changes of a stock in different markets after the disclosure of ESG information are rare. I could find no such research on Chinese companies. 2) No relevant literature exists on how brand value or executive compensation change after the disclosure of ESG information for Chinese listed companies. 3) In particular, I tried to discover which of the three ESG factors most affected stock prices, executive compensation, and brand value. Such literature is also rare.

To address this gap in the literature, I have introduced novel contributions to both theory and methodology. Firstly, I developed a new theoretical framework, the *reputation ecosystem*, to elucidate the impact mechanisms of ESG. Secondly, I utilized the investor-paid model to gather and rate ESG data, a method rarely employed in previous academic literature. Thirdly, I harnessed the potential of AI and GPT to improve the precision and speed of ESG data collection and scoring. These technical tools, including deep learning, also have potential applications in financial analysis.

### 6.3.1 Contributions to literature

**In Chapter 3**, my research contributes to the literature in several ways. First, from a theoretical perspective, this study discusses the relationship between ESG and stock performance after controlling firm characteristics, including company ownership and market competition. The impacts of corporate ownership (Córdoba-Pachón et al., 2014) and market competition (Muhmad et al., 2021) on social responsibility have been investigated by prior studies. Nevertheless, the impact on the relationship between ESG and stock performance has not been discussed yet. Lin et al. (2021) find that ESG has a positive moderating effect on the relationship between state ownership and firm innovation, but the question remains whether innovation can bring better stock performance. Although Truong and Berrone (2022) conclude that environmental innovation can lead to higher market value, the question still needs to be addressed because ESG and the three dimensions are all important. My results bridge these studies and provide evidence for the relationship between ESG and the stock performance of firms with different ownerships.

Second, I contribute to empirical research by investigating the relationship between stock performance and ESG from the perspective of separate dimensions. Although many articles have studied the impact of ESG (Alexander & Buchholz, 1978; Patel, 2021; Statman & Glushkov, 2009) or simply one dimension (Afrin et al., 2021; Flammer, 2021; Garela & Romec, 2021) on stock performance, as far as we know, only a minority have discussed the impact of ESG dimensions on stock performance, especially in emerging markets. My research fills the research gap with both regression and causal analysis. The results are consistent with previous literature (Gompers et al., 2003; Semenova et al., 2010) and confirm the significant relationship between ESG dimensions and stock performance.

Finally, I add to the literature on financial geography by studying cross-listed companies. Although prior studies, such as Fernandes and Ferreira (2008) and Foucault and Gehrig

(2008), have discussed the effect of cross-listing on information, their studies only examined financial information. No prior studies have considered ESG information. Following the conclusion that cross-listed firms can have significant advantages over domestic firms in information accuracy (Lang et al., 2003), I utilize this property and use cross-listed firms as the research sample to investigate and compare the impacts of ESG on stock performance in both emerging and developed financial markets. My results add more evidence to the literature that ESG can positively impact stock performance in both emerging and developed markets, whereas the effect of company ownership and industry nature can vary between markets.

**In Chapter 4**, my study contributes to the general literature on ESG. First, this study discusses for the first time the impact of ESG on brand values, considering such firm characteristics as corporate ownership, regional development, and industry characteristics. The impacts of corporate ownership (Lin & Li, 2004) and market competition (Graf & Wirl, 2014; Martins, 2022) on social responsibility have been investigated by prior studies. However, how these characteristics will impact the relationship between ESG and brand value has not been discussed yet. These characteristics have been partially discussed by Kim et al. (2021), but only environmental level performance is considered in the study, failing to provide insights at the overall level. Our study finds that the relationship between ESG and brand value can vary for firms with different characteristics in corporate ownership, regional development, and market competition.

Second, the study makes empirical contributions to the literature by investigating the different relationships between the three dimensions of ESG. Previous studies (Bardos et al., 2020; Harjoto & Salas, 2017) mainly focused on the overall impact of ESG, while Lee et al. (2018) only discussed the relationship in certain sectors. In this study, I investigate

the relationship between brand value and the three dimensions to compare their different impacts on corporate reputation.

Finally, I also add new perspectives to empirical studies on the relationship between ESG and corporate brands. Previous studies have mostly failed to evaluate the quality of ESG data or do not have the choices for a more suitable ESG rating system in the first place. Kannerberg and Schreck (2019) conclude that integrated reporting can have positive implications for ESG data quality, and Zhang et al. (2021) have proven that ESG data quality can have a significant impact on corporate reputation. However, the role of ESG rating agencies has been ignored in this process. I argue that the issuer-paid ESG rating model, which is widely applied by mainstream ESG rating agencies, can create biases in ESG rating and evaluation because of conflicts of interest and a lack of independence (Krugman, 2010) and cause variations in ESG ratings that will lead to increased difficulty in sustainable investing (Avramov et al., 2021). The investor-paid rating model used in this study can address the problem, and we recommend that future empirical studies carefully choose ESG data providers.

**In Chapter 5**, my study makes several contributions. From a theoretical perspective, I find a positive relationship between ESG and executive compensation, enriching the research in this area (Dunbar et al., 2020; McGuire et al., 2003; Murphy, 1985; Radu & Smaili, 2021; Taussig & Baker, 1925; Wójcik, 2006). Few studies have discussed the relationship between the three dimensions of ESG and executive compensation comprehensively. Our study contributes to existing empirical research by proving that the three dimensions of ESG are also positively related to executive compensation.

Second, previous studies have focused separately on the relationship between ESG and executive compensation, brand equity, and company reputation (Aluchna et al., 2022; Cai et al., 2020; Focke, 2017; McGuire et al., 2003; Stanwick & Stanwick, 2001). We expand

on these studies and propose an ESG and executive compensation model based on stakeholder theory (Freeman, 1984). This model explains how ESG affects executives, customers, and other stakeholders, which fills the research gap by comprehensively explaining the relationships among these factors.

Third, previous studies (Husted & de Sousa-Filho, 2019; Tsang et al., 2021) have included executive attributes in their models to analyze the relationship between executive compensation and ESG performance, but firm characteristics are neglected. Our study includes state ownership and industry competition as two considerations to analyze whether firm characteristics will affect pay incentives. Introducing and analyzing these variables improves the theoretical model for executive compensation and contributes fresh analysis and empirical data to the literature on corporate governance and sustainable finance.

Finally, my study contributes to existing empirical research by adopting an investor-paid rating model in the process of data collection for the first time. Previous studies have proven that the ratings provided by investor-pay models are timelier and can predict defaults better than issuer-pay models (Beaver et al., 2006; Bruno et al., 2016; Cornaggia & Cornaggia, 2013). However, few studies have used the investor-paid model because mainstream ESG rating agencies have adopted the issuer-paid model. I believe that empirical studies should avoid using issuer-paid models, which can create conflicts of interest (Krugman, 2010) and lead to increased difficulty in sustainable investing (Avramov et al., 2021).

### 6.3.2 Methodological contributions

At present, the empirical papers on ESG (or CSR) published in mainstream academic journals basically use the data samples of mainstream ESG rating agencies (such as MSCI

and Bloomberg). However, from the perspective of recent papers (Wang et al., 2021; Zhang et al., 2022), the ESG evaluation system of these mainstream issuer payment models does not apply to the A-share market; because it tests whether a set of factor systems is effective, it depends on whether it can bring an excess return or a better risk-return balance. Therefore, I tried to use SuperFinance's ESG scoring data with an investor-paid model for the first time. Although the existence of this obvious conflict of interest has a long-term historical, economic, and geopolitical background, trying to adopt the investor-paid model for academic research remains a methodological contribution.

The research team—all associated with MIT's Sustainability Initiative—found that the correlation among six mainstream agencies' ESG ratings was on average 0.61 (Berg et al., 2019). That finding indicates that "the information the decision-makers receive from [ESG] rating agencies is relatively noisy," the paper states—a condition researchers call "aggregate confusion." Kotsantonis and Serafeim (2019) also show different ESG results obtained using the same ESG metric. These conflicting results confuse investors and imply that the accuracy and credibility of ESG data and scores are currently far from adequate.

Most of the world's leading ESG scoring agencies do not disclose their rating methodologies in detail. The specific metrics and weightings of ratings are seriously confidential to the rating agencies, and limited information is therefore published. For example, information collection methods, assumptions, calculations, weightings, thresholds, and analyses are rarely or inadequately disclosed. As a result, investors or stakeholders are unable to completely evaluate their assessment and rating results. From criticism of the transparency of ESG rating agencies (Walter, 2020) to questions about the low relevance of ESG rating results (Brandon et al., 2021), the gradual popularity of the ESG topic has also created confusion in the marketplace regarding ESG data. In

particular, the mainstream ESG rating firms studied by the aforementioned scholars, such as KLD (MSCI Stats), Sustainalytics, VigeoEiris (Moody's), RobecoSAM (SP Global), Asset4 (Refinitiv), and MSCI IVA, have adopted an investor-paid business model. The rating agencies often raise their ratings for profit. Against this background, investors are often victimized. The 2008 financial crisis was also catalyzed by this problem (Partnoy, 2009; Mullard, 2012).

Krugman (2010) addressed the conflicts of interest of the rating agencies by stating that they were "companies that were hired by the people selling debt to give that debt a seal of approval... It was a system that looked dignified and respectable on the surface. Yet it produced huge conflicts of interest. " Issuers of debt "could choose among several rating agencies," Krugman noted. Brian Clarkson, the former head of Moody's Ratings Division, once admitted that there is a large amount of rating shopping on the market (Jones, 2008). Kedia et al. (2014) later confirmed that Moody's ratings were more favorable for clients who were subject to greater conflicts of interest.

Considering the similarity of the information functions of ESG ratings and credit ratings, the existing literature has compared the accuracy and timeliness of credit ratings issued by issuer-paid versus investor-paid rating agencies. Several studies document that investor-paid raters provide more timely ratings that better predict defaults than do issuer-paid raters (Beaver et al., 2006; Bhattacharya et al., 2019; Bruno et al., 2014). The use of investor-paid models is considered more reliable in providing unbiased ratings because they do not present the direct conflict of interest inherent in issuer-paid models (Bruno et al., 2016; Xia, 2014). Generally speaking, the business models of rating agencies are divided into two types: issuer-paid and investor-paid. Issuer-paid is mainstream because this business model can achieve higher profitability in the short term. In contrast, the investor-paid business model better reflects the agent characteristics of ESG rating agencies and their investor-centered operational philosophy. The

investor-paid business model is more compatible with the ESG concept because it reflects the needs of investors and can achieve more monitoring from the private sector, making up for the lack of a top-down monitoring system.

The issuer-paid model was born in the developed capital markets of the United States and Europe, and I believe that this model will remain mainstream for a long time, despite the controversy. In emerging markets, however, the model is likely to be subverted. For example, institutional investors play a dominant role in U.S. markets, while Chinese markets are dominated by retail investors. China has more than 177 million retail investors and only 387,200 institutional investors, which means that more than 99.7% are retail investors (Johnston, 2021). In China, the mainstream ESG rating agencies currently charge fees to investors in addition to issuers. The expensive subscription fees of the ESG rating agencies are only affordable to some institutional investors and almost unaffordable to retail investors. The SuperFinance team is targeting the 177 million Chinese retail investors that the mainstream rating agencies are ignoring.

The reason for the existence of rating agencies is the asymmetry of information among financial market participants. As Frost (2007) indicated, rating agencies play two important roles in the capital markets: one is to provide information to market participants and play the role of valuation, and the other is to reveal credit risk through simple symbols to help both sides of a contract transaction. However, these two functions have clearly failed. White (2010) argues that the shift in the business model of mainstream rating agencies from investor-paid to issuer-paid since 1970 contributed to the subprime mortgage debacle and the associated financial crisis.

Questions remain about why conflicts of interest have been identified among the three major rating agencies but have not been investigated and why no new participants can enter the industry. The answer lies in market access. In 1975, the Securities and Exchange

Commission (SEC) in the United States implemented a licensing system for rating agencies. However, since the SEC proposed and implemented the nationally recognized statistical rating organizations (NRSRO) system in 1975, no other companies have been added to the list in addition to the three credit rating companies designated at the beginning (i.e., Moody's, Standard & Poor's, and Fitch). Therefore, the SEC's regulatory concession creates an inviolable barrier to entering the credit rating industry, leading to the formation of an oligopoly in the ratings market. Krugman (2013) has repeatedly criticized the three major rating agencies as "financial weapons" and highlighted the "political conspiracy" behind the license system.

### 6.3.3 Theoretical contribution

Currently, there is no widely accepted consensus on how to explain, predict, and understand the economic impact mechanisms of ESG factors. Although there are several key theories available, none of them are precise enough to fully capture the complexity of the issue. Early research on nonfinancial information used agency theory and information asymmetry theory as the basis for analyzing disclosure motivation and its economic consequences. However, these two theories assume that investors are the only information users. With the growing recognition of stakeholder rights and interests, it is now clear that information disclosure is not limited to investors but also includes customers and the government. For instance, customers may use company information to assess the quality of products, while the government may use it to ensure compliance with environmental regulations and employee welfare standards. Given the increasing diversity of information users, questions remain about what motivates executives to disclose nonfinancial information and what the corresponding economic consequences are. Principal-agent theory and signal theory have limitations in explaining these issues, which underscores the need to introduce or develop new theoretical models that can guide research and address practical problems. The creation of new models could be the key to

unlocking a better understanding of the economic impact mechanisms of ESG, which could help companies make more informed decisions that align with the interests of all stakeholders.

In time, some scholars began to attempt to use legitimacy theory, stakeholder theory, business ecosystem theory, and reputation theory to analyze the problem of nonfinancial information disclosure. Although these theories provide beneficial research ideas from various perspectives, the overall feeling is to interpret and predict from a certain point of view. ESG disclosure and impact are not interpreted in the same way in different theoretical frameworks. For example, legitimacy theory is based on the concept of the social contract, but laws are costly to enforce and ultimately require reputation systems to maintain them. If a company only meets the legal bottom line, it cannot grow into a company with high added value, such as Apple or Tesla. Meanwhile, stakeholder theory emphasizes that a company's success depends on its relationships with key stakeholders, but stakeholders are defined as possessing low operability—they do not have fixed property, and stakeholder interests are inherently competitive. Therefore, constructing or quoting other theories is crucial to explaining and predicting the increasingly complex problem of sustainable financial and ESG information disclosure.

For this purpose, I created a new theoretical framework, namely, a reputation system that is similar in structure to the business ecosystem. In this case, however, the predictions of the two theories do not overlap because they apply to different explanatory domains. The business ecosystem emphasizes the concept of an economic community, where individual stakeholders are embedded in a business environment that must grow and co-evolve with other companies (Moore, 1993). This framework explains the need for ESG participants to proactively develop mutually beneficial (or symbiotic) relationships with customers, suppliers, and even competitors. The use of ecological metaphors to describe business structures and operations is becoming increasingly common. Business

ecosystems use natural ecosystems as metaphors, emphasizing symbiosis and networking among firms; however, they ignore the role of individuals, governments, and nonprofit organizations, and are not sufficiently persuasive in explaining the mechanisms of influence among the various ecological niches. *Reputation ecosystem* explains the mechanisms of influence among various stakeholders in a business ecosystem. When examining ESG impact mechanisms, the predictions of the reputation system fit better than those of the business ecosystem. Scholars refer to the relationship between the two ecosystems as theoretical proliferation (Wagner & Berger, 1985).

Corporate reputation is a perceptual representation of a company's past actions and prospects that describes the firm's appeal to key constituents. A corporation's reputation can reflect the company's overall attractiveness to all stakeholders (Fombrun & Van Riel, 1997). Thus, reputation theory partially explains the impact mechanism of ESG. However, existing reputation theory does not imply a recognized system—scholars in distinct categories have differing interpretations. Reputation theory mainly explains the information effect (Diamond, 1989), the asset effect (Cripps et al., 2004), and the reputation maintenance effect in an information asymmetric environment (Tadelis, 1999), among others. Emphasizing competitiveness, reputation theory mainly adopts a static perspective and ignores symbiotic relationships, dynamic perspectives, and sustainable development. Various factors are interactive, particularly in ESG ecosystems. The chaotic phenomena and randomness are excessive; thus, nonlinear systems must be developed to solve complex problems. The reputation *ecosystem* is based on this perspective. Reputation theory currently has no fixed structure or framework because economists, sociologists, and management scholars do not have the same definitions, extensions, and connotations of reputation. In the context of sustainable development, particularly in the study of ESG impact mechanisms, the *reputation ecosystem* is more precise and rigorous than reputation theory. Academics refer to this relationship as theory elaboration (Wagner & Berger, 1985).

### 6.3.4 Practical contributions

A practical implication of my research is that it examines how firms invest funds according to the three ESG dimensions under fixed-budget conditions. In addition to the lack of clarity around ESG terminology, the definition of sustainability is also vague: Stakeholders in different sectors (investors vs. economists vs. environmentalists) use different terminology and do not communicate well across disciplines (Inderst & Stewart, 2018). However, in general, I believe that the main stakeholders include shareholders, employees, customers, suppliers, and the public sector. Governments and communities in the public sector provide infrastructure, standardize organizational activities, and impose taxes. The main stakeholders have a close relationship with the enterprise. Secondary stakeholders include competitors, the media, industry associations, and support groups. According to ESG scoring standards and weights, the score for the environment dimension is mainly affected by the government and social dimensions, whereas the score for the social dimension is primarily affected by employees, customers, and the supply chain. The score for the governance dimension is more closely related to corporate shareholders. Indeed, my results show how the three ESG dimensions affect stock price, executive compensation, and brand value; therefore, this study provides a foundation for entrepreneurs and executives to not only be efficient in ESG investments but to also balance the interests of all parties.

The findings in **Chapter 3** will influence portfolio practice. Since the capital asset pricing model (CAPM) was widely studied and practiced in the 1960s, hundreds of papers have attempted to explain the cross-section of expected returns based on various factors with conflicting results (Harvey et al., 2016; Jagannathan & Wang, 1996). The factors commonly used in the market can be divided into seven categories: low volatility, size, value, profitability, quality, growth, momentum, and dividend payout. There is no

doubt that ESG will be popular in future research and practice. The 128 signatories to the '*net-zero asset managers'* initiative want to achieve net-zero emissions across all assets under management by 2050 or sooner. They have $43 trillion in assets under management (Nikulina, 2021). Although this goal is doubted by academics (Deutch, 2020), the impact of ESG on the investment landscape has indeed grown exponentially over the past five years. Hence, increasing numbers of investment decision-makers are taking ESG analysis seriously and combining it with traditional financial analysis techniques, which is referred to as ESG-integrated investing. The impact of ESG on stock prices is mainly achieved through portfolios. However, at present, negative (exclusionary) screening, positive screening (best in class), and norms-based screening examine ESG as a whole without considering that the three dimensions have different impacts on stock prices. My study addresses investment strategies that explain stock returns in terms of these three dimensions. For example, in the mainland market, given that all other factors remain the same, every one-unit increase in the corporate governance score can help raise the average annual stock return by 1.46%, whereas the average increase for every unit of environmental and social scores is 0.97% and 0.43%, respectively.

The findings in **Chapter 4** have implications for investing in intangible assets. In the last 20 years, ESG investment has not only gained widespread attention (Gillan et al., 2021) but has also had a growing impact on the global investment chain (Clark & Hebb, 2004). The driving factors for this are complex. However, most entrepreneurs, particularly marketing executives, must be aware of the fact that the value orientation of the younger generation favors sustainable development (Eisingerich et al., 2011; Giesler & Veresiu, 2014). In particular, the green-identity labeling technique increases purchases of environmentally friendly products across consumer settings (Schwartz et al., 2020), and the sales of low-carbon products are significantly higher than high-carbon ones (Vanclay et al., 2011). Although this "greenwashing" behavior reveals the difficulties and pain points of ESG investment, the direct impact of ESG activities on consumer behavior is

not particularly controversial. My research links ESG investment to intangible asset investment, especially brand building. When ESG is considered as an overall concept, a 1% increase in the ESG score will raise the brand value by 0.354%. However, it is worth noting that, though all three ESG dimensions are significant for brand value, the regression (and causality) results suggest that they do not necessarily contribute equally to brand value and firm growth. For firms, the ESG, especially the environmental logo, has a reputation-carrier role. Given that there are now more than 20 mainstream environmental festivals worldwide and that carbon emissions along the product value chain have essentially been calculated—on average, 45% of value-chain emissions come from upstream in the supply chain, 23% from direct company operations, and 32% from downstream (Meinrenken et al., 2020)—it is easy for companies to leverage various environmental festivals to communicate their responsibility to practice environmental ecology.

The findings in **Chapter 5** have implications for executive ESG decisions and compensation-incentive systems. Executive compensation is not only an evaluation of the results of executive behavior but also an incentive. To motivate the behavior of executives, firms should link executive compensation with corporate performance through a compensation mechanism. In this manner, executives can improve corporate performance while receiving more compensation. However, it is unclear which behavior executives should adopt to improve corporate performance. There are two approaches to addressing this problem: the first is to use ESG strategies to continuously improve corporate performance, and the second involves breaking through the basic bottom line of ESG and obtaining short-term corporate performance. Moreover, it is unclear which factors are responsible for motivating executives to balance the economic and social performance of their companies. My research validates the intrinsic motivation of executives to drive ESG investment, which provides evidence for linking executive compensation to ESG metrics. On the one hand, for executives, the three ESG dimensions

have varying degrees of impact on executive compensation. Based on the regression results, although the coefficients of the three dimensions are positive, their impacts differ. The coefficient of the social dimension is the largest at 0.0177, whereas the environmental dimension coefficient is the smallest. Thus, executives strike a dynamic balance between long-term corporate interests and personal compensation with respect to ESG inputs. On the other hand, for shareholders, linking ESG goals to executive compensation (particularly the incentive-compensation component) is something that drives long-term shareholder interest; hence, establishing a timeline for ESG compensation design and implementation is imperative. In terms of investors, they are more interested in the ability of such linked incentive programs to enhance accountability and transparency.

## 6.4 Implications for Policy and Strategy

Sustainable finance has become important in countries around the world to address environmental, climate, and biodiversity crises. ESG has gradually taken root in the global capital market. However, after researching the history of global sustainable development, we found that there are still problems surrounding the development of sustainable finance, including inadequate policy systems, insufficient environmental risk evaluation capacity, insufficient environmental information disclosure, and a lack of information sharing among financial institutions. At present, the disclosure of nonfinancial information by listed companies is limited. Three bottlenecks related to data, algorithms, and arithmetical power are currently prevalent in ESG assessments. Even so, promoting ESG information disclosure and strengthening ESG investment are positive steps for governments, enterprises, entrepreneurs, investors, and consumers. To this end, my advice to policymakers, investors, and entrepreneurs is presented as follows:

### 6.4.1 For Policymakers

ESG has been questioned by stakeholders in recent years; unclear objectives and the absence of coherent guidelines on ESG are causing confusion among investors and managers (The Economist, 2022). The government and policymakers should play a larger role. At present, global decision-makers are facing several dilemmas concerning ESG development. First, ESG disclosure requirements are difficult to specify in detail. For example, for emissions with environmental impacts, decision makers can set numerical emission standards. However, it is difficult to evaluate the implementation of future-oriented ESG development plans, such as whether enterprises demonstrate green innovation behaviors. Many companies also use greenwashing or other techniques to create an environmentally conscious image in the absence of taking real action (de Freitas Netto et al., 2020).

Second, countries have been unable to agree on ESG measurement standards, resulting in no consistent global ESG standards. For many developing countries, the pursuit of ESG is often at odds with the pursuit of overall economic development. Industrialization inevitably leads to the exploitation and overuse of resources and greater overall carbon emissions. For developing countries, the cost of reducing carbon emissions slows urbanization (Wu et al., 2016). For developed countries, the next milestone in creating a global benchmark for ESG investment has been indefinitely put on hold, with officials reluctant to commit resources to a process that is already deeply politically divided in the wake of the Russia-Ukraine war. Europe had intended to spend years creating a guide for driving capital into ESG-compliant economic activity. However, social taxonomy, a key plank of the ESG rulebook, has been shelved indefinitely. This could remove the "S" in ESG from the regulatory map. Objectives such as gender equality and supply chain avoidance of exploitation cannot be incorporated into EU ESG regulations (Ainger & Arons, 2022).

Finally, during periods of international political or economic turmoil, ESG development is likely to experience brief setbacks. In the case of the war in Ukraine, some ESG investors were persuaded to invest in oil and energy stocks as the market still prioritized returns. During the war, global energy prices have skyrocketed, and investors have rediscovered the value of the traditional energy sector. This is clear evidence that the influence of ESG on investors wanes in times of economic or political turmoil.

Governments and policymakers can address these issues by taking several key steps. First, governments should work with professionals and academics to build a practical ESG information disclosure framework. Current ESG disclosure frameworks in many countries do not fix information asymmetries and gaps in data quality. As conflicts of interest among different groups are often what cause the problems ESG is meant to resolve, governments should coordinate with other stakeholders to pursue common sustainability goals. A robust and practical ESG disclosure framework would help investors identify corporations that are truly responsible and avoid market players with poor sustainability track records.

Second, policymakers should create a market environment that encourages fair competition. Measures to enhance fairness could include improving information transparency, lowering transaction costs, increasing regulation quality, and protecting investors. During some black swan events, such as the COVID-19 pandemic and the war in Ukraine, ESG was questioned as a result of abnormal performance achieved in unethical sectors. However, governments should keep in mind that the end goal has not changed despite these events. In these conditions, a market with fair competition encourages ESG-related investments; corporations that violate the ESG philosophy will bear the consequences of damaged brand images in the long run.

Third, governments must abandon the idea of being monopolistic providers of public goods. Traditionally, some governments have viewed themselves in this fashion, leading to policy failure, which is also a consequence of inefficiency caused by excessive government intervention. To address this problem, governments should adjust their role and collaborate with the private sector. To promote environmental protection, governments should work with all stakeholders in the market when providing public goods. Such a public-private partnership can improve efficiency and provide incentives for the private sector to pursue sustainability.

### 6.4.2 For Investors

My empirical studies on the impact of ESG have provided evidence for *reputation ecosystem* theory, which states that ESG investment can improve corporate brand value by enhancing reputation. According to this theory, investors should make the following changes to their investment behaviors: First, investors should integrate ESG into their investment frameworks, as this will help them identify potential risks and help companies achieve long-term growth. Investors can use either quantitative ESG evaluation ratings or qualitative ESG information to gain a deeper understanding of the underlying reputational assets and achieve higher returns.

Second, investors should educate themselves to identify ESG-related disinformation; greenwashing is an example of this. Investors should identify this marketing trap early and stay away from companies that use it to prevent future losses. Possible ways to counteract greenwashing include putting more pressure on companies to be more transparent with their information and using ESG assessment metrics to identify signs of disinformation. Tesla, for example, has worked for 17 years between its founding in 2003 and its profitability in 2020. If investors could have identified the greenwashing status of the auto industry, they would have bought Tesla stock 5 or 10 years ago, resulting in

spectacular returns. However, because Tesla has no advertising budget and does not pay the ESG rating agencies, it was kicked out of the S&P 500 ESG index in May 2022, while others like Exxon Mobil remain.

Third, large investors should be role models for ESG investing; SOIs should lead the way in impact investing and help promote the ESG concept to maintain their legitimacy. The legitimacy of SWFs has been questioned because they have challenged the notions of practice and governance embodied by traditional financial institutions (Monk, 2009). However, if SWFs take the lead in going against the ESG investment philosophy and fall below the ethical standards of ordinary private companies, the fund's survival base could be significantly affected. SOIs, represented by SWFs and PPFs, can be seen as a reflection of global economic integration (Clark & Monk, 2010b). They have the potential to influence the global economy in the 21st century (Clark, 2010) and can have a transformative impact if they increasingly focus on ESG factors.

Lastly, it is essential for investors, particularly institutional investors, to exert more pressure on companies to increase ESG investments and maintain a positive ESG image. Institutional investors hold considerable influence over corporate strategy and should use their knowledge and expertise to encourage companies to incorporate ESG considerations into their business models rather than pursuing short-term profits by decreasing ESG investments. There is still much room for institutional investors to contribute to the ESG process. For instance, Sovereign Wealth Funds (SWFs) manage over $8 trillion in equity, making them significant players in the ESG process. However, it has been observed that changes in ESG scores are not apparent in companies where SWFs have ownership. This means that SWFs are not actively leading their target companies to improve their ESG levels (Liang & Renneboog, 2020). Thus, it is crucial for institutional investors to play a more active role in pushing companies to incorporate

ESG considerations into their operations and decision-making processes. By doing so, they can drive sustainable value creation and contribute to a more sustainable future.

### 6.4.3 For Entrepreneurs

For entrepreneurs, ESG can enhance not only the reputation of the company but also the image of its founder and executives, which is one of the most important intangible assets of a company. A good reputation for an entrepreneur is an important factor for maintaining the internal and external stability of a company, and an effective weapon with which an enterprise can obtain a competitive advantage. A company with a good reputation usually has strong internal management, a good external image, and social visibility. Therefore, in today's competitive market environment, shaping an entrepreneur's good reputation is one of the top priorities that enterprises should focus on. There are several ways in which entrepreneurs can improve their reputations.

Firstly, entrepreneurs can increase their awareness of internal ESG practices in their company and raise their voices internally, thereby enhancing their reputation within the enterprise. Many ESG issues, such as employee equality, safety, and training, are related to internal management. Entrepreneurs can gain credibility within their companies by promoting pay equity in gender, race, and other spheres, as well as by establishing a corporate training department to improve employee training methods. At the same time, entrepreneurs can build their reputations by setting good examples of ESG within their companies, for example, by taking the lead in practicing green commuting or water conservation within the company.

Secondly, entrepreneurs should also promote their image through external statements. Entrepreneurs represent the company when they communicate with the public, and they should take their public platform as an opportunity to express their stances on ESG issues.

They can find opportunities to do this by attending seminars, general meetings of shareholders, and more, in order to raise awareness among the public. As the entrepreneur is the chief decision-maker of the company, the entrepreneur's attitude towards ESG typically indicates whether the company is actively deploying ESG-related policies. Therefore, when entrepreneurs pay attention to ESG, they build a positive image among the public and ultimately benefit the company.

Finally, entrepreneurs should internally formulate the direction of their company’s ESG development and increase their own awareness of ESG disclosure. Disclosure of ESG information should be a high-priority item on the corporate agenda. A complete and informative ESG report can send a positive message to the public about efforts made by the company on environmental, social, and governance matters. It can also provide a sufficient ESG governance framework and forward-looking data to increase confidence among stakeholders. This will create a positive image for the company and, furthermore, increase the reputations of its entrepreneurs.

## 6.5 Limitations and Future Studies

### 6.5.1 Limitations

The limitations of this study are mainly concentrated in three areas.

The first limitation regards data quality. Since ESG scoring data is primarily derived from the annual reports of listed companies, it is usually updated annually, and this is also common practice for other ESG data providers. The available data limits the depth of the work this study was able to carry out. As an investment reference tool, I believe that ESG ratings should be updated quarterly, like financial reports. In addition, I have not yet incorporated measurements of the impact of company-related news on changes in rating

scores. In formulating an ESG quarterly score, I will include company news as a reference factor.

The second concern is the problem of sample size. Although the three studies are all related to ESG, they have different perspectives, which gives rise to the variance in the sample data. In Chapter 3, the main sampling target of this study comprised cross-listed companies. An attempt has been made to explain the role of ESG information in the capital market by examining the responses of various markets to ESG disclosure. However, to date, the number of companies listed in both the A-share and Hong Kong markets remains limited, with even fewer listed in a third market (e.g., the United States, London, or Singapore). In Chapter 4, in researching ESG and brand value, the sample comprised entities from the "China's 500 Most Valuable Brands" list published annually by the World Brand Lab (WBL) because of limitations on access to brand value data. Finally, in Chapter 5, to study the impact of ESG on executive compensation, ESG-sensitive companies were selected for the study. The restricted sample size may have affected the robustness and generalizability of the study's findings.

The third limitation regards theory. Research on *reputation ecosystem* theory is still in the preliminary stage. As the content involved in the theory is derived from ecology, business ecosystem theory, reputation theory, information asymmetry theory, legitimacy theory, and other complex theoretical systems, there is no single *reputation ecosystem* model, and researchers provide diverse interpretations from different angles. At present, the theory of the business ecosystem is still in its embryonic stage. Improvements in principles and concepts are needed, including (1) the definition of the scope of the *reputation ecosystem* and the measurement and evaluation of niche factors; (2) formulations as to how an enterprise should formulate strategies to participate in multiple *reputation ecosystem*s; and (3) explorations of whether *reputation ecosystem* theory, which intersects with other theories, can be integrated with established models.

### 6.5.2 Future Studies

Scholars have conducted much beneficial exploration of the theory, motivation, and economic impact of ESG information disclosure. This analysis has important theoretical value and practical significance for research content and methods. However, many research deficiencies have yet to be addressed. The following areas merit further research and exploration by subsequent scholars:

Firstly, research on the ESG rating method and its impact should be accelerated. ESG performance assessment has long been a problem in the industry because of the difficulties in data processing. Due to the lack of a unified industry standard and international differences in legislation, it is difficult for authorities to collect and quantify ESG information, which creates obstacles to the standardization of ESG ratings. With the rise of ESG investment in recent years, some scholars have conducted research into corporate ESG ratings with a unified scope, but most academic research is still limited in scope. Before the concept of ESG emerged, scholars disagreed about the definition and classification of CSR. Wood (1994) proposed three levels of corporate CSR measurement: social legitimacy (institutional), public responsibility (organizational), and managerial discretion (individual). Scholars have also researched the overall management systems used in corporate ESG. For example, Francesco et al. (2018) studied the different dimensions of the ESG performance of 130 Italian companies. Additional research has focused on the three dimensions of ESG.

It is evident that the lack of comparable and unified standards for ESG information poses a significant challenge for market players to make informed decisions. Despite the existence of various standards across countries, little research has been conducted on how these standards differ and how companies can bridge the gaps between them. This lack of

relevant standards has become a significant obstacle to transitioning towards a more sustainable and carbon-free economy, especially as the concept of ESG gains traction among stakeholders worldwide.

As an AI language model, GPT can effectively collect and process large amounts of textual data, including ESG-related information. SuperFinance, as a leading ESG data provider, is leveraging AI technology and GPT tools to mine and analyze ESG data effectively. However, there are limitations to what GPT can achieve in terms of collecting ESG information. 1) GPT's data collection depends on the availability of ESG-related texts in digital formats. If the information is not available or is not easily accessible, GPT may not be able to collect it. 2) GPT's ability to collect ESG information may be limited by language barriers. If the information is only available in languages that GPT does not understand, it may not be able to collect or analyze it effectively. 3) GPT may also face limitations in collecting ESG information from non-traditional sources such as social media or other unstructured data. This type of data is often more difficult to process and analyze than structured data, which could limit GPT's ability to collect and analyze ESG information from these sources.

Secondly, methods to accurately measure nonfinancial information need to be actively explored. At present, the measurement of nonfinancial information is mainly conducted using two methods. The first is the subjective scoring method. Although this method can select indicators that correspond to the research content, which strengthens its pertinence, there is a great deal of subjectivity involved in both index selection and weight assignment, which reduces the explanatory power and verifiability of the research. To reduce the influence of subjective estimation in this scoring method, Bozzolan et al. (2009), Muslu et al. (2012), and others have measured nonfinancial information disclosures by the number of sentences they contain. Although this can provide an objective basis to a certain extent, it is doubtful whether the number of sentences

indicates the quality of the disclosed nonfinancial information. The second method used is to directly adopt particular nonfinancial indicators, such as customer satisfaction, market share, and other factors. Researchers using this scoring method can sidestep the risk involved in focusing on the amount of information disclosed rather than its content. For example, even if the company discloses customer satisfaction, the types of customer satisfaction data provided by different companies vary greatly. If researchers ignore this difference and only consider whether a company discloses information, they may draw misleading empirical conclusions, which reduce the accuracy of the empirical results.

Thirdly, further research is necessary on the relationship between ESG and company valuation. Integrating ESG into company valuation models could result in a more precise estimate of corporate value. Traditional methods of corporate valuation, such as absolute valuation methods (e.g. the discounted cash flow model) and relative valuation methods (e.g. price multipliers), commonly assume that a company's valuation is exclusively driven by financial factors. However, in reality, there is a growing number of nonfinancial metrics that have a significant impact on a company's future operations. The ESG investment approach is an essential consideration in addressing this issue. ESG performance is a crucial factor in assessing sustainable operations and corporate social impact. While the absolute valuation method can account for the effect of long-term corporate stability on corporate valuation, ESG can precisely identify potential risks in long-term operations. Integrating ESG into valuation models is a practical approach to utilizing ESG concerns since company valuations change with the fluctuation of risk-free return and equity risk premium rates. ESG factors could be integrated into valuations through equity risk premium figures. However, the process of integrating ESG into corporate valuation is still in its exploratory stage, and ESG factors are mainly used as a reference for qualitative adjustments. As awareness of the significance of ESG increases, I anticipate that it will play a more substantial role in

corporate valuation. Companies and investors can incorporate the ESG concept into their decision-making process to assess the true value of a corporation.

Finally, it is crucial to expand existing research methods and conduct behavioral experiments. Currently, research on nonfinancial information primarily relies on secondhand data, and other research methods, especially behavioral experiments, are rarely utilized. Financial analysts and investors are not entirely rational due to limited knowledge, ability, energy, and emotional influences. Consequently, it is challenging to analyze how nonfinancial information affects information users' decision-making behavior. In this scenario, behavioral experiments based on relevant psychological theories can supplement the limitations of archival research. Similarly, behavioral experimentation can be applied to how companies disclose nonfinancial information. Existing studies employ agency theory and signal theory to analyze managers' motivations for disclosing nonfinancial information and argue that the primary reason for poor disclosure quality is individual rational choice. However, many studies demonstrate that managers are not always rational, and their decision-making is influenced by excessive optimism, the anchoring effect, myopia bias, illusion of control, framework dependence, and other factors (Ashta et al., 2007; Kyereboah-Coleman, 2007). Therefore, even without agency costs, overly optimistic managers may disclose nonfinancial information inconsistent with the future prospects, mislead investors, and be subject to prediction bias. Behavioral experiments can facilitate further exploration and analysis of the impact of managers' irrational disclosure behavior on information quality.

# Bibliography


Aaker, D. A. (1992). The value of brand equity. *Journal of Business Strategy*, *13*(4), 27-32.

Aaker, D. A. (1996). Measuring brand equity across products and markets. *California Management Review*, *38*(3).

Aaker, D. A. (2009). *Managing brand equity*. Simon and Schuster.

Aalbers, M. B. (2015). The potential for financialization. *Dialogues in Human Geography*, *5*(2), 214-219.

Acs, Z. J., & Audretsch, D. B. (1988). Innovation in large and small firms: an empirical analysis. *The American Economic Review*, 678-690.

Adizes, I. (2004). *Managing corporate lifecycles*. The Adizes Institute Publishing.

Adler, P. S., & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *Academy of Management Review*, *27*(1), 17-40.

Adner, R. (2006). Match your innovation strategy to your innovation ecosystem. *Harvard Business Review*, *84*(4), 98.

Afrin, R., Peng, N., & Bowen, F. (2021). The wealth effect of corporate water actions: How past corporate responsibility and irresponsibility influence stock market reactions. *Journal of Business Ethics*, 1-20.

Agarwal, R., Ganco, M., & Ziedonis, R. H. (2009). Reputations for toughness in patent enforcement: Implications for knowledge spillovers via inventor mobility. *Strategic Management Journal*, *30*(13), 1349-1374.

Aggarwal, S. (2017). Smile curve and its linkages with global value chains. *Journal of Economics Bibliography*, *4*(3), 278-286.

Ailawadi, K. L., Lehmann, D. R., & Neslin, S. A. (2003). Revenue premium as an outcome measure of brand equity. *Journal of Marketing*, *67*(4), 1-17.

Ainger, J., & Arons, S. (2022, July 31). *Europe to put Key plank of ESG rulebook on hold amid infighting.* Bloomberg. Retreived from https://www.bloomberg.com/news/articles/2022-07-31/europe-to-put-key-plank-of-esg-rulebook-on-hold-amid-infighting#xj4y7vzkg

Ajour El Zein, S., Consolacion-Segura, C., & Huertas-Garcia, R. (2019). The role of sustainability in brand equity value in the financial sector. *Sustainability*, *12*(1), 254.

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: International Journal of Business in Society*, *20*(7), 1409-1428.

Albitar, K., Hussainey, K., Kolade, N., & Gerged, A. M. (2020). ESG disclosure and firm performance before and after IR: The moderating role of governance mechanisms. *International Journal of Accounting and Information Management*, *28*(3), 429-444.

Alexander, G. J., & Buchholz, R. A. (1978). Corporate social responsibility and stock market performance. *Academy of Management Journal*, *21*(3), 479-486.

Aluchna, M., Roszkowska-Menkes, M., Kamiński, B., & Bosek-Rak, D. (2022). Do institutional investors encourage firm to social disclosure? The stakeholder salience perspective. *Journal of Business Research*, *142*, 674-682.

Amel-Zadeh, A., & Serafeim, G. (2018). Why and how investors use ESG information: Evidence from a global survey. *Financial Analysts Journal*, *74*(3), 87-103.

Amihud, Y., & Mendelson, H. (1986). Liquidity and stock returns. *Financial Analysts Journal*, *42*(3), 43-48.

Anderson, J. C., & Frankle, A. W. (1980). Voluntary social reporting: An iso-beta portfolio analysis. *Accounting Review*, 467-479.

Aon. (2019, April). *2019 intangible assets financial statement impact comparison report*. Aon. https://www.aon.com/getmedia/60fbb49a-c7a5-4027-ba98-0553b29dc89f/Ponemon-Report-V24.aspx

Aravossis, K. G., Panayiotou, N., & Tsousi, K. (2006). A proposed methodological framework for the evaluation of corporate social responsibility. *Environmental Economics and Investment Assessment*, 87-95.

Argyris, C. (1960). *Understanding organizational behavior*.

Arora, A., & Alam, P. (2005). CEO compensation and stakeholders' claims. *Contemporary Accounting Research*, *22*(3), 519-547.

Arrow, K. J. (1972). Gifts and exchanges. *Philosophy & Public Affairs*, 343-362.

Ashta, A., Patil, S., & Seguin, G. (2007). Behavioral finance issues in listing and delisting in the French wine industry: Lessons from the case of Grands Vins Boisset. *Decision (0304-0941)*, *34*(2), 1-26.

Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985). An empirical examination of the relationship between corporate social responsibility and profitability. *Academy of Management Journal*, *28*(2), 446-463.

Aureli, S., Del Baldo, M., Lombardi, R., & Nappo, F. (2020). Nonfinancial reporting regulation and challenges in sustainability disclosure and corporate governance practices. *Business Strategy and the Environment*, *29*(6), 2392-2403.

Avramov, D., Cheng, S., Lioui, A., & Tarelli, A. (2022). Sustainable investing with ESG rating uncertainty. *Journal of Financial Economics*, *145*(2), 642-664.

Ayuso, S., Rodr ́guez, M. A., Garc ́a-Castro, R., & Ariño, M. A. (2014). Maximizing stakeholders' interests: An empirical analysis of the stakeholder approach to corporate governance. *Business & Society*, *53*(3), 414-439.

Bae, K. H., El Ghoul, S., Gong, Z. J., & Guedhami, O. (2021). Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic. *Journal of Corporate Finance*, *67*, 101876.

Banker, R. D., Huang, R., & Natarajan, R. (2009). Incentive contracting and value relevance of earnings and cash flows. *Journal of Accounting Research*, *47*(3), 647-678.

Bardos, K. S., Ertugrul, M., & Gao, L. S. (2020). Corporate social responsibility, product market perception, and firm value. *Journal of Corporate Finance*, *62*, 101588.

Barney, J. B., & Hansen, M. H. (1994). Trustworthiness as a source of competitive advantage. *Strategic management journal*, 15(S1), 175-190.

Barth, M. E., Clement, M. B., Foster, G., & Kasznik, R. (1998). Brand values and capital market valuation. *Review of Accounting Studies*, *3*(1), 41-68.

Basak, S., & Pavlova, A. (2016). A model of financialization of commodities. *The Journal of Finance*, *71*(4), 1511-1556.

Beaver, W. H. (1968). The information content of annual earnings announcements. *Journal of Accounting Research*, 67-92.

Beaver, W. H., Shakespeare, C., & Soliman, M. T. (2006). Differential properties in the ratings of certified versus non-certified bond-rating agencies. *Journal of Accounting and Economics*, *42*(3), 303-334.

Bebchuk, L. A., & Fried, J. M. (2003). Executive compensation as an agency problem. *Journal of Economic Perspectives*, *17*(3), 71-92.

Beinhocker, E. D. (2006). *The origin of wealth: Evolution, complexity, and the radical remaking of economics*. Harvard Business Press.

Belo, F., Gala, V. D., Salomao, J., & Vitorino, M. A. (2022). Decomposing firm value. *Journal of Financial Economics*, *143*(2), 619-639.

Belo, F., Lin, X., & Vitorino, M. A. (2014). Brand capital and firm value. *Review of Economic Dynamics*, *17*(1), 150-169.

Bendixen, M., Bukasa, K. A., & Abratt, R. (2004). Brand equity in the business-to-business market. *Industrial Marketing Management*, *33*(5), 371-380.

Berg, F., Fabisik, K., & Sautner, Z. (2020). Rewriting history II: The (un)predictable past of ESG ratings. *European Corporate Governance Institute–Finance Working Paper*, *708*(2020), 10-2139.

Berg, F., Koelbel, J. F., & Rigobon, R. (2019). *Aggregate confusion: The divergence of ESG ratings* (pp. 1-42). Cambridge, MA, USA: MIT Sloan School of Management.

Berrone, P., & Gomez-Mejia, L. R. (2009). Environmental performance and executive compensation: An integrated agency-institutional perspective. *Academy of Management Journal*, *52*(1), 103-126.

Bessen, J. (2016, May 26). *Lobbyists are behind the rise in corporate profits.* Harvard Business Review. Retrieved from https://hbr.org/2016/05/lobbyists-are-behind-the-rise-in-corporate-profits

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, *50*(2-3), 296-343.

Bhattacharya, U., Wei, K. D., & Xia, H. (2019). Follow the money: Investor trading around investor-paid credit rating changes. *Journal of Corporate Finance*, *58*, 68-91.

Blau, P. M. (1977). *Inequality and heterogeneity: A primitive theory of social structure* (Vol. 7, pp. 677-683). New York: Free Press.

Bloomberg Intelligence. (2021). *ESG assets may hit $53 trillion by 2025, a third of global AUM.* Bloomberg. Retrieved from https://www.bloomberg.com/professional/blog/esg-assets-may-hit-53-trillion-by-2025-a-third-of-global-aum/.

Blundell, R., Griffith, R., & Reenen, J. V. (1995). Dynamic count data models of technological innovation. *The Economic Journal*, *105*(429), 333-344.

Bond, P., & Zeng, Y. (2022). Silence is safest: information disclosure when the audience's preferences are uncertain. *Journal of Financial Economics*, *145*(1), 178-193.

Borghesi, R., Houston, J. F., & Naranjo, A. (2014). Corporate socially responsible investments: CEO altruism, reputation, and shareholder interests. *Journal of Corporate Finance*, *26*, 164-181.

Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *Accounting Review*, 323-349.

Boubakri, N., El Ghoul, S., Wang, H., Guedhami, O., & Kwok, C. C. (2016). Cross-listing and corporate social responsibility. *Journal of Corporate Finance*, *41*, 123-138.

Bouwman, C. H. (2012). The geography of executive compensation. *Available at SSRN 2023870*.

Bowen, H. R. (2013). *Social responsibilities of the businessman*. University of Iowa Press.

Bozzolan, S., Trombetta, M., & Beretta, S. (2009). Forward-looking disclosures, financial verifiability and analysts' forecasts: A study of cross-listed European firms. *European Accounting Review*, *18*(3), 435-473.

Bragdon, J. H., & Marlin, J. (1972). Is pollution profitable. *Risk Management*, *19*(4), 9-18.

Brammer, S., & Millington, A. (2008). Does it pay to be different? An analysis of the relationship between corporate social and financial performance. *Strategic Management Journal*, *29*(12), 1325-1343.

Brammer, S., Brooks, C., & Pavelin, S. (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. *Financial Management*, *35*(3), 97-116.

Brammer, S., Jackson, G., & Matten, D. (2016). Corporate social responsibility and institutional theory: New perspectives on private governance. *Socio-Economic Review*, 14(1), 3-28.

Brennan, M. J., & Cao, H. H. (1997). International portfolio investment flows. *The Journal of Finance*, *52*(5), 1851-1880.

Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, *38*, 101716.

Brown, G. W., & Cliff, M. T. (2005). Investor sentiment and asset valuation. *The Journal of Business*, *78*(2), 405-440.

Brown, T. J., & Dacin, P. A. (1997). The company and the product: Corporate associations and consumer product responses. *Journal of Marketing*, *61*(1), 68-84.

Brunen, A. C., & Laubach, O. (2022). Do sustainable consumers prefer socially responsible investments? A study among the users of robo advisors. *Journal of Banking & Finance*, *136*, 106314.

Bruno, V., Cornaggia, J., & Cornaggia, K. J. (2016). Does regulatory certification affect the information content of credit ratings?. *Management Science*, *62*(6), 1578-1597.

Buchanan, B., Cao, C. X., & Chen, C. (2018). Corporate social responsibility, firm value, and influential institutional ownership. *Journal of Corporate Finance*, *52*, 73-95.

Bucher-Edwards, E., Grimmer, L., & Grimmer, M. (2021). Using Place-of-Origin Branding Strategies to Market Australian Premium-Niche whisky and Gin Products. *Journal of International Food & Agribusiness Marketing*, 1-19.

Buhr, N. (2002). A structuration view on the initiation of environmental reports. *Critical Perspectives on Accounting*, *13*(1), 17-38.

Buhr, N. (2007). Histories of and rationales for sustainability reporting. In *Sustainability Accounting and Accountability* (pp. 57-69). Routledge.

Burt, R. S. (1995/2021). *Structural Holes: The Social Structure of Competition*. Harvard University Press.

Burt, R. S., & Burzynska, K. (2017). Chinese entrepreneurs, social networks, and guanxi. *Management and Organization Review*, *13*(2), 221-260.

Burt, R. S., & Opper, S. (2017). Early network events in the later success of Chinese entrepreneurs. *Management and Organization Review*, *13*(3), 497-537.

Cai, X., Gao, N., Garrett, I., & Xu, Y. (2020). Are CEOs judged on their companies' social reputation?. *Journal of Corporate Finance*, *64*, 101621.

Cai, Y., Jo, H., & Pan, C. (2011). Vice or virtue? The impact of corporate social responsibility on executive compensation. *Journal of Business Ethics*, *104*(2), 159-173.

Cai, Y., Xu, J., & Yang, J. (2021). Paying by donating: Corporate donations affiliated with independent directors. *The Review of Financial Studies*, *34*(2), 618-660.

Caldecott, B., & McDaniels, J. (2014). Financial dynamics of the environment: Risks, impacts, and barriers to resilience. In Stranded Assets Programme. Smith School of Enterprise and the Environment.

Callan, S. J., & Thomas, J. M. (2011). Executive compensation, corporate social responsibility, and corporate financial performance: a multi-equation framework. *Corporate Social Responsibility and Environmental Management*, *18*(6), 332-351.

Campbell, D. (2004). A longitudinal and cross-sectional analysis of environmental disclosure in UK companies—a research note. *The British Accounting Review*, *36*(1), 107-117.

Campbell, K., Johnston, D., Sefcik, S. E., & Soderstrom, N. S. (2007). Executive compensation and non-financial risk: An empirical examination. *Journal of Accounting and Public Policy*, *26*(4), 436-462.

Carroll, A. B. (1999). Corporate social responsibility: Evolution of a definitional construct. *Business & Society*, *38*(3), 268-295.

Carter, M. E., Franco, F., & Gine, M. (2017). Executive gender pay gaps: The roles of female risk aversion and board representation. *Contemporary Accounting Research*, *34*(2), 1232-1264.

Castro, P. (2006). Applying social psychology to the study of environmental concern and environmental worldviews: Contributions from the social representations approach. *Journal of Community & Applied Social Psychology*, *16*(4), 247-266.

Celik, O., Ecer, A., & Karabacak, H. (2006). Disclosure of forward looking information: Evidence from listed companies on Istanbul stock exchange. *Investment Management and Financial Innovations*, (3, Iss. 2), 197-216.

Cennamo, C., & Santalo, J. (2013). Platform competition: Strategic trade-offs in platform markets. *Strategic Management Journal*, *34*(11), 1331-1350.

Chakravarty, S., Sarkar, A., & Wu, L. (1998). Information asymmetry, market segmentation and the pricing of cross-listed shares: theory and evidence from Chinese A and B shares. *Journal of International Financial Markets, Institutions and Money*, *8*(3-4), 325-356.

Chami, R., Cosimano, T. F., & Fullenkamp, C. (2002). Managing ethical risk: How investing in ethics adds value. *Journal of Banking & Finance*, *26*(9), 1697-1718.

Chan, K., & Hameed, A. (2006). Stock price synchronicity and analyst coverage in emerging markets. *Journal of Financial Economics*, *80*(1), 115-147.

Chatterji, A. K., Durand, R., Levine, D. I., & Touboul, S. (2016). Do ratings of firms converge? Implications for managers, investors and strategy researchers. *Strategic Management Journal*, *37*(8), 1597-1614.

Chatterji, A. K., Levine, D. I., & Toffel, M. W. (2009). How well do social ratings actually measure corporate social responsibility?. *Journal of Economics & Management Strategy*, *18*(1), 125-169.

Chau, G., & Gray, S. J. (2010). Family ownership, board independence and voluntary disclosure: Evidence from Hong Kong. *Journal of International Accounting, Auditing and Taxation*, *19*(2), 93-109.

Chebbia, K., Aliedanb, M. M., & Mohammed, A. (2020). Women on the board and environmental sustainability reporting: Evidence from France. *International Journal of Innovation, Creativity and Change*, *14*(11), 231-258.

Chemmanur, T., & Yan, A. (2017). Product market advertising, heterogeneous beliefs, and the long-run performance of initial public offerings. *Journal of Corporate Finance*, *46*, 1-24.

Chen, C. J., & Jaggi, B. (2000). Association between independent non-executive directors, family control and financial disclosures in Hong Kong. *Journal of Accounting and Public Policy*, *19*(4-5), 285-310.

Chin, M. K., Hambrick, D. C., & Treviño, L. K. (2013). Political ideologies of CEOs: The influence of executives' values on corporate social responsibility. *Administrative Science Quarterly*, *58*(2), 197-232.

China Securities Index. (2021). *ESG development of Chinese listed companies white paper*. Retrieved from https://csi-web-dev.oss-cn-shanghai-finance-1-pub.aliyuncs.com/home_research/20211223075551-%E3%80%8A%E4%B8%AD%E5%9B%BD%E4%B8%8A%E5%B8%82%E5%85%AC%E5%8F%B8ESG%E5%8F%91%E5%B1%95%E7%99%BD%E7%9A%AE%E4%B9%A6%E3%80%8B%E6%91%98%E8%A6%81.pdf

Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, *32*(7-8), 639-647.

Chui, A. C., & Kwok, C. C. (1998). Cross-autocorrelation between A shares and B shares in the Chinese stock market. *Journal of Financial Research*, *21*(3), 333-353.

Clark, E. (2013). Financialization, sustainability and the right to the island: A critique of acronym models of island development. *Journal of Marine and Island Cultures*, *2*(2), 128-136.

Clark, G. L.(2000). Pension fund capitalism. Oxford University Press.

Clark, G. L. (2005). Money flows like mercury: The geography of global finance. *Geografiska Annaler: Series B, Human Geography*, *87*(2), 99-112.

Clark, G. L., Feiner, A., & Viehs, M. (2015). From the stockholder to the stakeholder: How sustainability can drive financial outperformance. *Available at SSRN 2508281*.

Clark, G. L., Fiaschetti, M., Tufano, P., & Viehs, M. (2018). Playing with your future: Who gambles in defined-contribution pension plans?. *International Review of Financial Analysis*, *60*, 213-225.

Clark, G. L., Hachigian, H., McGill, S., Molinari, C., & Wójcik, D. (2015). Addressing the challenges of transformation through sustainable investment. In *The Routledge Handbook of Responsible Investment* (pp. 617-633). Routledge.

Clark, G.L., & Hebb, T. (2004). Pension fund corporate engagement: The fifth stage of capitalism. *Industrial Relations*, *59*(1), 142-171.

Clark, G. L., & Hebb, T. (2005). Why should they care? The role of institutional investors in the market for corporate global responsibility. *Environment and Planning A*, *37*(11), 2015-2031.

Clark, G. L., & Monk, A. H. (2010a). The legitimacy and governance of Norway's sovereign wealth fund: the ethics of global investment. *Environment and Planning A*, *42*(7), 1723-1738.

Clark, G. L., & Monk, A. (2010b). Sovereign wealth funds: Form and function in the 21st century. *FEEM Working Paper* (No. 140.2010).

Clark, G. L., & Wójcik, D. (2003). An economic geography of global finance: Ownership concentration and stock-price volatility in German firms and regions. *Annals of the Association of American Geographers*, *93*(4), 909-924.

Clarke, G. R., Xu, L. C., & Zou, H. F. (2006). Finance and income inequality: What do the data tell us?. *Southern Economic Journal*, *72*(3), 578-596.

Clarkson, M. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, *20*(1), 92-117.

Clarkson, P. M., Fang, X., Li, Y., & Richardson, G. (2013). The relevance of environmental disclosures: Are such disclosures incrementally informative? *Journal of Accounting and Public Policy*, 32(5), 410–431.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, *33*(4-5), 303-327.

Climent, F., & Soriano, P. (2011). Green and good? The investment performance of US environmental mutual funds. *Journal of Business Ethics*, *103*(2), 275-287.

Coase, R. H. (2013). The problem of social cost. *The Journal of Law and Economics*, *56*(4), 837-877.

Coe, N. M., Lai, K. P., & Wójcik, D. (2014). Integrating finance into global production networks. *Regional Studies*, *48*(5), 761-777.

Cohen, M. A., Fenn, S., & Naimon, J. S. (1997). *Environmental and financial performance: are they related?*.

Cohen, S., Kadach, I., Ormazabal, G., & Reichelstein, S. (2022). Executive compensation tied to ESG performance: International evidence. *European Corporate Governance Institute–Finance Working Paper*, (825).

Coombs, J. E., & Gilley, K. M. (2005). Stakeholder management as a predictor of CEO compensation: Main effects and interactions with financial performance. *Strategic Management Journal*, *26*(9), 827-840.

Cordeiro, J. J., & Sarkis, J. (2008). Does explicit contracting effectively link CEO compensation to environmental performance?. *Business Strategy and the Environment*, *17*(5), 304-317.

Cordeiro, J. J., & Tewari, M. (2015). Firm characteristics, industry context, and investor reactions to environmental CSR: A stakeholder theory approach. *Journal of Business Ethics*, *130*(4), 833-849.

Córdoba-Pachón, J. R., Garde-Sánchez, R., & Rodríguez-Bolívar, M. P. (2014). A systemic view of corporate social responsibility (CSR) in state-owned enterprises (SOEs). *Knowledge and Process Management*, *21*(3), 206-219.

Core, J. E., Guay, W. R., & Rusticus, T. O. (2006). Does weak governance cause weak stock returns? An examination of firm operating performance and investors' expectations. *The Journal of Finance*, *61*(2), 655-687.

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, *51*(3), 371-406.

Cormier, D., & Gordon, I. M. (2001). An examination of social and environmental reporting strategies. *Accounting, Auditing & Accountability Journal*, *14*(5), 587-617.

Cornaggia, J., & Cornaggia, K. J. (2013). Estimating the costs of issuer-paid credit ratings. *The Review of Financial Studies*, *26*(9), 2229-2269.

Cortazar, G., Schwartz, E. S., & Salinas, M. (1998). Evaluating environmental investments: A real options approach. *Management Science*, *44*(8), 1059-1070.

Cowan, E. (1999). Topical issues in environmental finance. *Research paper was commissioned by the Asia Branch of the Canadian International Development Agency (CIDA)*, *1*, 1-20.

Cripps, M. W., Mailath, G. J., & Samuelson, L. (2004). Imperfect monitoring and impermanent reputations. *Econometrica*, *72*(2), 407-432.

Cupertino, S., Consolandi, C., & Vercelli, A. (2019). Corporate social performance, financialization, and real investment in US manufacturing firms. *Sustainability*, *11*(7), 1836.

Curtis, M. (2009, September 24). *Norway's dirty little secrets*. The Guardian. Retreived from https://www.theguardian.com/commentisfree/cif-green/2009/sep/24/norway-ethical-oil-environment-arms

Dai, R., Liang, H., & Ng, L. (2021). Socially responsible corporate customers. *Journal of Financial Economics*, *142*(2), 598-626.

Dai, Y. (2014). Research on influencing factors of executive compensation in China's monopoly industries. *Open Journal of Business and Management*, *2014*.

Darnall, N., Henriques, I., & Sadorsky, P. (2010). Adopting proactive environmental strategy: The influence of stakeholders and firm size. *Journal of Management Studies*, *47*(6), 1072-1094.

Dasgupta, S., Gan, J., & Gao, N. (2010). Transparency, price informativeness, and stock return synchronicity: Theory and evidence. *Journal of Financial and Quantitative analysis*, *45*(5), 1189-1220.

Datayes!. (2021). Datayes! financial big data. [Database]. https://mall.datayes.com

Datta, S., Iskandar-Datta, M., & Sharma, V. (2011). Product market pricing power, industry concentration and analysts' earnings forecasts. *Journal of Banking & Finance*, *35*(6), 1352-1366.

Davis, G. F., & Kim, S. (2015). Financialization of the economy. *Annual Review of Sociology*, *41*(1), 203-221.

Davis, L. E. (2017). Financialization and investment: A survey of the empirical literature. *Journal of Economic Surveys*, *31*(5), 1332-1358.

De Castro, G. M., López, J. E. N., & Sáez, P. L. (2006). Business and social reputation: Exploring the concept and main dimensions of corporate reputation. *Journal of Business Ethics*, *63*(4), 361-370.

de Freitas Netto, S. V., Sobral, M. F. F., Ribeiro, A. R. B., & da Luz Soares, G. R. (2020). Concepts and forms of greenwashing: A systematic review. *Environmental Sciences Europe*, *32*(1), 1-12.

De Villiers, C., & Van Staden, C. J. (2010). Shareholders' requirements for corporate environmental disclosures: A cross country comparison. *The British Accounting Review*, *42*(4), 227-240.

Deckop, J. R., Merriman, K. K., & Gupta, S. (2006). The effects of CEO pay structure on corporate social performance. *Journal of Management*, *32*(3), 329-342.

Deegan, C. (2002). Introduction: The legitimising effect of social and environmental disclosures–a theoretical foundation. *Accounting, Auditing & Accountability Journal*, *15*(3), 282-311.

Deegan, C., Rankin, M., & Voght, P. (2000, March). Firms' disclosure reactions to major social incidents: Australian evidence. In *Accounting forum* (Vol. 24, No. 1, pp. 101-130). Taylor & Francis.

Delmas, M., & Toffel, M. W. (2004). Stakeholders and environmental management practices: An institutional framework. *Business Strategy and the Environment*, *13*(4), 209-222.

Dembinski, P. H. (2009). Financial ethics trapped by financialization. *Ethik und Gesellschaft*, (2).

Demers, E., Hendrikse, J., Joos, P., & Lev, B. (2020). ESG didn't immunize stocks against the COVID-19 market crash. *Available at SSRN*, *3675920*.

Demsetz, H. (1983). The structure of ownership and the theory of the firm. *The Journal of Law and Economics*, *26*(2), 375-390.

Deng, X., & Cheng, X. (2019). Can ESG indices improve the enterprises' stock market performance?—An empirical study from China. *Sustainability*, *11*(17), 4765.

Derwall, J., & Verwijmeren, P. (2007). Corporate governance and the cost of equity capital: Evidence from gmi's governance rating. *European Centre for Corporate Engagement Research Note*, *6*(1), 1-11.

Derwall, J., Guenster, N., Bauer, R., & Koedijk, K. (2005). The eco-efficiency premium puzzle. *Financial Analysts Journal*, *61*(2), 51-63.

Deutch, J. (2020). Is net zero carbon 2050 possible?. *Joule*, *4*(11), 2237-2240.

DeVere Group. (2019). *8 Out of 10 millennials now priorities responsible investing – and they're right.* Retrieved from https://www.devere-group.com/news/8-out-of-10-millennials-now-prioritise-responsible-investing-and-theyre-right.aspx

Dhaliwal, D. S., Radhakrishnan, S., Tsang, A., & Yang, Y. G. (2012). Nonfinancial disclosure and analyst forecast accuracy: International evidence on corporate social responsibility disclosure. *The Accounting Review*, *87*(3), 723-759.

Diamond, D. W. (1989). Reputation acquisition in debt markets. *Journal of Political Economy*, *97*(4), 828-862.

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The Journal of Finance*, *46*(4), 1325-1359.

Dichter, E. (1962). The world customer. *The International Executive*, *4*(4), 25-27.

Dicken, P. (2003). *Global shift: Reshaping the global economic map in the 21st century.* Sage.

Dietz, S., & Adger, W. N. (2003). Economic growth, biodiversity loss and conservation effort. *Journal of Environmental Management*, *68*(1), 23-35.

Dore, R. (2008). Financialization of the global economy. *Industrial and Corporate Change*, *17*(6), 1097-1112.

Dorfleitner, G., Halbritter, G., & Nguyen, M. (2015). Measuring the level and risk of corporate responsibility–An empirical comparison of different ESG rating approaches. *Journal of Asset Management*, *16*(7), 450-466.

Drees, J. M., & Heugens, P. P. (2013). Synthesizing and extending resource dependence theory: A meta-analysis. *Journal of Management*, *39*(6), 1666-1698.

Dunbar, C., Li, Z. F., & Shi, Y. (2020). CEO risk-taking incentives and corporate social responsibility. *Journal of Corporate Finance*, *64*, 101714.

Dupire, M., & M'Zali, B. (2018). CSR strategies in response to competitive pressures. *Journal of Business Ethics*, *148*(3), 603-623.

Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multilatinas: Moderating effects of geographic international diversification and financial slack. *Journal of Business Ethics*, *168*(2), 315-334.

Dyck, A., Lins, K. V., Roth, L., & Wagner, H. F. (2019). Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics*, *131*(3), 693-714.

Dye, R. A. (1985). Disclosure of nonproprietary information. *Journal of Accounting Research*, 123-145.

Ebbers, J. J., & Wijnberg, N. M. (2012). Nascent ventures competing for start-up capital: Matching reputations and investors. *Journal of Business Venturing*, *27*(3), 372-384.

Economic Policy Institute. (2020). *CEOs now earn 320 times as much as a typical worker*. Retrieved from https://www.epi.org/publication/ceo-compensation-surged-14-in-2019-to-21-3-million-ceos-now-earn-320-times-as-much-as-a-typical-worker/

Economist. (2021, January 20). *China's economic centre of gravity is moving south.* Retrieved March 12, 2021, from https://www.economist.com/graphic-detail/2021/01/20/chinas-economic-centre-of-gravity-is-moving-south

Edmans, A. (2011). Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics*, *101*(3), 621-640.

Eisingerich, A. B., Rubera, G., Seifert, M., & Bhardwaj, G. (2011). Doing good and doing better despite negative information?: The role of corporate social responsibility in consumer resistance to negative information. *Journal of Service Research*, *14*(1), 60-75.

Elfring, T., & Hulsink, W. (2003). Networks in entrepreneurship: The case of high-technology firms. *Small Business Economics*, *21*(4), 409-422.

Eliwa, Y., Aboud, A., & Saleh, A. (2021). ESG practices and the cost of debt: Evidence from EU countries. *Critical Perspectives on Accounting*, *79*, 102097.

Eng, L. L., & Mak, Y. T. (2003). Corporate governance and voluntary disclosure. *Journal of Accounting and Public Policy*, *22*(4), 325-345.

Engelberg, J., Gao, P., & Parsons, C. A. (2013). The Price of a CEO's Rolodex. *The Review of Financial Studies*, *26*(1), 79-114.

Epstein, G. (2021). Financialisation: There's Something Happening Here 1. In *Global Political Economy* (pp. 270-293). Routledge.

Epstein, G. A. (Ed.). (2005). *Financialization and the world economy*. Edward Elgar Publishing.

Erkens, D. H. (2011). Do firms use time-vested stock-based pay to keep research and development investments secret?. *Journal of Accounting Research*, *49*(4), 861-894.

Ernst, D., & Kim, L. (2002). Global production networks, knowledge diffusion, and local capability formation. *Research Policy*, *31*(8-9), 1417-1429.

Ettenson, R., & Knowles, J. (2008). Don't confuse reputation with brand. *MIT Sloan Management Review*, *49*(2), 19.

Faccio, M. (2006). Politically connected firms. *American Economic Review*, *96*(1), 369-386.

Falato, A., Li, D., & Milbourn, T. (2015). Which skills matter in the market for CEOs? Evidence from pay for CEO credentials. *Management Science*, *61*(12), 2845-2869.

Fama, E. F. (1980). Agency problems and the theory of the firm. *Journal of Political Economy*, *88*(2), 288-307.

Fan, J., & Wang, Y. (2019). Pattern evolution of China's economic geography in the past 40 years and regional coordinated development in the new era. *Economic Geography*, *39*(1), 1-7.

Fang, X., & Wang, X. (2018). Examining consumer responses to cross-border brand acquisitions. *European Journal of Marketing*, *52*(7/8), 1727-1749.

Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. *Global Finance Journal*, *38*, 45-64.

Fernandes, N., & Ferreira, M. A. (2008). Does international cross-listing improve the information environment. *Journal of Financial Economics*, *88*(2), 216-244.

Fernández, F. L., Fernández, P., Fernandez, P., & López, P. F. (2002). *Valuation methods and shareholder value creation*. Academic Press.

First, I., & Khetriwal, D. S. (2010). Exploring the relationship between environmental orientation and brand value: Is there fire or only smoke?. *Business Strategy and the Environment*, *19*(2), 90-103.

Flammer, C. (2013). Corporate social responsibility and shareholder reaction: The environmental awareness of investors. *Academy of Management Journal*, *56*(3), 758-781.

Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, *142*(2), 499-516.

Fleurbaey, M., & Blanchet, D. (2013). *Beyond GDP: Measuring welfare and assessing sustainability*. Oxford University Press.

Focke, F., Maug, E., & Niessen-Ruenzi, A. (2017). The impact of firm prestige on executive compensation. *Journal of Financial Economics*, *123*(2), 313-336.

Foerster, S. R., & Karolyi, G. A. (1999). The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the United States. *The Journal of Finance*, *54*(3), 981-1013.

Foley, J., & Kendrick, J. (2006). *Balanced brand: How to balance the stakeholder forces that can make or break your business*. John Wiley & Sons.

Fombrun, C. J. (1996). Reputation: Realizing Value from the Corporate Image: Harvard Business School Press. *Boston, MA*.

Fombrun, C. J. (2005). A world of reputation research, analysis and thinking—building corporate reputation through CSR initiatives: Evolving standards. *Corporate Reputation Review*, *8*(1), 7-12.

Fombrun, C. J., & Rindova, V. (1996). Who's tops and who decides? The social construction of corporate reputations. *New York University, Stern School of Business, Working Paper*, *5*, 13.

Fombrun, C., & Shanley, M. (1990). What's in a name? Reputation building and corporate strategy. *Academy of management Journal*, 33(2), 233-258.

Fombrun, C., & Van Riel, C. (1997). The reputational landscape. *Corporate Reputation Review*, 1-16.

Forte, A., Peiró-Palomino, J., & Tortosa-Ausina, E. (2015). Does social capital matter for European regional growth?. *European Economic Review*, *77*, 47-64.

Foucault, T., & Gehrig, T. (2008). Stock price informativeness, cross-listings, and investment decisions. *Journal of Financial Economics*, *88*(1), 146-168.

Francoeur, C., Melis, A., Gaia, S., & Aresu, S. (2017). Green or greed? An alternative look at CEO compensation and corporate environmental commitment. *Journal of Business Ethics*, *140*(3), 439-453.

Frederick, W. C., Davis, K., & Post, J. E. (1988). *Business and society: Corporate strategy, public policy, ethics*. McGraw-Hill Companies.

Freeman, R. B. (2010). It's financialization!. *International Labour Review*, *149*(2), 163-183.

Freeman, R. E. (1984). Stakeholder management: Framework and philosophy. *Pitman, Mansfield, MA*.

Freeman, R. E. (2001). A stakeholder theory of the modern corporation. *Perspectives in Business Ethics Sie*, *3*(144), 38-48.

Freeman, R. E., & Phillips, R. A. (2002). Stakeholder theory: A libertarian defense. *Business Ethics Quarterly*, *12*(3), 331-349.

Freeman, R. E., Martin, K., & Parmar, B. (2007). Stakeholder capitalism. *Journal of Business Ethics*, *74*(4), 303-314.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), 210-233.

Friedman, M. (1953). *The methodology of positive economics.*

Friedman, M. (1962). *Capital and freedom, The University of Chicago Press, USA*.

Friedman, M. (1970). A Friedman doctrine: The social responsibility of business is to increase its profits. *The New York Times Magazine*, *13*(1970), 32-33.

Friedman, M. (2007). The social responsibility of business is to increase its profits. In *Corporate ethics and corporate governance* (pp. 173-178). Springer, Berlin, Heidelberg.

Frijters, P., & Krekel, C. (2021). *A handbook for wellbeing policy-making: History, theory, measurement, implementation, and examples*. Oxford University Press.

Frost, C. A. (2007). Credit rating agencies in capital markets: A review of research evidence on selected criticisms of the agencies. *Journal of Accounting, Auditing & Finance*, *22*(3), 469-492.

Fry, L. W., Keim, G. D., & Meiners, R. E. (1982). Corporate contributions: Altruistic or for-profit?. *Academy of Management Journal*, *25*(1), 94-106.

Frydman, C., & Saks, R. E. (2010). Executive compensation: A new view from a long-term perspective, 1936–2005. *The Review of Financial Studies*, *23*(5), 2099-2138.

Frydman, R., & Goldberg, M. D. (2011). Beyond mechanical markets. In *Beyond Mechanical Markets*. Princeton University Press.

Fulton, M., Kahn, B., & Sharples, C. (2012). Sustainable investing: Establishing long-term value and performance. *Available at SSRN 2222740*.

Gabaix, X., & Landier, A. (2008). Why has CEO pay increased so much?. *The Quarterly Journal of Economics*, *123*(1), 49-100.

Gaines-Ross, L. (1997). Part III: Measuring and valuing reputations: Leveraging corporate equity. *Corporate Reputation Review*, *1*(1), 51-56.

Galema, R., Plantinga, A., & Scholtens, B. (2008). The stocks at stake: Return and risk in socially responsible investment. *Journal of Banking & Finance*, *32*(12), 2646-2654.

Gan, H., Park, M. S., & Suh, S. (2020). Non-financial performance measures, CEO compensation, and firms' future value. *Journal of Business Research*, *110*, 213-227.

Ganglmair-Wooliscroft, A., & Wooliscroft, B. (2016). Diffusion of innovation: The case of ethical tourism behavior. *Journal of Business Research*, *69*(8), 2711-2720.

Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of Cleaner Production*, *150*, 135-147.

Gardberg, N. A., & Fombrun, C. J. (2006). Corporate citizenship: Creating intangible assets across institutional environments. *Academy of Management Review*, *31*(2), 329-346.

Garel, A., & Petit-Romec, A. (2021). Investor rewards to environmental responsibility: Evidence from the COVID-19 crisis. *Journal of Corporate Finance*, *68*, 101948.

Gayle, G. L., & Miller, R. A. (2009). Has moral hazard become a more important factor in managerial compensation?. *American Economic Review*, *99*(5), 1740-69.

Ghodeswar, B. M. (2008). Building brand identity in competitive markets: A conceptual model. *Journal of Product & Brand Management*, *17*(1), 4-12.

Gibson Brandon, R., Krueger, P., & Schmidt, P. S. (2021). ESG rating disagreement and stock returns. *Financial Analysts Journal*, *77*(4), 104-127.

Giesler, M., & Veresiu, E. (2014). Creating the responsible consumer: Moralistic governance regimes and consumer subjectivity. *Journal of Consumer Research*, *41*(3), 840-857.

Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, *66*, 101889.

Gillet, P., & Salaber, J. (2015). Are ethical funds more resistant to crisis than conventional funds. In *2nd Vietnam International Conference in Finance*.

Global SWF. (2022). *2022 annual report*. Global SWF. Retreived from https://globalswf.com/reports/2022annual

Goergen, M., Martynova, M., & Renneboog, L. (2005). Corporate governance convergence: Evidence from takeover regulation reforms in Europe. *Oxford Review of Economic policy*, *21*(2), 243-268.

Goldsmith R. (1969). *Financial Structure and Economic Development.* Yale University Press.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, *118*(1), 107-156.

Graf, C., & Wirl, F. (2014). Corporate social responsibility: A strategic and profitable response to entry?. *Journal of Business Economics*, *84*(7), 917-927.

Graham, J. R., Li, S., & Qiu, J. (2012). Managerial attributes and executive compensation. *The Review of Financial Studies*, *25*(1), 144-186.

Grampp, W. D. (2000). What did Smith mean by the invisible hand? *Journal of Political Economy*, 108(3), 441-465.

Gray, R. (1992). Accounting and environmentalism: An exploration of the challenge of gently accounting for accountability, transparency and sustainability. *Accounting, Organizations and Society*, *17*(5), 399-425.

Gray, R. (2001). Social and environmental responsibility, sustainability and accountability, can the corporate sector deliver. *University of Glasgow, Working Papers Series*, *2*(3), 9-16.

Gray, R., Owen, D., & Adams, C. (1996). *Accounting & accountability: Changes and challenges in corporate social and environmental reporting*. Prentice hall.

Green, T. C., & Jame, R. (2013). Company name fluency, investor recognition, and firm value. *Journal of Financial Economics*, *109*(3), 813-834.

Greif, A. (1994). Cultural beliefs and the organization of society: A historical and theoretical reflection on collectivist and individualist societies. *Journal of Political Economy*, *102*(5), 912-950.

Grewal, J., Hauptmann, C., & Serafeim, G. (2017). Stock price synchronicity and material sustainability information. *Harvard Business School Working Paper*, 17-098.

Groening, C. (2018). When do investors value board gender diversity?. *Corporate Governance: International Journal of Business in Society*, *19*(1), 60-79.

Grossman, S. J. (1981). The informational role of warranties and private disclosure about product quality. *The Journal of Law and Economics*, *24*(3), 461-483.

Grossman, S. J., & Hart, O. D. (1980). Disclosure laws and takeover bids. *The Journal of Finance*, *35*(2), 323-334.

Grullon, G., Kanatas, G., & Weston, J. P. (2004). Advertising, breadth of ownership, and liquidity. *The Review of Financial Studies*, *17*(2), 439-461.

Gupta, S., Lehmann, D. R., & Stuart, J. A. (2004). Valuing customers. *Journal of Marketing Research*, *41*(1), 7-18.

Haddock-Fraser, J. E., & Tourelle, M. (2010). Corporate motivations for environmental sustainable development: Exploring the role of consumers in stakeholder engagement. *Business Strategy and the Environment*, *19*(8), 527-542.

Haigh, D., & Perrier, R. (1997). Valuation of trademarks and brand names. *Brand Valuation*, *3*, 19-24.

Hamel, G. & Prahalad, C. K. (1990). The core competence of the corporation. *Harvard Business Review*, *68*(3), 79-91.

Handy, C. (2016). *The second curve: Thoughts on reinventing society*. Random House.

Harjoto, M. A., & Salas, J. (2017). Strategic and institutional sustainability: Corporate social responsibility, brand value, and Interbrand listing. *Journal of Product & Brand Management*.

Harris, S., & Wheeler, C. (2005). Entrepreneurs' relationships for internationalization: Functions, origins and strategies. *International Business Review*, *14*(2), 187-207.

Hart, T. A., David, P., Shao, F., Fox, C. J., & Westermann-Behaylo, M. (2015). An examination of the impact of executive compensation disparity on corporate social performance. *Strategic Organization*, *13*(3), 200-223.

Harvey, C. R., Liu, Y., & Zhu, H. (2016). … and the cross-section of expected returns. *The Review of Financial Studies*, *29*(1), 5-68.

Haskel, J., & Westlake, S. (2017). Capitalism without capital. In *Capitalism without Capital*. Princeton University Press.

Haskins, M. E., & Ferris Kennet R, S. T. I. (2000). *International financial reporting and analysis: A contextual emphasis.*

Hassel, L., Nilsson, H., & Nyquist, S. (2005). The value relevance of environmental performance. *European Accounting Review*, *14*(1), 41-61.

Haubrich, J. G. (1994). Risk aversion, performance pay, and the principal-agent problem. *Journal of Political Economy*, *102*(2), 258-276.

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, *31*(1-3), 405-440.

Healy, P. M., Hutton, A. P., & Palepu, K. G. (1999). Stock performance and intermediation changes surrounding sustained increases in disclosure. *Contemporary Accounting Research*, *16*(3), 485-520.

Heikkurinen, P., & Ketola, T. (2012). Corporate responsibility and identity: From a stakeholder to an awareness approach. *Business Strategy and the Environment*, *21*(5), 326-337.

Herbig, P., & Milewicz, J. (1993). The relationship of reputation and credibility to brand success. *Journal of Consumer Marketing*, *10*(3), 18-24.

Hermalin, B. E. (2005). Trends in corporate governance. *The Journal of Finance*, *60*(5), 2351-2384.

Hill, C. W., & Jones, T. M. (1992). Stakeholder-agency theory. *Journal of Management Studies*, *29*(2), 131-154.

Hillman, A. J., & Keim, G. D. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line?. *Strategic Management Journal*, *22*(2), 125-139.

Hillman, A. J., Keim, G. D., & Schuler, D. (2017). Corporate Political Activity: A Literature Review and Research Agenda. *Journal of Management*, 43(1), 182–203.

Hiltrop, J. M. (1995). The changing psychological contract: The human resource challenge of the 1990s. *European Management Journal*, *13*(3), 286-294.

Hirst, S. (2017). Social responsibility resolutions. *J. Corp. L.*, *43*, 217.

Hite, J. M., & Hesterly, W. S. (2001). The evolution of firm networks: From emergence to early growth of the firm. *Strategic Management Journal*, *22*(3), 275-286.

Hogan, T. D., & McPheters, L. R. (1980). Executive compensation: Performance versus personal characteristics. *Southern Economic Journal*, 1060-1068.

Holmstrom, B. (1982a). Moral Hazard in Teams. *The Bell Journal of Economics*, 324-340.

Holmstrom, B. (1982b). Design of incentive schemes and the new Soviet incentive model. *European Economic Review*, *17*(2), 127-148.

Hong, B., Li, Z., & Minor, D. (2016). Corporate governance and executive compensation for corporate social responsibility. *Journal of Business Ethics*, *136*(1), 199-213.

Hong, H., & Kacperczyk, M. (2009). The price of sin: The effects of social norms on markets. *Journal of Financial Economics*, *93*(1), 15-36.

Houston, J. F., & Shan, H. (2019). Corporate ESG profiles and banking relationships. *Review of Financial Studies, Forthcoming*.

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives?. *Journal of Financial Economics*, *108*(3), 822-839.

Hübel, B., & Scholz, H. (2020). Integrating sustainability risks in asset management: The role of ESG exposures and ESG ratings. *Journal of Asset Management*, *21*(1), 52-69.

Humphrey, J. E., Lee, D. D., & Shen, Y. (2012). Does it cost to be sustainable?. *Journal of Corporate Finance*, *18*(3), 626-639.

Hur, W. M., Kim, H., & Woo, J. (2014). How CSR leads to corporate brand equity: Mediating mechanisms of corporate brand credibility and reputation. *Journal of Business Ethics*, *125*(1), 75-86.

Husted, B. W., & de Sousa-Filho, J. M. (2019). Board structure and environmental, social, and governance disclosure in Latin America. *Journal of Business Research*, *102*, 220-227.

Hutton, I., Knill, A. M., & Zutter, C. J. (2021). 25 years and counting of corporate finance: What have we learned and where are we going?. *Journal of Corporate Finance*, *66*, 101896.

Hutton, P. (2005). The emerging importance of brand energy in the financial services sector. *Journal of Financial Services Marketing*, *9*(4), 307-317.

Iansiti, M., & Levien, R. (2004). Strategy as ecology. *Harvard Business Review*, *82*(3), 68-78.

Iansiti, M., & Levien, R. (2004). *The keystone advantage: What the new dynamics of business ecosystems mean for strategy, innovation, and sustainability*. Harvard Business Press.

Iatridis, G. E. (2013). Environmental disclosure quality: Evidence on environmental performance, corporate governance and value relevance. *Emerging Markets Review*, *14*, 55-75.

Ikram, A., Li, Z. F., & Minor, D. (2019). CSR-contingent executive compensation contracts. *Journal of Banking & Finance*, 105655.

Inderst, G., & Stewart, F. (2018). Incorporating environmental, social and governance (ESG) factors into fixed income investment. *World Bank Group Publication, April*.

Ioannou, I., & Serafeim, G. (2015). The impact of corporate social responsibility on investment recommendations: Analysts' perceptions and shifting institutional logics. *Strategic Management Journal*, *36*(7), 1053-1081.

Jackson, J. (2019). *Proof that ethical funds often outperform their peers*. Retrieved November 09, 2020, from https://www.ii.co.uk/analysis-commentary/proof-ethical-funds-often-outperform-their-peers-ii509299

Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, *39*(8), 2255-2276.

Jacoby, G., Liu, M., Wang, Y., Wu, Z., & Zhang, Y. (2019). Corporate governance, external control, and environmental information transparency: Evidence from emerging markets. *Journal of International Financial Markets, Institutions and Money*, *58*, 269-283.

Jagannathan, R., & Wang, Z. (1996). The conditional CAPM and the cross-section of expected returns. *The Journal of Finance*, *51*(1), 3-53.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305-360.

Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs and ownership structure. In *Corporate Governance* (pp. 77-132). Gower.

Jensen, M. C., & Murphy, K. J. (1990). CEO incentives: It's not how much you pay, but how. *Journal of Applied Corporate Finance*, *3*(3), 36-49.

Jiang, H. (2021). The role of panel data in organization of global value chain: Evidence from a developing country. *Applied Economics Letters*, *28*(7), 546-550.

Jiang, X., Fu, W., & Li, G. (2020). Can the improvement of living environment stimulate urban innovation?——analysis of high-quality innovative talents and foreign direct investment spillover effect mechanism. *Journal of Cleaner Production*, *255*, 120212.

Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics*, *103*(3), 351-383.

John, K., Saunders, A., & Senbet, L. W. (2000). A theory of bank regulation and management compensation. *The Review of Financial Studies*, *13*(1), 95-125.

Johnson, S. A., Moorman, T. C., & Sorescu, S. (2009). A reexamination of corporate governance and equity prices. *The Review of Financial Studies*, *22*(11), 4753-4786.

Johnson, Z. S., Mao, H., Lefebvre, S., & Ganesh, J. (2019). Good guys can finish first: How brand reputation affects extension evaluations. *Journal of Consumer Psychology*, *29*(4), 565-583.

Johnston M. (2021, May 20). *China's stock markets vs. U.S. stock markets.* Investopedia. Retreived from https://www.investopedia.com/articles/investing/092415/chinas-stock-markets-vs-us-stock-markets.asp

Jones, B., & Nisbet, P. (2011). Shareholder value versus stakeholder values: CSR and financialization in global food firms. *Socio-Economic Review*, *9*(2), 287-314.

Jones, S. (2008, October 17). *How Moody's faltered*. Financial Times. Retreived from https://www.ft.com/content/65892340-9b1a-11dd-a653-000077b07658

Joseph, E. (2002). Promoting corporate social responsibility: Is market-based regulation sufficient?. *New Economy*, *9*(2), 96-101.

Jouber, H. (2019). How does CEO pay slice influence corporate social responsibility? US–Canadian versus Spanish–French listed firms. *Corporate Social Responsibility and Environmental Management*, *26*(2), 502-517.

Jovanovic, B. (1982). Truthful disclosure of information. *The Bell Journal of Economics*, *13*(1), 36-44.

Kale, J. R., & Loon, Y. C. (2011). Product market power and stock market liquidity. *Journal of Financial Markets*, *14*(2), 376-410.

Kannenberg, L., & Schreck, P. (2019). Integrated reporting: Boon or bane? A review of empirical research on its determinants and implications. *Journal of Business Economics*, *89*(5), 515-567.

Kaplan, S. N., & Minton, B. A. (2012). How has CEO turnover changed?. *International review of Finance*, *12*(1), 57-87.

Kaplan, S. N., & Rauh, J. (2013). It's the market: The broad-based rise in the return to top talent. *Journal of Economic Perspectives*, *27*(3), 35-56.

Karim, S. (2021). An investigation into the remuneration–CSR nexus and if it can be affected by board gender diversity. *Corporate Governance: International Journal of Business in Society*, *21*(4), 608-625.

Karmel, R. S. (2020). The Financialization of Corporate Governance. *Cambridge Handbook on Investor Protection*.

Kedia, S., Rajgopal, S., & Zhou, X. (2014). Did going public impair Moody′ s credit ratings?. *Journal of Financial Economics*, *114*(2), 293-315.

Keller, K. L. (1993). Conceptualizing, measuring, and managing customer-based brand equity. *Journal of Marketing*, *57*(1), 1-22.

Kerin, R. A., & Sethuraman, R. (1998). Exploring the brand value-shareholder value nexus for consumer goods companies. *Journal of the Academy of Marketing Science*, *26*(4), 260-273.

Khan, R., Dharwadkar, R., & Brandes, P. (2005). Institutional ownership and CEO compensation: A longitudinal examination. *Journal of Business Research*, *58*(8), 1078-1088.

Khaoula, F., & Moez, D. (2019). The moderating effect of the board of directors on firm value and tax planning: Evidence from European listed firms. *Borsa Istanbul Review*, *19*(4), 331-343.

Khojastehpour, M., & JOHNS, R. (2014). The effect of environmental CSR issues on corporate/brand reputation and corporate profitability. *European Business Review*, *26*(4), 330-339.

Kilduff, M., Angelmar, R., & Mehra, A. (2000). Top management-team diversity and firm performance: Examining the role of cognitions. *Organization Science*, *11*(1), 21-34.

Kim, I., Pantzalis, C., & Zhang, Z. (2021). Multinationality and the value of green innovation. *Journal of Corporate Finance*, *69*, 101996

Kim, J. H., & Hyun, Y. J. (2011). A model to investigate the influence of marketing-mix efforts and corporate image on brand equity in the IT software sector. *Industrial Marketing Management*, *40*(3), 424-438.

Kim, S. (2019). The process model of corporate social responsibility (CSR) communication: CSR communication and its relationship with consumers' CSR knowledge, trust, and corporate reputation perception. *Journal of Business Ethics*, *154*(4), 1143-1159.

Kim, Y., Li, H., & Li, S. (2014). Corporate social responsibility and stock price crash risk. *Journal of Banking & Finance*, *43*, 1-13.

Kishan, S. (2022, May 05). *Tesla, Echoing Musk, Says ESG Metrics Are 'Fundamentally Flawed'.* Bloomberg. Retreived from

https://www.bloomberg.com/news/articles/2022-05-06/tesla-says-esg-metrics-are-fundamentally-flawed

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *The Quarterly journal of economics*, *112*(4), 1251-1288.

Koetsier, J. (2019, May 6). *Tesla Spends Zero On Ads. Here's Where BMW, Toyota, Ford, and Porsche Spend Digital Ad Dollars.* Forbes. Retreived from https://www.forbes.com/sites/johnkoetsier/2019/05/06/tesla-spends-zero-on-ads-heres-where-bmw-toyota-ford-and-porsche-spend-digital-ad-dollars/?sh=3d29424011d4

Komlos, J. (2019). *Foundations of real-world economics: What every economics student needs to know*. Routledge.

Konar, S., & Cohen, M. A. (2001). Does the market value environmental performance?. *Review of Economics and Statistics*, *83*(2), 281-289.

Kotler, P., & Armstrong, G. (1991). *Principles of Marketing.*

Kotsantonis, S., & Serafeim, G. (2019). Four things no one will tell you about ESG data. *Journal of Applied Corporate Finance*, *31*(2), 50-58.

Kotter, J. P. (1973). The psychological contract: Managing the joining-up process. *California Management Review*, *15*(3), 91-99.

Kreps, D. M., & Wilson, R. (1982). Reputation and imperfect information. *Journal of Economic Theory*, *27*(2), 253-279.

Krippner, G. R. (2005). The financialization of the American economy. *Socio-economic Review*, *3*(2), 173-208.

Krüger, P. (2015). Corporate goodness and shareholder wealth. *Journal of Financial Economics*, *115*(2), 304-329.

Krugman, P. (2010). *Berating the raters.* New York Times. Retrieved from https://www.nytimes.com/2010/04/26/opinion/26krugman.html.

Krugman, P. (2013). The plot against France. *New York Times, November*, *10*.

Krugman, P., Cooper, R. N., & Srinivasan, T. N. (1995). Growing world trade: Causes and consequences. *Brookings Papers on Economic Activity*, *1995*(1), 327-377.

Kyereboah-Coleman, A. (2007). The impact of capital structure on the performance of microfinance institutions. *Journal of Risk Finance*, *8*(1), 56-71.

Labatt, S., & White, R. R. (2003). *Environmental Finance: A Guide to Environmental Risk Assessment and Financial Products (Vol. 200)*. John Wiley & Sons.

Labatt, S., & White, R. R. (2011). *Carbon finance: The financial implications of climate change*. John Wiley & Sons.

Lacy, P., Haines, A., & Hayward, R. (2012). Developing strategies and leaders to succeed in a new era of sustainability. *The Journal of Management Development*, *31*(4), 346.

Lai, C. S., Chiu, C. J., Yang, C. F., & Pai, D. C. (2010). The effects of corporate social responsibility on brand performance: The mediating effect of industrial brand equity and corporate reputation. *Journal of Business Ethics*, *95*(3), 457-469.

Lane, P. R., & Milesi-Ferretti, G. M. (2008). The drivers of financial globalization. *American Economic Review*, *98*(2), 327-32.

Lang, M. H., Lins, K. V., & Miller, D. P. (2003). ADRs, analysts, and accuracy: Does cross listing in the United States improve a firm's information environment and increase market value?. *Journal of Accounting Research*, *41*(2), 317-345.

Langley, K. (2019). *More companies are making noise about ESG*. Wall Street Journal. Retrieved from https://www.wsj.com/articles/more-companies-are-making-noise-about-esg-11569263634.

Larkin, Y. (2013). Brand perception, cash flow stability, and financial policy. *Journal of Financial Economics*, *110*(1), 232-253.

Laughlin, R. C., & Puxty, A. G. (1983). Accounting regulation: An alternative perspective. *Journal of Business Finance & Accounting*, *10*(3), 451-479.

Lawson, T. (1997). *Economics and reality*. Routledge.

Lawton, J. H., & Brown, V. K. (1993). *Redundancy in ecosystems. In: Schulze, ED., Mooney, H.A. (eds) Biodiversity and Ecosystem Function.* Praktische Zahnmedizin Odonto-Stomatologie Pratique Practical Dental Medicine, vol 99. Springer, Berlin, Heidelberg.

Lazonick, W. (2015). Stock buybacks: From retain-and-reinvest to downsize-and-distribute. *Center for Effective Public Management at Brookings*, *17*.

Lee, H. C. B., Cruz, J. M., & Shankar, R. (2018). Corporate social responsibility (CSR) issues in supply chain competition: Should greenwashing be regulated?. *Decision Sciences*, *49*(6), 1088-1115.

Lehman, G. (1995). A legitimate concern for environmental accounting. *Critical Perspectives on Accounting*, *6*(5), 393-412.

Lenton, T. M., Rockström, J., Gaffney, O., Rahmstorf, S., Richardson, K., Steffen, W., & Schellnhuber, H. J. (2019). Climate tipping points—too risky to bet against. *Nature*, *575*(7784), 592-595.

Levine, R. (1997). Financial development and economic growth: Views and agenda. *Journal of Economic Literature*, *35*(2), 688-726.

Li, D., & Wu, J. (2017). The impact of heterogeneity of senior management team on corporate social performance. *Management Review*, *29*(12), 84-93.

Li, S. S., Lu, J. Y., Yan, J. P., Liu, X., Kong, F., & Wang, J. (2018). Spatiotemporal variability of temperature in northern and southern Qinling Mountains and its influence on climatic boundary. *Acta Geographica Sinica*, *73*(1), 13-24.

Li, Z. F., Patel, S., & Ramani, S. (2021). The role of mutual funds in corporate social responsibility. *Journal of Business Ethics*, *174*(3), 715-737.

Liang, H., & Renneboog, L. (2020). The global sustainability footprint of sovereign wealth funds. *Oxford Review of Economic Policy*, *36*(2), 380-426.

Liang, H., Renneboog, L., & Sun, S. L. (2015). The political determinants of executive compensation: Evidence from an emerging economy. *Emerging Markets Review*, *25*, 69-91.

Lin-Hi, N., & Blumberg, I. (2018). The link between (not) practicing CSR and corporate reputation: Psychological foundations and managerial implications. *Journal of Business Ethics*, *150*(1), 185-198.

Lin, B. (2018). The accounting analysis of the intangible cultural heritage enterprises' brand value—take the Chinese medicine industry as an example. *American Journal of Industrial and Business Management*, *8*(07), 1716.

Lin, K. H., & Tomaskovic-Devey, D. (2013). Financialization and US income inequality, 1970–2008. *American Journal of Sociology*, *118*(5), 1284-1329.

Lin, Y. F., & Li, Z. (2004). Policy burden, moral hazard and soft budget constraint. *Economic Research Journal*, *2*, 17-27.

Lin, Y., Fu, X., & Fu, X. (2021). Varieties in state capitalism and corporate innovation: Evidence from an emerging economy. *Journal of Corporate Finance*, *67*, 101919.

Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *The Journal of Finance*, *72*(4), 1785-1824.

Lins, K. V., Strickland, D., & Zenner, M. (2005). Do non-US firms issue equity on US stock exchanges to relax capital constraints?. *Journal of Financial and Quantitative Analysis*, *40*(1), 109-133.

Liu, B., Liu, X., Li, S. X., & He, S. W. (2003). An empirical test of the interactive effect between CEO salary and enterprise performance. *Accounting Research*, *3*, 35-39.

Liu, G. (2017). Do cross-listed firms report better social responsibility performance?. In *SHS Web of Conferences* (Vol. 34, pp. 1-7). EDP Sciences.

Liu, H., & Liao, X. (2011). Status quo of top executive compensation in Chinese state-owned monopolistic enterprises—Analysis based on the data of listed companies. *2011 International Conference on E-Business and E-Government (ICEE)*, 1-4.

Liu, J., Yang, Q., Liu, J., Zhang, Y., Jiang, X., & Yang, Y. (2020). Study on the spatial differentiation of the populations on both sides of the "Qinling-Huaihe Line" in China. *Sustainability*, *12*(11), 4545.

Liu, X. (2017). Industry policy and classified reform of state-owned enterprises. *Economic Theory and Business Management*, *36*(7), 38.

Liu, X., & Anbumozhi, V. (2009). Determinant factors of corporate environmental information disclosure: An empirical study of Chinese listed companies. *Journal of Cleaner Production*, *17*(6), 593-600.

Loh, L., & Tan, S. (2020). Impact of sustainability reporting on brand value: An examination of 100 leading brands in Singapore. *Sustainability*, *12*(18), 7392.

Lorraine, N. H. J., Collison, D. J., & Power, D. M. (2004). An analysis of the stock market impact of environmental performance information. *Accounting Forum*, *28*(1), 7–26.

Love, I., & Zicchino, L. (2006). Financial development and dynamic investment behavior: Evidence from panel VAR. *The Quarterly Review of Economics and Finance*, *46*(2), 190-210.

Lucas Jr, R. E. (1978). On the size distribution of business firms. *The Bell Journal of Economics*, 508-523.

Lundahl, O. (2014). Fashionalising sustainable consumption in lifestyle media. *Advances in Consumer Research*, *42*, 343-347.

Luo, W., Guo, X., Zhong, S., & Wang, J. (2019). Environmental information disclosure quality, media attention and debt financing costs: Evidence from Chinese heavy polluting listed companies. *Journal of Cleaner Production*, *231*, 268-277.

Lyon, T., Lu, Y., Shi, X., & Yin, Q. (2013). How do investors respond to Green Company Awards in China?. *Ecological Economics*, *94*, 1-8.

Mader, P., Mertens, D., & van der Zwan, N. (2020). Financialization: An introduction. In *The Routledge international handbook of financialization* (pp. 1-16). Routledge.

Mahoney, L. S., & Thorn, L. (2006). An examination of the structure of executive compensation and corporate social responsibility: A Canadian investigation. *Journal of Business Ethics*, *69*(2), 149-162.

Manne, H. G. (1962). Corporate responsibility, business motivation, and reality. *The Annals of the American Academy of Political and Social Science*, *343*(1), 55-64.

Margolis, J. D., & Walsh, J. P. (2001). *People and profits?: The search for a link between a company's social and financial performance*. Psychology Press.

Margolis, J. D., Elfenbein, H. A., & Walsh, J. P. (2009). Does it pay to be good...and does it matter? A meta-analysis of the relationship between corporate social and financial performance. *Available at SSRN 1866371*.

Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, *7*(1), 77-91.

Mart ín, O. M., & Cervi ño, J. (2011). Towards an integrative framework of brand country of origin recognition determinants: A cross-classified hierarchical model. *International Marketing Review*, *28*(6), 530-558.

Mart ínez-Ferrero, J., Ruiz-Cano, D., & Garc á-S ánchez, I. M. (2016). The causal link between sustainable disclosure and information asymmetry: The moderating role of the stakeholder protection context. *Corporate Social Responsibility and Environmental Management*, *23*(5), 319-332.

Martins, H. C. (2022). Competition and ESG practices in emerging markets: Evidence from a difference-in-differences model. *Finance Research Letters*, *46*, 102371.

Matute‐Vallejo, J., Bravo, R., & Pina, J. M. (2011). The influence of corporate social responsibility and price fairness on customer behaviour: Evidence from the financial sector. *Corporate Social Responsibility and Environmental Management*, *18*(6), 317-331.

Megginson, W. L., Lopez, D., & Malik, A. I. (2021). The rise of state-owned investors: sovereign wealth funds and public pension funds. *Forthcoming, Annual Review of Financial Economics*.

McCabe, C. ( 2020). *ESG investing shines in market turmoil, with help from big tech.* Wall Street Journal. Retrieved from https://www.wsj.com/articles/esg-investing-shines-in-market-turmoil-with-help-from-big-tech-11589275801.

McElroy, C. A. (2012). Corporate foundations in the mining industry: The relationship between responsible investment and social investment. *Journal of Sustainable Finance & Investment*, *2*(3-4), 240-256.

McGuire, J., Dow, S., & Argheyd, K. (2003). CEO incentives and corporate social performance. *Journal of Business Ethics*, *45*(4), 341-359.

McWilliams, A., Siegel, D. S., & Wright, P. M. (2006). Corporate social responsibility: Strategic implications. *Journal of Management Studies*, *43*(1), 1-18.

Meadows, D.H., Meadows, D.L., Randers, J., & Behrens, W.W.. (1972). *The Limits to Growth.* New York: Universe Books.

Means, G. (2017). *The modern corporation and private property*. Routledge.

Meier, C. (2018). Aggregate investor confidence in the stock market. *Journal of Behavioral Finance*, *19*(4), 421-433.

Meinrenken, C. J., Chen, D., Esparza, R. A., Iyer, V., Paridis, S. P., Prasad, A., & Whillas, E. (2020). Carbon emissions embodied in product value chains and the role of life cycle assessment in curbing them. *Scientific Reports*, *10*(1), 1-12.

Melo, T., & Garrido‐Morgado, A. (2012). Corporate reputation: A combination of social responsibility and industry. *Corporate Social Responsibility and Environmental Management*, *19*(1), 11-31.

Meng, B., Ye, M., & Wei, S. J. (2020). Measuring smile curves in global value chains. *Oxford Bulletin of Economics and Statistics*, *82*(5), 988-1016.

Meschi, R. L. (1995). Value added: Refinements in our brand valuation methodology. *Financial World*, *164*(August), 52-53.

Michelon, G. (2011). Sustainability disclosure and reputation: A comparative study. *Corporate Reputation Review*, *14*(2), 79-96.

Milbourn, T. T. (2003). CEO reputation and stock-based compensation. *Journal of Financial Economics*, *68*(2), 233-262.

Miles, P. C., & Miles, G. (2013). Corporate social responsibility and executive compensation: Exploring the link. *Social Responsibility Journal*, *9*(1), 76-90.

Milgrom, P. R. (1981). Good news and bad news: Representation theorems and applications. *The Bell Journal of Economics*, 380-391.

Milinski, M. (2016). Reputation, a universal currency for human social interactions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *371*(1687), 20150100.

Miller, S. R., Eden, L., & Li, D. (2020). CSR reputation and firm performance: A dynamic approach. *Journal of Business Ethics*, *163*(3), 619-636.

Minor, D. (2015). The value of corporate citizenship: Protection. *Harvard Business School Strategy Unit Working Paper*, (16-021).

Miralles-Quirós, M. M., Miralles-Quirós, J. L., & Redondo Hernández, J. (2019). ESG performance and shareholder value creation in the banking industry: International differences. *Sustainability*, *11*(5), 1404.

Mishel, L. & Wolfe, J. (2019). *CEO compensation has grown 940% since 1978 : Typical worker compensation has risen only 12% during that time*. Economic Policy Institute.

Mishra, D. R. (2017). Post-innovation CSR performance and firm value. *Journal of Business Ethics*, *140*(2), 285-306.

Mlodinow, L. (2016). *The upright thinkers: The human journey from living in trees to understanding the cosmos*. Vintage.

Monk, A. (2009). Recasting the sovereign wealth fund debate: trust, legitimacy, and governance. *New Political Economy*, *14*(4), 451-468.

Moore, G. A., & McKenna, R. (1999). Crossing the chasm.

Moore, J. F. (1993). Predators and prey: A new ecology of competition. *Harvard Business Review*, *71*(3), 75-86.

Morrison, J. I. (1998). The second curve: Managing the velocity of change. *Strategy & Leadership*.

Mosca, F., & Civera, C. (2017). The evolution of CSR: An integrated approach. *Symphonya. Emerging Issues in Management*, (1), 16-35.

Mudambi, S. (2002). Branding importance in business-to-business markets: Three buyer clusters. *Industrial Marketing Management*, *31*(6), 525-533.

Mundell, R. A. (1998). What the euro means for the dollar and the international monetary system. *Atlantic Economic Journal*, *26*(3), 227-237.

Muhmad, S. N., Ariff, A. M., Majid, N. A., & Kamarudin, K. A. (2021). Product market competition, corporate governance and ESG. *Asian Academy of Management Journal of Accounting and Finance*, *17*(1), 63.

Mullard, M. (2012). The credit rating agencies and their contribution to the financial crisis. *The Political Quarterly*, *83*(1), 77-95.

Murphy, K. J. (1985). Corporate performance and managerial remuneration: An empirical analysis. *Journal of Accounting and Economics*, *7*(1-3), 11-42.

Murphy, K. J., & Zabojnik, J. (2007). Managerial capital and the market for CEOs. *Available at SSRN 984376*.

Muşlu, K., Brun, Y., Holmes, R., Ernst, M. D., & Notkin, D. (2012). Speculative analysis of integrated development environment recommendations. *ACM SIGPLAN Notices*, *47*(10), 669-682.

Nagel, G. L. (2010). The effect of labor market demand on US CEO pay since 1980. *Financial Review*, *45*(4), 931-950.

Nalebuff, B. J., & Stiglitz, J. E. (1983). Information, competition, and markets. *The American Economic Review*, *73*(2), 278-283.

Needham, J. (1956). *Science and civilization in China: Volume 2, history of scientific thought*.

Nelson, M. (2017). *The importance of nonfinancial performance to investors.* Harvard Law School Forum on Corporate Governance and Financial Regulation. Retrieved from https://corpgov.law.harvard.edu/2017/04/25/the-importance-of nonfinancial-performance-to-investors.

Nikulina, L. (2021). Global pensions and ESG: Is there a better way?. *Wharton Pension Research Council Working Paper*, (2021-17).

Normile, D. (2020). China's bold climate pledge earns praise—but is it feasible?. *Science*, *370*(6512), 17-18.

O'Brien, R. (1990). The end of geography? The impact of technology and capital flows. *The AMEX Bank Review*, *17*.

O'Brien, R. (1992). *Global financial integration: The end of geography*. London: Royal Institute of International Affairs, Pinter Publishers

O'rourke, K. H., & Williamson, J. G. (2002). When did globalisation begin?. *European Review of Economic History*, *6*(1), 23-50.

Ocean Tomo. (2020). *Intangible asset market value study*. Ocean Tomo. https://www.oceantomo.com/intangible-asset-market-value-study/

Oddsson, J. (2020, October). *A look into Chinese consumers and sustainable products.* Chemlinked. https://food.chemlinked.com/news/food-news/a-look-into-chinese-consumers-and-sustainable-products

Oh, H., Labianca, G., & Chung, M. H. (2006). A multilevel model of group social capital. *Academy of Management Review*, *31*(3), 569-582.

Ohlson, J. A. (1979). On financial disclosure and the behavior of security prices. *Journal of Accounting and Economics*, *1*(3), 211-232.

Okun, A. M. (2011). *Prices and quantities: A macroeconomic analysis*. Brookings Institution Press.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, *24*(3), 403-441.

Ortas, E., Álvarez, I., & Garayar, A. (2015). The environmental, social, governance, and financial performance effects on companies that adopt the United Nations Global Compact. *Sustainability*, *7*(2), 1932-1956.

Pae, S. (2002). Discretionary disclosure, efficiency, and signal informativeness. *Journal of Accounting and Economics*, *33*(3), 279-311.

Palladino, L. (2021). Financialization at work: Shareholder primacy and stagnant wages in the United States. *Competition & Change*, *25*(3-4), 382-400.

Panayotou, T. (2000). Economic growth and the environment (No. 56A). *Center for International Development at Harvard University.*

Park, C. S., & Srinivasan, V. (1994). A survey-based method for measuring and understanding brand equity and its extendibility. *Journal of Marketing Research*, *31*(2), 271-288.

Partnoy, F. (2009). Rethinking regulation of credit rating agencies: An institutional investor perspective. *Council of Institutional Investors, April*, 09-014.

Patel, P. C., Pearce II, J. A., & Oghazi, P. (2021). Not so myopic: Investors lowering short-term growth expectations under high industry ESG-sales-related dynamism and predictability. *Journal of Business Research*, *128*, 551-563.

Patell, J. M., & Wolfson, M. A. (1979). Anticipated information releases reflected in call option prices. *Journal of Accounting and Economics*, *1*(2), 117-140.

Patten, D. M. (1991). Exposure, legitimacy, and social disclosure. *Journal of Accounting and Public Policy*, *10*(4), 297-308.

Patten, D. M. (2002). The relation between environmental performance and environmental disclosure: A research note. *Accounting, organizations and Society*, *27*(8), 763-773.

Paunov, C. (2016). Corruption's asymmetric impacts on firm innovation. *Journal of Development Economics*, *118*, 216-231.

Peng, M. W., & Luo, Y. (2000). Managerial ties and firm performance in a transition economy: The nature of a micro-macro link. *Academy of Management Journal*, *43*(3), 486-501.

Penrose, E. (2009). *The theory of the growth of the firm*. Oxford University Press.

Peress, J. (2010). Product market competition, insider trading, and stock market efficiency. *The Journal of Finance*, *65*(1), 1-43.

Perryman, A. A., Fernando, G. D., & Tripathy, A. (2016). Do gender differences persist? An examination of gender diversity on firm performance, risk, and executive compensation. *Journal of Business Research*, *69*(2), 579-586.

Petrovits, C. M. (2006). Corporate-sponsored foundations and earnings management. *Journal of Accounting and Economics*, *41*(3), 335-362.

Pfarrer, M. D., Smith, K. G., Bartol, K. M., Khanin, D. M., & Zhang, X. (2008). Coming forward: The effects of social and regulatory forces on the voluntary restatement of earnings subsequent to wrongdoing. *Organization Science*, *19*(3), 386-403.

Philippe, D., & Durand, R. (2011). The impact of norm‐conforming behaviors on firm reputation. *Strategic Management Journal*, *32*(9), 969-993.

Pike, A., & Pollard, J. (2010). Economic geographies of financialization. *Economic Geography*, *86*(1), 29-51.

Piketty, T. (2020). *Capital and ideology*. Harvard University Press.

Pomering, A., & Johnson, L. W. (2009). Constructing a corporate social responsibility reputation using corporate image advertising. *Australasian Marketing Journal*, *17*(2), 106-114.

Ponczek, S. (2020, October 21). *Epic S&P 500 Rally Is Powered by Assets You Can't See or Touch.* Bloomberg. https://www.bloomberg.com/news/articles/2020-10-21/epic-s-p-500-rally-is-powered-by-assets-you-can-t-see-or-touch

Porter, M. E., & Kramer, M. R. (2006). The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, *84*(12), 78-92.

Qi, G., Zeng, S., Tam, C., Yin, H., & Zou, H. (2013). Stakeholders' influences on corporate green innovation strategy: A case study of manufacturing firms in China. *Corporate Social Responsibility and Environmental Management*, *20*(1), 1-14.

Qi, Y., Chai, Y., & Jiang, Y. (2021). Threshold effect of government subsidy, corporate social responsibility and brand value using the data of China's top 500 most valuable brands. *Plos One*, *16*(5), e0251927.

Qiu, B., Yu, J., & Zhang, K. (2020). Trust and stock price synchronicity: Evidence from China. *Journal of Business Ethics*, *167*(1), 97-109.

Radu, C., & Smaili, N. (2021). Alignment versus monitoring: An examination of the effect of the CSR committee and CSR-linked executive compensation on CSR performance. *Journal of Business Ethics*, 1-19.

Rahman, M., Rodr ǵuez-Serrano, M. Á., & Faroque, A. R. (2021). Corporate environmentalism and brand value: A natural resource-based perspective. *Journal of Marketing Theory and Practice*, *29*(4), 463-479.

Rahman, M., Rodr ǵuez-Serrano, M. Á., & Lambkin, M. (2017). Corporate social responsibility and marketing performance: The moderating role of advertising intensity. *Journal of Advertising Research*, *57*(4), 368-378.

Ramanna, K. (2008). The implications of unverifiable fair-value accounting: Evidence from the political economy of goodwill accounting. *Journal of Accounting and Economics*, *45*(2-3), 253-281.

Ranft, A. L., Zinko, R., Ferris, G. R., & Buckley, M. R. (2006). Marketing the image of management: The costs and benefits of CEO reputation. *Organizational Dynamics*, *35*(3), 279-290.

Rangan, K., Chase, L., & Karim, S. (2015). The truth about CSR. *Harvard Business Review*, *93*(1/2), 40-49.

Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea Green Publishing.

Reese Jr, W. A., & Weisbach, M. S. (2002). Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. *Journal of Financial Economics*, *66*(1), 65-104.

Rekker, S. A., Benson, K. L., & Faff, R. W. (2014). Corporate social responsibility and CEO compensation revisited: Do disaggregation, market stress, gender matter?. *Journal of Economics and Business*, *72*, 84-103.

Ren, H. (2009). Environment protection, sustainable development and establishment of green finance system. *Modern Economic Research, 10*.

Reuters (2019). *China to prosecute former chairman of luxury liquor maker for graft*. Retrieved from https://www.reuters.com/article/us-china-corruption-idUSKCN1SS0U5

Reynolds, A., & Lewis, D. (2017). Teams solve problems faster when they're more cognitively diverse. *Harvard Business Review*, *30*, 1-8.

Riahi‐Belkaoui, A. (1992). Executive compensation, organizational effectiveness, social performance and firm performance: An empirical investigation. *Journal of Business Finance & Accounting*, *19*(1), 25-38.

Richard, O. C. (2000). Racial diversity, business strategy, and firm performance: A resource-based view. *Academy of Management Journal*, *43*(2), 164-177.

Richardson, A. J., & Welker, M. (2001). Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organizations and Society*, *26*(7-8), 597-616.

Riedl, A., & Smeets, P. (2017). Why do investors hold socially responsible mutual funds?. *The Journal of Finance*, *72*(6), 2505-2550.

Roberts, P. W., & Dowling, G. R. (2002). Corporate reputation and sustained superior financial performance. *Strategic Management Journal*, *23*(12), 1077-1093.

Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting, Organizations and Society*, *17*(6), 595-612.

Rodriguez, P., Siegel, D. S., Hillman, A., & Eden, L. (2006). Three lenses on the multinational enterprise: Politics, corruption, and corporate social responsibility. *Journal of International Business Studies*, *37*(6), 733-746.

Rogers, E. M. (1976). New product adoption and diffusion. *Journal of Consumer Research, 2*(4), 290-301.

Rogers, E. M., Singhal, A., & Quinlan, M. M. (2014). Diffusion of innovations. In *an integrated approach to communication theory and research* (pp. 432-448). Routledge.

Roll, R. (1988). R2. *The Journal of Finance, 43*(3), 541-566.

Rosenbröijer, C. J. (2001). Industrial brand management: A distributor's perspective in the UK fine-paper industry. *Journal of Product and Brand Management*, *10*(1), 7-25.

Rostow, W. W. (1974). Money and capital in economic development. By Ronald I. McKinnon. (Washington, DC: The Brookings Institution, 1973. Pp. 184. $7.50.). *American Political Science Review*, *68*(4), 1822-1824.

Roulstone, D. T. (2003). The relation between insider‐trading restrictions and executive compensation. *Journal of Accounting Research*, *41*(3), 525-551.

Ruf, B. M., Muralidhar, K., Brown, R. M., Janney, J. J., & Paul, K. (2001). An empirical investigation of the relationship between change in corporate social performance and financial performance: A stakeholder theory perspective. *Journal of Business Ethics*, *32*(2), 143-156.

Russo, M. V., & Harrison, N. S. (2005). Organizational design and environmental performance: Clues from the electronics industry. *Academy of Management Journal*, *48*(4), 582-593.

Salazar, J. (1998, May). Environmental finance: Linking two world. In *a Workshop on Financial Innovations for Biodiversity Bratislava* (Vol. 1, pp. 2-18).

Samuelson P. A. (1948). *Economics: An introductory analysis*. New York: McGraw-Hill Book Company

Samuelson, J. F., & Stout, L. A. (2009). *Are executives paid too much?*. The Wall Street Journal, *26*.

Sardon M., (2021). ESG metrics help CFOs attract new investors, reduce costs. *Wall Street Journal*. Retrieved from https://www.wsj.com/articles/esg-metrics-help-cfos-attract-new-investors-reduce-costs-11612780321

Sassen, R., Hinze, A. K., & Hardeck, I. (2016). Impact of ESG factors on firm risk in Europe. *Journal of Business Economics*, *86*(8), 867-904.

Schadewitz, H., & Niskala, M. (2010). Communication via responsibility reporting and its effect on firm value in Finland. *Corporate Social Responsibility and Environmental Management*, *17*(2), 96-106.

Scharfstein, D. (1988). Product-market competition and managerial slack. *The RAND Journal of Economics*, 147-155.

Schein, E.H. (1965). *Organizational psychology*. Prentice-Hall, Englewood Cliffs, NJ.

Schmidt, K. M. (1997). Managerial incentives and product market competition. *The Review of Economic Studies*, *64*(2), 191-213.

Schneider, M. R., Iseke, A., & Pull, K. (2021). The gender pay gap in European executive boards: The role of executives' pathway into the board. *The International Journal of Human Resource Management*, *32*(14), 2952-2974.

Schnietz, K. E., & Epstein, M. J. (2005). Exploring the financial value of a reputation for corporate social responsibility during a crisis. *Corporate Reputation Review*, *7*(4), 327-345.

Schultz, M., & De Chernatony, L. (2002). Introduction: The challenges of corporate branding. *Corporate Reputation Review*, *5*(2-3), 105-105.

Schwartz, M. S., & Carroll, A. B. (2003). Corporate social responsibility: A three-domain approach. *Business Ethics Quarterly*, *13*(4), 503-530.

Schwartz, M. S. (2003). The "ethics" of ethical investing. *Journal of Business Ethics*, *43*(3), 195-213.

Schwartz, D., Loewenstein, G., & Agüero-Gaete, L. (2020). Encouraging pro-environmental behaviour through green identity labelling. *Nature Sustainability*, *3*(9), 746-752.

Seetharaman, A., Nadzir, Z. A. B. M., & Gunalan, S. (2001). A conceptual study on brand valuation. *Journal of Product & Brand Management*.

Semenova, N., HaSSel, L. G., & Nilsson, H. (2010). The value relevance of environmental and social performance: Evidence from Swedish SIX 300 companies. *Liiketaloudellinen Aikakauskirja*, (3).

Sen, S., & Bhattacharya, C. B. (2001). Does doing good always lead to doing better? Consumer reactions to corporate social responsibility. *Journal of Marketing Research*, *38*(2), 225-243.

Sengupta, P. (1998). Corporate disclosure quality and the cost of debt. *Accounting Review*, 459-474.

Seo, H. J., Kim, H. S., & Kim, Y. C. (2012). Financialization and the slowdown in Korean firms' R&D investment. *Asian Economic Papers*, *11*(3), 35-49.

Sethi, S. P., Martell, T. F., & Demir, M. (2016). Building corporate reputation through corporate social responsibility (CSR) reports: The case of extractive industries. *Corporate Reputation Review*, *19*(3), 219-243.

Shackleton, M., Yan, J., & Yao, Y. (2022). What drives a firm's ES performance? Evidence from stock returns. *Journal of Banking & Finance*, *136*, 106304.

Shahab, Y., Ntim, C. G., & Ullah, F. (2019). The brighter side of being socially responsible: CSR ratings and financial distress among Chinese state and non-state owned firms. *Applied Economics Letters*, *26*(3), 180-186.

Sharma, R., & Jain, V. (2019). CSR, trust, brand loyalty and brand equity: Empirical evidences from sportswear industry in the NCR region of India. *Metamorphosis*, *18*(1), 57-67.

Sheldon, O. (1924). *The philosophy of management*. Pitman.

Shi, H., Zhang, X., & Zhou, J. (2018). Cross-listing and CSR performance: Evidence from AH shares. *Frontiers of Business Research in China*, *12*(1), 1-15.

Shipley, D., & Howard, P. (1993). Brand-naming industrial products. *Industrial Marketing Management*, *22*(1), 59-66.

Silk, D.M, Niles, S.V, & Lu C.X.W. (2022, March 28). *Board oversight of ESG: Preparing for the 2022 proxy season and beyond.* Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2022/03/28/board-oversight-of-esg-preparing-for-the-2022-proxy-season-and-beyond/

Singh, A., & Verma, P. (2018). Driving brand value through CSR initiatives: An empirical study in Indian perspective. *Global Business Review*, *19*(1), 85-98.

Smith, A. (1763/1978). *Lectures on jurisprudence*. Oxford University Press.

Smith, A. (1776*). An inquiry into the nature and causes of the wealth of nations: Volume One.* London: printed for W. Strahan; and T. Cadell, 1776.

Snehota, I., & Hakansson, H. (1995). Developing relationships in business networks.

Solomon, A., & Lewis, L. (2002). Incentives and disincentives for corporate environmental disclosure. *Business Strategy and the Environment*, *11*(3), 154-169.

Song, D. (2006). State-owned holdings, promotion of executives and firm performance. *Nankai Economic Studies*, *28*(003), 102-115.

Stam, W., Arzlanian, S., & Elfring, T. (2014). Social capital of entrepreneurs and small firm performance: A meta-analysis of contextual and methodological moderators. *Journal of Business Venturing*, *29*(1), 152-173.

Stanwick, P. A., & Stanwick, S. D. (2001). CEO compensation: Does it pay to be green?. *Business Strategy and the Environment*, *10*(3), 176-182.

Statman, M., & Glushkov, D. (2009). The wages of social responsibility. *Financial Analysts Journal*, *65*(4), 33-46.

Staubus, G. J. (1958). Comments on "Accounting and reporting standards for corporate financial statements-1957 revision". *The Accounting Review*, *33*(1), 11-24.

Staubus, G. J. (2013). *The decision usefulness theory of accounting: A limited history*. Routledge.

Stiglitz, J.E. (2020). *How to recover green*. Project Syndicate. Retrieved from https://www.project-syndicate.org/onpoint/how-to-direct-investments-toward-green-recovery-by-joseph-e-stiglitz-2020-09?barrier=accesspaylog

Stiglitz, J. E. (2012). *The price of inequality: How today's divided society endangers our future*. WW Norton & Company.

Stiglitz, J. E., Sen, A., & Fitoussi, J. P. (2009). Report by the commission on the measurement of economic performance and social progress.

Stiglitz, J.E., & Stern, N. (2009, March 2). *Obama's chance to lead the green recovery.* Financial Times. Retrieved from http://www.ft.com/cms/s/0/7c51644a-075b-11de-9294-000077b07658.html#axzz3QwscYh5V

Strine, L. E., & Smith, K. M. (2020). *Toward fair gainsharing and a quality workplace for employees: How a reconceived compensation committee might help make corporations more responsible employers and restore faith in American capitalism*. Harvard Law School.

Stulz, R. M. (2005). The limits of financial globalization. *The Journal of Finance*, *60*(4), 1595-1638.

Stulz, R. M., & Wasserfallen, W. (1995). Foreign equity investment restrictions, capital flight, and shareholder wealth maximization: Theory and evidence. *The Review of Financial Studies*, *8*(4), 1019-1057.

SuperFinance. (2021) SuperFinance ESG ratings. [Database]. https://www.superfinance.com/us-ratings.html

Swaminathan, V., Page, K. L., & Gürhan-Canli, Z. (2007). "My" brand or "our" brand: The effects of brand relationship dimensions and self-construal on brand evaluations. *Journal of Consumer Research*, *34*(2), 248-259.

Tadelis, S. (1999). What's in a name? Reputation as a tradeable asset. *American Economic Review*, *89*(3), 548-563.

Taeuscher, K. (2019). Reputation and new venture performance in online markets: The moderating role of market crowding. *Journal of Business Venturing*, *34*(6), 105944.

Takahashi, H., & Yamada, K. (2021). When the Japanese stock market meets COVID-19: Impact of ownership, China and US exposure, and ESG channels. *International Review of Financial Analysis*, *74*, 101670.

Talke, K., Salomo, S., & Rost, K. (2010). How top management team diversity affects innovativeness and performance via the strategic choice to focus on innovation fields. *Research Policy*, *39*(7), 907-918.

Tang, K., & Xiong, W. (2012). Index investment and the financialization of commodities. *Financial Analysts Journal*, *68*(6), 54-74.

Taussig, F. W., & Barker, W. S. (1925). American corporations and their executives: A statistical inquiry. *The Quarterly Journal of Economics*, *40*(1), 1-51.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319-1350.

The Economist. (2022, July 21). *ESG should be boiled down to one simple measure: Emissions.* The Economist. Retreived from https://www.economist.com/leaders/2022/07/21/esg-should-be-boiled-down-to-one-simple-measure-emissions

Thurow, L. C. (2000). Globalization: The product of a knowledge-based economy. *The Annals of the American Academy of Political and Social Science*, *570*(1), 19-31.

Tilt, C. A. (2001). The content and disclosure of Australian corporate environmental policies. *Accounting, Auditing & Accountability Journal*, *14*(2), 190-212.

Ting, I. W. K., Azizan, N. A., Bhaskaran, R. K., & Sukumaran, S. K. (2019). Corporate social performance and firm performance: Comparative study among developed and emerging market firms. *Sustainability*, *12*(1), 26.

Torres, A., Bijmolt, T. H., Tribó, J. A., & Verhoef, P. (2012). Generating global brand equity through corporate social responsibility to key stakeholders. *International Journal of Research in Marketing*, *29*(1), 13-24.

Truong, Y., & Berrone, P. (2022). Can environmental innovation be a conventional source of higher market valuation?. *Journal of Business Research*, *142*, 113-121.

Tsang, A., Wang, K. T., Liu, S., & Yu, L. (2021). Integrating corporate social responsibility criteria into executive compensation and firm innovation: International evidence. *Journal of Corporate Finance*, *70*, 102070.

Tsujimoto, M., Kajikawa, Y., Tomita, J., & Matsumoto, Y. (2018). A review of the ecosystem concept—Towards coherent ecosystem design. *Technological Forecasting and Social Change*, *136*, 49-58.

Tuan, L. T. (2014). Corporate governance and brand performance. *Management Research Review*.

UN PRI. (2020*). Enhance our global footprint.* Retrieved from https://www.unpri.org/annual-report-2020/how-we-work/building-our-effectiveness/enhance-our-global-footprint

UNEP (2019). China to host world environment day 2019 on air pollution. Retrieved from https://www.unenvironment.org/news-and-stories/press-release/china-host-world-environment-day-2019-air-pollution.

Ünlü, U., & Yagli, I. (2016). Corporate governance and brand value. *European Journal of Business and Management*, *8*(15).

UNPRI (2022). Enhance our global footprint. Retrieved from https://www.unpri.org/annual-report-2021/how-we-work/building-our-effectiveness/enhance-our-global-footprint

Urban, M. A., & Wójcik, D. (2019). Dirty banking: Probing the gap in sustainable finance. *Sustainability*, *11*(6), 1745.

Vafeas, N. (2000). Board structure and the informativeness of earnings. *Journal of Accounting and Public policy*, *19*(2), 139-160.

Vanclay, J. K., Shortiss, J., Aulsebrook, S., Gillespie, A. M., Howell, B. C., Johanni, R., ... & Yates, J. (2011). Customer response to carbon labelling of groceries. *Journal of Consumer Policy*, *34*(1), 153-160.

Van der Laan, G., Van Ees, H., & Van Witteloostuijn, A. (2008). Corporate social and financial performance: An extended stakeholder theory, and empirical test with accounting measures. *Journal of Business Ethics*, *79*(3), 299-310.

Van der Walt, N., & Ingley, C. (2003). Board dynamics and the influence of professional background, gender and ethnic diversity of directors. *Corporate Governance: An International Review*, *11*(3), 218-234.

Van der Zwan, N. (2014). Making sense of financialization. *Socio-Economic Review*, *12*(1), 99-129.

Vazifehdust, H., Mojoudi, A., & Jalalian, S. (2014). The effect of corporate social responsibility on corporate image, customer satisfaction and loyalty in the banking industry (Case Study: Tehran Melli Bank). In *Conference of Development and Innovation Management in Management Empowerment* (pp. 1-23).

Verlegh, P. W., & Steenkamp, J. B. E. (1999). A review and meta-analysis of country-of-origin research. *Journal of Economic Psychology*, *20*(5), 521-546.

Verrecchia, R. E. (1983). Discretionary disclosure. *Journal of Accounting and Economics*, *5*, 179-194.

Wagenhofer, A. (1990). Voluntary disclosure with a strategic opponent. *Journal of Accounting and Economics*, *12*(4), 341-363.

Wagner, D. G., & Berger, J. (1985). Do sociological theories grow?. *American Journal of Sociology*, *90*(4), 697-728.

Walter, I. (2020). Sense and nonsense in ESG ratings. *Journal of Law, Finance and Accounting*.

Wang, J. M. (2008). Research on the correlation between environmental information disclosure, industry differences and external institutional pressure--Empirical evidence from environmental information disclosure of China's Shanghai-listed companies. *Accounting Research*, *6*, 54-62.

Wang, M. L., Kuo, T. C., & Liu, J. W. (2009). Identifying target green 3C customers in Taiwan using multiattribute utility theory. *Expert Systems with Applications*, *36*(10), 12562-12569.

Wang, Y., & Berens, G. (2015). The impact of four types of corporate social performance on reputation and financial performance. *Journal of Business Ethics*, *131*(2), 337-359.

Wang, Z., Liao, K., & Zhang, Y. (2021). Does ESG screening enhance or destroy stock portfolio value? Evidence from China. *Emerging Markets Finance and Trade*, 1-15.

Wang, Z., Zhang, Z, & Liu, L. (2006). Is the analyst's recommendation worth the investment? *Research on Financial and Economic Issues, 7*, 36–44.

Wara, M. (2007). Is the global carbon market working?. *Nature*, *445*(7128), 595-596.

Warfield, T. D., Wild, J. J., & Wild, K. L. (1995). Managerial ownership, accounting choices, and informativeness of earnings. *Journal of Accounting and Economics*, *20*(1), 61-91.

Wartick, S. L. (2002). Measuring corporate reputation: Definition and data. *Business & Society*, *41*(4), 371-392.

Watkins, J. P. (2017). Financialization and society's protective response: Reconsidering Karl Polanyi's double movement. *Journal of Economic Issues*, *51*(1), 98-117.

Webster, F. E., & Keller, K. L. (2004). A roadmap for branding in industrial markets. *Journal of Brand Management*, *11*(5), 388-402.

Wei, Z., & Varela, O. (2003). State equity ownership and firm market performance: Evidence from China's newly privatized firms. *Global Finance Journal*, *14*(1), 65-82.

Weitzman, M. L. (2009). On modeling and interpreting the economics of catastrophic climate change. *The Review of Economics and Statistics*, *91*(1), 1-19.

Welker, M. (1995). Disclosure policy, information asymmetry, and liquidity in equity markets. *Contemporary Accounting Research*, *11*(2), 801-827.

White, L. J. (2010). Markets: The credit rating agencies. *Journal of Economic Perspectives*, *24*(2), 211-26.

WHO. (2016, September 27). *WHO releases country estimates on air pollution exposure and health impact*. Retrieved January 18, 2022, from https://www.who.int/news/item/27-09-2016-who-releases-country-estimates-on-air-pollution-exposure-and-health-impact

Willmott, H. (2010). Creating 'value' beyond the point of production: Branding, financialization and market capitalization. *Organization*, *17*(5), 517-542.

Winkler, A. (1999). *Warp-speed branding: The impact of technology on marketing* (Vol. 6). Wiley.

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, *105*(3), 581-606.

Wójcik, D. (2006). Convergence in corporate governance: Evidence from Europe and the challenge for economic geography. *Journal of Economic Geography*, *6*(5), 639-660.

Wójcik, D. (2013). Where governance fails: Advanced business services and the offshore world. *Progress in Human Geography*, *37*(3), 330-347.

Wójcik, D. (2021). Financial geography III: Research strategies, designs, methods and data. *Progress in Human Geography*, 03091325211043208.

Wójcik, D., & Burger, C. (2010). Listing BRICs: Stock issuers from Brazil, Russia, India, and China in New York, London, and Luxembourg. *Economic Geography*, *86*(3), 275-296.

Wójcik, D., & Camilleri, J. (2015). 'Capitalist tools in socialist hands'? China Mobile in global financial networks. *Transactions of the Institute of British Geographers*, *40*(4), 464-478.

Wójcik, D., & Cojoianu, T. F. (2018). Resilience of the US securities industry to the global financial crisis. *Geoforum*, *91*, 182-194.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

Wu, Y., Shen, J., Zhang, X., Skitmore, M., & Lu, W. (2016). The impact of urbanization on carbon emissions in developing countries: A Chinese study based on the U-Kaya method. *Journal of Cleaner Production*, *135*, 589-603.

Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of financial economics*, *58*(1-2), 187-214.

Xia, H. (2014). Can investor-paid credit rating agencies improve the information quality of issuer-paid rating agencies?. *Journal of Financial Economics*, *111*(2), 450-468.

Xin, K. K., & Pearce, J. L. (1996). Guanxi: Connections as substitutes for formal institutional support. *Academy of Management Journal*, *39*(6), 1641-1658.

Xu, X. D., Zeng, S. X., & Tam, C. M. (2012). Stock market's reaction to disclosure of environmental violations: Evidence from China. *Journal of Business Ethics*, *107*(2), 227-237.

Yamaguchi, K. (2008). Reexamination of stock price reaction to environmental performance: A GARCH application. *Ecological Economics*, *68*(1-2), 345-352.

Yang, J., & Basile, K. (2018). The impact of corporate social responsibility on brand equity. *Marketing Intelligence & Planning*.

Yao, Q., Zeng, S., Sheng, S., & Gong, S. (2021). Green innovation and brand equity: Moderating effects of industrial institutions. *Asia Pacific Journal of Management*, *38*(2), 573-602.

Ye, Y. (2008). "Equatorial" journey of "green credit". *Environmental Protection*, (4): 46–48.

Yin, W. (2017). Sovereign wealth fund investments and the need to undertake socially responsible investment. *International Review of Law*, *2017*(1), 9.

Yoo, S., & Managi, S. (2022). Disclosure or action: Evaluating ESG behavior towards financial performance. *Finance Research Letters*, *44*, 102108.

Yuan, X., Li, Z., Xu, J., & Shang, L. (2022). ESG disclosure and corporate financial irregularities–Evidence from Chinese listed firms. *Journal of Cleaner Production*, *332*, 129992.

Zhang, B. P. (2019). Ten major scientific issues concerning the study of China's north-south transitional zone. *Progress in Geography*, *38*(3), 305-311.

Zhang, D., Wang, C., & Dong, Y. (2022). How does firm ESG performance impact financial constraints? An experimental exploration of the COVID-19 pandemic. *The European Journal of Development Research*, 1-21.

Zhang, F., Zhu, L., & Lyu, C. (2020). Large shareholder–manager social capital and firms' radical innovation: Empirical evidence from Chinese firms. *Innovation*, *22*(4), 377-398.

Zhang, L., Shan, Y. G., & Chang, M. (2021). Can CSR disclosure protect firm reputation during financial restatements?. *Journal of Business Ethics*, *173*(1), 157-184.

Zhang, Y. (2005). Research on the Formation Mechanism of China's Securities Market Bubble. *Management World*, *10*, 34–40.

# Appendices

## **Appendix 1:** Conflict-of-Interest Disclosure Statement

No external funding was received for this thesis.

The author of this thesis, Haisen Ding, is an investor, majority shareholder, and current chairman of SuperFinance. The results of this study were not pre-screened by anyone.

This thesis is not intended to have commercial value. If any subsequent reader intends to reproduce, copy, use, or access any part of this thesis for commercial purposes, or if this thesis is otherwise referenced in any commercial undertaking, no reference should be made to the supervisor or examiners of the thesis when acknowledging the source.

The supervisor and examiners of this thesis have NO affiliation with or involvement in any organization or entity with any financial interest in any of the companies mentioned in this study.

## **Appendix 2:** SuperFinance's ESG Rating Methodology and Weights

At present, all mainstream ESG rating agencies use the issuer-paid business model and all have conflicts of interest. For example, S&P collects the rating fee first, then begins the rating, and finally puts the rated sample into the index data pool. A listed company or bond issuer generally consults all rating agencies first, asks for a "pre-evaluation," and then chooses the highest-rated rater. To gain profits, rating agencies often raise their rating scores. The catalyst of the 2008 financial crisis also stemmed from this problem.

To resolve the conflict-of-interest problem, SuperFinance adopts a completely different business model than that of mainstream rating agencies such as S&P. They do not charge the issuer, but only charge the investors who need the ESG score data, so there are no business ethics issues or conflicts of interest. Of course, this business model will lose money in the short term. Therefore, few people are willing to try this model (it is a high-risk niche market).

SuperFinance has its own rating methodology containing various indicators for each pillar of ESG. Per this methodology, the ESG data is collected from the annual disclosure reports of public companies as well as other authoritative sources, such as exchange documents, official releases, etc.

The integrity of the data is ensured in two ways. First, the data is always double-checked by the team and periodically reviewed by management. Second, the collected data is sent out to companies via questionnaires so that they can respond with questions or corrections if needed. These procedures help to improve the quality of data collection and ratings.

Below are the factors comprising the SuperFinance ESG rating model:

| Segment | Weight | Primary Indicator | Secondary Indicator | Weight |
|---|---|---|---|---|
| Environment | 35% | Environmental governance policy and management system | Environmental governance policy, Environmental governance goal, Environmental internal management, Environmental innovation | 6% |
| | | Emission | GHG emissions, Waste disposal, Spillage | 17% |
| | | Resource usage efficiency and biodiversity | Energy, Water, Raw Materials, Biodiversity | 12% |
| Social | 30% | Employment relationship | Employee structure, Fair opportunity, Employee care | 10% |
| | | Health and safety | Accidents, Training, Education | 5% |
| | | Social ethics and philanthropy | Customers, Community contributions, Ethics | 7% |
| | | Products | Product quality, Supply chain, Third-party certification | 8% |
| Governance | 35% | Board of Directors | Independence, Diversity, Structure, Other | 12% |
| | | Investor rights | Dividend distribution, Shareholder participation, Stock price maintenance | 8% |
| | | Salary and performance | Employee management and benefits, Salary, Other | 9% |
| | | Information disclosure | Periodic reports, Audits, Other disclosures | 6% |
| Total | | | | 100% |