

**EFFECT OF ESG PERFORMANCE ON STOCK  
PRICE CRASH RISK: THE MODERATING ROLE  
OF INVESTOR ATTENTION**

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**UNIVERSITI SAINS MALAYSIA**

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# **EFFECT OF ESG PERFORMANCE ON STOCK PRICE CRASH RISK: THE MODERATING ROLE OF INVESTOR ATTENTION**

by

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**Saya sayang USM!**

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## LIST OF ABBREVIATIONS

|        |                                                              |
|--------|--------------------------------------------------------------|
| AUM    | Assets Under Management                                      |
| CBRC   | China Banking Regulatory Commission                          |
| CCDI   | Central Commission for Discipline Inspection                 |
| CNNIC  | China Internet Network Information Centre                    |
| CNPC   | China National Petroleum Corporation                         |
| CNRDS  | Chinese Research Data Services                               |
| CSMAR  | China Stock Market and Accounting Research                   |
| CSRC   | China Securities Regulatory Commission                       |
| CSP    | Corporate Social Performance                                 |
| CSR    | Corporate Social Responsibility                              |
| DUVOL  | Down-to-up Volatility                                        |
| ESG    | Environment, Social, and Governance                          |
| FEM    | Fixed Effects Model                                          |
| FTSE   | Financial Times Share Exchange                               |
| IPO    | Initial Public Offering                                      |
| IV     | Instrumental Variable                                        |
| MSCI   | Morgan Stanley Composite Index                               |
| NCSKEW | Negative Coefficient Skewness                                |
| NGO    | Non-Governmental Organizations                               |
| OECD   | Organization for Economic Cooperation and Development        |
| OLS    | Ordinary Least Squares                                       |
| PRI    | Principles for Responsible Investment                        |
| PT     | Particular Transfer                                          |
| SASAC  | State-owned Assets Supervision and Administration Commission |
| SDG    | Sustainable Development Goals                                |
| 2SLS   | Two-Stage Least Squares                                      |
| SMEs   | Small and Medium-sized Enterprises                           |
| SNSI   | Sino-Securities Index                                        |
| SOEs   | State-owned Enterprises                                      |
| SPSS   | Statistical Package for the Social Sciences                  |
| SSE    | Shanghai Stock Exchange                                      |

|         |                                                          |
|---------|----------------------------------------------------------|
| ST      | Special Treatment                                        |
| S&P 500 | Standard & Poor's 500                                    |
| UNPRI   | The United Nations Principles for Responsible Investment |
| VIF     | Variance Inflation Factor                                |
| WSVI    | Web Search Volume Index                                  |

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# **KESAN PRESTASI ESG TERHADAP RISIKO KEJATUHAN HARGA SAHAM: PERANAN MODERASI PERHATIAN PELABUR**

## **ABSTRAK**

Kejatuhan pasaran saham yang kerap di negara China telah menyebabkan kemerosotan ekonomi yang ketara, ketidakstabilan pasaran, penjejasan perniagaan dan peruntukan sumber serta mengakibatkan kerugian pihak berkepentingan. Justeru itu, usaha mengurangkan risiko kejatuhan harga saham adalah amat penting. Penyelidikan ini mengkaji peranan prestasi ESG dalam mengurangkan risiko kejatuhan harga saham di masa depan bagi negara China. Berasaskan perspektif pihak berkepentingan, kajian ini menyelidik faktor pendorong prestasi ESG yang paling berpengaruh dalam mengurangkan risiko kejatuhan harga saham bagi golongan firma pencemaran tinggi dan firma pengawalan tinggi dengan lebih lanjut. Mekanisme utama di sebalik kejatuhan harga saham peringkat firma ialah pendedahan secara mendadak maklumat negatif yang sebelum ini disembunyikan daripada pasaran. Memandangkan pelabur yang mengelak risiko sentiasa cuba mencari maklumat yang relevan untuk mengurangkan asimetri maklumat, penyelidikan ini mengkaji perhatian pelabur sebagai pembolehubah penyederhana yang mengukuhkan hubungan negatif antara prestasi ESG dan risiko kejatuhan harga saham. Dengan menggunakan sebanyak 17,042 pemerhatian tahun firma daripada set data panel yang tidak seimbang bagi firma tersenarai di negara China dari tahun 2013 hingga 2021, bukti empirikal mendedahkan perkaitan negatif antara prestasi ESG dan risiko kejatuhan harga saham. Bagi golongan firma pencemaran tinggi, prestasi alam sekitar merupakan pemacu paling berpengaruh dalam mengurangkan risiko kejatuhan harga saham. Sementara itu, bagi golongan firma pengawalan tinggi, prestasi tadbir urus memainkan peranan yang

paling kritikal. Perhatian pelabur berperanan memperkukuhkan hubungan negatif antara prestasi ESG dan risiko kejatuhan harga saham. Kajian ini memberikan sumbangan teori dan implikasi praktikal. Dari segi teori, kajian ini menerokai peranan prestasi ESG dalam pengurangan risiko melalui kanta teori pihak berkepentingan, teori ‘salience’ pihak berkepentingan dan teori agensi dengan memberikan bukti dan pandangan baharu tentang aplikasi teori-teori ini. Hasil kajian juga menyediakan panduan berguna bagi pihak pelabur, pengurus dan penggubal dasar. Para pelabur boleh meningkatkan strategi pelaburan mereka dengan menyepadukan prestasi ESG ke dalam proses membuat keputusan. Pengurus harus menggabungkan amalan ESG ke dalam operasi untuk mengoptimumkan peruntukan sumber, mengukuhkan kepercayaan dan sokongan pihak berkepentingan serta mengurangkan risiko kejatnhan harga saham. Pembuat dasar boleh menggalakkan firma melalui insentif dan mendidik pelabur untuk mengguna pakai strategi pelaburan yang focus kepada ESG secara progresif demi meningkatkan prestasi ESG korporat dan memupuk masyarakat yang lebih mampan.

# **EFFECT OF ESG PERFORMANCE ON STOCK PRICE CRASH RISK: THE MODERATING ROLE OF INVESTOR ATTENTION**

## **ABSTRACT**

China's frequent stock market crashes have caused significant economic damage, destabilized markets, harmed businesses and resource allocation, and resulted in stakeholder losses. Therefore, mitigating stock price crash risk is crucial. This research examines the role of ESG performance in mitigating future stock price crash risks in China. Grounding on stakeholders' perspective, this study further researches the most influential driving factor of ESG performance in reducing stock price crash risk in high-pollution and high-regulation firms. A key mechanism behind firm-level stock price crashes is the sudden disclosure of negative information that was previously concealed from the market. As risk-averse investors attempt to search for relevant information to reduce information asymmetry, this research examines investor attention as a moderating variable that strengthen the negative relationship between ESG performance and stock price crash risk. Using an unbalanced panel dataset of 17,042 firm-year observations of Chinese listed firms from 2013 to 2021, empirical evidence reveals a negative association between ESG performance and stock price crash risk. In high-pollution firms, environmental performance is the most influential driver in mitigating stock price crash risk. Meanwhile, in high-regulation firms, governance performance plays the most critical role. Investor attention strengthen the negative relationship between ESG performance and stock price crash risk. The study provides theoretical contributions and practical implications. Theoretically, this study explores the risk reduction role of ESG performance through the lenses of stakeholder theory, stakeholder salience theory and agency theory and

provides new evidence and insights into the application of these theories. The results of this study also provide helpful guidance for investors, managers, and policymakers. Investors can enhance their investment strategy by integrating ESG performance into their decision-making process. Managers should integrate ESG practices into operations to optimize resource allocation, strengthen stakeholder trust and support, and mitigate crash risks. Policymakers could incentivize firms through incentives and educate investors to progressively adopt ESG-focused investment strategies, thereby enhancing corporate ESG performance and fostering a more sustainable society.

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

This chapter provides an overview of the present study. First, the background of the study is discussed, followed by the research problem. Based on this problem, research objectives and questions are set. Then the study's significance in both theory and practice are explained, followed by definitions of key terms. The chapter concludes with a summary of the overall structure of the entire study.

### **1.2 Background of Study**

The study's background discussion covers various aspects, including stock price crashes in the Chinese capital market, growing concerns about ESG performance in China, capital market development, and investor attention in China.

#### **1.2.1 Stock price crashes in Chinese capital market**

The healthy development of the capital market plays a crucial role in the overall economy by facilitating the efficient allocation of financial resources (F. Jiang et al., 2020). It allows firms to raise funds for expansion and innovation. Besides, it also offers investors opportunities to earn returns on their investments. The Chinese capital market has been established over thirty years, since 1990. It provides necessary financial support to lots of firms. There are two types of methods that dominate market resources: the “visible hand” (government) and the “invisible hand” (market) (Song et al., 2015). On the one hand, the market self-regulates through the price mechanism. It affects stock prices through supply and demand, thereby helping efficient resource allocation (Xi et al., 2021).

On the other hand, the government strengthens supervision to guide and stabilize the market. For instance, the central government of China is dedicated to ensuring and prioritizing the stability and health of the capital market by implementing policies and promoting a transparent information environment (S. Huang & Liu, 2021). The president of China, Xi Jinping, has given crucial instructions multiple times, emphasizing the need to establish a multi-level capital market system with complete financing functions, effective market regulations, and adequate protection of legitimate interests (Z. Wang et al., 2020). Driven by market and government forces, the capital market in China is gradually moving towards a more stable developing stage.

Despite the efforts to maintain stability in Chinese capital market, stock price crashes still occur frequently. A stock price crash severely affects investor confidence in the capital market and the stability of the financial market. It even triggers resource misallocation in the economy (S. Huang & Liu, 2021).

There are two types of stock price crashes: firm-level crashes and market-level crashes (Chauhan et al., 2021). This study specifically focuses on firm-level stock price crash risk. A market-level stock price crash refers to a sudden and significant decline in the prices of a broad range of stocks across the entire market within a short period (Gabaix, 2012). From the stock exchange index in China, one can easily see that market-level crashes in Chinese capital market happen frequently. Moreover, there is a stark contrast in stock markets between developing and developed countries because of the different market mechanisms and processes<sup>1</sup>.

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<sup>1</sup> The Capital market can be divided into three categories: stock market, bond market, and fund market. Because the stock market has a large scale and profound influence, it has increasingly become the main part of capital markets in various countries.

Take the Shanghai Stock Exchange (SSE) Composite Index as an example. It is a stock price index calculated based on representative listed stocks as samples and weighted by the stock issuance volume. Moreover, it is one of the most widely recognized indicators of the performance of the Chinese stock market (Y. Chen & Hao, 2017). Figure 1.1 depicts the SSE Composite Index in the last 20 years. It experienced a bull market in 2007, with the index rising rapidly from about 2,700 points at the start of the year to a peak of 6,124 points. However, the financial crisis hit the market, and the index plummeted to 1,664 points in 2008. The same incident happened in 2015; the SSE Composite Index experienced a rapid rise in value, peaking at 5,178 points (X. Fan et al., 2021). However, the boom was short-lived. One month later, the stock market crisis hit, and stock prices plummeted by over 30%. Thousands of stocks crashed, leading to the suspension of trading for numerous firms. Such a widespread suspension of trading is rare in the history of the global capital market.

According to the methodology established by Folkinshteyn et al. (2015), a market-level stock price crash is defined as a cumulative decline of at least 9.8% in the market index over several consecutive trading days (usually a week). This definition provides a clear and objective threshold for identifying market-level crashes.

In the context of the SSE Composite Index, illustrated in Figure 1.1, six significant stock market crashes have occurred in the past 20 years. These major crashes include the downturn in June 2021, which was associated with state-owned enterprise reforms; the global financial crisis in September 2008; the government's sudden policy reversal in July 2015; the June 2018 tensions resulting from U.S.– China trade disputes; and the outbreak of COVID-19 in March 2020. And in early 2022 due to economic slowdowns and pandemic restrictions. These incidents highlight the considerable

volatility of the Chinese stock market and the frequent occurrence of sharp short-term declines.

In contrast, the stock market in developed countries tends to be more stable. Take the Standard & Poor's 500 (S&P 500) Index in the United States as an example. The S&P 500 index is one of the oldest and most representative indices of the US stock market, reflecting the overall state of the United States stock market (Yousfi et al., 2021). Due to the fact that these 500 companies span various industries and their market value accounts for about 80% of the total value of the New York Stock Exchange, and the index is also calculated using the weighted method, the S&P 500 is highly representative of the US stock market (Enke & Amornwattana, 2008). Figure 1.2 depicts the S&P 500 index in recent 20 years.

The U.S. S&P 500 Index experienced four significant market crashes during the specified period, following a similar methodology to analyze market crash. The first crash occurred in April 2000, triggered by the bursting of the dot-com bubble, which led to a sharp decline in the market. The second crash took place in September 2008 during the global financial crisis. The third crash happened in February 2020, coinciding with the COVID-19 outbreak. The fourth crash occurred in early 2022, driven by surging inflation and a rapid tightening of monetary policy.

When comparing the SSE Composite Index to the S&P 500 Index, clear differences emerge. Although Chinese capital market has grown rapidly, its overall quality still lags behind that of developed markets. Consequently, while the SSE Composite Index experiences frequent fluctuations (Y. Li & Li, 2023), the S&P 500 Index shows a steady upward trend, as illustrated in Figures 1.1 and 1.2.

During such market crash periods, asset prices and investor sentiment tend to decline rapidly (Smales, 2017). On a broader scale, these crashes also negatively affect the market size and overall stability. The loss of investor confidence and wealth often leads to reduced market liquidity and a significant drop in trading volume (Debata et al., 2018). Furthermore, the heightened uncertainty following a crash can hinder capital-raising activities. Firms tend to raise capital more frequently under such uncertainty conditions, often favouring debt financing over equity financing to avoid further declines in stock prices (Ashraf et al., 2022). Over time, persistent structural challenges, such as low information transparency, market volatility, and incomplete regulatory frameworks, can exacerbate these effects, sustaining a higher risk of future stock price crashes.



Figure 1.1 SSE Composite Index

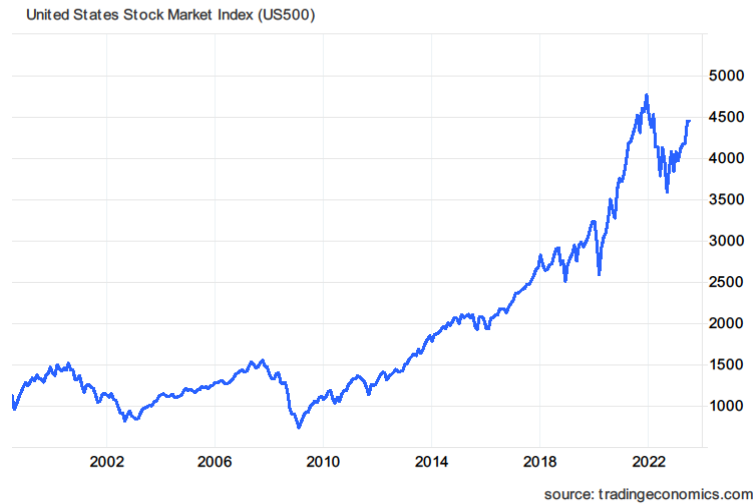


Figure 1.2 US S&P 500 Index

The Chinese capital market has experienced several market-level crashes in recent years, which have raised concerns about systemic risk and market stability. However, even in stable market conditions, individual firms can still be highly susceptible to firm-level stock price crashes. These crashes are often the result of latent, firm-specific risks that have been concealed from the public. While market-level crashes are driven by macro factors, firm-level crashes are a result of a firm's own actions and characteristics. Therefore, this study aims to delve into these firm-specific factors to find some ways to mitigate this type of risk.

A firm-level stock crash refers to the risk of a sudden, severe decline in the stock price of an individual company (J. B. Kim et al., 2011a). According to a regulatory agency in China, if a stock price in one single-day return has a decline of 10% or more in the stock's price, it is called a stock price crash (D. Chen & Zhou, 2006). At the firm level, firm-specific stock price crash cases emerge endlessly. For instance, Jiugui Liquor, a famous Chinese liquor company, experienced a sharp decline in its stock price due to food safety issues. Changsheng Biotechnology, a prominent Chinese biomedical

research institute, suffered the same fate after being caught producing and selling counterfeit products. This led to its mandatory delisting from the Shenzhen Stock Exchange. LeTV, once a top-five multimedia platform in China, faced a debt crisis that caused its stock price to crash, leading to a loss of RMB 170 billion and ultimately ending in a delisting. Table 1.1 illustrates some major cases of firm-specific stock price crashes in China.

Table 1.1 Typical Cases of Firm-specific Stock Price Crashes in China

| Date      | Firm Name (Code)                                              | Major Issue                                                                 | Stock Price Movement                                                                                                                    | Shareholder Impact                                                                                                                                                                     |
|-----------|---------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19-Nov-12 | Jiugui Liquor Co. Ltd. (000799)                               | Alcoholic products contained 260% more plasticiser than the standard limit. | Fell from 47.58 yuan per share to 27.32 over two weeks, resulting in a market value decrease of RMB 6.583 billion.                      | The net outflow of the main funds amounting to RMB 1.68 billion, with a trading volume of 88,295,300 shares and a turnover rate of 39.38%, leading to a 13.32% decline in share price. |
| 6-Nov-16  | LeTV Co. Ltd. (Delisted)                                      | Payment default                                                             | The stock price peaked at a historical high of 179.03 yuan per share. Upon delisting, the stock price plummeted to 0.18 yuan per share. | LeTV had a total of 280,767 shareholders, who faced uncertainty and potential financial losses.                                                                                        |
| 29-May-18 | Kangmei Pharmaceutical Co. Ltd. (*Special Treatment) (600518) | Financial fraud                                                             | The stock price dropped from 21 yuan per share to 6.31 yuan per share.                                                                  | According to the court ruling, Kangmei Pharmaceutical Co. is required to compensate approximately 24.59 billion yuan to 52,037 investors.                                              |
| 15-Jul-18 | Changsheng Biotechnology Co. Ltd. (Delisted)                  | Vaccine counterfeiting                                                      | The stock price plummeted from 24.55 yuan to 14.50 yuan, eroding the market value by nearly 10 billion yuan.                            | Changsheng Bio Co. had 24,800 shareholders who faced substantial losses.                                                                                                               |

|           |                                                         |                                                                          |                                                                                                                               |                                                                                                                                                  |
|-----------|---------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 23-Apr-18 | Jiangsu Huifeng Bio Agriculture Co. Ltd. (002496)       | Illegally dumping sewage and burying chemical waste                      | The firm's stock price plummeted, resulting in limit down for five consecutive days.                                          | According to the court ruling, the company is required to compensate investors a total of 87 million yuan.                                       |
| 1-Feb-21  | China Fortune Land Development (CFLD) Co. Ltd. (600340) | Loan default                                                             | Within a year of the scandal, the stock price plummeted 80% from a peak of 20.93 yuan to a low of 4.14 yuan.                  | The company's market capitalization decreased by over RMB 3 billion                                                                              |
| 29-Jan-22 | China Evergrande Group (To be delisted on 25-Aug-25)    | Debt crisis                                                              | Share price declined sharply, reaching approximately HK\$1.16 by March 2022, representing a loss of over 90% from prior peaks | Shareholder wealth severely eroded; creditors faced minimal recovery rates; industry-wide confidence deteriorated; homebuyers' rights undermined |
| 16-Feb-23 | China Renaissance Holdings Ltd. (01911)                 | CEO's irresponsibility and unexplained missing                           | Share price plunged by approximately 50% within days                                                                          | Rapid collapse in investor confidence; severe market capitalization loss; intensified concerns over corporate governance                         |
| 9-Apr-24  | China Tianrui Group Cement Co., Ltd. (01252)            | Forced liquidation of pledged shares held by the controlling shareholder | Share price plunged by 99% within 15 minutes                                                                                  | Nearly total value loss for shareholders; raised systemic risk alarms                                                                            |

Source: Hand-collect from the news

The consequences of a stock price crash affect not only the company itself but also its investors, suppliers, customers, and even the entire economy. A significant drop in stock price leads to substantial losses for shareholders, which erodes investor confidence (S. Huang & Liu, 2021). It, in turn, increases the difficulty for firms to refinance because firms that suffer such a crash will face higher borrowing costs. (M.

Wang et al., 2020). This further puts its creditors at very high risk as they are less likely to get money back from these firms. In addition, suppliers are also affected. A stock price crash can affect the firm's liquidity, leading to delayed payments or defaults on outstanding obligations to suppliers (J. Shi et al., 2022). The frequent occurrence of stock price crashes has disrupted the operation of the financial market. It further reduces the efficiency of capital allocation and impacts the healthy development of the economy (S. Huang & Liu, 2021). How to avoid the stock price crash risk has become a hot topic among regulators, investors, scholars, and the public.

### **1.2.2 Increasing concerns about ESG performance in China**

The rapid economic development of China has intensified the country's environmental problems such as pollution and waste (J. Zhang et al., 2021). These issues have caused significant harm to ecosystems, raising global awareness of the urgent need for sustainable practices. Therefore, a firm's performance in environment, social, and governance (ESG) has gained increased awareness and discussion. Stakeholders have shifted away from focusing only on economic development towards combined economic, environment and social responsibility as a whole system. This is in line with triple bottom line concept (Yi et al., 2023). They call for firms should not only focus on the financial outcomes, but also pay attention on a combination of economic, environmental, and social responsibility, achieving long-term development.

The term triple bottom line was proposed in 1994 by John Elkington. It emphasizes that while pursuing economic goals, firms should assume responsibilities for the environment and society (Elkington, 1994), which requires firms to have sound corporate governance structures to ensure that the management can make decisions that align with sustainable development goals. Triple bottom line laid the foundation for more specific and measurable sustainable frameworks. One of such frameworks that

has gained prominence is Environmental, Social, and Governance (ESG) performance, proposed in 2004. ESG takes the principles of triple bottom line and translates them into a set of criteria that are used to assess a company's sustainability (Mendes et al., 2023).

In 2015, the United Nations released the *2030 Agenda for Sustainable Development*, which includes 17 Sustainable Development Goals (SDGs) (Baskaran & Velkennedy, 2022). The SDGs are a set of “blueprints” developed by the United Nations to guide countries around world in achieving sustainable development. These SDGs align with the ESG concept, as shown in Table 1.2. ESG and SDGs work together to contribute a sustainable development world by leveraging synergies at micro and macro levels (X. Y. Peng et al., 2024).

Table 1.2 Correspondence of the SDGs to the ESGs

|    | SDG Goals                               | ESG         |        |            |
|----|-----------------------------------------|-------------|--------|------------|
|    |                                         | Environment | Social | Governance |
| 1  | No Poverty                              |             | ●      |            |
| 2  | Zero Hunger                             |             | ●      |            |
| 3  | Good Health and Well-being              | ●           | ●      |            |
| 4  | Quality Education                       |             | ●      | ●          |
| 5  | Gender Equality                         |             | ●      | ●          |
| 6  | Clean Water and Sanitation              | ●           | ●      |            |
| 7  | Affordable and Clean Energy             | ●           | ●      | ●          |
| 8  | Decent Work and Economic Growth         | ●           | ●      |            |
| 9  | Industry, Innovation and Infrastructure | ●           | ●      |            |
| 10 | Reduced Inequalities                    |             | ●      | ●          |
| 11 | Sustainable cities and communities      | ●           | ●      |            |
| 12 | Responsible Consumption and Production  | ●           | ●      | ●          |
| 13 | Climate Action                          | ●           |        | ●          |
| 14 | Life below Water                        | ●           |        |            |
| 15 | Life on Land                            | ●           |        |            |
| 16 | Peace, Justice and Strong Institutions  |             | ●      | ●          |
| 17 | Partnerships for the Goals              |             |        | ●          |

Source: Sustainometric

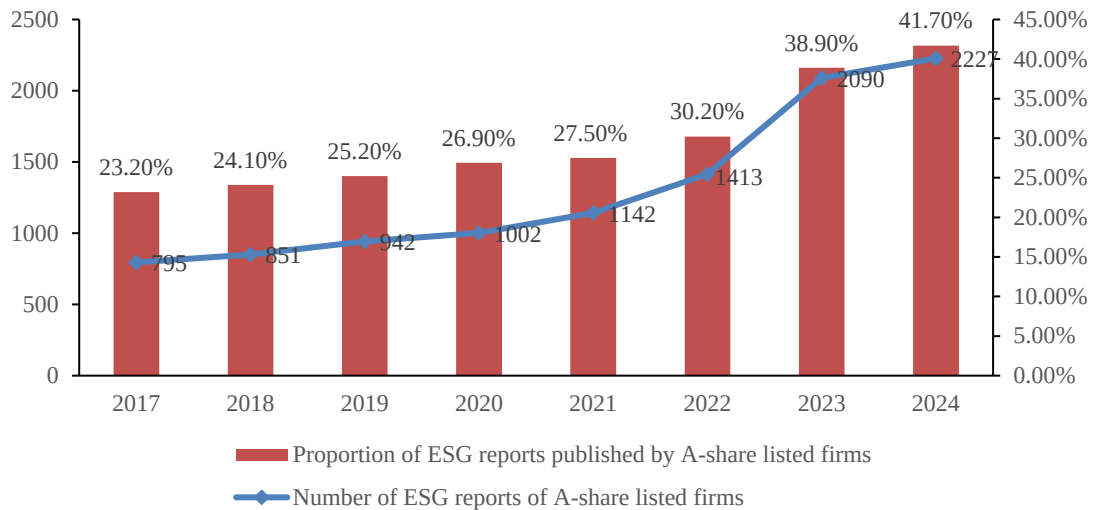
At the firm level, ESG performance refers to a firm's management and operational practice that incorporates environmental, social and governance factors, according to China ESG Development White Paper (2021)<sup>2</sup>. At present, more firms than ever are considering improving their ESG performance, both for stakeholders' benefit and for management decision-making (C. Da Chen et al., 2022). This can be seen in three aspects. Firstly, questionnaire surveys conducted by organizations indicate that managers are willing to take action related to ESG. According to a joint questionnaire survey of A-share listed firms by China Securities Times<sup>3</sup> at the end of 2021, more than 70% of respondents (senior executives, board secretaries, and board office members) were concerned about the ESG ratings of their firms, and 50% of them would take action to improve their firms' ESG performance.

Secondly, the number of firms disclosing ESG reports is on the rise. According to the Wind database, the number of A-share listed firms that reported their ESG performance in 2017 was 795. By 2022, this number had increased to 1,413, representing approximately 30.2% of all A-share listed firms. In 2023, 2,099 companies disclosed ESG reports, and up to 2024, the number had risen to 2,227, accounting for 41.38% of all A-share listed firms. This increasing trend indicates that firms have started to pay more attention on their ESG performance. Figure 1.3 depicts the disclosure number of ESG reports of the A-share listed firms.

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<sup>2</sup> <https://promote.caixin.com/cxzt/2021esg/2021ESG.html>

<sup>3</sup> The China Securities Times is designated by the China Securities Regulatory Commission (CSRC), China Insurance Regulatory Commission (CIRC) and China Banking Regulatory Commission (CBRC) to disclose information on listed firms.



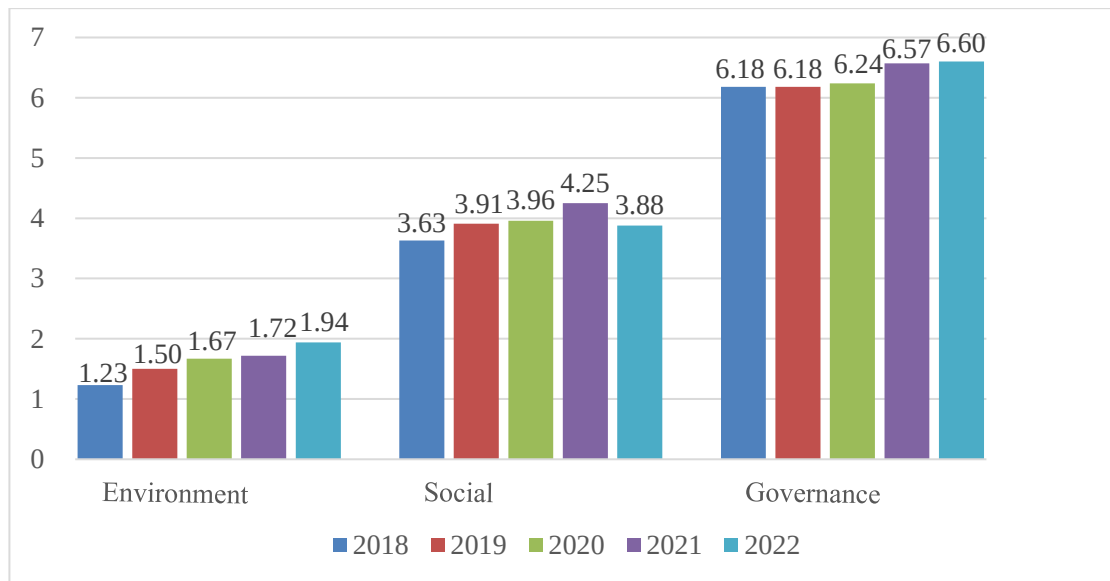
Source: Wind Database

Figure 1.3 ESG Reports of the A-share Listed Firms

Thirdly, firms' average ESG ratings have gradually increased. ESG rating is a score that measures a firm's ESG performance. ESG ratings help stakeholders better understand a firm's risks and opportunities (C. Da Chen et al., 2022). The trend of ESG rating scores from 2018 - 2022 indicates that companies are gradually focusing on ESG performance, as highlighted in Figure 1.4. The environmental dimension score has shown the most significant growth, with a 57.72% increase over these five years. This increase is closely related to China's Carbon Peaking and Neutrality (Dual-Carbon) targets<sup>4</sup>. Listed firms have responded positively to these targets and continued increasing their environmental management efforts. In 2018 only about 60 listed firms issued energy and climate change management targets, while the number of firms issuing relevant management targets exceeded 960 in 2022. Additionally, the scores of the social dimension and governance dimension are also on a rising trend.

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<sup>4</sup> During the 75th session of the United Nations General Assembly, President Xi Jinping announced China's policy to reduce emissions. The policy aims to reach the peak of carbon emissions before 2030 and achieve carbon neutrality before 2060, known as the "dual carbon" goals.



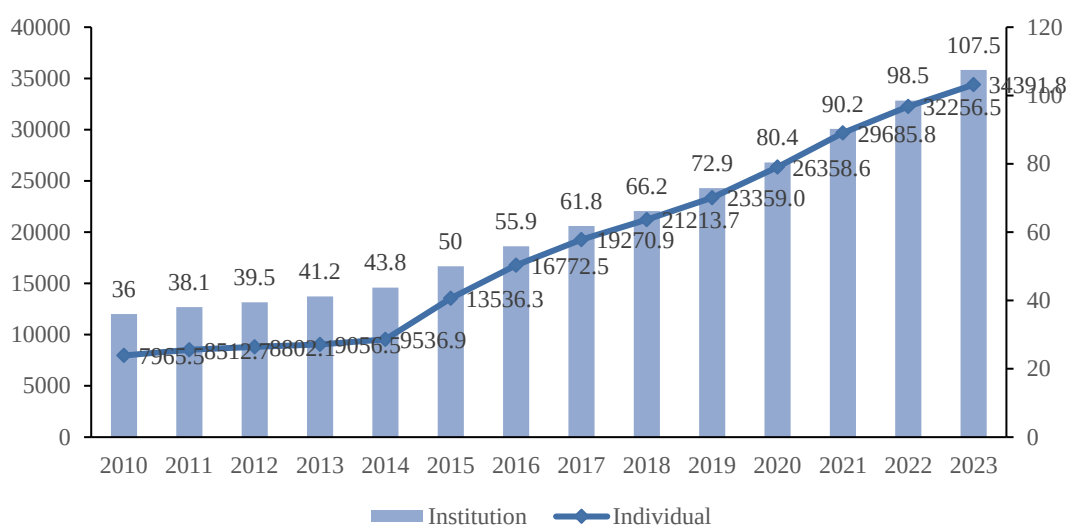
Source: Wind Database

Figure 1.4 Trends in ESG Score Changes in 2018-2022

In the cases of the stock price crash mentioned above, it was evident that firms neglecting ESG performance (such as financial fraud, environment pollution) can lead to a range of negative outcomes for firms, including regulatory issues, reputational damage, loss of investor and consumer trust. In response to reduce the far-reaching impact, firms are increasingly prioritizing ESG performance into their decision-making process. For instance, BYD is a leading Chinese electric vehicle company. BYD is dedicated to product high-efficiency, energy-saving, and environmentally friendly electric vehicles, aiming to reduce dependence on traditional fuel sources and minimize polluted emissions. At the same time, BYD actively participates in public welfare activities, contributing to society. At the same time, stock price crashes also have profound effects on stakeholders (Khurana et al., 2018). In order to avoid these negative consequences, stakeholders have begun to place greater emphasis on a firm's ESG performance as well (G. Zhou et al., 2022). They aim to figure out the long-term stability and sustainability of the companies they want build connection with.

### 1.2.3 Capital market development and investor attention in China

The increasing number of expanding trading volume suggests that capital market develop rapidly in China (Smales, 2021). From the market capitalization perspective, the capitalization of the A-share market has grown from RMB 22.88 trillion in 2012 to RMB 82.63 trillion by July 2022, an impressive increase of 261.1%. Moreover, regarding the number of investors' account, the number in A-share market has grown from 79,655,000 in 2010 to 322,565,000 in 2023, an increase of about 4 times in just 14 years. Figure 1.5 illustrates the trend in the number of investors account from 2010 to 2023, showing an upward trend whole. This vast community of investors not only ensures the continuity of securities transactions but also greatly enhances the vibrancy of the securities trading market (Han & Shi, 2022). It reflects the market is being pursued with enthusiasm.



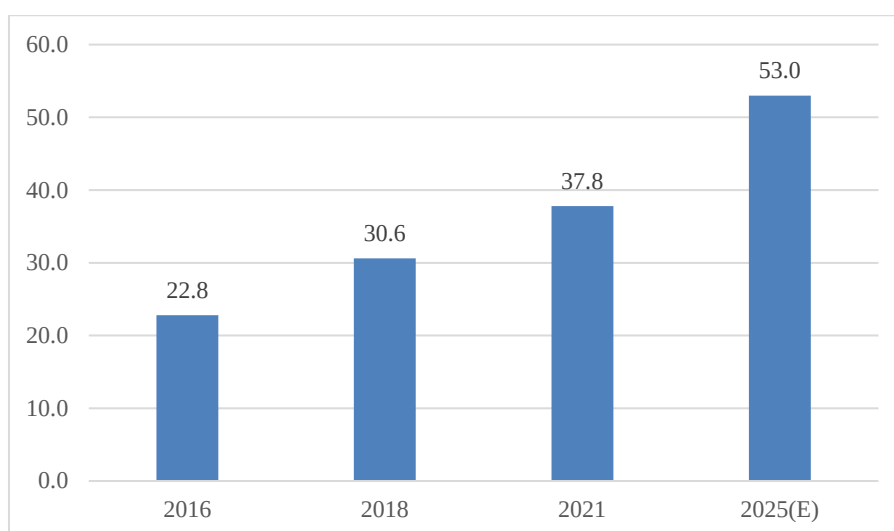
Source: China Securities Depository and Clearing Corporation Statistical Yearbook

Figure 1.5 Number of Investors' Accounts in China (Unit: 10 thousand)

Investors are now adopting a more comprehensive strategy for investment decision-making as sustainable development gains increasing attention. They no longer solely focus on a firm's financial performance but also emphasize on its environmental

protection efforts, social concerns, and corporate governance, collectively known as ESG criteria (De Spiegeleer et al., 2023). This graduate emphasis on ESG can be observed across three key dimensions. Firstly, the steady expansion of ESG investment scale; secondly, the variety of ESG investment products; and thirdly, the growing attention from investment institutions towards ESG investment principle.

First, in terms of the ESG investment scale, since the United Nations introduced the ESG concept in 2006, global principal investment has been increasing gradually. According to Bloomberg Intelligence, global ESG assets were worth USD 22.8 trillion in 2016, which increased to USD 30.6 trillion in 2018 and reached USD 37.8 trillion in 2021. By 2025, ESG assets are expected to grow to USD 53 trillion, accounting for one-third of the total global Assets Under Management (AUM). Figure 1.6 provides a graphical representation of the scale of global ESG assets from 2016 to 2025 (including forecasts).



Source: Bloomberg Intelligence

Figure 1.6 Global ESG Assets (Unit: Trillion Dollars)

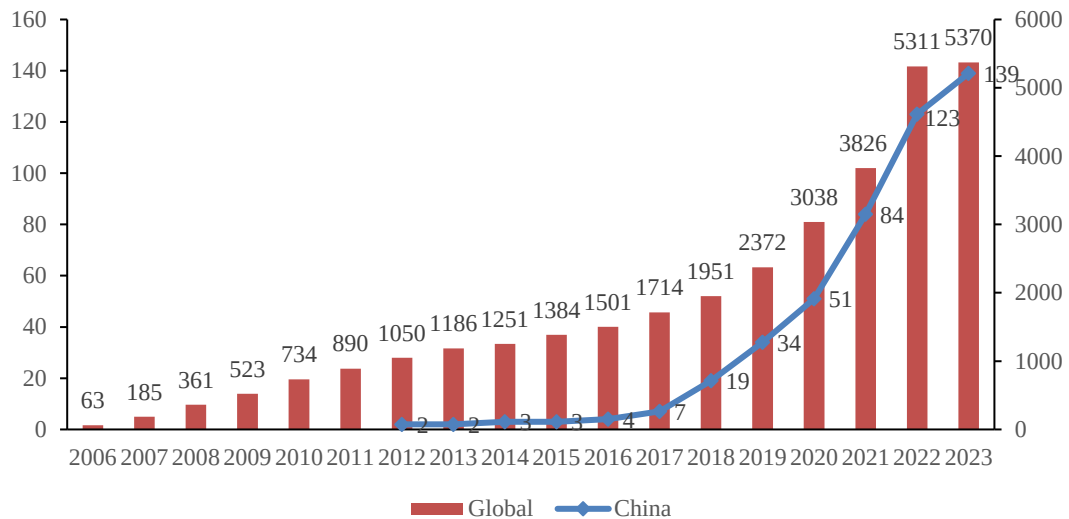
Second, ESG mutual funds, as a form of ESG investment products, reflect the capital market's proactive response to sustainable development. ESG funds utilize environmental, social, and governance factors to determine their investments. The

popularity of ESG funds among investors is increasing, indicating that ESG is receiving critical attention from investors. According to the Wind Database, active funds with pan-ESG themes<sup>5</sup> are the most popular, with 137 products and a scale of nearly RMB 170 billion. Pan-ESG-themed index funds are the second most popular, with 92 products and a size of over RMB 84 billion. These two funds comprise over 85% of all ESG products and 95% of their size. This suggests that investor interest in ESG is continuing to grow.

Third, the Principles for Responsible Investment (PRI), as an investment criterion by institutional investors and financial institutions, promote firm efforts to balance economic benefits with social and environmental benefits (S. Kim & Yoon, 2023). This aligns closely with the ESG criteria, as UNPRI is a key initiative that promotes the integration of ESG factors into investment decision-making. As of 2022, more and more institutions have joined in PRI, including asset owners, asset management firms, and third-party service providers. By signing the UNPRI, institution investors commit to considering ESG factors in their investment analysis and decision-making processes, aiming to promote sustainable, long-term value. Figure 1.7 displays the number of PRI signatories for both China and global institutions. Since the PRI was released by the United Nations in 2006, global signatories have increased from 734 in 2010 to 1,384 in 2015 and 5,311 in 2022. The number of signatories in China has grown from just two in 2011 to 139 in 2023, indicating a growing interest in sustainable development among investors (Gutsche & Zwergel, 2020; Widyawati, 2020).

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<sup>5</sup> Pan-ESG theme funds are a type of investment fund that incorporates a broad approach to Environmental, Social, and Governance (ESG) criteria across their investment strategies.

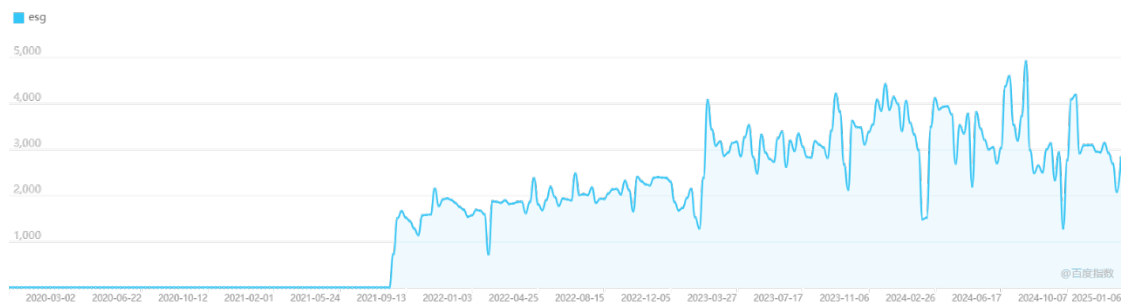


Source: UNPRI

Figure 1.7 Number of Global and China PRI Signatories

The widespread use of the internet and social media make stakeholders get information rapidly. According to Statistical Reports on Internet Development in China issued by China Internet Network Information Centre (CNNIC), as of 2023, China has over 1 billion internet users, with approximately 980 million active internet users<sup>6</sup>. These users discuss corporate-related information in real time through platforms, enhancing information transparency. In addition, search engine usage is highly prevalent in China, with Baidu, a dominant search engine in China, boasting approximately 600 million monthly active users as of 2021 (T. Zhang et al., 2023). The interest in searching for corporate ESG performance has been on the rise. For example, according to Baidu Trends as shown in Figure 1.8, searches trend related to “ESG” have shown significant growth in recent years, reflecting increasing investor attention to corporate sustainability performance.

<sup>6</sup> <https://finance.sina.com.cn/wm/2024-09-09/doc-incnqrhf9639169.shtml>



Source: Baidu Trend

Figure 1.8 Searches Related to “ESG” in Baidu Trend

### 1.3 Problem Statement

The occurrence of stock price crashes often can be attributed to the sudden break out of bad news that contradicts investors’ expectations (L. Jin & Myers, 2006). When the accumulated bad news reaches a tipping point, it is difficult to cover and ultimately be released. The unexpected news is non-acceptance by investors, so they rush for exits, causing prices to fall further (Zhu, 2016). In Chinese capital market, stock crashes caused by inadequate ESG performance have occurred frequently in recent years, not only leading to substantial losses for stakeholders but also imposing limitations on the firm itself to grow further (Khurana et al., 2018).

Take the case of Huifeng Bio Agriculture, a leading national pesticide manufacturer listed on the Shenzhen Stock Exchange. In 2018, the firm’s stock price hit five consecutive trading suspensions after the exposure of environmental pollution violations, followed by an investigation notice from the China Securities Regulatory Commission (CSRC). Its market value plummeted by 1.2 billion RMB within four days, dropping from RMB 5.9 billion to RMB 4.7 billion, leading investors to suffer sizeable losses. Subsequently, Huifeng was required by the Environmental Protection Bureau to halt production for rectification and was fined 2.1 million RMB by CSRC. The

indeterminate duration of the halt was projected to result in monthly losses approaching ten million RMB per month.

Stock price crashes not only impose significant negative impacts on the firms themselves but also adversely affect their closely related stakeholders. As Huifeng is a supplier to major multinational firms such as BASF<sup>7</sup> and Bayer<sup>8</sup>, it is imperative to meet strict environmental requirements. Environmental issues damage its reputation and international competitiveness, affecting its connections with overseas customers (Vali-Siar & Roghanian, 2022). The abovementioned issues highlight the significance of social responsibility and environmental protection.

In conclusion, a stock price crash not only severely impacts the firm itself but also triggers a chain reaction that affects upstream and downstream firms as well as other stakeholders. From a business perspective, a significant decline in stock prices can lead to immediate dissatisfaction among shareholders and creditors, potentially prompting investor withdrawal (Schmidt & Brauer, 2006). This withdrawal exacerbates the firm's financial instability, adversely affecting its liquidity and solvency (Kiymaz, 2023) and increasing the likelihood of defaults. Such financial distress can further restrict the firm's ability to secure funding, invest in growth opportunities, or maintain operational continuity, creating a vicious cycle of declining performance and eroding market confidence.

From a stakeholders' perspective, the consequences of a stock price crash are far-reaching and multifaceted. For investors, it results in substantial financial losses and diminished trust in the firm's management and governance practices. For employees, the crash often leads to job insecurity, reduced morale, and potential layoffs, as firms

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<sup>7</sup> BASF, the world's largest chemical company, ranked 335th on the 2022 Hurun Global 500.

<sup>8</sup> Bayer is a German pharmaceutical and agrochemical firm that ranks among the Fortune 500 firms.

may cut costs to stabilize their financial position. Suppliers face heightened payment risks and potential disruptions to their cash flows, which can strain their operations and financial health (Ben-Nasr & Ghouma, 2018). On the other hand, creditors are exposed to increased default risks, which may lead to tighter credit conditions and higher borrowing costs for the firm (W. C. Chiu et al., 2018).

Moreover, one firm's failure can damage the entire industry's reputation, as stakeholders may perceive the issue as systemic rather than isolated. This loss of trust can spill over to other companies within the same sector, further amplifying the negative impact. Another typical example is Evergrande, a real estate company. The news revealed that, in 2022, Evergrande Group used numerous subsidiaries and affiliated companies' transactions to conceal its high leverage and liquidity issues (Altman et al., 2022). Following the exposure of such news, Evergrande's stock price plummeted, triggering widespread repercussions. Many families were affected by Evergrande's stalled projects, leaving many properties undelivered because of financial constraints, which directly impacted many families' lives. This contagion effect spilt over into the financial system, as banks, trust companies, and bond markets faced heightened default risks and deteriorating asset quality (Ahmed et al., 2024). These dynamics collectively weakened market liquidity, constrained credit supply, and contributed to heightened volatility in both equity and debt markets, thereby threatening the stability and efficiency of China's capital markets.

The capital markets in developed countries are characterized by well-developed regulatory systems, institutional maturity, and stable market structures. In contrast, the Chinese stock market is emerging, exhibiting lower transparency and stability levels than its developed counterparts (W. Luo et al., 2024). Retail investors account for approximately 60% of market participation in China — substantially higher than

developed markets (F. He, Yan, et al., 2022). Moreover, individual investors are generally more vulnerable than institutional investors (F. He, Yan, et al., 2022), further accentuating market volatility. The rising number of investor accounts in China, as shown in Figure 1.5, does not imply that the market has become more rational or efficient. The Chinese stock market is still dominated by retail investors, whose behavior is often characterized by herding, emotional decisions, and irrationality (Hsieh et al., 2020). These behaviors can be amplified during periods of market stress. For instance, an historical data reveals that the SSE Composite Index has experienced more frequent and severe market-level crashes than the S&P 500 Index. This heightened market fluctuation and susceptibility to crashes reflect the inherent issues that persist despite the Chinese market's large size and growth. In addition, the Chinese market is often described as policy-driven (Aizawa & Yang, 2010), where government interventions and regulatory changes significantly shape market dynamics. In this complex environment, frequent stock price crashes severely threaten stakeholders' interests and overall market stability.

Furthermore, although the above analysis has shown a growing trend in the number of A-share listed firms reporting their ESG reports, the quality and transparency of these disclosures remain a critical issue. The increase in reporting volume does not necessarily equate to improving the quality of the information. For instance, firms' ESG reports may suffer from "greenwashing", where they selectively disclose positive information while omitting negative aspects (W. Wang et al., 2023; E. P. Yi Yu et al., 2020). Such information asymmetry creates a significant gap between what a firm reports and its actual ESG performance. There is still a question of whether referencing ESG performance, as a genuine reflection of corporate performance, can help companies manage crash risk and assist investors in enhancing their portfolios. Under

this background, exploring effective strategies for mitigating stock price crash risk in the Chinese capital market is imperative.

#### **1.4 Motivation of the Study**

The severe consequences of stock price crashes have driven stakeholders and firms to explore effective methods for identifying and mitigating crash risks. In analyzing the drivers of stock price crashes, poor environmental practices, social misconduct, and governance failures are increasingly recognized as critical contributors to the accumulation of negative information. On the one hand, managers have self-interest motivations to conceal negative information, leading the stock price to be higher than the actual value and forming a bubble (Y. Kim et al., 2014). However, when the accumulation of negative information exceeds the threshold, the information spreads to the market immediately, leading to a popping bubble and prompting a one-time sell-off by investors and causing a stock price crash. These findings have led to a growing consensus that firms should not focus solely on economic performance but also prioritize sustainable development to prevent such risks (Z. Wang et al., 2022).

On the other hand, even when operating diligently, firms may occasionally generate negative information. When adverse events occur, stakeholders tend to impose sanctions (Godfrey et al., 2009). For example, investors might withdraw their funds to avoid further losses, potentially triggering a rapid decline in stock prices. However, robust ESG performance helps to build stakeholders' trust by demonstrating a firm's commitment to sustainable practices, ethical governance, and social responsibility. In an environment where stakeholders maintain high levels of trust (Madsen & Rodgers, 2015), they are more likely to view negative incidents as unintentional and allow the firm time to remedy the situation rather than imposing immediate sanctions. This

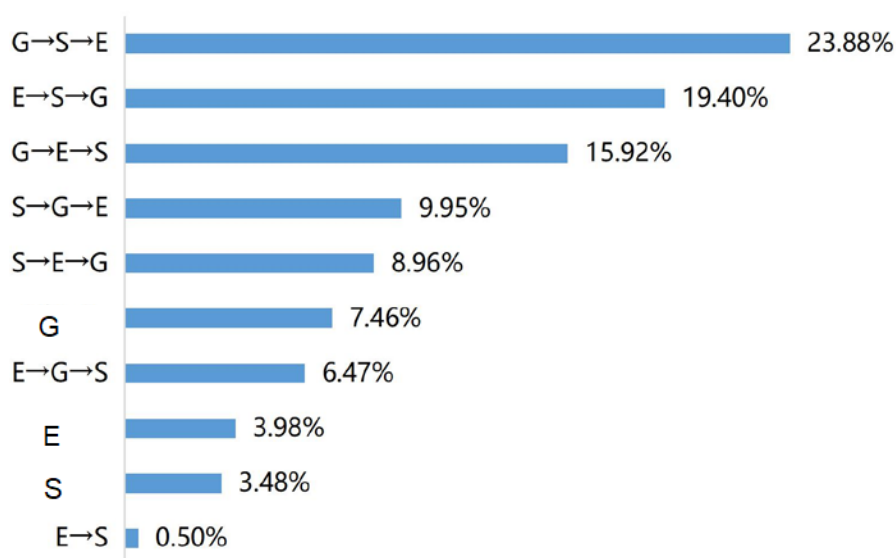
enhanced trust mitigates the impact of adverse events and reduces the likelihood of punitive measures, lowering the risk of a sharp decline in stock prices.

From the stakeholders' perspective, ESG performance is a tool that assesses a firm's commitment to sustainability. It aligns with stakeholders' expectations for responsible, long-term prospects and resilient corporate behaviour. When stakeholders find that a firm meets or exceeds their expectations, they tend to value higher on them and respond with increased loyalty and support (Boaventura et al., 2020). For example, investors are more likely to invest, customers continue patronising the company's products or services, and employees are more motivated to work. In addition, actively taking on social responsibilities means the commitment to persistent value creation and demonstrating a proactive approach to remedy issues when they arise. This proactive stance gives stakeholders confidence and assurance (Wellalage et al., 2022). Consequently, when negative events occur, stakeholders may moderate their punitive reactions, believing the firm's ongoing efforts to address problems and maintain stability (Godfrey et al., 2009).

From a firm's perspective, an increasing number of companies are paying closer attention to ESG by integrating it into their strategic planning and daily operations (Lokuwaduge & Heenetigala, 2017). By enhancing ESG practices, firms can not only reduce operating risks but also garner trust and acquire support. For instance, strong ESG performance helps mitigate regulatory risks and prevent legal disputes arising from environmental or social shortcomings. Moreover, ESG plays a crucial role in building relationships with governments and financial institutions. To secure financial support, firms must demonstrate robust ESG performance (D. Zhang & Lucey, 2022). As customers and suppliers increasingly prioritize social performance in their partner

selection, firms that actively enhance their social commitments can ensure the stability and viability of their business relationships.

In addition, commendable ESG performance requires investing large amounts of time, money, and effort. Firms must optimize resource allocation among three sections implementing ESG practices, especially when resources are constrained. Which part should be improved first? According to a survey proposed by China Securities Times, the ranking of respondents' priorities of ESG practice is shown in Figure 1.9. The majority of respondents (senior executives, board secretaries, and board office members) say corporate governance is more important than environmental and social dimensions. They state that the first step should be to enhance the governance structure. While 19.4% of the respondents said they would consider environmental factors first. Moreover, some respondents consider social factors more important. The reason for the different views of respondents may be because firms are under different circumstances.



Source: Research Institute of Capital Market of China

Figure 1.9 The Priorities of ESG Practice from Search Respondents