

Sustainable competitiveness through ESG performance: An empirical study on corporate resilience

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Abstract

The COVID-19 pandemic significantly impacted businesses and economies worldwide, highlighting the importance of resilience in the face of unexpected disruptions. In this context, environmental, social, and governance (ESG) practices have emerged as pivotal strategies for companies to maintain sustainable competitiveness. Organizations with superior ESG performance tend to exhibit enhanced sustainability and financial performance, presenting substantial opportunities for investors. Unlike previous research that predominantly concentrates on financial outcomes, this study delves into the organizational implications of ESG, bridging the knowledge gap regarding its role in resilience. This study investigates the relationship between ESG performance and corporate resilience utilizing data from Chinese-listed companies from 2010 to 2022. Corporate resilience is measured through two dimensions using the entropy weight method. The study finds a positive and statistically significant relationship between corporate resilience and ESG performance, thereby providing new evidence of the influence of ESG performance on corporate resilience. Furthermore, this impact is achieved through reduced financing costs, improved information disclosure quality, and diminished liquidity. Notably, these findings exhibit greater prominence in larger enterprises, while state-owned enterprises demonstrate no discernible effects. This research provides novel insights into the manner in which ESG practices can augment corporate resilience, thereby contributing to sustainable competitiveness in dynamic environments.

Keywords: *ESG, corporate resilience, sustainable competitiveness*

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1 INTRODUCTION

Businesses today face complex and unpredictable environmental changes, such as climate change, resource scarcity, social inequalities, and regulatory shifts. These transformations pose significant challenges and pressures on business operations and growth, alongside heightened demands and expectations. The COVID-19 pandemic heavily impacted global businesses and economies, underscoring the need for resilience in the face of unforeseen disruptions. Corporate resilience refers to a company's ability to adapt to environmental changes and disruptions, mitigate negative outcomes, and quickly recover from shocks (Niu et al., 2024; Xia et al., 2022). Maintaining resilience is crucial for companies to stay competitive and succeed in the long term (Wang et al., 2022). Moreover, reducing the impact of disasters and improving resilience are

fundamental aspects of competitiveness (Oulehlova et al., 2021; Martín-Rojas et al., 2023). However, existing research on corporate resilience has not fully addressed the mechanisms through which companies can effectively build resilience against these challenges. This gap highlights the necessity and significance of exploring strategies to enhance resilience. Therefore, this study investigates how ESG practices can contribute to building corporate resilience, providing insights that are crucial for businesses striving for long-term success and sustainability (Feng & Xue, 2023).

ESG is an essential strategy for enhancing corporate resilience, enabling companies to position themselves for future growth and development (KPMG, 2021). Consequently, ESG practices have emerged as a crucial method for improving business resilience and promoting future growth. Companies with strong ESG performance are typically more competitive and sustainable, providing more options for investors (Agustia et al., 2023). Moreover, companies excelling in ESG demonstrate solid risk management capacities and financial gains, resulting in higher valuation levels. Given the ongoing global challenges like climate change and resource scarcity, ESG issues have become increasingly vital for achieving sustainable development objectives and goals. Studies by Li et al. (2023), Kim and Li (2021), Ahmed et al. (2022), and Zheng et al. (2023) have shown that ESG factors can positively impact a company's growth, innovation, and resilience. Furthermore, incorporating ESG principles into a company's core values and operations can result in competitive advantages such as reduced costs, increased revenues, enhanced innovation, improved customer loyalty, and reduced regulatory risk.

However, most studies on ESG have focused on its effects on investing and finance, such as excess return, market value, and financial performance (Gillan et al., 2021; Avramov et al., 2022; DasGupta, 2022), with little attention paid to the organizational level. Additionally, the relationship between ESG performance and corporate resilience remains unclear, particularly in the context of emerging markets. China offers a practical and optimal context to investigate this matter. Distinct from prior studies that generally employ cross-national frameworks, this paper focuses on the impact of cross-regional ESG on corporate resilience within China, allowing for a more detailed analysis of these effects at the industrial and firm levels. Despite increasing attention to ESG in China in recent years, ESG practices remain limited and are currently in an early stage of development (Broadstock et al., 2021; Liu & Wang, 2023). Furthermore, China's rapid economic growth and distinctive regulatory environment, coupled with substantial regional disparities in economic development and environmental conditions, presents a unique setting for investigating the impact of ESG practices on corporate resilience. Consequently, studying the Chinese context provides valuable insights into the effective implementation of ESG practices to enhance corporate resilience in a rapidly evolving and diverse environment.

Based on a data sample of Chinese listed companies from 2010 to 2022, this study identifies the effects of ESG performance on corporate resilience through empirical analysis. This paper contributes to existing research in several ways. Firstly, from a literature perspective, this study supplements existing research by providing new

evidence that ESG performance can enhance corporate resilience, filling a gap where previous studies have primarily focused on environmental and social practices without addressing their comprehensive impact on resilience (Ortiz & Bansal, 2016). Secondly, from a theoretical standpoint, this study enriches the understanding of the mechanisms through which ESG performance influences corporate resilience. It demonstrates that ESG performance can reduce financing costs, enhance information quality, and decrease liquidity risk, thus providing a clearer explanation of how these factors contribute to overall corporate resilience. This expands the theoretical framework by integrating ESG factors as critical elements in resilience-building strategies. Thirdly, from an empirical perspective, the study introduces an innovative methodological approach by applying entropy weighting to assess corporate resilience across multiple dimensions. This approach contrasts with existing literature that typically employs stock prices to depict resilience (Martín et al., 2023; Xu et al., 2023; Ding et al., 2023), offering a more comprehensive and aligned measure with the concept of resilience. Additionally, by focusing on the Chinese context, this research leverages a unique dataset, providing robust insights into ESG integration at the organizational level. This helps to uncover the “black box” of how ESG practices influence resilience and extends the boundary conditions of ESG's impact on corporate resilience.

2 THEORETICAL BACKGROUND

2.1 ESG performance and the corporate development

In researching the impact of ESG on firms, most scholars focus on three perspectives. The first perspective evaluates the influence of ESG factors on a company's financial performance and value. Companies often try to increase their ESG performance during periods of declining financial performance to maintain legitimacy (DasGupta, 2022). A company's financial performance is more significantly impacted by ESG when ESG investors are present, the company has a long-standing presence in the industry, and there is a high level of media attention and agency costs (Chen & Xie, 2022). While ESG performance positively impacts financial performance, such as gross profit, stakeholder legitimacy is a prerequisite for ESG performance to influence financial performance (Lee & Raschke, 2023).

Various studies have illustrated the beneficial influence of ESG on companies' market value and analyzed the underlying mechanisms using empirical data. Enhancing a firm's value through ESG performance is achieved by utilizing shareholding sources (Wu et al., 2022). Additionally, Wang et al. (2023) found, after reviewing the literature, that corporate ESG performance primarily affects firm value through the mechanisms of risk, information, and strategy. Meanwhile, the level of ESG possessed by the acquirer continues to have a significant impact on post-merger and post-acquisition performance, market value, and the level of ESG in corporate M&As. This effect was observed in European and Chinese evidence by Tampakoudis and Anagnostopoulou (2020) and Zheng et al. (2023), respectively. Fuente et al. (2022), Espinosa-Méndez et al. (2023), and Yu et al. (2018) have examined the influence of ESG on firm value

through the lenses of real options, family businesses, and disclosure quality, respectively. However, Rojo-Suárez and Alonso-Conde (2023) argue that the relationship between ESG performance and firm value is still a matter of debate. They propose that ESG has insignificant effects in the short term but reduced effects in the long term due to higher discount rates. Similarly, Khan and Liu (2023) illustrate a negative correlation between ESG performance and firm financial performance. They also note a positive impact of all-encompassing ESG performance on corporate reputation, which is moderated by the extent of green innovation.

Secondly, a range of studies examines the impact of ESG on corporate innovation, with a particular focus on green innovation. ESG disclosure boosts corporate innovation capacity by addressing corporate funding constraints (Chen et al., 2023). Additionally, a significant number of scholars have extensively scrutinized the impact of ESG on corporate green innovation. Zheng et al. (2023) posit that ESG performance has a bi-directional, long-term relationship with green innovation outputs in firms, as well as short-term and long-term causal connections. Furthermore, Wang et al. (2023) propose that such effects are amplified in firms with shortsighted investors, non-state ownership, and significant financial constraints. Higher ESG rating scores significantly impact firms' ESG performance in promoting environmentally friendly innovation, as proven by Tan and Zhu (2022) and Long et al. (2023) through nationwide research. Although financial constraints may hamper green innovation, firms' ESG practices can expand their investor base, resulting in lower financing costs and encouraging further green innovation (Zhai et al., 2022). Meanwhile, Qiang et al. (2023), Li and Xu (2023), and Wang et al. (2022) have conducted research in this field, investigating environmental cooperation mechanisms, inter-firm spillovers, and executive perceptions, respectively.

The third aspect to consider is the impact of ESG on corporate risk management, with a focus on financial risk as the primary research area. Including ESG risk enables a broader perspective on portfolio risk (Dunbar et al., 2023). Shakil (2021) suggests that ESG performance may lower overall risk for the firm, although its influence on financial risk will be moderated by ESG controversies and the level of gender diversity on the board of directors. Li et al. (2022) found that high ESG ratings decrease a company's likelihood of default, which can assist investors in decision-making. ESG news sentiment, according to Yu et al. (2023), can increase the risk of corporate stock crashes. Despite industry variability, brief ESG portfolios can lower risk ratings and produce comparable returns (Dinh, 2023). Additionally, ESG can lessen financial risk in the banking sector (Di and Thornton, 2023) and diminish firms' risk tolerance levels (He et al., 2023).

2.2 Corporate resilience

Corporate resilience has gained significant attention in management research (Hillmann & Guenther, 2021). It is defined as a firm's ability to adapt to environmental changes and disruptions, mitigate negative outcomes, and swiftly recover from shocks (Niu et al., 2023; Xia et al., 2022). Some studies distinguish between organizational resilience

and corporate resilience, considering them distinct concepts. Additionally, firms rely on dynamic capabilities to reduce the adverse effects of unforeseeable risks and restore normalcy by fostering resilience (Um & Han, 2020). One of the main challenges in enhancing the efficiency and effectiveness of industrial markets is cultivating resilience to potential disruptions (Li et al., 2022). Hillmann and Guenther (2021) recommend that future research on corporate resilience should focus on its definition, measurement, influencing factors, outcomes, and the integration of interdisciplinary approaches.

In light of the global crisis caused by the COVID-19 outbreak, numerous scholars have investigated methods to improve corporate resilience in managing unforeseeable risks. Ding et al. (2021) examined the correlation between corporate characteristics and the reaction of stock returns to COVID-19, finding that corporate resilience significantly depends on factors such as financial status, international reach, CSR initiatives, less established executives, and ownership. Jiang et al. (2023) argue that geographic diversity can enhance corporate resilience through diversified portfolios, persistent business affiliations, and access to non-local resources. A strong corporate culture can also be a valuable asset in achieving better performance during a pandemic (Li et al., 2021). Similarly, Uddin et al. (2022) contend that firms with higher levels of intangible assets may be more resilient to pandemic shocks.

Furthermore, many scholars have investigated the measurement and evaluation of corporate resilience from various angles. DesJardine et al. (2019) measured organizational resilience through dimensions of stability and flexibility, considering the severity of loss and recovery time. Corporate resilience can also be measured using three factors: return on sales (ROS), return on investment (ROI), and return on assets (ROA) (Martín et al., 2023). Ortiz and Bansal (2016) suggest evaluating corporate resilience by considering four dimensions: stronger organizational growth, lower volatility, higher probability of long-term survival, and lower short-term profitability. Chen et al. (2021) propose that organizational resilience encompasses five dimensions: capital resilience, strategic resilience, cultural resilience, relational resilience, and learning resilience. Other scholars, such as Xu et al. (2023) and Ding et al. (2023), have used stock price as a metric for assessing corporate resilience. However, Hillmann and Guenther (2021) stated that the measurement of resilience needs to be clearer and more specific.

2.3 ESG performance and corporate resilience

As an integration of environmental, social, and corporate governance, ESG presents a framework for assessing corporate sustainability from a strategic standpoint (Xie et al., 2019). Impacts of ESG on long-term corporate value creation are significant, yet this is reduced by management myopia leading to firms' ESG engagement reduction (Liu & Zhang, 2023). Developing business resilience against potential disruptions has become a primary concern for firms aiming to enhance operational effectiveness, and Feng and Xue (2023) suggest that this challenge is critical to improving efficiency.

While some research has explored that the impact of ESG activities could be a resilient factor, it is not clear whether ESG performance affects corporate resilience. ESG ratings exhibit a positive correlation with corporate sustainability (Bekaert et al., 2023). In addition, firms with higher ESG ratings, along with larger cash holdings and liquid assets, outperform other firms and are better equipped to withstand COVID-19 externalities (Cardillo et al., 2023). Some studies suggest that ESG can improve corporate resilience, although resilience is predominantly evaluated based on stock prices. Based on evidence of China, Xu et al. (2023) argue that ESG played a crucial role in reinstating stock price resilience amidst the COVID-19 crisis. Conversely, Demers et al. (2021) have concluded that intangible assets were the main factor in maintaining stock price resilience during the COVID-19 pandemic, as opposed to ESG-related practices.

In addition, some research pointed out that ESG related activities are closely related to sustainable development. Social and the environmental practices could contribute to organizational resilience (Ortiz & Bansal, 2016). In addition, corporate social responsibility factors in the environmental context could have a positive and significant impact on organizational performance, thus enhancing competitiveness (Ahmed & Streimikiene., 2021). CSR initiatives had a constructive impact on stock price responses to the pandemic by improving relationships with stakeholders, consequently bolstering corporate resilience (Ding et al, 2021). DesJardine et al. (2019) argued that social and environmental practices could enhance resilience during a crisis. While investing resources to decrease a company's ecological impact might appear counterproductive to its financial recuperation, having strong environmental capabilities may enhance corporate resilience in light of increased environmental fines (Foulon & Marsat, 2023).

3 RESEARCH OBJECTIVE, METHODOLOGY AND DATA

3.1 Research object

In the context of dynamic change, it is imperative for companies to boost their resilience and competitiveness by enhancing their ESG performance. This paper reconstructs the metrics of corporate resilience from multiple perspectives and explores the relationship between ESG and corporate resilience. In addition, this paper investigates the mechanisms that link ESG performance to resilience. Moreover, it investigates how ESG influences resilience across different sectors, providing insights into the key drivers in diverse settings. By analyzing these variations, the study offers a comprehensive understanding of how ESG practices contribute to enhancing resilience under varying conditions.

3.2 Sample and data selected

This study employs a sample of companies listed on the China A-share market between 2010 and 2022. To enhance the analysis, the sample excludes financial institutions and companies with operating anomalies, delisting experiences, or less than three years of listing. Additionally, the micro-continuous variables undergo a Winsorize shrinkage of

1% at the upper and lower tails to account for potential outliers. Notably, the financial data and the corporate governance data were sourced from the databases of CSMAR and Wind.

3.3 Methodology

3.1 Measurement of corporate resilience

A significant concern this paper addresses is the construction of the resilience variable. Currently, the definition of corporate resilience is unclear and lacks consistent parameters (Hillmann & Guenther, 2021). Previous studies such as Xu et al. (2023) and Ding et al. (2023) use stock price to measure corporate resilience. By definition, corporate resilience refers to a company's capacity to adjust to environmental changes and disruptions, minimize adverse consequences, and rebound rapidly from setbacks (Niu et al., 2023; Xia et al., 2022). Munoz et al. (2022) suggested that the comprehensive concept of resilience is multifaceted and requires attention to the interdependence of stability and growth. Therefore, this study draws on research of Ortiz and Bansal (2016) and considers real-world business scenarios. The variables for resilience measurement are performance growth over the long-term, low volatility and enhanced survivability. This perspective is more applicable in explaining the concept of corporate resilience.

In this paper, the cumulative sales revenue growth rate over three years is used to represent the long-term growth. In addition, the standard deviation of stock returns for each month of the given year is used for low volatility. However, corporate resilience is a multi-object variable, and different perspectives are required to be considered simultaneously. Consequently, the indicators should be converted into a single variable by weighting. Specifically, entropy weight method (EWM) is a commonly used weighting method that measures value dispersion. By measuring the dispersion of values, this method can prevent subjective interference on the indicator weight, thereby enhancing the objectivity of the comprehensive evaluation results (Zhu et al., 2020). In this study, EWM is used to generate the level of resilience. Following the steps of the method, firstly the measured value is processed by standardization. Then the information entropy is calculated, and finally the variable is aggregated by the indicator using the weight of each dimension. Details of the calculation procedure are omitted.

3.2 ESG performance (Dependent variable)

Referring to the existing ESG-related literature (Huang et al., 2023; Mu et al., 2023), The CSI (Huazheng) ESG rating system is used as the representative for the ESG performance of a company in this paper. The CSI is a China-based third-party data provider, and its ESG rating system is comprised of 9 levels, with the assignment of 1-9 points implemented in this paper (China Securities Index). Technical abbreviations are explained when they are first used. The rating is conducted quarterly, and the annual average rating is used to determine the ESG level of the enterprise in that year. In addition, Bloomberg's ESG performance rating data serves as an alternative

explanatory variable for the robustness test in ensuring the validity of the conclusions presented in this paper.

3.3 Control variables

This paper includes several control variables, which could have an impact on corporate resilience. Inspired by the findings from previous works (Ding et al., 2021; DesJardine et al., 2019), the following primary corporate characters are selected and included: total assets, firm age, return on invested capital (RoIC), ratio of independent directors (RIND) and ownership concentration (OC).

3.4 Model setting

In order to get the evidence for the hypothesis, the fixed-effect model is constructed in this paper. The model is shown:

$$Res_{it} = \beta_0 + \beta_1 ESG_{i,t-1} + \sum \beta_{it} Controls_{it} + \sum Year + \sum Ind + \varepsilon_{it}$$

In this model, the dependent variable, *Res*, indicates the corporate resilience. The primary explanatory variable, *ESG*, indicates the level of ESG performance, where β_0 represents the data truncation item and β_1 denotes the partial regression coefficient of the corresponding independent variable. Notably, considering the impact of ESG-related practice may not be effective immediately, it is lagged one-year. Additionally, a range of control variables have been included to enhance the robustness of the results. The control variables include corporate size, age, total revenue, operation revenue, return on invested capital, return on invested capital, percentage of independent directors and shareholding concentration. Moreover, the industry-fixed effect *Ind* and year-fixed effect *Year* are added into this econometric model to mitigate the interference with results. ε is the random disturbance term.

4 RESULTS AND DISCUSSION

4.1 Impact of ESG on corporate resilience

This section exhibits the evidence for the relationship between ESG and corporate resilience. Before presenting the empirical data, summary statistics are displayed as follows:

Tab. 1 – Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>ESG</i>	33625	6.453	1.13	1	9
<i>Tassets</i>	35936	1.520e+10	7.947e+10	477331.05	2.733e+12
<i>Age</i>	36049	10.56	7.811	0	32
<i>ROIC</i>	35055	4.628	324.556	-28.476	59412.549
<i>Rind</i>	35508	.378	.066	0	.8
<i>Oc</i>	34703	34.661	15.23	.29	100
<i>resilience</i>	33809	.876	.122	.022	.998

Furthermore, a regression model incorporating fixed effects is conducted to determine the impact of ESG performance on corporate resilience. The regression results are shown in the following table. Column (1) presents regression findings that only incorporate industry and year fixed effects. The regression coefficient for ESG performance on corporate resilience is significantly positive at the 1% confidence level, indicating that ESG strategies considerably enhance the corporate resilience of listed Chinese firms. Column (2) comprises control variables based on region and firm. The coefficient of regression signifies that ESG performance positively impacts corporate resilience at a significant level of 1% confidence. This conclusion reinforces the premise that ESG behaviors can indeed enhance risk resilience in firms. Thus, our findings indicate that augmenting investments in ESG measures is an intrinsic method to bolster corporate risk resilience, thereby validating hypothesis 1. The findings within this section strongly suggest that ESG performance has a significantly positive impact on corporate resilience.

Tab. 2 – ESG performance and corporate resilience

	(1)	(2)	(3)
	<i>resilience</i>	<i>resilience</i>	<i>resilience</i>
<i>ESG</i>	0.00124***	0.00116***	0.000921***
	(4.60)	(4.28)	(3.17)
Tassets		3.01e-14***	3.03e-14***
		(4.55)	(4.75)
Age		0.00361***	0.00351***
		(36.35)	(31.09)
ROIC			-0.000691***
			(-16.64)
Rind			-0.00354
			(-0.84)
Oc			0.0000769**
			(2.13)
_cons	0.872***	0.850***	0.849***
	(144.17)	(138.44)	(120.18)
<i>N</i>	28374	28279	21303
adj. <i>R</i> ²	0.694	0.695	0.735
Firm	Y	Y	Y
Year	Y	Y	Y
indust	Y	Y	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

4.2 Robustness checks

To enhance the reliability of previous preceding results, supplementary analyses are performed in this section. The ESG variable is replaced by a data source from Bloomberg to conduct another robustness test. In particular, the time range is narrowed

to a 10-year-period from 2010 to 2021 due to the data availability. The regression results are shown in the following table.

Tab. 3 – Robustness check results

	(1)
	<i>resilience</i>
<i>ESG_Bloom</i>	0.000652***
	(3.97)
<i>Tassets</i>	3.43e-14***
	(2.68)
<i>Age</i>	0.00359***
	(7.80)
<i>ROIC</i>	0.000214
	(0.29)
<i>Rind</i>	0.00348
	(0.26)
<i>Ow</i>	-0.0000730
	(-0.62)
<i>_cons</i>	0.843***
	(25.46)
<i>N</i>	8945
<i>adj. R²</i>	0.361
<i>Firm</i>	Y
<i>Year</i>	Y
<i>Indust</i>	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

4.3 Mechanisms

This section examines the roles through which ESG performance affects corporate resilience. The step-by-step test regression coefficient method proposed by Wen et al. (2004) was utilized to test the channel mechanism of this effect, with intermediary variables such as financing cost, quality of information disclosure, and liquidity taken into consideration.

ESG performance can enhance creditor support and reduce the cost of debt financing (Kong, 2023). However, Gigante and Manglaviti (2022) contend that no evidence supports a relationship between ESG performance and debt financing cost. In a study focusing on new energy enterprises, it was found that strong ESG performance increases enterprise value; however, financing constraints can inhibit this positive impact (Du et al., 2024). Given that reducing financing costs can enhance corporate resilience (Xia et al., 2022), this study posits that ESG performance contributes to corporate resilience by lowering financing costs. Consequently, we conduct a

mechanism test of this hypothesis. The following table shows the regression results by steps. The results suggest that achieving lower financing could be a mechanism in the effect.

Tab. 4 – Step-by-step regression results_financing cost

	(1)	(2)	(3)
	<i>resilience</i>	<i>resilience</i>	<i>fcost</i>
<i>ESG</i>	0.000889***		-0.00203***
	(3.06)		(-4.14)
<i>fcost</i>	-0.0153***	-0.0830***	
	(-3.61)	(-6.48)	
<i>Tassets</i>	2.98e-14***	-8.27e-15	-3.57e-14***
	(4.66)	(-0.44)	(-3.27)
<i>Age</i>	0.00354***	0.00851***	0.00163***
	(31.26)	(26.81)	(8.48)
<i>ROIC</i>	-0.000691***	-0.000693***	0.0000431
	(-16.63)	(-5.18)	(0.60)
<i>Rind</i>	-0.00318	0.0190	0.0225***
	(-0.75)	(1.49)	(3.15)
<i>Oc</i>	0.0000701*	-0.000200*	-0.000404***
	(1.93)	(-1.88)	(-6.66)
<i>_cons</i>	0.849***	0.759***	-0.000779
	(120.21)	(38.69)	(-0.06)
<i>N</i>	21303	25050	22043
<i>adj. R²</i>	0.735	0.118	0.000
<i>Firm</i>	Y	Y	Y
<i>Year</i>	Y	Y	Y
<i>Indust</i>	Y	Y	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

In addition, a particular focus on the mediating effect of the quality of information disclosure is assumed and presented. ESG disclosure diminishes ambiguity regarding the future viability of the corporation (Schiemann & Tietmeyer, 2022). Yuan et al. (2022) argued that the degree of environmental disclosure boosts the long-term value of a company. In this paper, it is posited that the quality of ESG-related information disclosed by a company can significantly influence how its ESG performance impacts its resilience. By examining this mediator effect, we hope to provide valuable insights into how companies can enhance their resilience through effective ESG performance and transparent information disclosure. This could potentially guide corporations in their strategic decision-making processes, contributing to sustainable business practices and long-term success.

Tab. 5 – Step-by-step regression results_quality of disclosure

	(1)	(2)	(3)
	<i>resilience</i>	<i>resilience</i>	<i>disclosure</i>
<i>ESG</i>	0.000885***		0.413***
	(3.04)		(7.86)
<i>Disclosure</i>	0.0000943**	0.000685***	
	(2.35)	(6.23)	
<i>Tassets</i>	3.01e-14***	-7.52e-15	1.65e-12
	(4.72)	(-0.40)	(1.41)
<i>Age</i>	0.00344***	0.00763***	0.837***
	(29.11)	(21.95)	(40.63)
<i>ROIC</i>	-0.000690***	-0.000686***	-0.0119
	(-16.61)	(-5.12)	(-1.56)
<i>Rind</i>	-0.00364	0.0169	0.846
	(-0.86)	(1.32)	(1.11)
<i>Oc</i>	0.0000740**	-0.000189*	0.0276***
	(2.04)	(-1.77)	(4.25)
<i>_cons</i>	0.846***	0.744***	25.08***
	(118.63)	(37.48)	(19.50)
<i>N</i>	21302	24896	22042
<i>adj. R²</i>	0.735	0.116	0.151
<i>Firm</i>	Y	Y	Y
<i>Year</i>	Y	Y	Y
<i>Indust</i>	Y	Y	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Furthermore, this study examines the hypothesis that ESG performance improves corporate resilience by reducing stock liquidity. Low liquidity indicates a reduced participation of short-term opportunistic investors. Conversely, higher liquidity may lead to a rise in opportunity costs for the business, thus hindering its profitability and growth prospects (Cardillo et al., 2023). In particular, the turnover rate (*Trate*) is used to represent the liquidity of firms.

Tab. 6 – Step-by-step regression results liquidity

	(1)	(2)	(3)
	<i>resilience</i>	<i>resilience</i>	<i>Trate</i>
<i>ESG</i>	0.000440*		-0.0346***
	(1.65)		(-3.88)
<i>Trate</i>	-0.0128***	-0.0264***	
	(-58.97)	(-42.66)	
<i>Tassets</i>	1.72e-14***	-2.38e-14	-1.06e-12***
	(2.93)	(-1.33)	(-5.35)
<i>Age</i>	0.00438***	0.00766***	0.0681***
	(41.82)	(25.07)	(19.50)
<i>ROIC</i>	-0.000647***	-0.000605***	0.00349***
	(-16.98)	(-4.70)	(2.68)

<i>Rind</i>	0.00342 (0.88)	0.0316*** (2.58)	0.449*** (3.46)
<i>Oc</i>	-0.000184*** (-5.49)	-0.000659*** (-6.40)	-0.0205*** (-18.53)
<i>_cons</i>	0.862*** (133.00)	0.820*** (43.30)	1.050*** (4.82)
<i>N</i>	21303	25049	22010
<i>adj. R²</i>	0.777	0.184	0.236
<i>Firm</i>	Y	Y	Y
<i>Year</i>	Y	Y	Y
<i>Indust</i>	Y	Y	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

Consequently, the results prove the hypothesis that low liquidity mediates the effect of ESG performance on corporate resilience.

4.4 Heterogeneity test

4.4.1 Ownership heterogeneity

For companies in China, ownership is a significant contributor to firm operation and development (Zhou et al., 2017). The ownership structure significantly influences the varying levels of investor pressure, which subsequently impacts corporate ESG initiatives in reporting (Agustia et al., 2023). However, studies examining the correlation between ownership and ESG-related activities have produced contradictory outcomes (Gillian and Wei, 2020). In addition, Hsu et al. (2021) stated that state-owned companies in emerging markets show a greater interest in enhancing environmental and social matters than governance concerns.

Tab. 7 – Sub-sample analysis: SOEs and non-SOEs.

	Non-SOEs	SOEs
	<i>resilience</i>	<i>resilience</i>
<i>ESG</i>	0.000864* (1.81)	0.000587 (1.57)
<i>Asset</i>	5.99e-14* (1.76)	2.82e-14*** (4.42)
<i>Age</i>	0.00342*** (15.98)	0.00361*** (26.25)
<i>ROIC</i>	-0.00365*** (-22.60)	-0.000455*** (-10.54)
<i>Rind</i>	0.00257 (0.37)	-0.00712 (-1.32)
<i>Ow</i>	0.0000257 (0.38)	0.000124** (2.57)
<i>_cons</i>	0.839*** (46.98)	0.844*** (107.41)

<i>N</i>	8825	12478
<i>adj. R²</i>	0.724	0.748
<i>Firm</i>	Y	Y
<i>Year</i>	Y	Y
<i>Indust</i>	Y	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

4.4.2 Value-based size heterogeneity

A previous study shows different results based on different firm size (Wang et al., 2023). As a result, this section examines the impact of ESG on the resilience of companies of varying sizes, based on their market capitalization. A firm is considered “big” if its value exceeds the industry average.

Tab. 8– Sub-sample analysis: big firms and others

	Big	Not big
	<i>resilience</i>	<i>resilience</i>
<i>ESG</i>	0.00117**	0.000643*
	(2.38)	(1.68)
<i>Tasset</i>	3.18e-14***	1.46e-13**
	(4.91)	(2.24)
<i>Age</i>	0.00296***	0.00375***
	(15.48)	(24.20)
<i>ROIC</i>	-0.0137***	-0.000677***
	(-3.11)	(-15.54)
<i>Rind</i>	-0.0114	-0.000611
	(-1.63)	(-0.11)
<i>Oc</i>	0.000202***	0.0000290
	(2.99)	(0.60)
<i>_cons</i>	0.840***	0.852***
	(43.80)	(86.54)
<i>N</i>	6759	14544
<i>adj. R²</i>	0.755	0.716
<i>Firm</i>	Y	Y
<i>Year</i>	Y	Y
<i>Indust</i>	Y	Y

t statistics in parentheses

* $p < .1$, ** $p < .05$, *** $p < .01$

This table provides evidence of different impacts in different firm sizes. Compared with small firms, large firms could benefit more in resilience by ESG improvement.

5 CONCLUSION

In the face of global crises such as the COVID-19 pandemic, the concept of resilience has become a key factor in business management discourse. This paper contributes to

this ongoing conversation by exploring the role of ESG performance in enhancing competitiveness through the perspective of corporate resilience.

This study innovatively reconstructs the variable of resilience through the EWM, taking both long-term growth and low volatility aspects into account. The findings reveal that ESG engagement enhances firms' resilience and competitiveness by limiting financial costs, improving the quality of disclosure, and alleviating liquidity risks in their shares. It appears that larger firms could benefit more from this strategy.

This paper emphasizes the ESG from the perspective of corporate management and provides fresh insights into the interplay between ESG performance and corporate resilience with a specific focus on Chinese listed firms. Our findings underscore the significance of ESG-related activities and strategies in equipping firms to navigate dynamic environments and maintain a competitive edge. As multinational enterprises seek effective risk mitigation strategies, a nuanced understanding of ESG becomes crucial. ESG performance, we argue, is not just a peripheral concern, but central to a corporation's long-term growth and sustainable competitiveness.

While this study provides valuable insights into the relationship between ESG performance and corporate resilience, it is limited by its focus on Chinese listed companies, which may not fully represent global corporate practices. Furthermore, future studies could explore ESG's impact on SMEs and other corporate sectors, such as human resource management, where previous research has shown that the integration of CSR can significantly enhance HRM practices (Belas et al., 2023). Additionally, the reliance on specific ESG and resilience metrics may not capture all dimensions of these constructs, suggesting the need for broader measures in future research. Future research could expand on this study by including data from companies in different countries and regions, thereby enhancing the generalizability of the findings. Additionally, employing alternative methodologies and metrics for measuring ESG and corporate resilience could provide further insights into the robustness of these relationships.

In summary, this paper illustrates the increasing significance of ESG performance in building corporate resilience and sustainable competitiveness. It is hoped that these findings will spark further investigations in this field and play a pivotal role in shaping effective corporate strategies in this era of global disruptions.

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