

# ESG Performance and Corporate Organizational Resilience: Evidence from A-share Listed Companies

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## Abstract

With the development of the sustainable green concept and the operational challenges faced by most companies in today's complex and dynamic business environment, the ESG concept, which focuses on environmental, social and corporate governance, has gradually gained the attention of stakeholders and has gradually become a key component of corporate management, based on which this paper explores the impact of ESG performance on the organizational resilience of companies. Based on the A-share panel data of Chinese listed companies from 2009 to 2022, this paper conducts an empirical analysis based on the annual average of CSI ESG rating scores. The results show that ESG scores have significant positive results on corporate organizational toughness, and significant positive and negative effects on the dimensions of performance growth and financial volatility, respectively. In the heterogeneity analysis, relative to the non-manufacturing industry, the ESG performance of manufacturing enterprises has a stronger significance on organizational toughness; the results are more significant in the eastern region compared to the central region and the western region; and the results are significant for both non-state-controlled and state-controlled enterprises, but the coefficients are different.

## Keywords

ESG Performance; Organizational Resilience; Performance Growth; Financial Volatility.

## 1. Introduction

Against the background of the wave of reverse globalization and accelerated economic transformation and upgrading, the VUCA (Volatile, Uncertain, Complex and Ambiguous) characteristics of China's local business environment have become increasingly prominent, with the continued impact of "black swan" and "grey rhino" events[1], the outbreak of the new crown epidemic in 2020 and various natural disasters make most enterprises encounter difficulties in their operations, in such a context, business resilience is the key ability of enterprises to resist risks, adapt to environmental changes and cope with challenges, as well as an important factor in determining the rapid recovery of enterprises in the face of adversity, and sustainable development [2].

The concept of ESG was first proposed by the United Nations in 2004, with the three letters E, S and G representing the three dimensions of environmental protection, social responsibility and corporate governance, aiming at the hope that these three dimensions will be included in the consideration of corporate business. The report of the 20th CPC National Congress pointed out that it is necessary to firmly establish and practice the concept that green water and green mountains are golden silver mountains, and to plan development at the height of the harmonious coexistence of human beings and nature. Currently, China has entered the stage of high-quality development, and in the context of such a sustainable and high-quality development, ESG, as a typical concept of sustainable development, is an important driver for

enterprises to realize the pursuit of long-term value, and is expected to become an important part of the future value and asset management of enterprises. value and a mainstream investment trend in the asset management industry[3]. Therefore, the concept of ESG has been emphasized by the government and regulators since its introduction, with the introduction of policies on ESG disclosure, implementation, and regulation, and enterprises actively disclosing ESG-related actions to the outside world[4].

Existing studies have focused on the impact of corporate ESG performance on corporate value, green technology innovation[5], corporate performance[6], and financing constraints[7], whereas the study in this paper is focusing on the impact of corporate ESG performance on the organizational resilience of corporations. It is usually believed that corporate sustainable development requires companies to have the ability to maintain operation in a crisis environment and can be quickly recovered in this process, the impact of corporate ESG performance on corporate organizational resilience is particularly important. Enhancing the organizational resilience of enterprises not only depends on their financial strength and operational efficiency, but is also closely related to their performance in environmental, social and corporate governance (ESG), so it is of great theoretical and practical significance to explore the impact of ESG performance on the organizational resilience of enterprises in the context of the macro-environment.

Based on this, this paper focuses on China's A-share listed companies from 2009-2022, using financial volatility and performance growth measures, the total score calculated by the entropy weighting method to measure organizational resilience, and the annual average of CSI ESG scores to measure the level of corporate ESG performance. The marginal contributions of this paper are mainly in the following aspects: first, this study can enrich and develop the related theories of ESG and corporate organizational toughness, reveal the influence mechanism between ESG performance and corporate organizational toughness, provide new perspectives for the construction of a more comprehensive theory of corporate sustainability, and at the same time, provide practical guidance for enterprises, which can help them to identify and assess ESG risks, formulate ESG strategies, enhance ESG performance, enhance organizational resilience, and improve corporate competitiveness and sustainability; Second, this paper is innovative in terms of data, most of the existing articles focus on Shanghai and Shenzhen A-share listed companies or specific industries of A-share listed companies, whereas this paper covers all A-share listed companies as the research samples, and the comprehensiveness of the data makes the results of the study universal. Thirdly, this paper does a heterogeneity analysis according to the different nature of the enterprises' shareholding, the nature of the industry, and the region to analyze the effect of these differences on ESG performance on corporate resilience.

The rest of the paper is arranged as follows: the second part, literature review, summarizes the research ideas of the literature on the related topics of corporate ESG performance and organizational resilience, and lays the theoretical foundation for this paper. The third part, Theoretical Analysis and Research Hypotheses, utilizes the theory and discusses the influence mechanism of ESG performance affecting organizational toughness. The fourth part, research design, details the data sources and treatment process, and constructs the multiple regression model. Part V, empirical results and analysis, conducts benchmark regression analysis, robustness test and heterogeneity analysis. Part VI, Conclusion and Suggestions, summarizes the whole text and makes reasonable suggestions to enterprises.

## 2. Literature Review

Combing through the existing literature at home and abroad, the research on ESG performance mainly focuses on the enterprise value level, including the audit system, performance, financing

constraints and innovation efficiency of enterprises. Disclosing ESG information to improve a company's ESG performance can reduce the company's audit fees[8], and conducting a post-ESG audit system can optimize the corporate investment structure[9]. In terms of performance, based on the cost-benefit theory, enterprises that carry out short-term ESG responsibilities to increase the input of environmental and social responsibility and other factors will increase the cost of the enterprise, which in turn may have a negative impact on the financial performance[10]; but carrying out good ESG behavior in the long run, based on stakeholder theory, can promote the relationship between the enterprise and various stakeholders, which can in turn improve the financial performance. On the other hand, enterprises with poor ESG performance, which are inadequate in environmental, social or governance aspects, are more likely to be negatively impacted by law, market and social opinion, and will be condemned by stakeholders or society leading to a decline in efficiency, and may be exposed to a variety of business risks. Therefore, some scholars believe that ESG behavior by considering environmental, social and governance factors, enterprises can identify and assess a variety of potential risks, such as climate change, social instability, ethical violations, etc., and this comprehensive risk identification helps enterprises to more accurately understand the risks they face, and can effectively avoid risks, such as downside risks[11]. Therefore, the fulfillment of ESG responsibilities can build corporate reputation, reduce corporate risk, establish competitive advantage, and ultimately achieve the improvement of corporate business performance[12].

Second, enterprises with better ESG performance will increase investment in environmental management to reduce pollution emissions, and therefore will enhance innovation in green technology to save resources from the source, improve the efficiency of product production technology, and then enhance the competitive advantage of products in the market, and enterprises with an advantage in market competition are more likely to obtain commercial credit provided by suppliers to obtain financing[7]. Publicizing ESG information can reduce the principal-agent problem brought about by information asymmetry, and it also has a significant positive impact on reducing corporate financing costs[13]. Furthermore, reputation is the comprehensive evaluation of the subject by the public, and by releasing the positive signals of non-complete self-interest, enterprises win a good social reputation for honesty and trustworthiness, which satisfies the social responsibility preferences of suppliers, government and other financial institutions, which in turn establishes a good relationship of trust, and enables them to promote the enterprises to obtain the support of commercial credit more easily[7].

Regarding ESG for corporate innovation, studies have concluded that ESG promotes enterprises to engage in innovative behaviors through mechanisms such as easing financing constraints and improving employees' innovation efficiency and risk-taking levels[14]. In terms of green innovation, the rise of the ESG concept provides a new path for sustainable development of enterprises, and the unprecedented emphasis on social responsibility in all sectors of society prompts enterprises to actively participate in ESG ratings in order to attract investors and optimize resource allocation. In the face of the high-risk and long-cycle challenges of green technology innovation, ESG ratings effectively reduce information asymmetry and curb short-sightedness and opportunistic behavior of managers by enhancing transparency and stakeholder monitoring. At the same time, it closely links executives' personal reputation with the fate of the enterprise, enhances their sense of responsibility and long-term vision in decision-making, and encourages enterprises to increase their investment in green technological innovation, realizing the double enhancement of economic benefits and social responsibility[5].

The term "resilience" was earlier a concept in physics and engineering, later applied to psychology, and later extended to the field of management with the concept of organizational

resilience. Organizational resilience is defined as the ability of a firm to maintain normal operations and recover quickly in the face of external shocks and uncertainty. Scholars have conducted extensive research around organizational resilience. One part of scholars believes that corporate resilience is formed slowly in the environment, through events that occur externally to influence corporate organizational resilience; another part of scholars believes that corporate resilience develops internally[15]. From an external organizational perspective, building solid social network relationships and strengthening strong ties with stakeholders are important strategies for firms to maintain robust growth and reduce financial vulnerability in a complex environment. Analyzing from an internal organizational perspective, organizational resilience is deeply influenced by its members, resource allocation and strategic planning[16]. Based on the research on ESG, this paper innovatively uses the time fixed effects approach to conduct an empirical study of ESG behaviors affecting corporate organizational resilience, which complements the field of ESG behaviors affecting corporate sustainability.

### 3. Theoretical Analysis and Research Hypothesis

ESG is a multidimensional index consisting of environmental protection (E), social responsibility (S) and corporate governance (G) together, respectively, and thus needs to be further explored. The national government prioritizes environmental protection (E) above all else. It has proposed a number of ground-breaking policy objectives and measures, including the "dual-carbon" policy, strengthened the creation and enforcement of environmental protection regulations and laws, raised the penalties for environmental pollution, and is dedicated to advancing green, low-carbon development. Consequently, businesses should adopt environmentally friendly practices to protect the environment. These practices include cutting back on pollution emissions and implementing green technology innovation behavior. By doing this, they can minimize environmental pollution and shift from high-pollution, high-energy production to a green production mode, which lowers costs and improves resource utilization, so as to obtain opportunities for development in the market, and in the long term will enhance corporate performance, and enhance the resilience of the encountered difficulties. In the long run, it will enhance the performance of enterprises and strengthen their resilience when they encounter difficulties. At the same time, corporate environmental protection information disclosure is considered to be a positive signal to the outside world, proving that the enterprise is an enterprise with awareness of environmental protection, alleviating the problem of information asymmetry, helping to attract the trust of the government, investors, etc., and helping to alleviate financing constraints[13].

Second is the social responsibility (S) aspect, nowadays, under the environment of increasingly fierce market competition, enterprises tend to pay more and more attention to the activities of social responsibility and invest a large amount of financial and material resources, because the returns generated by the fulfillment of social responsibility can often offset the costs paid[17]. The active fulfillment of social responsibility by enterprises, such as protecting the rights and interests of employees and providing a good working environment and career development opportunities, can enhance employees' sense of belonging and loyalty. This internal cohesion helps companies maintain team stability and combat effectiveness when facing difficulties. Externally, making disclosure of social responsibility helps the outside world to recognize the enterprise quickly, reduces information asymmetry, helps the enterprise to build up a good image in the market, and enhances the brand reputation, and helps the enterprise to gain more trust and support in the market. At the same time, better fulfillment of social responsibility by enterprises can help enterprises establish a good relationship with the society and stakeholders, and when the enterprise meets a crisis, the main stakeholders can lend a helping hand, such as employees through human resources to get through the crisis, and suppliers to help the

enterprise to relieve the pressure by providing goods in time or extending the payment and other behaviors to help the enterprise [18]. Moreover, most studies believe that social responsibility will play a safeguarding role when enterprises encounter adverse events.

Finally, in terms of corporate governance (G), effective corporate governance can ensure the scientific and efficient decision-making of enterprises, establish sound internal systems and internal organizational structures, better respond to market changes and external shocks, and make correct decisions quickly, which helps enterprises to adjust their strategies and resource allocation in times of crises, and to maintain the continuity and stability of their operations. Good corporate governance helps enterprises to reduce internal risk issues, reduce the occurrence of internal corruption, cliques and other malpractices, and helps to enhance organizational resilience. Transparent information disclosure and an independent board of director system can gain investors' trust, and investors are more willing to support well-governed enterprises, which can help enterprises obtain more financial support and development opportunities in times of crisis.

Enterprises focusing on ESG will pay attention to environmental governance and will consider reducing damage to the natural environment when carrying out corporate activities; enterprises under the ESG concept tend to fulfill their social responsibilities and satisfy social expectations and concerns; and in terms of governance, the ESG concept advocates enterprises to strengthen their internal control management and promote the healthy development of the capital market. By fulfilling their environmental, social and corporate governance responsibilities, enterprises enhance the mutually beneficial symbiotic relationship between internal and external stakeholders, thus gaining support when encountering difficulties. In summary, corporate ESG behaviors can contribute to enhancing corporate organizational resilience. Based on the above analysis, this paper proposes the hypothesis:

H1: Firms' ESG ratings are positively related to firms' organizational resilience.

## 4. Research Design

### 4.1. Sample Selection and Data Sources.

ESG data and organizational resilience data are complete and stable from 2009, so this paper takes the A-share data of Chinese listed companies from 2009- 2022 as the sample, excludes the samples with missing organizational resilience, ST, \*ST and PT samples, and finally obtains 24,205 companies - the annual samples. The ESG data in this paper is the CSI rating data, which is widely recognized; the organizational toughness data refer to Ortiz's methodology; the rest of the data is from the 2009-2022 A-share listed companies data.

### 4.2. Variable Selection and Definition.

#### 4.2.1. Explanatory Variable

The explanatory variable is the organizational toughness Score, and referring to the studies of Wu et al. and Ortiz's methodology, the cumulative sales revenue growth over a 3-year period (in tens of billions of dollars) is used to measure performance growth; the standard deviation of stock returns in each month of a 1-year period is used to measure volatility.

#### 4.2.2. Explanatory Variable

In this paper, the ESG performance of enterprises is measured by the ESG rating under the CSI, which has been recognized and used by academics and the industry[19], which contains nine grades of C, CC, CCC, B, BB, BBB, A, AA, AAA, and AAA, and with reference to the methodology of Fang Xianming and Huding, the ESG grades of listed companies are assigned to be from 1 to 9 from the low to the high, and the higher the score, the better the corporate ESG performance, and then the annual average of scores is calculated as an explanatory variable. The higher the

score, the better the ESG performance of the company, and then calculate the annual average of the score as an explanatory variable.

**4.2.3. Control Variable**

A time fixed effects model is used, i.e., variables that do not vary with individual differences but vary over time are considered. Therefore, the following control variables were selected, i.e., age at listing (Age), firm size (size), corporate return on net assets (roe), net profitability of total assets (roa), total debt ratio (lev), net fixed assets (fixed), and management expense ratio (mer). The ROE reflects the profitability of the enterprise and is an important indicator of the efficiency of the enterprise in utilizing its own capital; the ROA reflects the effect of the comprehensive utilization of the enterprise's assets; the total liabilities ratio reflects the financial risk and financial health of the enterprise; the net fixed assets accounting reflects the current value of the enterprise's fixed assets after deduction of accumulated depreciation, which is helpful to reflect the real-time status of the enterprise's assets more accurately; the management expense ratio (MER) is an important indicator of the efficiency of the enterprise's utilization of its own capital. The net fixed assets accounting method reflects the current value of fixed assets after deducting accumulated depreciation, which helps to more accurately reflect the real-time status of the enterprise's assets; the management expense ratio reflects the enterprise's operation and management level, and is an important factor affecting the enterprise's profitability.

**Table 1.** Definition of variables and calculation method

variable name	explicit explanation
Score	Growth and volatility
ESG_Score_mean	CSI ESG Rating Annual Average
Age	Number of years on the market as of the current period plus one to take the natural logarithm
size	Natural logarithm of total assets of the enterprise at the end of the year
roe	Net profit/net assets
roa	EBIT/total assets
lev	Total liabilities/total assets
fixed	Net fixed assets/total assets
mer	Current administrative expenses/current operating income

**4.3. Modeling.**

In order to test the impact of ESG performance on firms' organizational resilience, the following model is developed in this paper:

$$Score_{i,t} = \alpha + \beta_0 \cdot ESG\ Score_{\sim ani,t} + \beta_1 \cdot Controls_{i,t} + \mu_t + \epsilon_{i,t}$$

where i and t denote individuals and years, respectively, and  $\mu_t$  denotes that time fixed effects were controlled for, and  $\epsilon_{i,t}$  is the random error term. There were unobservable shocks or cyclical changes in the data that varied over time but not with individuals, and the sample data spanned a long period of time, so a fixed time effects model was chosen for data analysis.

## 5. Empirical Results and Analysis

### 5.1. Descriptive Statistics.

Descriptive statistics are shown in Table 2, the mean value of corporate organizational toughness (Score) is 0.884, the difference between the maximum value of 0.997 and the minimum value of 0.0256 is large, at the same time, the standard deviation is 0.0612, which can be seen that the sample has a certain degree of dispersion. The mean value of ESG annual mean performance of enterprises (ESG\_Score\_mean) is 4.111, and the standard deviation is 0.918, the sample data is less dispersed, but the difference between the maximum value of 7.750 and the minimum value of 1, is large, which shows that a few enterprises have some differences.

**Table 2.** Descriptive statistics of variables

Variable	Obs	Mean	Std. Dev.	Min	Max.
Score	24,205	0.884	0.0612	0.0256	0.997
ESG_Score_mean	24,205	4.111	0.918	1	7.750
year	24,205	2017	3.890	2009	2022
size	24,204	22.00	1.201	16.41	27.62
Age	22,244	1.893	0.953	0	3.466
roe	24,113	0.0755	4.868	-66.54	713.2
roa	24,204	0.0398	0.375	-30.69	22.01
lev	24,204	0.405	1.241	0.00752	178.3
fixed	24,204	2.340e+09	7.980e+09	0	2.270e+11
mer	24,197	0.229	18.34	-0.111	2825

### 5.2. Return to Baseline.

**Table 3.** Benchmark regression results

	(1)	(2)
VARIABLES	Score	Score
ESG_Score_mean	0.002***	0.003***
	(4.43)	(9.40)
Age		0.002***
		(6.91)
size		0.003***
		(10.91)
roe		-0.000**
		(-2.31)
roa		-0.028***
		(-11.12)
lev		-0.021***
		(-13.56)
fixed		0.000**
		(1.99)
mer		0.007***
		(7.66)
Year fix effect	Yes	Yes
Constant	0.781***	0.716***
	(372.78)	(113.51)
Observations	22,148	22,148

z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3 presents the results of the benchmark regression of firms' ESG performance on firms' organizational toughness, where year fixed effects are controlled for. Column (1) shows the regression results of ESG performance alone on firms' organizational toughness, with a regression coefficient of 0.002, which is significantly positive at the 1% level, suggesting that ESG performance positively promotes organizational toughness, and Column (2) shows the regression results after control variables are added, with a regression coefficient of 0.003, which is significantly positive at the 1% level, and after controlling for other factors that may affect organizational toughness, the The positive contribution of ESG performance to the organizational toughness of enterprises is more obvious and stable, indicating that enterprises with good ESG performance have a stronger coping ability when encountering external shocks and other situations. The hypothesis that firms can enhance their organizational resilience by improving ESG performance while pursuing sustainable development is valid.

The regression coefficients of Age, size and mer are significantly positive at the 1% level, and the regression coefficient of fixed assets is significantly positive at the 5% level, indicating that the longer the age of listing, the larger the size of the enterprise, the larger the management expenses, and the larger the fixed assets are, the stronger the ability to maintain normal operation and recover in the face of a crisis. The longer the company has been listed, the larger the size of the company, the higher the management expenses and the more fixed assets, the stronger the ability to maintain normal operation and recover in the face of crisis. With the increase of listing time (Age), the enterprise has accumulated rich market experience, which helps to better respond to market changes and optimize the allocation of resources. With the expansion of enterprise size (size), enterprises can enjoy the benefits of scale effect, such as cost reduction, improve efficiency, enhance bargaining power, etc., which helps enterprises to improve profitability and increase market competitiveness, while large enterprises usually have more resources, which helps enterprises to face the risk of coping with changes and achieve sustainable growth. A high management expense ratio (mer) means that a company invests a lot of resources in management, such as technological innovation, employee training, etc., aiming to improve quality, which increases short-term costs but helps to improve competitiveness and profitability in the long run. Fixed assets (fixed) are the material basis for the production activities of the enterprise, higher fixed assets means that the enterprise has stronger production capacity, higher technical level and facilities, which helps the enterprise to improve the quality of products and meet market demand. Fixed assets are also an important collateral for enterprises to obtain financing. Enterprises rich in fixed assets are more likely to obtain loans from banks and financial institutions, thus providing the necessary financial support for the development and expansion of the enterprise, and helping the enterprise to resist risks and recover in time in the face of changes. The regression coefficients of enterprise net profit margin of total assets (roa) and total debt ratio (lev) are significantly negative at 1% level, and the regression coefficient of return on net assets (roe) is significantly negative at 5% level, which indicates that the higher the efficiency of the utilization of assets, the higher the debt ratio of the enterprise, and the enterprise with high profitability, the weaker the organizational resilience. The net profitability of total assets (roa) reflects the ability of total assets to generate net profit, and the coefficient is negative, an increase in the efficiency of asset utilization of the enterprise may be accompanied by higher operating costs and a higher level of risk, thus weakening organizational toughness. Total debt ratio (lev) is an important indicator of financial risk, high debt ratio means that enterprises need to bear higher debt servicing pressure, which will lead to more vulnerability in the face of external shocks; at the same time, high debt ratio also faces stricter financing constraints, limiting its ability to raise funds, thus reducing organizational resilience. Return on equity (roe), a measure of shareholders' return on investment, can be affected by financial leverage. If a firm relies excessively on debt financing, while it may temporarily increase ROE (because debt costs can

be deducted pre-tax), it will also increase the firm's financial risk. When financial risk is high to a certain extent, it may have a negative impact on the stability and organizational resilience of the firm, leading to a negative correlation between ROE and organizational resilience. A high ROE does not necessarily mean that the quality of a firm's profits is also high. If a firm's profits come mainly from non-recurring gains and losses or accounting manipulation, this high ROE may not be sustainable and cannot truly enhance the firm's organizational toughness.

### 5.3. Robustness Check.

Organizational resilience data refer to Ortiz, which conceptualizes organizational resilience (Score) and views it as a two-dimensional structural index with high performance growth and low financial volatility. Long-term performance growth is measured by the cumulative amount of sales revenue over a three-year period, as cumulative growth is more indicative of long-term performance than year-to-year growth, denoted as Growth, while financial volatility is measured by the volatility of stock returns, measured as the standard deviation of stock returns for each month of the year, denoted as sd.

**Table 4.** Replacement of explanatory variables

VARIABLES	(4) growth	(5) sd
ESG_Score_mean	3.637*** (2.63)	-0.006*** (-10.40)
Age	26.637*** (12.02)	-0.005*** (-9.04)
size	18.845*** (8.64)	-0.006*** (-10.38)
roe	-1.852*** (-3.22)	-0.001*** (-3.55)
roa	57.129*** (4.88)	0.033*** (5.33)
lev	-0.275 (-0.03)	0.035*** (11.25)
fixed	0.000*** (27.90)	-0.000 (-0.14)
mer	1.611 (0.39)	0.006** (2.50)
Year fix effect	Yes	Yes
Constant	-456.180*** (-10.32)	0.304*** (24.90)
Observations	22,145	22,146

z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 shows the regression results of the robustness test for replacing the explanatory variables. According to the regression results in column (4), the regression coefficient of long-

term performance growth (growth) is 3.637, which is significantly positive at the 1% level, and ESG performance has a positive contribution to long-term corporate performance. Column (5) shows the regression result of financial volatility, and the regression coefficient is - 0.006, which is significantly negative at 1% level, indicating that ESG performance helps to reduce the financial volatility of the enterprise, which makes the enterprise's financial position more stable and better able to withstand external shocks. Enterprises that have good ESG performance and focus on CSR attract more consumers and investors, which in turn boosts the sales revenue; Environmentally friendly behaviors help reduce costs, improve resource utilization, and enhance the ability to grow corporate performance. Companies that focus on ESG performance enhance risk management by identifying and addressing potential environmental, social and governance risks, thereby reducing financial volatility. After replacing the measure of organizational resilience, both regression results illustrate that ESG performance plays an important role in enhancing long-term firm performance and reducing financial volatility, so the hypothesis still holds that ESG performance enhances firms' organizational resilience.

**5.4. Heterogeneity Test**

**5.4.1. Heterogeneity Analysis of the Nature of Property Rights.**

**Table 5.** Impact of the nature of property rights

VARIABLES	(6)	(7)
	Gov=1	Gov=0
	Score	Score
ESG_Score_mean	0.002***	0.003***
	-3.92	-8.57
Age	0.001**	0.002***
	-2	-5.93
size	0.004***	0.003***
	-8.49	-7.34
roe	0	-0.000*
	-0.18	(-1.84)
roa	-0.014**	-0.030***
	(-2.48)	(-10.65)
lev	-0.012***	-0.025***
	(-5.21)	(-13.06)
fixed	0	0
	-0.7	-0.6
mer	0.001	0.008***
Year fix effect	Yes	Yes
Constant	0.714***	0.727***
	-86.08	-87.02
Observations	6,893	15,102

z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

First, the nature of property rights affects the motivation of enterprises' ESG performance. Non-state-controlled enterprises engage in ESG practices to obtain economic returns and meet the needs of stakeholders, while state- controlled enterprises have to consider responding to the

state, policies and society. Different property rights nature of enterprise practice focus is also different, non-state-controlled enterprises are more inclined to, and state-controlled enterprises in response to the call of the state to carry out corresponding ESG practices. Second, for state-controlled (non-state-controlled) enterprises, the marginal effect of enhancing ESG in terms of accessing resources related to government and other institutions is low (high)[20]. The Third Plenary Session of the 18th CPC Central Committee clearly pointed out that assuming social responsibility is an important element in promoting the deepening reform of state-owned enterprises (SOEs), and state-controlled firms are subject to policy orientation, and ESG performance is motivated by policy requirements rather than market motives, whereas non-state-controlled firms need to face more market pressures to effectively invest resources in ESG practices, and through their investment in environment, social responsibility and corporate governance, they can enhance the firm's reputation, reduce financing costs, improve market competitiveness, and thus promote the enhancement of organizational resilience.

In summary, it is expected that the effect of ESG performance on organizational resilience is more significant for non-state-controlled enterprises. Therefore, in further analysis, this paper explores the difference in the extent of the role of ESG performance on organizational resilience between state-controlled enterprises and non-state-controlled enterprises. Considering the characteristics of the grouping variable of the nature of property rights, this paper adopts the grouping regression, and the regression results are shown in Table 5, Column (6) is the state-controlled enterprises (Gov=1), and the regression coefficient is smaller than that of the non-state-controlled enterprises (Gov=0), therefore, the enhancement of the organizational toughness of ESG performance of the non-state-controlled enterprises is more significant.

#### **5.4.2. Heterogeneity Analysis of the Industry.**

As China's sustainable development policy continues to advance, manufacturing enterprises usually face more stringent environmental regulations and social responsibility requirements, manufacturing enterprises need to reduce pollution to the environment and improve the efficiency of resource utilization, and stakeholder theory suggests that the process of business operations should not only meet the maximization of shareholder wealth, but also take into account the demands of stakeholders, manufacturing enterprises' supply chains tend to be more complex, the Manufacturing enterprises engage in ESG practices to demonstrate to stakeholders that the company fulfills its responsibilities in terms of environment, social responsibility and corporate governance, practicing the concept of sustainable development, and green and friendly positive actions, which help to gain investors' trust, access to resources, and alleviate financing constraints[21]. In recent years, the government attaches importance to improving the innovation ability of enterprises, and manufacturing enterprises are an important field of technological innovation and green transformation, and this process of technological innovation and green transformation helps to improve the organizational resilience of enterprises, and the government will consider enterprises comprehensively and select enterprises with better prospects for enterprise development, high social value, and a good reputation for resource support [22], therefore, manufacturing enterprises carry out more ESG behaviors compared to non-manufacturing enterprises.

In this paper, in further analysis, group regression is conducted, and the regression results are shown in Table 6, Column (8) is the regression result of non-manufacturing industry, which is significantly positive at the 5% level, with a regression coefficient of 0.004, and Column (9) is the regression result of manufacturing firms, which is significantly positive at the 1% level, with a regression coefficient of 0.003, and the ESG behaviors of manufacturing firms have a stronger effect on promoting the organizational resilience of the firms than that of non-manufacturing enterprises, and the regression results are consistent with the inference.

**Table 6.** Impact of the nature of the industry

VARIABLES	(8)	(9)
	non- manufacturing industry	service industry
	Score	Score
ESG_Score_mean	0.004**	0.003***
	-2.35	-9.18
Age	0.001	0.002***
	-0.45	-6.66
size	0.001	0.003***
	-0.69	-10.81
roe	0	-0.000***
	(-0.27)	(-2.90)
roa	0.002	-0.029***
	-0.11	(-11.43)
lev	-0.017*	-0.021***
	(-1.82)	(-13.20)
fixed	0	0.000*
	-1.03	-1.94
mer	-0.002	0.008***
	(-0.28)	-8.66
Year fix effect	Yes	Yes
Constant	0.758***	0.714***
	-21.24	-110.38
Observations	499	21,649

z-statistics in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

### 5.4.3. Heterogeneity Analysis of Regions.

Due to the development of geographic location, history and other comprehensive factors, China's economic development is still in the basic national conditions of regional imbalance and obvious gap between rich and poor. The level of economic development, financial resources and public awareness in the eastern region is significantly better than that in the central and western regions[23]; moreover, the institutional environment in the eastern region is relatively better, and firms are also more concerned about ESG to reduce management risks, enhance internal innovation, strengthen reputation and improve corporate governance. Secondly, the central region is an important transportation hub connecting east and west and north and south, with certain advantages in geographic location, and the central region actively promotes the optimization of industrial structure and vigorously develops high-tech industries, which enhances the economy of the central region, therefore, the central region is more developed than the west, and firms should also pay more attention to ESG behaviors than in the western region.

The paper is further analyzed by performing regional grouping regression and the regression results are shown in Table 7, column (10) shows the regression results for the eastern region with a regression coefficient of 0.003, which is significantly positive at the 1% level, column (11) shows the results for the central region with a regression coefficient of 0.002 which is significantly positive at the 1% level, and column (12) shows the regression results for the western region with a coefficient of 0.001 which is significantly positive at the 5% level.

significantly positive at 5% level. The results show that corporate ESG performance promotes corporate organizational resilience most significantly in the eastern region and more significantly in the central region than in the western region, consistent with the inference.

**Table 7. Regional impacts**

VARIABLES	(10) the east Score	(11) central section Score	(12) western part Score
ESG_Score_mean	0.003*** (8.24)	0.002*** (3.44)	0.001** (1.97)
Age	0.002*** (6.06)	0.002* (1.85)	0.002** (2.45)
size	0.003*** (9.02)	0.002** (2.16)	0.003*** (3.96)
roe	-0.000* (-1.85)	-0.000 (-0.49)	0.000 (0.27)
roa	-0.032*** (-10.61)	-0.024*** (-2.88)	-0.010 (-1.64)
lev	-0.026*** (-13.63)	-0.014*** (-2.94)	-0.008** (-2.19)
fixed	0.000** (2.13)	0.000 (0.84)	-0.000 (-0.76)
mer	0.008*** (7.99)	-0.002 (-0.49)	0.002 (0.64)
Year fix effect	Yes	Yes	Yes
Constant	0.715*** (91.94)	0.738*** (34.08)	0.725*** (48.36)
Observations	15,682	3,592	2,863

z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 6. Conclusion and Recommendations

### 6.1. Reach a Verdict.

With sustainable development, ESG ratings are getting more and more attention from all parties, which has a great impact on the organizational resilience of companies. This paper explores the impact of ESG performance on organizational resilience based on the data of listed A-shares from 2009-2022. The study finds that: corporate ESG performance enhances corporate organizational toughness and passes the robustness test, dividing organizational toughness into two dimensions: long-term performance growth and financial volatility, ESG performance promotes the growth of long-term corporate performance and is negatively correlated with corporate financial volatility. However, there is ownership nature, industry, and regional heterogeneity. Non-state-controlled enterprises are more responsive to ESG transformation due to flexible governance mechanisms and market sensitivity; manufacturing industries are

more responsive to ESG in terms of supply chain stability due to green technologies embedded in the whole production process; and ESG effectiveness is more prominent in the eastern region due to its well-developed economic fundamentals, policy support, and resource agglomeration advantages.

## 6.2. Suggestion.

Enterprises should not only focus on financial indicators, but also on their organizational resilience. Enterprises should strengthen environmental management and incorporate environmental protection into their long-term development strategies; fulfill their social responsibilities and build a harmonious ecology; improve corporate governance, improve the system of boards of directors, supervisory boards and executives, strengthen information disclosure and transparency, publish regular ESG reports, disclose ESG performance in detail, and strengthen investor and public confidence, as well as strengthen risk management to ensure a rapid response in the event of a crisis. The market environment is unpredictable, and companies should be forward-looking, long-term and prepared to face risks and shocks. Looking forward to future research directions, the impact of different dimensions of ESG on different aspects of organizational resilience can be investigated, as well as the relationship between ESG performance and organizational resilience of different types of enterprises, such as state-owned enterprises, private enterprises and foreign-funded enterprises respectively.

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