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Entrepreneurship and Corporate ESG Performance—A Case Study of China's A-Share Listed Companies

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Abstract: This paper examines the contemporary implications of entrepreneurship and utilizes panel data from Chinese A-share listed companies spanning 2011 to 2022. Based on the five aspects of Chinese entrepreneurship, namely "patriotism, courage to innovate, integrity and law-abiding, social responsibility, and international vision", the findings suggest that fostering entrepreneurship enhances the environmental, social, and governance (ESG) performance of firms. Mechanism analysis indicates that green technology innovation, social performance enhancement, and governance capability optimization mediate this relationship. Furthermore, factors such as corporate market power, regional marketization processes, and advancements in artificial intelligence technology influence the link between entrepreneurship and ESG performance. Robust entrepreneurship equips firms to navigate environmental uncertainties, but entrepreneurship cannot improve corporate governance performance. This article elucidates the distinctive significance of entrepreneurship, expanding the institutional economics research perspective, offering practical insights for cultivating entrepreneurship and elucidating potential determinants of corporate ESG performance. This article also provides spiritual guidance for sustainable development.

Keywords: entrepreneurship; ESG; marketization; environmental uncertainty; artificial intelligence; technological innovation

JEL Classification: D22; M14; L25

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1. Introduction

Historical culture and ideology, as vital elements of informal institutions, can subtly influence social behavioral norms and value judgment standards, thereby influencing the decision-making of economic agents [1], and increasingly play a crucial role in shaping business philosophy, development goals, and overall strategy [2]. As the primary entities in the micro-market, enterprises directly engage in production and business activities, significantly influencing economic and social development. As leaders of these enterprises, entrepreneurs naturally exert a substantial impact on production and business activities through their cultural literacy and ideology, making the intrinsic spirit of entrepreneurs a vital source of economic development. Consequently, the urgent topic at hand is how to foster entrepreneurship to stimulate economic vitality and drive sustainable, high-quality economic development.

Given that the subject matter of economics primarily revolves around measurable economic phenomena, factors such as "culture" and "spirit", which are challenging to quantify, were initially not given significant emphasis in early economic studies. However, as a discipline that investigates humans, it is inappropriate to examine economic behavior solely through the lens of "economic man". Therefore, taking into account the factors that influence human behavior has become an indispensable focus in economic research,

particularly the role that institutional structures and cultural elements play in guiding human behavior and economic activities [3]. Existing research has shown that culture, spirit, and other forms of mental awareness can significantly influence self-awareness, emotions, and behavioral motivation [4], and therefore, these factors must also influence corporate behavioral decision-making [2,5–7]. For example, Bai F. discovered that corporate culture can foster green innovation via resource and information effects and enhance information transparency, thus boosting ESG performance [2]. Hogan and Coote discovered that superior innovation concepts positively influence the innovation paradigm of enterprises from the perspective of organizational culture [5], thereby enhancing their innovation capabilities, which indirectly underscores the significance of cultivating entrepreneurial innovation awareness. Schumpeter, as one of the economists revered by the evolutionary economics school, introduced theories that emphasize the influence of disequilibrium and qualitative shifts on economic growth and underscored the role of the entrepreneurship of innovation in driving economic expansion [8]. Based on this, Baumol found that correctly utilizing entrepreneurship helps promote economic growth [9]. If entrepreneurship is used for rent-seeking activities, it leads to a loss of economic growth efficiency, reflecting the key to correctly cultivating and guiding entrepreneurship. The current research on entrepreneurship is gradually enriching [9–11]; however, it can be found that relevant research mainly focuses on the impact of cultivating entrepreneurship on economic activities [7,9,12]. With a worldwide focus on the Sustainable Development Goals, the significance of nurturing entrepreneurship should extend beyond its contribution to economic growth. The existing study suggests that entrepreneurship can be considered as the "creation of all economic and social value" [13]. From the perspective of the Chinese cultural system, both the report of the 20th National Congress of the Communist Party and the newly revised "Company Law" underscore the critical importance of promoting entrepreneurship. Moreover, they have integrated concepts such as "the simultaneous pursuit of righteousness and profit" and "a sense of national duty" into the essence of entrepreneurship, significantly enriching its connotation and injecting a robust spiritual impetus into sustainable high-quality development.

At the same time, governments, investors, and managers globally increasingly prioritize the development and application of ESG. The inherent requirement of the ESG concept is to encourage enterprises to commit to sustainable high-quality development goals and advance the sustainability of their own development. This underscores the importance of enterprises' contributions to the environment, society, and governance, aligning with the goal pursued by entrepreneurship. At present, there is a wealth of research on ESG, which not only analyzes the scientific nature of ESG concepts and their practical significance, but also discusses the relationship between ESG and factors such as enterprise value, financial performance, and enterprise size [13–17]. However, the existing literature lacks sufficient exploration into the antecedent variables influencing enterprise ESG performance, particularly with regard to "entrepreneurship", which is a critical factor impacting business operations. Consequently, strategies to foster entrepreneurship, maximizing its impact to enhance enterprise ESG performance, and thereby revitalizing the economy and driving its sustainable, high-quality development, remain to be further explored.

In conclusion, this study gathers panel data from A-share listed companies in the Shanghai and Shenzhen stock markets between 2011 and 2022. Drawing on existing research and relevant theories, it analyzes the relationship between entrepreneurship and corporate ESG performance. Specifically, the contributions and possible innovations of this study are as follows.

Firstly, the relationship between entrepreneurship and corporate ESG performance was analyzed based on institutional theory, resource-based theory, and stakeholder theory. Additionally, empirical evidence confirmed that fostering entrepreneurship improves corporate ESG performance. Secondly, the mechanism analysis explored the mediating effects of green technology innovation, governance capacity enhancement, and social performance optimization. Finally, the moderating effects analysis delved into the impacts

of environmental uncertainty, the market power of enterprises, regional marketization level, and the advancement of artificial intelligence technology, and we also analyzed the relationship between entrepreneurship and ESG sub-items. The findings not only more clearly illustrate the essence of entrepreneurship and its variation across different times and places, but also expand the research on the link between entrepreneurship and corporate ESG performance. They not only offer a practical foundation for nurturing entrepreneurship but also point the way toward sustainable and high-quality economic advancement.

2. Literature Review and Theoretical Analysis

2.1. Entrepreneurship

The term "entrepreneur" is derived from Richard Cantillon: "The role of the entrepreneur is to shift economic resources from areas of lower productivity and efficiency to areas of higher productivity and efficiency". It is evident that early studies have not distinctly differentiated between entrepreneur and entrepreneurship. At the dawn of the 19th century, the scholarly community identified certain attributes of entrepreneurs and categorized them under the term entrepreneurship. However, at this time, the understanding of the intricacies and nuances encapsulated within the notion of entrepreneurship remained relatively constrained. Therefore, some research on entrepreneurship mainly focuses on exploring entrepreneurial activities of entrepreneurship [18–20]. Liñán and Chen specifically examined the entrepreneurial activities of entrepreneurs and found that cultural orientation can significantly affect their entrepreneurship [20]. Song's research also supports their findings [19]. However, it is important to recognize that entrepreneurial activity is a specific activity, whereas entrepreneurship is a personality trait, and the two ought to be clearly distinguished. However, existing research reveals that the concept of entrepreneurship is not universally agreed upon. In addition to the innovative spirit proposed by Schumpeter [8], it also encompasses Knight's ideas of adventurous spirit and risk-taking prowess [21], as well as the opportunity recognition ability proposed by the Austrian School [22]. In existing research, Yang and Yang [23], building on the definitions of entrepreneurship by Schumpeter and Drucker [18], discovered a significant mediating effect of entrepreneurship between executive landing and innovation investment, which reflected the distinctive innovative mindset of entrepreneurs. Cramer et al., focusing on individual risk tolerance, found that an individual's risk tolerance significantly influences their entrepreneurial intentions [24], which indirectly verifies the high-risk nature of entrepreneurial activities and supports the views of Knight and others. A separate study, focusing on college students, revealed that opportunity identification and steadfast beliefs significantly influence an individual's entrepreneurial capacity [25]. It can be found that the entrepreneurship promoted in the West primarily encompasses the key concepts of "innovation, risk, and opportunity". However, the development of organizational culture and social awareness is profoundly shaped by local historical and cultural contexts. The examination of entrepreneurship must also take into account the cultural attributes of the entrepreneurs' respective regions [26]. Weber, situated within his historical context, examined the relationship between Protestant ethics and the spirit of capitalism, reckoning that loyalty and conscientiousness to the endeavor are central to the essence of entrepreneurship. Schumpeter et al.'s definition of entrepreneurship is also based on the business culture environment in which it operates. So, in a similar fashion, the Chinese people throughout their five-thousand-year history—the teachings of Confucius and Mencius and the talk of gentlemen have been renowned far and wide—not only left the ancient adage of "Without honesty man cannot live" but also hand down such splendid aphorisms as "For the sake of the nation, I am prepared to sacrifice my life, why should I flee from misfortune or pursue prosperity?" and others, all of which underscore the significance of adhering to integrity, feeling of family and country, and embracing responsibility. This, in turn, facilitates the development of entrepreneurship that is imbued with Chinese cultural values. However, existing research has not fully paid attention to the impact of this entrepreneurship with ethnic characteristics on economic activities and enterprise behavior.

2.2. ESG

ESG originated from the principles of social responsibility investment in the 1970s. As ESG practices have evolved, the specific meaning of ESG has been gradually clarified, though some controversy remains. Partial research has identified ESG as a tool for investors to assess companies, emphasizing the influence of ESG investment philosophy on investor and analyst assessments of corporate value [27], which has led external investors to consider a company's non-financial aspects, such as environmental, social, and governance performance, alongside their financial health. Enhancing a company's ESG performance can secure stakeholder support and earn "legitimacy" [15], thus advancing the company's own development, based on this, Mohammad and Wasiuzzaman posit that ESG encompasses activities related to the environment, society, and governance undertaken by corporations with the objective of optimizing social welfare [28]. This conceptualization more aptly captures the limitations imposed by the ESG framework on corporate conduct. It can be found that the former is mainly based on the perspective of investors, while the latter is mainly from the perspective of enterprises. Therefore, other studies have summarized ESG, believing that ESG should be based on the perspective of both investors and enterprises, and investors should follow ESG investment philosophy and fully examine the non-financial performance of the business (environmental, social, and governance). Enterprises, in their pursuit of profit maximization, must dedicate substantial attention to their environmental, social, and governance (ESG) performance [29], thereby fostering sustainable development.

Nevertheless, there are still some studies that criticize and question the rationality of ESG. Representative views include the Friedman doctrine, which believes that corporate social responsibility is profit [30], and corporate investment in social responsibility projects may not secure enough return, thus affecting the value of the enterprise [31]. This viewpoint separates the goal of maximizing profits from the obligations of the enterprise in environmental, social, and governance aspects, but enterprises still need to act within the framework permitted by law. However, with the development of modern enterprise theory, institutionalists have found that institutions will impose mandatory, stimulative, and normative pressure on enterprises [32]. Enterprises' compliance with environmental protection regulations and information disclosure obligations can improve their ESG performance, so as to obtain the support of stakeholders, and then obtain the status of "legitimacy" [15]. Legitimacy, as a strategic resource for the survival of an organization [33], can cultivate the unique competitive advantage of enterprises. Porter and Kramer also argue that companies can only realize social value and achieve substantial business profits by actively engaging in social responsibility [34]. Therefore, investment in ESG projects by enterprises will not hinder their own development; rather, it can cultivate long-term competitive advantages. More specifically, existing research has discovered that enhancing an enterprise's ESG performance can not only effectively promote the optimization of financial performance and increase market value [13,15], but also inspire enterprises to engage in green technology innovation [35]. This underscores the practical significance of the existence of ESG. By analyzing the antecedent variables that affect enterprise ESG performance, Drempetic et al. found that enterprise size can significantly affect enterprise ESG performance [17]. Large enterprises have rich resources, so they can achieve better performance in environmental governance and other social responsibilities, and there may be a two-way causal relationship between financial performance and enterprise ESG performance; that is, the lack of enterprise financial performance will also promote the improvement in enterprise ESG performance [36]. The aforementioned study mainly starts from the analysis of enterprises' market operation performance, yet it insufficiently addresses the correlation between intangible factors and the ESG performance of these entities. Bai F. discovered that corporate culture has a significant impact on environmental, social, and governance (ESG) performance [2]. This finding aligns with other research that suggests that cultural and ideological factors can substantially influence corporate social responsibility (CSR) [37]. Furthermore, intangible resources have been identified

as playing a pivotal role in the association between CSR and corporate performance [38]. These observations underscore the growing importance of informal institutions, such as culture and ideology, along with intangible elements, in economic endeavors. However, in examining the specific factors that influence corporate social responsibility, there remains an insufficient exploration of the individual level of entrepreneurs [39].

2.3. Literature Summary

Since Cantillon first proposed the concept of "entrepreneur", entrepreneurship has experienced extensive deepening from economic definition to interdisciplinary research. In this process, entrepreneurship has been given new connotations and expectations and has become an indispensable part of modern society, which has a far-reaching impact on modern economic activities. The diverse manifestations of entrepreneurship across different systems and cultures carry theoretical and practical importance for the nuanced analysis of entrepreneurship in specific contexts. From the perspective of the ESG research process, the research on the antecedents of ESG is still insufficient, especially since the influence mechanism of informal institutions such as culture and ideology are not clear enough. Therefore, how to give full play to entrepreneurship, especially entrepreneurship rich in national cultural characteristics, so as to improve the performance of enterprise ESG is not only of far-reaching significance for the research of new institutional economics, organizational culture, and ESG, but can also promote the cultivation of modern entrepreneurship, so as to better guide economic construction.

2.4. Theoretical and Hypothetical Analysis

The country's top leader emphasized that "entrepreneurs must continually enhance their patriotism, innovation, integrity, social responsibility, and international vision to lead their businesses through current challenges and into an even more brilliant future...". This underscores the distinct national character of entrepreneurship in China, where the key tenets are "patriotism, innovation, integrity, social responsibility, and international vision". Guided by this unique entrepreneurship, it is inevitable that it will invigorate enterprises and encourage them to improve their ESG performance, thereby achieving sustainable and high-quality development.

Enterprise leaders play a significant role in shaping organizational culture [40]. Therefore, exceptional entrepreneurship can create a cultural atmosphere within the enterprise that aligns with this spirit. Institutionalists emphasize that institutions impose coercive, mimetic, and normative pressures on enterprises [32]. As an integral component of informal institutions [1,3], culture inevitably exerts coercive, mimetic, and normative pressures on enterprise behavior. At the individual level, the cultural atmosphere and organizational norms of integrity, law-abiding behavior, patriotism, dedication, innovative courage, and social commitment are gradually formed under the influence of entrepreneurship. Managers and employees are subtly influenced by these organizational norms, customs, and cultural atmospheres [41]. Guided by these unwritten norms, organization members tend to be more creative in solving related problems [42]. Therefore, driven by entrepreneurship and relevant culture and norms, managers and employees are encouraged to focus on technological innovation and strictly adhere to government rules and regulations [5,6], uphold integrity management, and assume social responsibility. Technological innovation, as a pivotal factor in transforming the mode of economic growth, can mitigate pollution emissions [43], thereby improving the environmental performance of enterprises, and the innovative spirit of entrepreneurs can significantly improve energy efficiency [44]. Secondly, strict compliance with environmental protection laws will also reduce the intensity of environmental pollution in enterprises. In addition, entrepreneurs' awareness of social responsibility, integrity and law-abiding, and home country feelings will also encourage enterprises to improve their social and governance performance, including actively undertaking social responsibility, improving the quality of products and services, promoting internal information disclosure, and maintaining the bottom line of business ethics. There-

fore, at the individual level, entrepreneurship will affect individuals' ideology, promote enterprises to actively assume social responsibility, and improve their ESG performance.

At the organizational level, with the government and society vigorously promoting entrepreneurship and making it a normative identity throughout society, enterprises are compelled to align their behaviors with these norms [32]. Furthermore, as a strategic resource for enterprise survival [33], compliance with such norms often grants enterprises higher legitimacy status and more ample market recognition, thereby fostering their competitive advantage [45,46]. Therefore, vigorously promoting entrepreneurship can force managers to carry out actions in line with this spiritual norm [45]. Specifically, when the whole society vigorously promotes entrepreneurship, enterprises will pay attention to cultivating entrepreneurship and strive to follow the inherent requirements of entrepreneurship. Under the guidance of entrepreneurship, enterprises will be forced to carry out technological innovation to reduce environmental pollution and assume social responsibility, and will also supervise enterprises to adhere to business ethics so as to operate in good faith. In summary, at the organizational level, entrepreneurship will form an institutional norm, restrict enterprise behavior, and promote enterprises to improve ESG performance. Therefore, under the dual influence of individual and organizational levels, fostering entrepreneurship can enhance the performance of corporate ESG.

Enterprises can establish a sustainable competitive advantage by creating scarce, irreplaceable, and valuable resources and capabilities [47]. Organizational resources are considered to be the key element combination that helps organizations realize their vision and achieve strategic goals [48], including both tangible and intangible assets [49]. Entrepreneurship is the core competitiveness of enterprises [18]. This intangible resource is integrated into organizations and is concentrated in leaders with vision and courage; thus, this establishes an enterprise's competitive advantage, making it difficult for other enterprises to copy or imitate. Innovation, as a "creative destruction" activity, faces significant uncertainty, which has also become the biggest obstacle to technological innovation. The unique innovation consciousness present in entrepreneurship can inspire enterprises to engage in technological innovation, thereby igniting their innovation vitality and facilitating sustainable, high-quality development. Additionally, the innovation consciousness of entrepreneurs can markedly influence the energy efficiency of enterprises [44]. Furthermore, according to Cantillon, the role of entrepreneurs is to transfer economic resources from fields with low productivity and output efficiency to higher ones; therefore, entrepreneurship can reallocate resources to generate economic and social value [50]. This indicates that leaders with exceptional entrepreneurship can significantly enhance resource allocation efficiency, thereby improving the enterprise environment and social performance. In addition, entrepreneurship, as a distinct heterogeneous resource for enterprises, can facilitate the establishment of long-term competitive advantages [47], thereby enhancing the financial performance of these enterprises. Large enterprises can achieve better performance in environmental governance and other social responsibilities because of their rich resources [17]. Consequently, under the influence of exceptional entrepreneurship, enterprises are capable of utilizing their current resources more efficiently [39], which leads to favorable market performance [38]. This, in turn, makes them more inclined and prepared to invest resources in ESG initiatives, further advancing the enhancement of corporate ESG performance. In summary, this paper posits Hypothesis 1:

Hypothesis 1. *Entrepreneurship can improve the ESG performance of enterprises.*

Schumpeter characterizes innovation as a process of "creative destruction," highlighting the complexity and long-term uncertainty of innovation activities. Consequently, exceptional entrepreneurs must possess foresight and a keen ability to discern emerging business prospects, thereby fostering technological advancement [6,18]. The values upheld by entrepreneurs also significantly influence organizational culture, thereby shaping the innovative direction of corporations [11]. Moreover, informal institutions such as cultural

norms and ideological frameworks also play a crucial role in advancing green technological innovation [2,6]. Thus, propelled by entrepreneurship, patriotism, and a sense of social responsibility, enterprises will actively undertake social responsibilities such as environmental protection in production and operation activities, which will inevitably promote enterprises to carry out green technology innovation in the process. On the other hand, as a unique heterogeneous resource of enterprises, entrepreneurs' personal characteristics can enhance the resource allocation capabilities of firms, direct organizational resources towards the most efficient departments, and augment the green innovation output of businesses [39]. The notion of "integrity" in entrepreneurship aids companies in gaining the confidence of financial institutions and markets, thereby providing adequate capital and market backing for high-risk green technology innovations. Therefore, excellent entrepreneurship promotes enterprises to continuously carry out green technology innovation. Furthermore, outstanding entrepreneurs must possess sufficient "international perspective" and embrace the philosophy of "honest management," which epitomizes an attitude of openness, inclusivity, and harmonious coexistence. Leveraging the keen intuition and superior foresight of entrepreneurs can stimulate organizational transformation and resource sharing, thus contributing to the development of an open innovation paradigm and fostering inter-organizational collaboration for green technology advancement. Green technology innovation has the potential to diminish environmental pollution during production, and further establish and refine a resource-efficient and eco-friendly production model, thereby enhancing corporate environmental performance. Additionally, through green technology innovations, companies can offer consumers a range of sustainable products, enriching societal welfare. Moreover, integrating green production and management philosophies also aids in elevating corporate governance efficiency [2], ultimately propelling enhancements in enterprise ESG performance. In summary, this paper presents Hypothesis 2:

Hypothesis 2. *Entrepreneurship can improve ESG performance by promoting green technology innovation and open green technology innovation.*

For enterprises, the essence of ESG lies in delivering essential products and services to society. Furthermore, ESG mandates that companies move beyond the "shareholder supremacy" theory, taking into account the needs of investors, the public, employees, and other stakeholders [15]. ESG aims to optimize both economic and social benefits. First of all, entrepreneurship advocates the spirit of integrity, law-abiding, and innovation, which significantly affect the business philosophy and behavior decision-making of enterprises [3], promote enterprises to comply with relevant laws and regulations, such as the consumer rights and interest protection law, and give full consideration to consumer demands. Under the influence of entrepreneurs' innovative spirit and integrity and law-abiding consciousness, they can quickly transform consumer demands into corresponding actual goods [39]; at the same time, they can ensure product quality and ultimately promote the improvement in enterprise product advantages, so as to optimize enterprise social performance. Secondly, culture and ideology can significantly influence the social responsibility stance of enterprises [5,37], which, in turn, affects their social performance. The sense of homeland and societal duty inherent in entrepreneurship compels businesses to foster sustainable social development throughout their growth, contributing to philanthropy, volunteerism, economic expansion, and environmental stewardship. Notably, in recent years, exemplary listed companies such as Vanke, Shenhua Group, and Fuyao Glass have dedicated themselves to charitable causes, education, and ecological conservation. Wang Shi, the chairman of Vanke Group, has openly stated that due to the paramount importance of environmental preservation, he has been deeply involved in the realm of resource emission reduction for many years. Therefore, excellent entrepreneurship will encourage enterprises to assume social responsibility and pay attention to environmental protection, so as to improve their social performance, take into account the win–win of economic and social benefits, and ultimately realize the optimization and improvement in enterprise ESG performance.

Finally, informal institutions such as culture and ideology can also significantly affect the corporate governance system [51]. The innovation consciousness that entrepreneurship focuses on can promote the transformation and development of the enterprise management system with the actual needs of the enterprise, so as to optimize the corporate governance ability. Moreover, the integrity and law-abiding nature of entrepreneurs will inevitably promote the formation of a harmonious and trustworthy cultural atmosphere within the enterprise [27], so as to improve the internal governance ability. The improvement in governance ability can not only optimize the corporate governance performance, but can also improve the external supervision mechanism, and then strengthen the internal information disclosure, so as to optimize the ESG performance of the enterprise [2]. To sum up, this paper proposes Hypothesis 3:

Hypothesis 3. *Entrepreneurship can improve corporate ESG performance by optimizing corporate social performance and enhancing corporate governance capability (referring to the evaluation framework of ESG systems such as Huazheng, Shang Daorong, and existing research, product advantages and social responsibility belong to the "social" level of enterprise ESG performance).*

3. Data and Method

In order to verify whether entrepreneurship can improve enterprise ESG performance, this paper collected the panel data of A-share listed companies from 2011 to 2022, consisting of a total of 1835 listed companies, and built a two-way fixed effect panel model for analysis. Model 1 is as follows:

$$ESG_{it} = \alpha_0 + \alpha_1 Spirit_{it} + \alpha_2 Control_{it} + \lambda + \gamma + \mu_{it} \quad (1)$$

where ESG_{it} is the explained variable, representing the performance of enterprise ESG, $Spirit_{it}$ is entrepreneurship, $Control_{it}$ is the control variable, λ and γ are individual and time-fixed effects, and μ_{it} is the random error term, in which the positive and negative and significance of α_1 are the key points in this paper.

Specifically, the measurement method and selection of each variable are as follows:

Explained variable: To determine enterprise ESG performance (ESG_{it}), select the Huazheng ESG evaluation system and assign the scores according to the ESG rating of each period of the enterprise in the current year and c~aaa, respectively. Then, give a score of 1~9 points. Sum up the ESG scores of each company in the third quarter of the current year and the first quarter of the following year and then calculate the average value. Then, take the average value of the calculated ESG rating as the explained variable.

Core explanatory variable: To determine entrepreneurship ($Spirit_{it}$), refer to the entrepreneurship evaluation index system of Chinese listed companies constructed by Zhang Sanbao (Zhang Sanbao, 2024, "entrepreneurship database of Chinese listed companies", https://doi.org/10.18170/DVN/BLEVGR (accessed on 9 September 2024), Peking University open research data platform, v1) [52], which includes five first-class indicators, namely "patriotism, courage to innovate, integrity and law-abiding, social responsibility, and international vision". Therefore, this paper takes the entrepreneurship data in the dataset as the core explanatory variable.

Control variables: refer to existing studies [2,15,17]. The selection of control variables is as follows: ① Return on total assets (Roa). ② Tobin Q (Tobq): the ratio of the sum of the market value and the book value of liabilities to the total assets of the enterprise is selected for measurement. ③ Shareholding ratio of top ten shareholders (SR). ④ Asset liability ratio (Alr). ⑤ Fixed assets ratio (PPE): select the proportion of fixed assets in total assets to measure. ⑥ Operating revenue (Income): the logarithm of the operating revenue of the enterprise in the current year. ⑦ Equity nature (GQ): the value assigned to the state-owned enterprise is 1, otherwise it is 0. ⑧ Board size (Board): measured by the number of board members in the current year. ⑨ Company size (Size): measured by selecting the logarithm of the total assets of the enterprise in the current year. ⑩ Age of enterprise (Age): the

length of time the enterprise is listed. None of the above variables use percentage as the unit of measurement. Table 1 shows the descriptive statistics of each variable.

Table 1. Descriptive statistics of variables.

Var.	Obs	Mean	Std.dev.	Min	Max
ESG	22,020	3.985	1.099	1	8
Spirit	22,020	42.589	7.303	11.015	69.322
Size	22,020	22.3	1.33	14.941	27.621
Age	22,020	13.26	7.09	14	32
SR	22,020	0.444	0.202	0.111	0.963
Board	22,020	8.652	1.714	3	18
Income	22,020	21.626	1.61	0	27.53
GQ	22,020	0.429	0.495	0	1
PPE	22,020	0.232	0.166	0.102	0.71
Roa	22,020	0.027	0.073	−0.034	0.197
TobQ	22,020	2.105	1.54	0.825	10.13
Alr	22,020	0.445	0.211	0.054	0.943

4. Empirical Analysis

4.1. Benchmark Effects Regression

To ascertain whether entrepreneurship enhances corporate ESG performance, this study employs benchmark effect regression based on Model 1. The detailed outcomes are presented in Table 2. Column 1 of Table 2 shows the regression results of no control variables and fixed effects, column 2 shows the regression results of adding control variables but not controlling fixed effects, and column 3 shows the regression results of adding control variables and controlling fixed effects. The findings reveal that the coefficients of the core explanatory variables ($Spirit_{it}$) are notably positive. As observed in column 3, for every 1% increase in entrepreneurship, there is a corresponding 2.6% enhancement in the ESG performance of enterprises, indicating that entrepreneurship is often associated with innovation, responsibility, and commitment to sustainable development. Excellent entrepreneurship can exert the subtle influence of the informal system of culture, thus affecting the behavior decisions of enterprises, promoting the improvement in enterprises' environmental protection, social and governance performance, and ultimately improving the ESG performance of enterprises; that is, the stronger the entrepreneurship, the better the ESG performance of the enterprise. In addition, to verify whether the cultivation of entrepreneurial spirit will have an impact on the future ESG performance of enterprises, this article includes the dependent variable lagged by one period in Model 1 for regression analysis. The specific results are shown in Table 2, column 4. From the results, it can be seen that the core explanatory variable is still significantly positive, indicating that the cultivation of entrepreneurial spirit has a significant and sustained impact on the ESG performance of enterprises. Hence, the evidence simply supports Hypothesis 1.

Table 2. Benchmark effects regression.

Var.	(1) ESG_{it}	(2) ESG_{it}	(3) ESG_{it}	(4) $L.ESG_{it}$
$Spirit_{it}$	0.026 ***	0.027 ***	0.026 ***	0.01 ***
	(14.98)	(15.05)	(13.41)	(4.74)
Control variable	NO	YES	YES	YES
Individual fixed	NO	NO	YES	YES
Time fixed	NO	NO	YES	YES
Constant	2.89 ***	−1.34 ***	−2.34 ***	−3.422 ***
	(39.68)	(−3.06)	(−5.12)	(−5.93)
R^2	0.1730	0.2571	0.2808	0.5882
Obs	22,020	22,020	22,020	20,185

Note: *** is significant at the 1% level, respectively, with t-values in parentheses. Clustering robust standard errors clustered to the firm level are the same as below.

4.2. Robustness Check

4.2.1. Replace the Explained Variable

In this study, the explanatory variable is substituted with the median of the firm's ESG rating for the current year and re-introduced into Model 1 for analysis. The detailed outcomes are presented in the first column of Table 3. As per the findings in the first column of Table 3, the core explanatory variable maintains its significant positive correlation even after the substitution of the dependent variable. Therefore, Hypothesis 1 is still valid.

Table 3. Robustness tests.

Var.	(1) ESG_{it}	(2) ESG_{it}	(3) $Spirit_{it}$	(4) ESG_{it}	(5) $Spirit_{it}$	(6) ESG_{it}
$Spirit_{it}$	0.027 ***	0.041 ***		0.143 ***		0.028 ***
	(13.32)	(15.05)		(9.08)		(21.69)
IV			0.148 ***		0.89 ***	
			(10.05)		(26.82)	
Control variable	YES	YES	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES	YES	YES
Constant	−2.63 ***	−0.55	−29.47 ***	−6.88 ***	2.29 ***	−2.68 ***
	(−5.51)	(−1.24)	(−4.67)	(−6.13)	(3.46)	(−9.25)
R^2	0.2881	0.2814	0.6563	0.4951	0.9798	0.6370
Obs	22,020	20,185	18,350	18,350	22,020	22,020

Note: *** is significant at the 1% level, respectively, with t-values in parentheses.

4.2.2. Endogenous Test

In order to avoid t-value estimation errors caused by endogeneity issues, the following methods are used for the endogeneity test. First, due to the fact that lagged variables are usually not correlated with the current error term and can to some extent control for unobserved individual-specific influences and capture dynamic relationships between variables, endogeneity issues can be alleviated to a certain extent. The core explanatory variables and control variables are included in Model 1 for analysis after a lag of one period. The specific results are shown in column 2 of Table 3. The results show that the core explanatory variables are significantly positive after a lag of one period, and the original hypothesis is still valid. Secondly, this study employs instrumental variable (IV) estimation for re-testing. Two instrumental variables are chosen: ① The core explanatory variable lagged by two periods serves as the first instrumental variable; the reason for selecting the first instrumental variable is the same as above. ② Select the mean value of entrepreneurship of other enterprises in the region and industry as the second instrumental variable. The second instrumental variable is selected because, under the influence of industry and regional culture, there will be certain similarities in entrepreneurship among enterprises in the same region and industry, which will affect the entrepreneurship of enterprises themselves. Whereas the entrepreneurship of other enterprises will not affect other factors and the ESG rating of the enterprise, meeting the requirements of correlation and exogenous instrumental variables. Therefore, this study employs the aforementioned two instrumental variables to conduct an endogeneity test using the IV approach, and the specific results are shown in columns 3 to 6 of Table 3. Column 3 and column 4 show the two-stage regression results of the core explanatory variable lagging two periods as an instrumental variable, and column 5 and column 6 show the results of the mean value of entrepreneurship in the same industry in the same region as an instrumental variable. Based on the first- and second-stage regression analyses, the core explanatory variable maintains a significant positive relationship, suggesting that Hypothesis 1 remains valid even after accounting for endogeneity concerns.

4.2.3. Change Core Explanatory Variable

Following the methodology employed by Li Q. [53], this study reassesses entrepreneurship using indicators such as the number of patent applications, per capital fixed assets, per capital income, per capital intangible assets, and the independence of the board of directors. The specific value of entrepreneurship is derived through principal component analysis and is subsequently integrated into Model 1 as a key explanatory variable for regression analysis. The detailed outcomes are presented in column 1 of Table 4. The findings indicate that even with an altered measurement approach for entrepreneurship, the coefficient of the core explanatory variable remains significantly positive, thereby validating Hypothesis 1.

Table 4. Robustness tests.

Var.	(1) ESG_{it}	(2) ESG_{it}	(3) ESG_{it}	(4) ESG_{it}	(5) ESG_{it}
$Spirit_{it}$	0.208 **	0.025 ***	0.027 ***	0.02 ***	0.011 **
	(2.19)	(13.51)	(3.19)	(8.28)	(2.22)
L.ESG					0.291 ***
					(6.77)
Control variable	YES	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES	YES
Industry fixed		YES			
Constant	−3.89 ***	−2.17 ***	−2.39 ***	−0.383	−5.366 ***
	(−5.37)	(−3.17)	(−5.23)	(−0.72)	(−5.31)
R^2	0.2751	0.1971	0.2836	0.2283	
Obs	22,020	22,020	22,020	16,515	20,185

Note: ** and *** are significant at the 5%, and 1% levels, respectively, with t-values in parentheses.

4.2.4. Controlling for Industry Fixed Effects

In order to control the factors that are not easy to capture at the industry level, this study controls for industry-fixed effects in the regression analysis, building upon Model 1. The detailed outcomes are presented in column 2 of Table 4. These results indicate that, even after controlling for industry effects, the core explanatory variable remains significantly positive, thereby affirming the validity of Hypothesis 1.

4.2.5. Incorporating Additional Control Variables

To mitigate the potential endogeneity issues arising from the omission of relevant control variables, this study introduces five supplementary control variables on the basis of the original control variables. These include owner's equity, total asset turnover, a dummy variable indicating whether the audit is conducted by a Big Four accounting firm, the price-to-earnings (P/E) ratio, and the cash ratio. These variables are incorporated into Model 1 for regression analysis. The specific outcomes are presented in column 3 of Table 4. Notably, the results indicate that the core explanatory variable retains its significant positive relationship even after the inclusion of these additional controls, thereby affirming the validity of Hypothesis 1.

4.2.6. Abnormal Year Exclusion

To mitigate the impact of anomalous data stemming from abnormal years, and in consideration of the substantial influence that events such as the COVID-19 pandemic have exerted on economic activities from 2020 onwards, this study excluded the data pertaining to the year 2020 and the subsequent two years. These adjustments were then incorporated into Model 1 for regression analysis. The detailed outcomes are presented in column 4 of Table 4. Notably, the results indicate that the core explanatory variable retains its significant positive correlation even after the exclusion of these abnormal years, thereby upholding the validity of Hypothesis 1.

4.2.7. Replace the Estimation Model

In order to ensure the robustness of the results, this paper re-performs the regression through the System GMM model. The specific results are shown in column 5 of Table 4. In the table, Z values are shown in brackets. Where AR1 test results are significant, AR2 test results are not significant. Hansen test results are not significant, and the lag terms of the explained variable and the core explanatory variable are still significant, indicating that the original hypothesis is still valid after replacing the regression model.

4.3. Mechanism Analysis

To ascertain whether entrepreneurship can enhance corporate ESG performance by fostering green technological innovations, improving social performance, and strengthening governance capabilities, this study employs Model 2 for the mediation effect analysis:

$$Med_{it} = \beta_0 + \beta_1 Spirit_{it} + \beta_2 Control_{it} + \lambda + \gamma + \mu_{it} \quad (2)$$

where Med_{it} is the mediating variable, and the other variables are the same as those in Model 1. The significance and positive and negative of β_1 are the key to judging whether there is a mediating effect. Specifically, the mediation variables selected in this paper are as follows: ① Green technology innovation (GTE_{it}): The total number of green patents applied by enterprises in the current year is selected as the mediating variable. Concurrently, to ascertain whether entrepreneurship can precipitate a transformation in the enterprise innovation paradigm, such as the emergence of an open innovation model, this paper also counts the total number of green patents jointly applied by enterprises in the current year ($OpenGte_{it}$) as the mediating variable. ② Social performance ($Social_{it}$): As mentioned above, the core of ESG is to provide the required products and services for society. With reference to the evaluation standard of the Huazheng ESG rating system for "social", this paper combines the ESG characteristic database in the cnrds database and the information disclosed by enterprises to measure the social performance of enterprises from the aspects of products, charity, volunteer activities, and social disputes. The specific methods are as follows: measure the social performance of enterprises from the following twelve levels, including "whether to donate, support education, support charity, volunteer activities, promote employment, promote local economic development, quality system, after-sales service, customer satisfaction survey, quality honor, strategic sharing and integrity management concept". If the enterprise has made contributions at a certain level in the year, it is assigned a value of 1; otherwise, the value is 0. The total value of each index for each enterprise in the current year is then calculated, and this obtained value represents the social performance of the enterprise for that year. ③ Governance capacity (Gov_{it}): Following Zhou Q's approach [54], the principal component analysis method is employed to assess corporate governance capabilities, focusing on supervision, incentive mechanisms, and decision-making processes. Key indicators include executive remuneration, executive ownership percentage, the ratio of independent directors, board size, institutional ownership stake, equity checks and balances, and duality. The first principal component is used as a proxy variable for corporate governance capability.

According to columns 1 and 2 of Table 5, the core explanatory variables are significantly positive, indicating that entrepreneurship can not only promote the formation of innovative corporate culture, but also make enterprises pay attention to environmental protection and green production. Moreover, enterprises with strong entrepreneurial spirit are more likely to invest resources and energy in the R&D and innovation of green technology, including developing new environmental protection products, improving production processes to reduce environmental pollution, and adopting sustainable resource management methods, so as to enhance the green technology innovation ability of enterprises, and also promote enterprises to form an open innovation paradigm, thus optimizing the ESG performance of enterprises. This green technology innovation not only helps enterprises enhance competitiveness, but also promotes environmental protection and sustainable

development. The evidence simply supports Hypothesis 2. According to the results of columns 3 and 4 of Table 5, the core explanatory variables are still significantly positive, indicating that entrepreneurship can cultivate a strong sense of family and country and social responsibility within enterprises, thus enhancing the advantages of enterprises in products and social performance, so as to improve corporate ESG performance. Moreover, excellent entrepreneurship can promote improvements in corporate governance systems and the formation of harmonious cultures within enterprises, so as to enhance corporate governance capabilities and ultimately improve corporate ESG performance. The evidence simply supports Hypothesis 3.

Table 5. Mechanism analysis.

Var.	(1) GTE_{it}	(2) $OpenGte_{it}$	(3) $Social_{it}$	(4) Gov_{it}
$Spirit_{it}$	0.156 ***	0.099 ***	0.011 **	0.002 **
	(3.69)	(3.99)	(2.16)	(2.13)
Control variable	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES
Constant	−12.75 *	−8.76 **	5.988 ***	−4.33 ***
	(−1.70)	(−2.01)	(4.79)	(−17.84)
R^2	0.1284	0.1330	0.2808	0.7733
Obs	22,020	22,020	22,020	22,020

Note: *, **, and *** are significant at the 10%, 5%, and 1% levels, respectively, with t-values in parentheses.

4.4. Analysis of Moderating Effect

4.4.1. Environmental Uncertainty

Entrepreneurship underscores the qualities of pioneering spirit and innovation, motivating enterprises to seek opportunities amidst challenges, drive change, and adapt flexibly and proactively to environmental shifts. This ensures optimal use of resources, enhances organizational resilience, and bolsters the enterprise's capacity to manage environmental risks. Moreover, entrepreneurship's emphasis on social responsibility encourages enterprises to balance economic gains with social values and environmental conservation, thereby enhancing their ESG performance. By continually enhancing their capacity for innovation and adaptation, enterprises can sustain their competitive edge in a fiercely competitive market. This edge stems not only from optimized financial performance but also from improvements in non-financial metrics, such as ESG performance, which attracts stakeholder support and strengthens their "legitimacy" position [15,39]. Therefore, with the support of excellent entrepreneurship, even in the face of significant market environment uncertainty, enterprises can still be urged to focus on their environmental, social, and governance performance, thereby enhancing the ESG performance of the enterprise. This study employs the methodology delineated by Shen H. to quantify environmental uncertainty (EU_{it}) at the firm level [55]. It subsequently investigates whether market environment uncertainty modulates the relationship between entrepreneurship and ESG performance through a moderation analysis. The detailed outcomes are presented in column 1 of Table 6. Observations from column 1 of Table 6 reveal that the coefficient for market environment uncertainty (EU_{it}) is significantly negative. This suggests that the increase in uncertainty in the market environment has a negative impact on the ESG performance of enterprises. However, the interaction term representing the moderating effect (Spirit × EU) is not significant, implying that market environment uncertainty cannot influence the driving effect of entrepreneurship on enterprise ESG performance. This finding implies that bolstered by entrepreneurship, firms can focus on their environmental, social, and governance performance even amid substantial market environment uncertainty, thereby enhancing their ESG performance.

Table 6. Analysis of the moderating effect.

Var.	(1) ESG_{it}	(2) ESG_{it}	(3) ESG_{it}	(4) ESG_{it}
$Spirit_{it}$	0.026 ***	0.026 ***	0.025 ***	0.026 ***
	(13.32)	(13.56)	(12.77)	(13.37)
EU_{it}	−0.232 *			
	(−1.93)			
Spirit × EU	0.01			
	(1.37)			
HHI_{it}		−0.211 **		
		(−2.50)		
Spirit × HHI		−0.025 **		
		(−2.29)		
Mar_{it}			−0.002	
			(−0.10)	
Spirit × Mar			0.059 ***	
			(6.25)	
Int_{it}				0.002 **
				(2.01)
Spirit × Int				0.023 **
				(2.08)
Control variable	YES	YES	YES	YES
Individual fixed	YES	YES	YES	YES
Time fixed	YES	YES	YES	YES
Constant	−2.21 ***	−2.34 ***	−2.16 ***	−2.162 ***
	(−4.76)	(−5.09)	(−4.65)	(−4.68)
R^2	0.2857	0.2838	0.2771	0.2723
Obs	22,020	22,020	22,020	22,020

Note: *, **, and *** are significant at the 10%, 5%, and 1% levels, respectively, with t-values in parentheses.

4.4.2. Market Concentration

The higher the industry concentration of the enterprise, the greater the market power of the enterprise and the more relaxed the market competition it faces, which reflects the dominant position of the enterprise in the industry. If the enterprise's market power is significant, it may lead to relaxed conduct if the enterprise is in a dominant position in the game between the enterprise, the public, and suppliers, thus ignoring the demands of "stakeholders", which may ultimately have a negative impact on the enterprise's ESG performance. Therefore, this paper calculates the Herfindahl–Hirschman Index (HHI_{it}) based on the market share of firms' main business income within the same industry and area in a given year to measure their market power. Then, we examine how this market power moderates the relationship between entrepreneurship and ESG performance through moderating effect analysis. The specific results can be found in column 2 of Table 6. It can be seen from column 2 of Table 6 that the market concentration (HHI_{it}) and the interaction term (Spirit × HHI) are significantly negative, indicating that the expansion of the enterprise's market power will make the enterprise ignore the demands of "stakeholders" and result in relaxed conduct, thus weakening the role of entrepreneurship in promoting the enterprise's ESG performance.

4.4.3. Marketization Level

Enhanced marketization levels can influence the relationship between entrepreneurship and corporate ESG performance in several ways. Firstly, as marketization improves, the legal environment typically enhances, making the ESG-related regulatory framework more mature. An effective regulatory mechanism can motivate enterprises to elevate their ESG performance, which is particularly evident in regions with well-developed legal infrastructures. Secondly, in regions with advanced marketization, activities such as "corruption" and "rent-seeking" are effectively curtailed, thereby fostering higher ethical standards. Additionally, the level of marketization significantly impacts regional transaction costs.

Due to the advancement of intermediary institutions, factor markets, and the private economy, regions with greater marketization tend to exhibit reduced transaction costs among organizations and enhanced economic dynamism. Moreover, the rise in the protection of private property rights enables entrepreneurs to operate in a more stable and predictable business environment, especially the protection of intellectual property rights, which can effectively stimulate entrepreneurs' innovative spirit. This, in turn, enhances regional resource allocation efficiency, nurtures and develops entrepreneurship, and ultimately improves corporate ESG performance. Lastly, a higher level of marketization promotes innovation-driven development, thereby enhancing entrepreneurs' innovative spirit and consequently improving corporate ESG performance. However, some perspectives suggest that market-oriented reforms have impacted the progression of social ethics; for example, the advancement of the private ownership process urges entrepreneurs to pay attention to the acquisition of their own interests, so as to put aside the moral code and even take unfair competition measures, which is not conducive to the cultivation of entrepreneurship and the improvement in enterprise ESG performance. Therefore, in order to verify how the marketization process affects the relationship between entrepreneurship and enterprise ESG performance, this study adopts Fan G.'s approach [56], which assesses the marketization level (Mar_{it}) across five dimensions: government-market relations, non-state sector development, product market development, factor market development, and intermediary organizations legal framework development, and analyzes it through the moderating effect. The specific results are shown in Table 6, column 3. It can be seen from the results in column 3 that the interaction term (Spirit $\times$ Mar) is significantly positive, indicating that the improvement in the level of marketization can create a good business environment for enterprises; it can also improve the level of rule of law in the region and protect the individual rights of entrepreneurs, which are conducive to the cultivation and development of excellent entrepreneurship. A higher level of marketization can further stimulate the vitality of enterprises and improve economic efficiency, which is more conducive to exploiting the positive impact of entrepreneurship, and then improve the ESG performance of enterprises, so as to achieve sustainable and high-quality economic development.

4.4.4. Artificial Intelligence

The film *Terminator* highlights the potential dangers of artificial intelligence misuse. Concerns about academic ethics have arisen with the development of ChatGPT. While AI and robotics can drive economic growth, they may also lead to job displacement [57]. Additionally, robot ethics underscores moral and legal issues arising from AI advancements. For instance, personal privacy may be compromised during data collection by AI. Although robots can simulate human emotion recognition through algorithms, this does not equate to genuine emotional experiences. They lack the capacity for authentic human emotions and consciousness. AI operates based on predefined programs and cannot make choices according to culture and spiritual consciousness. These limitations could hinder entrepreneurship development and diminish its positive impact on ESG performance. Nevertheless, some research suggests that AI, as a cutting-edge digital technology, can significantly foster technological innovation [58], enhance resource allocation efficiency, and improve corporate ESG performance [59]. Therefore, this study aims to examine the impact of artificial intelligence technology development on the relationship between entrepreneurship and ESG performance. To achieve this, we introduce the development level of AI technology (Int_{it}) and its interaction term with entrepreneurship (Spirit $\times$ Int) through a moderating effect analysis. The measurement of the development level of AI technology (Int_{it}) follows the methodology proposed by Wu F. [60], utilizing the text crawler method for quantification. The specific regression results are presented in Table 6, column 4. As observed in column 4 of Table 6, the advancement of AI technology positively influences the enhancement of corporate ESG performance. Furthermore, the progression of AI technology can exert a positive moderating effect on the relationship between entrepreneurship and corporate ESG performance. In other words, the evolution of AI technology facilitates the positive

influence of entrepreneurship on corporate ESG performance. A likely reason is that the advancement of artificial intelligence technology offers robust support, and enhances the innovation ability of enterprises and the quality and efficiency of their products and services. Additionally, AI technology optimizes production processes, increases resource efficiency, and minimizes waste. Furthermore, AI aids in decision-making by providing data analysis and support, so as to enhance corporate governance ability. It is important to recognize that despite the swift progress of AI, the strategic planning and ultimate decision-making authority remain with managers. AI merely supplements decision-making and cannot replace human judgment. Entrepreneurs and managers retain a decisive influence in operational activities. In conclusion, guided by entrepreneurship, enterprises can enhance their ESG performance by leveraging AI's assistance to optimize management, conserve resources, and innovation ability, thereby amplifying the contribution of entrepreneurship to ESG performance.

4.5. Further Analysis

In order to verify whether the cultivation of entrepreneurship can improve the environmental ($Environmental_{it}$), social ($Social_{it}$), and governance ($Governance_{it}$) performance of enterprises at the same time, this paper takes the environmental performance, social performance, and governance performance of each enterprise in the current year as the dependent variables for regression analysis. See Table 7 for specific results. It can be seen from the results in Table 7 that the cultivation of entrepreneurship can promote enterprises' environmental governance and enable enterprises to pay attention to investment in social responsibility projects, so as to improve their own environment and social performance. However, from column 3, it can be found that entrepreneurship cannot improve corporate governance performance. The possible reason for this result is that with the support of entrepreneurs' innovative spirit, entrepreneurs can observe many potential opportunities and usually take bold and risky measures. Such decisions may conflict with the ideas and perceptions of shareholders and other managers, which is not conducive to the stability of the company's internal governance structure, and may lead to governance risks, which is not conducive to improving corporate governance performance.

Table 7. Further analysis.

Var.	(1) $Environmental_{it}$	(2) $Social_{it}$	(3) $Governance_{it}$
$Spirit_{it}$	0.036 **	0.199 ***	0.056
	(2.08)	(3.54)	(1.32)
Control variable	YES	YES	YES
Individual fixed	YES	YES	YES
Time fixed	YES	YES	YES
Constant	−4.91 ***	2.28 ***	4.33 ***
	(−3.68)	(4.99)	(2.71)
R^2	0.1581	0.1553	0.1620
Obs	22,020	22,020	22,020

Note: ** and *** are significant at the 5%, and 1% levels, respectively, with t-values in parentheses.

5. Conclusions

Entrepreneurship carries unique connotations across various countries, ethnicities, and regions. In China, the specific meaning of entrepreneurship is "patriotism, courage to innovate, integrity and law-abiding, social responsibility, and international vision". This study utilizes panel data from 2011 to 2022 Chinese A-share listed companies and demonstrates through theoretical and empirical evidence that fostering entrepreneurship will enhance corporate ESG performance. This finding remains valid across a range of robustness checks, not only expanding research on the determinants of organizational behavior but also clarifying the relationship between entrepreneurship and corporate ESG performance. Secondly, the mechanism analysis reveals that green technology innovation,

social performance, and governance enhancement act as intermediaries. Moreover, entrepreneurship provides a robust spiritual motivation for businesses, enabling them to minimize the impacts of environmental uncertainties. However, excessive market power in enterprises can lead to "organizational inertia" and neglect the demands of "stakeholders," potentially harming their ESG performance. Finally, this research identifies that enhancing marketization and advancing artificial intelligence technologies are crucial for nurturing and leveraging entrepreneurship, and the cultivation of entrepreneurship can improve environmental and social performance, but it cannot affect corporate governance performance. Consequently, the government should expedite market-oriented reforms and robustly develop artificial intelligence technologies to stimulate economic momentum, thereby fostering sustainable and high-quality economic growth.

In conclusion, this paper, grounded in the contemporary implications of entrepreneurship in China, examines the role of entrepreneurship in shaping corporate behavior and the factors influencing it. This not only further clarifies the specific meanings of entrepreneurship but also pinpoints the underlying factors influencing corporate ESG performance, enriching the institutional economics research perspective and highlighting the role of culture in shaping human decision-making. Therefore, it is imperative to heighten ESG awareness within enterprises, motivate entrepreneurs to spearhead ESG practices with innovative approaches and focus on nurturing entrepreneurship. Particularly, there is a need to deepen cognitive education about environmental and social responsibility and governance. This education is necessary to cultivate a broad social consensus so as to fully tap into the value of entrepreneurship, thereby enhancing corporate ESG performance, achieving long-term sustainable development, and ultimately fostering societal harmony and prosperity.

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References

1. North, D.C. *Institutions, Institutional Change and Economic Performance*, 1st ed.; Cambridge University Press: Cambridge, UK, 1990.
2. Bai, F.; Shang, M.; Huang, Y. Corporate culture and ESG performance: Empirical evidence from China. *J. Clean. Prod.* **2024**, *437*, 140732. [CrossRef]
3. Hodgson, G.M. *Manifesto of Modern Institutional Economics*; Xiang, Y., Ed.; Peking University Press: Beijing, China, 1993; ISBN 9787301015995.
4. Markus, H.R.; Kitayama, S. Culture and the self: Implications for cognition, emotion, and motivation. In *College Student Development and Academic Life*; Altbach, P.G., Arnold, K., King, I.C., Eds.; Routledge: Oxfordshire, UK, 2014; pp. 264–293.
5. Du, X. Does Confucianism reduce minority shareholder expropriation? Evidence from China. *J. Bus. Ethics* **2015**, *132*, 661–716. [CrossRef]
6. Hogan, S.J.; Coote, L.V. Organizational culture, innovation, and performance: A test of Schein's model. *J. Bus. Res.* **2014**, *67*, 1609–1621. [CrossRef]
7. Mueller, S.L.; Thomas, A.S. Culture and entrepreneurial potential: A nine country study of locus of control and innovativeness. *J. Bus. Ventur.* **2001**, *16*, 51–75. [CrossRef]
8. Schumpeter, J.A. *The Theory of Economic Development Cambridge*, 1st ed.; Harvard University: Cambridge, MA, USA, 1934.
9. Baumol, W. Entrepreneurship: Productive Unproductive and Destructive. *J. Bus. Ventur.* **1990**, *98*, 893–921. [CrossRef]
10. Bogatyreva, K.; Edelman, L.F.; Manolova, T.S.; Osiyevskyy, O.; Shirokova, G. When do entrepreneurial intentions lead to actions? The role of national culture. *J. Bus. Res.* **2019**, *96*, 309–321. [CrossRef]

11. Kusa, R.; Duda, J.; Suder, M. Explaining SME performance with fsQCA: The role of entrepreneurial orientation, entrepreneur motivation, and opportunity perception. *J. Innov. Knowl.* **2021**, *6*, 234–245. [CrossRef]
12. Berson, Y.; Oreg, S.; Dvir, T. CEO values, organizational culture and firm outcomes. *J. Organ. Behav.* **2008**, *29*, 615–633. [CrossRef]
13. Chell, E. Social enterprise and entrepreneurship: Towards a convergent theory of the entrepreneurial process. *Int. Small Bus. J. Res. Entrep.* **2007**, *25*, 5–26. [CrossRef]
14. Zhou, G.; Liu, L.; Luo, S. Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Bus. Strategy Environ.* **2022**, *31*, 3371–3387. [CrossRef]
15. Chen, Z.; Xie, G. ESG disclosure and financial performance: Moderating role of ESG investors. *Int. Rev. Financ. Anal.* **2022**, *83*, 102291. [CrossRef]
16. Lokuwaduge, C.S.D.S.; Heenetigala, K. Integrating environmental, social and governance (ESG) disclosure for a sustainable development: An Australian study. *Bus. Strategy Environ.* **2017**, *26*, 438–450. [CrossRef]
17. Drempetic, S.; Klein, C.; Zwergel, B. The influence of firm size on the ESG score:Corporate sustainability ratings under review. *J. Bus. Ethics* **2020**, *167*, 333–360. [CrossRef]
18. Drucker, P. *Innovation and Entrepreneurship*; Cai, W., Ed.; China Machinery Industry Press: Beijing, China, 2007.
19. Song, S. The Effect of Sports Performance Entrepreneurial Project by entrepreneurship. *Front. Psychol.* **2022**, *13*, 914388. [CrossRef] [PubMed]
20. Liñán, F.; Chen, Y.W. Development and cross–cultural application of a specific instrument to measure entrepreneurial intentions. *Entrep. Theory Pract.* **2009**, *33*, 593–617. [CrossRef]
21. Knight, F.H. *Risk Uncertainty and Profit*, 1st ed.; Houghton Mifflin: New York, NY, USA, 1921.
22. Kirzner, I.M. *Competition and Entrepreneurship*, 1st ed.; University of Chicago Press: Chicago, MI, USA, 1973.
23. Yang, X.; Yang, X. External parachuting and innovation investment: Mediating effect of entrepreneurship. *Int. Entrep. Manag. J.* **2023**, *19*, 1643–1671. [CrossRef]
24. Cramer, J.S.; Hartog, J.; Jonker, N.; Van Praag, C.M. Low risk aversion encourages the choice for entrepreneurship: An empirical test of a truism. *J. Econ. Behav. Organ.* **2002**, *48*, 29–36. [CrossRef]
25. Bergmann, H. The formation of opportunity beliefs among university entrepreneurs: An empirical study of research-and non-research-driven venture ideas. *J. Technol. Transf.* **2017**, *42*, 116–140. [CrossRef]
26. Morris, M.; Schindehutte, M. Entrepreneurial Values and the Ethnic Enterprise: An Examination of Six Subcultures. *J. Small Bus. Manag.* **2005**, *43*, 453–479. [CrossRef]
27. Schiemann, F.; Tietmeyer, R. ESG controversies, ESG disclosure and analyst forecast accuracy. *Int. Rev. Financ. Anal.* **2022**, *84*, 102373. [CrossRef]
28. Mohammad, W.M.W.; Wasiuzzaman, S. Environmental, Social and Governance (ESG) disclosure, competitive advantage and performance of firms in Malaysia. *Clean. Environ. Syst.* **2021**, *2*, 100015. [CrossRef]
29. Gillan, S.L.; Koch, A.; Starks, L.T. Firms and social responsibility: A review of ESG and CSR research in corporate finance. *J. Corp. Financ.* **2021**, *66*, 101889. [CrossRef]
30. Friedman, M. *The Social Responsibility of Business Is to Increase Its Profits*, 1st ed.; The New York Times Company: New York, NY, USA, 1970.
31. Pucker, K.P.; Andrew, K. ESG Investing Isn't Designed to Save the Planet. Available online: https://hbr.org/2022/08/esg-investing-isnt-designed-to-save-the-planet (accessed on 1 August 2022).
32. DiMaggio, P.J.; Powell, W.W. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *Adv. Strateg. Manag.* **1983**, *48*, 147–160. [CrossRef]
33. Dowling, J.; Pfeffer, J. Organizational legitimacy: Social values and organizational behavior. *Pac. Soc. Rev.* **1975**, *18*, 122–136. [CrossRef]
34. Porter, M.E.; Kramer, M.R. Corporate strategy and sociality: The relationship between corporate competence and corporate social responsibilty. *Harv. Bus. Rev.* **2006**, *128*, 76–99.
35. Li, J.; Lian, G.; Xu, A. How do ESG affect the spillover of green innovation among peer firms? Mechanism discussion and performance study. *J. Bus. Res.* **2023**, *158*, 113648.
36. DasGupta, R. Financial performance shortfall, ESG controversies, and ESG performance: Evidence from firms around the world. *Financ. Res. Lett.* **2022**, *46*, 102487. [CrossRef]
37. Gupta, A.; Briscoe, F.; Hambrick, D.C. Red, blue, and purple firms: Organizational political ideology and corporate social responsibility. *Strateg. Manag. J.* **2017**, *38*, 1018–1040. [CrossRef]
38. Surroca, J.; Tribó, J.A.; Waddock, S. Corporate responsibility and financial performance: The role of intangible resources. *Strateg. Manag. J.* **2010**, *31*, 463–490. [CrossRef]
39. Tate, W.L.; Bals, L. Achieving shared triple bottom line (TBL) value creation: Toward a social resource-based view (SRBV) of the firm. *J. Bus. Ethics* **2018**, *152*, 803–826. [CrossRef]
40. Schein, E.H. *Organizational Culture and Leadership*, 2nd ed.; Jossey-Bass: San Francisco, CA, USA, 1992.
41. Berger, P.L.; Luckmann, T. *The Social Construction of Reality*; Anchor Books: Palatine, IL, USA, 2016; pp. 110–122.
42. Dewett, T. Creativity and strategic management: Individual and group considerations concerning decision alternatives in the top management teams. *J. Manag. Psychol.* **2004**, *19*, 156–169. [CrossRef]

43. Mi, Z.; Zeng, G.; Xin, X.; Shang, Y.; Hai, J. The extension of the Porter hypothesis: Can the role of environmental regulation on economic development be affected by other dimensional regulations? *J. Clean. Prod.* **2018**, *203*, 933–942.
44. Wang, L.; Shao, J. Digital economy, entrepreneurship and energy efficiency. *Energy* **2023**, *269*, 126801. [CrossRef]
45. Oliver, C. Sustainable competitive advantage: Combining institutional and resource-based views. *Strateg. Manag. J.* **1997**, *18*, 697–713. [CrossRef]
46. Yang, Y.; Konrad, A.M. Understanding diversity management practices: Implications of institutional theory and resource-based theory. *Group Organ. Manag.* **2011**, *36*, 6–38. [CrossRef]
47. Barney, J.B. Firm Resources and Sustained Competitive Advantage. *J. Manag.* **1991**, *17*, 99–120. [CrossRef]
48. Porter, M.E. The contributions of industrial organization to strategic management. *Acad. Manag. Rev.* **1981**, *6*, 609–620. [CrossRef]
49. Caves, R.E. Industrial organization, corporate strategy and structure. *J. Econ. Lit.* **1980**, *18*, 64–92.
50. Mair, J.; Martı´, I. Social entrepreneurship research: A source of explanation, prediction, and delight. *J. World Bus.* **2006**, *41*, 36–44. [CrossRef]
51. Griffin, D.; Guedhami, O.; Kwok, C.C. National culture: The missing country-level determinant of corporate governance. *J. Int. Bus. Stud.* **2017**, *48*, 740–762. [CrossRef]
52. Zhang, S. Entrepreneurship Database of Chinese Listed Companies. Peking University Open Research Data Platform, v1. Available online: https://doi.org/10.18170/DVN/BLEVGR (accessed on 9 September 2024).
53. Li, Q.; Liu, L.G.; Shao, J.B. Digital transformation, supply chain integration and enterprise performance-the moderating effect of entrepreneurship. *Bus. Manag. J.* **2021**, *43*, 5–23.
54. Zhou, Q.; Xu, X.F.; Lu, Z.F. Deleveraging: Who is more active or Prudent? *Manag. World* **2020**, 127–148. (In Chinese) [CrossRef]
55. Shen, H.; Yu, P.; Wu, L.S. State owned equity, environmental uncertainty and investment efficiency. *Econ. Res. J.* **2012**, *47*, 113–126. (In Chinese)
56. Fan, G.; Wang, X.L.; Ma, G.R. The contribution of China's marketization process to economic growth. *Econ. Res. J.* **2011**, *46*, 4–16. (In Chinese)
57. Acemoglu, D.; Restrepo, P. Robots and jobs: Evidence from US labor markets. *J. Political Econ.* **2020**, *128*, 2188–2244. [CrossRef]
58. Huang, M.H.; Rust, R.T. Artificial intelligence in service. *J. Serv. Res.* **2018**, *21*, 155–172. [CrossRef]
59. Zhang, D. The pathway to curb greenwashing in sustainable growth: The role of artificial intelligence. *Energy Econ.* **2024**, *133*, 107562. [CrossRef]
60. Wu, F.; Hu, H.; Lin, H.Y. Digital transformation of enterprises and capital market performance-Empirical Evidence from stock liquidity. *Manag. World.* **2021**, 130–144. (In Chinese) [CrossRef]