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The Impact of Business Strategy on ESG Performance

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Abstract:

With global environment deterioration, ESG has become a newly emerging research area. A lot of previous researches focus on ESG and financial performance, yielding the long-lasting debate on whether firms' ESG practice conflicts with its economic interests. Business strategy is found to be directly relevant to firms' long-term development goals as it navigates the firms' future development. This research explores the effect of business strategy on corporate ESG performance, considering the moderating effects of economic uncertainty and government environmental regulation, filling the research gap in relevant empirical evidence. Using Chinese A-share listed companies from 2009 to 2021 as the sample, business strategy is measured with reference to the method of Bentley. The findings indicate that business strategy has a positive influence on firms' ESG performance, with "prospector-like" firms outperforming "defender-like" ones. Both economic uncertainty and government environmental regulation strengthen this positive relationship. This study suggests that differentiated ESG policies are necessary, given that business strategy is a crucial factor in determining corporate ESG performance. These insights can also offer guidance for the firms in aligning their strategy with the global sustainable development goals, offering a roadmap for integrating ESG practice in the dynamic landscape of emerging markets.

Keywords: Business strategy; ESG; Economic uncertainty; Environmental regulation

1. Introduction

Recently, the pursuit of environmentally friendly, carbon-efficient, and sustainable development has reached a global consensus, intensifying concern over problems like environmental damage and irresponsible corporate behaviour. Environmental, social, and governance (ESG) has been thriving as a newly emerging research area. In 2015, the United Nations has issued Sustainable Development Agenda for 2023 and set 17 Sustainable Development Goals (SDGs) to encourage sustainable development all

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over the world [1]. The SDGs further urges firms to take social responsibility and to pay attention to ESG goals to maintain long-term development. Under this circumstance, Corporate ESG, especially in emerging market where the laws and regulations are not yet fully developed or strictly enforced, has drawn the attention of numerous scholars. Although numerous research has been conducted to study ESG performance, few has specifically addressed the business strategy and ESG performance.

With the intensified global worries regarding climate change, social justice, and ethical governance, companies are faced with growing pressure to incorporate ESG standards into their corporate strategies. Business strategy plays an important function in wavering how organizations develop in the long-term and respond to these ESG goals, influencing not only operational practices but also the allocation of resources toward sustainable development goals. For Chinese specifically, rapid economic growth, evolving regulatory frameworks, and rising stakeholder awareness have created both opportunities and pressures for companies to enhance its ESG performance. Moreover, China has established a set of targets in environment pollution and issued many policies and rules to achieve its high-quality development, setting the dual carbon aims of reaching "carbon peak" by 2023 and "carbon neutrality" by 2060 [2]. However, empirical evidence on how business strategies affect firms' ESG performance remains limited. The research seeks to fill the void by examining the link between business strategy and firms' ESG performance among Chinese enterprises.

China's economy is currently at a critical transformation stage, characterized by market volatility and uncertainties such as trade frictions and raw material price fluctuations. Meanwhile, China is placing greater emphasis on environmental regulation and sustainable development through stricter energy - conservation and emission - reduction policies, as well as enhanced environmental law enforcement. Using empirical data, this study explores how economic uncertainty and government environmental regulation moderate the relationship between business strategies and enterprises' ESG performance. By exploring the pathways through which business strategies impact firms' ESG performance, the research expands the existing study on corporate social responsibility and business strategies research. The research findings also offer useful directions for managers and policymakers seeking to align corporate objectives with the broader agenda of sustainable development in emerging markets.

2. Hypotheses

2.1 Business Strategy and ESG Performance

Corporate business strategies are related to ESG performance. Lliescu and Voicu found that integrating ESG factors in firms' business strategies might help firms' form competitive advantages [3]. Xu and Xiao proved the mediating effect of enterprises' strategic aggressiveness in linking the board's informal hierarchy and ESG [2]. Firms with stronger strategic aggressiveness often demonstrate stronger ESG outcomes because they show more flexibility in adapting to external changes through their aggressive strategies, with quicker identification of opportunities and risks [4]. However, more innovative and competitive strategies will also yield better outcomes when companies are expanding its foreign market and hence benefiting its long-term development. Strategic aggressiveness is termed as an organization's capacity to remain flexible and responsive, using proactive approaches to address shifts in external environment that might affect the business' performance. Moreover, adopting strategic aggressiveness might ensure the achievement of firms' long-term targets. According to the literature, this study hypothesized the following:

Hypothesis 1. Corporate strategic aggressiveness positively influences ESG performance.

2.2 Economic Uncertainty and ESG Performance

Economic uncertainty refers to a set of factors arising from macroeconomic shocks, geopolitical tensions, financial market fluctuations, or even policy uncertainties that might affects managerial risk perceptions and resource allocation [4]. China's economy is currently at a critical transformation stage, suffering from market volatility and multiple uncertainties like the impact of macroeconomic fluctuations, the shock of geopolitics on international trade, trade frictions, and raw material price fluctuations. The uncertainty in the external economic environment directly affects business operations. It impacts different business models in various ways and may influence their sustainable development. Business strategies are found effective in managing uncertainty [5]. However, the uncertainty of economic environment can add the business-risk of enterprises, which may amplify the impact of enterprises' long-term strategies on their future financial outcomes [6]. Previous research has also shown that during periods of economic uncertainty, enterprises adopting a defensive strategy are better able to withstand risks and maintain stable financial performance [7]. These findings offer valuable insights for organizations in crafting strategies to navigate economic policy uncertainty effectively. This paper then the potential moderating role of economic uncertainty plays in shaping business strategy and enhancing firms' ESG performance. According to the literature, the study hypothesized the following:

Hypothesis 2. Economic uncertainty plays a mediating

role between business strategy and ESG performance.

2.3 Environmental Regulation and ESG Performance

Government environmental regulation is broadly acknowledged as a critical motivator of corporate ESG performance, especially for emerging economies like China where the regulations have historically lagged behind global standards. It was not until 2015 that China revised Environmental Protection Law [8]. As many of the China A-share listed companies are state owned, these companies are quicker in responding to Environmental Protection Law" revision and stick more rigidly to the regulations concerning firms' ESG performance and social responsibility [9]. Regulatory policies like emission standards, pollution levies, carbon pricing, and mandatory disclosure requirements create pressures that encourage firms to adopt greener technologies, improve governance systems, and enhance social accountability [9]. Empirical research shows that more stringent environmental regulations implemented in China in recent years have functioned effectively, promoting corporate green innovation and sustainable performance [10, 11, 12, 13]. Overall, the literature highlights that well-crafted environmental regulation, supported by credible monitoring and incentives, can synchronize business strategies with sustainability goals, reinforcing the environmental and governance components of ESG. Therefore, this paper hypothesized the following:

Hypothesis 3. Environmental regulation plays a mediating role between business strategy and ESG performance.

3. Design of the Research

3.1 Data and Sample

The raw sample includes all Chinese A-share enterprises from 2009 to 2021. The sample are dealed as follows: (1) exclude all firms labelled as "Special Treatment" (ST) or "delisting warning" (*ST) result from abnormal financial performance; (2) exclude financial firms due to their distinct business models and ESG motivations; (3) remove samples with missing variables. The completed dataset constitutes an unbalanced panel with 32,577 firm-year data entries.

Data sources are as follows: Corporate financial information statistics is downloaded from the CSMAR database; corporate ESG ratings is downloaded from the HuaZheng ESG system. Government environmental regulation intensity is from the provincial statistical yearbooks.

3.2 Variable Design

Dependent variable: ESG performance (ESG). Consistent with Zhou et al., enterprises' ESG outcomes are measured using the Huazheng ESG rating from a leading Chinese ESG assessment institution [14]. The Huazheng ESG rating includes 9 levels. The researcher converts these 9 ESG rating levels into a discrete score, ranging from 9 (highest) to 1 (lowest). To ensure the reliability of the measurement, the Bloomberg ESG score is used for robustness test.

Key explanatory variable: enterprises' business strategies (Strategy). Following Bentley et al., the study uses six ratios to measure the strategy typology of Miles and Snow: (1) R&D expenditure to sales revenue (capturing innovation intensity) [15]. (2) the scale of employees to sales (capturing corporate efficiency). (3) the growth of sales (capturing the growth patterns). (4) sales and administrative expenses to revenue (capturing expansion into new products and markets). (5) the standard deviation of the scale of employees (capturing stability). (6) tangible assets to the total of assets (capturing capital intensity): the researcher calculates the moving average of these variables mentioned above over the preceding 5 years and ranks them into five groups by industry-year. For the first five variables, the highest quintile is assigned a score of 5, descending to 1 for the lowest [16, 17]. Conversely, the sixth variable is scored in reverse order.

Business strategy (Strategy) is calculated as the sum of the aforementioned scores, ranging from 6 to 30. Firms scored higher in terms of Strategy exhibit more prospector-like characteristics, whereas those with lower scores exhibit a defender-like stance; analyser firms are positioned in the middle of the Strategy continuum. Consistent with Bentley et al., a dummy variable to categorize business strategies is utilized: firms with Strategy scores between 6 and 12 are designated as Defender-like (Defender), those with scores between 24 and 30 are considered Prosper-like (Prospector), and the rest are classified as Analyzer firms (Analyzer) [15].

Moderating variables: Uncertainty, according to Xu and Xiao, economic environmental uncertainty is measured by the coefficient of variation (CV) of sales revenue at the industry level; ER, Government environmental regulation intensity, measured by the ratio of provincial environmental administrative penalties to industrial output value [3].

Control variables: consistent with prior studies, the research controls for several enterprises' financial characteristics: size (Size), leverage (Lev), growth (Growth), operating cash flows (CF), profitability (ROA), and net assets on total assets (Tangible) [18, 19, 20]. Additionally, it can include various factors in corporate governance, including the controlling shareholder's ownership interests (Top1), the proportion of independent directors (Ind_ratio), the percentage of institutional ownership (Insti_ratio), and existence of state-owned equity (SOE).

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3.3 Models

To test the relationship between enterprises' business strategy and ESG performance (H1), this paper designs the following model:

$$ESG_{it} = \alpha_0 + \alpha_1 Strategy_{it} + \Sigma \alpha_n Control_{it} + Industry + Year + City + \epsilon_{it} \quad (1)$$

Where i and t represents firm and year. To calculate industry- and city-specific heterogeneity as well as temporal trends related to environmental policies, the study uses industry, year, and city fixed effects.

To investigate the moderating function of economic uncertainty (H2), this research designs the following model:

$$ESG_{it} = \beta_0 + \beta_1 Strategy_{i,t} + \beta_2 Uncertainty_{i,t} + \beta_3 Strategy_{i,t} \times Uncertainty_{i,t} + \beta_j Controls_{i,t} + Industry + Year + City + \epsilon_{it} \quad (2)$$

To test the moderating function of environmental regulation (H3), this research designs the following model:

$$ESG_{it} = \beta_0 + \beta_1 Strategy_{i,t} + \beta_2 ER_{i,t} + \beta_3 Strategy_{i,t} \times ER_{i,t} + \beta_j Controls_{i,t} + Industry + Year + City + \epsilon_{it} \quad (3)$$

3.4 Descriptive Statistics

Table 1 reveals the statistics findings. Enterprises' ESG performance shows the mean of 4.080, with a considerable standard deviation, which corresponds to an overall ESG rating between "B" and "BB" on average. The environmental outcome, with the mean of 1.880, indicates generally weak environmental performance among Chinese listed enterprises, most ratings falling between "C" and "CC". The social performance and governance performance scores exhibit means of 4.059 and 5.356, respectively. Corporate business strategy, with the mean of 17.776 and a large standard deviation, shows notable diversity in strategic approaches among sample firms. Uncertainty has a mean of 1.405 and a deviation of 1.467, illustrating notable variation, while ER is highly concentrated and stable.

Table 1. Descriptive statistics

Variable	Mean	SD	Min	P25	Median	P75	Max
ESG	4.079	1.117	1.000	3.000	4.000	5.000	8.000
E_score	1.880	1.154	1.000	1.000	1.000	3.000	9.000
S_score	4.058	1.170	1.000	3.000	4.000	5.000	9.000
G_score	5.355	1.439	1.000	5.000	6.000	6.000	9.000
Strategy	17.776	3.833	9.000	15.000	18.000	20.000	26.000
Uncertainty	1.405	1.467	0.013	0.613	1.004	1.647	26.219
ER	0.002	0.002	0.000	0.001	0.002	0.003	0.009
Size	22.149	1.313	19.612	21.206	21.973	22.896	26.166
Lev	0.432	0.212	0.050	0.264	0.424	0.587	0.950
Growth	0.185	0.448	-0.568	-0.020	0.113	0.277	2.980
CF	0.092	0.184	-0.664	0.014	0.082	0.170	0.704
ROA	0.037	0.064	-0.276	0.014	0.037	0.067	0.205
Tangible	0.927	0.087	0.536	0.914	0.956	0.979	1.000
Top1	0.345	0.149	0.086	0.229	0.323	0.447	0.747
Ind_ratio	0.375	0.053	0.333	0.333	0.357	0.429	0.571
Insti_share	45.588	25.141	0.326	25.580	47.197	65.623	94.865
SOE	0.385	0.486	0.000	0.000	0.000	1.000	1.000

4. Empirical Results

4.1 Business Strategy and ESG Performance

Table 2 provides results of the baseline model. The first two columns show statistics from the OLS regressions results. The coefficient of Strategy is 0.007 (0.006), statistically significant in column (1) (5% significance level) and column (2) (1% significance level), once financial and governance characteristics are controlled for the firms. This suggests that enterprises with more aggressive strategy display better ESG performance than enterprises with lower strategy scores.

Columns (3) and (4) of Table 2 are estimated using an ordered logit model to account for the ordinal nature of the nine ESG ratings categories, enabling the ranking of

firms' ESG performance across different rating categories. However, it is important to note that one cannot assume uniform differences in performance between the categories. In Columns (3) and (4), the coefficients of Strategy are also positive and significant, revealing that prospector firms outperform defender firms in terms of ESG performance. In summary, these results provide support for H1.

Table 2. Baseline results: business strategy and ESG performance

	OLS Model		Ordered Logit Model	
VARIABLES	(1)	(2)	(3)	(4)
Strategy	0.007**	0.006***	0.014**	0.019***
	(2.03)	(2.78)	(2.36)	(3.39)
Size		0.283***		0.597***
		(24.31)		(25.58)
Lev		-0.994***		-1.968***
		(-21.61)		(-15.55)
Growth		-0.077***		-0.237***
		(-6.93)		(-8.91)
CF		-0.122***		-0.011
		(-4.07)		(-0.13)
ROA		0.851***		4.789***
		(8.80)		(15.86)
Tangible		0.491***		1.529***
		(5.84)		(6.20)
Top1		0.628***		0.597***
		(7.89)		(3.50)
Ind_ratio		1.309***		3.270***
		(9.75)		(8.98)
Insti_share		-0.001		-0.004***
		(-0.99)		(-3.55)
SOE		0.049		0.283***
		(1.53)		(4.90)
Constant	3.963***	-3.044***		
	(67.32)	(-10.82)		
Cut1			-3.092***	11.976***
			(-7.87)	(17.04)
Cut2			-1.819***	13.329***
			(-4.64)	(18.94)
Cut3			-0.269	15.032***
			(-0.69)	(21.29)
Cut4			1.503***	16.992***
			(3.84)	(23.96)
Cut5			3.546***	19.202***
			(9.01)	(26.97)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes

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Observations	32574	32574	32574	32574
Adjusted/Psedue R^2	0.128	0.508	0.053	0.104

4.2 Moderating Effect of Economic Uncertainty

Columns (2) of Table 3 reports the test for the moderating influence of economic uncertainty (H2) guided by Model (2). The term Strategy×Uncertainty has a coefficient of 0.002, with 5% significance level. This suggests that economic uncertainty enhances the positive relationship between business strategy and ESG performance, thus supporting hypothesis H2. The finding underscores the value of strategic clarity and environmental, social, and governance commitments as stabilizing mechanisms during periods of economic instability. Additionally, the results stress the significance of maintaining strategic clarity and upholding commitments to environmental, social, and governance factors, as these elements serve as key foundations for stability when the economy faces instability.

Table 3. Moderation effects

	(1)	(2)	(3)
Strategy	0.008***	0.009***	0.005**
	(2.77)	(4.22)	(2.06)
Uncertainty		-0.167***	
		(-8.21)	
Strategy × Uncertainty		0.002**	
		(1.99)	
ER			-14.536
			(-0.93)
Strategy × ER			1.480*
			(1.76)
Size	0.303***	0.310***	0.303***
	(26.36)	(53.41)	(51.90)
Lev	-1.088***	-1.318***	-1.089***
	(-16.55)	(-40.17)	(-30.73)
Growth	-0.120***	0.144***	-0.120***
	(-8.37)	(9.98)	(-9.12)
CF	0.013	0.011	0.010
	(0.30)	(0.20)	(0.32)
ROA	2.532***	2.530***	2.531***
	(16.18)	(12.36)	(24.85)
Tangible	0.827***	0.905***	0.828***
	(6.52)	(12.88)	(11.76)
Top1	0.341***	0.372***	0.341***
	(3.99)	(8.27)	(7.62)
Ind_ratio	1.485***	1.482***	1.486***
	(7.99)	(14.00)	(14.14)
Insti_share	-0.002***	-0.001***	-0.002***
	(-4.11)	(-4.23)	(-7.53)
SOE	0.155***	0.130***	0.155***
	(5.41)	(9.02)	(10.79)

Constants	-3.778***	-3.734***	-3.755***
	(-13.14)	(-24.70)	(-24.77)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
City FE	Yes	Yes	Yes
Observations	32574	32574	32574
Adjusted R^2	0.222	0.227	0.222

4.3 Moderation Effect of Environmental Regulation

Columns (3) of Table 3 presents the findings exploring the environmental regulation (ER)'s moderating role in the strategy–ESG relationship (H3) as specified in Model (3). The coefficient on Strategy×ER is 1.480 and with a significance level of 10%, implying that environmental regulation amplifies the positive effect. This provides supportive evidence for hypothesis H3. This indicates that well-designed environmental policies can act as a catalyst, enhancing the positive effect of corporate strategy on sustainable outcomes. The result highlights the importance of synergistic governance between policy-driven regulations and internal strategic orientation in promoting ESG practices.

4.4 Robustness Test

To guarantee the robustness, this study performed the following checks for reliability:

Alternative Measures of the Dependent Variable. The original HuaZheng ESG ratings are replaced with ESG ratings from many other rating agencies (e.g., Bloomberg Rating, Hexun ESG Rating) for re-estimation. The sign and significance level of the coefficient for Strategy stay substantially unchanged, indicating that the results are stable given different ESG measurements.

Alternative Measures of the Explanatory Variable. According to the classification method of Bentley et al., firms with strategy scores between 24 and 30 as are categorized as Prospectors, while those with scores between 6 and 12 are classified as Defenders [15]. The regression results confirmed that firms with more Prospector-like characteristics exhibit greater ESG performance.

Excluding Specific Samples. Considering potential disturbances from the financial crisis or specific policy periods, samples from the COVID-19 pandemic period (2020-2021) were excluded for re-estimation. The core conclusions held.

Addressing Omitted Variables. Industry × Year joint fixed effects were added to the model to mitigate time-varying industry-wide shocks. The results were robust. Additionally, all explanatory variables were lagged by one period (t+1) to mitigate potential reverse causality. The findings showed that lagged strategic aggressiveness still had a significant impact on the current period's ESG performance.

5. Conclusion

Following the measurement method proposed by Bentley et al., this study takes Chinese A-share listed enterprises as the sample and finds that the aggressiveness of enterprises' business strategy is positively related to ESG performance; additionally, both economic uncertainty and government environmental regulation positively moderate the relationship between them.

Theoretically, this study fills the research void in existing literature by enriching the study of the complex interaction between business strategy and firms' ESG performance in emerging markets (especially in China). Moreover, it also contributes by incorporating economic uncertainty and government environmental regulation into the ESG study, and by revealing the moderating mechanism of external contextual factors on the "strategy-ESG" relationship.

Practically, this study provides useful insights for government, organisations and enterprise and practical guidance for those policymakers and managers. For policymakers, it indicates differentiated ESG-related policies based on the heterogeneity of business strategies, as well as strengthening the enforcement of environmental regulations to guide enterprises in standardizing their ESG behaviours. For enterprise managers, they should integrate ESG goals into the strategic decision-making process—among them, "prospector-like firms" (with higher strategic aggressiveness) should give full play to their advantages in innovation and market development, boost research and development investment to develop green technologies, and actively expand new markets in low-carbon fields; "Defender-like firms" can, in line with their own cost-control orientation, take compliance with environmental regulation requirements as the basic bottom line, and gradually promote the adaptive integration of ESG and corporate strategy.

Nonetheless, there are some limitations of the current study. Firstly, the research focuses on China, an emerging economy and developing country, which may limit its applicability to developed countries like the UK and the US. Typically, developed countries have more mature environmental regulations and stricter ESG standards, whereas the business strategy and ESG might relate to each other in different ways. Secondly, industry-specific characteris-

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tics should be considered. As the study is mainly based on China and traditional manufacturing companies make up a large proportion of listed companies in China, it further limits the applicability of the study as a substantial amount of the sample is from the traditional manufacturing companies. These firms follow a defensive business model (focused on cost reduction), which can no longer meet the evolving demands of ESG. These companies should make transition towards green innovation and upgrade the industry structure. Therefore, working on those directions is worthy the efforts of future researchers.

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