

Article

ESG and Investment Efficiency: The Role of Marketing Capability

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Abstract: This study examines whether and how corporate environmental, social, and governance (ESG) performance is associated with firms' investment efficiency while considering the role of firms' marketing capability. Using a sample of U.S. firms from 1991 to 2019, we find robust evidence that firms with better marketing capabilities (MC) are more likely to engage in ESG activities and receive higher ESG scores. In addition, ESG engagement by firms with better marketing capabilities reduces investment inefficiency. Moreover, we find that the effect of MC-fitted ESG is more prominent when economic policy uncertainty is low or agency costs are low. The results are also driven by social or environmental dimensions. Our empirical evidence extends the understanding of firms' decisions cross-functionally.

Keywords: ESG; investment efficiency; marketing capability

JEL Classification: G11; M14; M31



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1. Introduction

In the early decades, neoclassical economists argued that the social objective of firms was to maximize their shareholders' wealth [1]. However, later researchers, from the perspective of a resource-based view (RBV), assert that environmental and social responsibility can become a resource or capability that can result in a competitive advantage [2]. Recent studies have taken an extended view of firms' environmental and social responsibilities, focusing on the Environmental, Social, and Governance (ESG) concept, which pays more attention to business activities and strategic development [3]. As a more developed measure for firms' environmental protection, social inclusion, and corporate governance, ESG is regarded as an extension of CSR since CSR mainly focuses on social responsibility, whereas ESG focuses on both business activities and a firm's strategic development, and the latter emphasizes social responsibility [3]. However, since the concept of ESG focuses on the non-financial areas of companies, it leaves the literature with inconsistent evidence about its impact on corporate financial performance [4,5].

Existing studies based on stakeholder theory have shown that ESG has a positive effect on investment efficiency by reducing information asymmetry, mitigating agency conflicts [6,7], building good images, and reducing reputational risks [8]. On the other hand, some studies have shown evidence that ESG activities could harm a company's financial well-being or fail to produce positive or negative business outcomes [9,10].

However, extant empirical evidence in the literature failed to find a consistent relationship between ESG and investment efficiency due to the self-selection-biased estimation. It should be noted that the decision to do ESG activities is not random and is affected by corporate functional abilities (e.g., marketing capability). The dynamics of ESG are

highly dependent on the diversity of external condition [11,12] and are heavily influenced by the specific inherent nature of different companies [13]. Despite a few important exceptions [14,15], the literature treats ESG activities as an isolated decision and expects such activities to be independent of a firm's functional abilities. In this study, we examine whether and how a firm's marketing capability affects ESG activities and how this will impact the relationship between ESG and investment efficiency.

Traditional theories such as the Resource-based View (RBV) and Dynamic Capability Theory (DCT) claim that corporate environmental and social responsibilities are quite distinguished from corporate capabilities (e.g., marketing or operational) when considering the uncertainty of corporate performance. However, that is not the case in real life. Firms' environmental and social activities are strategically intertwined with their functional capabilities. Marketing capability (hereafter MC), among others, is a particular type of corporate competence that represents a firm's ability to utilize specific resources to translate them into financial performance. As a firm-specific attribute, MC is not easily imitated and is therefore a good channel to explain why different firms engage in ESG activities that lead to different outcomes.

We seek to move forward the related literature in two ways. First, we seek to advance theorizing about firms' functional capabilities and environmental, social, and governance performance. The relationship between MC and ESG performance is either ignored or oversimplified in the literature since they both play parts in attracting external parties to firms [16]. Therefore, from a cross-functionally strategic perspective, we consider the link between MC and ESG performance and examine how firms use functional strengths to facilitate firm-wide strategic actions that help them improve investment efficiency. Second, we empirically contribute to the literature by providing new evidence. Using the Heckman selection model and two-stage least squares regression models to explore the relationship between marketing capabilities and ESG, we circumvent the effects of sample-selection bias, which causes endogeneity issues. We use a treatment-effect model to investigate the moderating effect of the MC-fitted ESG on investment sensitivity to free cash flow and examine the differences in the moderating effects of ESG on the efficiency of investment under different scenarios. We find that firms with better marketing capabilities are more willing to engage in ESG activities and have better ESG performance (i.e., higher ESG ratings), which indicates that MC-fitted ESG has a corrective effect on firms' investment efficiency.

The paper proceeds as follows: Section 2 reviews the literature and develops our hypotheses. We discuss our data collection, measures, and research methodology in Section 3. Section 4 presents the main empirical results and additional tests. We discuss our contributions and propose a series of implications for both theories and real business practices in Section 5. We conclude the results, summarize possible limitations, and propose future research directions in Session 6.

2. Literature Review and Hypothesis Development

2.1. Marketing Capabilities and "Efficiency" Functional Advantages

Dynamic capability theory (DCT) defines a firm's capabilities as the ability to control and deploy the firm's resources to achieve desired outcomes. Thus, a firm's capabilities imply how the firm uses its available assets, knowledge, information, and skills in a systematic way. DCT supports firm capabilities that not only directly drive firm performance but also help other firm attributes improve [17].

A company has a set of competencies across its business areas. Among these competencies, marketing competency reflects the extent to which a company uses its marketing resources, such as sales capabilities, advertising, and customer relationships, to achieve optimal market performance [18]. It is one of the most critical types of competencies in a company due to its inimitability and complexity [19]. When a company manages to spread its marketing messages well and maintain good customer relationships, it benefits from this and deploys resources in other functions well. That is, marketing capabilities leverage

their business and social sophistication into other areas of the firm and provide additional protection for these areas from competitive threats [20].

Marketing capability is the efficiency of a company in deploying relevant resources to maximize marketing performance. Companies with superior marketing capabilities excel in identifying consumer needs and driving factors of consumer behavior, giving them an advantage in targeting and positioning [21]. Companies with strong marketing capabilities understand the potential needs of the market, are better able to segment, select appropriate targets and generate well-built customer profiles [22]. Further, high marketing capabilities lead to social complexity, allowing companies to enter a network involving different parties such as employees, channel members, key customer groups and third-party support organizations [23]. This network is less likely to be replicated by peers in the same industry. The operational complexity and social sophistication resulting from high marketing capabilities protects the company from fierce competition and thus ensures stable cash flows. The power of marketing capability to reduce risk also stems from its function of detecting operation risk, analyzing the market environment and implementing response strategies. Companies with superior marketing capabilities continually develop market intelligence and are therefore able to anticipate and respond to changes in customer demand, markets and technology in a timely manner and take relevant action before competitors do, helping firms better communicate with consumers, investors, and other stakeholders [22,24].

Further, the resource-based view (RBV) argues that a firm is a combination of resources and capabilities, with capabilities being the firm's ability to effectively deploy relevant resources (inputs) to achieve desired goals (outputs). Marketing capability is the ideal solution to the problem of competing resources and financial burden, as it represents a company's ability to use available resources effectively. A company with a high marketing capability can deploy resources more effectively to achieve its objectives, and it is therefore likely to release more unused resources to ESG activities and give managers more freedom to initiate such activities in the right direction, rather than the suboptimal option of being constrained by resource shortages. Therefore, firms with higher MC nested well socially and have better ESG performance, so we propose that:

Hypothesis 1. *Firms with better MC tend to have better ESG performance.*

2.2. ESG, Marketing Capability, and Investment Efficiency

The literature has found that corporate social and environmental performance positively influences investment efficiency [25]. Based on the value-enhancing view of stakeholder theory, there is evidence strongly supporting that good corporate social responsibility performance leads to better financial performance [26]. For example, previous studies show that better corporate social and environmental performance is associated with higher firm value [27] lower financial risk [28], reduced information asymmetry [29,30], and increased market perception [31]. Using more than 2000 empirical studies to do a meta-analysis, Friede et al. [6] show that around 90% of the reviewed studies find a non-negative relationship between ESG and corporate financial performance. Amel-Zadeh and Serafeim [32] find that the valuation premium paid for companies with better ESG performance has increased over time.

However, based on agency theory, some studies believe that corporate social and environmental involvement may expropriate firms' existing resources, thus harming a firm's financial well-being or failing to produce positive or negative business outcomes. Bhandari & Javakhadze [33] and that CSR engagement distorts firms' investment sensitivity to Tobin's Q, increases a firm's investment sensitivity to internally generated cash flows, and reduces investment. On the other hand, Çek and Şerife [34] argue that corporate social and governance performance has a positive impact on firm performance while environmental performance does not have a significant influence on economic outcome.

The resource-based perspective argues that social or environmental engagement is essentially a corporate decision that requires a commitment of corporate resources. That is, ESG activities can be resource distractions or financial burdens that consume corporate resources such as financial investment, human resources, and communication channels. Since firms' resources are limited, internal competition, and conflicts among functions from different departments exist. Companies hardly keep increasing their ESG activities without considering the cost [35]. What is worse, resource commitment to ESG distracts companies from their core business and makes them more vulnerable to external threats such as competition, leading to increasing uncertainty [36]. Overinvestment in ESG raises concerns among customers that the company may fail to manage its core business, which not only influences the stability of cash flows [33] but may also put socially responsible companies at a competitive disadvantage. Therefore, ESG activities may be a source of conflict between different stakeholders [37]. Excessive ESG activities may lock companies into a specific direction that attracts specific stakeholders, thus reducing their adaptability to market changes and competitive evolution [38]. In other words, increasing ESG activities may exacerbate tensions between the company's management team and shareholders [39]. Managers may tend to use ESG activities to pursue their own interests instead of serving the company's goals. As a result, "empire building" worsens agency problems and increases investment inefficiencies due to poor project selections [40].

In Modigliani and Miller's paradigm [41], investment opportunities are the sole driver of a firm's growth. Improving investment efficiency is likely to be the channel through which a firm with better corporate social and environmental responsibility may consider meeting the expectations of the stakeholders and enhancing its financial performance. The theory suggests that firms are likely to obtain financing for all positive NPV projects and continue to invest until the marginal benefit of the investment equals the marginal cost. Based on three pillars (i.e., environmental, social, and governance) of corporate strategic activities, ESG not only provides investors with more information as a basis for investment decisions but cultivates the concept of long-term investment and value investment. It has gradually become a key reference indicator for large and significant funds such as sovereign investment funds and pension funds in various countries. The ESG factors (or dimensions) have been regarded as important indicators in practice since it has been recognized that companies with high or "black swan" risks can be better with the negative screening of ESG investing. Therefore, the core research question that we seek to answer is the effect of ESG on investment efficiency.

Prior research on corporate social and environmental responsibility suggests that whether such activities can drive corporate performance is heavily dependent on the diversity of external conditions under which firms design, deploy, and implement social or environmental programs [12,15]. However, it is also influenced by the specific inherent nature of different firms. Although ESG and corporate capabilities have been shown to have a significant impact on business operations and outcomes, their impacts are largely separated in the literature. In this context, the combination of ESG and corporate capabilities represents a valuable attempt to reveal how these two key corporate attributes may be intertwined, thereby generating a new body of knowledge in this scenario.

In practice, firms must face potential resource expropriation and increasing financing costs, which limit the ability of managers to execute all active NPV projects [42]. Underinvestment occurs when firms with financing constraints withdraw from positive NPV projects due to high financing costs [43], whereas overinvestment occurs when managers choose to confiscate some firms' available resources to invest cheaply through poor project selection. This is the case when it comes to ESG practices. Activities related to ESG affect revenues and costs [44], while the impact of the inherent nature of the firm, such as marketing capabilities, has a direct impact on revenues. Therefore, we believe that differences in such capabilities among different firms explain the heterogeneous impact of ESG on firm performance.

A company with high marketing capabilities is likely to organically integrate its key resources to achieve a high level of operational sophistication that is difficult for competitors to emulate [20]. ESG is related to many operational performance indicators, such as customer satisfaction, brand equity, revenue, and profitability [45]. Companies with high marketing capabilities actively seek information on market trends, identify possible threats, and provide timely feedback on strategic planning. This proactive mechanism helps companies look more reliably into the future and avoids unnecessary upheaval. If companies anticipate the need, they tend to integrate appropriate ESG activities into their marketing and operations earlier than their competitors [46].

Further, a good reputation helps a company achieve better social compliance and will improve the long-term effectiveness of marketing activities such as public relations and publicity. A company with stronger marketing capabilities or one that could better leverage its ESG efforts is likely to have a better chance of soliciting a positive response from stakeholders, which is likely to support the company's core activities [47]. If they properly communicate, ESG initiatives can enhance a company's reputation among different stakeholders [48]. MC can also lead to better financial performance by improving brand equity and customer loyalty. In addition, stakeholder perceptions of ESG describe it as an important factor that enables companies to build a network of friendly external environments consisting of a group of key stakeholders such as customers, investors, channel members, and regulatory organizations [49]. The value-enhancement perspective argues that by serving the implicit proposition of their stakeholders (stakeholder theory), high-CSR companies improve their reputation, gain employee loyalty, and benefit from customer support [50]. This network of stakeholders represents an ecosystem within which the company operates. The supportive nature of the system gives companies important strategic flexibility and avoids potentially severe penalties for accidental misconduct [51].

ESG engagement is essentially a firm expenditure aimed at social recognition. The initiatives must communicate key processes to external parties and automatically make them transparent to the public, such as stakeholders [52]. This nature of ESG either prompts competitors to deploy similar ESG programs or seek alternative strategies to eliminate their advantages. As a result, ESG itself is highly imitative, highly visible, has less complexity, and is unlikely to create a sustainable competitive barrier. This vulnerability of ESG should be addressed by integrating marketing capabilities into corporate social engagement, and the operational complexity and social sophistication inherent in companies with high marketing capabilities allow these companies to encode ESG activities into their marketing strategies.

In summary, companies lacking MC are likely to see ESG as a challenge, while companies with good MC are likely to see ESG as an opportunity to make effective integration of ESG activities in their marketing strategies, mitigating under- and over-investment, and thus improving the financial benefits of ESG. Based on this, we propose the hypotheses that:

Hypothesis 2a. *With higher MC, investments in firms with better ESG performance are more sensitive to CF.*

Hypothesis 2b. *With higher MC, investments in firms with better ESG performance are less sensitive to CF.*

3. Data, Measures, and Method

3.1. Data and Sample Selection

We collected ESG data from the MSCI ESG KLD Stats Dataset over the period of 1991–2019. We obtain financial data of U.S.-listed firms from Compustat. We exclude firms in the financial or utility sectors that rarely need marketing. All scaled variables are winsorized at the 1 and 99 percentiles for mitigating the effects of outliers. Our final sample consists of an unbalanced panel of 19,719 firm-year observations.

3.2. Measurement of Main Variables

3.2.1. Dependent Variable and Independent Variable

Following the literature [53–55], we use investment-cash sensitivity to measure investment efficiency. We use investment as the dependent variable and cash flow as the independent variable. The coefficient of cash flow, i.e., the investment-cash sensitivity, is the measure of investment efficiency. Investment in firms that can generate internal cash will be correlated with the availability of internally generated funds due to cash shortages, whereas firms may invest more when they have more cash due to cash abundance. Therefore, the sensitivity of investment to cash flow indicates investment inefficiency, which considers that firms can deviate from optimal investment due to information asymmetry. In our study, we use investment-cash sensitivity as a measure of investment efficiency. Consistent with previous literature [56,57], we measure investment (INV) by capital expenditure scaled by the lagged book value of total assets. We estimate cash flow (CF) as cash flows (which is measured as operating income before depreciation minus receivables minus inventories minus current assets plus current liabilities plus accounts payable minus capital expenditures) scaled by the book value of total assets [58,59].

3.2.2. Moderate Variables

We construct a firm's ESG score based on the MSCI ESG KLD Stats database by using the difference between the total number of strengths and the total number of concerns. To be consistent with prior literature, we divide the ESG measure into two dimensions; social and environmental [60]. SOC is the score for the social dimension, calculated as the number of social strengths minus the number of social concerns in the aspects of community, diversity, employee relations, and product. ENV is the score for the environmental dimension, calculated as the number of environmental strengths minus the number of environmental concerns (we focus on the social and environmental dimensions of ESG activities since the governance factor is relatively less studied in the literature).

Marketing capability is the efficiency of a firm in deploying relevant resources to maximize marketing performance. Following previous studies [15,61], we estimated marketing capability (MC) using the stochastic frontier estimation (SFE) methodology. Based on the view that resources are limited, this capability represents the ability of a firm to efficiently use the relevant resources/inputs to produce the desired output. Thus, we use the firm's sales, general and administrative expenses (SGA), and receivables as proxies for input, and sales as output. One of the main objectives of a company engaging in marketing activities is to increase the value of the company's products in the minds of current and potential customers, thereby generating additional operating income through pricing differences. We rescale the measure between 0 and 1000, representing the level of MC from low to high accordingly.

3.2.3. Control Variables

To rule out other possible explanations for our research question, we control for a couple of variables, including firm size (SIZE)—by using the natural logarithm of dollar value of total book value of assets; a firm's leverage (LEV) as the ratio of total liabilities to total assets; profitability (ROA) as earnings before interest and taxes scaled by the book value of total assets; agent cost (AC) as the composite score of free cash flow, expense ratio, dividend payout ratio, and asset utilization; disclosure quality (DQ) as the mean of balance sheet disclosure quality and income statement disclosure quality; earnings management (ACCM) as a three-year moving mean of absolute value of discretionary accruals. Table 1 shows the variable definitions and data sources.

Table 1. Variable Definitions and Data Sources.

Variables	Measurement	Source	Reference
INV	capital expenditure scaled by the lagged book value of total assets	Compustat	Bhandari & Javakhadze [33]
CF	the ratio of free cash flow to total assets	Compustat	Bhandari & Javakhadze [33]
ESG	the total number of strengths minus the total number of concerns	MSCI ESG KLD	Bhandari & Javakhadze [33]
SOC	the social dimension is calculated as the number of social strengths minus the number of social concerns in the areas of community, diversity, human rights, and employee relations	MSCI ESG KLD	Bhandari & Javakhadze [33]
ENV	the environmental dimension of ESG performance, calculated as the number of environmental strengths minus the number of environmental concerns under the environmental area	MSCI ESG KLD	Bhandari & Javakhadze [33]
MC	MC can be assessed using stochastic frontier estimation (<i>SFE</i>) methodology, which measures a firm's efficiency to deploy its marketing resources (firm's sales, general and administrative expenses (SGA), and receivables) to maximize sales revenue.	Compustat	Hirunyawipada & Xiong [14]
SIZE	the natural logarithm of the dollar value of the total book value of assets	Compustat	Sun & Ding [15]
LEV	the ratio of total liabilities and long-term debt scaled by the book value of total assets	Compustat	Sun & Ding [15]
ROA	the ratio of earnings before interest and taxes scaled by the book value of total assets	Compustat	Benlemlih & Bitar [57]
AC	the composite score of free cash flow, expense ratio, dividend payout ratio, and asset utilization	Compustat	Obeng et al. [62]
DQ	the mean of balance sheet disclosure quality and income statement disclosure quality	Compustat	Chen et al. [39]
ACCM	a three-year moving mean of absolute discretionary accruals	Compustat	Hutton et al. [63]

To address potential year- and industry-specific effects, we include year- and industry-dummies in the model. Industry is classified by the four-digit SIC codes.

3.3. Empirical Model

To address the sample-selection bias concern, system of equation estimation techniques should be employed to explicitly recognize the potential for correlation in the errors across estimated equations. We use the Heckman selection model and two-stage least squares to address the concern and use the two-stage least squares estimators to further analyze our research question. We construct the following regression equation to test Hypothesis 1:

$$ESG_{i,t} = \beta_0 + \beta_1 \times MC_{i,t-1} + \beta_2 \times Control_{i,t-1} + Year + Industry + \varepsilon_{i,t} \quad (1)$$

where MC is the marketing capability, which represents the ability of a firm to efficiently use a firm's sales, general and administrative expenses, and receivables to produce the desired sales; we calculate it using the SFE model and rescale the measure between 0 and 1000, representing its level. ESG is measured as the total number of strengths minus the total number of concerns based on the MSCI ESG KLD database. SOC is the social dimension, calculated as the number of social strengths minus the number of social concerns. ENV is the environmental dimension, calculated as the number of environmental strengths minus the number of environmental concerns. We measure investment (INV) as capital expenditure scaled by the lagged book value of total assets. Cash flow (CF) is defined as free cash flow (operating income before depreciation – receivables – inventories – current

assets + current liabilities + accounts payable – capital expenditures) scaled by the book value of total assets. As a proxy for firm size (SIZE), we use the natural logarithm of the total book value of assets; a firm's leverage (LEV) as the ratio of the total liabilities and long-term debt scaled by the book value of total assets; ROA as Earnings Before Interest and Taxes scaled by the book value of total assets; as a proxy for agent cost (AC), measured as the composite score of free cash flow, expense ratio, dividend payout ratio, and asset utilization; disclosure quality (DQ) as the mean of the balance sheet disclosure quality and income statement disclosure quality; earnings management (ACCM) as a three-year moving mean of absolute discretionary accruals.

Our empirical model is adapted from Bhandari & Javakhadze [33]. More specifically, we estimate the following regressions:

$$INV_{i,t} = \beta_0 + \beta_1 \times CF_{i,t-1} \times ESG_{i,t-1} + \beta_2 \times ESG_{i,t-1} + \beta_3 \times CF_{i,t-1} + \beta_4 \times Control_{i,t-1} + Year + Industry + \varepsilon_{i,t} \quad (2)$$

where INV is the measure of investment, CF measures free cash flow, and ESG is the measure of a firm's ESG performance. The coefficient of CF is the measure of investment-cash flow sensitivity; the higher the coefficient, the lower the investment efficiency. Our main interest is β_1 which is predicted to be negative, indicating that the MC-fitted ESG lessens the investment sensitivity to free cash flows, i.e., improves the investment efficiency.

Tables 2 and 3 present descriptive statistics and correlation coefficients for the main variables, respectively. In Table 2, the standard deviation of the overall ESG score is 2.716, with median being zero. This suggests that the distribution of the ESG score in our sample is balanced. The average value of INV is 0.056 and that of CF is 0.108, which is consistent with prior research Bhandari & Javakhadze [33]. Among the explanatory variables, the standard deviation of SOC and ENV is 2.057 and 0.940, respectively, indicating varying degrees of ESG performance among our sample firms. Table 3 presents the Pearson correlation coefficients, and it shows that there are significant relations between our main variables. MC is significantly positively correlated with ESG, which serves as preliminary proof of our hypothesis. Moreover, INV is significantly correlated with LEV, ROA, AC, DQ, and ACCM. ESG is significantly correlated with SIZE, ROA, and DQ, indicating that companies with larger size, better growth, and better disclosure quality have a higher level of ESG performance. Given the significant correlations found among some variables, we examined for potential multicollinearity using variance inflation factors ($VIF = 4.24$), and it shows no severe multicollinearity exists.

Table 2. Descriptive Statistics. This table reports summary statistics for the main dependent, independent, and control variables.

	Mean	STD	Min	Q1	Median	Q3	Max
INV	0.056	0.054	0.000	0.020	0.039	0.074	0.389
CF	0.108	0.099	0.001	0.036	0.080	0.147	0.633
ESG	0.322	2.716	−11.000	−1.000	0.000	1.000	19.000
SOC	0.416	2.057	−6.000	−1.000	0.000	1.000	13.000
ENV	0.189	0.940	−5.000	0.000	0.000	0.000	5.000
MC	990.267	3.843	963.518	988.840	991.286	992.908	995.300
SIZE	6.772	2.060	1.439	5.360	6.781	8.195	12.374
LEV	0.260	0.225	0.000	0.050	0.230	0.405	0.928
ROA	0.109	0.097	−0.378	0.055	0.100	0.156	0.588
AC	−0.057	0.200	−0.922	−0.120	−0.018	0.047	0.660
DQ	0.691	0.112	0.330	0.604	0.719	0.777	0.897
ACCM	0.139	0.189	0.000	0.029	0.063	0.157	0.998

Table 3. Correlation Coefficients. Table 3 shows the Pearson coefficients between the main variables in this paper for the 191,719 firm-year observations between 1991 and 2019. Firms in the financial and public utilities sectors are excluded from the sample. ** and *** indicate statistical significance at 5% and 1%, respectively.

	INV	CF	ESG	SOC	ENV	MC	SIZE	LEV	ROA	AC	DQ
CF	−0.019 ***										
ESG	−0.051 ***	0.045 ***									
SOC	−0.006	0.057 ***	0.886 ***								
ENV	−0.111 ***	0.021	0.638 ***	0.315 ***							
MC	−0.022 ***	−0.005	0.278 ***	0.354 ***	0.179 ***						
SIZE	0.006	−0.077 ***	0.251 ***	0.325 ***	0.171 ***	0.847 ***					
LEV	−0.017 **	−0.092 ***	0.003	−0.028 ***	0.056 ***	0.170 ***	0.286 ***				
ROA	0.197 ***	0.374 ***	0.085 ***	0.111 ***	0.036 ***	0.082 ***	−0.026 ***	−0.165 ***			
AC	−0.142 ***	−0.115 ***	−0.005	0.006	−0.003	−0.116 ***	0.093 ***	0.130 ***	−0.258 ***		
DQ	−0.341 ***	0.086 ***	0.053 ***	−0.046 ***	0.208 ***	−0.105 ***	−0.186 ***	−0.183 ***	−0.048 ***	−0.004	
ACCM	−0.024 ***	0.077 ***	−0.004	0.013 **	−0.040 ***	−0.102 ***	−0.081 ***	−0.134 ***	−0.089 ***	0.157 ***	0.086 ***

4. Empirical Results

4.1. The Effect of Marketing Capability (MC) on ESG

Tables 4 and 5 report the results of estimating Equation (1). We use the Heckman two-stage selection model to mitigate endogeneity issues. Table 4 shows the first stage results, where the ESG dummy equals one if a firm is engaged in ESG activities and zero otherwise. The results show that the coefficient between marketing capabilities and ESG is significantly positive (t -statistic = 18.48), meaning that firms with better marketing capabilities are more likely to release resources for ESG activities. Table 5 presents the results for the second-stage regression, which uses the sample companies engaged in ESG activities. The estimated coefficient on ESG is significantly positive at the 1% level, and the Cragg-Donald F statistic is higher than the critical value under the 10% bias of the weak instrumental variable, indicating that the instrumental variable is correlated. The coefficient of *inverse Mill's ratio* (λ) is significantly positive, indicating that selection bias is controlled. The coefficient of MC remains significantly positive ($\beta_1 = 0.370$, $p < 0.01$), suggesting that companies perform better ESG (i.e., higher ESG scores) with higher MC. This confirms Hypothesis 1. After controlling the endogeneity problem, our results echo the findings of Hirunyawipada & Xiong [14]. In light of Wang & Kaffo [64], we use modified bootstrap procedures that provide a valid distributional approximation for the estimators with weak instruments.

Table 4. The effect of MC on the ESG dummy. This table presents the first stage of the Heckman regression model, where we use a dummy variable for ESG. The first column does not include marketing capability to see the raw impact, while the second column explores the relationship between marketing capability and whether a firm is engaged with ESG activities. *** means statistical significance at 1%, respectively; t -statistics are in parentheses.

	ESG Dummy	
	(1)	(2)
Intercept	−9.765 *** (−30.10)	−454.197 *** (−18.87)
MC		0.454 *** (18.48)
ROA	3.963 *** (15.53)	3.978 *** (14.71)
SIZE	0.677 *** (40.30)	0.035 (0.94)
DQ	3.274 *** (7.71)	2.185 *** (4.93)
LEV	−1.858 *** (−14.82)	−1.886 *** (−14.69)
AC	0.644 *** (4.53)	1.581 *** (10.05)

Table 4. *Cont.*

	ESG Dummy	
	(1)	(2)
ACCM	−0.475 *** (−3.26)	−0.490 *** (−3.32)
Year. Y.E.	YES	YES
Industry. F.E.	YES	YES
Pseudo R ²	46.40%	47.79%
N	19,719	19,719

Table 5. The effect of MC on ESG performance (first-stage model). This table shows the second stage of the Heckman two-step regression, where we add *lambda* in the regression to control for the effects of sample selection bias. Marketing capability is concluded in columns (2) and (4), with the model including or not including *lambda*, respectively. It can be seen that *lambda* is significantly related to ESG, and the coefficients of MC are opposite which indicates that the sample selection bias does exist in the original model. After controlling for the bias, the coefficient of marketing capability in column (4) reveals that our proposition is supported. ** and *** mean statistical significance at 5% and 1%, respectively; bootstrapped t-statistics are in parentheses.

	ESG			
	(1)	(2)	(3)	(4)
Intercept	−3.491 *** (−4.93)	82.726 *** (2.83)	−8.156 *** (−9.38)	−373.984 *** (−7.66)
MC		−0.088 *** (−2.95)		0.370 *** (7.52)
lambda			3.154 *** (10.50)	5.185 *** (11.65)
ROA	2.936 *** (8.48)	2.976 *** (8.57)	4.775 *** (11.87)	5.791 *** (13.43)
SIZE	0.506 *** (20.09)	0.599 *** (13.15)	0.756 *** (19.30)	0.524 *** (11.82)
DQ	−1.471 ** (−2.52)	−1.338 ** (−2.30)	0.155 (0.26)	0.644 (1.07)
LEV	−0.938 *** (−6.42)	−0.932 *** (−6.39)	−1.818 *** (−10.14)	−2.412 *** (−11.57)
AC	−0.072 (−0.36)	−0.211 (−1.00)	0.334 (1.62)	1.183 *** (4.81)
ACCM	0.393 ** (2.27)	0.388 ** (2.25)	0.105 (0.61)	−0.061 (−0.35)
Year. Y.E.	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES
R ²	33.83%	33.88%	34.97%	35.47%
Adj R ²	31.42%	31.47%	32.60%	33.11%
N	9210	9210	9210	9210
Cragg-Donald Wald F statistic		530.415		
Stock-Yogo weak ID test critical values:		16.38		
10% maximal IV size				

4.2. The Effect of ESG^(#) on Investment Sensitivity to CF

In this section, we analyze the impact of MC-fitted ESG on the sensitivity of firms' investments to cash flow. In columns (1) and (2) of Table 6, we use the MC-fitted ESG (hereafter ESG[#]) and original ESG measure (i.e., the total number of strengths minus the total number of concerns), respectively. In all regressions, we control for firms' size, as large firms may have lower performance risk; we control for firms' cash flow as it is related to its

borrowing and liquidity; we control for firms' leverage since financial leverage affects a firm's resource allocation; we control for agency costs as executives tend to over-invest if they engage in "empire building" based on their own interests; because a firm's investment decisions are influenced by the information it has, we control for disclosure quality; we also control for earnings management and ROA. Our results show that β_1 , the interaction term between CF and ESG obtained by fitting with MC (ESG[#]) in column (1), is negatively significant (*t*-statistic = −1.85). In contrast, the coefficient of interaction term in column (2) is not significant. This suggests that, considering the effect of MC, ESG significantly reduces investment inefficiency. It confirms Hypothesis 2b, that the ESG fitted by MC has a negative moderating effect on the sensitivity of firms' investment to CF.

Table 6. The effect of ESG^(#) on investment efficiencies. This table presents the second-stage results of the treatment effects model. To investigate the moderating effect of ESG on investment efficiency, we use both the raw value of ESG and the fitted values of ESG by MC (i.e., ESG[#]), and the components of ESG, SOC, and the fitted values of SOC by MC, as well as ENV and the fitted values of ENV by MC, respectively. *, **, and *** mean statistical significance at 10%, 5%, and 1%, respectively; bootstrapped *t*-statistics are in parentheses.

	INV					
	ESG [#]	ESG	SOC [#]	SOC	ENV [#]	ENV
Intercept	8.817 *** (7.34)	9.541 *** (8.25)	9.696 *** (6.93)	9.564 *** (8.24)	8.954 *** (6.74)	9.639 *** (8.23)
CF	−4.037 *** (−5.13)	−4.730 *** (−5.82)	−3.974 *** (−4.89)	−4.741 *** (−5.75)	−3.659 *** (−4.46)	−4.584 *** (−5.58)
CF × ESG ^(#)	−0.722 * (−1.86)	−0.225 (−1.20)	−0.828 * (−1.73)	−0.223 (−0.98)	−3.729 *** (−3.06)	−1.390 ** (−2.26)
ESG ^(#)	0.163 (1.21)	0.106 *** (3.82)	0.499 * (1.73)	0.116 *** (3.48)	0.558 (1.43)	0.373 *** (4.54)
Controls	YES	YES	YES	YES	YES	YES
Year. Y.E.	YES	YES	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES	YES	YES
R ²	53.21%	53.76%	53.22%	53.71%	53.29%	53.78%
Adj R ²	51.29%	51.75%	51.30%	51.70%	51.38%	51.77%
N	7788	7233	7788	7233	7788	7233
F-value	291.643 ***	826.258 ***	195.278 ***	725.198 ***	4682.260 ***	76,585.097 ***

We decompose the aggregated ESG metric and examine which of its components drive the results. Specifically, we estimate separately the SOC—social dimension, calculated as the number of social strengths minus the number of social concerns, and the ENV—environmental dimension of ESG performance, calculated as the number of environmental strengths minus the number of environmental concerns [65]. Since the governance dimension is more likely to be mandated and regulated by authorities, whereas the other two dimensions are usually voluntary and more representative of ESG performance, we only test the social and environmental subcategories. Columns (3)–(6) show the regression results with the ESG sub-category component as the main variables. In models (3) and (4), we focus on the social dimension of ESG (i.e., SOC[#]), and the impact based on the five dimensions of community, diversity, employee relations, and product. We find that the interaction term CF × ESG obtained by fitting with MC in column (3) is negatively significant (*t*-statistic = −1.72). In contrast, the interaction term coefficient using the original ESG value in column (4) is insignificant (*t*-statistic = −0.95). This again confirms that a more "efficient" social dimension of ESG, through the role of MC, helps to reduce overinvestment. For the environmental aspects of ESG, the empirical results show that the interaction term β_1 of CF and ESG obtained by fitting with MC in column (5) is negatively significant (*t*-statistic = −3.07), while the coefficient of the interaction of ESG raw values and CF in column (6) is also negatively significant (*t*-statistic = −2.27). This suggests that both the original value of ENV and the more "efficient" ENV reduce overinvestment through the effect of MC. These results help further confirm Hypothesis 2b and suggest that the overall effect of ESG on the sensitivity of firms' investment to CF is mainly driven by environ-

mental factors. Our evidence differs from that of Bhandari & Javakhadze [33], whose empirical results find that the ESG rating exacerbates overinvestment as CSR increases a firm's reliance on internally generated cash for investment. This again echoes the urgent need to introduce marketing capabilities in related studies. Marketing capability allows for the mobilization of resources, which puts the entire firm in an "optimal" rather than "sub-optimal" state of operation and discourages overinvestment by executives based on "empire building".

In Table 7, we further analyze the impact of a firm's ESG level on the sensitivity of investment to CF by dividing it into strong groups (the total score of strength is greater than the total score of concern) and weak groups (the total score of strength is less than the total score of concern). We find that the coefficients of the interaction of CF and the MC-fitted scores of ESG (ESG[#]), SOC (SOC[#]), and ENV (ENV[#]), respectively, are all significantly negative for each pair of strong and weak subsamples. Specifically, the coefficients of the interactions are relatively more significant for companies in strong groups than their weak counterparts. This suggests that the higher the ESG (or SOC, ENV) level, the stronger the negative moderating effect of ESG (or SOC, ENV) on the sensitivity of investment to CF, that is, the more effective the correction of over- or underinvestment for those firms with better marketing capabilities. It is worth noting that higher investment-cash flow sensitivity suggests a larger deviation from the optimal level of investment but does not indicate whether managers over- or underinvest [55].

Table 7. The effect of ESG on investment efficiencies. This table presents sub-sample analyses by splitting the ESG fitted values, SOC fitted values, and ENV fitted values into strong and weak groups to explore the differences in the moderating effect of different ESG levels on investment efficiency. *, **, and *** mean statistical significance at 10%, 5%, and 1%, respectively, with bootstrapped t-statistics in parentheses.

	INV					
	ESG [#]		SOC [#]		ENV [#]	
	Strong	Weak	Strong	Weak	Strong	Weak
Intercept	8.392 *** (6.16)	10.276 *** (4.34)	9.723 *** (5.91)	11.420 *** (3.60)	8.288 *** (5.59)	10.106 *** (3.96)
CF	−1.298 (−1.12)	−8.039 *** (−4.98)	−1.292 (−1.07)	−6.259 *** (−4.67)	−1.501 (−1.46)	−5.633 *** (−4.64)
CF × ESG [#]	−1.260 *** (−2.68)	−3.275 ** (−2.25)	−1.533 ** (−2.46)	−2.761 * (−1.84)	−3.763 *** (−3.07)	−6.485 ** (−2.31)
ESG [#]	0.232 (1.43)	0.288 (0.82)	0.741 ** (2.17)	0.812 (0.98)	0.450 (1.01)	0.243 (0.28)
Controls	YES	YES	YES	YES	YES	YES
Year. Y.E.	YES	YES	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES	YES	YES
R ²	52.50%	56.70%	52.54%	56.64%	52.52%	56.73%
Adj R ²	49.52%	53.19%	49.56%	53.12%	49.54%	53.22%
N	4451	3337	4451	3337	4451	3337
F-value	257.164 ***	62.019 ***	169.791 ***	594.246 ***	909.735 ***	55.178 ***

4.3. Additional Tests

Building on the above evidence, we further explore the channels through which ESG may enhance investment efficiency. We conduct sub-sample analyses based on high-level vs. low-level economic policy uncertainty, industry concentration, agency costs, and disclosure quality. Panels A to D in Table 8 replicate the analyses in Table 7 in subsamples. Previous literature believes that firms engaged in ESG may be distracted from their core business, especially when allocating resources toward specific stakeholders when facing uncertain risks. Panel A of Table 8 presents the subsample test results based on economic policy uncertainty (EPU). Columns (1)–(2) show that the coefficient of the interactive term of CF

and ESG fitted by MC (ESG[#]) is significantly negative (t -statistic = -2.60) when firms face low EPU. In contrast, there is no significant relationship in the high-level group. For the social dimension, columns (3) and (4) show that the level of social activity of firms does not significantly impact the sensitivity of investment to CF, either in high or low EPU groups. On the other hand, columns (5) and (6) show that in both high and low EPU groups, the coefficients of the interaction of CF and ENV fitted by MC (ENV[#]) are significantly negative, which indicates that the level of EPU does not influence the impact of ENV on investment efficiency and leaves our main results consistent. Overall, it can be concluded that the overall effect of economic policy uncertainty on the sensitivity of business investment to CF is mainly driven by environmental factors in ESG.

Table 8. The effect of ESG performance on investment efficiencies. Panel A to Panel D present sub-sample regression results grouped by different factors (economic policy uncertainty, industrial concentration, agency cost, and information disclosure quality) that may channel the relationship between ESG and investment efficiency. *, **, and *** mean statistical significance at 10%, 5%, and 1%, respectively; t -statistics are in parentheses.

Panel A: By Economic Policy Uncertainty (EPU)						
	INV					
	ESG [#]		SOC [#]		ENV [#]	
	(1)	(2)	(3)	(4)	(5)	(6)
	High	Low	High	Low	High	Low
Intercept	8.773 *** (6.96)	7.833 (1.12)	9.379 *** (6.42)	26.077 * (1.90)	8.826 *** (6.34)	13.406 * (1.86)
CF	−4.255 *** (−5.35)	−3.253 (−0.54)	−4.214 *** (−5.14)	0.669 (0.11)	−3.913 *** (−4.68)	−0.607 (−0.10)
CF × ESG [#]	−0.390 (−1.04)	−8.958 *** (−2.60)	−0.492 (−1.05)	−5.450 (−1.37)	−2.768 ** (−2.30)	−23.691 ** (−2.51)
ESG [#]	0.077 (0.57)	3.106 * (1.91)	0.305 (1.06)	7.248 ** (2.14)	0.353 (0.89)	6.754 (1.60)
Controls	YES	YES	YES	YES	YES	YES
Year. Y.E.	YES	YES	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES	YES	YES
R ²	53.35%	78.54%	53.36%	78.07%	53.41%	77.96%
Adj R ²	51.39%	53.24%	51.40%	52.22%	51.45%	51.99%
N	7543	245	7543	245	7543	245
F-value	88.195 ***	30.688 ***	100.690 ***	103.516 ***	608.608 ***	1905.046 ***
Panel B: by Herfindahl-Hirschman Index (HHI)						
	ESG [#]		SOC [#]		ENV [#]	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mon	Com	Mon	Com	Mon	Com
Intercept	8.792 *** (4.91)	8.576 *** (5.50)	9.470 *** (4.62)	10.774 *** (4.19)	8.795 *** (4.46)	7.985 *** (5.55)
CF	−3.845 *** (−3.15)	−4.338 *** (−4.35)	−3.742 *** (−2.95)	−4.386 *** (−4.26)	−3.462 *** (−2.68)	−3.886 *** (−3.78)
CF × ESG [#]	−0.605 (−1.20)	−0.826 (−1.49)	−0.692 (−1.14)	−0.843 (−1.24)	−3.671 ** (−2.25)	−4.065 ** (−2.37)
ESG [#]	0.077 (0.45)	0.295 (1.19)	0.331 (1.00)	0.773 (1.35)	0.345 (0.67)	0.936 (1.38)
Controls	YES	YES	YES	YES	YES	YES
Year. Y.E.	YES	YES	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES	YES	YES
R ²	61.54%	49.77%	61.54%	49.78%	61.66%	49.83%
Adj R ²	58.47%	47.84%	58.47%	47.85%	58.60%	47.90%
N	3867	3921	3867	3921	3867	3921
F-value	509.840 ***	143.436 ***	97.718 ***	242.656 ***	304.143 ***	255.491 ***

Table 8. Cont.

Panel C: by Agency Cost						
	ESG [#]		SOC [#]		ENV [#]	
	(1)	(2)	(3)	(4)	(5)	(6)
	High	Low	High	Low	High	Low
Intercept	10.138 *** (6.22)	6.676 *** (3.68)	11.851 *** (5.61)	5.858 *** (2.85)	10.445 *** (5.64)	7.013 *** (3.67)
CF	−2.759 ** (−2.06)	−4.524 *** (−4.28)	−2.686 * (−1.91)	−4.351 *** (−4.06)	−2.221 (−1.55)	−4.289 *** (−4.02)
CF×ESG [#]	−1.471 * (−1.93)	−0.895 ** (−2.07)	−1.531 * (−1.74)	−1.316 ** (−2.28)	−5.894 ** (−2.47)	−3.176 ** (−2.56)
ESG [#]	0.345 (1.48)	0.060 (0.35)	0.976 * (1.84)	−0.095 (−0.24)	0.977 (1.48)	0.372 (0.79)
Controls	YES	YES	YES	YES	YES	YES
Year. Y.E.	YES	YES	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES	YES	YES
R ²	56.80%	53.06%	56.79%	53.08%	56.91%	53.09%
Adj R ²	53.72%	49.33%	53.71%	49.34%	53.84%	49.36%
N	3879	3909	3879	3909	3879	3909
F-value	194.155 ***	89.839 ***	362.378 ***	148.484 ***	5627.327 ***	4420.884 ***

Panel D: by disclosure quality						
	ESG [#]		SOC [#]		ENV [#]	
	(1)	(2)	(3)	(4)	(5)	(6)
	High	Low	High	Low	High	Low
Intercept	4.998 *** (2.91)	11.370 *** (5.70)	6.919 *** (3.42)	11.388 *** (4.93)	4.543 ** (2.55)	11.908 *** (5.42)
CF	−1.231 (−1.30)	−7.019 *** (−5.47)	−1.073 (−1.10)	−6.862 *** (−5.15)	−1.355 (−1.42)	−6.638 *** (−4.92)
CF×ESG [#]	−1.098 ** (−2.19)	−0.580 (−0.97)	−1.499 ** (−2.45)	−0.987 (−1.26)	−1.889 (−1.39)	−3.833 ** (−2.08)
ESG [#]	0.216 (1.25)	0.193 (0.93)	0.938 ** (2.42)	0.298 (0.65)	0.094 (0.20)	0.884 (1.47)
Controls	YES	YES	YES	YES	YES	YES
Year. Y.E.	YES	YES	YES	YES	YES	YES
Industry. F.E.	YES	YES	YES	YES	YES	YES
R ²	58.00%	53.66%	58.08%	53.67%	57.93%	53.76%
Adj R ²	54.87%	49.98%	54.95%	49.98%	54.80%	50.08%
N	3877	3911	3877	3911	3877	3911
F-value	319.473 ***	235.045 ***	188.059 ***	213.292 ***	338.137 ***	384.274 ***

Panel B of Table 8 presents the results of subsample tests based on monopolistic (Mon) and competitive (Com) subsamples. We use the HHI to explore the differences in the moderating effect of ESG levels on investment efficiency for different industrial concentration scenarios, where Mon and Com stand for monopolistic and competitive subsamples, respectively. Columns (1)–(4) show that the coefficients of the interaction of CF and ESG (SOC) fitted by MC are negative but not significantly related to investment. However, columns (5) and (6) show that the coefficients of interactions of CF and MC-fitted SOC are significantly negative, indicating that the social dimension enhances investment efficiency in either more or less concentrated industries.

Traditional theory believes that agency problems critically impact a firm's investment decisions. For example, firms with high levels of agency problems may be engaged in “empire building” out of managers' interests, which results in overinvestment. We therefore use high vs. low agency costs (AC) as subsample groups to test the impact of the agency problem channel on our research question. The results in Panel C of Table 8 show that the coefficients of the interactions of CF and ESG fitted by MC in different dimensions are significantly negative. Specifically, columns (2), (4), and (6) show that the MC-fitted ESG of firms in low-level AC groups have stronger corrective effects on the inefficiency caused by overinvestment.

In Panel D of Table 8, we use the disclosure quality grouping to explore the difference in the moderating effect of ESG level on investment efficiency for different levels of ESG disclosure quality. According to Myers and Majluf [66], information asymmetry between principal and agent can affect the investing decision and project selection. Information asymmetry may prevent efficient investment [57]; thus, corporate transparency plays a vital role in broadening the communication channels between firms and investors [67]. Therefore, we extend our analysis based on the information disclosure quality channel. Following the literature [39,67], we use disclosure disaggregation quality (DQ) to capture the level of disclosure quality by measuring disaggregation and the fineness of financial data through a count of non-missing Compustat accounting line items in annual reports. Panel D of Table 8 presents the subsample test results grouped by high vs. low level of DQ. Columns (1) and (3) show that firms with high-level DQ, ESG, and social dimension (SOC) have significant impacts on investment efficiency (t -statistic = -2.19 and -2.45). However, column (6) shows that for the dimension of the environmental aspect, the impact from firms with lower DQ is more significant (t -statistic = -2.08). One explanation could be that although information asymmetry may lead to a deviation from firms' optimal investment, awareness of environmental issues has become more necessary in a less transparent information environment [68].

5. Discussion

5.1. Contributions

The role of marketing is rarely acknowledged in the literature of ESG. We advance the theory of RBV and DCT and explore the relationship between ESG engagement and investment efficiency by considering the role of marketing capability. Therefore, this study contributes to the emerging literature on ESG and resource allocation in a couple of ways. First, we give impetus to the growing literature on firms' functional capabilities [14]. Building on RBV and DCT, we believe that marketing capability is a type of corporate competence that represents a firm's ability to utilize specific resources. Priors that focus on the impact of social or environmental activities on firms' investment efficiency without considering the factor of operational function will omit a crucial part of the picture [15,33], thus resulting in estimation bias. Second, we also contribute to the literature on investment efficiency by using the investment-cash flow sensitivity measure to test our research question. The measure is developed on the assumption that a firm deviates from the optimal investment because of information asymmetry between managers and outside investors, which is consistent with the results in our subsample analyses. Third, we employ the Heckman selection model and two-stage least squares [69] to predict the MC-fitted ESG as the proxy for ESG performance, and we use modified bootstrap procedures [64] for our regression models. As previous literature has found that excessive socially responsible activities are related to management discretionary decisions [70], we believe the predicted values that are fitted by functional capabilities provide strong proof of our research propositions. We find robust evidence that firms with better marketing capabilities are more likely to engage in ESG activities and receive higher ESG scores. The study complements the literature by documenting the allocated resource in ESG engagement, which we name MC-fitted ESG in our study.

5.2. Practical Implications

This study also has some practical implications. ESG engagement may be a tool for managers, allowing them to resolve conflicts with stakeholders and thus act in the interests of shareholders. Further, ESG practices can be used by managers as a reinforcement strategy and self-defense to reduce the likelihood of being identified by those shareholders and stakeholders whose interests are compromised. Both marketing capabilities and ESG practices are ways for companies to talk to the outside world, and how a company's capital structure changes with the inclusion of marketing capabilities needs to be further explored. In developed economies, ESG activities have prompted managers to increase

dividend payments [71], while it might be a different picture in the context of emerging markets [72]. Our paper proposes a new perspective to explain the differences across different institutional environments.

6. Conclusions and Limitations

Although the existing literature documents the positive effects of ESG activities on investment efficiency, researchers have paid scant attention to the role of firms' functional capabilities in the above relationship. We find it surprising since firms' decisions in ESG activities are affected by functional capabilities such as marketing. Based on financial data of U.S. listed firms, we find that firms with better marketing capabilities are more likely to take part in ESG activities, and the MC-fitted ESG significantly reduces investment inefficiency.

The empirical results show that firms with better marketing capabilities are more likely to be engaged in ESG activities and have higher ESG scores. Using a Heckman two-stage model, we find that ESG obtained by fitting with MC improves a firm's investment efficiency. This responds to the academic debate on whether firms should invest in ESG activities. In other words, we believe that firms' executives can make better use of ESG to improve their financial performance through the functional advantages of some specific competencies. Alternatively, this paper provides a theoretical basis for whether firms are suitable for or should engage in ESG activities.

Further, our study may also suggest a rationale for why mixed results have been found in the existing ESG literature. For example, two opposing views exist on the relationship between ESG performance and cash holding value. According to the institutional view [73], corporate social and environmental decisions may be associated with the implementation of austerity strategies [74]. As a result, investors may undervalue the cash holdings of companies with high ESG ratings because they expect inefficient use of cash resources. However, the conflict resolution perspective of related literature [75,76] suggests that corporate social and environmental performance has a positive impact on the value of cash holdings.

Our interpretation of the results is subject to several caveats. The evidence is mainly based on firms' public disclosure, but the consequences of ESG practice depend on specific attributes of firms' design and implementation of social and environmental programs. Firms are a combination of resources and capabilities. Thus, other aspects, including operational capabilities, innovation capabilities, and supply chain management capabilities, also play an essential role in a firm's productive operations. All of the above calls for future research into the joint effects of ESG and various corporate capabilities on the relationships between ESG and investment.

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References

1. Friedman, M. The Social Responsibility of Business Is to Increase Its Profits. In *Springer eBooks*; Springer: Berlin/Heidelberg, Germany, 2007; pp. 173–178. [\[CrossRef\]](#)
2. Hart, S.L. A Natural-Resource-Based View of the Firm. *Acad. Manag. Rev.* **1995**, *20*, 986–1014. [\[CrossRef\]](#)
3. Wang, K.; Li, T.; San, Z.; Gao, H. How Does Corporate ESG Performance Affect Stock Liquidity? Evidence from China. *Pac. Basin Financ. J.* **2023**, *80*, 102087. [\[CrossRef\]](#)
4. Iazzolino, G.; Bruni, M.E.; Veltri, S.; Morea, D.; Baldissarro, G. The Impact of ESG Factors on Financial Efficiency: An Empirical Analysis for the Selection of Sustainable Firm Portfolios. *Corp. Soc. Responsib. Environ. Manag.* **2023**, *30*, 1917–1927. [\[CrossRef\]](#)
5. Nirino, N.; Santoro, G.; Miglietta, N.; Quaglia, R. Corporate Controversies and Company's Financial Performance: Exploring the Moderating Role of ESG Practices. *Technol. Forecast. Soc. Chang.* **2021**, *162*, 120341. [\[CrossRef\]](#)
6. Friede, G.; Busch, T.; Bassen, A. ESG and Financial Performance: Aggregated Evidence from More than 2000 Empirical Studies. *J. Sustain. Financ. Investig.* **2015**, *5*, 210–233. [\[CrossRef\]](#)
7. Branco, M.C.; Rodrigues, L.L. Corporate Social Responsibility and Resource-Based Perspectives. *J. Bus. Ethics* **2006**, *69*, 111–132. [\[CrossRef\]](#)
8. Chen, I.J.; Hasan, I.; Lin, C.; Nguyen, T. Do Banks Value Borrowers' Environmental Record? Evidence from Financial Contracts. *J. Bus. Ethics* **2020**, *174*, 687–713. [\[CrossRef\]](#)
9. Roman, R.M.; Hayibor, S.; Agle, B.R. The Relationship between Social and Financial Performance. *Bus. Soc.* **1999**, *38*, 109–125. [\[CrossRef\]](#)
10. Grisales, E.A.D.; Aguilera-Caracuel, J. Environmental, Social and Governance (ESG) Scores and Financial Performance of Multilatinas: Moderating Effects of Geographic International Diversification and Financial Slack. *J. Bus. Ethics* **2019**, *168*, 315–334. [\[CrossRef\]](#)
11. Marín, L.; Ruiz, S.; Rubio, A. The Role of Identity Salience in the Effects of Corporate Social Responsibility on Consumer Behavior. *J. Bus. Ethics* **2008**, *84*, 65–78. [\[CrossRef\]](#)
12. Sun, W.; Cui, K. Linking Corporate Social Responsibility to Firm Default Risk. *Eur. Manag. J.* **2014**, *32*, 275–287. [\[CrossRef\]](#)
13. Farooq, M.; Farooq, O.; Jasimuddin, S.M. Employees Response to Corporate Social Responsibility: Exploring the Role of Employees Collectivist Orientation. *Eur. Manag. J.* **2014**, *32*, 916–927. [\[CrossRef\]](#)
14. Hirunyawipada, T.; Xiong, G. Corporate Environmental Commitment and Financial Performance: Moderating Effects of Marketing and Operations Capabilities. *J. Bus. Res.* **2018**, *86*, 22–31. [\[CrossRef\]](#)
15. Sun, W.; Ding, Y. Corporate Social Responsibility and Cash Flow Volatility: The Curvilinear Moderation of Marketing Capability. *J. Bus. Res.* **2020**, *116*, 48–59. [\[CrossRef\]](#)
16. Morgan, N.; Vorhies, D.W.; Mason, C.H. Market Orientation, Marketing Capabilities, and Firm Performance. *Strateg. Manag. J.* **2009**, *30*, 909–920. [\[CrossRef\]](#)
17. Cepeda-Carrión, G.; Vera, D. Dynamic Capabilities and Operational Capabilities: A Knowledge Management Perspective. *J. Bus. Res.* **2007**, *60*, 426–437. [\[CrossRef\]](#)
18. Angulo-Ruiz, F.; Donthu, N.; Prior, D.; Criado, J.R. How Does Marketing Capability Impact Abnormal Stock Returns? The Mediating Role of Growth. *J. Bus. Res.* **2018**, *82*, 19–30. [\[CrossRef\]](#)
19. Orr, L.; Bush, V.D.; Vorhies, D.W. Leveraging Firm-Level Marketing Capabilities with Marketing Employee Development. *J. Bus. Res.* **2011**, *64*, 1074–1081. [\[CrossRef\]](#)
20. Krasnikov, A.; Jayachandran, S. The Relative Impact of Marketing, Research-and-Development, and Operations Capabilities on Firm Performance. *J. Mark.* **2008**, *72*, 1–11. [\[CrossRef\]](#)
21. Vorhies, D.W.; Morgan, N. Benchmarking Marketing Capabilities for Sustainable Competitive Advantage. *J. Mark.* **2005**, *69*, 80–94. [\[CrossRef\]](#)
22. Xiong, G.; Bharadwaj, S.G. Asymmetric Roles of Advertising and Marketing Capability in Financial Returns to News: Turning Bad into Good and Good into Great. *J. Mark. Res.* **2013**, *50*, 706–724. [\[CrossRef\]](#)
23. Greenley, G.E.; Hooley, G.J.; Rudd, J.M. Market Orientation in a Multiple Stakeholder Orientation Context: Implications for Marketing Capabilities and Assets. *J. Bus. Res.* **2005**, *58*, 1483–1494. [\[CrossRef\]](#)
24. Stoughton, N.M.; Wong, K.P.; Long, Y. Investment Efficiency and Product Market Competition. *J. Financ. Quant. Anal.* **2017**, *52*, 2611–2642. [\[CrossRef\]](#)
25. Alsayegh, M.F.; Rahman, R.A.; Homayoun, S. Corporate Sustainability Performance and Firm Value through Investment Efficiency. *Sustainability* **2022**, *15*, 305. [\[CrossRef\]](#)
26. Mackey, A.; Mackey, T.B.; Barney, J.B. Corporate Social Responsibility and Firm Performance: Investor Preferences and Corporate Strategies. *Acad. Manag. Rev.* **2007**, *32*, 817–835. [\[CrossRef\]](#)
27. Jo, H.; Harjoto, M.A. The Causal Effect of Corporate Governance on Corporate Social Responsibility. *J. Bus. Ethics* **2011**, *106*, 53–72. [\[CrossRef\]](#)
28. Bouslah, K.; Kryzanowski, L.; M'Zali, B. The Impact of the Dimensions of Social Performance on Firm Risk. *J. Bank. Financ.* **2013**, *37*, 1258–1273. [\[CrossRef\]](#)
29. Cui, J.; Jo, H.; Na, H. Does Corporate Social Responsibility Affect Information Asymmetry? *J. Bus. Ethics* **2016**, *148*, 549–572. [\[CrossRef\]](#)

30. Su, W.; Peng, M.W.; Tan, W.; Cheung, Y. The Signaling Effect of Corporate Social Responsibility in Emerging Economies. *J. Bus. Ethics* **2014**, *134*, 479–491. [\[CrossRef\]](#)
31. Bardos, K.S.; Ertugrul, M.; Gao, L.S. Corporate Social Responsibility, Product Market Perception, and Firm Value. *J. Corp. Financ.* **2020**, *62*, 101588. [\[CrossRef\]](#)
32. Amel-Zadeh, A.; Serafeim, G. Why and How Investors Use ESG Information: Evidence from a Global Survey. *Financ. Anal. J.* **2018**, *74*, 87–103. [\[CrossRef\]](#)
33. Bhandari, A.; Javakhadze, D. Corporate Social Responsibility and Capital Allocation Efficiency. *J. Corp. Financ.* **2017**, *43*, 354–377. [\[CrossRef\]](#)
34. Çek, K.; Eyupoglu, Ş.Z. Does environmental, social and governance performance influence economic performance? *J. Bus. Econ. Manag.* **2020**, *21*, 1165–1184. [\[CrossRef\]](#)
35. Sun, X.; Gunia, B.C. Economic Resources and Corporate Social Responsibility. *J. Corp. Financ.* **2018**, *51*, 332–351. [\[CrossRef\]](#)
36. Becchetti, L.; Ciciretti, R.; Hasan, I. Corporate Social Responsibility, Stakeholder Risk, and Idiosyncratic Volatility. *J. Corp. Financ.* **2015**, *35*, 297–309. [\[CrossRef\]](#)
37. Krüger, P. Corporate Goodness and Shareholder Wealth. *J. Financ. Econ.* **2015**, *115*, 304–329. [\[CrossRef\]](#)
38. Sénéchal, S.; Georges, L.; Pernin, J.L. Alliances between Corporate and Fair Trade Brands: Examining the Antecedents of Overall Evaluation of the Co-Branded Product. *J. Bus. Ethics* **2013**, *124*, 365–381. [\[CrossRef\]](#)
39. Chen, R.; Ghoul, S.E.; Guedhami, O.; Wang, H. Do State and Foreign Ownership Affect Investment Efficiency? Evidence from Privatizations. *J. Corp. Financ.* **2017**, *42*, 408–421. [\[CrossRef\]](#)
40. Tsang, A.; Wang, K.T.; Liu, S.; Yu, L. Integrating Corporate Social Responsibility Criteria into Executive Compensation and Firm Innovation: International Evidence. *J. Corp. Financ.* **2021**, *70*, 102070. [\[CrossRef\]](#)
41. Modigliani, F.; Miller, M.H. The cost of capital, corporate finance and the theory of investment. *Am. Econ. Rev.* **1958**, *48*, 261.
42. Hubbard, R.G. Capital-Market Imperfections and Investment. Ph.D. Thesis, University of Oxford, Oxford, UK, 1997. [\[CrossRef\]](#)
43. Biddle, G.C.; Hilary, G.; Verdi, R.S. How Does Financial Reporting Quality Relate to Investment Efficiency? *J. Account. Econ.* **2009**, *48*, 112–131. [\[CrossRef\]](#)
44. Lloret, A. Modeling Corporate Sustainability Strategy. *J. Bus. Res.* **2016**, *69*, 418–425. [\[CrossRef\]](#)
45. Walsh, G.; Bartikowski, B. Exploring Corporate Ability and Social Responsibility Associations as Antecedents of Customer Satisfaction Cross-Culturally. *J. Bus. Res.* **2013**, *66*, 989–995. [\[CrossRef\]](#)
46. Varadarajan, R. Innovating for Sustainability: A Framework for Sustainable Innovations and a Model of Sustainable Innovations Orientation. *J. Acad. Mark. Sci.* **2015**, *45*, 14–36. [\[CrossRef\]](#)
47. Jayachandran, S.A.; Kalaighnam, K.; Eilert, M. Product and Environmental Social Performance: Varying Effect on Firm Performance. *Strateg. Manag. J.* **2013**, *34*, 1255–1264. [\[CrossRef\]](#)
48. Peloza, J.; Loock, M.; Cerruti, J.; Muyot, M. Sustainability: How Stakeholder Perceptions Differ from Corporate Reality. *Calif. Manag. Rev.* **2012**, *55*, 74–97. [\[CrossRef\]](#)
49. Brown, J.A.; Forster, W.R. CSR and Stakeholder Theory: A Tale of Adam Smith. *J. Bus. Ethics* **2012**, *112*, 301–312. [\[CrossRef\]](#)
50. Cao, Z.; Rees, W. Do Employee-Friendly Firms Invest More Efficiently? Evidence from Labor Investment Efficiency. *J. Corp. Financ.* **2020**, *65*, 101744. [\[CrossRef\]](#)
51. Basu, K.; Palazzo, G. Corporate Social Responsibility: A Process Model of Sensemaking. *Acad. Manag. Rev.* **2008**, *33*, 122–136. [\[CrossRef\]](#)
52. Udayasankar, K. Corporate Social Responsibility and Firm Size. *J. Bus. Ethics* **2007**, *83*, 167–175. [\[CrossRef\]](#)
53. Biddle, G.C.; Hilary, G. Accounting Quality and Firm-Level Capital Investment. *Account. Rev.* **2006**, *81*, 963–982. [\[CrossRef\]](#)
54. Schleicher, T.; Tahoun, A.; Walker, M. IFRS Adoption in Europe and Investment-Cash Flow Sensitivity: Outsider versus Insider Economies. *Int. J. Account.* **2010**, *45*, 143–168. [\[CrossRef\]](#)
55. Gao, R.; Yu, X. How to Measure Capital Investment Efficiency: A Literature Synthesis. *Account. Financ.* **2018**, *60*, 299–334. [\[CrossRef\]](#)
56. McLean, R.D.; Zhang, T.; Zhao, M. Why Does the Law Matter? Investor Protection and Its Effects on Investment, Finance, and Growth. *J. Financ.* **2012**, *67*, 313–350. [\[CrossRef\]](#)
57. Benlemlih, M.; Bitar, M. Corporate Social Responsibility and Investment Efficiency. *J. Bus. Ethics* **2016**, *148*, 647–671. [\[CrossRef\]](#)
58. Baker, M.; Stein, J.C.; Wurgler, J. When Does the Market Matter? Stock Prices and the Investment of Equity-Dependent Firms. *Q. J. Econ.* **2003**, *118*, 969–1005. [\[CrossRef\]](#)
59. Rauh, J.D. Investment and Financing Constraints: Evidence from the Funding of Corporate Pension Plans. *J. Financ.* **2006**, *61*, 33–71. [\[CrossRef\]](#)
60. Ng, A.K.Y.; Rezaee, Z. Business Sustainability Performance and Cost of Equity Capital. *J. Corp. Financ.* **2015**, *34*, 128–149. [\[CrossRef\]](#)
61. Dutta, S.; Narasimhan, O.; Rajiv, S. Success in High-Technology Markets: Is Marketing Capability Critical? *Mark. Sci.* **1999**, *18*, 547–568. [\[CrossRef\]](#)
62. Obeng, V.A.; Ahmed, K.; Cahan, S.F. Integrated Reporting and Agency Costs: International Evidence from Voluntary Adopters. *Eur. Account. Rev.* **2020**, *30*, 645–674. [\[CrossRef\]](#)
63. Hutton, A.P.; Marcus, A.J.; Tehranian, H. Opaque Financial Reports, R2, and Crash Risk. *J. Financ. Econ.* **2009**, *94*, 67–86. [\[CrossRef\]](#)

64. Wang, W.; Kaffo, M. Bootstrap Inference for Instrumental Variable Models with Many Weak Instruments. *J. Econom.* **2016**, *192*, 231–268. [[CrossRef](#)]
65. Fatemi, A.M.; Glaum, M.; Kaiser, S. ESG Performance and Firm Value: The Moderating Role of Disclosure. *Glob. Financ. J.* **2018**, *38*, 45–64. [[CrossRef](#)]
66. Myers, S.C.; Majluf, N.S. Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. *J. Financ. Econ.* **1984**, *13*, 187–221. [[CrossRef](#)]
67. Liu, C.; Li, Q.; Lin, Y. Corporate Transparency and Firm Value: Does Market Competition Play an External Governance Role? *J. Contemp. Account. Econ.* **2023**, *19*, 100334. [[CrossRef](#)]
68. Azmi, W.; Hassan, M.K.; Houston, R.; Karim, M.d.S. ESG Activities and Banking Performance: International Evidence from Emerging Economies. *J. Int. Financ. Mark. Inst. Money* **2021**, *70*, 101277. [[CrossRef](#)]
69. Shaver, J.M. Testing for Mediating Variables in Management Research: Concerns, Implications, and Alternative Strategies. *J. Manag.* **2005**, *31*, 330–353. [[CrossRef](#)]
70. Zhou, G. Good for Managers, Bad for Shareholders? The Effects of Lone-Insider Boards on Excessive Corporate Social Responsibility. *J. Bus. Res.* **2022**, *140*, 370–383. [[CrossRef](#)]
71. Breuer, W.; Rieger, M.O.; Soypak, K.C. The Behavioral Foundations of Corporate Dividend Policy a Cross-Country Analysis. *J. Bank. Financ.* **2014**, *42*, 247–265. [[CrossRef](#)]
72. Saeed, A.; Zamir, F. How Does CSR Disclosure Affect Dividend Payments in Emerging Markets? *Emerg. Mark. Rev.* **2021**, *46*, 100747. [[CrossRef](#)]
73. Jiraporn, P.; Chintrakarn, P. How Do Powerful CEOs View Corporate Social Responsibility (CSR)? An Empirical Note. *Econ. Lett.* **2013**, *119*, 344–347. [[CrossRef](#)]
74. Surroca, J.; Tribó, J.A. Managerial Entrenchment and Corporate Social Performance. *J. Bus. Financ. Account.* **2008**, *35*, 748–789. [[CrossRef](#)]
75. Harjoto, M.A.; Jo, H. Corporate Governance and CSR Nexus. *J. Bus. Ethics* **2011**, *100*, 45–67. [[CrossRef](#)]
76. Jo, H.; Harjoto, M.A. Corporate Governance and Firm Value: The Impact of Corporate Social Responsibility. *J. Bus. Ethics* **2011**, *103*, 351–383. [[CrossRef](#)]

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