

Determinants and financial consequences of corporate climate change strategy

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1. Introduction

With the increasing importance of ESG investments, companies have increasingly begun to participate in various voluntary environmental activities. These activities are undertaken voluntarily by companies to demonstrate their commitment to environmental sustainability and address the concerns of stakeholders regarding climate change. However, previous studies have shown inconsistent financial implications of voluntarily adopted environmental activities, and they have primarily focused on the initial period or conducted long-term impact analyses (Keeley et al., 2022). To address this research gap, this study aims to identify environmental strategies based on a series of interactive environmental activities and investigate their dynamic financial impacts in the short and medium term.

2. Methodology

This study utilizes a dataset obtained from Refinitiv Eikon, a global corporate database that provides financial and ESG (Environmental, Social, and Governance) information. We constructed an unbalanced panel dataset of U.S.-listed firms covering the period from 2014 to 2021. The latent class model (LCM) is used to identify several sets of climate change-related environmental policies (Linzer & Lewis, 2011). As shown in **Figure 1**, by using 10 climate change-related corporate environmental policies, this study identified 4 path-dependent environmental strategies: Inactive, Energy, Supply Chain, and Proactive, upon the natural-resource-based view of firms. A fixed effect model is applied to test the initial impacts of environmental strategy on financial performance, proxied by ROA. We further conducted a quasi-experiment study based on DiD with multiple period designs to examine the dynamic financial impacts of corporate environmental strategy upgrades (Callaway & Sant'Anna, 2021).

3. Results

Fixed effect model results suggest that engaging in environmental initiatives is negatively correlated with financial performance. The negative financial impact of environmental activities is most likely attributed to the resource use domain. Furthermore, firms that adopt more proactive environmental strategies experience more pronounced adverse effects on their financial performance. **Table 1** shows the overall average treatment effects of the DiD model. Upgrading

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climate change-related strategies has no significant negative impact on ROA. Furthermore, once the Energy strategy is established, subsequent upgrades to the next-step strategies are less likely to affect financial performance negatively.

Figure 1. Climate change-related environmental strategies

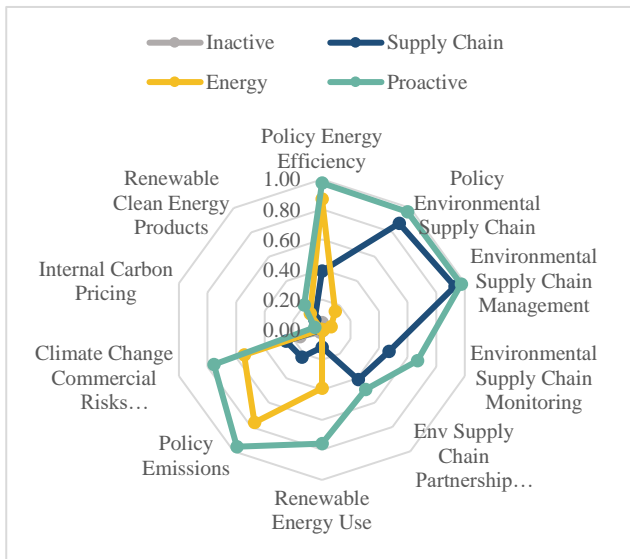


Table 1. Treatment effects on ROA of strategy upgrades

From	To	Effect
Inactive	Energy	-0.309 (0.437)
Inactive	Supply Chain	0.734 (1.538)
Inactive	Proactive	-2.151 (2.969)
Energy	Proactive	0.178 (0.875)
Supply Chain	Proactive	0.447 (1.366)

4. Conclusion

Based on the analysis, four path-dependent environmental strategies were identified: Inactive, Energy, Supply Chain, and Proactive strategies. It was observed that most companies enhanced their environmental engagement during the investigated period, especially in Energy and Proactive strategies. Adopting environmental strategies does not come without costs, while the negative financial impact in the initial period could be mitigated in the subsequent period, particularly in the next-step strategy upgrade.

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