



# Gendered leadership and market reactions to corporate environmental strategies: differentiation vs. conformity in emerging markets

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Accepted: 21 March 2025  
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## Abstract

Despite the growing importance of corporate environmental strategies (CES), limited attention has been paid to the dynamic interplay between emphasis differentiation—prioritizing unique environmental initiatives—and scope conformity—aligning with industry norms—and how the market evaluates this interplay within the CES context. Drawing on the literature on optimal distinctiveness and social role theory, this study examines how the market responds to firms' CES emphasis differentiation and scope conformity, considering their prior strategic positioning and CEO gender. Specifically, we hypothesize that firms maintaining consistency in their CES practices (e.g., continuing to emphasize differentiation or conformity) are rewarded by the market, whereas strategic shifts (e.g., transitioning from emphasis differentiation to scope conformity, or vice versa) are penalized due to perceived uncertainty. Furthermore, firms led by female CEOs face heightened skepticism for both consistent and shifting strategies, reflecting gender biases in market evaluations. Using a dataset of Chinese publicly listed firms, our empirical findings support these hypotheses. This study contributes to the literature by emphasizing the critical role of consistency in CES practices for favorable market outcomes and revealing how gendered perceptions influence the evaluation of corporate environmental practices.

**Keywords** Corporate environmental strategy · Emphasis differentiation · Scope conformity · Market responses · Gendered leadership

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Published online: 07 April 2025

Springer

## Introduction

Corporate environmental strategy (CES) has emerged as a critical dimension of corporate strategy, driven by increasing stakeholder concerns about sustainability and environmental impact (Bansal & Roth, 2000; Delmas & Toffel, 2008). Firms are under growing pressure to integrate environmental considerations into their strategic decision-making in order to enhance both legitimacy and competitive advantage. For example, effective CES initiatives can improve a firm's reputation, attract environmentally conscious investors, and mitigate regulatory risks (Cai et al., 2016; Dangelico, 2015; Jacobs et al., 2010; Xue et al., 2020). These benefits are particularly important in emerging markets such as China, where rapid industrialization has intensified environmental challenges (Aklin & Urpelainen, 2013; Dasgupta et al., 2002). However, CES encompasses diverse issues such as pollution control, carbon reduction, and biodiversity preservation, requiring firms to strategically allocate limited resources. This raises a critical question: how should firms prioritize among diverse environmental initiatives and allocate resources to achieve maximum impact at minimal cost?

To address this challenge, recent studies have highlighted two distinct yet complementary dimensions of corporate strategy: emphasis differentiation and scope conformity. In the context of CES, emphasis differentiation refers to the extent to which a firm's allocation of efforts and resources toward specific environmental initiatives deviates from industry norms, thereby signaling a unique strategic focus (Zhang et al., 2020). This differentiation allows firms to stand out by prioritizing initiatives that align with their strategic goals and stakeholder expectations. Conversely, scope conformity captures the degree to which a firm's environmental activities align with established regulatory guidelines or industry norms, emphasizing the breadth and comprehensiveness of its environmental initiatives. This conformity ensures legitimacy and enhances stakeholder trust by demonstrating adherence to widely accepted standards (Deephouse, 1999; Dong et al., 2021). Although these concepts have been extensively studied in the context of corporate social responsibility (CSR) (e.g., Zhang et al., 2020, 2023a, b), their application to CES remains underexplored. Furthermore, the interaction between these two strategic dimensions—how firms balance differentiation and conformity in their environmental strategies—has received limited attention. This gap may be particularly pronounced when considering how market perceptions of CES are influenced by leadership characteristics, such as CEO gender. To address these gaps, this study investigates how market responses to emphasis differentiation and scope conformity strategies differ based on a firm's prior strategic positioning and CEO gender. Specifically, we examine the following research questions: (1) How does the market respond when firms with high-emphasis-differentiation continue to differentiate or switch to scope conformity, and vice versa for firms with high-scope conformity? (2) Do market responses to these strategies vary depending on whether the firm is led by a male or female CEO?

Specifically, we propose that firms with high-emphasis differentiation that continue to differentiate will elicit positive market responses (Hypothesis 1a), while those that switch to scope conformity will face negative reactions (Hypothesis 1b). Similarly, we hypothesize that high-scope-conformity firms will be rewarded for continued conformity (Hypothesis 2a) but penalized for attempting to differentiate (Hypothesis

2b). This is because investors tend to favor firms that remain consistent with successful prior strategies, while strategic shifts in CES may introduce uncertainty and skepticism about the firm's long-term direction. Moreover, we extend these hypotheses by incorporating a gendered lens, predicting that female-led firms will experience weaker positive responses to CES pattern persistence (Hypothesis 3) and more pronounced negative reactions to CES pattern change (Hypothesis 4). These effects are driven by gender stereotypes, as investors are generally more skeptical of strategic decisions made by female CEOs compared to their male counterparts, regardless of whether these decisions involve maintaining or changing existing strategies.

Our study makes several key contributions to the literature. First, we contribute to the literature on optimal distinctiveness by shifting the focus from static strategy positions to the dynamic implications of strategy direction—whether firms persist in or change between emphasis differentiation and scope conformity. Our study underscores the importance of consistency versus change in these strategic dimensions, offering new insights into how firms balance the trade-offs between distinctiveness and conformity to navigate corporate environmental strategy effectively. Second, we introduce gendered leadership expectations into the conversation on corporate optimal distinctiveness, a dimension that has been largely overlooked in the existing literature. Our study suggests that female CEOs face greater skepticism from investors and the market, regardless of whether they choose to persist in or shift between emphasis differentiation and scope conformity strategies. This finding underscores the pervasive influence of gender stereotypes on market perceptions of strategic decision-making. Finally, we contribute to the corporate environmental strategy literature by integrating emphasis differentiation and scope conformity into a unified framework, highlighting how their persistence or change influences market perceptions. By incorporating CEO gender, we offer a novel perspective on how individual-level factors shape the effectiveness and reception of corporate environmental strategies.

## Theoretical background

In this study, we draw upon two key theoretical frameworks—optimal distinctiveness theory and social role theory—to explore how corporate environmental strategies impact market responses, with a particular focus on the moderating role of CEO gender. By integrating these two theories, we aim to address the complex dynamics between emphasis differentiation and scope conformity in corporate environmental strategies, as well as the gendered expectations placed on corporate leadership.

### Optimal distinctiveness theory

The optimal distinctiveness theory (Deephouse, 1999) posits that firms face a strategic paradox: they must conform to institutional norms to gain legitimacy while simultaneously differentiating themselves to capture attention and resources. This tension arises because conformity builds trust and credibility among stakeholders by adhering to widely accepted norms, whereas differentiation allows firms to stand out by signaling innovation and strategic leadership. Balancing these competing demands is

critical for firms seeking to achieve both legitimacy and competitive advantage (Zhao et al., 2017).

Recent studies, however, suggest that conformity and differentiation are not necessarily mutually exclusive. Instead, firms can pursue both simultaneously through strategies that integrate emphasis differentiation and scope conformity (Zhang et al., 2020). Emphasis differentiation refers to the extent to which a firm's practices deviate from industry norms, enabling it to establish a unique position that appeals to stakeholders. In contrast, scope conformity reflects a firm's alignment with industry standards and regulatory expectations, which enhances legitimacy and stakeholder trust. By strategically combining these two dimensions, firms can achieve a balance that maximizes both distinctiveness and legitimacy, thereby strengthening their competitive advantage (Zhang et al., 2023a, b).

However, the pursuit of these strategies is not without challenges. While prior research highlights the positive effects of both emphasis differentiation and scope conformity on market evaluations (Zhang et al., 2020), firms often encounter trade-offs when attempting to balance these two dimensions. Limited resources constrain a firm's ability to excel in both simultaneously. For example, a firm prioritizing emphasis differentiation may allocate excessive resources to developing unique initiatives or achieving a distinctive market position. This heavy resource commitment can leave the firm unable to fully meet all industry norms or regulatory requirements necessary for scope conformity. As a result, a tension emerges between emphasis differentiation and scope conformity, as the pursuit of one dimension may inherently limit the firm's ability to excel in the other.

This raises a critical yet underexplored question: how should firms balance emphasis differentiation and scope conformity to maximize their returns? Despite the growing recognition of the importance of these strategies, limited research has examined how firms can dynamically manage these trade-offs to achieve optimal outcomes. Our study aims to address this gap.

## Social role theory

Social role theory (Eagly & Karau, 2002) provides a complementary lens to examine how CEO gender influences market reactions to firms' corporate environmental strategies. By explaining how societal expectations about gender roles influence perceptions of individuals in leadership positions, social role theory posits that men and women are ascribed distinct roles based on culturally ingrained stereotypes: men are typically associated with agentic traits such as assertiveness, independence, and decisiveness, while women are linked to communal traits such as nurturing, cooperation, and risk aversion (Eagly & Johannesen-Schmidt, 2001). These stereotypes shape how leaders' actions are interpreted, often leading to biased evaluations of their decisions.

In leadership contexts, these gendered expectations create a double bind for female leaders. Leadership roles inherently require agentic traits, yet societal norms expect women to exhibit communal behaviors, creating a perceived mismatch between their gender role and the demands of leadership (Eagly & Karau, 2002; Heilman, 2001). This mismatch leads to biases in how female CEOs' strategic decisions are evaluated. Specifically, investors may unconsciously attribute female CEOs' decisions—

whether maintaining or changing strategies—to external constraints or competency deficits, rather than deliberate strategic intent (Lee & James, 2007). In contrast, male CEOs benefit from stereotypes that align their actions with perceived leadership traits, such as decisiveness and strategic foresight.

Similarly, previous research on attribution theory also suggests that male CEOs' successes are more likely to be attributed to their internal qualities (e.g., vision or competence), while similar actions by female CEOs are attributed to external factors or luck (Deaux & Emswiller, 1974; Ridgeway, 2001). As a result, investors are generally more skeptical of strategic decisions made by female CEOs compared to their male counterparts, regardless of whether these decisions involve maintaining or changing existing strategies. This skepticism reflects the broader societal tendency to evaluate women in leadership roles more critically, even when their decisions are objectively comparable to those of men.

## Hypotheses

### High-emphasis-differentiation firms' corporate environmental strategies and market responses

Firms adopting high-emphasis-differentiation strategies inherently exhibit a level of distinctiveness that resonates with market analysts and investors. Prior research indicates that as firms increasingly differentiate themselves through corporate social activities, these efforts are generally well-received by the market (Zhang et al., 2020). This positive reception arises from the firm's ability to balance differentiation with familiarity—akin to product design strategies that enhance uniqueness while retaining consumer recognition (Liu et al., 2017). In the context of corporate environmental strategy (CES), firms emphasizing differentiation in their CES can bolster their reputation and market standing, thereby reinforcing their competitive advantage (Wu et al., 2019). For example, BYD Company Limited, a leading Chinese electric vehicle manufacturer, exemplifies differentiation through its commitment to sustainable innovation. BYD has positioned itself as a pioneer in the electric vehicle market by not only manufacturing electric cars but also investing in renewable energy solutions such as solar panels. This strategic differentiation has enabled BYD to appeal to environmentally conscious consumers, enhance its brand value, and strengthen its corporate environmental practices.

However, if a firm with a well-established emphasis differentiation shifts its focus toward greater conformity with popular CES practices, this could tarnish its differentiated image. Market analysts might perceive this move as inconsistent with the firm's prior distinctiveness, casting doubts on its strategic direction (Wu & Ma, 2014). This is especially true for high-visibility firms, where greater public scrutiny increases the risk of negative market reactions (Wang & Qian, 2011). Analysts may impose penalties on firms that deviate from their established differentiation advantage, especially when they perceive a misalignment with the firm's past strategies (Xu et al., 2021; Zuckerman, 1999). Based on this logic, we hypothesize that:

**Hypothesis 1** (a) A high-emphasis-differentiation firm striving to increase its emphasis differentiation will elicit positive market responses, but (b) pursuing CES scope conformity will elicit negative market responses.

### **High-scope-conformity firms' corporate environmental strategies and market responses**

For firms that are already recognized for their high scope conformity, further alignment with stakeholder expectation and industry norms can reinforce their legitimacy and competitive advantage (Suchman, 1995). By conforming to established reporting guidelines, these firms send strong positive signals to market analysts, reinforcing stereotypes of legitimacy (Zhang et al., 2020). As firms become more confident in their CES, they are likely to invest more resources to further strengthen their legitimacy, creating a virtuous cycle of positive assessments (Wu, 2014). This enhanced legitimacy can also lead to economies of scale, further increasing positive market responses (Cronqvist & Yu, 2017). A pertinent example of scope conformity can be observed in China National Petroleum Corporation (CNPC). As one of the largest oil and gas companies in China, CNPC has historically adhered to traditional fossil fuel practices. When faced with increasing pressure to adopt more sustainable practices, CNPC's management was hesitant to deviate from their established operational scope, demonstrating how recognition of a firm's corporate environmental practice can lead to rigidity in adapting to changing environmental standards.

In contrast, when high-scope-conformity firms pursue greater emphasis differentiation, market analysts may become skeptical. Analysts may view a firm's shift from conformity to differentiation as misaligned with their prior strengths, questioning the firm's ability to successfully adopt a differentiation strategy (Durand & Paoletta, 2013). This perceived inconsistency can lead to negative market responses, as analysts suspect hidden motivations behind the firm's sudden shift (Hsu & Hannan, 2005). Furthermore, such shifts in strategy often consume substantial resources, hindering the firm's ability to maintain other revenue-generating opportunities (Durand et al., 2017). Therefore, we suggest that:

**Hypothesis 2** (a) A high-scope-conformity firm pursuing CES scope conformity will elicit positive market responses, but (b) striving to increase emphasis differentiation will elicit negative market responses.

### **Role of CEO gender in influencing market responses to firms' corporate environmental strategies**

Market analysts perceive strategic persistence (e.g., maintaining emphasis differentiation or scope conformity) through a gendered lens rooted in social role theory. When male CEOs sustain a strategic direction, it is interpreted as deliberate consistency reflecting leadership decisiveness—a trait aligned with masculine agentic stereotypes. In contrast, female CEOs face a paradoxical expectation: while they are

socially penalized for deviating from communal norms (e.g., collaborative adaptation), their adherence to existing strategies is attributed to competency deficits rather than strategic intent. Specifically, stakeholders unconsciously associate prolonged strategic persistence by women with an inability to innovate or respond dynamically, as these behaviors conflict with stereotypical “flexibility” expected of female leaders (Eagly & Karau, 2002; Ridgeway, 2001).

This bias stems from two reinforcing mechanisms. First, the fundamental attribution error in gender-role cognition: male CEOs’ strategic persistence is credited to internal traits (e.g., visionary resolve), whereas female CEOs’ identical behavior is ascribed to external constraints (e.g., lack of alternatives due to limited influence) (Lee & James, 2007). Second, strategic persistence amplifies competency-role mismatch: when female leaders maintain agentic strategies like emphasis differentiation, it violates the communal role prescribed by social norms, triggering doubts about their capacity to authentically “own” such strategies (Elsbach & Kramer, 2003). Consequently, even objectively effective strategic persistence by female CEOs receives diminished market rewards compared to male counterparts. Hence, we hypothesize:

**Hypothesis 3** Compared with male-CEO-led firms, the positive effects of emphasis differentiation (Hypothesis 1a) and scope conformity (Hypothesis 2a) will be weaker for female-CEO-led firms.

Similarly, the gender stereotypes persist when firms led by female CEOs shift between distinct strategic approaches, such as moving from a history of high emphasis differentiation to scope conformity or from high scope conformity to increased emphasis differentiation. While such strategic shifts reflect deliberate adjustments to market conditions, analysts interpret these actions differently based on the gender of the CEO. For male CEOs, such transitions are often framed as evidence of “dynamic balance”—their ability to flexibly adapt to changing circumstances. In contrast, identical shifts under female CEOs are frequently attributed to leadership deficiencies, such as indecisiveness or a lack of strategic vision. This disparity stems from the “double bind” faced by female leaders: they are expected to demonstrate boldness comparable to male peers but are simultaneously penalized for deviating from stereotypical “relational-oriented” gender roles (Eagly & Karau, 2002; Ridgeway, 2001). As a result, female CEOs are more likely to be perceived as lacking clarity or direction when they make strategic adjustments.

The resource allocation debate further exacerbates these biases. For example, when firms with a history of scope conformity under female CEOs invest resources to pursue greater emphasis differentiation, these actions are disproportionately interpreted as “reckless risk-taking” rather than rational strategic choices. This stems from the stereotype that female leaders are inherently more risk-averse (Faccio et al., 2016). Conversely, when firms with a history of emphasis differentiation shift toward scope conformity under female CEOs, the market often views this as a retreat or “capability-strategy mismatch,” rather than a deliberate recalibration. In both cases, male CEOs who make similar shifts are more likely to be praised for their strategic foresight or boldness, whereas female CEOs undertaking such shifts are more likely

to face negative feedback, including skepticism from market analysts. In summary, we hypothesize:

**Hypothesis 4** Compared with male-CEO-led firms, the negative effects of scope conformity (Hypothesis 1b) and emphasis differentiation (Hypothesis 2b) will be more salient for female-CEO-led firms.

## Data and methods

### Sample

We drew data on our sample of Chinese firms from multiple sources. First, we obtained the information on firm-level financial characteristics and corporate governance from the China Security Market and Accounting Research (CSMAR) database. Second, we extracted firm-level and regional-level pollution data from the Institute of Public & Environmental Affairs (IPE). Third, we obtained the data on regional economic development and marketization from China Statistics Yearbook (CSY) and the National Economic Research Institute (NERI), respectively. Finally, we gathered information on the environmental practices of the firm from the CSMAR database and manually cross-checked the data with the firm's CSR report to ensure its accuracy and completeness. We limited our analysis to Chinese publicly listed firms due to their obligation to annually report their environmental strategies and financial performance; this enabled us to systematically track their historical environmental behaviors. To select firms which are appropriate for our sample, we employed three criteria. First, we excluded firms identified with the "ST" (i.e., special treatment) and "\*ST" labels from our sample because this indicated that they were facing delisting or even bankruptcy. Second, we excluded any firms with missing data from our sample. Moreover, we chose year 2008–2014 as our sample period because limited information on CES extracted from CSR reports was available both before 2008—the year when Chinese firms had been first required to issue them—and after 2014, which was the last year covered by CSMAR. In addition, the selection of this time period was also consistent with other studies undertaken in the context of Chinese firms' environmental strategies (e.g., Xiang et al., 2020). For example, in 2008, the Chinese government had enacted the Green Securities Policy, aimed at encouraging and improving the sustainability practices of publicly listed Chinese firms. One of the key outcomes of this policy was to force 16 highly polluting industries to disclose their environmental performance (Wang & Bernell, 2013). Our final sample consisted of 671 companies, providing 2,994 firm-year observations over our sample seven-year period. Appendix 1 reports the sample distribution across industries.

### Dependent variables

**Earnings forecast** We followed prior studies (e.g., Gentry & Shen, 2013; Washburn & Bromiley, 2014) and used earnings forecast to capture the extent to which the market had responded to our sample firms' CES. Prior studies (e.g., Liu et al., 2021;

Zhang & Gimeno, 2010) have suggested that, when firms engage in promising activities which might be appreciated by investors (i.e., trigger a positive market response), they are more likely to exhibit better performance. Hence, higher earnings forecasts will be given by financial analysts. Conversely, when firms invest in poor projects which might be disfavored by investors (i.e., elicit a negative market response), they will receive more criticism from the public, which will be more pessimistic about such firms' future performance, thus lower earnings forecasts will be provided by financial analysts. In summary, the earnings forecast reflects investors' expectation of a firm's future performance: a greater level of earnings forecast results in firms receiving more positive responses from the market, and vice versa. Specifically, we measured earnings forecast as the average value of all analysts' earnings forecasts for each sample firm (i.e., market consensus forecast), and the data on analyst forecast was extracted from the CSMAR database.

### Independent variables

Following prior research (Zhang et al., 2020), we obtained information on CES practices from the CSMAR database, which records CSR activities reported by listed companies and categorizes them. However, the CSMAR database, while comprehensive, may contain errors or omissions in its records of CSR activities, potentially leading to biases in the data. To address this issue, we manually collected the firms' CSR reports and cross-checked them with the CSMAR data to ensure accuracy and completeness. In line with well-known CSR rating systems (e.g., Hexun, RKS, MSCI), we categorized corporate environmental activities into five fields: pollution control, resource consumption, biodiversity, green finance, and green volunteer practices. In detail, the pollution control field involves activities and practices aimed at reducing or eliminating the release of pollutants into the environment. It includes measures such as waste management, emission reductions, and the use of cleaner production technologies to minimize environmental contamination. The resource consumption field focuses on the efficient and sustainable use of natural resources. It includes practices that aim to reduce the consumption of water, energy, and raw materials, as well as initiatives to promote recycling and the use of renewable resources. The biodiversity field encompasses activities that protect and enhance the variety of life in a particular habitat or ecosystem. It includes conservation efforts, habitat restoration, and initiatives to protect endangered species and maintain ecological balance. The green finance field involves financial activities that support environmental sustainability. It includes investments in environmentally friendly projects, the issuance of green bonds, and the integration of environmental criteria into financial decision-making processes to promote sustainable development. And the green volunteer practices field includes volunteer activities and community engagement efforts aimed at promoting environmental awareness and sustainability. It involves organizing and participating in events such as tree planting, clean-up drives, and educational campaigns to encourage environmentally responsible behavior. For instance, one of the leading companies in the real estate industry, Vanke (stock code: 000002), conducted activities to reduce carbon emissions in 2014, which were classified as pollution control.

Consistent with prior studies (Zhang et al., 2020, 2023a, b), we then constructed measures for two distinct dimensions of CES (i.e., emphasis differentiation and scope conformity) based on the firm-level CES practice data. First, based on the aforementioned classification of CES, we tabulated the number of activities reported by each firm in each CES field annually. For example, if Company A reported a total of 15 CES practices in 2010, comprising 3 in pollution control, 3 in resource consumption, 3 in biodiversity, 0 in green finance, and 6 in green volunteer practices, the number of CES practices for the company in each of the 5 CES fields for 2010 would be 3, 3, 3, 0, and 6, respectively. It is important to note that the *number of CES practices* here refers to the quantity of activities reported by the firm related to each CES field, rather than the frequency of mentions of each CES field. Even if a firm repeatedly mentions a specific CES activity in its CSR report, it is only counted once in our data. In addition, we also constructed a series of dummy variables to reflect whether a company has activities in a specific CES field: if the number of CES practices for a company in a particular CES field is greater than 0, *existence of CES practice* for that CES field is assigned a value of 1; otherwise, it is assigned a value of 0. For example, in the previous example, Company A's existence of CES practice in each of the 5 CES fields for 2010 would be 1, 1, 1, 0, and 1, respectively. In summary, the number of CES practices reflects the intensity of a firm's activities in each CES field, while the existence of CES practice reflects whether the firm is involved in a particular CES field.

Second, considering that different CES fields have varying degrees of importance for firms, we utilized the concept network method to calculate the weight of each CES field (Kennedy & Fiss, 2013). By constructing a network encompassing the five CES fields, the concept network method can determine how different CES fields co-occur and the strength of connections among them, ultimately yielding the eigenvector centrality value for each CES field. We used the eigenvector centrality value as the weight for each CES field to measure its significance, where a higher value indicates greater importance of the CES field.

Third, we calculated the values of CES *scope conformity* and *emphasis differentiation*. Specifically, the value of *scope conformity* is equal to the sum of the product of *existence of CES practice* for each CES field and the weight calculated based on the concept network method. And the value of *emphasis differentiation* is equal to the sum of the product of the difference between the firm's number of CES practices and the industry average number of CES practices for each CES field and the weight calculated based on the concept network method. Suppose the weight for each CES field is 0.1, 0.2, 0.2, 0.4, and 0.1, respectively, the value of CES *scope conformity* for Company A in 2010 is  $0.1*1+0.2*1+0.2*1+0.4*0+0.1*1=0.6$ . Furthermore, assuming the industry average number of CES practices for each CES field in Company A's industry in 2010 is 2, 2, 3, 1, and 1, the value of CES *emphasis differentiation* for Company A in 2010 is  $0.1*(3-2)+0.2*(3-2)+0.2*(3-3)+0.4*(1-0)+0.1*(6-1)=1.2$ .

Moreover, given that we aim to investigate the market response to the (un)change of firm's environmental strategies, we further constructed two dummy variables (i.e., *prior high emphasis differentiation (ED) strategy*, *prior high scope conformity (SC) strategy*) to capture the firm's prior environmental strategy. Specifically, we identified high-emphasis differentiation firms and high-scope-conformity based on firms'

CES in the previous year. *Prior emphasis differentiation strategy* will be given 1 if a firm's emphasis differentiation level in the previous year (i.e., year t-1) is higher than the median level, and zero otherwise. Similarly, *prior scope differentiation strategy* will be given 1 if a firm's scope conformity level in the previous year is higher than the median level, and zero otherwise.

### Moderator

**Female CEO** Consistent with previous studies (e.g., Chen et al., 2016; Knippen et al., 2019), we measured *female CEO* as a dummy variable. Specifically, CEO gender will be given 1 if the CEO is female, and zero if the CEO is male.

### Control variables

To factor in any alternative explanations, we included a battery of control variables in our analysis. First, we constructed a series of variables related to firm-level fundamental characteristics, including *firm size*, *financial leverage*, *ROA*, *firm age*, and *firm visibility*. *Firm size* was measured as the logarithm of the number of employees (e.g., Agarwal, 1979). We did so because larger firms, while having more resources to pursue pro-environmental behaviors, are also more visible and therefore more likely to be targeted by stakeholders (Chiu & Sharfman, 2011). *Financial leverage*, which was measured as the ratio of total liabilities divided by total assets, was included because corporate debt level may influence its profitability and subsequent financial performance (Mandelker & Rhee, 1984). *ROA* was measured as the ratio of return divided by total assets, which captures the extent to which the firm profits directly influence analysts' expectation (Gentry & Shen, 2013). *Firm age* was measured as the years that elapsed since each firm's incorporation. This was done because older operations tend to have older equipment, which affects any decisions pertaining to corporate environmentalism (Darnall et al., 2010). And *firm visibility*, which could affect analyst attentions to the focal firm, was operated as a firm's advertising intensity, that is, the ratio of selling and administrative expenses to total sales revenues (Wang & Qian, 2011).

Second, we also included several controls related to corporate governance, which are expected to influence a firm's future value. As ownership structure is a key determinant of corporate governance quality and vital to firm success (La Porta et al., 1999), we controlled for three different types of ownership: *state ownership*, *foreign ownership*, and *institutional ownership*. Specifically, *state ownership* was measured as the ratio of the number of state-owned shares to the total ones, *foreign ownership* was measured as the ratio of the number of foreign-owned shares to the total ones, and *institutional ownership* was measured as the ratio of the number of institutional-investor-owned shares to the total ones. We then controlled for *analyst coverage*, that is, the number of financial analysts who follow the firm. A firm with a greater number of analyst coverage is found to have better corporate governance and is therefore expected to have higher performance in the future (Kim et al., 2019). In addition, given the critical role of independent directors in disciplining firms' behaviors

(Fahlenbrach et al., 2017), we also included *board independence* which was calculated as the proportion of independent directors on the board.

Third, we further controlled for each firm's environmental-related characteristics. Specifically, we controlled for environmental violation events (*EVEs*) to proxy the relative environmental performance of each sample firm. Following prior studies of 'poor' environmental performance in various institutional contexts (e.g., Clarkson et al., 2008; Dasgupta et al., 2006; Kassinis & Vafeas, 2009; Xu et al., 2012), we operationalized each firm's *EVEs* as the difference between their numerosity and the industry average. We extracted the data on firm-level *EVEs* from the database provided by the Institute of Public & Environmental Affairs (IPE)—a non-profit environmental research organization registered and based in Beijing, China, that collects, collates, and analyzes government and corporate environmental information. The organization monitors pollution behavior and violations in real-time based on the relevant legislation and CSR requirements, and updates this information in its "Corporate Environmental Manifest" database—a comprehensive collection of environmental quality, emissions, and pollution source supervision records that are based not only on voluntary disclosure but also on the publicly available information (e.g., fines) released by local governments, environmental supervision departments, court cases, etc.

Moreover, we also controlled for several CEO attributes due to the critical influence of CEO on firm decision making (Hambrick, 2007). We first included *CEO age*, which is measured as the number of years since the CEO was born (Yim, 2013). We then controlled for *CEO power* due to the significant impact of CEO power on firm financial performance (Daily & Johnson, 1997). Following prior studies (Briscoe et al., 2014; Zhang et al., 2020) we constructed *CEO power* as a composite index consisting of three items: (1) CEO duality (coded as 1 if the CEO was also serving as the chair of the board of directors and as 0 otherwise), (2) CEO founder (coded as 1 if the CEO was a founder of the firm and as 0 otherwise), and (3) equity share held by the CEO (as a percentage).

Finally, we further included several regional-level variables which may influence the market valuation of a firm. First, we controlled for *regional economic development* by capturing the per capita GDP. Second, we controlled for *regional pollution*, which is measured as the  $SO_2$  emissions in the province where the firm is located. Third, we controlled for the level of *government intervention* using the Marketization Process Index developed by the National Economic Research Institute (NERI), which reflects the relative distance of the marketization process of each province, autonomous district, and municipality and compares them to assess the level of marketization. See Appendix 2 for descriptions of key variables.

## Econometric model

Given that our data set consisted of firm-year observations, we deployed an econometric model suitable for panel data analyses. This model was specified as:  $Y_{i,t} = \alpha + \beta_1 X_{i,t-1} + \gamma' C_{i,t-1} + \Lambda + \epsilon_{i,t}$ , where  $Y_{i,t}$  was the dependent variable,  $X_{i,t-1}$  was the independent variable,  $C_{i,t-1}$  represented all relevant control variables,  $\Lambda$  represented the firm and year fixed effects,  $\alpha$  was the intercept term,

and  $\epsilon_{i,t}$  was the residual term. To examine our hypotheses, we employed a two-way fixed-effect model. We did so for two reasons. First, both firm-specific characteristics and yearly factors influence market responses. Different firms are likely to face various levels of earnings pressure in the same year, and a firm is likely to face various levels of earnings pressure in different years due to external environmental conditions (e.g., financial crises). A two-way fixed-effect model can effectively alleviate any endogeneity issue caused by any omitted variables related to the above reasons. This econometric method controls for any unobserved firm and time heterogeneity (Chi, 2005). Moreover, compared with a random-effect model, which estimates the coefficients by assuming the absence of any omitted variable, a fixed-effect one produces results without the above stringent assumption (Wooldridge, 2013). In brief, we employed a fixed-effect model in the analyses to address any potential issues related to the omitted variable. And all independent variables were lagged by one year to address any possible concerns about reverse causality.

## Results

Table 1 reports the summary statistics and correlation matrix of the main variables used in the analyses. The statistics indicate multicollinearity to be unlikely to be a problem in our models. All pair-wise correlations were found to fall within the acceptable ranges. We also calculated the variance inflation factor (VIF) for each model. The maximum VIF value was found to be 1.83, the minimum VIF value to be 1.01, and the mean VIF value to be 1.25, further suggesting the absence of multicollinearity in our models.

Table 2 reports the testing results for our baseline hypotheses. Model 1 reports the results with only the control variables. Model 2 reports the joint effect of prior high ED strategy and emphasis differentiation on earnings forecast, indicating market response to firms' sticking to CES emphasis differentiation strategy. Model 3 reports the joint effect of prior high ED strategy and scope conformity on earnings forecast, indicating market response to firms' switch from CES emphasis differentiation strategy to CES scope conformity strategy. Model 4 reports the joint effect of prior high SC strategy and scope conformity on earnings forecast, indicating market response to firms' sticking to CES scope conformity strategy. Model 5 reports the joint effect of prior high SC strategy and emphasis differentiation on earnings forecast, indicating market response to firms' switch from CES scope conformity strategy to CES emphasis differentiation strategy. We used Model 2, 3, 4, and 5 to interpret Hypothesis 1a, 1b, 2a, and 2b, respectively.

Hypothesis 1a posited that, for a high-emphasis-differentiation firm in an emerging market, sticking to a CES differentiation strategy would positively affect subsequent market response (i.e., have a positive effect on earnings forecast). As shown in Table 2, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation* is significant and positive (i.e.,  $\beta = 0.005$ ,  $p = .060$  in Model 2), suggesting that firms' increase in CES emphasis differentiation will lead to increased earnings forecast for firms with prior high emphasis differentiation strategy. We also plotted the above relationship in Fig. 1, in which the solid line represents firms with prior low emphasis differentiation

**Table 1** Summary statistics and correlation matrix

Variables	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Earnings forecast	0.856	0.644	1.000														
(2) Emphasis differentiation (ED)	0.168	19.55	-0.004	1.000													
(3) Scope comforty (SC)	0.705	0.394	0.123	0.086	1.000												
(4) Prior high ED strategy	0.442	0.497	0.017	0.266	0.252	1.000											
(5) Prior high SC strategy	0.517	0.500	0.096	0.070	0.603	0.176	1.000										
(6) Female CEO	0.042	0.201	0.010	-0.003	0.018	0.016	0.004	1.000									
(7) Firm size	2.862	0.984	0.167	0.092	0.153	0.075	0.064	-0.065	1.000								
(8) Financial leverage	0.509	0.211	-0.045	0.027	-0.010	-0.022	-0.091	-0.020	0.349	1.000							
(9) ROA	0.059	0.061	0.405	-0.013	0.066	0.023	0.087	0.045	-0.100	-0.496	1.000						
(10) Firm age	4.508	3.512	0.024	0.033	-0.014	0.010	-0.007	-0.003	0.041	0.032	-0.032	1.000					
(11) Firm visibility	0.052	0.238	0.035	0.001	0.043	0.022	-0.002	0.038	-0.102	0.088	-0.012	1.000					
(12) State ownership	0.119	0.206	-0.075	0.002	-0.172	0.004	-0.072	-0.064	0.099	0.055	-0.019	-0.010	-0.065	1.000			
(13) Foreign ownership	0.009	0.055	0.005	0.017	-0.005	0.055	0.003	0.009	0.013	-0.017	0.036	-0.038	-0.003	-0.002	1.000		
(14) Institutional ownership	0.589	0.217	0.067	0.050	0.052	0.061	-0.014	-0.047	0.388	0.229	0.072	0.003	-0.052	0.334	0.107	1.000	
(15) Analyst coverage	15.73	12.46	0.394	0.022	0.127	0.056	0.067	0.028	0.374	0.112	0.286	-0.012	0.004	0.006	0.020	0.300	1.000
(16) Board independence	0.373	0.067	-0.006	0.024	0.030	0.020	-0.030	-0.025	0.037	0.001	0.024	-0.008	0.032	-0.009	-0.001	0.016	0.036
(17) EVES	0.070	3.818	-0.014	0.020	0.021	0.027	-0.001	-0.017	0.116	0.071	-0.024	-0.019	-0.005	-0.003	-0.014	0.085	0.048
(18) CEO age	48.41	6.265	0.019	-0.002	0.084	0.031	0.013	-0.034	0.159	0.097	-0.065	0.021	-0.035	0.006	-0.027	0.145	0.071
(19) CEO power	0.084	0.198	0.076	-0.027	-0.018	0.009	0.051	-0.047	-0.191	-0.246	0.118	-0.041	0.038	-0.155	0.020	-0.317	-0.036

**Table 1** (continued)

(20) Regional economic development	3.245	1.370	0.030	0.007	0.136	0.014	0.008	0.005	-0.025	-0.030	-0.013	-0.034	0.029	-0.103	0.035	-0.052	0.005
(21) Regional pollution	176.8	1.240	-0.013	-0.013	-0.040	0.004	-0.034	-0.017	0.000	0.023	-0.019	0.046	-0.010	0.026	-0.015	-0.013	-0.027
(22) Government Intervention	5.321	1.828	-0.039	0.016	-0.111	0.026	-0.005	0.001	-0.047	0.012	-0.014	0.019	-0.016	0.035	0.007	0.013	-0.008
Variables	(16)	(17)	(18)	(19)	(20)	(21)	(22)										
(16) Board independence	1.000																
(17) EVEs	-0.022	1.000															
(18) CEO age	0.029	0.051	1.000														
(19) CEO power	0.048	-0.025	0.070	1.000													
(20) Regional economic development	0.060	-0.014	0.060	0.088	1.000												
(21) Regional pollution	0.023	-0.035	-0.033	-0.030	-0.092	1.000											
(22) Government Intervention	-0.038	-0.009	-0.016	0.017	0.063	0.016	1.000										

N=2,994 observations

strategy, and the dashed line represents firms with prior high emphasis differentiation strategy. As shown in Fig. 1, the slope of the dashed line is steeper than the slope of the solid line, indicating a more positive relationship between CES emphasis differentiation and earnings forecasts for firms with prior high emphasis differentiation strategy. The plot and the results thus provide support for Hypothesis 1a.

Hypothesis 1b posited that, for a high-emphasis-differentiation firm in an emerging market, pursuing a strategy of CES conformity would negatively affect subsequent market response (i.e., have a negative effect on earnings forecast). As shown in Table 2, the coefficient of *prior high ED strategy*  $\times$  *scope conformity* is significant and negative (i.e.,  $\beta = -0.086$ ,  $p = .002$  in Model 3), suggesting that firms' increase in CES scope conformity will lead to decreased earnings forecast for firms with prior high emphasis differentiation strategy. We also plotted the above relationship in Fig. 2, in which the solid line represents firms with prior low emphasis differentiation strategy, and the dashed line represents firms with prior high emphasis differentiation strategy. As shown in Fig. 2, the slope of the solid line is positive while the slope of the dashed line is negative, indicating a more negative relationship between CES scope conformity and earnings forecasts for firms with prior high emphasis differentiation strategy. The plot and the results thus support Hypothesis 1b.

Hypothesis 2a posited that, for a high-scope-conformity firm in an emerging market, pursuing a strategy of CES scope conformity would positively affect subsequent market response (i.e., have a positive effect on earnings forecast). As shown in Table 2, the coefficient of *prior high SC strategy*  $\times$  *scope conformity* is significant and positive (i.e.,  $\beta = 0.171$ ,  $p = .000$  in Model 4), suggesting that firms' increase in CES scope conformity will lead to increased earnings forecast for firms with prior high scope conformity strategy. We also plotted the above relationship in Fig. 3, in which the solid line represents firms with prior low scope conformity strategy, and the dashed line represents firms with prior high scope conformity strategy. As shown in Fig. 3, the slope of the dashed line is steeper than the slope of the solid line, indicating a more positive relationship between CES scope conformity and earnings forecasts for firms with prior high scope conformity strategy. The plot and the results support the assertion made in Hypothesis 2a.

Hypothesis 2b posited that, for a high-scope-conformity firm in an emerging market, pursuing a strategy of CES emphasis differentiation would negatively affect subsequent market response (i.e., have a negative effect on earnings forecast). As shown in Table 2, the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation* is significant and negative (i.e.,  $\beta = -0.016$ ,  $p = .000$  in Model 5), suggesting that firms' increase in CES emphasis differentiation will lead to decreased earnings forecast for firms with prior high scope conformity strategy. We also plotted the above relationship in Fig. 4, in which the solid line represents firms with prior low scope conformity strategy, and the dashed line represents firms with prior high scope conformity strategy. As shown in Fig. 4, the slope of the solid line is positive while the slope of the dashed line is negative, indicating a more negative relationship between CES emphasis differentiation and earnings forecasts for firms with prior high scope conformity strategy. The plot and the results thus support Hypothesis 2b.

Table 3 presents the moderating effects of female CEO. Hypothesis 3 posits that the positive effect of emphasis differentiation under the high-emphasis-differentiation

**Table 2** Main results

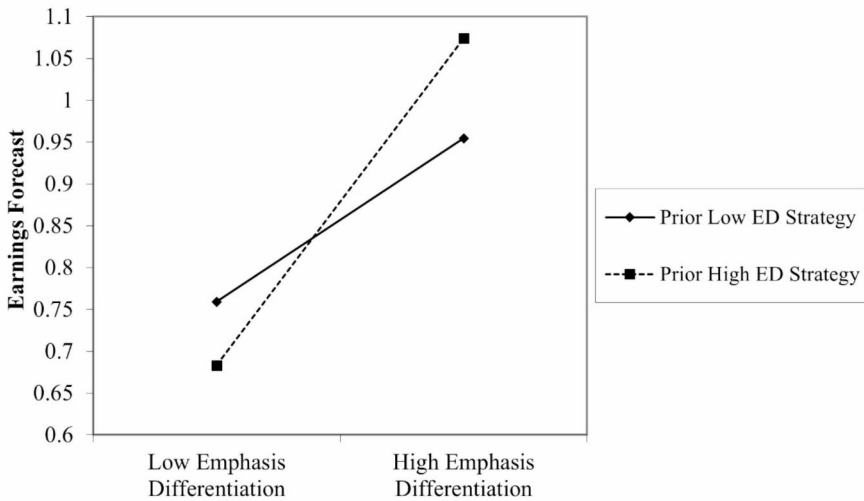
	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.021 (0.018)	0.017 (0.036)		
Prior high SC strategy				0.165 (0.165)	0.010 (0.018)
Emphasis differentiation		0.005* (0.003)			0.001 (0.001)
Scope conformity			0.026 (0.032)	0.040 (0.034)	
Prior high ED strategy × Emphasis differentiation (H1a)		0.005* (0.003)			
Prior high ED strategy × Scope conformity (H1b)			-0.086*** (0.028)		
Prior high SC strategy × Scope conformity (H2a)				0.171*** (0.032)	
Prior high SC strategy × Emphasis differentiation (H2b)					-0.016*** (0.004)
Firm size	0.090*** (0.032)	0.090*** (0.032)	0.090*** (0.032)	0.091*** (0.032)	0.090*** (0.032)
Financial leverage	-0.251* (0.152)	-0.257* (0.152)	-0.249* (0.151)	-0.247 (0.152)	-0.251 (0.152)
ROA	1.669*** (0.293)	1.660*** (0.293)	1.663*** (0.294)	1.660*** (0.292)	1.670*** (0.293)
Firm age	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Firm visibility	0.028 (0.020)	0.027 (0.020)	0.028 (0.020)	0.027 (0.020)	0.028 (0.020)
State ownership	0.039 (0.056)	0.041 (0.055)	0.041 (0.056)	0.040 (0.055)	0.039 (0.056)
Foreign ownership	-0.145 (0.275)	-0.144 (0.276)	-0.156 (0.275)	-0.138 (0.272)	-0.138 (0.275)
Institutional ownership	-0.168 (0.143)	-0.172 (0.142)	-0.173 (0.143)	-0.172 (0.143)	-0.163 (0.143)
Analyst coverage	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
Board independence	0.203 (0.138)	0.209 (0.138)	0.206 (0.138)	0.198 (0.138)	0.203 (0.138)
EVEs	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
CEO age	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
CEO power	0.044 (0.109)	0.040 (0.110)	0.046 (0.109)	0.044 (0.110)	0.041 (0.110)
Regional economic development	0.006	0.006	0.006	0.006	0.006

**Table 2** (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Regional pollution	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Government intervention	0.002	0.002	0.002	0.002	0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Constant	0.413**	0.415**	0.410**	0.414**	0.413**
	(0.181)	(0.182)	(0.183)	(0.182)	(0.181)
Observations	2,994	2,994	2,994	2,994	2,994
R-squared	0.132	0.134	0.132	0.133	0.133

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses

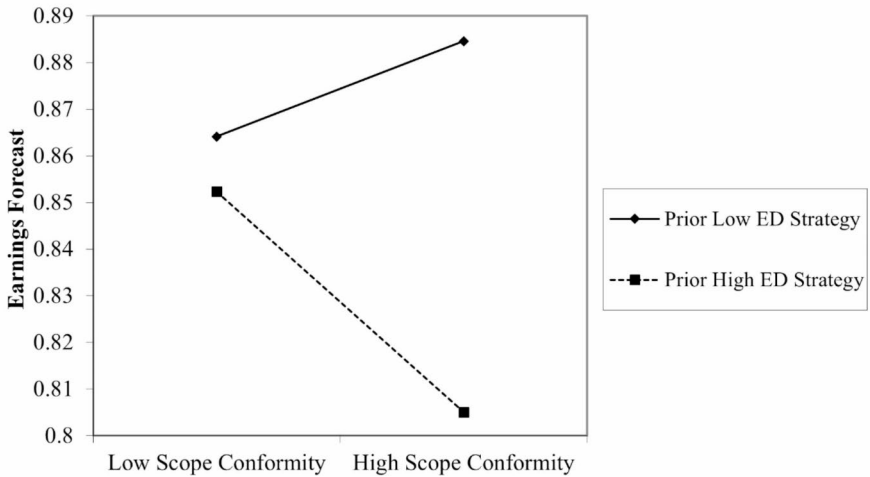
\*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$



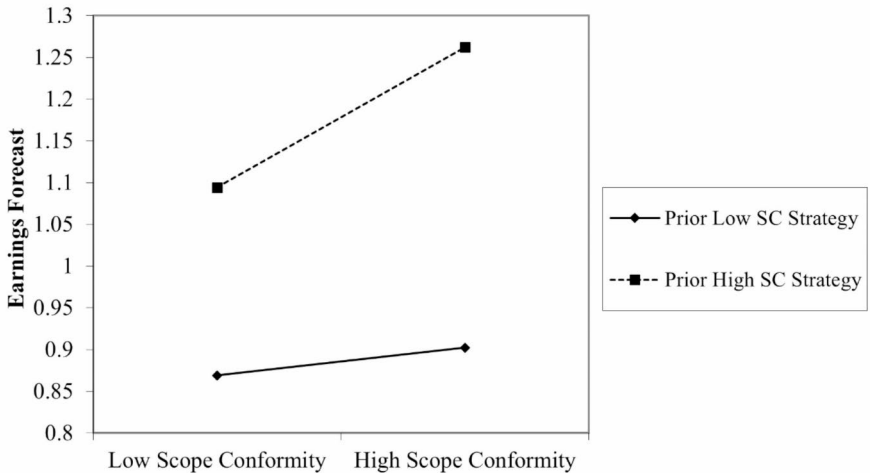
**Fig. 1** Joint effect of prior high emphasis differentiation strategy and emphasis differentiation on earnings forecast

situation (or the positive effect of scope conformity under the high-scope-conformity situation) will be weaker for female-CEO-led firms. As shown in Table 3, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* is significant and negative (i.e.,  $\beta = -0.002$ ,  $p = .000$  in Model 2) and the coefficient of *prior high SC strategy*  $\times$  *scope conformity*  $\times$  *female CEO* is also significant and negative (i.e.,  $\beta = -0.012$ ,  $p = .002$  in Model 4), suggesting that female CEO will attenuate the positive impact of strategy persistence. Hence, Hypothesis 3 is supported.

Hypothesis 4 posits that the negative effect of scope conformity under the high-emphasis-differentiation situation (or the negative effect of emphasis differentiation under the high-scope-conformity situation) will be stronger for female-CEO-led firms. As shown in Table 3, the coefficient of *prior high ED strategy*  $\times$  *scope con-*

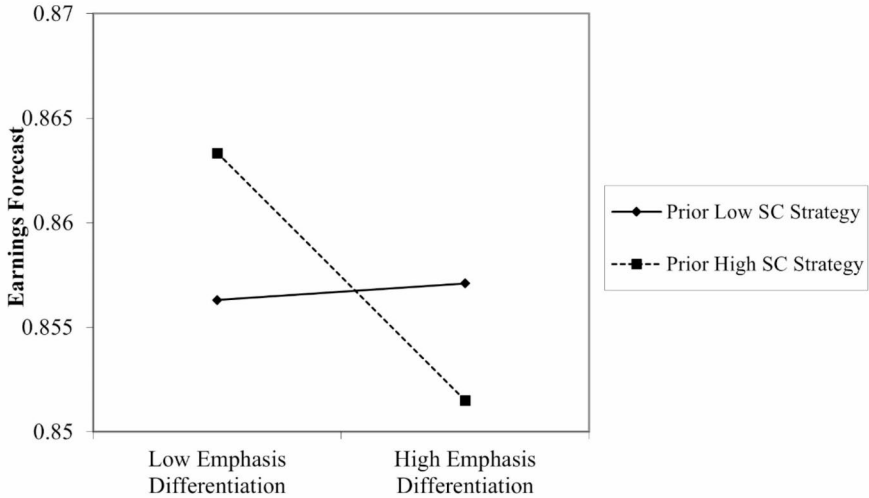


**Fig. 2** Joint effect of prior high emphasis differentiation strategy and scope conformity on earnings forecast



**Fig. 3** Joint effect of prior high scope conformity strategy and scope conformity on earnings forecast

*formity* × *female CEO* is significant and negative (i.e.,  $\beta = -0.060, p = .077$  in Model 3) and the coefficient of *prior high SC strategy* × *emphasis differentiation* × *female CEO* is also significant and negative (i.e.,  $\beta = -0.009, p = .001$  in Model 5), suggesting that female CEO will accentuate the negative influence of strategy transformation. Hence, Hypothesis 4 is also supported.



**Fig. 4** Joint effect of prior high scope conformity strategy and emphasis differentiation on earnings forecast

## Robustness analyses

We performed several robustness tests to further validate the robustness of our main results. First, this study so far relies on the analyst forecast to identify the market response. To further assess the robustness of our results, we examined other measures of market response in this part. Accordingly, we replaced our original measures with two alternative proxies for the market response: analyst recommendation and Tobin's Q. Prior studies suggest that analyst recommendation reflects the extent to which analyst is optimistic (or pessimistic) about the focal firm's future performance (Zhang et al., 2020). And Tobin's Q measures a firm's market value, reflecting how stock investors react to firm decisions in a direct way. Therefore, these two measures are appropriate alternatives for market response. In detail, *analyst recommendation* was calculated as the mean investment recommendation provided by all financial analysts for the focal firm, and Tobin's Q was measured as the ratio of the sum of the market value of equity and book value of debt divided by the book value of total assets. We then reran all analyses in Table 3 and reported the results using *analyst recommendation* and *Tobin's Q* in Tables 4 and 5, respectively. Because the results for the baseline hypotheses in Table 3 are highly consistent with those in Table 2, we will use the regression models in Table 3 to further validate our four hypotheses in the robustness analyses section.

As shown in Table 4, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation* in Model 2 was found to be significantly positive (i.e.,  $\beta=0.061$ ,  $p=.091$ ), in line with Hypothesis 1a. The coefficient of *prior high ED strategy*  $\times$  *scope conformity* in Model 3 was found to be significantly negative (i.e.,  $\beta=-0.130$ ,  $p=.000$ ), in line with Hypothesis 1b. Moreover, the coefficient of *prior high SC strategy*  $\times$  *scope conformity* in Model 4 was found to be significantly positive (i.e.,  $\beta=0.118$ ,

**Table 3** Moderating effects of female CEO

	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.018 (0.018)	0.012 (0.036)		
Prior high SC strategy				0.126 (0.169)	0.013 (0.019)
Emphasis differentiation		0.005* (0.003)			0.001 (0.001)
Scope conformity			0.020 (0.034)	0.036 (0.035)	
Prior high ED strategy × Emphasis differentiation		0.005* (0.004)			
Prior high ED strategy × Scope conformity			-0.077*** (0.029)		
Prior high SC strategy × Scope conformity				0.145*** (0.037)	
Prior high SC strategy × Emphasis differentiation					-0.016*** (0.004)
Female CEO		-0.213* (0.111)	-0.253** (0.124)	-0.201** (0.092)	-0.132* (0.068)
Prior high ED strategy × Female CEO		0.103 (0.095)	0.111 (0.141)		
Prior high SC strategy × Female CEO				-1.120 (0.739)	0.045 (0.065)
Emphasis differentiation × Female CEO		-0.005 (0.007)			0.004 (0.005)
Scope conformity × Female CEO			0.160 (0.109)	0.136 (0.105)	
Prior high ED strategy × Emphasis differentiation × Female CEO (H3)		-0.002*** (0.000)			
Prior high ED strategy × Scope conformity × Female CEO (H4)			-0.060* (0.034)		
Prior high SC strategy × Scope conformity × Female CEO (H3)				-0.012*** (0.004)	
Prior high SC strategy × Emphasis differentiation × Female CEO (H4)					-0.009*** (0.003)
Firm size	0.090*** (0.032)	0.088*** (0.031)	0.088*** (0.031)	0.091*** (0.032)	0.090*** (0.032)
Financial leverage	-0.251* (0.152)	-0.262* (0.152)	-0.254* (0.152)	-0.255* (0.152)	-0.258* (0.153)

**Table 3** (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
ROA	1.669*** (0.293)	1.648*** (0.294)	1.653*** (0.294)	1.643*** (0.292)	1.647*** (0.294)
Firm age	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Firm visibility	0.028 (0.020)	0.023 (0.021)	0.025 (0.021)	0.023 (0.021)	0.022 (0.021)
State ownership	0.039 (0.056)	0.043 (0.056)	0.040 (0.056)	0.036 (0.056)	0.040 (0.056)
Foreign ownership	-0.145 (0.275)	-0.137 (0.275)	-0.149 (0.274)	-0.135 (0.270)	-0.143 (0.275)
Institutional ownership	-0.168 (0.143)	-0.164 (0.142)	-0.162 (0.143)	-0.158 (0.142)	-0.154 (0.142)
Analyst coverage	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
Board independence	0.203 (0.138)	0.199 (0.138)	0.203 (0.138)	0.194 (0.138)	0.196 (0.138)
EVEs	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
CEO age	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
CEO power	0.044 (0.109)	0.042 (0.110)	0.048 (0.110)	0.045 (0.110)	0.043 (0.110)
Regional economic development	0.006 (0.007)	0.006 (0.006)	0.005 (0.007)	0.006 (0.007)	0.006 (0.007)
Regional pollution	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Government intervention	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)
Constant	0.413** (0.181)	0.429** (0.181)	0.421** (0.182)	0.424** (0.181)	0.422** (0.181)
Observations	2,994	2,994	2,994	2,994	2,994
R-squared	0.132	0.137	0.135	0.136	0.134

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses  
 \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

$p = .000$ ), in line with Hypothesis 2a. And the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation* in Model 5 was found to be significantly negative (i.e.,  $\beta = -0.055$ ,  $p = .019$ ), in line with Hypothesis 2b. Besides, the coefficients of *prior high ED strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO*, *prior high SC strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, *prior high ED strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, and *prior high SC strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* are all significant and negative (i.e.,  $\beta = -0.010$ ,  $p = .000$  in Model 2;  $\beta = -0.051$ ,  $p = .057$  in Model 3;  $\beta = -0.084$ ,  $p = .004$  in Model 4;  $\beta = -0.006$ ,  $p = .007$  in Model 5), supporting Hypotheses 3 and 4. In summary, the results presented in Table 4 are consistent with those reported in Table 3. Further, as shown in Table 5, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation* in Model 2 was found

**Table 4** Robustness analyses: analyst recommendation as DV

	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.020 (0.019)	0.059* (0.031)		
Prior high SC strategy				0.168 (0.224)	0.031* (0.016)
Emphasis differentiation		0.001 (0.002)			0.000 (0.000)
Scope conformity			0.057** (0.028)	0.029 (0.031)	
Prior high ED strategy × Emphasis differentiation (H1a)		0.061* (0.036)			
Prior high ED strategy × Scope conformity (H1b)			-0.130*** (0.032)		
Prior high SC strategy × Scope conformity (H2a)				0.118*** (0.029)	
Prior high SC strategy × Emphasis differentiation (H2b)					-0.055** (0.023)
Female CEO		-0.068 (0.096)	0.048 (0.121)	-0.031 (0.093)	0.014 (0.061)
Prior high ED strategy × Female CEO		0.061 (0.091)	-0.183 (0.141)		
Prior high SC strategy × Female CEO				-0.196 (0.396)	-0.097 (0.059)
Emphasis differentiation × Female CEO		-0.003 (0.007)			-0.002 (0.003)
Scope conformity × Female CEO			-0.183 (0.133)	0.083 (0.108)	
Prior high ED strategy × Emphasis differentiation × Female CEO (H3)		-0.010*** (0.002)			
Prior high ED strategy × Scope conformity × Female CEO (H4)			-0.051* (0.027)		
Prior high SC strategy × Scope conformity × Female CEO (H3)				-0.084*** (0.029)	
Prior high SC strategy × Emphasis differentiation × Female CEO (H4)					-0.006*** (0.002)
Firm size	0.026 (0.018)	0.026 (0.018)	0.028 (0.018)	0.029 (0.018)	0.029 (0.018)
Financial leverage	0.216** (0.107)	0.216** (0.106)	0.206** (0.105)	0.211** (0.106)	0.217** (0.106)

**Table 4** (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
ROA	1.083*** (0.247)	1.094*** (0.248)	1.096*** (0.248)	1.082*** (0.247)	1.089*** (0.248)
Firm age	-0.003* (0.002)	-0.003* (0.002)	-0.003 (0.002)	-0.003* (0.002)	-0.003* (0.002)
Firm visibility	-0.014* (0.007)	-0.014* (0.008)	-0.015* (0.008)	-0.013 (0.008)	-0.014* (0.008)
State ownership	-0.024 (0.052)	-0.025 (0.053)	-0.032 (0.052)	-0.030 (0.053)	-0.027 (0.053)
Foreign ownership	-0.471 (0.403)	-0.463 (0.407)	-0.457 (0.403)	-0.475 (0.414)	-0.462 (0.405)
Institutional ownership	0.253** (0.101)	0.254** (0.100)	0.277*** (0.101)	0.270*** (0.101)	0.262*** (0.100)
Analyst coverage	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)	0.007*** (0.001)
Board independence	0.206 (0.166)	0.201 (0.167)	0.187 (0.165)	0.185 (0.166)	0.183 (0.166)
EVEs	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
CEO age	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)	0.002 (0.003)
CEO power	-0.016 (0.073)	-0.019 (0.073)	-0.016 (0.072)	-0.025 (0.073)	-0.022 (0.073)
Regional economic development	-0.007 (0.008)	-0.007 (0.008)	-0.007 (0.008)	-0.006 (0.008)	-0.007 (0.008)
Regional pollution	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Government intervention	-0.010** (0.004)	-0.010** (0.004)	-0.010** (0.004)	-0.010** (0.004)	-0.010** (0.004)
Constant	3.651*** (0.169)	3.668*** (0.170)	3.685*** (0.168)	3.654*** (0.171)	3.657*** (0.169)
Observations	2,994	2,994	2,994	2,994	2,994
R-squared	0.108	0.110	0.113	0.112	0.111

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses  
 \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

to be significantly positive (i.e.,  $\beta = 0.001$ ,  $p = .024$ ), in line with Hypothesis 1a, and the coefficient of *prior high ED strategy*  $\times$  *scope conformity* in Model 3 was found to be significantly negative (i.e.,  $\beta = -0.088$ ,  $p = .063$ ), in line with Hypothesis 1b. Moreover, the coefficient of *prior high SC strategy*  $\times$  *scope conformity* in Model 4 was found to be significantly positive (i.e.,  $\beta = 0.677$ ,  $p = .000$ ), supporting Hypothesis 2a and the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation* in Model 5 was found to be significantly negative (i.e.,  $\beta = -0.001$ ,  $p = .000$ ), in line with Hypothesis 2b. Besides, the coefficients of *prior high ED strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO*, *prior high SC strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, *prior high ED strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, and *prior high SC strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* are all significant and negative

**Table 5** Robustness analyses: Tobin's Q as DV

	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.073* (0.040)	0.140* (0.072)		
Prior high SC strategy				0.474 (0.517)	0.085** (0.035)
Emphasis differentiation		0.002 (0.006)			0.001 (0.001)
Scope conformity			0.196** (0.086)	0.153 (0.095)	
Prior high ED strategy × Emphasis differentiation (H1a)		0.001** (0.000)			
Prior high ED strategy × Scope conformity (H1b)			-0.088* (0.047)		
Prior high SC strategy × Scope conformity (H2a)				0.677*** (0.046)	
Prior high SC strategy × Emphasis differentiation (H2b)					-0.001*** (0.000)
Female CEO		0.179 (0.163)	0.103 (0.171)	-0.010 (0.189)	0.158 (0.222)
Prior high ED strategy × Female CEO		0.182 (0.173)	-0.247 (0.426)		
Prior high SC strategy × Female CEO				3.020** (1.453)	0.123 (0.170)
Emphasis differentiation × Female CEO		0.020* (0.012)			-0.002 (0.012)
Scope conformity × Female CEO			-0.063 (0.188)	0.350 (0.293)	
Prior high ED strategy × Emphasis differentiation × Female CEO (H3)		-0.001*** (0.000)			
Prior high ED strategy × Scope conformity × Female CEO (H4)			-0.016** (0.007)		
Prior high SC strategy × Scope conformity × Female CEO (H3)				-0.156** (0.074)	
Prior high SC strategy × Emphasis differentiation × Female CEO (H4)					-0.001** (0.000)
Firm size	-0.110* (0.066)	-0.108 (0.066)	-0.104 (0.064)	-0.104 (0.065)	-0.103 (0.066)
Financial leverage	0.112 (0.279)	0.123 (0.281)	0.111 (0.278)	0.137 (0.282)	0.130 (0.280)

Table 5 (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
ROA	2.811*** (0.730)	2.884*** (0.717)	2.892*** (0.727)	2.874*** (0.728)	2.813*** (0.723)
Firm age	0.010*** (0.004)	0.010*** (0.004)	0.010*** (0.004)	0.010*** (0.004)	0.010*** (0.004)
Firm visibility	-0.131** (0.051)	-0.115*** (0.042)	-0.119*** (0.042)	-0.118*** (0.042)	-0.125*** (0.043)
State ownership	-1.020*** (0.142)	-1.022*** (0.142)	-1.055*** (0.145)	-1.053*** (0.144)	-1.029*** (0.142)
Foreign ownership	-2.782*** (0.883)	-2.769*** (0.889)	-2.716*** (0.893)	-2.693*** (0.878)	-2.754*** (0.895)
Institutional ownership	1.633*** (0.319)	1.623*** (0.320)	1.687*** (0.315)	1.668*** (0.314)	1.644*** (0.317)
Analyst coverage	0.006** (0.003)	0.005** (0.003)	0.006** (0.003)	0.006** (0.003)	0.006** (0.003)
Board independence	0.387 (0.341)	0.402 (0.340)	0.366 (0.342)	0.369 (0.341)	0.387 (0.341)
EVEs	0.001 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
CEO age	0.001 (0.005)	0.002 (0.006)	0.001 (0.006)	0.002 (0.005)	0.002 (0.005)
CEO power	-0.237 (0.189)	-0.255 (0.191)	-0.247 (0.190)	-0.243 (0.190)	-0.254 (0.192)
Regional economic development	0.013 (0.015)	0.012 (0.015)	0.014 (0.015)	0.014 (0.015)	0.014 (0.015)
Regional pollution	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Government intervention	-0.011 (0.011)	-0.012 (0.011)	-0.011 (0.011)	-0.011 (0.011)	-0.011 (0.011)
Constant	0.507 (0.488)	0.527 (0.493)	0.563 (0.488)	0.503 (0.485)	0.479 (0.492)
Observations	2,994	2,994	2,994	2,994	2,994
R-squared	0.301	0.305	0.308	0.307	0.304

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses  
 \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

(i.e.,  $\beta = -0.001$ ,  $p = .000$  in Model 2;  $\beta = -0.016$ ,  $p = .014$  in Model 3;  $\beta = -0.156$ ,  $p = .035$  in Model 4;  $\beta = -0.001$ ,  $p = .023$  in Model 5), supporting Hypotheses 3 and 4. In summary, the results presented in Table 5 are also consistent with those reported in Table 3. Therefore, our main results are robust to several alternative measure, further confirming our four predictions.

Second, while we used a firm's prior CES pattern to identify its previous CES position, one-year-window may not be long enough because some firms may adjust their strategies year by year. To check whether our results remain robust to different measures for identifying prior high-emphasis-differentiation (or high-scope-conformity) firms, we reconstructed the variables *prior high ED strategy* and *prior high SC strategy* by using a three-year-window. In detail, *prior high ED strategy* is a

dummy variable, which will be given 1 if a firm's emphasis differentiation level is higher than the median level during all past three years (i.e., year t-3, t-2, and t-1), and zero otherwise. And *prior high SC strategy* is also a dummy variable, which will be given 1 if a firm's scope conformity level is higher than the median level during all past three years (i.e., year t-3, t-2, and t-1), and zero otherwise. The results using alternative measures for *prior high ED strategy* and *prior high SC strategy* are reported in Table 6. As shown in Table 6, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation* in Model 2 was found to be significantly positive (i.e.,  $\beta = 0.001, p = .016$ ), in line with Hypothesis 1a. The coefficient of *prior high ED strategy*  $\times$  *scope conformity* in Model 3 was found to be significantly negative (i.e.,  $\beta = -0.020, p = .006$ ), in line with Hypothesis 1b. Moreover, the coefficient of *prior high SC strategy*  $\times$  *scope conformity* in Model 4 was found to be significantly positive (i.e.,  $\beta = 0.041, p = .011$ ), in line with Hypothesis 2a. And the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation* in Model 5 was found to be negative but insignificant (i.e.,  $\beta = -0.001, p = .341$ ), partially supporting Hypothesis 2b. Besides, the coefficients of *prior high ED strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* and *prior high SC strategy*  $\times$  *scope conformity*  $\times$  *female CEO* are significant and negative (i.e.,  $\beta = -0.000, p = .062$  in Model 2;  $\beta = -0.008, p = .007$  in Model 4), in line with Hypothesis 3. And the coefficients of *prior high ED strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, and *prior high SC strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* are also significant and negative (i.e.,  $\beta = -0.011, p = .000$  in Model 3;  $\beta = -0.000, p = .016$  in Model 5), in line with Hypothesis 4. Thus, most of our theoretical predictions remain supportive by using alternative measures for independent variables.

Third, while the main results support our predictions, we could not say that the causal relationship between CES practice and market response was established. For example, the adjustment of firms' CES practice may be the consequences, instead of reasons, of change in earnings (i.e., reverse causality). To address potential endogeneity issues, we followed prior studies (e.g., Luo et al., 2021; Phelps, 2010) and deployed a two-stage least squares (2SLS) method. Specifically, we used *regulatory enforcement* as the instrumental variable for *emphasis differentiation* and *scope conformity*. As a firm faces stronger environmental regulatory enforcement from the local community, it will pay more attention to the environmental issues and thereby tends to increase its CES practice, including CES emphasis differentiation and CES scope conformity, in response to stronger regulatory pressure. Thus, we expect a positive impact of regulatory enforcement on CES emphasis differentiation and CES scope conformity. Equally importantly, regulatory enforcement is unlikely to directly affect earnings forecast. The combination of these reasons makes regulatory enforcement an appropriate instrumental variable for CES practice. In detail, we measured *regulatory enforcement* as the number of environmental government employees in the province where the firm is located, adjusted by the total population in the province. The information on the number of regional environmental government employees and the total regional population was extracted from the China Environmental Protection Database and the National Bureau of Statistics, respectively. We further conducted several tests to confirm the validity of the instrumental variable. First, we performed the weak identification test with the null hypothesis of regulatory enforcement being a weak instrumental variable and found that the result of the test rejected

**Table 6** Robustness analyses: alternative measure for IVs

	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.021 (0.019)	-0.024 (0.045)		
Prior high SC strategy				0.053 (0.060)	0.022 (0.018)
Emphasis differentiation		0.001 (0.001)			0.001 (0.001)
Scope conformity			0.032 (0.068)	0.064 (0.059)	
Prior high ED strategy × Emphasis differentiation (H1a)		0.001** (0.000)			
Prior high ED strategy × Scope conformity (H1b)			-0.020*** (0.007)		
Prior high SC strategy × Scope conformity (H2a)				0.041** (0.016)	
Prior high SC strategy × Emphasis differentiation (H2b)					-0.001 (0.001)
Female CEO		-0.110 (0.102)	0.992 (0.669)	-0.157 (0.111)	-0.106 (0.083)
Prior high ED strategy × Female CEO		0.001 (0.106)	-1.281* (0.708)		
Prior high SC strategy × Female CEO				-0.225 (0.398)	-0.003 (0.071)
Emphasis differentiation × Female CEO		0.003 (0.006)			-0.003 (0.003)
Scope conformity × Female CEO			-1.224* (0.707)	0.053 (0.084)	
Prior high ED strategy × Emphasis differentiation × Female CEO (H3)		-0.000* (0.000)			
Prior high ED strategy × Scope conformity × Female CEO (H4)			-0.011*** (0.002)		
Prior high SC strategy × Scope conformity × Female CEO (H3)				-0.008*** (0.003)	
Prior high SC strategy × Emphasis differentiation × Female CEO (H4)					-0.000** (0.000)
Firm size	0.068 (0.043)	0.065 (0.043)	0.065 (0.043)	0.062 (0.043)	0.061 (0.043)
Financial leverage	-0.872*** (0.200)	-0.890*** (0.202)	-0.884*** (0.203)	-0.883*** (0.203)	-0.884*** (0.202)

**Table 6** (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
ROA	0.263 (0.384)	0.242 (0.387)	0.243 (0.380)	0.261 (0.387)	0.258 (0.386)
Firm age	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Firm visibility	-0.074 (0.075)	-0.038 (0.080)	-0.032 (0.078)	-0.037 (0.079)	-0.038 (0.081)
State ownership	0.041 (0.102)	0.052 (0.103)	0.048 (0.102)	0.043 (0.102)	0.047 (0.102)
Foreign ownership	0.884* (0.454)	0.892** (0.445)	0.908** (0.449)	0.891* (0.454)	0.887** (0.451)
Institutional ownership	-0.496*** (0.147)	-0.487*** (0.149)	-0.485*** (0.152)	-0.488*** (0.150)	-0.478*** (0.149)
Analyst coverage	0.001 (0.002)	0.001 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)
Board independence	0.055 (0.152)	0.048 (0.152)	0.011 (0.152)	0.042 (0.153)	0.048 (0.152)
EVEs	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
CEO age	0.000 (0.003)	0.000 (0.003)	0.000 (0.003)	-0.000 (0.003)	0.000 (0.003)
CEO power	-0.001 (0.126)	-0.005 (0.128)	-0.011 (0.128)	0.013 (0.128)	0.007 (0.127)
Regional economic development	0.008 (0.006)	0.008 (0.006)	0.009 (0.006)	0.008 (0.006)	0.008 (0.006)
Regional pollution	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Government intervention	0.007 (0.007)	0.006 (0.007)	0.007 (0.007)	0.007 (0.007)	0.007 (0.007)
Constant	1.269*** (0.202)	1.276*** (0.205)	1.261*** (0.198)	1.250*** (0.195)	1.286*** (0.203)
Observations	1,683	1,683	1,683	1,683	1,683
R-squared	0.090	0.094	0.096	0.095	0.094

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses  
 \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

it (i.e., the Cragg–Donald Wald F-statistic of 56.721 for emphasis differentiation and 32.988 for scope conformity is larger than the critical value of the Stock–Yogo weak identification test with 10% maximal IV size). This suggests regulatory enforcement as a strong instrumental variable. Second, we performed the under-identification test with the null hypothesis that the number of IVs is insufficient and found that the result of the test rejected it (i.e.,  $p = .000$ ). This result indicates that the number of IVs is sufficient.

Table 7 shows the results of 2SLS analyses. As shown in Table 7, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation* in Model 2 was found to be significantly positive (i.e.,  $\beta = 0.001$ ,  $p = .000$ ), in line with Hypothesis 1a. The coefficient of *prior high ED strategy*  $\times$  *scope conformity* in Model 3 was found to be sig-

**Table 7** Robustness analyses: 2SLS Estimation

	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.003 (0.017)	0.082* (0.047)		
Prior high SC strategy				0.049 (0.053)	-0.013 (0.018)
Emphasis differentiation		0.226*** (0.054)			0.221*** (0.054)
Scope conformity			0.347*** (0.077)	0.306*** (0.066)	
Prior high ED strategy × Emphasis differentiation (H1a)		0.001*** (0.000)			
Prior high ED strategy × Scope conformity (H1b)			-0.124* (0.068)		
Prior high SC strategy × Scope conformity (H2a)				0.072*** (0.021)	
Prior high SC strategy × Emphasis differentiation (H2b)					-0.050* (0.027)
Female CEO		-0.167 (0.106)	-0.224 (0.197)	-0.319** (0.134)	-0.133** (0.068)
Prior high ED strategy × Female CEO		0.082 (0.084)	-0.043 (0.215)		
Prior high SC strategy × Female CEO				0.389* (0.213)	0.022 (0.058)
Emphasis differentiation × Female CEO		0.022 (0.032)			-0.008 (0.023)
Scope conformity × Female CEO			0.094 (0.225)	0.292* (0.173)	
Prior high ED strategy × Emphasis differentiation × Female CEO (H3)		-0.001* (0.001)			
Prior high ED strategy × Scope conformity × Female CEO (H4)			-0.013*** (0.002)		
Prior high SC strategy × Scope conformity × Female CEO (H3)				-0.065*** (0.022)	
Prior high SC strategy × Emphasis differentiation × Female CEO (H4)					-0.013*** (0.003)
Firm size	0.090*** (0.032)	0.289*** (0.050)	0.081** (0.032)	0.081** (0.032)	0.290*** (0.050)
Financial leverage	-0.251* (0.152)	-0.063 (0.144)	-0.265* (0.153)	-0.263* (0.153)	-0.061 (0.145)

**Table 7** (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
ROA	1.669*** (0.293)	0.672* (0.406)	1.589*** (0.296)	1.587*** (0.294)	0.666* (0.402)
Firm age	0.001 (0.002)	-0.017*** (0.005)	0.000 (0.002)	0.000 (0.002)	-0.017*** (0.004)
Firm visibility	0.028 (0.020)	-0.052* (0.029)	0.021 (0.020)	0.018 (0.021)	-0.056* (0.029)
State ownership	0.039 (0.056)	-0.379*** (0.098)	0.076 (0.059)	0.072 (0.059)	-0.383*** (0.098)
Foreign ownership	-0.145 (0.275)	-1.777*** (0.450)	-0.221 (0.273)	-0.221 (0.272)	-1.782*** (0.452)
Institutional ownership	-0.168 (0.143)	-0.617*** (0.168)	-0.233* (0.141)	-0.218 (0.141)	-0.605*** (0.169)
Analyst coverage	0.005*** (0.001)	0.015*** (0.003)	0.004*** (0.001)	0.004*** (0.001)	0.015*** (0.003)
Board independence	0.203 (0.138)	-1.994*** (0.540)	0.257* (0.139)	0.242* (0.139)	-1.996*** (0.541)
EVEs	0.001 (0.001)	0.010*** (0.002)	0.001 (0.001)	0.001 (0.001)	0.010*** (0.002)
CEO age	0.001 (0.002)	-0.003 (0.003)	0.000 (0.002)	0.000 (0.002)	-0.003 (0.003)
CEO power	0.044 (0.109)	0.375*** (0.135)	0.076 (0.109)	0.076 (0.110)	0.374*** (0.135)
Regional economic development	0.006 (0.007)	0.069*** (0.015)	0.005 (0.007)	0.005 (0.007)	0.070*** (0.015)
Regional pollution	-0.000 (0.000)	0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.000** (0.000)
Government intervention	0.002 (0.005)	0.121*** (0.030)	0.002 (0.005)	0.002 (0.005)	0.121*** (0.030)
Constant	0.413** (0.181)	0.355** (0.180)	0.397** (0.183)	0.424** (0.182)	0.350* (0.180)
Observations	2,994	2,994	2,994	2,994	2,994
R-squared	0.132	0.134	0.136	0.136	0.134

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses  
 \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

nificantly negative (i.e.,  $\beta = -0.124$ ,  $p = .067$ ), in line with Hypothesis 1b. Moreover, the coefficient of *prior high SC strategy*  $\times$  *scope conformity* in Model 4 was found to be significantly positive (i.e.,  $\beta = 0.072$ ,  $p = .001$ ), in line with Hypothesis 2a. And the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation* in Model 5 was found to be significantly negative (i.e.,  $\beta = -0.050$ ,  $p = .062$ ), in line with Hypothesis 2b. Finally, the coefficients of *prior high ED strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO*, *prior high SC strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, *prior high ED strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, and *prior high SC strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* are all negative (i.e.,  $\beta = -0.001$ ,  $p = .057$  in Model 2;  $\beta = -0.013$ ,  $p = .000$  in Model 3;  $\beta = -0.065$ ,  $p = .003$  in Model 4;  $\beta = -0.013$ ,

$p = .000$  in Model 5), supporting Hypotheses 3 and 4. Thus, Hypotheses 1, 2, 3, and 4 were found to receive additional support.

Although we have made substantial efforts to address potential endogeneity issues through the 2SLS approach, we acknowledge several inherent limitations associated with this method. First, the effectiveness of the instrumental variable approach heavily relies on the validity and strength of the chosen instrumental variable. Despite our rigorous tests (e.g., weak identification test and under-identification test) confirming regulatory enforcement as a strong and valid instrumental variable, we cannot completely rule out the possibility that regulatory enforcement may correlate with certain unobserved regional economic or social factors, potentially biasing our estimates. Second, the instrumental variable method identifies local average treatment effects (LATE), reflecting the average causal effects for those firms influenced by changes in regulatory enforcement rather than the entire population (Jiang, 2017). Thus, the generalizability of our findings may be constrained to this specific subset of firms. Future studies could further mitigate these limitations by employing alternative methodological approaches, such as difference-in-differences (DID) method.

Fourth, since we relied on CSR reports to identify corporate environmental strategies, our sample does not cover firms those do not issue CSR reports, which may result in self-selection bias problem. To further improve the robustness of our results, we took the self-election bias issue into consideration by employing the Heckman two-stage method (Gao et al., 2019; Heckman, 1979; Komera et al., 2018; Wolfolds & Siegel, 2019). In detail, we firstly regressed the dummy variable whether the firm issues CSR report on two instrumental variables, *central political connection*, and *local political connection*. In detail, we measured *central political connection* as the number of TMT members and directors who had served or were serving as government officials (e.g., as representatives of the National People's Congress—the NPC—or as representatives of the Chinese People's Political Consultative Conference—the CPPCC) in the central government. And we measured *local political connection* as the number of TMT members and directors who had served or were serving as government officials (e.g., as representatives of the National People's Congress—the NPC—or as representatives of the Chinese People's Political Consultative Conference—the CPPCC) in the province where the firm located. Previous studies have indicated significant impact of political connection on firm's CSR reporting (Luo et al., 2017), which supports our selection of instrumental variables. Second, we reran all models in Table 3 by including an additional control: inverse Mills ratio, which is yielded from the first-stage analysis and accounts for each firm's likelihood of issuing CSR reports. Table 8 reported the second-stage results of Heckman two-step method. As shown in Table 8, the coefficient of *prior high ED strategy*  $\times$  *emphasis differentiation* in Model 2 was found to be significantly positive (i.e.,  $\beta = 0.005$ ,  $p = .063$ ), in line with Hypothesis 1a. The coefficient of *prior high ED strategy*  $\times$  *scope conformity* in Model 3 was found to be significantly negative (i.e.,  $\beta = -0.063$ ,  $p = .065$ ), in line with Hypothesis 1b. Moreover, the coefficient of *prior high SC strategy*  $\times$  *scope conformity* in Model 4 was found to be significantly positive (i.e.,  $\beta = 0.090$ ,  $p = .001$ ), in line with Hypothesis 2a. And the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation* in Model 5 was found to be significantly negative (i.e.,  $\beta = -0.001$ ,  $p = .018$ ), in line with Hypothesis 2b. Finally, the coefficients of *prior*

**Table 8** Robustness analyses: Heckman two-stage method

	Model 1	Model 2	Model 3	Model 4	Model 5
Prior high ED strategy		0.021 (0.018)	0.015 (0.036)		
Prior high SC strategy				-0.168 (0.162)	-0.012 (0.018)
Emphasis differentiation		0.005** (0.003)			0.001 (0.001)
Scope conformity			0.026 (0.032)	0.042 (0.034)	
Prior high ED strategy × Emphasis differentiation (H1a)		0.005* (0.003)			
Prior high ED strategy × Scope conformity (H1b)			-0.063* (0.034)		
Prior high SC strategy × Scope conformity (H2a)				0.090*** (0.028)	
Prior high SC strategy × Emphasis differentiation (H2b)					-0.001** (0.000)
Female CEO		-0.220** (0.110)	-0.260** (0.122)	-0.206** (0.091)	-0.138** (0.069)
Prior high ED strategy × Female CEO		0.106 (0.095)	0.114 (0.140)		
Prior high SC strategy × Female CEO				-1.144 (0.735)	0.049 (0.065)
Emphasis differentiation × Female CEO		-0.005 (0.007)			0.004 (0.005)
Scope conformity × Female CEO			0.163 (0.108)	0.136 (0.104)	
Prior high ED strategy × Emphasis differentiation × Female CEO (H3)		-0.002*** (0.000)			
Prior high ED strategy × Scope conformity × Female CEO (H4)			-0.015*** (0.001)		
Prior high SC strategy × Scope conformity × Female CEO (H3)				-0.062* (0.034)	
Prior high SC strategy × Emphasis differentiation × Female CEO (H4)					-0.001 (0.001)
Firm size	0.090*** (0.032)	0.087*** (0.031)	0.087*** (0.031)	0.090*** (0.032)	0.089*** (0.032)
Financial leverage	-0.250* (0.152)	-0.261* (0.152)	-0.254* (0.152)	-0.255* (0.152)	-0.258* (0.153)
ROA	1.670*** (0.294)	1.649*** (0.295)	1.654*** (0.294)	1.643*** (0.292)	1.648*** (0.294)

**Table 8** (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5
Firm age	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Firm visibility	0.028 (0.020)	0.023 (0.021)	0.025 (0.021)	0.024 (0.021)	0.022 (0.021)
State ownership	0.038 (0.056)	0.042 (0.056)	0.039 (0.056)	0.035 (0.055)	0.039 (0.056)
Foreign ownership	-0.143 (0.273)	-0.134 (0.273)	-0.146 (0.272)	-0.132 (0.269)	-0.140 (0.274)
Institutional ownership	-0.167 (0.143)	-0.163 (0.142)	-0.161 (0.144)	-0.157 (0.143)	-0.153 (0.142)
Analyst coverage	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.005*** (0.001)
Board independence	0.203 (0.138)	0.200 (0.138)	0.203 (0.138)	0.194 (0.138)	0.196 (0.138)
EVEs	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
CEO age	0.001 (0.002)	0.000 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
CEO power	0.039 (0.109)	0.036 (0.110)	0.043 (0.109)	0.040 (0.109)	0.038 (0.109)
Regional economic development	0.006 (0.007)	0.006 (0.006)	0.005 (0.007)	0.006 (0.007)	0.006 (0.007)
Regional pollution	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Government intervention	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)	0.002 (0.005)
Inverse Mills ratio	0.012 (0.017)	0.016 (0.017)	0.015 (0.017)	0.015 (0.017)	0.016 (0.017)
Constant	0.411** (0.182)	0.427** (0.182)	0.419** (0.183)	0.422** (0.182)	0.420** (0.181)
Observations	2,994	2,994	2,994	2,994	2,994
R-squared	0.132	0.137	0.135	0.136	0.135

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses  
 \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

*high ED strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO*, *prior high SC strategy*  $\times$  *scope conformity*  $\times$  *female CEO*, and *prior high ED strategy*  $\times$  *scope conformity*  $\times$  *female CEO* are significant and negative (i.e.,  $\beta = -0.002$ ,  $p = .000$  in Model 2;  $\beta = -0.015$ ,  $p = .000$  in Model 3;  $\beta = -0.062$ ,  $p = .071$  in Model 4) while the coefficient of *prior high SC strategy*  $\times$  *emphasis differentiation*  $\times$  *female CEO* is negative and insignificant (i.e.,  $\beta = -0.001$ ,  $p = .128$  in Model 5), supporting Hypotheses 3 and 4. In summary, the results presented in Table 8 are consistent with those reported in Table 3. Thus, Hypotheses 1, 2, 3, and 4 were found to receive additional support.

## Supplementary analyses

In this section, we further compared four different scenarios stated in our hypotheses and discussed the differences of effectiveness between various strategies. First, we investigated the effectiveness of CES emphasis differentiation strategy and CES scope conformity strategy for firms with high emphasis differentiation (or high scope conformity). Based on our main results, we can conclude that: for high-emphasis-differentiation firms, one unit increase in emphasis differentiation will lead to additional 0.005 unit increase in earnings forecast while one unit increase in scope conformity will result in additional 0.086 unit decrease in earnings forecast; for high-scope-conformity firms, one unit increase in scope conformity will lead to additional 0.171 unit increase in earnings forecast while one unit increase in emphasis differentiation will result in additional 0.016 unit decrease in earnings forecast. Hence, we found that firms would suffer (or benefit) more from the change in CES scope conformity rather than emphasis differentiation. A plausible reason for this phenomenon is that investors value legitimacy associated with conformity more than competitive advantage associated with distinctiveness, which is consistent with the traditional view that firms must achieve legitimacy before pursuing distinctiveness (Zuckerman, 1999). Thus, our analyses suggest that firms should, if possible, particularly care about changes in scope conformity strategy.

Second, although our predictions posit optimal CES for high-emphasis-differentiation firms and high-scope-conformity firms, we did not discuss the best strategy for firms with either low emphasis differentiation or low scope conformity. As shown in Fig. 1, the slope of the solid line is positive, indicating that a firm's increase in CES emphasis differentiation will elicit positive market response even if the firm has a prior low-emphasis-differentiation strategy. Similarly, Figs. 2, 3, and 4 suggest that for firms with prior low-emphasis-differentiation (or low-scope-conformity) strategy, they will be awarded by the market when they improve either emphasis differentiation or scope conformity. Taken together, we can posit that: for firms with low emphasis differentiation and low scope conformity, the choices between emphasis differentiation and scope conformity do not matter at all and firms can choose either one according to their own advantages and resources.

Finally, although our study provides insights for firms with high emphasis differentiation (or high scope conformity), it also raises a paradox: what is the optimal strategy for firms with both high emphasis differentiation and high scope conformity? On the one hand, improving emphasis differentiation will elicit positive market response given their high emphasis differentiation status while may also result in negative market response given their high scope conformity status. On the other hand, improving scope conformity will elicit positive market response given their high scope conformity status while may also result in negative market response given their high emphasis differentiation status. To reconcile this paradox, we further conducted a three-way-interaction analysis and reported results in Table 9. As shown in Table 9, the coefficient of *prior high ED strategy*  $\times$  *prior high SC strategy*  $\times$  *emphasis differentiation* in Model 1 was significant and negative (i.e.,  $\beta = -0.009$ ,  $p = .027$ ) and the coefficient of *prior high ED strategy*  $\times$  *prior high SC strategy*  $\times$  *scope conformity* in Model 2 was insignificant (i.e.,  $\beta = 0.510$ ,  $p = .236$ ). These results suggest that firms

**Table 9** Supplementary analyses: market responses to firms with high emphasis differentiation and high scope conformity

	Model 1	Model 2
Prior high ED strategy	0.016 (0.023)	0.025 (0.035)
Prior high SC strategy	0.011 (0.034)	0.101 (0.357)
Emphasis differentiation	0.008** (0.003)	
Scope conformity		0.093** (0.039)
Prior high ED strategy × Emphasis differentiation	0.007** (0.003)	
Prior high SC strategy × Emphasis differentiation	-0.009** (0.004)	
Prior high ED strategy × Prior high SC strategy	-0.003 (0.038)	-0.400 (0.415)
Prior high ED strategy × Prior high SC strategy × Emphasis differentiation	-0.009** (0.004)	
Prior high ED strategy × Scope conformity		-0.104** (0.050)
Prior high SC strategy × Scope conformity		-0.189 (0.371)
Prior high ED strategy × Prior high SC strategy × Scope Conformity		0.510 (0.430)
Firm size	0.088*** (0.032)	0.090*** (0.032)
Financial leverage	-0.256* (0.152)	-0.239 (0.152)
ROA	1.639*** (0.292)	1.636*** (0.290)
Firm age	0.001 (0.002)	0.001 (0.002)
Firm visibility	0.027 (0.020)	0.028 (0.020)
State ownership	0.043 (0.056)	0.043 (0.055)
Foreign ownership	-0.125 (0.274)	-0.138 (0.270)
Institutional ownership	-0.167 (0.143)	-0.183 (0.143)
Analyst coverage	0.005*** (0.001)	0.005*** (0.001)
Board independence	0.209 (0.137)	0.197 (0.136)
EVEs	0.001 (0.001)	0.001 (0.001)
CEO age	0.001 (0.002)	0.001 (0.002)

**Table 9** (continued)

	Model 1	Model 2
CEO power	0.032 (0.109)	0.045 (0.110)
Regional economic development	0.006 (0.007)	0.006 (0.007)
Regional pollution	-0.000 (0.000)	-0.000 (0.000)
Government intervention	0.002 (0.005)	0.002 (0.005)
Constant	0.402** (0.183)	0.403** (0.184)
Observations	2,994	2,994
R-squared	0.137	0.137

Firm and year fixed effects are included; standard errors clustered at firm-level are shown in parentheses

\*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

with both high emphasis differentiation and high scope conformity should no longer invest in neither emphasis differentiation nor scope conformity, as they cannot benefit from such investments. Instead, they may even be penalized by the market for their continued focus on improvement in emphasis differentiation.

## Discussion and conclusions

In this study, we examined how corporate environmental strategies (CES)—emphasis differentiation and scope conformity—impact market responses, and how these responses are moderated by CEO gender. By integrating optimal distinctiveness theory and social role theory, we explored the interplay between strategic differentiation, conformity pressures, and the gendered expectations of leadership in shaping market evaluations. Our results provide insights into the complexities firms face when choosing between emphasis differentiation and scope conformity in their CES, particularly in the context of male- and female-led firms. In this discussion, we will highlight the key contributions of the study, elaborate on practical implications, and outline potential avenues for future research.

### Theoretical contributions

Our study makes several key contributions to the literature. First, we contribute to the literature on optimal distinctiveness by shifting the focus from static strategy positions to the dynamic implications of strategy direction—whether firms persist in or change between emphasis differentiation and scope conformity. While prior research has largely examined the tension between differentiation and conformity (e.g., Zhang et al., 2020), our study underscores the importance of consistency versus change in these strategic dimensions, offering new insights into how firms balance the trade-offs between distinctiveness and conformity to navigate corporate environmental strategy effectively.

Second, we introduce gendered leadership expectations into the conversation on corporate optimal distinctiveness, a dimension that has been largely overlooked in the existing literature. By integrating optimal distinctiveness theory with social role theory, we demonstrate how gendered leadership expectations influence market responses to firms' strategic decisions. Our findings suggest that female CEOs face greater skepticism from investors and the market, regardless of whether they choose to persist in or shift between emphasis differentiation and scope conformity strategies. This highlights the pervasive influence of gender stereotypes on market perceptions of strategic decision-making, adding an important social dimension to the optimal distinctiveness framework.

Finally, we contribute to the corporate environmental strategy literature by integrating emphasis differentiation and scope conformity into a unified framework, highlighting how their persistence or change influences market perceptions. By incorporating CEO gender, we offer a novel perspective on how individual-level factors shape the effectiveness and reception of corporate environmental strategies. This extends the literature by emphasizing the critical role of strategic direction and its interaction with leadership characteristics, providing a more nuanced understanding of corporate environmental strategies under dynamic market conditions.

### **Practical implications**

The findings of this study hold important implications for practitioners, particularly CEOs and strategic decision-makers navigating the complex trade-offs between emphasis differentiation and scope conformity in corporate environmental strategies. As CES becomes a critical dimension of corporate strategy, firms must carefully evaluate the long-term market implications of their strategic direction, whether persisting in or shifting between differentiation and conformity. Firms should prioritize consistency in their strategies, as abrupt shifts may introduce uncertainty and skepticism among stakeholders. To mitigate these risks, firms can adopt a phased approach to strategic changes, such as piloting new initiatives in select markets before broader implementation. Furthermore, regular market research and feedback mechanisms can help firms assess how their emphasis differentiation or scope conformity strategies are perceived by investors and other stakeholders. Effective communication strategies are also essential to manage expectations during transitions, ensuring that stakeholders understand the rationale and potential benefits of strategic changes.

For female CEOs, this study highlights the additional scrutiny and potential biases they face when implementing corporate environmental strategies. Gender stereotypes may lead to heightened skepticism of their decisions, regardless of whether they persist in or shift between emphasis differentiation and scope conformity. To address these challenges, female-led firms might benefit from aligning their strategies with social expectations of ethical and compliant leadership, particularly when conformity to environmental norms is a key component. Additionally, female CEOs can strengthen their market positioning by presenting robust evidence of their firm's ability to succeed in differentiation-based strategies. This could include showcasing

successful pilot projects, obtaining third-party certifications, or leveraging endorsements from credible industry associations. Building strategic alliances or engaging external consultants may further enhance stakeholder confidence and mitigate potential biases.

For investors and analysts, the study underscores the importance of recognizing biases that may shape their evaluations of female-led firms. Market actors should adopt data-driven evaluation frameworks that prioritize objective performance indicators over subjective perceptions. Training programs and workshops aimed at raising awareness of unconscious biases can also promote fairer evaluation practices. By taking these steps, investors and analysts can contribute to a more equitable market environment, where firms are evaluated based on their strategic merits rather than the gender of their leaders.

### **Limitations and future research**

While our study provides valuable insights, it is not without limitations. First, our analysis focuses exclusively on firms in China, which may restrict the generalizability of our findings to other cultural or institutional contexts. Future research could extend our framework to other emerging markets or developed economies to assess whether the relationships between emphasis differentiation, scope conformity, and gendered leadership are consistent across diverse institutional settings. Second, although we concentrated on gendered leadership, other factors—such as firm financial slack, industry characteristics, or CEO ethnicity—may also influence market responses to corporate environmental strategies. Future studies could investigate these additional factors to develop a more holistic understanding of the determinants of market evaluations. Finally, while this study operationalized gender as a binary variable, future research could adopt a more nuanced approach by examining the effects of non-binary or gender-diverse leadership on corporate strategy and market responses.

### **Conclusion**

In sum, this study explores how firms navigate the trade-offs between emphasis differentiation and scope conformity in the context of corporate environmental strategy and how these strategic choices are influenced by CEO gender. By integrating optimal distinctiveness theory and social role theory, the study finds that the market tends to reward firms that maintain strategic consistency while exhibiting greater uncertainty toward firms that shift their strategies. Moreover, due to gender stereotypes, female-CEO-led firms face heightened market skepticism regardless of whether they persist in or change their strategies. This research not only fills a gap in the literature on the relationship between gender, leadership, and market responses but also provides practical guidance for firms in resource allocation and leadership decision-making in environmental strategies.

## Appendix 1. Sample distribution across industries

Industry Code	Industry Name	Number of Observations
A	Agriculture, Forestry, Animal Husbandry, and Fishery	47
B	Mining	138
C	Manufacturing	1,738
D	Production and Supply of Electricity, Heat, Gas, and Water	131
E	Construction	86
F	Wholesale and Retail Trade	126
G	Transportation, Storage, and Postal Services	173
H	Accommodation and Catering	6
I	Information Transmission, Software, and Information Technology Services	104
J	Financial Industry	171
K	Real Estate	187
L	Leasing and Business Services	24
M	Scientific Research and Technical Services	6
N	Water Conservancy, Environment, and Public Facilities Management	22
O	Resident Services, Repairs, and Other Services	1
P	Education	0
Q	Health and Social Work	4
R	Culture, Sports, and Entertainment	15
S	Comprehensive	15
	Total	2,994

## Appendix 2. Variable definitions

Variables	Definition
Earnings forecast	The average value of analysts' earnings forecasts.
Emphasis differentiation	The extent to which a firm's pattern of CES emphasis deviated from the common emphasis of other firms in the same industry.
Scope conformity	The extent to which a firm's CES portfolio covers the scope defined in the established guidelines.
Prior high ED strategy	A dummy variable, which equals 1 if a firm's emphasis differentiation level is higher than the median level in the previous year, and zero otherwise.
Prior high SC strategy	A dummy variable, which equals 1 if a firm's scope conformity level is higher than the median level in the previous year, and zero otherwise.
Female CEO	A dummy variable, which equals 1 if the CEO is female and zero otherwise.
Firm size	A firm's employees (logarithm).
Financial leverage	The ratio of total liabilities divided by total assets.
ROA	The ratio of return divided by total assets.
Firm age	The number of years since a firm's incorporation.
Firm visibility	The ratio of a firm's selling and administrative expenses to its revenue.
State ownership	The ratio of a firm's state-owned shares to its total ones (percentage).

Variables	Definition
Foreign ownership	The ratio of a firm's foreign-owned shares to its total ones (percentage).
Institutional ownership	The ratio of a firm's institutional-investor-owned shares to its total ones (percentage).
Analyst coverage	The number of financial analysts which follow the focal firm.
Board independence	The proportion of independent directors on the board.
EVEs	The extent to which the environmental pollution generated by a firm, which was exposed by IPE, deviated from its parent industry's average level.
CEO age	The number of years since the CEO was born.
CEO power	The average value of three variables: (1) CEO duality, (2) whether the CEO was a founder of the firm, (3) the equity share held by the CEO.
Regional economic development	Provincial GDP per capita.
Regional pollution	Provincial SO <sub>2</sub> emission.
Government intervention	Marketization Process Index developed by the National Economic Research Institute (NERI).

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**Publisher's note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

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