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When Do CEOs Engage in CSR Activities? Performance Feedback, CEO Ownership, and CSR

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Abstract: The growing importance of corporate social responsibility (CSR) for firms' sustainability has been spurring scholarly attempts at identifying the antecedents of CSR activities. This study examines how CEO ownership differentially affects firms' CSR activities in response to their performance relative to aspirations. Building upon the agency theory and the performance feedback model, we argue that CEOs with greater ownership are relatively more likely to increase their firms' CSR activities than those with smaller ownership as their firms' performance further decreases below or increases above their aspiration levels, because they typically have more discretionary power and a greater pool of behavioral alternatives. Our fixed-effects analysis of the panel data from the U.S. crude petroleum and natural gas industry between 1995 and 2016 found that there is a systematic difference in how firms' CSR activities are adjusted in response to negative performance feedback depending on the levels of CEO ownership, but no significant difference in the face of positive performance feedback. The overall results imply that the CEOs tend to care about CSR only when performance is near their target and not so much when performance is far below or above the target, especially if their stock ownership is low.

Keywords: corporate social responsibility; performance feedback model; CEO ownership

1. Introduction

Corporate social responsibility (CSR) has become an important determinant of firms' sustainability due to stakeholders' growing expectations [1]. Nevertheless, the extents and patterns of CSR activities vary widely among firms. Accordingly, scholars have attempted to identify various factors affecting firms' decisions to engage in CSR activities. In particular, building upon the upper echelons theory [2], a stream of research has examined the effects of the chief executive officers' (CEOs) characteristics, including hubris [3], political ideologies [4], pay structure [5], tenure [6], and career horizon [7]. In line with this research, we focus on how CEOs' stock ownership affects their firms' CSR activities.

According to the agency theory [8], CEO ownership has important strategic implications for a firm's activities and performance, as it more or less aligns the interests of CEOs and shareholders and thereby affects the CEOs' decision making. A group of scholars have thus examined the effects of CEO ownership on the firms' CSR activities and found mixed results (e.g., [9–12]; see [13] for a review). For example, Johnson and Greening [9] found a positive relationship between top management equity and CSR, whereas Barnea and Rubin [10] and Oh and his colleagues [11] found a negative relationship. These mixed findings suggest a need to consider boundary conditions in examining the CEO ownership's effects on CSR. In this study, we incorporate the performance feedback model [14,15] to investigate "when" owner-CEOs are more or less likely to engage in CSR activities than non-owner CEOs.

Originated from the behavioral theory of the firm [14], the performance feedback model suggests the behavioral mechanism underlying organizational search [15,16]. The model focuses on "when" firms are likely to engage in search behavior and predicts that a performance below the aspiration level

will trigger a "problemistic search," which is "stimulated by a problem (usually a rather specific one) and is directed toward finding a solution to that problem" [14] (p. 121). An extension of this model (e.g., [17–19]) also predicts that performance above the aspiration level can initiate a "slack search," where excess resources generated from successful performance are invested in "innovations that would not be approved in the face of scarcity" [14] (p. 279). While the model has been supported in many different contexts (see [20] for a review), it has rarely been applied to examine a firm's CSR-related decisions (cf. [21]).

In this study, we examine how firms adjust their CSR activities in response to their performance relative to aspirations, depending on the levels of CEO ownership. More particularly, we argue that CEOs with greater ownership are more likely to increase CSR activities than those with smaller ownership as their firms' performance decreases below or increases above aspirations. This is not necessarily because owner-CEOs are more socially responsible [9], but rather because they typically have greater discretionary power and thus more behavioral alternatives, compared to non-owner CEOs who tend to be more short-term oriented [8].

This study contributes to the CSR literature. First, we employed the performance feedback model to examine how searches triggered by performance relative to aspirations affect the firms' CSR-related decisions. To our knowledge, there have been very few attempts to understand CSR decisions from the behavioral perspective. Second, we attempt to resolve the mixed prior findings regarding the effects of CEO ownership on CSR. By investigating their interactions with performance feedbacks, we argue for the importance of considering the divergent forms of responsiveness to performance relative to aspirations.

In the following, we first develop our theory and hypotheses and then empirically examine them in the context of the U.S. crude petroleum and natural gas industry between 1995 and 2016, where the firms tend to face strong pressures for social responsibility from the stakeholders. Finally, we discuss the implications and limitations of our findings in the discussion section.

2. Theory and Hypotheses

2.1. Divergent Perspectives on CSR

Since Bowen [22] suggested that organizations have responsibility for their actions toward their various stakeholders by going beyond their legal or contractual obligations, the concept of CSR has evolved to be broadly defined as "business responsibility for some wider societal good," of which the precise manifestation and direction lie at the discretion of the corporation [23] (p. 405). Indeed, CSR is increasingly recognized as an "essentially contested concept," where there are multiple irreconcilable but equally reasonable interpretations of its meaning, just as with art, beauty, and justice [24–26]. For example, Mitnick and colleagues [24] note that there have been two dominant perspectives on CSR within the literature: On the one hand, the instrumental/economic CSR is "oriented toward specific goals of profit maximization, market value, and shareholder primacy at the organizational level and efficient resource use and wealth creation at the societal level"; On the other hand, the injunctive/social CSR is guided by "ethics at the individual and organizational levels, values underlying social impacts, and an orientation toward reducing harms and increasing benefits at the societal level" (p. 7).

While the injunctive/social approach is instructional and obligational in directing that CSR *should* be pursued as a means to implement a variety of human values or to generate positive social impacts [24], the instrumental/economic approach, which characterizes the strategy literature, tends to generate divergent arguments, depending on the assumptions regarding the motives and consequences of CSR activities. For example, the so-called "good management theory" [27] argues that socially responsible practices can improve relationships with key stakeholder groups, resulting in reduced stakeholder management costs, increased sales, and better financial performance. A contrasting argument, in line with those of Friedman [28] and other neoclassical economists, suggests that socially responsible behavior incurs costs that might otherwise be avoided or that should be borne by government or

individuals, reducing profits and thus shareholder wealth [29]. Given these contesting normative arguments, many scholars have empirically examined the relationship between CSR and financial performance and found mixed results, although some meta-analyses reported that the relationship is positive, or at least non-negative (e.g., [30,31]).

2.2. CEO Ownership and CSR

Despite divergent perspectives on CSR, stakeholders' expectations about CSR have been growing in recent decades, leading to scholarly attempts at identifying various antecedents to CSR activities. While some scholars investigated the role of external factors, such as economic and institutional conditions (e.g., [32]), others focused on internal factors, such as firm size [33], slack resources [27], and board characteristics [9]. In particular, a group of scholars have emphasized the role of CEOs, building upon the upper echelons theory [2], which states that managerial background characteristics are important antecedents of organizational decisions and performances. For example, this line of research has examined the effects of diverse characteristics of CEOs on CSR, including gender, education, experience [34], hubris [3], political ideologies [4], pay structure [5], tenure [6], career horizon [7], and stock ownership [9–12].

In this study, we focus on the effects of CEO stock ownership on the firms' CSR activities because it has long been recognized as a critical factor affecting the CEO's decisions and firm performance (e.g., [8]). According to the agency theory [8], the separation of ownership and managerial control often results in agency problems, where the agents (i.e., CEOs) take advantage of information asymmetries to maximize their own interests at the expense of the principals (i.e., shareholders). However, when CEO ownership, or the proportion of shares held by the CEOs, increases, their interests are more aligned with those of shareholders, which tends to prevent them from pursuing goals that are not in the best interests of the shareholders. Therefore, the level of CEO ownership has important strategic implications for their firms' activities and performance.

Prior studies on the effects of CEO ownership on CSR have found mixed results (e.g., [9–13]). For example, Johnson and Greening [9] argued that ownership empowers executives and enables them to allocate resources among diverse stakeholders in a way that ensures continued stakeholder support in the longer run and found a positive relationship between top management equity and CSR. In contrast, Barnea and Rubin [10] stated that managers with a larger ownership stake would have to bear more of the cost associated with the non-value maximizing CSR activities and found a negative relationship between managerial ownership and the CSR rating of a firm. Oh and his colleagues [11] also found a similar result, arguing that stock-owning managers may not reap the benefits of social investments because CSR may increase firm performance in the long run but not in the short run.

We believe that there are at least two reasons for these discrepant findings. First, the CEOs themselves are likely to have divergent perspectives on CSR, based on which they make different decisions given more or less discretionary power. For example, if CEOs truly believe that CSR would increase their firms' value, consistent with the good management theory, then they would engage in more CSR activities as they have greater ownership. Second, there must be some contextual factors interacting with the effects of CEO ownership, so that the same CEO with a given share of ownership would make different CSR decisions contingent on the external or internal conditions. This leads us to question "when" owner-CEOs are more or less likely to engage in CSR activities than non-owner CEOs. In this study, we build upon the behavioral theory of the firm [14] to investigate how CEO ownership interacts with performance feedback to affect a firm's decisions regarding CSR activities.

2.3. The Performance Feedback Model and Organizational Search

Based upon the notion of "bounded rationality" that assumes limitations in the cognitive capacity and resource availability of decision makers [35], Cyert and March [14] suggested the "behavioral theory of the firm," which describes how firms make decisions. They argued that an "aspiration level" is determined through negotiations among coalitions within a firm, which represents "the smallest

outcome that would be deemed satisfactory by the decision maker" [36] (p. 1053). When a firm's performance falls below the aspiration level, it is recognized as a problem, triggering "problemistic search" aimed at finding a solution to that problem [14]. Greve [15,16] named this component of the theory as the "performance feedback model (PFM)" and found empirical supports, demonstrating that the firms' propensities to search for alternatives (in the form of R&D investments or organizational changes) tend to increase as their performance drops further below aspiration levels and decrease rather sharply as their performance exceeds aspiration levels, due to organizational inertia. The solid lines in Figure 1 illustrate Greve's [15] findings, where negative performance feedback (performance below aspirations) triggers problemistic search (see the negative slope in the left side) but positive performance feedback (performance above aspirations) reduces the search for alternatives (see the steeper negative slope on the right side).

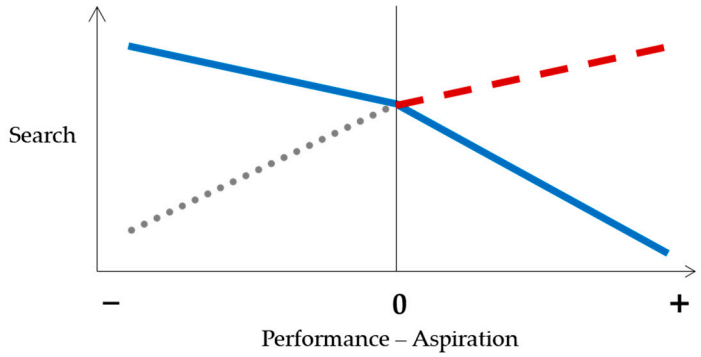


Figure 1. The Variations of the Performance Feedback Model.

While the original PFM predicts that search for alternative courses of action would decrease as the firms' performance exceeds their aspiration levels, some scholars have extended this model to explain some firms' increase in search propensities in the face of a positive performance feedback (e.g., [17–19]). They related this propensity to the notion of a "slack search," which is triggered when slack resources are invested in experimenting with new courses of action [14] (p. 279). Slack resources refer to financial and other resources (e.g., redundant employees, extra time, and unused capacity) in an organization in excess of the minimum required for operations, serving as a buffer against downside risk and environmental jolts [37,38]. To the extent that performance above aspiration levels increases slack resources, positive performance feedbacks may initiate a slack search, at least temporarily. The dashed line in the right side of Figure 1 depicts increasing slack-based searches in the face of greater above-aspiration performance.

Lastly, when a firm is performing far below its aspiration levels, its focus of attention may shift from aspirations to survival, causing a "threat rigidity" [39]. The threat rigidity thesis suggests that the threat of failure makes the actors more reliant on prior courses of action, reducing search activities to preserve current resources [40]. The dotted line in the left side of Figure 1 represents reduced search in response to negative performance feedbacks due to threat rigidity. These diverse forms of responses to performance relative to aspirations suggest the importance of considering the contingent variables interacting with performance feedbacks [19].

2.4. The Interaction of Negative Performance Feedback and CEO Ownership

While the PFM has been extensively examined in various empirical contexts [20], it has rarely been applied to investigate the firms' CSR-related decisions. As an exception, Arora and Dharwadkar [21] examined the effects of performance feedback on CSR, but they fell short of examining the different effects of negative and positive performance feedbacks (i.e., performance below and above aspiration levels, respectively) and considering the mechanism of how organizational search triggered by performance feedbacks results in CSR decisions. According to Cyert and March [14], a problemistic

search is initially conducted in the proximity of the problem symptom or the current alternative, but it can become a more distant search if the initial local search fails to find a satisfactory solution or when search pressure is significantly higher. Thus, many studies found that the firms tend to take greater risks or change their courses of action more radically as their performance decreases further below aspiration levels [16,20]. This search for a solution to the performance problem is not independent from the current level of CSR activities. On the one hand, if the decision makers believe that CSR indeed contributes to firm performance, then they may increase their levels of CSR activities as a result of problemistic search. On the other hand, if they consider CSR merely as a cost, then they are likely to decrease the levels of CSR activities and probably invest in other profit-generating activities instead. Hence, it is difficult to predict the main effect of negative performance feedback on CSR.

However, we can still compare how CEOs would differentially respond to negative performance feedbacks by changing the levels of CSR activities, depending on the amount of their ownership. CEOs with greater ownership tend to have more managerial discretion. Depending on their perspectives on CSR, they may increase, decrease, or sustain the level of CSR activities at their will, as a (partial) solution to the performance problem. In contrast, CEOs with little or no ownership typically have less discretionary power within their firms, compared to the board of directors who represent the shareholders. When faced with a negative performance feedback, these hired CEOs would have even less power and are likely to be concerned about their careers and pressured to turnaround their company's performance as soon as possible. Therefore, increasing CSR investments would be an unthinkable option for them, regardless of their perspectives on CSR. Instead, it is more likely that they would reduce their levels of CSR activities and focus more on boosting the company's performance in a short term. On aggregate, this would result in relatively more CSR activities in the owner-CEOs' firms than in the non-owner CEOs' firms in the face of negative performance feedback. Hence, we hypothesize that:

Hypothesis 1. *As firms' performance decreases below aspirations, the CEOs with greater stock ownership in their companies are more likely to increase CSR activities than those with smaller ownership.*

2.5. The Interaction of Positive Performance Feedback and CEO Ownership

Many scholars have examined the effects of slack resources and past financial performance on CSR and found positive relationships (e.g., [27,41]). For example, Waddock and Grave [27] argued that better financial performance results in the availability of slack resources that provide opportunities for companies to invest in CSR. Also, building on the PFM, Arora and Dharwadkar [21] showed that both slack resources and positive performance feedback tend to have positive impacts on CSR. However, these studies only assume the good management premise and do not consider the search mechanisms. If the decision makers believe that CSR incurs more costs than benefits, positive performance feedbacks (and slack resources) may not result in greater CSR activities, but rather in other innovation activities that were not possible in the face of scarcity. More importantly, as the original PFM suggests, positive performance feedback may indeed reduce search propensities due to decision makers' general tendency towards risk aversion (cf. [42]).

We argue that CEOs' decisions on CSR activities in response to positive performance feedback would be determined by the amount of their stock ownership. To the extent that CEO ownership aligns the CEOs' interests with those of shareholders, CEOs with greater stock ownership in their companies are less likely to pursue goals that do not increase share values. Since CEOs have different perspectives regarding whether CSR helps to increase their firms' value, these owner-CEOs may increase, decrease, or sustain the level of CSR activities, as consistent with their perspectives, when faced with performances that are above aspiration levels. In contrast, as we noted above, CEOs with little or no ownership tend to have relatively less managerial discretion within their firms. However, if firm performance exceeds aspiration levels, then shareholders are likely to trust the CEOs and allow them greater discretion. In this case, these hired CEOs may search for new courses of action

in pursuit of their own interests, consistent with the agency theory [8], instead of engaging in CSR activities, unless they have an injunctive/social perspective on CSR. Thus, in aggregate, we predict that owner-CEOs are relatively more likely to increase their firms' CSR activities than non-owner CEOs when faced with positive performance feedback. This leads us to hypothesize that:

Hypothesis 2. *As firms' performance increases above aspirations, the CEOs with greater stock ownership in their companies are more likely to increase CSR activities than those with smaller ownership.*

3. Methods

3.1. Data and Sample

Following the conventional approach of prior studies examining the PFM, we decided to focus on a specific industry to control for cross-industry differences in responsiveness to performance feedback. The research setting that we chose is the U.S. crude petroleum and natural gas industry (standard industrial classification (SIC) code: 1311), where firms are involved in exploration, extraction, and/or production of oil and gas. These firms are often accused of oil leakages, carbon dioxide emissions, and wastewater pollution, which makes them actively engage in CSR activities [43,44]. Indeed, according to Frynas [43], "The oil and gas sector has been among the leading industries in championing CSR. . . . oil companies have initiated, funded and implemented significant community development schemes. . . . They participate in partnerships with established development agencies such as the US Agency for International Development (USAID) and the United Nations Development Programme (UNDP)" (p. 581). However, "the effectiveness of CSR initiatives in the oil, gas and mining sectors has been increasingly questioned, and there is mounting evidence of a gap between the stated intentions of business leaders and their actual behavior and impact in the real world" [43] (p. 581). Therefore, we believe that this industry provides an appropriate research setting for examining the factors affecting the firms' CSR activities.

To test our hypotheses, we collected and combined data from multiple sources: the firms' financial and general information from CompStat and CRSP, information on the CEOs from ExecuComp, and information on their CSR activities from the Kinder, Lydenberg, and Domini (KLD) database, all of which are commonly used and credible sources. KLD initially covered the S&P 500 firms and since 2002 it has expanded to cover the S&P 1500 firms. Thus, the process of combining available data from these sources resulted in our final sample of 362 firm-year observations from 45 firms, covering the 22-year period between 1995 and 2016. In the sample are two types of firms: The majors, such as ConocoPhillips, Occidental Petroleum, Marathon Oil, and Hess, are large, vertically integrated companies that explore, produce, refine, and sell oil and gas to customers; whereas the independents typically explore and/or produce oil and gas and sell them to others who then refine and distribute them. The firms range from very large ones that have more than 10,000 employees and generate revenue of more than $100 billion, to much smaller ones reporting less than $100 million in revenue with less than 100 employees. The ages of the CEOs were on average 66.76 years old, ranging between 43 and 85, and their average tenure was 7.54 years (see the descriptive statistics below in Table 1).

3.2. Measures and Variables

3.2.1. Dependent Variable: CSR Activities

We used the CSR ratings provided by the KLD to measure the firms' levels of *CSR activities*, which is a commonly used approach in the CSR literature. The KLD rates each firm's strengths (coded 1, and 0 otherwise) and concerns (coded 1, and 0 otherwise) in multiple items along several social performance dimensions. Following prior studies (e.g., [3,6,45]), we calculated an aggregated CSR score by adding the sum of the strengths and subtracting the sum of the concerns along five dimensions: environment, community, diversity, employee relations, and product quality. Then, we rescaled the value by adding seven (7) so that the minimum value would be zero.

3.2.2. Independent Variable: CEO Ownership

Consistent with prior studies (e.g., [9–12]), we measured *CEO ownership* as the ratio of the firm's common shares owned by the CEO to the total amount of outstanding shares of the firm. We obtained information on the CEO's shares from the ExecuComp and the firm's total number of outstanding shares from the CompStat. In our sample, the mean of *CEO ownership* was 0.02 and the standard deviation 0.05 (see Table 1 below). These values are quite similar to the mean of 0.024 and the standard deviation of 0.055 from a larger-scale study [46], based on 15,970 firm-year observations of 2155 firms from various industries excluding the financial and utilities industries, during the similar 20-year period from 1994 to 2013.

3.2.3. Independent Variable: Performance Feedbacks

Performance feedback is defined as a firm's performance relative to its aspiration level at a given year. We measured firm performance (P) as return on assets (ROA), which is net income divided by total asset. Following Greve [47], we measured a firm's aspiration level (A) as a mixture of social aspiration (SA)—the average of other firms' performance—and historical aspiration (HA)—a mix of prior historical aspiration and prior performance. More formally,

$$A_{ti} = a_1 SA_{ti} + (1 - a_1) HA_{ti}$$

$$SA_{ti} = \left(\sum\nolimits_{j \neq i} P_{tj}\right) / (n_t - 1)$$

$$HA_{ti} = a_2 HA_{t-1,i} + (1 - a_2) P_{t-1,i},$$

where i and j indicate firms and n_t is the number of all firms in the sample in year t. We followed Greve [47] to estimate the weights, a_1 and a_2, by examining all combinations of the parameter values by increments of 0.1 (between 0.1 and 0.9) in our estimation model and choosing the values that generate the best model fit, which were $a_1 = 0.3$ and $a_2 = 0.5$.

We specified the performance feedback as a spline function by separating the positive and negative components to test for their differential effects on CSR. The *positive performance feedback* is defined as $P - A$ if $P - A$ is positive (> 0), and 0 otherwise; whereas the *negative performance feedback* is defined as $P - A$ if $P - A$ is negative (< 0), and 0 otherwise. Finally, we performed the log-modulus transformation to account for the skewness by taking the logarithm of the absolute value plus one (1) and putting back the original sign [48].

3.2.4. Control Variables

Several other variables that may affect the firms' CSR decisions are controlled. We controlled for some variables related to CEO characteristics. *CEO age* was measured as of the given year. *CEO tenure* is calculated as the number of years since the CEO first assumed the position. *CEO duality* was coded as 1 if the CEO is also the chairman of the board and 0 otherwise. *Founder-CEO* reflected whether the CEO is also one of the founders. *Salary*, *bonus*, and *incentives* are measured as the ratios of the dollar value to total compensation. We also intended to control the CEO's gender, but it was omitted from the model because of too small variance of this variable. Some variables associated with the firm characteristics were controlled as well. *Firm size* was measured as the firm's total asset. *Firm age* was the number of years since the firm was first included in CRSP. *Market-to-book* was the ratio of the firm's market value to its book value. *Slack* was measured as the ratio of current assets to current liabilities. *Leverage* was operationalized as the ratio of long-term debt to total assets. All firm characteristics control variables were log-transformed to account for their skewness. Finally, we also included year dummies in our model to control for any year-specific effects. All independent and control variables were lagged by one-year over the dependent variable.

4. Results

Descriptive statistics and correlations for the variables in our model are presented in Table 1. The highest correlation is the one between *firm age* and *firm size*, which is 0.57. To check for any multicollinearity issue, we examined the variance inflation factor (VIF) of the variables and found that the highest VIF is 2.25 and the mean VIF is 1.46, indicating no serious problem.

Table 2 presents the fixed-effects estimation results of our model. Model 1 only includes the control variables and shows that *CEO duality* is negatively associated with the firms' CSR activities. It is notable that the effect of *slack* is non-significant, inconsistent with prior studies (e.g., [27]). We conjecture that the reason is because the oil and gas companies are already engaging in relatively greater levels of CSR activities with or without slack resources, given social pressures for CSR initiatives in this industry (cf. [43]).

Table 1. Descriptive Statistics and Correlation Coefficients.

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. CSR activities	6.19	1.77	-							
2. CEO age	66.76	7.86	−0.23	-						
3. CEO tenure	7.54	6.22	0.11	0.27	-					
4. CEO duality	0.51	0.50	0.04	0.20	0.25	-				
5. Founder CEO	0.06	0.23	0.18	−0.19	0.20	0.21	-			
6. Salary	0.15	0.14	−0.05	0.06	−0.19	−0.27	−0.04	-		
7. Bonus	0.12	0.15	−0.07	0.11	0.01	0.05	−0.09	0.25	-	
8. Incentives	0.13	0.12	−0.19	0.30	0.04	−0.13	−0.09	0.44	0.17	-
9. Firm size	8.74	1.46	−0.09	0.18	0.15	0.16	−0.16	−0.44	−0.13	−0.12
10. Firm age	2.84	1.05	−0.24	0.27	0.04	−0.08	−0.22	−0.08	−0.06	0.06
11. Market-to-book	0.69	0.02	−0.01	0.02	0.04	0.01	0.01	−0.07	0.00	−0.07
12. Slack	0.72	0.22	−0.01	0.09	−0.07	0.05	0.07	0.06	−0.05	−0.13
13. Leverage	0.22	0.11	0.10	−0.21	0.10	−0.05	−0.11	0.03	0.11	0.03
14. CEO ownership	0.02	0.05	0.12	−0.10	0.13	−0.01	0.22	−0.06	−0.11	−0.05
15. Negative performance feedback	−0.04	0.11	−0.09	0.07	−0.02	0.11	−0.02	−0.04	0.13	−0.04
16. Positive performance feedback	0.03	0.05	−0.04	0.07	0.07	0.03	0.00	0.13	0.11	0.11
Variable	**Mean**	**SD**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
10. Firm age	2.84	1.05	0.57	-						
11. Market-to-book	0.69	0.02	0.02	0.00	-					
12. Slack	0.72	0.22	0.00	0.07	0.02	-				
13. Leverage	0.22	0.11	−0.10	−0.08	−0.01	−0.32	-			
14. CEO ownership	0.02	0.05	−0.19	−0.14	0.05	0.01	−0.05	-		
15. Negative performance feedback	−0.04	0.11	0.13	0.08	0.03	0.03	−0.44	0.01	-	
16. Positive performance feedback	0.03	0.05	−0.25	−0.09	0.26	0.00	0.04	0.09	0.16	-

Notes: $n = 362$. Correlations greater than 0.103 are significant at $p < 0.05$. Year dummy values are not reported due to space limitations.

In Model 2, the main effects of our independent variables are added to the model, significantly increasing the model fit ($\chi^2 = 3.48$, $p < 0.05$). The effect of *CEO ownership* is positive and significant ($\beta = 2.843$, $p < 0.05$), implying that the CEOs with greater ownership tend to invest more in CSR activities, consistent with the predictions based on the good management theory (e.g., [9]). It is also shown that the effect of *negative performance feedback* is positive but non-significant ($\beta = 1.859$, $p = 0.187$), whereas that of *positive performance feedback* is negative and significant ($\beta = -4.179$, $p < 0.01$).

The interaction terms between our independent variables are added in Model 3 to test our hypotheses, where the model fit is significantly increased ($\chi^2 = 3.58$, $p < 0.05$). The coefficient of the interaction term between *CEO ownership* and *negative performance feedback* is negative and significant ($\beta = -40.673$, $p < 0.05$). Given that the main effect of *negative performance feedback* is non-significant but positive, this result implies that the relationship between below-aspiration performance and CSR activities is less (more) positive as CEO ownership increases (decreases). Thus, it supports Hypothesis 1 that the CEOs with greater ownership are relatively more likely to increase CSR activities than those with smaller ownership as the firm performance decreases below aspirations. However, the coefficient of the interaction term between *CEO ownership* and *positive performance feedback* is

positive but non-significant (β = 32.057, p = 0.122). This result suggests that CEO ownership does not significantly affect the relationship between above-aspiration performance and CSR activities, failing to support Hypothesis 2.

Table 2. The Fixed-Effect Estimation Results of Corporate Social Responsibility (CSR) Activities.

Variables	Model 1	Model 2	Model 3
Constant	6.973 ***	5.848 **	7.629 **
	(2.480)	(2.600)	(2.930)
CEO age	−0.003	0.006	0.007
	(0.034)	(0.034)	(0.033)
CEO tenure	0.038	0.036	0.035
	(0.031)	(0.031)	(0.030)
CEO duality	−0.589 *	−0.619 *	−0.588 *
	(0.326)	(0.317)	(0.320)
Founder CEO	0.488	0.469	0.625
	(0.803)	(0.781)	(0.862)
Salary	0.729	0.752	0.832
	(0.612)	(0.607)	(0.625)
Bonus	0.149	0.161	0.095
	(0.554)	(0.551)	(0.554)
Incentives	−1.761	−1.541	−1.577
	(1.422)	(1.396)	(1.418)
Firm size	−0.136	−0.418	−0.481 *
	(0.222)	(0.265)	(0.279)
Firm age	−0.669	−0.501	−0.500
	(0.441)	(0.411)	(0.411)
Market-to-book	−0.200	2.200	0.233
	(0.744)	(1.363)	(1.937)
Slack	−0.107	−0.064	−0.074
	(0.426)	(0.457)	(0.457)
Leverage	−0.088	1.432	1.432
	(1.117)	(2.029)	(2.026)
CEO ownership		2.843 **	−0.053
		(1.296)	(2.363)
Negative performance feedback		1.859	2.628 *
		(1.388)	(1.537)
Positive performance feedback		−4.18 ***	−5.231 ***
		(1.460)	(1.588)
Ownership × Negative performance feedback			−40.673 **
			(15.565)
Ownership × Positive performance feedback			32.057
			(20.320)
Within R^2	0.328	0.346	0.350
Model comparison		1 vs. 2	2 vs. 3
Wald χ^2		3.48 **	3.58 **
df		3	2

Notes: n = 362. n of firms = 45. Year dummy values are not reported due to space limitations. Standard errors are in parentheses. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

Figure 2 illustrates the effects of performance feedbacks on CSR activities when CEO ownership is high (one standard deviation above the mean: 0.063) and low (zero), based on the estimates from Model 3. The slope of negative performance feedback for higher ownership is non-significant (0.076, $p > 0.10$, the solid line on the left side), whereas that for lower ownership is positive and significant (2.628, $p < 0.10$, the dashed line on the left side). Given the non-significant main effect of *negative performance feedback*, this figure implies that the significant difference between high and low ownership (Hypothesis 1) is mainly due to the fact that CEOs with lower ownership tend to reduce their firms' CSR activities as their firm performance decreases below aspirations. On the other hand, although the

slope of positive performance feedback for lower ownership seems to be steeper than that for higher ownership, their difference is not statistically significant.

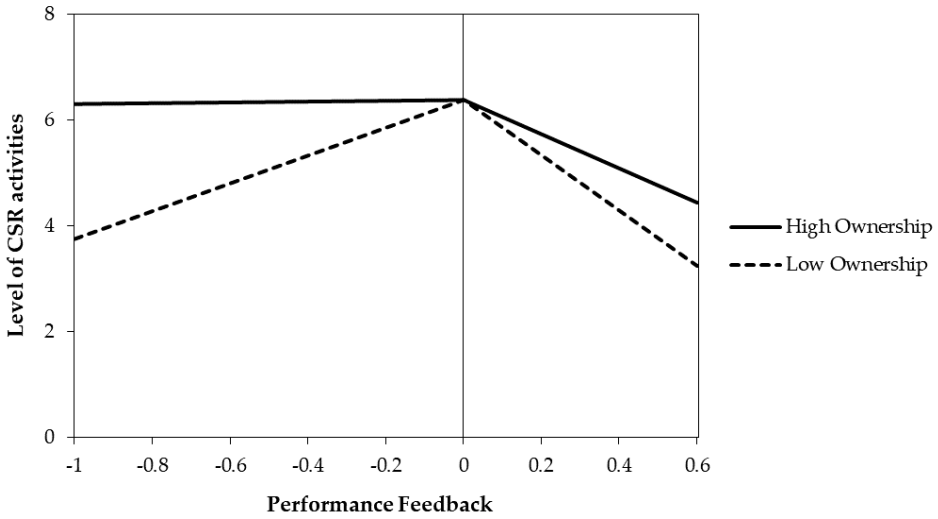


Figure 2. The Estimated Effects of Performance Feedback on the Level of CSR Activities.

5. Discussion

This study examined how CEO ownership differentially affects the firms' CSR activities when performance decreases below and increases above their aspiration levels. Building upon the agency theory and the performance feedback model, we argued that CEOs with greater ownership are relatively more likely to increase CSR activities than those with smaller ownership, as firm performance deviates further from aspirations, because owner-CEOs tend to have more discretionary power and a greater pool of behavioral alternatives, including CSR activities. Our empirical tests in the context of the U.S. crude petroleum and natural gas industry between 1995 and 2016 found that there is a systematic difference in how firms' CSR activities are adjusted in response to negative performance feedback depending on the levels of CEO ownership (Hypothesis 1 supported); whereas CEO ownership does not make a significant difference between firms in terms of the levels of CSR activities in the face of positive performance feedback (Hypothesis 2 not supported).

A graphical illustration of our estimated model in Figure 2 suggests that the significant effect of CEO ownership given negative performance feedback is mainly due to the tendency of CEOs with smaller ownership to reduce their firms' CSR activities as their firm performance further decreases, rather than due to an increase in CSR activities by the CEOs with greater ownership. This means that when faced with a performance problem, the firms' search for solutions to the problem is likely to involve a reduction in CSR investments if the CEOs have small or no ownership, because they tend to have short-term orientation and limited options and discretionary power. The graph in Figure 2 also shows that CEOs with both large and small ownership tend to reduce their firms' CSR activities as firm performance further increases above aspiration levels. This result contrasts with prior studies arguing for the positive effects of prior performance and slack resources on CSR (e.g., [27]). Rather, the overall results of our study suggest that the CEOs in our research context tend to care about CSR only when their firms' performance is near their target and not so much when performance is far below or above the target, especially if they have little stock ownership.

Our study makes some contributions to the CSR literature. First, this paper is one of the few attempts to employ the PFM in investigating the firms' CSR decisions (cf. [21]). While CSR activities themselves are not exactly a search behavior, our findings showed that they are very likely to be (negatively) affected by the firms' search for alternative courses of action triggered by performance feedback. We believe that, given diverse perspectives on CSR, the PFM can be helpful in understanding further the motivation behind the firms' CSR decisions by examining "when" they

engage in more or less CSR activities. Although Arora and Dharwadkar [21] have attempted to examine the effects of performance feedback on CSR, they could not discern the various forms of responsiveness to performance feedback because they did not separate the negative and positive performance feedback (see Figure 1 above). For example, our findings suggest that they might have found a positive relationship between performance relative to aspirations and CSR because the (non-owner) CEOs' myopic problemistic search reduces their investments in CSR activities in the face of negative performance feedback, not because slack resources are invested in CSR activities in the face of positive performance feedback.

Second, this study proffers a solution to the mixed findings of prior studies on the effects of CEO ownership on CSR. By incorporating the PFM, we argued that the question of "when" can be more important than that of "whether" or "how." Indeed, our empirical analysis showed that CEO ownership is positively associated with CSR activities when firm performance falls below aspirations; whereas it does not have a significant effect when firm performance increases above aspirations. These results seem to suggest that prior studies' (e.g., [9]) findings of the positive relationship between CEO ownership and CSR activities may be because most of the firms at the time were facing negative performance feedbacks. In contrast, the findings of prior studies (e.g., [10–12]) supporting the negative relationship may be due to underrepresentation of the firms that are performing below their aspirations. At the least, our study suggests the usefulness of considering the PFM in investigating the relationship between CEO ownership and CSR activities.

Our findings also have some managerial implications. CSR activities are becoming increasingly more crucial for firms' sustainable businesses by providing legitimacy and facilitating exchange relations with their stakeholders [1,25]. However, we showed that firms are more likely to engage in CSR activities when their performance is near their targets and not as much when they are performing well below or above their aspirations, especially if their CEOs have small or no stock ownership. This result implies that many CEOs do not genuinely believe in the importance of CSR for their firms' sustainability. Given the stakeholders' growing expectations towards corporate citizenship, this may eventually threaten the firms' sustainability. Therefore, we suggest that firms and CEOs proactively experiment with CSR-related activities for their problemistic and slack searches.

This paper has some limitations that need to be addressed in future research. First, although we argued that the firms' CSR activities can be adjusted as a result of search behavior triggered by performance feedbacks, we did not indeed measure the firms' search intensity. While some prior studies used the R&D intensity as a proxy, it does not fully capture the firms' search range (e.g., strategic alliances, M&A, and restructuring) either. Future research should attempt to directly observe the interactions between CSR activities and other firm activities in face of performance feedback. Second, although we assumed that the owner-CEOs tend to have greater managerial discretion, we did not fully consider the firms' ownership structure and/or governance structure. Even the owner-CEOs' search decisions may be constrained by stronger governance structure or larger shareholders. We expect that future studies would examine these factors that can limit the search range and/or the pool of feasible alternatives. Third, our research design has some limitations. Since the KLD database only covers some selected firms, our final sample had only 45 firms. Also, due to our limited access to the KLD database, we could only obtain the information on CSR activities between 1995 and 2016. We would like to encourage future researchers to use different sources to perform more rigorous analyses. Finally, the generalizability of our findings is limited. Our research setting, the U.S. crude petroleum and natural gas industry, is one of the industries that face strong pressure for social responsibility from the stakeholders. It would be interesting for future research to examine the effects of external pressure on the firms' responses to performance feedbacks in other contexts.

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