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Managerial Overconfidence, Corporate Social Responsibility Activities, and Financial Constraints

Kyung-Hee Park ¹, Jinho Byun ^{2,*} and Paul Moon Sub Choi ² ¹ Graduate School, Ewha Womans University, Seoul 03760, Korea; fin.khpark@gmail.com² College of Business Administration, Ewha Womans University, Seoul 03760, Korea; paul.choi@ewha.ac.kr

* Correspondence: jbyun@ewha.ac.kr

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Abstract: Managerial overconfidence refers to managers' cognitive bias, according to which they demonstrate unwarranted belief in their own judgments and capabilities. This study provides a new measurement of CEO overconfidence through textual analysis of management discussion and analysis (MD&A) in 10-K documents by making use of the US Securities and Exchange Commission (SEC) EDGAR database. Overconfidence was obtained from "optimism" using the Diction program. From a sample of 19,367 US firms from 1994 to 2016, we found that CEO overconfidence was negatively related to corporate social responsibility (CSR) activities. Since overconfident CEOs are likely to consider CSR activities less important than their own ability, they seem to reduce CSR activities. Also, CSR activities initiated by overconfident CEOs were negatively related to firms' long-term performance. However, CSR activities led to positive long-term performance in firms that were financially constrained. Our findings show that CSR activities undertaken as a result of CEO overconfidence by financially unconstrained firms could be harmful to shareholder value in the long term.

Keywords: CEO overconfidence; optimism; CSR activities; long-run performance; financial constraints

1. Introduction

CEOs, like all people, have limited rationality, so they do not always make optimal decisions. Overconfidence is most robust in psychological biases and has been used to explain executives' suboptimal decision-making [1]. Prior research demonstrates a link between managerial overconfidence and corporate policies [2–7]. However, little is known about how managerial overconfidence impacts corporate social responsibility (CSR) activities. We investigated the relationship between managerial overconfidence and CSR activities using a textual analysis of 10-K reports from the US Securities and Exchange Commission (SEC) EDGAR database.

Recently, many studies on CSR have covered the relationship between CSR and financial performance. A number of empirical studies have shown that the more CSR activities a company is involved in, the better its long-term performance (e.g., [8,9]). Li et al. [10] investigated equity returns and showed that a portfolio consisting of the best CSR companies in the world generated positive abnormal returns. On the other hand, the relationship between CSR and financial performance could be negative, because CSR expenditures cause additional costs for firms and divert funds from more profitable potential investments. This negative relationship was also confirmed by a number of empirical studies (e.g., [11–13]).

In this paper, we focus on the impact of a CEO's overconfidence on decisions regarding a company's CSR activities. Since overconfident CEOs are likely to consider CSR activities less important than their own managing ability, they tend to reduce CSR activities. Also, overconfident CEOs may overlook CSR activities because of optimistic expectations of their future performance.

CSR activities are diverse and mostly require financial resources, which include community engagement, marketing and advertising, customer relations, workplace health and safety, union relations, human rights policies, product safety and quality, transparency in reporting, governance structure, and environmental protection activities. Chan et al. [14] found that, in general, firms facing financial constraints do not engage in any CSR activities. Zhao and Xiao [15] also found that CSR engagement is negatively correlated with financial constraints. Therefore, if firms face financial constraints with regard to engaging in CSR activities, rigorous CSR activities could be harmful to their long-term performance. We examine the long-term performance of CSR activities initiated by overconfident CEOs, considering financial constraints.

Prior research on the impact of a CEO's emotional bias (optimism, loss aversion, overconfidence) and other self-serving bias on corporate strategic decisions included financing decision [16], investments [17], dividend payment [18], cost behavior, and R&D expenditure [19]. This paper tries to examine the impact of CEOs' overconfidence level on CSR activities for the first time. As far as we know, no previous research has investigated the relationships between managerial overconfidence, CSR activities, and financial performance. This research offers a particular qualitative approach in providing a new measurement of CEO overconfidence through computer-assisted textual analysis, by describing and interpreting characteristics of the management discussion and analysis (MD&A). Classified as overconfident or normal, CEOs prefer to choose more or fewer CSR activities, according to their characteristics. The long-term performance of a firm depends on its CSR activities as well as its financial situation. Specifically, if a firm is financially unconstrained, then fewer CSR activities initiated by an overconfident CEO would result in a negative long-term performance. However, if a firm is constrained, choosing fewer CSR activities would be a better policy.

We employ a sample of 19,367 observations of US firms from 1994 to 2016, and the empirical implications of our study are as follows. First, CEO overconfidence appears to lead to fewer CSR activities. Our results indicate that the level of CSR activities is lower in firms managed by overconfident CEOs. Also, CEO overconfidence is related to less CSR strength and more CSR concerns. Additionally, CSR activities lead to positive long-term performance in firms with financial slack. These outcomes are robust in a subsample of financially unconstrained firms with overconfident CEOs.

We contribute to the growing literature on the impact of CEO overconfidence on corporate decisions by offering the first evidence of a relationship between CEO overconfidence and firms' CSR activities. Also, we expand the scope of CSR study by considering the influence of financial constraints and exploring the relationship between overconfident CEOs and their preferred level of CSR activities. Recent evidence indicates that managerial overconfidence can lead to decisions that harm firm value. Our results support this notion, as we find that highly overconfident managers are associated with negative long-term performance when firms are financially unconstrained.

This paper is organized as follows: Section 2 contains a short literature review regarding CEO overconfidence, CSR activities, and long-term performance, and Section 3 presents the research hypotheses and describes the research methodology. Section 4 presents the main findings of our study, and Section 5 concludes and gives some future research ideas.

2. Literature Review

Overconfidence is generally explained as a phenomenon in which one overestimates the accuracy of one's judgments [20]. According to Moore and Healy [21], there are three types of overconfidence. The first type is overestimation, which occurs when a person has overestimated the degree of their abilities, performance, control, or probability of success. The second type is overplacement, which occurs when someone believes that they are better than someone else. This attribute has been described as the better-than-average effect. The third type is overprecision, which is when someone believes that their belief is more precise than it is. Duttie [1] stated that overestimation and overplacement are based on performance, while overprecision is based on calibration. Most psychological studies on overconfidence are based on overestimation and overplacement. Hilton et al. [22] also stated that there are three types

of overconfidence: judgment overconfidence, self-enhancement bias, and social risk-related optimism. Overplacement, including the better-than-average effect, is a type of self-enhancement bias. Regardless of the actual model used, researchers have found that there is a variety of types of overconfidence.

The literature regarding CEO overconfidence essentially stems from the notion of a “better-than-average” effect in the psychology literature [23–25]. The better-than-average notion is also applied to future events for which people express unrealistic optimism [26]. Studies about human irrationality have been conducted not only about investors, but also about company managers. The psychological biases of company managers have a significant influence on companies’ decision-making processes [27,28]. Roll [29] introduced the concept of CEO overconfidence through his hypothesis of managerial hubris, the first of its kind in academic finance. Overconfidence may impair moral awareness and result in unethical behavior. Thus, fraud, accounting, and financial scandals, and other adverse outcomes, are some of the consequences of overconfidence documented in the literature [3,30–32].

Regarding the theoretical background on managerial overconfidence, Azouzi and Jarboui [16] explained that the main cause of capital structure choice is CEO emotional bias (optimism, loss aversion, and overconfidence). They showed that CEOs (optimistic, loss averse, and overconfident) prefer to finance their projects primarily through internal capital, secondly by debt, and finally by equity, which implies the presence of a pecking order of choice. Based on prior studies, Chen et al. [33] argued that the greater the CEO’s overconfidence, the higher the expectations for future performance, which results in asymmetric cost behavior. Hur et al. [20] examined the impact of a CEO’s confidence level on decisions regarding research and development (R&D) expenditures.

One of the most important issues in the study of overconfidence is how to measure it. Psychology studies commonly measure overconfidence through surveys. However, most finance studies use proxy variables, such as a company’s financial information, when measuring levels of CEO overconfidence. Despite the development of various methods, optimism and categories of overconfidence have been confusingly used when it comes to the concept of overconfidence [34,35]. Malmendier and Tate [2] defined optimism as overconfidence and modeled overconfident CEOs as overestimating future firm performance. Although no consensus has been reached on measuring overconfidence, there has been a lot of research classifying overconfidence in terms of a high level of “optimism” (e.g., [36]).

For empirical studies, the methods of measuring overconfidence variables can largely be divided into stock option-based and text analysis. Using ExecuComp data, Campbell et al. [4] defined highly optimistic CEOs, which is a stock option-based measurement. Text analysis, meanwhile, analyzes the content of a firm’s nonfinancial documents to extract meaningful information.

Malmendier and Tate [2,3] were the first to provide a way to measure overconfidence using stock options. They saw that risk-averse executives tended to exercise stock options before overconfident executives did, because the latter believed that the stock was undervalued. Since they introduced this method, many studies have used 67% or 100% standards of average stock option prices to measure overconfidence [8,37].

Textual analysis measures the tone of the content expressed in public disclosure, such as profit announcements [38,39], conference calls [40], and 10-K reports. Loughran and McDonald [41] developed a list of words in the financial context by analyzing the words used in 10-K documents submitted by US-listed companies, because they hypothesized that a specific dictionary in this context would have greater explanatory power than a general dictionary. However, in this case, the disadvantage is that fewer words are categorized. We applied Diction software for a text analysis, which is frequently used in many studies (e.g., [42]), after Loughran and McDonald [41].

Previous studies in the CSR literature have shown that CSR activities have a positive effect on financial performance and corporate value, because CSR raises the company’s reputation, leads to increased profitability, and improves employee productivity. CSR activities can enhance a company’s reputation and therefore improve its financial performance in the long run [43]. In addition, through CSR, communication with various stakeholders has a positive impact on nonfinancial value and increases the value of the company in the long-term [44,45]. CSR activities are sometimes claimed to

increase the value of intangible assets, such as brand value. However, some studies have shown that CSR has an adverse effect on corporate value, because it imposes additional costs on companies [12,46]. Zhao and Xiao [15] examined the role of a firm's life cycle stage on the relationship between CSR and financial constraints. They found that for firms in the growth, maturing, and declining phases of the life cycle, CSR engagement is negatively correlated with financial constraints. However, when researching information on CSR disclosure, Michelon et al. [47] pointed to an increasing lack of completeness and decreasing amount of credibility in the information reported, as well as concerns about overall reporting practices.

Recently, many studies on CSR activities have focused on corporate identity and value. For example, empathetic leadership, embedded in a culture of justice and care, could establish norms and expectations that serve as guidelines for responsible management. Deliu [48] argued that empathetic leadership entails effective corporate governance, and that companies have to grow emotional capital to handle issues of low morale, organizational stress, high staff turnover, and lack of work/life balance. Thus, corporate social responsibility (CSR) values cannot be communicated efficiently if they do not naturally belong to a company's identity [49]. Most studies on CSR have suggested that CSR activities improve a firm's reputation. As a result, they lead to employees being gratified to work in their firm. Additionally, social identity theory would suggest that if treating others well is part of an employee's self-concept, then they would find greater identification with an organization that treats others well [50]. Kim et al. [51] posited that due to the interpersonal nature of CSR, humans find meaningfulness through helping and improving the well-being of others. CSR contributes to the development of a favorable company image, enabling the firm to secure critical resources, enhance product competitiveness, and boost employee productivity [52]. Tang et al. [53] explored the role of the CSR engagement strategy. They proposed that firm profits are shaped by how firms engage in CSR and found that firms benefit more when they adopt a CSR engagement strategy that is consistent, involves related dimensions of CSR, and begins with aspects of CSR that are more internal to the firm.

Jo and Harjoto [54] investigated the relationship between CSR, corporate governance, and corporate financial performance in a sample of 2952 US firms for the period 1993–2004. Their results showed that CSR resulting from effective corporate governance indicators, such as board independence, presence of institutional investors, and number of analysts following a firm, positively influences corporate financial performance. Using the same sample, in another study, the authors investigated the impact of governance and monitoring mechanisms on the financial performance of firms that engaged in CSR activities. The study found that the number of analysts following these indicators was positively related to firm value for CSR firms. Board leadership, board independence, blockholder ownership, and institutional ownership were also found to have a positive, but weaker, impact.

3. Methodology

3.1. Sample and Data

We used several databases to construct our main sample. The sample consisted of publicly traded US firms from 1994 to 2016. We began in 1994, because this was the year from which we could obtain 10-K reports from the SEC. Furthermore, one of our key variables, CSR data from the MSCI KLD 400 Social Index, limited our last year to 2016. The construction of our dataset on CEO overconfidence was based on a textual analysis of SEC EDGAR 10-K reports, as in Loughran and McDonald [31]. Using crawling techniques to download managers' opinion text in 10-K reports, we analyzed item 7, "managerial discussion and analysis" (MD&A). We excluded cases where the total number of words used in MD&A was fewer than 200. To be eligible for inclusion in the sample, a firm had to be listed in the MSCI KLD dataset, from which we derived the proxy of CSR activities.

The stock price data for our sample were obtained from the CRSP. We included only ordinary common equities for our estimation of abnormal returns. The accounting data used for many variables were received from the Compustat database. We omitted those observations that had total assets missing

or negative book value of equity. In line with a widely accepted convention, financial (SIC 6000–6999) and utility (SIC 4900–4949) firms were excluded. Our final sample consisted of 19,367 observations.

From the MSCI KLD dataset, we averaged annual CSR, STR_V, and CON_V, as shown in Figure 1. STR_V and CON_V, which stand for CSR strength and concerns, respectively, represent positive and negative CSR activities. CSR represents overall CSR activities. Figure 1 shows the time-series patterns of CSR, STR_V, and CON_V. Recently, STR_V (positive) and CSR increased, while CON_V (negative) decreased.

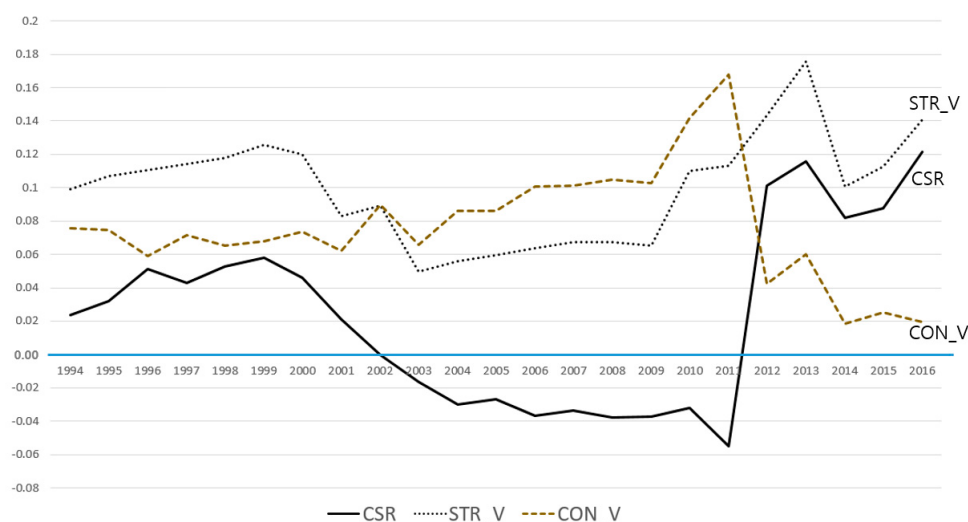


Figure 1. Time-series patterns of corporate social responsibility (CSR) activities from 1994 to 2016. STR_V—CSR strength; CON_V—CSR concerns.

3.2. Variables

Our measure of managerial overconfidence was based on a textual analysis of the wording used in the managerial discussion and analysis (MD&A) section of the 10-K reports. Because MD&A describes a company's current status and future plans from the management perspective, it is believed that this is the best indication of management characteristics. If managers are more overconfident, this should be reflected in the words they choose when discussing their firm's prospects.

Empirically, we followed the textual analysis procedure applied in Loughran and McDonald [41], except we used a different dictionary. Of the four approaches to textual analysis—rhetorical criticism, content analysis, interaction analysis, and performance studies—we used content analysis. To analyze the text, we employed a standard text-analysis software, Diction, which measures the word choice in the text on a number of aspects. Specifically, we used Diction's measure of "optimism" as a proxy for managerial confidence. Text with more words suggesting "praise", "satisfaction", and "inspiration", and fewer words suggesting "blame", "hardship", and "denial" received higher values for this measure of confidence. Because the length, tone, and general content of the MD&A section in 10-K reports were time-varying over the sample period, we classified CEO overconfidence level by optimism values as 20 groups in each year.

KLD is a rating service that assesses a great number of firms with regard to their strengths and concerns on a series of dimensions of CSR activities. To be more specific, companies are rated on multiple indicators within seven qualitative issue areas: community, corporate governance, diversity, employee relations, environment, human rights, and product. We followed Oikonomou et al. [55] in order to make the most of the information contained in it. We added all the ratings of the indicators for the strengths/concerns of a particular qualitative business issue and then divided the sum of those ratings by the number of indicators of the specific issue area. First, both the average strengths (STR_V) and average concerns (CON_V) were calculated from particular indicators of strengths and concerns. CSR is STR_V minus CON_V, which measures the overall CSR activities of a firm.

In order to measure long-term performance, we calculated average monthly abnormal returns (AARs) using the three-factor model of Fama and French [56]. To test the relationship between CSR and financial performance, all CSR variables were calculated from the KLD dataset. Sometimes we used a dummy variable for CSR. The CSR_D variable took the value of 1 for firms included in any strength (positive) categories in a given year and 0 otherwise. To measure financial constraint, we introduced a dummy variable for decreased cash flow (DC). DC had a value of 1 if cash flow during the year decreased, and 0 otherwise.

We also included firm size, leverage, market-to-book equity, cash flow, and DC as control variables that could affect a firm's financial performance. Among these control variables, firm size was the natural logarithm of total assets. This was because the objective of this paper was to measure a firm's total resources that could be used to generate profit and finance CSR activities. The calculation methodology for all variables is provided in Table 1.

Table 1. Definitions of variables.

Variable	Description
OC	Overconfidence from textual analysis of managerial discussion and analysis (MD&A) in 10-K reports; optimism values classified into 20 groups in each year
CSR	Average annual corporate social responsibility (CSR) activities: STR_V minus CON_V
STR_V	Average annual strength (STR_V) components from KLD
CON_V	Average annual concern (CON_V) components from KLD
AAR_12	Twelve-month monthly average abnormal returns
SIZE	Natural logarithm of total assets
LEV	Adjusted total liabilities to total assets (leverage)
CF	Income before extraordinary item plus depreciation (cash flow)
INV	Capital expenditure (Compustat item 128) to total assets of prior years (investments)
MTB	Ratio of market value to book value (of equities)
DC	Dummy variable for decreased cash flow, with a value of 1 if CF decreased compared with last year and 0 otherwise

3.3. Hypotheses and Models

Overconfident CEOs believe that they can enhance stockholder value by not choosing CSR activities. This is because they overestimate the probability that they can manage their firm efficiently and believe that CSR activities have uncertain outcomes and need more time. Based on the literature review, three research hypotheses were formulated and tested. As this is an empirical question, we established the first hypothesis as follows:

Hypothesis 1. *Firms with CEOs who have a high level of overconfidence have fewer CSR activities than those with CEOs who are less overconfident.*

CEOs are overconfident when they irrationally overestimate their abilities or future outcomes, underestimate risks, and apply lower opportunity costs. Therefore, CSR activities initiated by overconfident CEOs produce lower long-term performance. However, when firms are financially constrained, CEOs are more prudent and rational. As a result, we established two more test hypotheses.

Hypothesis 2. *CSR activities initiated by overconfident CEOs are negatively related to firms' long-term performance.*

Hypothesis 3. *CSR activities in financially constrained firms are positively related to the firms' long-term performance.*

In order to examine the effect that CEO overconfidence has on company CSR activities, company CSR was set as the dependent variable and the following regression analyses were conducted. The overconfidence variable (OC) used in this regression was optimism from 10-K reports. To investigate

the effect of CEO overconfidence on CSR activities, we first present a basic regression model, Equation (1). Equation (2) examines the effect of CSR with CEO overconfidence on long-term performance. An interaction term between CSR and OC was created and its effects were examined separately. Long-term performance was analyzed using the monthly average abnormal return using the Fama–French (FF) three-factor model. Also, we conducted a regression analysis that used long-term performance as a dependent variable and CSR activities faced with financial constraints (DC) as the independent interaction variable in Equation (2).

$$CSR_{i,t} = \alpha_0 + \beta_1 \cdot OC_{i,t} + \beta_2 \cdot SIZE_{i,t} + \beta_3 \cdot LEV_{i,t} + \beta_4 \cdot CF_{i,t} + \beta_5 \cdot INV_{i,t} + \beta_6 \cdot MTB_{i,t} + \beta_7 \cdot DC_{i,t} + \epsilon_{i,t} \quad (1)$$

$$AAR_{12_{i,t}} = \alpha_0 + \beta_1 \cdot CSR_{i,t} + \beta_2 \cdot CSR_{i,t} \times OC_{i,t} + \beta_3 \cdot OC_{i,t} + \beta_4 \cdot CSR_{i,t} \times DC_{i,t} + \beta_5 \cdot DC_{i,t} + \beta_6 \cdot SIZE_{i,t} + \beta_7 \cdot LEV_{i,t} + \beta_8 \cdot CF_{i,t} + \beta_9 \cdot INV_{i,t} + \beta_{10} \cdot MTB_{i,t} + \epsilon_{i,t}, \quad (2)$$

where α_0 represents the unknown intercept of every company, β represents the coefficient of each explanatory variable, and $\epsilon_{i,t}$ is the error term, with $i = 1 - 19,367$ companies and t representing the years analyzed (1994–2016).

4. Results

4.1. Findings

There were 19,367 samples included in the final analysis after extracting overconfidence and CSR data from 1994 to 2016 and matching them with the stock return and financial data. Table 2 shows the descriptive statistics of our variables. Overconfidence (OC) was calculated by ranking firms' optimism and assigned a score of 1–20. STR_V (CON-V) was the average strength (concern) components from KLD. CSR was STR_V minus CON_V, while CSR20 was ranked into 20 groups. The firm size (SIZE), leverage (LEV), cash flow (CF), and market-to-book equity ratio (MTB) variables showed mean values of 7.4627, 51.98%, 720.92, and 1.7269, respectively. Investments (INV) were capital expenditures scaled by the book value of total assets for prior years. In order to examine long-term returns, the monthly average abnormal returns (AARs) were calculated for 12 months using the FF three-factor model.

Table 2. Descriptive statistics ($n = 19,367$).

Variable	Mean	Median	Min	Max	Std.
OC	10.2829	10.0000	1.0000	20.0000	5.7084
CSR	0.0202	−0.0010	−0.5227	1.2573	0.1663
STR_V	0.1048	0.0465	0.0000	1.3704	0.1600
CON_V	0.0847	0.0488	0.0000	0.8611	0.0910
AAR_12	0.24%	0.19%	−28.18%	38.39%	3.09%
SIZE	7.4627	7.3624	−0.2231	13.5896	1.6157
LEV	0.5198	0.5173	0.0000	5.5020	0.2510
CF	720.92	127.00	−18,348.00	63,894.00	2715.96
INV	0.0590	0.0390	−0.1240	2.7867	0.0730
MTB	1.7269	1.1411	0.0063	2650.1200	19.0939
DC	0.3553	0.0000	0.0000	1.0000	0.4786

Table 3 shows the CSR activities between low and high overconfident groups. In panel A, we classified the sample into two subsamples, the lowest 20% group and highest 20% group, according to CEO overconfidence level. In panel B, we classified the sample into two groups using the 50% overconfidence level. All results were the same as in panel A and significant. The differences between the two groups were significant.

Table 3. Comparing CSR activities between low and high overconfidence.

Panel A: High/low 20% of overconfidence					
Variables	Overconfidence Level		Difference	t-stat	p-value
	Low 20%	High 20%			
CSR	0.0222020	0.0133396	0.0088624	2.550	0.0054
STR_V	0.1034551	0.0988458	0.0046093	1.362	0.0866
CON_V	0.0812531	0.0855062	−0.0042532	−2.266	0.0117
Panel B: High/low 50% of overconfidence					
Variables	Overconfidence Level		Difference	t-stat	p-value
	Low 50%	High 50%			
CSR	0.0188422	0.0125376	0.0063046	3.026	0.0012
STR_V	0.0981987	0.0942905	0.0039082	1.951	0.0255
CON_V	0.0793565	0.0817529	−0.0023964	−2.073	0.0191

Table 4 shows the correlations among the variables. CSR and OC were negatively correlated. In addition, there was a significantly negative correlation between CSR and long-term performance (AAR_12). The variable for CEO overconfidence showed a significantly positive correlation with INV.

Table 4. Pearson correlation matrix ($n = 19,367$).

Variable	CSR	OC	AAR_12	SIZE	LEV	CF	INV	MTB
OC	−0.0204 (0.0045)							
AAR_12	−0.0130 (0.0694)	−0.0018 (0.8039)						
SIZE	0.3203 (0.0000)	0.0634 (0.0000)	−0.0210 (0.0035)					
LEV	0.0553 (0.0000)	0.1059 (0.0000)	0.0411 (0.0000)	0.3385 (0.0000)				
CF	0.2285 (0.0000)	−0.0494 (0.0000)	−0.0082 (0.2539)	0.4964 (0.0000)	0.0699 (0.0000)			
INV	−0.0287 (0.0001)	0.0295 (0.0000)	−0.0477 (0.0000)	0.0450 (0.0000)	0.0159 (0.0272)	0.0278 (0.0001)		
MTB	0.0160 (0.0256)	−0.0175 (0.0151)	−0.0061 (0.3929)	−0.0533 (0.0000)	−0.0314 (0.0000)	−0.0028 (0.6990)	−0.0048 (0.5030)	
DC	0.0056 (0.4386)	−0.0116 (0.1050)	−0.0119 (0.0972)	−0.0451 (0.0000)	0.0167 (0.0205)	−0.0546 (0.0000)	−0.0670 (0.0000)	−0.0136 (0.0592)

A regression analysis, shown in Table 5, was conducted using OC as the independent variable and CSR as the dependent variable, as in Equation (1), with year and industry dummy variables. The OLS analysis showed that CEO overconfidence is negatively related to CSR. In other words, overconfidence by textual analysis revealed a negative relationship between CSR and OC. Company size (SIZE), cash flow (CF), investment (INV), and market-to-book equity (MTB) were shown to be positively related to CSR, while debt ratio (LEV) had a negative relationship with CSR. DC had a positive relationship with CSR, but this was statistically insignificant.

Models 1 and 2 in Table 6 show that CSR has a negative impact on long-term performance. Specifically, both models show significant a negative coefficient. The results imply that as CSR activities increase, long-term performance decreases. However, when we introduce an interaction term, CSR $\times$ OC, which combines the CSR dummy (if CSR > 0, then CSR_D = 1, otherwise 0) with OC ranks (1–20) as in models 3 and 4, the results are totally different. The relationship between CSR and AAR turns to positive and significant (p -value < 5%) in model 3. This result means that as CSR activities increase, long-term performance increases. Also, in model 4 the negative relationship between CSR and AAR_12 disappeared. Although OC itself has no relationship with long-term performance, the

interaction term $CSR \times OC$ has a negative sign of coefficient and is statistically significant. Therefore, these results are consistent with our second hypothesis, that CSR activities initiated by overconfident CEOs are negatively related to firms' long-term performance.

Table 5. Regression analysis of CSR and CEO overconfidence.

Variable	1 CSR	2 CSR	3 CSR	4 CSR
<i>Intercepts</i>	−33.817 *** (−3.11)	−33.503 *** (−3.08)	−1052.2 ** (−2.34)	−1051.0 ** (−2.34)
<i>OC</i>	−0.0005 ** (−2.53)	−0.0005 ** (−2.51)	−0.0262 *** (−3.49)	−0.0262 *** (−3.48)
<i>SIZE</i>	0.0305 *** (36.58)	0.0306 *** (36.61)	0.9413 *** (27.30)	0.9415 *** (27.29)
<i>LEV</i>	−0.0199 *** (−4.31)	−0.0202 *** (−4.36)	−1.0069 *** (−5.27)	−1.0078 *** (−5.27)
<i>CF</i>	0.0000 *** (11.65)	0.0000 *** (11.69)	0.0001 *** (5.63)	0.0001 *** (5.63)
<i>INV</i>	0.0747 *** (4.53)	0.0765 *** (4.63)	2.8651 *** (4.20)	2.8721 *** (4.20)
<i>MTB</i>	0.0002 *** (3.99)	0.0002 *** (4.02)	0.0079 *** (3.59)	0.0079 *** (3.59)
<i>DC</i>		0.0034 (1.58)		0.0129 (0.14)
Observations	19,367	19,367	19,367	19,367
R-squared	0.2858	0.2859	0.1042	0.1042

***, **, and * indicating statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6. Regression analysis of CSR and CEO overconfidence.

Variables	1 AAR_12	2 AAR_12	3 AAR_12	4 AAR_12
<i>Intercepts</i>	0.0006 (0.89)	0.0054 *** (4.34)	0.0045 *** (3.36)	0.0049 *** (3.58)
<i>CSR</i>	−0.0043 *** (−2.87)	−0.0027 * (−1.73)	0.0009 ** (2.00)	0.0001 (1.10)
<i>CSR × OC</i>			−0.0006 ** (−1.99)	−0.0001 ** (−1.99)
<i>OC</i>	−0.0001 (−0.90)	−0.0001 (−0.57)	0.0002 (0.47)	0.0002 (0.47)
<i>CSR × DC</i>	0.0002 ** (2.32)	0.0002 ** (2.26)		0.0001 (1.42)
<i>DC</i>	−0.0026 *** (−3.20)	−0.0026 *** (−3.24)	−0.0011 ** (−2.42)	−0.0022 ** (−2.48)
<i>SIZE</i>		−0.0008 *** (−4.56)	−0.0008 *** (−4.74)	−0.0008 *** (−4.74)
<i>LEV</i>	0.0055 *** (6.20)		0.0070 *** (7.44)	0.0070 *** (7.44)
<i>CF</i>	−0.0000 (−0.98)		0.0000 (1.03)	0.0000 (1.04)
<i>INV</i>	−0.0206 *** (−6.84)		−0.0198 *** (−6.58)	−0.0198 *** (−6.60)
<i>MTB</i>	−0.0001 (−0.69)		−0.0001 (−1.01)	−0.0001 (−1.00)
Observations	19,349	19,349	19,349	19,349
R-squared	0.0049	0.0060	0.0050	0.0061

***, **, and * indicating statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6 shows other results for CSR activities. DC (decreased cash flow) is a dummy variable equal to 1 if the operating cash flow in year t is lower compared to year $t-1$, and 0 otherwise. As in Choi et al. [57], DC measures financial constraints. If $DC = 1$, operating cash flow decreases, which implies financial constraint. Table 6 shows that DC has a negative coefficient, which means the long-term performance of financially constrained firms is lower than that of firms with financial slack. Models 1 and 2 include an interaction term, $CSR \times DC$, to measure the impact of CSR activities with financial constraints on long-term performance. As expected in hypothesis 3, all coefficients of $CSR \times DC$ are positive and significant. Therefore, CSR activities in financially constrained firms are related to positive long-term performance. Coefficients of CSR in models 1 and 2 show that CSR activities in firms with financial slack may worsen shareholder wealth.

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4.2. Discussion

The aim of this paper was to find the relationship between CEO overconfidence and CSR activities suitable for improving long-term firm value. The first hypothesis was that an overconfident CEO leads to fewer CSR activities. Our evidence in Table 3 suggests that CSR activities between high overconfidence firms and low overconfidence firms, classified by textual analysis of executives' optimism, are significantly different. Firms in the high overconfidence group participated in fewer CSRs, and had less STR_V and more CON_V than the low group. Based on our results, it appears that an average CSR of a high overconfidence firm is 33% to 40% less than that of a low overconfidence firm. Since the correlation between CSR and OC was negative and significant in Table 4, our results seem to be consistent with hypothesis 1. When we regressed OC on CSR in Table 5, coefficients of OC in regression analysis were also negative and significant, which reveals the same results. Although our results cannot fully explain the reason why overconfident CEOs engage in fewer CSR activities, overconfident CEOs probably overestimate the probability that they can enhance stockholder value and manage their firm efficiently without CSR activities. For example, because CSR activities have uncertain outcomes and mostly require financial resources, overconfident CEOs might be reluctant to participate in CSRs.

Next, we examined the relationship between CSR and long-term performance. Table 6 shows the regression results of long-term performance (AAR_12) and CSR with overconfidence (OC). CSR has a negative impact on long-term performance. Our results imply that as CSR activities increase, long-term performance decreases. These results are quite surprising compared to previous literature on CSRs, which shows that CSRs have generally positive impacts on long-term performance. However, after introducing the CEO overconfidence variable to the regression equation, the coefficients of CSR changed. The relationship between CSR and AAR became positive and significant, which means that as CSR activities increase, long-term performance increases. Including the interaction term $CSR \times OC$ captured the negative effects of CSR, which implies that CSR activities are harmful to long-term performance as OC increases. Although OC itself had no relationship with long-term performance, the interaction term $CSR \times OC$ had a negative sign of coefficient and was statistically significant. Therefore, these results are consistent with our second hypothesis, that CSR activities initiated by overconfident CEOs are negatively related to firms' long-term performance.

Our third hypothesis was about financial constraint. As we noted in the introduction, CSR activities require financial resources. Thus, if firms face financial constraints with regard to engaging in CSR activities, we can expect that rigorous CSR activities could be harmful to their long-term performance. However, although firms are financially constrained, rational managers would undertake CSR activities. In such cases, CSR activities with financial constraints have positive performances in the long-term. Conversely, CSR activities by financially unconstrained firms with overconfident CEOs may worsen shareholder wealth. In order to measure financial constraint, we introduced a dummy

variable for decreased cash flow (DC). DC had value of 1 if cash flow during the year decreased, and 0 otherwise. Table 6 shows the regression results and all coefficients of $CSR \times DC$ were positive and significant. This finding suggests a fundamental difference in the quality of CSR decisions made by two groups of firms in terms of CEO overconfidence.

The main implication of our results is that CSR activities do not appear to have a positive long-term performance. In particular, when firms with overconfident CEOs and financial slack engage in vigorous CSR activities, it could be harmful to shareholders. However, CSR activities in financially constrained firms are related to positive long-term performance. The results were able to improve our understanding of CSR decisions made by overconfident CEOs with limited financial resources. In order to achieve a higher firm value, firms with overconfident CEOs should refrain from a high level of CSR activities. It is necessary to have an adequate degree of CSR activities for firms with overconfident CEOs, especially with abundant resources.

5. Conclusions

This paper empirically tested how CSR activities in firms with overconfident CEOs are related to the firms' long-term performance, as measured by monthly abnormal returns using the Fama–French three-factor model. The results show that CSR activities are negatively related to long-term performance. However, when we considered CSR activities of firms with overconfident CEOs, the negative relationship between CSR and long-term performance disappeared. In some cases, CSR and AAR_12 showed a positive relationship. Another important finding of this paper is a positive relationship between financially constrained firms and their CSR activities. The results also show that increased CSR activities in the face of capital constraints are positively related to long-term performance. This result indicates that overconfident CEOs evaluate the impact of CSR less accurately than rational CEOs, reducing long-term performance, especially when there are financial constraints.

The results of this study have the following implications and contributions. First, the results empirically verify that CEO characteristics are related to CSR activities. The results also show that there are other factors related to CSR activities. Second, this study verified the long-term performance of CSR activities initiated by overconfident CEOs. In addition, overconfidence was measured through textual analysis of executives' narratives as they appeared in official announcement documents. This methodology can expand the scope of analyzed companies, because it can be applied to all businesses that make public announcements. Finally, this study showed that the CSR of financially constrained firms is positively related to long-term performance, although CSR initiated by overconfident executives is negatively related to long-term performance. Depending on management characteristics, the scale of CSR activities may vary. The results of this study will have many research implications for CSR activities, CEO overconfidence, and financial constraints.

Overall, the results of this study were able to improve our understanding of CSR decisions by overconfident managers in firms with limited financial resources. However, the study suffered from the following limitations. First, the study employed the measure of optimism as a proxy for managerial overconfidence. Thus, the results lacked control for macro-economic and systematic factors, such as market sentiment, cost of capital, and regulation or institutional change, that might affect the CEOs' self-confidence. Moreover, the study included only firms with CSR variables in the KLD dataset and results could be different if we extended the CSR variables to other activities, such as R&D, training and education, and advertising expenses. Future studies might deal with these limitations by using alternative variables with broader samples. Additionally, the other characteristics in corporate governance, such as executive compensation, stakeholder relations, family ownership ratio, or board structure, could be analyzed for future research.

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References

1. Dutt, K. Disentangling Two Causes of Biased Probability Judgment—Cognitive Skills and Perception of Randomness. *Ruhr Econ. Paper* **2015**, *568*, 3–14. [\[CrossRef\]](#)
2. Malmendier, U.; Tate, G. Does overconfidence affect corporate investment? CEO overconfidence measures revisited. *Eur. Financ. Manag.* **2005**, *11*, 649–659. [\[CrossRef\]](#)
3. Malmendier, U.; Tate, G. Who makes acquisitions? CEO overconfidence and the market's reaction. *J. Financ. Econ.* **2008**, *89*, 20–43. [\[CrossRef\]](#)
4. Campbell, T.; Galley, M.; Johnson, S.; Rutherford, J.; Stanley, B.W. CEO optimism and forced turnover. *J. Financ. Econ.* **2011**, *101*, 695–712. [\[CrossRef\]](#)
5. Gervais, S.; Heaton, J.B.; Odean, T. Overconfidence, compensation contracts, and capital budgeting. *J. Financ.* **2011**, *66*, 1735–1777. [\[CrossRef\]](#)
6. Campbell, J.L. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Acad. Manag. Rev.* **2007**, *32*, 946–967. Available online: <https://www.jstor.org/stable/20159343> (accessed on 13 December 2019). [\[CrossRef\]](#)
7. Ho, P.H.; Huang, C.W.; Lin, C.Y.; Yen, J.F. CEO overconfidence and financial crisis: Evidence from bank lending and leverage. *J. Financ. Econ.* **2016**, *120*, 194–209. [\[CrossRef\]](#)
8. Chien, C.C.; Peng, C.W. Does going green pay off in the long-run? *J. Bus. Res.* **2012**, *65*, 1636–1642. [\[CrossRef\]](#)
9. Cho, S.J.; Chung, C.Y.; Young, J. Study on the relationship between CSR and financial performance. *Sustainability* **2019**, *11*, 343. [\[CrossRef\]](#)
10. Li, C.; Zhang, B.; Xie, B.; Zhao, X.; Chen, J.; Chen, Z.; Long, Y. Stearic acid/expanded graphite as a composite phase change thermal energy storage material for tankless solar water heater. *Sustain. Cities Soc.* **2019**, *44*, 458–464. [\[CrossRef\]](#)
11. Gollop, F.; Roberts, M.J. Environmental regulation and productivity growth: The case of fossil-fuel electric power generation. *J. Polit. Econ.* **1983**, *91*, 654–674. [\[CrossRef\]](#)
12. Moore, G. Corporate social and financial performance: An investigation in the U.K. supermarket industry. *J. Bus. Ethics* **2001**, *34*, 299–315. [\[CrossRef\]](#)
13. López, M.V.; Garcia, A.; Rodriguez, L. Sustainable development and corporate performance: A study based on the Dow Jones Sustainability Index. *J. Bus. Ethics* **2007**, *75*, 285–300. [\[CrossRef\]](#)
14. Chan, C.-Y.; Chou, D.-W.; Lo, H.-C. Do financial constraints matter when firms engage in CSR? *N. Am. J. Econ. Financ.* **2017**, *39*, 241–259. [\[CrossRef\]](#)
15. Zhao, T.; Xiao, X. The impact of corporate social responsibility on financial constraints: Does the life cycle stage of a firm matter? *Int. Rev. Econ. Financ.* **2019**, *63*, 76–93. [\[CrossRef\]](#)
16. Azouzi, M.A.; Jarboui, M.A. CEO emotional bias and capital structure choice. Bayesian network method. *Bus. Excel. Manag.* **2012**, *2*, 47–70.
17. Malmendier, U.; Tate, G. Behavioral CEOs: The role of managerial overconfidence. *J. Econ. Perspect.* **2015**, *29*, 37–60. [\[CrossRef\]](#)
18. Deshmukh, S.; Goel, A.M.; Howe, K.M. CEO overconfidence and dividend policy. *J. Financ. Intermed.* **2013**, *22*, 440–463. [\[CrossRef\]](#)
19. Hur, K.S.; Kim, D.H.; Cheung, J.H. Managerial Overconfidence and Cost Behavior of R&D Expenditures. *Sustainability* **2019**, *11*, 4878.
20. Sternberg, R. Applying psychological theories to educational practice. *Am. Edu. Res. J.* **2008**, *45*, 150–165. [\[CrossRef\]](#)
21. Moore, D.A.; Healy, P.J. The trouble with overconfidence. *Psychol. Rev.* **2008**, *115*, 502–517. [\[CrossRef\]](#) [\[PubMed\]](#)
22. Hilton, D.; Regner, I.; Cabantous, L.; Charalambides, L.; Vautier, S. Do positive illusions predict overconfidence in judgment? A test using interval production and probability evaluation measures of miscalibration. *J. Behav. Decis. Mak.* **2011**, *24*, 117–139. [\[CrossRef\]](#)

23. Larwood, L.; Whittaker, W. Managerial myopia: Self-serving biases in organizational planning. *J. Appl. Psychol.* **1977**, *62*, 194–198. [\[CrossRef\]](#)
24. Svenson, O. Are we all less risky and more skillful than our fellow drivers? *Acta Psychol.* **1981**, *47*, 143–148. [\[CrossRef\]](#)
25. Alicke, M.D. Global self-evaluation as determined by the desirability and controllability of trait adjectives. *J. Personal. Soc. Psychol.* **1985**, *49*, 1621–1630. [\[CrossRef\]](#)
26. Weinstein, N.D. Unrealistic optimism about future life events. *J. Personal. Soc. Psychol.* **1980**, *39*, 806–820. [\[CrossRef\]](#)
27. Schoar, A.; Bertrand, M. Managing with style: The effect of managers on firm policies. *Q. J. Econ.* **2003**, *118*, 169–1208.
28. Bernoster, I.; Rietveld, C.A.; Thurik, A.R.; Torrès, O. Overconfidence, optimism and entrepreneurship. *Sustainability* **2018**, *10*, 2233. [\[CrossRef\]](#)
29. Roll, R. The hubris hypothesis of corporate takeovers. *J. Bus.* **1986**, *59*, 197–216. [\[CrossRef\]](#)
30. Ben-David, I.; Graham, J.R.; Harvey, C.R. Managerial overconfidence and corporate policies. *Natl. Bur. Econ. Res.* **2007**. [\[CrossRef\]](#)
31. Hayward, M.L.; Hambrick, D.C. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Admin. Sci. Q.* **1997**, *42*, 103–127. [\[CrossRef\]](#)
32. Rijsenbilt, A.; Commandeur, H. Narcissus enters the courtroom: CEO narcissism and fraud. *J. Bus. Ethics* **2013**, *117*, 413–429. [\[CrossRef\]](#)
33. Chen, C.; Gores, T.; Nasev, J. *Managerial Overconfidence and Cost Stickiness*; Working Paper; University of Illinois at Urbana-Champaign: Champaign, IL, USA, 2013.
34. Cassar, G. Are individuals entering self-employment overly optimistic? An empirical test of plans and projections on nascent entrepreneur expectations. *Strateg. Manag. J.* **2010**, *31*, 822–840.
35. Landier, A.; Sraer, D.; Thesmar, D. Optimal dissent in organizations. *Rev. Econ. Stud.* **2009**, *76*, 761–794. [\[CrossRef\]](#)
36. Lee, J.M.; Hwang, B.H.; Chen, H. Are founder CEOs more overconfident than professional CEOs? Evidence from S&P 1500 companies. *Strateg. Manag. J.* **2017**, *38*, 751–769.
37. Humphery-Jenner, M.; Lisic, L.L.; Nanda, V.; Silveri, S.D. Executive overconfidence and compensation structure. *J. Financ. Econ.* **2016**, *119*, 533–558. [\[CrossRef\]](#)
38. Davis, A.K.; Tama-Sweet, I. Managers' use of language across alternative disclosure outlets: Earnings press releases versus MD&A. *Contem. Account. Res.* **2012**, *29*, 804–837.
39. Huang, X.; Teoh, S.H.; Zhang, Y. Tone management. *Account. Rev.* **2013**, *89*, 1083–1113. [\[CrossRef\]](#)
40. Price, S.M.; Doran, J.S.; Peterson, D.R.; Bliss, B.A. Earnings conference calls and stock returns: The incremental informativeness of textual tone. *J. Bank. Financ.* **2012**, *36*, 992–1011. [\[CrossRef\]](#)
41. Loughran, T.; McDonald, B. The use of word lists in textual analysis. *J. Behav. Financ.* **2015**, *16*, 1–11. [\[CrossRef\]](#)
42. Boulton, T.J.; Campbell, T.C. Managerial confidence and initial public offerings. *J. Corp. Financ.* **2016**, *37*, 375–392. [\[CrossRef\]](#)
43. Waddock, S.A.; Graves, S.B. Quality of management and quality of stakeholder relations: Are they synonymous? *Bus. Soc.* **1997**, *36*, 250–279. [\[CrossRef\]](#)
44. Frooman, J. Socially irresponsible and illegal behavior and shareholder wealth: A meta-analysis of event studies. *Bus. Soc.* **1997**, *36*, 221–249. [\[CrossRef\]](#)
45. McGuire, J.B.; Sundgren, A.; Schneeweis, T. Corporate social responsibility and firm financial performance. *Acad. Manag. J.* **1988**, *31*, 854–872. Available online: <http://links.jstor.org/sici?sici=0001-4273%28198812%2931%3A4%3C854%3ACSR%3E2.0.CO%3B2-0> (accessed on 13 December 2019).
46. Weidenbaum, M.; Vogt, S. Takeovers and stockholders: Winners and losers. *Calif. Manag. Rev.* **1987**, *29*, 157–168. [\[CrossRef\]](#)
47. Michelon, G.; Pilonato, S.; Ricceri, F. CSR reporting practices and the quality of disclosure: An empirical analysis. *Crit. Perspect. Account.* **2015**, *33*, 59–78. [\[CrossRef\]](#)
48. Deliu, D. Empathetic Leadership—Key Element for Inspiring Strategic Management and a Visionary Effective Corporate Governance. The Bucharest University of Economic Studies Publishing House: Bucharest, Romania. *J. Emerg. Trends Mark. Manag.* **2019**, *1*, 280–292. Available online: http://www.etimm.ase.ro/journal/ETIMM_V01_2019.pdf (accessed on 13 December 2019).

49. Farcane, N.; Deliu, D.; Bureană, E. A Corporate Case Study: The Application of Rokeach's Value System to Corporate Social Responsibility (CSR). Special Issue "Corporate Social Responsibility (CSR) in Developing Countries: Current Trends and Development". *Sustainability* **2019**, *11*, 6612. [\[CrossRef\]](#)
50. Dutton, J.E.; Roberts, L.M.; Bednar, J. Pathways for Positive Identity Construction at Work: Four Types of Positive Identity and the Building of Social Resources. *Acad. Manag. Rev.* **2010**, *35*, 265–293.
51. Kim, B.J.; Nurunnabi, M.; Kim, T.-H.; Jung, S.-Y. The Influence of Corporate Social Responsibility on Organizational Commitment: The Sequential Mediating Effect of Meaningfulness of Work and Perceived Organizational Support. *Sustainability* **2018**, *10*, 2208. [\[CrossRef\]](#)
52. Lin, C.-S.; Chang, R.-Y.; Dang, V.T. An Integrated Model to Explain How Corporate Social Responsibility Affects Corporate Financial Performance. *Sustainability* **2015**, *7*, 8292–8311. [\[CrossRef\]](#)
53. Tang, Z.; Hull, C.E. How Corporate Social Responsibility Engagement Strategy Moderates the CSR–Financial Performance Relationship? *J. Manag. Stud.* **2012**, *49*, 1274–1303. [\[CrossRef\]](#)
54. Jo, H.; Harjoto, M.A. The causal effect of corporate governance on corporate social responsibility. *J. Bus. Ethics* **2012**, *106*, 53–72. [\[CrossRef\]](#)
55. Oikonomou, I.; Brooks, C.; Pavelin, S. The impact of corporate social performance on financial risk and utility: A longitudinal analysis. *Financ. Manag.* **2012**, *41*, 483–515. [\[CrossRef\]](#)
56. Fama, E.F.; French, K.R. Common risk factors in the returns on stocks and bonds. *J. Financ. Econ.* **1993**, *33*, 3–56. [\[CrossRef\]](#)
57. Choi, P.M.S.; Chung, C.Y.; Liu, C. Self-attribution of overconfident CEOs and asymmetric investment-cash flow sensitivity. *N. Am. J. Econ. Financ.* **2018**, *46*, 1–14. [\[CrossRef\]](#)



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