**"The Effect of CEO Overconfidence on Corporate ESG Performance: An Empirical Study of Chinese A-share Listed Companies"**

**ABSTRACT**

Environmental, social, and governance (ESG) has become a prominent focus in recent research. While existing studies emphasise the roles of corporate values, managerial traits, and shareholder preferences, the impact of CEO psychological biases, particularly overconfidence, on ESG outcomes remains underexplored. To fill this void, our study employs the upper echelon theory to investigate the potential influence of CEO overconfidence on corporate ESG performance. Specifically, we gathered data for Chinese A-share non-financial firms between 2007 and 2022. Our findings reveal that companies helmed by overconfident CEOs are more inclined to push for changes in ESG performance, especially with SOEs and high institutional investor engagement. Our study contributes to the literature on understanding the psychological dimensions of executive leadership in ESG performance. It offers practical implications for governance and policymaking in emerging markets with evolving ESG frameworks.

**Keywords:**

CEO Overconfidence, ESG Performance, Upper echelon theory, corporate governance, state-owned enterprises, institutional investors.

**1 | INTRODUCTION**

 In the era of sustainability-driven business, CEO overconfidence has emerged as a key internal factor impacting companies' ESG performance, particularly in the evolving Chinese market. Although ESG has become a global focus driving sustainable corporate strategies, China’s listed companies still show insufficient ESG disclosures, especially in governance and environmental areas, limiting the market’s ability to evaluate non-financial risks effectively. These difficulties are mostly caused by low levels of voluntary disclosure and the lack of standardized reporting standards. However, growing regulatory pressure and national climate goals, such as peak carbon emissions by 2030 and achieving carbon neutrality by 2060, have made it essential to integrate ESG factors into investment and corporate decisions (Li et al., 2024).

 Numerous factors influence ESG performance, according to recent research. These factors include external influences such as societal norms (Liu et al., 2022; Terzani & Turzo, 2021), banking relationships (Bruno et al., 2024; Xing et al., 2024), government policies (Yan et al., 2023; Zhang et al., 2023), investor pressure (Liu et al., 2023; Zhang & Zhang, 2024), and media scrutiny (Cai et al., 2024; Chen et al., 2024; He et al., 2024). Internal drivers also play a crucial role, including corporate values (Tan et al., 2025; Zheng et al., 2022), managerial traits (Menicucci & Paolucci, 2022; Miranda et al., 2023; Paolone et al., 2024), and shareholder preferences (Fiorillo & Santilli, 2024; Jia et al., 2022; Lopez-De-Silanes et al., 2022). Notably, CEO leadership is particularly influential among internal drivers, and psychological traits such as overconfidence are increasingly seen as important in shaping ESG strategies. While prior studies have explored the impact of CEO overconfidence on financial decisions like investment and mergers (Malmendier & Tate, 2004, 2005; Ferris et al.,2013; Lee et al., n.d.; Tang & Chang, 2024), its influence on ESG performance remains underexplored, revealing a key gap this study aims to address. Our study aims to fill this gap by examining the possible impact of CEO overconfidence on corporate ESG performance.

 The study analyzes a sample of A-share non-financial companies listed on the Shanghai and Shenzhen stock exchanges from 2007 to 2022. It specifically examines how CEO overconfidence influences corporate decisions regarding ESG practices. Additionally, the research assesses the moderating effects of state-owned enterprises (SOEs) and institutional investors on this relationship. Our findings reveal that companies helmed by overconfident CEOs are more inclined to push for changes in ESG performance, especially with SOEs and high institutional investor engagement.

 Our study offers several important contributions to corporate governance and sustainability. First, it extends research on the economic effects of CEO overconfidence by moving beyond traditional financial decisions to examine its influence on ESG performance. Second, it enhances understanding of the factors shaping corporate ESG outcomes by highlighting the role of executive overconfidence—a psychological bias often overlooked in sustainability research. While prior studies mainly focus on the economic benefits of ESG, our work explores the behavioral mechanisms through which overconfident CEOs may impact ESG strategies, providing a fresh perspective on executive decision-making in sustainability. This deeper insight into the behavioral drivers of ESG performance can help companies improve sustainability efforts by fostering more informed leadership. Finally, our findings offer practical implications for executive recruitment and human resource management, suggesting that recognizing the strengths and risks associated with overconfidence can promote healthier, more sustainable corporate development. Additionally, the research informs policymakers seeking to enhance ESG standards and corporate responsibility through targeted regulation and guidance.

 The paper is organized as follows: Section 2 presents a comprehensive literature review. Section 3 develops the research hypotheses. Section 4 outlines the research design and methodology. Section 5 reports the empirical results and provides an in-depth analysis. Finally, Section 6 concludes the study and discusses the implications of our findings.

**2 | LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

**2.1 | Economic Consequences of** **CEO Overconfidence**

Overconfidence has its roots in cognitive psychology and is a tendency for people to overestimate their skills and knowledge, especially in situations where they are uncertain. The likelihood of success is overestimated while the likelihood of failure is underestimated as a result of this tendency. Notably, studies have revealed that executives are more likely than the general public to display overconfidence(Dunning et al., 1990). Scholars have examined the effects of executive overconfidence on corporate decision-making from a variety of angles since behavioral finance gained popularity. Regarding investment choices, overconfident executives are more likely to overinvest and exhibit a greater desire to seek expansion, frequently through mergers and acquisitions, when a company has sufficient cash flow(Nguyen & Thuy, 2015; Pan et al., 2019; Twardawski & Kind, 2023).When it comes to financing, overconfident executives frequently think that the market is undervaluing their company's stock. As a result, they exhibit a preference for shorter-term financing arrangements(Huang et al., 2016)and favor debt financing over other options(Malmendier et al., 2010).Furthermore, overconfident executives are less likely to pay dividends because they are more likely to keep surplus funds in the company while actively looking for new growth opportunities(Cordeiro, 2009; Deshmukh et al., 2013; Dinh Nguyen et al., 2021)Nonetheless, some academics contend that overconfident executives are more inclined to take on risks and challenges because they have a positive outlook on the future and a strong belief in their abilities. As a result, they make long-term investments in things like technological innovation(Galasso Timothy Simcoe et al., 2010; Hirshleifer et al., 2012; Zheng et al., 2025)Additionally, according to Park et al. (2020), overconfident executives are more likely to overestimate their company's future profitability, encouraging them to devote resources to meeting their social obligations.

**2.2 | Overview of ESG Performance Literature**

 ESG performance has become a core value for firms worldwide (Huarng & Yu, 2024). It reflects a corporation's long-term development potential and sustainability, gaining increasing emphasis from investors and corporations(Gong, 2024). ESG encompasses environmental protection, social responsibility, and governance structure, influencing various factors in the external environment and promoting the sustainable development of social resources(Zhao, 2024).

 There remains a significant gap in research focused on improving corporate ESG performance, with most studies primarily concentrating on internal corporate characteristics and external environmental factors. In terms of internal characteristics, prior research has identified several key factors that can positively influence ESG performance. These factors include company size, which can provide greater resources for implementing sustainable practices (Drempetic et al., 2020); debt repayment capacity, which ensures financial stability and reduces the pressure for short-term profit maximization at the expense of ESG commitments Empirical Analysis of the Impact of ESG Scores on Access to Debt ( Zhao et al., 2024); and profitability, which allows firms to allocate funds toward long-term sustainability initiatives(D’Amato et al., 2024). Additionally, a well-structured capital arrangement is essential for enabling companies to make strategic investments in ESG efforts(Adeneye et al., 2023). These internal attributes are vital for creating a conducive environment for sustainable business practices and enhancing a company's overall ESG performance.

 In summary, existing literature has extensively investigated the factors affecting corporate ESG performance. A significant knowledge vacuum still exists regarding the impact of executives' irrational psychology, specifically their psychological characteristics, on ESG outcomes. Fewer studies have examined how executive traits impact non-financial aspects like corporate governance, social initiatives, and environmental responsibility, even though a large body of research has examined the financial implications of these traits. Executives' psychological characteristics have a big impact on both financial and non-financial performance since they are the ones who make the decisions that determine a company's strategic direction. By examining the potential effects of executive overconfidence on ESG performance, this paper aims to close this knowledge gap and provide insightful information about this largely unexplored area of corporate governance and sustainability.

**2.3 | Hypothesis development**

**2.3.1 | CEO Overconfidence and ESG performance**

We propose that CEO overconfidence positively affect the ESG performance of their firms for two reasons. First, According to Upper Echelon Theory, a firm’s strategic choices and outcomes are deeply influenced by the characteristics and cognitive biases of its top executives, particularly the CEO. Overconfident CEOs often hold an inflated belief in their ability to manage risks and uncertainties, which motivates them to pursue bold strategic decisions that emphasize long-term goals over short-term profits. Research by Burkhard et al. (2023) demonstrates that CEO overconfidence encourages strategic risk-taking, potentially enhancing firm performance by unlocking new opportunities, strengthening competitive positioning, and generating long-term value. Likewise, Du et al. (2025) find that Managerial overconfidence indeed has a positive impact on corporate ESG performance. Within the Environmental, Social, and Governance (ESG) context, overconfident executives may view sustainability initiatives as critical drivers of sustained competitive advantage. This perspective drives investments in environmental protection, social responsibility, and strong governance practices—even when immediate financial returns are uncertain. Scholars like Russo and Schoemaker (1992) and Gervais et al. (2011) contend that overconfident CEOs are more likely to champion innovation and long-term investments, which align closely with corporate sustainability goals. Their optimism and confidence often position them as leaders who actively promote ESG initiatives, perceiving these efforts not just as ethical imperatives but as strategic investments in the firm’s future growth and resilience.

 Secondly, overconfident executives are strongly motivated to seek attention and recognition. They strive to build a positive corporate image by enhancing ESG performance, which helps them gain accolades and affirmation from diverse stakeholders. In today’s era of rapid internet technology and pervasive social media, negative news—such as environmental penalties or fraudulent donations—can spread quickly and severely damage a company’s reputation. Conversely, strong ESG performance creates a win–win outcome by generating economic, social, and ecological benefits, thereby fostering a favorable corporate image and earning executives’ external recognition and respect. Overconfident leaders often crave attention and relish opportunities to demonstrate their capabilities, viewing applause as a source of motivation and personal fulfillment(Wallace & Baumeister, 2002). Their drive to improve ESG outcomes satisfies their sense of superiority and aligns with the “better-than-average effect,” where overconfident executives believe their skills exceed those of their peers(Kaplan et al., 2022). This belief further fuels their ambition for self-improvement and self-presentation. Since ESG performance is increasingly seen as a key measure of entrepreneurial success, overconfident CEOs set high standards for themselves in this area to showcase their abilities and attract external praise.

*Building upon the discussion above, this paper proposes the following research hypothesis:*

**Hypothesis 1A***: CEOs' overconfidence is positively associated with improved corporate ESG performance.*

On the other hand, beyond the extensive literature supporting a positive relationship between overconfident CEOs and ESG performance, there are studies suggesting that overconfident CEOs may also exhibit the opposite effect for two key reasons: First, Overconfident CEOs may inflate the perceived capabilities of implementing ESG initiatives. They focus on maintaining a positive image rather than achieving tangible ESG performance. For instance, Petrenko et al. (2016) find that narcissistic CEOs, who are typically overconfident, invest extensive resources into CSR but do not effectively use the Goodwill created by their CSR investments. Likewise, Tang et al. (2015) argue that overconfident CEOs invest fewer resources in CSR because they feel less dependent on the firm's stakeholders.

Second, Previous literature finds that overconfident CEOs tend to underinvest in CSR, viewing it as unnecessary due to their overestimating abilities and optimism about company outcomes (Karavitis et al., 2025; Saini & Singh, 2025; Qin, 2019; McCarthy et al., 2017). Overconfident CEOs may overestimate their abilities, underestimate risks, and disregard stakeholder concerns related to ESG (Malmendier & Tate, 2005b; Hsu & Lee, 2024). Moreover, Overconfident CEOs can significantly influence a firm's strategic and financial decisions, often prioritizing short-term gains over long-term strategic goals (Wang, et al., 2023). This stems from their tendency to overestimate their abilities and the prospects of their firms, leading to increased risk-taking and potentially detrimental financial strategies (Wang, et al., 2023; Seo et al., 2017).

 In sum, while overconfidence may push CEOs to take bold steps, it often results in a misalignment between their strategic ambitions and the practical demands of corporate sustainability, ultimately hindering ESG performance. Thus, we develop the following hypothesis:

**Hypothesis 1B***: CEOs' overconfidence is negatively associated with improved corporate ESG performance.*

**3 | METHODS**

**3.1 | Sample**

 To conduct our analysis, we utilized a sample of A-share non-financial companies listed on the Shanghai and Shenzhen stock exchanges from 2007 to 2022. The dataset was compiled from multiple reliable sources: ESG performance data came from Bloomberg, CEO data came from the CSMAR and Wind databases, and other financial data came from the CSMAR and Wind databases. Then, we excluded the firm-year observations (1) with CEOs born outside mainland China, (2) only 1-year observations, and (3) with missing information on variables. After applying these filters, we obtained a sample of 8,389 firm-year observations. Finally, we winsorized continuous variables at 1% and 99% to reduce the influence of outliers on our regression results.

**3.2 | Variables**

**3.2.1 | Dependent variable: ESG performance (ESG)**

Following the approach of Wang et al. (2022) and Minutolo et al. (2019) this study uses the ESG score from the Bloomberg database to measure corporate ESG performance. Bloomberg publicly provides comprehensive ESG data, including an overall ESG composite score as well as individual scores for the Environmental (E), Social (S), and Governance (G) dimensions. These scores are based on the quality and extent of ESG disclosure by firms, with scores ranging from 0 to 100—the higher the score, the more comprehensive and transparent the company’s ESG reporting. The choice of Bloomberg’s ESG data is motivated by several factors. First, Bloomberg derives its ESG scores primarily from company CSR and sustainability reports, along with other publicly available sources, which enhances the objectivity and reliability of the data. Second, compared to alternative ESG rating providers, Bloomberg offers broader coverage across industries and markets, making its dataset more representative and convincing for empirical analysis. Additionally, Bloomberg provides transparency in its scoring methodology and detailed score reports, allowing investors and researchers to access and verify the basis of each firm’s ESG rating.

**3.2.2 | Independent variable:** CEO overconfidence (OC*)*

CEO overconfidence will be measured using a composite index based on four key demographic and role-related factors: gender, age, education, and dual roles (i.e., whether the CEO also serves as the board chair) (Hatoum et al., 2022). This approach reflects common proxies used in prior research to capture executive psychological traits linked to overconfidence. Typically, male CEOs, younger executives, those with higher education levels, and CEOs holding dual roles are considered more likely to exhibit overconfidence due to greater risk tolerance, optimism, and control over firm decisions. By combining these variables into a single composite index, this study aims to assess the overall level of CEO overconfidence and examine its impact on corporate ESG performance.

**3.2.3 | Control variables**

**3.2.3 | Control variables**

We include several control variables that may influence corporate ESG performance, consistent with prior research. These controls encompass company size (Size), asset-liability ratio (Lev), operating revenue growth rate (Growth), return on assets (ROA), Tobin’s Q (TobinQ), firm age (FirmAge), and audit fees (AuditFee). Additionally, to control for industry-specific and temporal variations, we incorporate industry-fixed effects (Ind) and year-fixed effects (Year) in our analysis. Detailed definitions of all main variables are provided in Appendix 1.

**3.3 | Model**

We estimate the following panel regression model with firm-clustered standard errors, including year and industry fixed effects:

ESG*it* = β0 + β1 OC*it*+ β2 $\sum\_{i-1}^{n}controls$*it* + β3Year*t* + β4Industry*i* + ε*it*

Where (*i*) and (*t*) denote firm and year, respectively.

**4 | RESULTS**

**4.1 | Descriptive statistics and correlation analysis**

 Table 1 presents the descriptive statistics of the main variables in this study. The results show that, on average, firms have an ESG performance rating of 28.03, with a median value of 27.42. This suggests that more than half of the firms in the sample have received an ESG rating of A or higher, indicating generally positive ESG performance across the firms. The ESG ratings range from a minimum of 6.19 to a maximum of 71.18, with a standard deviation of 10.23, revealing substantial variability in ESG performance among the sampled companies.

 Regarding the primary explanatory variable, CEO overconfidence (OC), the average value is 0.65, with a median of 0.64. This suggests that overconfident CEOs are slightly more prevalent than their non-overconfident counterparts in the sample, with the overconfidence metric skewed toward higher values. This indicates a moderate prevalence of overconfident CEOs in the firms studied, which may influence their decision-making and, potentially, their approach to corporate sustainability and ESG performance.

|  |
| --- |
| **TABLE 1 Descriptive statistics.** |
| 1. **(2) (3) (4) (5) (6) (7)**
 |
|  **Mean Std. dev. Min p25 Mdn p75** **max** |
| ***ESG*** | *28.03* | *10.23* | *6.19* | *20.14* | *27.42* | *33.06* | *71.18* |
| ***OC*** | *0.65* | *0.16* | *0.01* | *0 .60* | *0 .64* | *0 .71* | *1.00* |
| ***Size*** | *22.04* | *1.51* | *10.84* | *21.03* | *21.80* | *22.75* | *31.43* |
| ***Leverage*** | *0.49* | *3.93* | *-0.19* | *0.26* | *0.49* | *0.63* | *87.25* |
| ***ROA*** | *0.03* | *0.41* | *-64.81* | *0.01* | *0.03* | *0.08* | *64.75* |
| ***Growth*** | *3.14* | *2.88* | *-2.68* | *-0.03* | *0.10* | *0.27* | *28.62* |
| ***TobinQ*** | *0.53* | *0.49* | *-0.49* | *1.20* | *1.53* | *2.16* | *9.60* |
| ***FirmAge*** | *2.79* | *0.45* | *0.00* | *2.56* | *2.89* | *3.13* | *1.00* |
| ***AuditFee*** | *13.72* | *0.81* | *10.30* | *13.21* | *13.61* | *14.11* | *21.41* |

Shanghai and Shenzhen A-share-listed firms from 2007 to 2022, covered by the China Stock Market and Accounting Research Database (CSMAR). We exclude firm-year observations with an overseas CEO and observations with a missing value. We show the cross-sectional statistics (mean, standard deviation, min, Q1, median, Q3, and max) of the variables. The descriptions of all variables are shown in the Appendix.

Table 2 displays the Pearson correlations among the variables in our model. CEO overconfidence (OC) correlates significantly positively with ESG (0.065), which provides preliminary support for Hypothesis 1A. In addition, the average and maximum variance inflation factors (VIF) are 1.01 and 1.88, respectively, suggesting that multicollinearity is not a serious concern in our study.

|  |
| --- |
| **TABLE 2 Pearson's correlation coefficients.** |
| Variables | VIF  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| (1) *ESG* |  | 1.000 |  |  |  |  |  |  |  |  |
| (2) *OC* | 1.01 | 0.065 | 1.000 |  |  |  |  |  |  |  |
| (3) *Size* | 3.70 | 0.067 | -0.005 | 1.000 |  |  |  |  |  |  |
| (4) *Leverage* | 1.97 | -0.063 | 0.047 | -0.470 | 1.000 |  |  |  |  |  |
| (5) *ROA* | 1.43 | 0.329 | 0.005 | 0.481 | -0.165 | 1.000 |  |  |  |  |
| (6) Growth | 1.00 | 0.192 | -0.050 | 0.111 | -0.069 | 0.372 | 1.000 |  |  |  |
| (7) TobinQ | 1.27 | 0.256 | 0.043 | 0.102 | -0.028 | 0.487 | 0.230 | 1.000 |  |  |
| *(8) FirmAge* | 1.10 | 0.037 | -0.042 | 0.281 | -0.244 | 0.154 | 0.162 | -0.042 | 1.000 |  |
| (9) *Audit fees* | 2.78 | 0.019 | -0.021 | -0.060 | 0.009 | -0.025 | 0.023 | -0.028 | -0.009 | 1.000 |

1.79

Note: Pearson's correlation coefficients are shown in the table. The mean value of variance inflation factors (VIF) is 1.79 and the maximum VIF is 1.88. A detailed description of the variables is provided in Appendix I. \*\*\*, \*\*, and \* denote significance at 1%, 5%, and 10% respectively.

**4.2 | Main findings**

Our baseline model in the full sample examines the relationship between CEO overconfidence and ESG performance. Table 3 presents the main results of the study. Column 1 is a baseline model that includes the main variables without control variables. Our results indicate that the coefficient of CEO overconfidence is significantly positive at (β = 2.69, p < 1%) without control variables. Column (2) shows that the coefficient on CEO overconfidence is significantly positive at (β = 3.51, p < 1%) after controlling for the control variables. This result supports Hypothesis 1A, suggesting that a CEO's overconfidence positively influences ESG performance.

|  |
| --- |
| **Table 3: The relationship between CEO Overconfidence and ESG Performance** |
|  |  | OLS |
|  |  | *(1)*  |  | *(2)* |
|  |  | *ESG*  | *ESG*  |
| *OC*  |  | *2.69\*\*\** |  | *3.51\*\*\** |
|  |  | *(3.48)* |  | *(5.71)* |
| *Size* |  |  |  | *2.03\*\*\** |
|  |  |  |  | *(20.41)* |
| *Leverage* |  |  |  | *-9.05\*\*\** |
|  |  |  |  | *(-16.38)* |
| *ROA* |  |  |  | *-2.19\** |
|  |  |  |  | *(-1.66)* |
| *Growth* |  |  |  | *-0.01* |
|  |  |  |  | *(-2.35)* |
| *TobinQ* |  |  |  | *0 .60\*\*\** |
|  |  |  |  | *(10.84)* |
| *FirmAge* |  |  |  | *7.86\*\*\** |
|  |  |  |  | *(34.86)* |
| *AuditFee* |  |  |  | *3.02\*\*\** |
|  |  |  |  | *(19.68)* |
| *Industry effect* |  | *Yes* |  | *Yes* |
| *Year effect* |  | *Yes* |  | *Yes* |
| *Observations* |  | *8,389*  |  | *8,389* |
| *R2* |  | *0.22* |  | *0.42* |
| *Adjusted R2* |  | *0.22* |  | *0.42* |

Note: Note: \*\*\* and \*\* represent significance at the 1% and 5% levels, respectively, with t-values in parentheses based on robust standard error adjustments.

**4.3 | Endogeneity issues**

**4.3.1** **Instrumental Variable Approach**

We adopted the two-stage least squares method (2SLS) to avoid simultaneous causality. We use the instrument variable, the average overconfidence level of CEO in other firms within the same region and year (Mean\_pro), as an instrumental variable for the explanatory variable OC (Wang et al., 2023). The results from the first stage of the two-stage least squares (2SLS) analysis reveal a positive relationship between CEO Overconfidence and the instrumental variable (Mean\_pro). In the second stage of the 2SLS, as shown in column 2 of Table 4, the coefficient of CEO Overconfidence remains positive (β = 19.94) and statistically significant at the 1% level. This finding robustly supports our hypothesis, confirming the positive association between CEO overconfidence and ESG performance.

|  |  |
| --- | --- |
| **TABLE 4: Endogeneity issues**  |  |
|  |  2SLS **Fixed Effect** |
|  | (1) |  | (2) |  (3) |
|  | OC  |  | ESG |  ESG |
| *Mean\_pro* |  | 0.14 \*\*\* |  |  |  |
|  |  | (6.67) |  |  |  |
| *OC*  |  |  |  | 19.94 \*\*\* |  4.22\*\*\* |
|  |  |  | (4.62) | (6.87) |
| Controls  |  | Yes |  | Yes | Yes |
| Industry effect |  | Yes |  | Yes | Yes |
| Year effect |  | Yes |  | Yes | Yes |
| Observations |  | 8,389 |  | 8,389 | 8,389 |
| R2 |  | 0.085 |  | 0.30 | 0.40 |
| Adjusted R2 |  | 0.085 |  | 0.30 | 0.41 |

Note: This table presents the results of addressing Endogeneity issues. Reports the results of two‐stage least squares method (2SLS). A detailed description of the variables is provided in Appendix I. Robust standard errors clustered by firms are reported in parentheses. \*\*\*, \*\* and \* denote significance at 1%, 5%, and 10% respectively.

**4.3.2** **Fixed-Effects Model**

Furthermore, to mitigate potential endogeneity bias due to omitted variables at the firm level, we employ a firm fixed-effects model and control for clustering at the firm level. The results in Table 4, Column (3), consistently show that the regression coefficient of OC remains significantly positive, reaffirming our main conclusions.

**4.5 | Additional analyses**

**4.5.1 | Role of** **state-owned enterprises (SOEs)**

In China, the power of CEOs is different in family firms and SOEs. In state-owned enterprises (SOEs), CEOs often act as implementers of government directives. In contrast, CEOs of family firms in China are usually family members, which gives them more flexibility to make decisions based on their personal preferences (Solarino & Boyd, 2020). Given the varying discretion of CEOs across different types of firms, we conducted an additional analysis to explore how the nature of firms (state-owned enterprises vs. family businesses) influences the relationship between CEO overconfidence and ESG performance. Table 5. Columns (1) and (2) indicate that the coefficient for CEO overconfidence is 0.176 (t = 4.412, significant at the 1% level), indicating a strong positive relationship with ESG performance. In contrast, the coefficient for non-SOEs is 0.045 (t = 0.892), which is not statistically significant. This result indicates that CEO overconfidence has a strong and statistically significant positive impact on ESG performance in state-owned enterprises (SOEs). At the same time, this effect is weaker and not statistically significant in non-SOEs, such as family firms.

**4.5.2 | Role of** **institutional ownership**

In China, institutional investors play a crucial role in promoting good corporate governance and the efficient allocation of capital (Cheng, 2022). Existing research has demonstrated that institutional investors possess the means and incentives to prevent CEOs from acting irrationally or inefficiently. Aguilera (2005) asserts that institutional investors significantly mitigate potential conflicts of interest between managers and stockholders. Huyghebaert & Wang (2012) offer proof of institutional investors' external governance function. Institutional investors, including insurance companies, pension funds, and mutual funds, play a vital role in increasing ESG performance by shaping corporate governance and managerial oversight (Eliwa & Elmaghrabi, 2025). Table 5, Columns (3) and (4), which focus on institutional investors, indicate that firms with high institutional investors exhibit a significant positive relationship between CEO overconfidence and ESG performance, with a coefficient of 0.134 (t = 2.938, significant at the 1% level). However, in firms with low institutional ownership, the coefficient is 0.047 (t = 0.974), which is insignificant. This highlights the role of institutional investors in promoting accountability and ensuring substantive ESG performance, amplifying the influence of CEO overconfidence.

|  |
| --- |
| **TABLE 5: Additional analyses.****TABLE9: Additional analyses.****TABLE9: Additional analyses.****TABLE9: Additional analyses.****TABLE9: Additional analyses.** |
|  | (1) | (2) | (3) | (4) |
| Non-SOEs | SOEs | High-INS | low-INS |
| *CEO\_ Famine*  | 0.045 | 0.176\*\*\* | 0.134\*\*\* | 0.047 |
|  | (0.892) | (4.412) | (2.938) | (0.974) |
| Controls  | Yes | Yes | Yes | Yes |
| Industry effect | Yes | Yes | Yes | Yes |
| Year effect | Yes | Yes | Yes | Yes |
| Observations | 4,887 | 3,474 | 4,181 | 4,180 |
| R2 | 0.171 | 0.266 | 0.248 | 0.185 |
| Adjusted R2 | 0.171 | 0.266 | 0.248 | 0.185 |

Note: \* \* \*, \* \*, and \* indicate significant correlation at 1%, 5%, and 10% levels, respectively, with t values in parentheses.

**5 | DISCUSSION AND CONCLUSION**

This study investigates the relationship between CEO overconfidence and corporate ESG performance in Chinese A-share non-financial firms. The findings contribute to the growing body of literature on behavioral corporate governance and sustainability by highlighting those executive psychological traits, specifically overconfidence, can positively shape ESG outcomes. Our empirical analysis reveals that CEO overconfidence significantly improves ESG performance across environmental, social, and governance dimensions. Furthermore, the effect is more pronounced in state-owned enterprises (SOEs) and firms with high institutional investor ownership, suggesting that external governance mechanisms can amplify or condition the impact of executive traits on sustainability outcomes. These results reinforce the relevance of Upper Echelon Theory, demonstrating that executives’ cognitive biases are central to financial outcomes and crucial in driving non-financial performance metrics like ESG.

 In sum, the conclusions suggest that fostering appropriate CEO Overconfidence, strengthening institutional investor engagement, and leveraging state-owned enterprises can jointly enhance ESG performance. By striking a balance in CEO overconfidence, firms may see high investment in ESG and motivate best decision making. Corporate governance can help to promote ethical ESG investment.

**5.1 | Managerial implications**

Our findings offer several practical implications for corporate leadership and governance. First, companies should recognize that overconfidence, while often viewed as a cognitive bias, can also be a strategic asset in driving long-term sustainability initiatives. Overconfident CEOs may be more willing to invest in ESG projects that yield delayed returns but offer long-term competitive advantages. Second, boards and human resource managers can use this insight to inform executive recruitment and development strategies, acknowledging the motivational potential of overconfidence while ensuring it is balanced with appropriate oversight. Third, institutional investors and regulators can play a proactive role in enhancing the positive effects of CEO overconfidence by fostering transparency and accountability mechanisms that align executive incentives with broader ESG goals. Lastly, in state-owned enterprises where CEOs often operate under government mandates, overconfidence may be a motivational trait that aligns public policy goals with corporate action, thereby contributing to national sustainability objectives.

**5.2 | Limitations and future research**

While this study provides valuable insights, it has several limitations that future research can address. First, the proxy used for CEO overconfidence, based on demographic and role-related characteristics, may not fully capture the psychological depth of this trait. Future studies could incorporate psychological assessments or behavioral data for more precise measurement. Second, our sample focuses exclusively on Chinese A-share non-financial firms, limiting the generalizability of the findings to other contexts or sectors. Comparative studies across countries or industries could provide a broader understanding of how cultural and institutional differences shape the overconfidence-ESG relationship. Third, while we explore the moderating effects of SOE status and institutional ownership, other governance variables—such as board composition or ownership concentration—might also influence this dynamic and warrant further exploration. Lastly, longitudinal case studies or qualitative approaches could offer deeper insights into the mechanisms through which overconfident CEOs implement and sustain ESG strategies over time.

**HIGHLIGHTS:**

* The study investigates the impact of CEO overconfidence on corporate ESG performance using data from Chinese A-share listed companies from 2007 to 2022.
* CEO overconfidence improves ESG performance through three key dimensions: environmental responsibility (E), social responsibility (S), and corporate governance (G).
* Policy and managerial implications include recognizing the dual nature of CEO overconfidence and encouraging firms to balance confidence with governance to optimize ESG outcomes.
* CEO overconfidence positively influences ESG performance.

**References**

Adeneye, Y. B., Kammoun, I., & Ab Wahab, S. N. A. (2023). Capital structure and speed of adjustment: the impact of environmental, social and governance (ESG) performance. *Sustainability Accounting, Management and Policy Journal*, *14*(5), 945–977. <https://doi.org/10.1108/SAMPJ-01-2022-0060>

Aguilera, R. V. (2005). Corporate governance and director accountability: An institutional comparative perspective. *British Journal of Management*, *16*(SPEC. ISS.). <https://doi.org/10.1111/j.1467-8551.2005.00446.x>

Bruno, E., Iacoviello, G., & Giannetti, C. (2024). Bank credit loss and ESG performance. *Finance Research Letters*, *59*. <https://doi.org/10.1016/j.frl.2023.104719>

Burkhard, B., Sirén, C., van Essen, M., Grichnik, D., & Shepherd, D. A. (2023). Nothing Ventured, Nothing Gained: A Meta-Analysis of CEO Overconfidence, Strategic Risk Taking, and Performance. *Journal of Management*, *49*(8), 2629–2666. <https://doi.org/10.1177/01492063221110203>

Cai, C., Hazaea, S. A., Alsayegh, M. F., Sahu, M., Raid, M., & Al-Ahdal, W. M. (2024). Media coverage as a moderator in the nexus between audit quality and ESG performance: Evidence from China. *PLoS ONE*, *19*(10). <https://doi.org/10.1371/journal.pone.0312510>

Chen, M. S., Chou, J. H., & Chen, Y. J. (2024). Media Attention, ESG Performance and Firm Value: Evidence from Taiwan. *International Review of Accounting, Banking & Finance*, *16*(4). [https://www.irabf.org/upload/journal/prog/1st%20%20%20%20%20Media%20Attention,%20ESG%20Performance%20and%20Firm%20Value.pdf](https://www.irabf.org/upload/journal/prog/1st%20%20%20%20%20Media%20Attention%2C%20ESG%20Performance%20and%20Firm%20Value.pdf)

Cheng, P. (2022). Institutional Investors in China: Problems and Prospects. *Colum. Bus. L. Rev.*, 664. <https://heinonline.org/HOL/LandingPage?handle=hein.journals/colb2022&div=16&id=&page=>

Cordeiro, L. (2009). *Managerial Overconfidence and Dividend Policy \**. *Available at SSRN 1343805*.

D’Amato, V., D’Ecclesia, R., & Levantesi, S. (2024). Firms’ profitability and ESG score: A machine learning approach. *Applied Stochastic Models in Business and Industry*, *40*(2), 243–261. <https://doi.org/10.1002/asmb.2758>

Deshmukh, S., Goel, A. M., & Howe, K. M. (2013). CEO overconfidence and dividend policy. *Journal of financial intermediation*, *22*(3), 440-463. <https://doi.org/10.1016/j.jfi.2013.02.003>

Dinh Nguyen, D., To, T. H., Nguyen, D. Van, & Phuong Do, H. (2021). Managerial overconfidence and dividend policy in Vietnamese enterprises. *Cogent Economics and Finance*, *9*(1). <https://doi.org/10.1080/23322039.2021.1885195>

Drempetic, S., Klein, C., & Zwergel, B. (2020). The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review. *Journal of Business Ethics*, *167*(2), 333–360. <https://doi.org/10.1007/s10551-019-04164-1>

Du, J., Zhu, R., & Ye, Q. (2025). Managers' overconfidence, institutional investors' shareholding, and corporate ESG performance. *Finance Research Letters*, *72*, 106594. <https://doi.org/10.1016/j.frl.2024.106594>

Dunning, D., Griffin, D. W., Milojkovic, J. D., & Ross, L. (1990). The overconfidence effect in social prediction. *Journal of personality and social psychology*, *58*(4), 568. <https://psycnet.apa.org/buy/1990-22524-001>

Eliwa, Y., & Elmaghrabi, M. E. (2025). Investment Horizons and ESG Decoupling: Distinct Roles of Long-Term and Short-Term Institutional Investors. *Economics Letters*, 112207. <https://doi.org/10.1016/j.econlet.2025.112207>

Ferris, S. P., Jayaraman, N., & Sabherwal, S. (2013). CEO overconfidence and international merger and acquisition activity. Journal of Financial and Quantitative Analysis, 48(1), 137-164. <https://doi.org/10.1017/S0022109013000069>

Fiorillo, P., & Santilli, G. (2024). The influence of shareholder ESG performance on corporate sustainability: Exploring the role of ownership structure. *Finance Research Letters*, *67*. <https://doi.org/10.1016/j.frl.2024.105800>

Galasso Timothy Simcoe, A. S., Cockburn, I., Goldfarb, A., Ho, T., Hossain, T., Kramer, L., Schankerman, M., Shi, X., Xiao, M., Galasso, A., Simcoe, T. S., & Timothy Simcoe, R. S. (2010). *NBER WORKING PAPER SERIES CEO OVERCONFIDENCE AND INNOVATION*. <http://www.nber.org/papers/w16041>

Gervais, S., Heaton, J. B., & Odean, T. (2011). Overconfidence, compensation contracts, and capital budgeting. *The Journal of Finance*, *66*(5), 1735-1777. <https://doi.org/10.1111/j.1540-6261.2011.01686.x>

Gong, X. (2024). Environmental, Social and Governance (ESG) Development Status and Outlook. *Finance &amp; Economics*, *1*(7). <https://doi.org/10.61173/wsc71495>

Hatoum, K., Moussu, C., & Gillet, R. (2022). CEO overconfidence: Towards a new measure. *International Review of Financial Analysis*, *84*. <https://doi.org/10.1016/j.irfa.2022.102367>

He, F., Guo, X., & Yue, P. (2024). Media coverage and corporate ESG performance: Evidence from China. *International Review of Financial Analysis*, *91*. <https://doi.org/10.1016/j.irfa.2023.103003>

Hirshleifer, D., Low, A., & Teoh, S. H. (2012). Are overconfident CEOs better innovators? *The journal of finance*, *67*(4), 1457-1498. <https://doi.org/10.1111/j.1540-6261.2012.01753.x>

Hsu, W., & Lee, Y. (2024). CEO Overconfidence and Corporate Tax Strategy. *Journal of Corporate Accounting & Finance*. <https://doi.org/10.1002/jcaf.22777>

Huarng, K.-H., & Yu, T. H.-K. (2024). Causal complexity analysis of ESG performance. *Journal of Business Research*, *170*, 114327. <https://doi.org/10.1016/j.jbusres.2023.114327>

Huang, R., Tan, K. J. K., & Faff, R. W. (2016). CEO overconfidence and corporate debt maturity. *Journal of Corporate Finance*, *36*, 93-110. <https://doi.org/10.1016/j.jcorpfin.2015.10.009>

Huyghebaert, N., & Wang, L. (2012). Expropriation of Minority Investors in Chinese Listed Firms: The Role of Internal and External Corporate Governance Mechanisms. *Corporate Governance: An International Review*, *20*(3), 308–332. <https://doi.org/10.1111/j.1467-8683.2012.00909.x>

Jia, F., Li, Y., Cao, L., Hu, L., & Xu, B. (2022). Institutional Shareholders and Firm ESG Performance: Evidence from China. *Sustainability (Switzerland)*, *14*(22). <https://doi.org/10.3390/su142214674>

Kaplan, S. N., Sørensen, M., & Zakolyukina, A. A. (2022). What is CEO overconfidence? Evidence from executive assessments. *Journal of Financial Economics*, *145*(2), 409–425. <https://doi.org/10.1016/j.jfineco.2021.09.023>

Karavitis, P., Kazakis, P., & Xu, T. (2025). Overconfident CEOs, corporate social responsibility, and tax avoidance: Evidence from China. *Journal of International Accounting, Auditing and Taxation*, 100702. <https://doi.org/10.1016/j.intaccaudtax.2025.100702>

Lee, J. M., Hwang, B. H., & Chen, H. (2017). Are founder CEOs more overconfident than professional CEOs? Evidence from S&P 1500 companies. *Strategic Management Journal*, *38*(3), 751-769. <https://doi.org/10.1002/smj.2519>

Li, S., Ao, X., Zhang, M., & Pu, M. (2024). ESG performance and carbon emission intensity: examining the role of climate policy uncertainty and the digital economy in China’s dual-carbon era. *Frontiers in Environmental Science*, *12*. <https://doi.org/10.3389/fenvs.2024.1526681>

Liu, J., Xiong, X., Gao, Y., & Zhang, J. (2023). The impact of institutional investors on ESG: Evidence from China. *Accounting and Finance*, *63*(S2), 2801–2826. <https://doi.org/10.1111/acfi.13011>

Liu, P., Zhu, B., Yang, M., & Chu, X. (2022). ESG and financial performance: A qualitative comparative analysis in China’s new energy companies. *Journal of Cleaner Production*, *379*. <https://doi.org/10.1016/j.jclepro.2022.134721>

Lopez-De-Silanes, F., Mccahery, J. A., & Pudschedl, P. C. (2022). *ECGI Working Paper Series in Law*. [https://ssrn.com/abstract=4049313](https://ssrn.com/abstract%3D4049313)

Malmendier, U., & Tate, G. (2004). *NBER WORKING PAPER SERIES WHO MAKES ACQUISITIONS? CEO OVERCONFIDENCE AND THE MARKET’S REACTION*. <http://www.nber.org/papers/w10813>

Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. *Journal of Finance*, *60*(6), 2661–2700. <https://doi.org/10.1111/j.1540-6261.2005.00813.x>

Malmendier, U., & Tate, G. (2005b). Does overconfidence affect corporate investment? CEO overconfidence measures revisited. *European financial management*, *11*(5), 649-659. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1354-7798.2005.00302.x>

Malmendier, U., Tate, G., Yan, J., Baker, M., Fahlenbrach, R., Faulkender, M., Frank, M., Hackbarth, D., Jenter, D., Stein, J., Strebulaev, I., Subrahmanyam, A., & Wurgler, J. (2010). *NBER WORKING PAPER SERIES OVERCONFIDENCE AND EARLY-LIFE EXPERIENCES: THE IMPACT OF MANAGERIAL TRAITS ON CORPORATE FINANCIAL POLICIES*. <http://www.nber.org/papers/w15659>

McCarthy, S., Oliver, B., & Song, S. (2017). Corporate social responsibility and CEO confidence. *Journal of Banking & Finance*, *75*, 280-291. <https://doi.org/10.1016/j.jbankfin.2016.11.024>

Menicucci, E., & Paolucci, G. (2022). Board Diversity and ESG Performance: Evidence from the Italian Banking Sector. *Sustainability (Switzerland)*, *14*(20). <https://doi.org/10.3390/su142013447>

Minutolo, M. C., Kristjanpoller, W. D., & Stakeley, J. (2019). Exploring environmental, social, and governance disclosure effects on the S&P 500 financial performance. *Business Strategy and the Environment*, *28*(6), 1083–1095. <https://doi.org/10.1002/bse.2303>

Miranda, B., Delgado, C., & Branco, M. C. (2023). Board Characteristics, Social Trust and ESG Performance in the European Banking Sector. *Journal of Risk and Financial Management*, *16*(4). <https://doi.org/10.3390/jrfm16040244>

Nguyen, T. T., & Thuy, T. (2015). *CEO Overconfidence Effects on Mergers and Acquisitions Finance Master’s thesis Title of thesis CEO Overconfidence Effects on Mergers and Acquisitions*. <https://aaltodoc.aalto.fi/items/4eef5961-14c7-43a3-ba5a-8998233e5787>

Pan, A., Liu, W., & Wang, X. (2019). Managerial overconfidence, debt capacity and merger & acquisition premium. *Nankai Business Review International*, *10*(4), 570–590. <https://doi.org/10.1108/NBRI-04-2019-0016>

Paolone, F., Pozzoli, M., Chhabra, M., & Di Vaio, A. (2024). Cultural and gender diversity for ESG performance towards knowledge sharing: empirical evidence from European banks. *Journal of Knowledge Management*, *28*(11), 106–131. <https://doi.org/10.1108/JKM-05-2023-0445>

Park, K. H., Byun, J., & Choi, P. M. S. (2020). Managerial overconfidence, corporate social responsibility activities, and financial constraints. *Sustainability (Switzerland)*, *12*(1), 1–14. <https://doi.org/10.3390/SU12010061>

Petrenko, O. V., Aime, F., Ridge, J., & Hill, A. (2016). Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. *Strategic management journal*, *37*(2), 262-279. <https://doi.org/10.1002/smj.2348>

Qin, B. (2019). CEO overconfidence and corporate environmental performances. Available at SSRN: [https://ssrn.com/abstract=3440407](https://ssrn.com/abstract%3D3440407) or [http://dx.doi.org/10.2139/ssrn.3440407](https://dx.doi.org/10.2139/ssrn.3440407)

Russo, J. E., & Schoemaker, P. J. (1992). Managing overconfidence. *Sloan management review*, *33*(2), 7-17. <https://sloanreview.mit.edu/article/managing-overconfidence/>

Saini, D., & Singh, B. (2025). CEO overconfidence and corporate social responsibility: exploring the moderating role of governance. *International Journal of Ethics and Systems*. <https://www.emerald.com/insight/content/doi/10.1108/ijoes-11-2024-0358/full/html>

Seo, K., Kim, E. E. K., & Sharma, A. (2017). Examining the determinants of long-term debt in the US restaurant industry: Does CEO overconfidence affect debt maturity decisions?. *International Journal of Contemporary Hospitality Management*, *29*(5), 1501-1520. <https://www.emerald.com/insight/content/doi/10.1108/ijchm-06-2015-0274/full/html>

Solarino, A. M., & Boyd, B. K. (2020). Are all forms of ownership prone to tunneling? A meta-analysis. *Corporate Governance: An International Review*, *28*(6), 488–501. <https://doi.org/10.1111/corg.12344>

Tan, W., Liu, Y., Dong, Q., & Chen, X. H. (2025). From values to value: exploring the dual impact of national spirit on corporate ESG performance. *Journal of Accounting Literature*. <https://doi.org/10.1108/JAL-08-2024-0222>

Tang, Y., Li, J., & Yang, H. (2015). What I see, what I do: How executive hubris affects firm innovation. *Journal of Management*, *41*(6), 1698-1723. <https://journals.sagepub.com/doi/abs/10.1177/0149206312441211>

Tang, H. W., & Chang, C. C. (2024). CEO overconfidence, risk-taking, and firm value: Influence of incentive compensation and financial constraints. *North American Journal of Economics and Finance*, *69*. <https://doi.org/10.1016/j.najef.2023.102034>

Terzani, S., & Turzo, T. (2021). Religious social norms and corporate sustainability: The effect of religiosity on environmental, social, and governance disclosure. *Corporate Social Responsibility and Environmental Management*, *28*(1), 485–496. <https://doi.org/10.1002/csr.2063>

Twardawski, T., & Kind, A. (2023). Board overconfidence in mergers and acquisitions. *Journal of Business Research*, *165*. <https://doi.org/10.1016/j.jbusres.2023.114026>

Wallace, H. M., & Baumeister, R. F. (2002). The performance of narcissists rises and falls with perceived opportunity for glory. *Journal of Personality and Social Psychology*, *82*(5), 819–834. <https://doi.org/10.1037/0022-3514.82.5.819>

Wang, W., Yu, Y., & Li, X. (2022). ESG performance, auditing quality, and investment efficiency: Empirical evidence from China. *Frontiers in Psychology*, *13*. <https://doi.org/10.3389/fpsyg.2022.948674>

Wang, Y., Han, Y., Du, Q., & Hou, D. (2023). Executive overconfidence and corporate environmental, social, and governance performance. *Sustainability*, *15*(21), 15570. <https://www.mdpi.com/2071-1050/15/21/15570>

Xing, T., Li, X., & Feng, N. (2024). Is bank competition conducive to corporate ESG performance? *International Review of Financial Analysis*, *95*. <https://doi.org/10.1016/j.irfa.2024.103509>

Yan, Y., Cheng, Q., Huang, M., Lin, Q., & Lin, W. (2023). Government Environmental Regulation and Corporate ESG Performance: Evidence from Natural Resource Accountability Audits in China. *International Journal of Environmental Research and Public Health*, *20*(1). <https://doi.org/10.3390/ijerph20010447>

Zhang, X., Zhang, J., & Feng, Y. (2023). Can companies get more government subsidies through improving their ESG performance? Empirical evidence from China. *PLoS ONE*, *18*(10 October). <https://doi.org/10.1371/journal.pone.0292355>

Zhang, Y. (2022). Analyst coverage and corporate social responsibility decoupling: Evidence from China. *Corporate Social Responsibility and Environmental Management*, *29*(3), 620–634. <https://doi.org/10.1002/csr.2224>

Zhang, Z., & Zhang, L. (2024). Investor attention and corporate ESG performance. *Finance Research Letters*, *60*. <https://doi.org/10.1016/j.frl.2023.104887>

Zhao, W. (2024). Research Trend in the Development of Environmental, Social, and Governance (ESG). *Advances in Economics, Management and Political Sciences*, *122*(1), 183–194. <https://doi.org/10.54254/2754-1169/2024.17815>

Zhao, Y., Gao, Y., & Hong, D. (2024). Sustainable Innovation and Economic Resilience: Deciphering ESG Ratings’ Role in Lowering Debt Financing Costs. *Journal of the Knowledge Economy*. <https://doi.org/10.1007/s13132-024-02129-y>

Zheng, B., Lin, Y. Y., Fong, V. H. I., & Huo, X. (2025). Exploring the influence of CEO overconfidence on innovation in artificial intelligence technology: a machine learning approach. *European Journal of Innovation Management*. <https://doi.org/10.1108/EJIM-11-2023-0987>

Zheng, Y., Wang, B., Sun, X., & Li, X. (2022). ESG performance and corporate value: Analysis from the stakeholders’ perspective. *Frontiers in Environmental Science*, *10*. <https://doi.org/10.3389/fenvs.2022.1084632>

**Appendix 1: Variable Definitions and Data Sources**

|  |  |  |
| --- | --- | --- |
| **Variable** | **Definition** | **Source** |
| ***Dependent variables ESG performance*** |
| *ESG*  | ESG\_performance scores from Bloomberg database | Bloomberg database |
| ***Independent variables CEO overconfidence*** |  |
| OC | a composite index based on four key demographic and role-related factors: gender, age, education, and dual roles | CSMAR and Wind databases |
| IV: (Mean\_pro) | Average overconfidence level of CEO in other firms within the same region and year  | CSMAR and Wind databases |
| ***Moderate variables*** |
| *INST*. | Institutional investor shareholding ratio INST Total number of institutional investors’ shareholdings / total number of shares  | CSMAR Database |
| *State Ownership* | Is it a state-owned enterprise? 1 if yes, 0 if no | Wind Database |
| ***Control variables*** |  |  |
| *Size* | Firm Size, measured as natural logarithm of total assets. | Wind Database |
| *Leverage* | The percentage of total liabilities to total shareholder equity. | Wind Database |
| *Growth* | Operating revenue growth rate, measured as the year-over-year percentage change in operating revenue. | CSMAR and Wind databases |
| *FirmAge* | Natural logarithm of the number of years since the firm’s establishment. | Wind Database |
| *ROA* | Net Profit / Average Balance of Total Assets | Wind Database |
| *Audit fees* | Audit fee takes the natural logarithm | Wind Database |
| TobinQ | Proxy for firm market value, calculated as (market value of equity + book value of debt) / total assets. | CSMAR |
| *Industry* | Indicator variables for industry effect. | Wind Database |
| *Year* | Indicator variables for year effect. | Wind Database |