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The Impact of CEO Narcissism on Firm Risk

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ABSTRACT

Purpose: Traditional financial theories are largely grounded in the assumption that investors and managers behave in a fully rational manner. In contrast, behavioral finance rejects this assumption and emphasizes evidence-based behavior shaped by psychological elements. These emerging perspectives highlight the role of cognitive biases and individual characteristics in shaping financial decisions. Among these traits, managerial narcissism can significantly influence decision-making. Narcissistic CEOs often demonstrate a tendency toward risk-taking, focusing on short-term goals without sufficient regard for long-term consequences, which in turn exposes organizations to greater risks. Accordingly, this study aims to investigate the impact of CEO narcissism on firm risk among companies listed on the Tehran Stock Exchange. **Method:** The study sample comprises 79 firms listed on the Tehran Stock Exchange over the period 2016–2021. A multivariate regression model with panel data and ordinary least squares (OLS) estimation was employed to test the research hypotheses. CEO narcissism was measured using two proxies: (1) the ratio of cash compensation to total remuneration, and (2) the size of the CEO's signature. **Findings:** The results indicate that, regardless of the measurement criterion, CEO narcissism has a positive and significant effect on firm risk. **Conclusion:** Narcissistic CEOs, driven by excessive risk-taking tendencies and insistence on their decisions, often engage in actions that create considerable challenges within organizations and threaten their long-term success and survival. Overall, the findings suggest that CEO narcissism increases firms' overall risk exposure.

1. INTRODUCTION

Today, with the rapid advancement of technology, the globalization of economies, and the increasing pace of environmental changes, risk and uncertainty have become inseparable elements of decision-making. These conditions have intensified the complexity of managing organizations, where managers as the primary decision-makers demonstrate diverse reactions that reflect their behavioral tendencies [1]. According to traditional financial

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theories, which are based on broad assumptions, investors and managers are considered entirely rational [2]. In contrast, behavioral finance challenges the assumption of rationality and instead emphasizes evidence-based behavior shaped by psychological factors, whereby individual biases and behavioral traits replace the earlier assumptions [3].

Biological factors, such as hormones, can influence personality traits and behavioral characteristics. Thus, personality features are often considered precursors of behavioral tendencies [4]. Organizational leadership, a widely studied subject in organizational psychology, is known to play a decisive role in enhancing productivity and efficiency within firms [5]. Consequently, managers' behaviors rooted in their personality traits significantly affect the organizational environment, transformation processes, and overall performance [4]. Among the executives, the CEO, as the highest-ranking officer, plays a central role in converting resources into income and creating wealth for shareholders while reducing uncertainty in the firm's environment [6]. Managers are therefore regarded as key drivers of organizational performance, with their decisions directly shaping success or failure [7].

Recent studies in behavioral finance have increasingly focused on managerial biases, often contrasting irrational managers with rational investors [8]. Evidence in this field suggests that managers' psychological characteristics significantly influence firms' strategies and decision-making processes [2]. Among the studied biases, managerial narcissism has received considerable scholarly attention [9]. Narcissism is a personality trait characterized by self-centeredness, excessive demand for admiration, and biased cognitive processing [10]. The significance of studying CEO narcissism lies in its implications for organizational outcomes. Firms face growing pressure to appoint managers who can avoid excessive risk-taking and potential crises, as behavioral biases such as narcissism may expose organizations to significant risks [11].

As Aime and Craig [12] argue, narcissistic managers tend to pursue risky decisions, focusing on short-term objectives while disregarding long-term consequences. While such decisions may sometimes benefit both the organization and the personal image of narcissistic CEOs, they can equally prove detrimental and lead to adverse outcomes [13]. Previous accounting studies have explored the impact of psychological biases such as overconfidence, optimism, projection bias, and risk preferences on capital markets and firm performance (e.g., [14]). In recent years, most research has concentrated on managerial overconfidence (e.g., Malmendier & Tate [9]), whereas narcissism has received comparatively limited attention. Following Abou et al. (2018), the present study aims to investigate the relationship between CEO narcissism and firm risk.

The novelty of this research lies in employing two distinct proxies to measure CEO narcissism: the ratio of cash compensation to total remuneration, and the size of the CEO's signature. This dual approach extends prior studies, such as those by Khajavi & Rahmani [14] and Namazi, Dehghani Saadi, & Ghovehestani [15], which primarily focused on compensation-based proxies. Hence, this study contributes to the literature by addressing the following question: Does CEO narcissism significantly influence firm risk?

2. THEORETICAL BACKGROUND

The relationship between psychological traits and corporate risk-taking has recently drawn growing attention in financial research, highlighting how psychological beliefs shape corporate decision-making [16]. These managerial beliefs may originate from biological or physical attributes. For example, Yim [17] suggested that psychological factors may evolve with age, while Bertrand [18] argued that older managers tend to prefer stability, and this tendency intensifies over time. Personality characteristics that potentially change with age or other biological factors such as overconfidence, optimism, and narcissism may directly influence CEOs' risk-taking behaviors.

Behavioral decision-making theory posits that excessive self-confidence, as a psychological bias, can lead decision-makers to overestimate their problem-solving abilities while underestimating uncertainty [19]. Psychological beliefs may also shape individuals' worldviews, values, and decision-making styles, often influenced by cultural transmission from family, peers, or society at large [8].

In some firms, CEOs make critical decisions independently, while in others, decision-making is shared with executive teams. From an organizational theory perspective, individual decisions are inherently riskier than group decisions, as group diversity introduces a wider range of perspectives. Accordingly, CEO-dominated decision-making is expected to be associated with greater risk. This effect largely depends on the CEO's influence within the

organization, as powerful CEOs can significantly shape corporate decision-making processes. Research generally suggests that overly powerful managers may harm long-term organizational performance [6].

The concept of narcissism was first introduced in psychology and psychiatry by Ellis in 1898 [8]. While much of the managerial bias literature has focused on overconfidence, more recent studies indicate that CEO personality and psychology substantially shape firm strategies and decisions [2]. Although narcissism shares similarities with overconfidence, it remains a distinct trait [20]. Narcissism is commonly defined as a relatively stable personality characteristic encompassing self-importance, grandiosity, pride, and self-promotion [22]. Narcissistic individuals often display exaggerated self-perceptions combined with a fragile self-image, simultaneously seeking recognition and validation from others.

In modern applications, the American Psychiatric Association (1994) classifies narcissism primarily as a personality disorder, marked by excessive self-centeredness, assertiveness, competitiveness, and a constant need for admiration. Despite their inflated self-image, narcissists often lack genuine self-awareness and possess a vulnerable self-concept. Their key features include an inflated sense of personal importance, preoccupation with fantasies of success, belief in uniqueness, and exploitative interpersonal behavior [22]. Narcissists not only rely on their sense of superiority but also require continuous admiration and external validation to reinforce their self-image [23][24]. Brummelman, Thomaes, and Sedikides [25] further argue that narcissists' sense of superiority is fragile and becomes unstable without external affirmation.

Research by Bogart et al. [23] demonstrated a positive association between narcissism and sensitivity to social comparison. Similarly, Adams, Almeida, and Ferreira [26] found that firms led by powerful CEOs exhibit significant variations in performance outcomes. Chatterjee, Jiraporn, and Tang [27] reported that CEOs with disproportionately high compensation tend to pursue riskier strategies. Ham, Seybert, and Wang [28] provided evidence that narcissistic CEOs, as reflected in larger signatures, are more prone to opportunistic behavior and excessive compensation-seeking.

Recent accounting research has also explored biological correlates of CEO decision-making. For example, Safari Gerayli et al. [29] demonstrated that higher testosterone levels in competitive and stressful environments increase managers' propensity to engage in riskier investments.

3. EMPIRICAL BACKGROUND

In recent years, numerous studies have shown that the demographic and psychological characteristics of managers influence both corporate strategy choices and performance outcomes. Kantsa, Brahmana, and Tang [30], using a sample of 514 firms listed on the Malaysian Stock Exchange between 2009 and 2015, demonstrated that narcissistic managers exhibit a stronger tendency toward earnings management, which in turn can increase firm risk. In addition to evidence suggesting that managerial narcissism exposes organizations to greater risk, some studies argue that narcissism is less prevalent among female CEOs than their male counterparts. Ingersoll et al. [11] found that female CEOs are less likely to exhibit narcissistic traits compared to male CEOs. They further showed that gender moderates the relationship between CEO narcissism and risk-taking behaviors.

Bail, Boone, and Wade [31] investigated how CEO narcissism, combined with corporate governance mechanisms, affects organizational risk. Examining 92 U.S. banks from 2006 to 2014, they found that, prior to the 2008 financial crisis, CEO narcissism had a significant positive impact on risk-taking, particularly when compensation policies encouraged risk. Moreover, their results indicated that the effect of CEO narcissism diminishes under stronger board monitoring (e.g., higher presence of independent directors), and that narcissistic traits may weaken firms' resilience against economic shocks.

Mashayekh et al. [32] reported that managerial narcissism has a significant negative impact on voluntary disclosure. Similarly, Abou et al. (2018), analyzing 475 U.S. firms between 2010 and 2014, documented an inverted U-shaped relationship between CEO narcissism and firm risk, suggesting that both very high and very low levels of narcissism are associated with similar levels of risk [8].

Haider et al. (2018) studied the relationship between CEO power and firm risk as well as the moderating role of institutional investors, using data from Chinese firms listed on the Shenzhen Stock Exchange between 2008 and

2013. Their findings showed a negative relationship between CEO power and both total and unsystematic risk, while institutional investors played a significant role in shaping this relationship [6].

Khajavi and Rahmani [14], examining 52 firms listed on the Tehran Stock Exchange between 2010 and 2014, analyzed the impact of CEO narcissism on stock price crash risk. Using testosterone levels and cash bonuses as proxies for narcissism, along with up-to-down volatility and crash periods as risk measures, they found that narcissism is positively related to stock price crash risk.

Safari Gerayli et al. [29] assessed the effect of CEO testosterone on corporate risk-taking. Studying 49 firms listed on the Tehran Stock Exchange between 2013 and 2015, they found that higher CEO testosterone levels, proxied by facial width-to-height ratio, significantly increased risk-taking.

Namazi, Dehghani Saadi, and Ghovehestani [15] analyzed the effect of managerial narcissism on strategic orientation. Their findings revealed that narcissism varies significantly across defensive, analytical, and aggressive strategies, showing a negative relationship with defensive and analytical strategies but a positive and significant relationship with aggressive strategies. Thus, higher narcissism among managers leads to greater adoption of bold and aggressive strategic choices.

Judd, Olsen, and Stekelberg (2015), using 3,885 observations, examined the relationship between managerial narcissism, financial reporting quality, and audit fees. Their evidence indicated that narcissistic managers reduce the quality of financial reporting, which in turn increases audit fees. Furthermore, narcissism among CEOs was found to increase the likelihood of auditor resignation [33].

Taken together, the findings of prior studies suggest that CEO narcissism can significantly affect corporate risk. Accordingly, the following hypothesis is proposed:

“CEO narcissism has a significant effect on firm risk”.

4. RESEARCH METHODOLOGY

This study is applied in terms of purpose and ex-post facto in terms of research design. In ex-post facto research, the potential relationships between variables are examined through observing existing conditions, where the studied events have already occurred and cannot be manipulated by the researcher. From the perspective of reasoning approach, this study follows an inductive method, whereby patterns are generalized for the population based on observations from a selected sample. The study is also categorized as a positive research design in theoretical terms and correlational in terms of statistical method, as multiple linear regression is employed to test the research hypotheses. The research period covers six years, from 2016 to 2021.

The statistical population consists of companies listed on the Tehran Stock Exchange (TSE). To ensure comparability and consistency, several criteria were applied to refine the sample:

1. The company must not have changed its fiscal year during the study period, and the fiscal year must end in March, to control for macroeconomic factors affecting the dependent variable.
2. The company must have continuous operations and its stock must have been actively traded without significant trading halts. Moreover, the company should not have been newly listed or delisted during the study period.
3. The company must not belong to financial institutions, insurance firms, banks, investment companies, or holding firms, due to fundamental differences in business models and revenue generation.
4. The company’s equity must not be negative, since negative equity indicates accumulated losses or liabilities exceeding assets, which could distort stock return behavior.
5. All financial and non-financial information required for the study must be available.

Companies that did not meet the above criteria were excluded systematically. Accordingly, the final research sample consists of 79 firms listed on the TSE.

5. OPERATIONAL DEFINITION OF VARIABLES AND HYPOTHESIS TESTING MODELS

5.1. Dependent Variable

To measure firm risk, stock return volatility is employed, as expressed in Equation (1):

$$SV = \sqrt{\frac{\sum_1^n (R_{it} - \hat{R}_t)^2}{n-1}} \quad (1)$$

The components of this formula are as follows:

- **SV**: Standard deviation of stock returns
- R_{it}: Return of stock *i* in period *t*
- $\widehat{R}_t$: Average return of all sample stocks during period *t*
- ***n***: Number of sample companies

To calculate the annual stock return, the difference between the market value at the beginning and the end of the period for each share is used. This is done based on the comprehensive return formula [34], as expressed in Equation (2).

$$\mathrm{R_{i,t}} = \frac{\mathrm{P_t}(1+\alpha+\beta) - (\mathrm{P_{t-1}} + \mathrm{C_\alpha}) + \mathrm{D_t}}{\mathrm{P_{t-1}} + \mathrm{C_\alpha}} \quad (2)$$

Where:

- R_{it}: Return of stock *i* in year *t*
- **α**: Percentage of capital increase from cash contributions and receivables
- **β**: Percentage of capital increase from reserves
- $\mathbf{D_t}$: Cash dividends paid during period *t*
- $\mathbf{P_{t-1}}$: Stock price at the beginning of period *t*
- $\mathbf{P_t}$: Stock price at the end of period *t*
- $\mathbf{C_\alpha}$: Nominal amount paid by the investor for capital increase from cash contributions and receivables

The required data for calculating stock returns were obtained from the *Rahavard Novin* software reports and the Tehran Stock Exchange website, considering capital increases from both cash contributions/receivables and reserves.

5.2. Main Independent Variable of the Study

In this study, managerial narcissism is considered the main independent variable, measured using two proxies. Consistent with Olsen and Stekelberg (2016) and Ham, Seybert, and Wang (2017), two indicators are employed: executive cash compensation and CEO signature size.

Narcissism1: Cash Compensation Index. This proxy measures narcissism through executive remuneration. It is calculated by dividing the cash bonus approved in the annual general meeting by the total salaries and wages paid during the company's fiscal year [14].

Narcissism2: Signature Size Index. The second proxy is the CEO's signature size. For this purpose, the signatures of the CEO and other board members are extracted from the first page of audited financial statements. Following Ham, Seybert, and Wang (2017) and Bazrafshan, Bazrafshan, and Salehi [35], a rectangle is drawn around each signature to define its boundary, and the area is measured using *ImageJ* software. The results are then processed in Excel. In the next step, the CEO's signature size is compared with that of other board members. If the CEO's signature is larger than the average of the remaining signatures, it is coded as **1**; otherwise, it is coded as **0**.

5.3. Control Variables of the Study

Since it is not feasible to examine the effects of all variables in a single study, researchers often control for certain factors statistically or methodologically. These are referred to as **control variables**, and in the present study they include:

SIZE (Firm Size): Measured as the logarithm of total assets. Firm size is a critical factor considered by investors when evaluating investment opportunities. Larger firms typically face greater monitoring and require stronger governance mechanisms. In contrast, smaller firms are more sensitive to economic fluctuations, leading to higher performance volatility and risk.

ROA (Return on Assets): This ratio reflects management efficiency in utilizing company resources to generate profit and serves as a proxy for economic performance. Prior research suggests that ROA is significantly associated with stock returns and can predict their changes. Hence, it is included as a control variable in assessing firm risk.

LEV (Financial Leverage): A measure of a firm's debt-paying capacity and the degree of financial pressure due to external obligations. As an indicator of financial risk, leverage is incorporated into the model.

LIQ (Current Ratio): Commonly used to evaluate a company's ability to settle short-term liabilities with short-term assets. A ratio below 1 signal poor financial health and higher investment risk. Therefore, liquidity is considered as a control factor that can explain variations in stock returns.

MB (Market-to-Book Value): This ratio is an important risk factor in asset valuation and also serves as a growth opportunity indicator. However, investments in high-growth firms may not necessarily yield positive future outcomes.

To test the **research** hypotheses, Equation (3) is estimated.

$$\mathrm{SV_{it}} = \beta_0 + \beta_1\ \mathrm{narcissism_{it}} + \beta_2 \mathrm{SIZE_{it}} + \beta_3 \mathrm{ROA_{it}} + \beta_4 \mathrm{LEV_{it}} + \beta_5 \mathrm{LIQ}_{\mathrm{it}} + \beta_6 \mathrm{MB_{it}} + \in_{it} \quad (3)$$

6. RESEARCH FINDINGS

6.1. Descriptive Statistics

The descriptive statistics of the study are presented in Table 1. Regarding the CEO signature measure, the mean signature size of the CEOs is 0.47, while the mean size of other board members' signatures is 0.50, indicating a moderate level of narcissistic personality traits.

In addition, the mean financial leverage ratio is 0.54, suggesting that, on average, 54% of the assets of sample firms are financed through debt, which exposes them to relatively high default risk. The mean return on assets (ROA) is 0.14, showing that the companies under investigation generate profits covering only 13.6% of their assets. In other words, on average, the firms earn 0.14 units of profit for every one unit invested in assets, which may imply that low profitability is partially attributable to narcissistic managerial behavior.

Another central tendency measure, the median, provides useful insights into the distribution of variables. As seen in Table 1, the mean and median values of the variables are relatively close, suggesting that the dataset follows a normal distribution, since in a normal distribution the mean and median coincide.

The standard deviation, as an important measure of dispersion, indicates the extent to which observations deviate from the mean. Among the studied variables, firm size exhibits the highest variability (1.34), while the cash compensation ratio to salaries and wages shows the lowest variability (0.01).

Finally, the minimum and maximum values of stock return volatility the dependent variable in this study are 0.01 and 0.39, respectively, which indicates significant differences in risk levels across the sampled firms.

Table 1. Descriptive Statistics

Variable	Observations	Mean	Median	Max	Min	Std. Dev.
Stock return volatility	474	0.136	0.126	0.39	0.012	0.069
Cash compensation	474	0.009	0.005	0.19	0	0.013
Signature size	474	0.47	0	1	0	0.499
Firm size	474	14.386	14.167	19.272	11.035	1.34
Return on assets (ROA)	474	0.136	0.113	0.603	-0.362	0.131
Financial leverage (LEV)	474	0.54	0.538	1.274	0.065	0.188
Current ratio (LIQ)	474	1.606	1.358	8.67	0.209	0.925
Growth opportunities (MB)	474	1.189	1.028	4.432	0.183	0.718

6.2. Hypothesis Testing Results

The results of the hypothesis testing, considering different measures of the independent variable (managerial narcissism), are presented in Table 2. Based on the findings, the research models do not suffer from heteroscedasticity; therefore, they were estimated using the Ordinary Least Squares (OLS) regression. The Durbin–Watson statistic also indicates the absence of first-order serial correlation in the residuals. Furthermore, according to the Chow and Hausman tests, the panel data approach with a fixed-effects model was deemed appropriate for estimating the research models.

The adjusted R-squared values (0.52 and 0.50 for the two models) indicate that the explanatory variables account for 52% and 50% of the variations in the dependent variable, respectively. Moreover, the Fisher statistics confirm the overall significance of the models at the 95% confidence level. Therefore, the estimated models can be reliably used to test the research hypothesis.

Table 2. Results of Hypothesis Testing Based on Different Narcissism Measures

Dependent Variable	SV (Cash Compensation)	SV (Signature Size)
Narcissism	**0.712 (0.00)**	**0.185 (0.03)**
Firm size (SIZE)	**-0.244 (0.00)**	**-0.086 (0.04)**
Return on assets (ROA)	**-0.079 (0.03)**	**-0.206 (0.01)**
Financial leverage (LEV)	**0.186 (0.02)**	**0.199 (0.03)**
Current ratio (LIQ)	**-0.406 (0.13)**	**-0.376 (0.07)**
Growth opportunities (MB)	**-0.267 (0.00)**	**-0.247 (0.00)**
Constant (C)	**5.506 (0.02)**	**4.872 (0.00)**
Durbin–Watson	**1.84**	**2.49**
Adjusted R^2	**0.52**	**0.50**
Fisher statistic (p-value)	**6.445 (0.00)**	**4.49 (0.00)**
Breusch–Pagan–Godfrey test	**1.433 (0.37)**	**1.133 (0.38)**
Chow test (p-value)	**1.424 (0.00)**	**1.451 (0.00)**
Hausman test (p-value)	**45.89 (0.00)**	**49.200 (0.00)**
Suitable estimation model	Panel fixed effects	Panel fixed effects

The results reveal that managerial narcissism in both models has positive and significant coefficients (0.71 and 0.18, respectively) at the 95% confidence level. This finding indicates that, regardless of the measurement method, managerial narcissism significantly increases firm risk. Hence, the research hypothesis is not rejected.

Regarding the control variables, firm size, return on assets, and growth opportunities show negative and significant effects on firm risk across both models. Conversely, financial leverage exerts a positive and significant impact on the dependent variable, confirming that higher debt exposure increases firm risk.

7. DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

Various theories suggest that differences in the physical and psychological characteristics of senior managers lead to distinct perceptions of the environmental conditions, which in turn influence strategic decisions through cognitive biases. Individual personality traits, including neurobiological and hormonal factors, shape behavior, implying that behavioral patterns are largely rooted in personal characteristics [4].

Recent research in the psychological domain indicates that managerial psychology significantly affects corporate strategy and other organizational decisions [2]. In this context, narcissism is a personality construct characterized by personal ambition, a desire for recognition, and cognitive processing biases [10].

Given the existing theoretical and empirical gap regarding the effect of managerial narcissism on firm risk in companies listed on the Tehran Stock Exchange, this study examined the relationship using two distinct measures of narcissism: cash compensation and signature size. The findings reveal that, regardless of the measurement approach and after controlling for other variables, managerial narcissism has a positive and significant impact on firm risk. In other words, there is a direct and significant relationship between CEO narcissism and firm risk, indicating that higher levels of narcissism among managers are associated with increased risk.

This result aligns with the argument that narcissistic managers, driven by the desire to achieve significant accomplishments within the firm (Khajavi et al., 2018), are more inclined toward bold decision-making and undertaking strategic, operational, and high-risk business initiatives, which can result in substantial profits or losses at the end of the fiscal period. Overall, these findings are consistent with previous studies, including Khajavi et al. (2018), Safri-Greyli et al. (2017), Moshayekh et al. (2020), and Abu et al. (2018).

The results of this study have practical implications for corporate boards, as CEOs are appointed by the board of directors. Boards should consider the risk-taking tendencies of narcissistic managers when making executive selections. That is, while increased firm risk may not necessarily be inappropriate for all firms, boards should align managerial selection with the firm's risk tolerance.

Given the broad scope of behavioral finance research and the need to expand theoretical knowledge in this area, future studies are recommended to examine the impact of managerial narcissism on other operational aspects of firms, such as capital structure, financial reporting quality, information asymmetry, and economic performance. It is also worth noting that one of the main limitations in this field is the difficulty in measuring narcissism and, in some cases, the unavailability of required data.

Transparency Statement

The data supporting this study are available upon reasonable request to the corresponding author, subject to ethical and confidentiality considerations.

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Declaration of Interest

The authors declare that they have no competing interests.

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