CEOs' Narcissism and Opportunistic Insider Trading

Cheng Jiang

Department of Finance
Carroll School of Management
Boston College
cheng.jiang@bc.edu

Kose John

Department of Finance
Stern School of Business
New York University
kjohn@stern.nyu.edu

J.H. John Kim

Department of Finance
School of Business
College of Charleston
kimj5@cofc.edu

Jingyu Zhang

Department of Finance
Smith School of Business
Queen's University
jingyu.zhang@queensu.ca

Abstract: Narcissism is a multifaceted personality trait that profoundly influences individuals' cognition, emotions, and actions. This study investigates the relationship between narcissistic CEOs and their engagement in opportunistic insider trading. Utilizing a quantitative measure of CEOs' narcissism derived from textual analysis, we find that CEOs with a higher level of narcissism engage in opportunistic insider trading more intensely, thereby supporting the hypothesis of exploitative personal benefit. To mitigate concerns of endogeneity, we employ various rigorous approaches, including matching, instrumental variable, Heckman's two-step sample selection model, and falsification tests. Through cross-sectional analysis, we find that the impact of CEOs' narcissism on opportunistic insider trading is more pronounced among CEOs with limited legal knowledge and weaker monitoring pressure. Collectively, our findings highlight narcissism as a significant personality trait that drives CEOs' opportunistic insider trading behaviors, contributing to a deeper understanding of corporate governance dynamics.

Keywords: CEO, narcissism, insider trading

JEL Classification: G14, G30, M12

CEOs' Narcissism and Opportunistic Insider Trading

Abstract

Narcissism is a multifaceted personality trait that profoundly influences individuals' cognition, emotions, and actions. This study investigates the relationship between narcissistic CEOs and their engagement in opportunistic insider trading. Utilizing a quantitative measure of CEOs' narcissism derived from textual analysis, we find that CEOs with a higher level of narcissism engage in opportunistic insider trading more intensely, thereby supporting the hypothesis of exploitative personal benefit. To mitigate concerns of endogeneity, we employ various rigorous approaches, including matching, instrumental variable, Heckman's two-step sample selection model, and falsification tests. Through cross-sectional analysis, we find that the impact of CEOs' narcissism on opportunistic insider trading is more pronounced among CEOs with limited legal knowledge and weaker monitoring pressure. Collectively, our findings highlight narcissism as a significant personality trait that drives CEOs' opportunistic insider trading behaviors, contributing to a deeper understanding of corporate governance dynamics.

Keywords: CEO, narcissism, insider trading

JEL Classification: G14, G30, M12

Narcissism is a multifaceted personality trait that encompasses a wide array of cognitive, emotional, and behavioral characteristics (Campbell & Foster, 2007). Scholars have recognized that narcissism exists along a continuum with both positive and negative manifestations (Buser et al., 2016). Individuals with narcissistic tendencies often exhibit charismatic qualities, attract devoted followers, and demonstrate a high level of self-discipline in managing, safeguarding, and enhancing their self-image (Maccoby, 2000). On the other hand, negative aspects of narcissism include entitlement, excessive self-love, attention-seeking, disregard for others, and an inflated self-perception (American Psychiatric Association, 2013).

CEOs, as individuals holding significant power and influence within organizations, commonly exhibit narcissism due to the inherent characteristics associated with their roles (Grosch, 1994; Holtzman & Donnellan, 2015). Noteworthy examples in the business world further underscore the existence of narcissistic traits among CEOs. Jack Welch, the former CEO of General Electric, gained notoriety for his volatile temper and exploitative tendencies, earning him the epithet "Neutron Jack."[1] This exemplifies a case where negative aspects of narcissism were evident in a CEO's conduct. Similarly, Bill Gates, the co-founder and former CEO of Microsoft, has been labeled a narcissist by Forbes magazine, primarily due to his emphasis on protecting his public image and reputation.[2]

Upper echelons theory posits that personality traits influence executives' decision-making and behaviors (Hambrick and Mason, 1984). Exploring the narcissistic traits in CEOs is crucial for comprehending their leadership styles, decision-making processes, and their effects on organizational dynamics and outcomes. Prior studies examining the impact of CEOs' narcissism

[1] https://www.cbsnews.com/news/is-neutron-jack-welch-not-so-tough-after-all/
[2] https://www.forbes.com/2006/08/28/business-basics-narcissist-ceos-cx_tw_0829narcissist.html?sh=4a2917637f47

on corporate decision-making have produced mixed findings. Brunell et al. (2008) and Maccoby (2000) suggest that narcissistic CEOs possess charismatic qualities that enable them to attract followers effectively. Kashmiri et al. (2017) demonstrate that narcissistic CEOs exhibit visionary leadership, leading to higher organizational growth and innovation. Conversely, other studies (Regnaud, 2014; Olsen et al., 2014) reveal that CEOs with elevated levels of narcissism tend to exhibit negative traits, including poor listening skills, arrogance, self-centeredness, and engagement in unethical and illegal behaviors, such as bullying and earnings manipulation. These contrasting findings emphasize the complexity of the relationship between CEOs' narcissism and corporate outcomes, prompting further investigation.

This paper investigates the influence of CEOs' narcissism on their insider trading behavior, with a specific focus on opportunistic insider trading. The term "insider trading", as defined by the Securities and Exchange Commission, refers to transactions carried out by individuals who possess nonpublic material information about their company's stock.[3] Prior research has demonstrated that insider trades often convey significant nonpublic information regarding a firm's future prospects, often resulting in abnormal stock returns (Seyhun, 1986, 1988, 1992; Lakonishok & Lee, 2001). As a result, both academic community (John & Lang, 1991; Cohen et al., 2012; Dai et al., 2015; Massa et al., 2015; Kacperczyk & Pagnotta, 2019) and industry practitioners closely monitor the trading activities of corporate insiders.[4]

As detailed later in the paper, we adopt the methodology proposed by Cohen et al. (2012) to distinguish between routine insider trades and opportunistic insider trades by CEOs and focus our analysis specifically on opportunistic insider trades, as they are more likely to be driven by the

[3] More detailed information about insider trading can be obtained from the Securities and Exchange Commission website via: https://www.sec.gov/Archives/edgar/data/25743/000138713113000737/ex14_02.htm

[4] The EDGAR database of the Securities and Exchange Commission provides public access to Form-4 filings for publicly listed US stocks. Forbes also highlights important insider transactions at a semi-daily frequency.

CEO's access to confidential information about the company. Such opportunistic insider trades can serve as a signal to the stock market, potentially causing abnormal market reactions and raising regulatory concerns. In contrast, routine insider trades are primarily carried out for liquidity or other ordinary purposes, making them less informative about a firm's prospects and less relevant to our research questions. This approach aligns with prior studies (e.g., Cohen et al., 2012, Massa et al., 2015, Akbas et al., 2020, and Suk and Wang, 2021) that have also focused on opportunistic insider trades due to their information-rich nature and strong predictive power.

While research by Hillier et al. (2015) suggests that personality traits account for a significant portion of the variability in CEOs' insider trades, limited studies have delved into the specific influence of CEOs' narcissistic traits on their insider trading behavior. This paper seeks to fill this gap in the literature. Understanding the relationship between CEOs' levels of narcissism and their engagement in opportunistic insider trading is crucial, as it offers valuable insights into the ethical conduct and decision-making processes of corporate leaders. Furthermore, it serves to safeguard the interests of investors and foster fairness and integrity within securities markets.

CEOs' narcissism can potentially have conflicting effects on opportunistic insider trading, resulting in an uncertain relationship. Our first hypothesis, referred to as the “exploitative personal benefit hypothesis,” posits that CEOs with higher levels of narcissism are more likely to engage in opportunistic insider trading. This hypothesis is rooted in the self-centered nature and disregard for others commonly observed in narcissistic individuals. CEOs with elevated narcissism may prioritize personal economic gains, potentially at the expense of the company and investors (Park et al., 2013). Furthermore, their inflated egos may induce them to underestimate the legal consequences associated with such trading activities.

In contrast, our alternative hypothesis, referred to as the "reputation protection hypothesis," suggests that narcissistic CEOs engage in less opportunistic insider trading. This prediction stems from the self-centered and self-protective characteristics of narcissists. Narcissistic CEOs, driven by their desire to enhance and safeguard their image and reputation, are intensely committed to maintaining their perception as accomplished individuals and hard workers (Rosenthal & Pittinsky, 2006). Given their concerns about reputational damage resulting from questionable behaviors like opportunistic insider trading, narcissistic CEOs may actively avoid engaging in such activities.

To empirically analyze the relationship between CEOs' narcissism and their opportunistic insider trading, we employ a textual analysis approach to quantify the level of CEOs' narcissism, drawing inspiration from prior studies (Raskin & Shaw, 1988; Chatterjee & Hambrick, 2007; Aktas et al., 2016; Aabo et al., 2022). These studies have consistently demonstrated a strong connection between the frequency and proportion of first-singular pronouns used in speech and the underlying constructs of narcissism. Accordingly, we construct a numerical score for a CEO's narcissism by calculating the ratio of first-singular pronouns to all first pronouns employed by the CEO in their responses during the Question-and-Answer (Q&A) sessions of earnings calls. This measure provides a quantitative assessment of the CEO's level of narcissistic tendencies.

Our empirical findings support the exploitative personal gain hypothesis, indicating that CEOs with high levels of narcissism are more prone to engaging in opportunistic insider trading. Specifically, we observe that a one-unit increase in the CEO narcissism score corresponds to a 49 percentage points increase in the intensity of CEO opportunistic insider trading. Moreover, our analysis reveals that CEOs with high narcissism levels opportunistically trade an additional 6.3 percentage points of their firms' stock compared to CEOs with low narcissism levels. These results

highlight the role of CEO narcissism in driving opportunistic trading behaviors with a focus on personal gain.

To mitigate endogeneity concerns caused by potential problems such as omitted variables, reverse causality, and sample selection bias, we employ four distinct analytical approaches: the coarsened exact matching (CEM), the instrumental variable (IV) approach, the Heckman's two-step sample selection approach, and the falsification tests approach.

Firstly, to ensure that our results are not driven by systematic differences between more narcissistic CEOs and those with less narcissistic CEOs, we perform the coarsened exact matching on the CEOs' characteristics variables and confirm the positive relationship between CEOs' narcissism and opportunistic insider trading using a matched sample (Blackwell et al., 2009).

Secondly, we employ the instrumental variable approach to further address endogeneity concerns arising from the omitted variables. In particular, we instrument for the narcissism level of CEOs by considering two crucial background factors: whether the CEO has children and whether the CEO has siblings. This choice is supported by insights from psychology literature (Jordan et al., 2014), which indicates that individuals with children and siblings tend to exhibit a stronger communal sense and lower levels of narcissistic traits. Moreover, our empirical analysis further corroborates this relationship. Notably, the familial conditions of having children or siblings are inherently exogenous to CEOs and are unlikely to exert a direct influence on CEOs' insider trading behaviors. The consistent outcomes yielded from our instrumental variable analysis serve to strengthen the validity of our primary results.

Thirdly, to address potential non-random sample selection bias stemming from only observing the insider trading behaviors of CEOs who actively trade their company's stock, we adopt Heckman's two-step sample selection model, following the approach of Massa et al. (2015)

and Cohen et al. (2012). By utilizing the number of CEOs' routine insider trades as a predictor of opportunistic insider trading, we account for the camouflage effect created by routine trades. This effect may mask the questionable nature of opportunistic insider trading, potentially increasing CEOs' incentives and likelihood of engaging in such behaviors. The results from Heckman's two-step model mitigate concerns of sample selection bias and provide further support for our main findings.

Fourthly, we acknowledge the possibility of reverse causality, which raises the possibility that CEOs may become more narcissistic as a result of benefiting from opportunistic insider trades. However, research in psychology (Campbell & Foster, 2007) indicates that narcissism is a relatively stable personality trait rooted in genetics and early childhood experiences. Thus, the likelihood of reverse causality in our context is considered minimal. Nevertheless, to further address this concern, we employ falsification tests and show that the past opportunistic insider trading activities are not related to the current level of CEOs' narcissism. This evidence provides further confidence that it is the CEOs' narcissism that influences their opportunistic insider trading behaviors, rather than the other way around.

In our cross-sectional analysis, we examine the role of CEOs' legal knowledge and external monitoring as potential modifiers in the relationship between CEOs' levels of narcissism and their opportunistic insider trading behaviors. We propose that CEOs with more legal knowledge possess greater sensitivity toward engaging in potentially illegal activity, inducing them to make more cautious decisions (Anderson et al., 2022). CEOs can acquire legal knowledge from their own educational experience or through collaboration with a legal expert within the company, such as the General Counsel. Our findings show that the impact of CEOs' narcissism on opportunistic insider trading is attenuated for CEOs with a background in law education and CEOs who work

with an influential General Counsel. Furthermore, we explore the influence of external monitoring on this relationship, with a focus on higher financial analyst coverage and the presence of blockholders. We posit that stronger external monitoring mechanisms can act as a deterrent and suppress the effect of CEOs' narcissism on opportunistic insider trading. Our results demonstrate that the impact of CEO narcissism on opportunistic insider trading is less pronounced among CEOs who face stronger monitoring pressures, such as those under higher financial analyst coverage or with significant blockholders. Our cross-sectional analysis highlights the importance of legal expertise and effective external monitoring mechanisms in curbing the potential negative consequences of CEO narcissism in the context of insider trading.

To ensure the robustness of our findings, we perform a comprehensive set of robustness checks. Firstly, we include a measure of CEOs' overconfidence in our analysis. This allows us to account for any potential overlap between CEOs' narcissism and overconfidence, ensuring that the observed effects are specifically attributable to narcissism and not confounded by overconfidence. Secondly, we incorporate additional control variables to capture other factors that could influence opportunistic insider trading behavior, thus strengthening the validity of our results. Thirdly, we consider the possibility of a non-linear relationship between CEO narcissism and opportunistic insider trading and confirm that the relationship doesn't exhibit any curvilinear patterns, providing further confidence into the linear nature of this association. Lastly, we utilize alternative fixed effects specifications to explore the impact of CEOs' narcissism on opportunistic insider trading and find similar results. The results obtained from a rich battery of robustness checks strengthen the validity and consistently support our primary findings that CEOs with higher levels of narcissism engage more in opportunistic insider trading.

Our paper makes notable contributions to three areas of literature. Firstly, our study adds to the growing body of research on narcissism-related human behavior in finance. Previous studies exploring the impact of CEOs' narcissism on firm outcomes have yielded mixed findings. Some studies have highlighted positive effects of narcissistic CEOs, such as improving return on assets and earnings per share (Reina et al., 2014; Popper, 2002; Volmer et al., 2016), attracting more followers, engaging in innovative activities, and driving mergers and acquisitions (Kashmiri et al., 2017; Chatterjee & Hambrick, 2007; Ingersoll et al., 2019; Petrenko et al., 2016). Conversely, the adverse consequences of CEOs' narcissism encompass higher debt financing costs, diminished financial reporting quality, and even disruptive behaviors including bullying (Anderson & Kim, 2022; Regnaud, 2014; Capalbo et al., 2018; Rijsenbilt & Commandeur, 2013; Ham et al., 2017). Our study unveils a previously unexplored negative impact of narcissistic CEOs engaging in opportunistic insider trades, further contributing to understanding narcissistic CEOs and their behaviors in the finance domain.

Secondly, we advance the literature on the determinants of corporate insider trades. Existing studies have examined various factors influencing insider trading behavior. For instance, Massa et al. (2015) shed light on how corporate insiders compete with short sellers by leveraging negative private information through opportunistic insider trading. Ali and Hirshleifer (2017) demonstrate the link between trading profitability before quarterly earnings announcements and the opportunistic trading behavior of corporate insiders. Goergen et al. (2019) empirically establish that well-connected directors are less prone to opportunistic insider trading. Our study adds to this knowledge by incorporating CEOs' personality traits, specifically narcissism, shedding light on their impact on insider trading behaviors.

Lastly, our research contributes to the literature on executives' legal expertise and corporate governance. Previous studies have uncovered valuable insights in this domain. Henderson et al. (2017) demonstrate that firms led by lawyer CEOs experience lower litigation rates, particularly in severe cases. Anderson et al. (2022) reveal that lawyer CEOs display a higher degree of risk aversion and, consequently, demonstrate worse innovation outcomes. Our study further enriches this literature by elucidating the impact of CEOs' legal knowledge as potential modifiers to mitigate the effects of narcissism on opportunistic insider trading. Moreover, prior research has shown that firms with weak internal governance structures tend to generate higher insider trading profits (Skaife et al., 2013), while better-governed firms have more stringent insider trading restrictions (Dai et al., 2013). In line with these findings, our study adds to the literature by finding that more robust external monitoring mechanisms, such as enhanced financial analyst coverage and the presence of blockholders, effectively suppress opportunistic insider trading.

The remainder of the paper is organized as follows. Section 2 describes the research design such as data sample, and variable construction. Section 3 provides summary statistics, model specification, and main results. Section 4 discusses endogeneity issues and identification strategies. Section 5 shows the cross-section analysis results. Section 6 conducts robustness checks and Section 7 concludes.

2. Research Design

2.1 Data Sample

Our sample consists of firms listed in the S&P 1,500 as of 2012. We select this starting year to avoid any lingering effects of the 2008 financial crisis and to maximize the availability of earnings call transcripts for a larger proportion of the firms. To eliminate survivorship bias, we

track these firms over subsequent years, ensuring a comprehensive dataset that extends until 2019, thereby excluding the economic turmoil caused by the pandemic in 2020. Following established conventions in corporate finance research, we exclude firms in the financial and utility industries due to their heavy regulation. Our final sample comprises 2,056 firm-year observations with CEO insider trading records. To account for potential sample selection issues arising from observing CEO trading behavior only when they trade their company's stock, we employ a Heckman two-step selection analysis to mitigate this concern.

2.2 Variable Construction

We elucidate the methodology employed to develop the primary independent, dependent, control, and other variables utilized throughout our study. This will encompass a comprehensive overview of these variables, along with a detailed exposition of their corresponding data sources.

2.2.1 CEO Narcissism

Our study's primary independent variable is CEOs' narcissism. We source earnings call transcripts from Thompson Reuters and employ a textual analysis approach to assess CEOs' narcissism. Our metric for CEOs' narcissism hinges on the frequency of first-person singular pronouns used by the CEO during the Q&A section of earnings calls. Prior research (Raskin & Shaw, 1988; Aktas et al., 2016) has established that this textual measure of narcissism, focusing on first pronoun usage, is congruent with theoretical and clinical definitions. Moreover, this measure of narcissism is robust to various factors such as age, gender, and speech content (Raskin & Shaw, 1988; Aabo et al., 2022; Chatterjee Hambrick, 2007).

We focus our analysis on the Q&A section of earnings calls for several reasons. Firstly, earnings calls adhere to a standardized format across different companies and years, comprised of a presentation and a question-and-answer section. This uniformity facilitates direct comparisons

among diverse firms and years, augmenting the precision of capturing CEO narcissism levels relative to other measures. while some studies have measured narcissism. Second, we focus on the extemporaneous Q&A section rather than the scripted presentation section to more accurately reflect CEOs' narcissism. During the Q&A section, CEOs have limited scope to choose topics or provide pre-prepared responses, thereby more accurately representing their genuine thought processes and personality traits (Matsumoto et al., 2011; Malhotra et al., 2018).

We compute a CEO's narcissism score (*Narcissism*) as the natural logarithm of one plus the ratio of first-singular pronouns to all first pronouns used by the CEO during the Q&A section of earnings calls. We also formulate a binary variable (*Narcissism Indicator*) to distinguish CEOs exhibiting stronger narcissistic tendencies compared to their counterparts within the same industry and year. Specifically, the indicator takes a value of one if the CEO's narcissism level surpasses the median level of CEOs' narcissism within the same industry and year and zero otherwise.

2.2.2 Opportunistic Insider Trading

The primary dependent variable in our study is CEOs' opportunistic insider trading. We distinguish between routine insider trades and opportunistic insider trades by CEOs, and concentrate our analysis on the latter, as they are more likely to be propelled by the CEO's access to private information about the company, potentially causing abnormal market reactions and raising regulatory concerns. In contrast, routine insider trades are driven by liquidity or other routine purposes, which are predictable and less informative about a firm's prospects, so they are less pertinent to our research objectives. Prior studies (e.g., Cohen et al., 2012; Massa et al., 2015; Akbas et al., 2020; Suk and Wang, 2021) also focus on opportunistic insider trades due to their information-rich nature and strong predictive power.

We adopt the approach proposed by Cohen et al. (2012) to identify these trades at the transaction level. If a CEO has conducted the same type of transaction in the same month for three consecutive years, these three transactions, along with any subsequent transactions in the same month in the following years, are considered routine insider trades. All other insider transactions conducted by the CEO are classified as opportunistic insider trades or non-routine insider trades.[5]

In line with Massa et al. (2015) and Wang et al. (2022), we specifically examine opportunistic insider sales transactions performed by CEOs. This approach is justified by the fact that insider purchase transactions represent a smaller portion of overall insider transactions. CEOs typically accumulate their own company's stocks as a part of their compensation packages, with open-market purchases not being the primary method for CEOs to acquire shares. By focusing on opportunistic insider sales, we effectively control for the potential confounding impacts of CEOs' compensation.

We gather data on corporate insider trades from Thomson/Refinitiv and formulate the variable *Opport Insider Trading* to gauge the intensity of opportunistic insider trading on an annual basis. This variable represents the ratio of the CEOs' opportunistic insider sales shares in a specific year to the CEOs' shareholdings from the preceding year.

2.2.3 Control Variables, Instrumental Variables, and Other Variables

Our baseline regressions include various control variables that account for both firm and CEO characteristics. For firm characteristics, we obtain data from Compustat and incorporate variables such as the natural log of total assets (*Total Assets*), net income over assets (*ROA*), book-to-market ratio (*Book to Market*), and leverage measured as total debt over assets (*Leverage*). We also consider internal governance measures by including the fraction of independent directors

[5] About 90 percent of all insider transactions are opportunistic insider trades, and about 10 percent are routine trades.

among all board members (*Independent Director*) derived from BoardEx. Additionally, we control for stock performance by including the cumulative stock return for the previous twelve months (*Cumulative Return*) obtained from CRSP. To capture CEO characteristics, we utilize data from ExecuComp and incorporate variables such as CEO gender (*Female CEO*), CEO age (*CEO Age*), and CEO tenure in years (*CEO Tenure*). We also control for CEO insider trading experience by including the number of years since the CEOs' first insider open-market transaction (*Insider Experience*).

Furthermore, we construct instrumental variables by manually collecting familial background information from corporate biographies and the LexisNexis database. We create the *Kids Indicator*, a binary variable indicating if the CEO has any children, and the *Siblings Indicator*, a binary variable indicating if the CEO has any siblings. These variables serve as instruments in our Two-Stage Least Square regressions.

In the cross-sectional analysis, we introduce additional variables such as *Lawyer CEO*, a binary variable indicating if the CEO has a law degree, and *Top Paid General Counsel*, a binary variable indicating if the General Counsel is among the top five paid executives in the company. We also take into account external monitoring measures, including the number of financial analysts covering the company (*Analyst Coverage*) and the number of blockholders with more than a five percent stake in the company (*Blockholders*).

In robustness checks, we integrate extra control variables. We calculate *Idiosyncratic Risk*, as the yearly average of the standard deviation of residuals from the Fama-French 3-factor model using daily stock returns from CRSP, and *Shares Directors Own,* as the fraction of common shares outstanding held by all directors. We also incorporate the binary variable *Independent Audit Comm*, indicating whether the firm has an independent audit committee composed entirely of

independent auditors, and the binary variable *Duality*, indicating whether the CEO is the board's Chairman. Detailed definitions of all variables are in Appendix A.

3. Main Results

3.1 Descriptive Statistics

Panel A of Table 1 provides summary statistics for all variables used in our analysis using the entire sample. The mean of the continuous measure of *CEO Narcissism* is 0.21, while the mean of the *Narcissism Indicator* is 0.46. The mean of our key outcome variable, *Opport Insider Trading*, is 0.35.

Panel B of Table 1 presents the results of difference-in-means tests between firms led by more narcissistic CEOs (where *Narcissism Indicator* equals one) and those guided by less narcissistic CEOs (where *Narcissism Indicator* equals zero). This comparison aids in delineating the differences in opportunistic insider trading behaviors, as well as firm and CEO characteristics, between these two subsets. The results reveal that more narcissistic CEOs are more inclined to engage in opportunistic insider trading, with 38 percent of their share trades deemed opportunistic, compared to 32 percent for less narcissistic CEOs. The 6 percent differential between the two groups is statistically significant.

3.2 Model Specification

Our research question focuses on the impact of CEOs' narcissism on their opportunistic insider trading behaviors. We analyze this relationship using the following regression specification as our baseline model:

$$Opport\ Insider\ Trading = \alpha + \beta Narcissism(Narcissism\ Indicator) +$$
$$\gamma Firm\ Characteristics + \delta CEO\ Characteristics + Industry\ FE + Year\ FE + \varepsilon \quad (2)$$

Opport Insider Trading represents the intensity of CEO opportunistic insider trading. *Narcissism* is a continuous variable measuring the CEOs' narcissism score, and *Narcissism Indicator* is a binary variable indicating CEOs with high narcissism levels. We include control variables for firm characteristics such as firm assets, book-to-market ratio, leverage ratio, ROA, the presence of independent directors, and cumulative stock returns. CEO characteristics control variables include CEO's gender, age, tenure, and insider trading experience. We include industry fixed effects to account for unobserved time-invariant heterogeneity across industries and include year fixed effects to control for macroeconomic shocks that may affect all the firms in a certain year.[6] For a robustness check, we include Industry × Year fixed effects for each pair of industry and year combination. Industry classification follows the Fama-French 48 industry classifications. We cluster standard errors at the firm level to address serial correlation within a firm over time. Continuous variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers.

3.3 Main Results

Table 2 presents the main results regarding the relationship between CEOs' narcissism and opportunistic insider trading. In Column 1, we observe a positive and statistically significant coefficient for the continuous measure of CEO narcissism. The coefficient reveals that a one-unit increase in CEO narcissism score is associated with a 48.2 percentage points increase in the intensity of CEO opportunistic insider trading. Thurs, CEOs with higher levels of narcissism are

[6] We choose not to include firm fixed effects because the narcissism level of a CEO is a sticky measure and does not change much across the years.

more inclined to engage in opportunistic insider trading, with a larger proportion of their share trades deemed opportunistic. Column 2 reinforces this finding by showing that CEOs with high narcissism levels opportunistically trade an additional 5.4 percentage points of their firms' stock compared to CEOs with low narcissism levels. This difference carries substantial economic significance, particularly considering the average opportunistic insider trading level of 35 percentage points.

4. Endogeneity Issues and Identification Strategies

To alleviate endogeneity concerns arising from potential issues such as omitted variables, reverse causality, and sample selection bias, we utilize four distinct analytical methods: the coarsened exact matching (CEM), the instrumental variable (IV) approach, Heckman's two-step sample selection approach, and the falsification tests approach. These rigorous approaches help ensure the validity of our findings.

4.1 Coarsened Exact Matching

To verify that our results are not driven by systematic discrepancies between more narcissistic CEOs and their less narcissistic counterparts, we perform the coarsened exact matching on the CEOs' characteristics variables to eliminate potential background differences. We focus on the CEOs' personal characteristics that are significantly different between CEOs with high and low levels of narcissism, as shown in Panel B of Table 1. Specifically, we consider CEO's age, tenure, and past insider trading experience. Other CEO characteristics such as gender and firm characteristics such as total assets, book to market ratio, leverage, and ROA are not statistically different between the two groups (see Panel B of Table 1), and hence are not used as the background variables for matching.

Through the application of CEM, we match on the CEO characteristics (i.e., age, tenure, and past insider trading experience), as well as industry and year, between firms led by more (above median) narcissistic CEOs and those led by less (below) narcissistic CEOs. The matching procedure includes exact matching on year and industry and followed by the coarsening of the three CEO characteristic variables into four equally spaced strata. This facilitates one-to-one matching between firms in the two defined groups.

Panel A of Table 3 presents the *t*-test results for the means of the background variables, assessing data balance for both the full sample and the matched sample. Before matching, the mean test results indicate significant discrepancies in CEO characteristics (namely age, tenure, and past insider trading experience) between the two groups in the full sample. However, after the matching process, the sample size is reduced from 2,056 to 870 observations, distributed evenly between firms governed by more narcissistic CEOs and those led by less narcissistic CEOs. Importantly, we observe no significant differences in the CEO characteristic variables in the matched sample, indicating successful matching and achieving a good balance between the two groups of firms.

We replicate our baseline regression in Panel B of Table 3 using the matched sample. We find that the results from the matched sample are qualitatively the same as the main findings from the entire sample, further supporting our main results. This matching approach helps mitigate concerns related to potential confounding effects of CEO characteristics difference, enhancing the reliability of our findings.

4.2 Instrumental Variable Analysis

To mitigate potential bias arising from unobservable features and alleviate endogeneity concerns, we employ the Instrumental Variable (IV) approach and Two-Stage Least Squares regressions. We utilize two hand-collected instruments related to CEOs' familial background,

which are presumed to influence CEOs' narcissism but have no direct effect on their opportunistic insider trading activities.

Our first instrument, labeled as *Kids Indicator*, is a binary variable indicating whether a CEO has any children. The second instrument, the *Siblings Indicator*, is a binary variable indicating whether a CEO has any siblings. Research in psychology suggests that having children or siblings diminishes narcissistic tendencies and encourages the development of a community-oriented perspective. (Jordan et al., 2014). Consequently, we expect CEOs with kids or siblings to exhibit lower levels of narcissism. The first-stage regression results in Panel A of Table 4 confirm this expectation and satisfies the relevant condition for instrument validity, by showing a negative relationship between the instruments (*Kids Indicator* and *Siblings Indicator*) and CEOs' narcissism. Furthermore, the familial conditions of having children or siblings are inherently exogenous to CEOs and are unlikely to exert a direct influence on CEOs' insider trading behaviors, thus satisfying the exclusion condition necessary for instrument validity.

For the second stage of Two-Stage Least Square regressions, Panel B of Table 4 unveils the results examining the relationship between the fitted value of CEO narcissism from the first-stage model and CEOs' opportunistic insider trading behaviors. In Columns 1 and 2, we use each instrument (*Kids Indicator* and *Siblings Indicator*) separately. In Column 3, we combine both instruments to achieve over-identification. Consistent with our main results, the instrumental variable approach shows that CEOs with higher levels of narcissism engage more intensively in opportunistic insider trading. These findings provide further support for the association between CEOs' narcissism and opportunistic insider trading. Additionally, it helps to counter potential biases stemming from unobserved omitted variables, thereby bolstering the certainty of our outcomes.

4.3 Heckman Two-Step Model

To address potential sample selection bias stemming from observing only the insider trading behaviors of CEOs who actively trade their company's stocks, we adopt Heckman's two-step sample selection model, following the approach proposed by Massa et al. (2015) and Cohen et al. (2012). This approach facilitates an analysis of the "unconditional" sample, encompassing firm-year observations both with and without opportunistic insider trading transactions.

In the first step, we estimate a Probit model to ascertain the likelihood of CEOs participating in opportunistic insider trading. We use the number of CEOs' routine insider trades as a predictor (Massa et al., 2015; Cohen et al., 2012). This variable serves as a proxy for the camouflage of opportunistic insider trading, given that CEOs often increase their routine insider trades to mask their questionable opportunistic insider trading activities. The resulting selection equation generates the Inverse Mill's Ratio. In the second step, we incorporate the Inverse Mill's Ratio as an additional control variable in the outcome equation, where we estimate the relationship between CEOs' narcissism and their involvement in opportunistic insider trading. The results from Heckman's two-step sample selection model, presented in Table 5, are consistent with our main findings, indicating that narcissistic CEOs are more prone to engage in opportunistic insider trading. These results further support our findings by addressing potential biases in the non-random sample selection process and alleviating endogeneity concerns.

4.4 Falsification Test

We acknowledge the potential presence of reverse causality in our study, which suggests the scenario where CEOs may become more narcissistic after benefiting from opportunistic insider trades. However, research in psychology (Campbell & Foster, 2007) indicates that narcissism is a

relatively stable personality trait deeply rooted in genetics and early childhood experiences. Thus, the likelihood of reverse causality in our specific context is considered minimal.

Nevertheless, to further eliminate the concern of reverse causality, we employ falsification tests. These tests involve regressing CEOs' narcissism on lagged values of opportunistic insider trading in the recent past. Specifically, we examine the relationship between CEOs' narcissism in year *t* and their opportunistic trading behaviors in the preceding years *t*-1, *t*-2, and *t*-3. The results of these falsification tests provide valuable evidence that the CEO's past opportunistic trading behaviors do not significantly impact their current narcissism levels. This further strengthens our confidence that it is the CEOs' narcissism that influences their opportunistic insider trading behaviors, rather than the other way around.

5. Cross-Sectional Analysis

To gather further support for the "exploitative personal benefit hypothesis," we investigate whether the association between CEOs' narcissism and opportunistic insider trading is more pronounced under specific conditions related to legal knowledge/sensitivity and external monitoring pressure.

5.1 CEOs' Legal Knowledge/Sensitivity

In this subsection, we examine the effects of CEOs' narcissism on opportunistic insider trading in subsamples characterized by different CEOs' legal knowledge/sensitivity measures. Specifically, we investigate the impact of CEOs' legal education background and the presence of influential General Counsel on the relationship between CEOs' narcissism and opportunistic insider trading.

To begin, we divide the sample into two subsamples: CEOs with a background in legal education (*Lawyer CEOs*) and CEOs without a background in legal education (*non-Lawyer CEOs*). Following existing literature (Henderson, 2017; Anderson et al., 2022), we consider CEOs to possess legal knowledge if they hold a law degree such as an LL.B., LL.M., J.D., or Ph.D. in Jurisprudence. The results in Columns 1 and 2 of Panel A in Table 7 show that non-lawyer CEOs with higher narcissism scores tend to engage in more opportunistic insider trading. However, this positive effect of CEOs' narcissism on insider trading becomes statistically insignificant for lawyer CEOs. This suggests that CEOs who have obtained legal knowledge and possess higher legal sensitivity from their legal education experience tend to be more risk-averse than their counterparts. This risk aversion suppresses the impact of CEO's narcissistic personality traits on opportunistic insider trading.

Next, we explore the influence of the General Counsel, who provides legal advice to CEOs, on the relationship between CEO narcissism and opportunistic insider trading. We measure the influence of General Counsel by considering whether their compensation is among the top five paid executives (*Top Paid General Counsel*). The higher hierarchical status of the General Counsel, as indicated by their compensation, suggests a greater potential for them to play a significant role in curbing the misbehaviors of narcissistic CEOs. The results in Columns 3 and 4 of Panel A in Table 7 support our expectations. We find that the impact of CEO narcissism on opportunistic insider trading diminishes in firms with an influential General Counsel. This suggests that an influential General Counsel has the ability to constrain and restrict the behaviors of narcissistic CEOs, limiting their engagement in opportunistic insider trading.

Overall, the cross-sectional analysis of lawyer CEOs and influential General Counsel support our main finding that CEOs' narcissism drives them to engage in more opportunistic

insider trading for personal gain. However, the presence of legal knowledge and sensitivity, either from the CEOs' legal education background or the expertise of the General Counsel, acts as a suppressant for opportunistic insider trading by increasing their awareness of legal consequences.

5.2 External Monitoring

We further explore the effects of CEOs' narcissism on opportunistic insider trading in subsamples characterized by different measures of external monitoring pressure. Specifically, we examine the effect of financial analyst coverage and blockholders on the relationship between CEOs' narcissism and opportunistic insider trading.

To assess the strength of external monitoring, we use financial analyst coverage as a measure and divide the sample into two subsamples: firms with a high degree of financial analyst coverage, consisting of those with a number of analysts above the median, and firms with a low degree of financial analyst coverage, comprising those with a number of analysts below the median. The results in Columns 1 and 2 of Panel B in Table 7 indicate that CEOs with higher narcissism scores engage in more intense opportunistic insider trading when facing low financial analyst coverage. However, this positive effect of CEO narcissism on insider trading disappears when the degree of financial analyst coverage is high. This suggests that firms with more extensive financial analyst coverage experience stronger external monitoring pressure and benefit from greater scrutiny, which acts as a deterrent for narcissistic CEOs to engage in opportunistic insider trading.

Next, to further assess the strength of external monitoring, we utilize the presence of blockholders with more than five percent shareholding as an alternative proxy. Similar to the previous analysis, we divide the sample into two subsamples: firms with a high presence of blockholders, consisting of those with a number of blockholders above the median, and firms with a low presence of blockholders, comprising those with a number of blockholders below the median.

The results in Columns 3 and 4 of Panel B in Table 7 reveal that the impact of CEOs' narcissism on opportunistic insider trading is less pronounced in firms with a high presence of blockholders. This finding supports the notion that blockholders provide external monitoring that effectively restricts the questionable behaviors of narcissistic CEOs, such as opportunistic insider trading.

In summary, our cross-sectional analysis of financial analyst coverage and blockholders provides further support for our argument that CEOs' narcissism drives opportunistic insider trading for personal gain without considering the welfare of others. However, we find that external monitoring pressure from financial analysts and blockholders can effectively mitigate this tendency and restrain CEOs' exploitation of personal benefits at the expense of others.

6. Robustness Tests

In this section, we conduct a comprehensive set of additional robustness checks to examine the sensitivity of our main findings. These checks involve removing the confounding effect of overconfidence from narcissism, incorporating additional control variables, employing an alternative measure of insider trading, exploring potential non-linear relationships, and testing alternative fixed effects specifications.

6.1 Removing the Confounding Effect of Overconfidence

Indeed, overconfidence and narcissism are related but distinct psychological traits. Overconfidence is characterized by an inflated belief in one's abilities, while narcissism encompasses a broader set of traits, including self-centeredness, a lack of concern for others, and a desire for admiration (Campbell & Foster, 2007; Campbell et al., 2004). To address the potential overlap between overconfidence and narcissism, we include a robustness check in our analysis. We introduce a control variable for CEOs' overconfidence, using the conventional option-based

measure proposed by Malmendier and Tate (2005). This control variable allows us to account for any potential confounding effects of overconfidence on the relationship between CEOs' narcissism and opportunistic insider trading.

In Columns 1 and 2 of Panel A in Table 8, we replicate our main analysis while including the control variable for CEOs' overconfidence. The main results remain, demonstrating that our main findings remain robust even after controlling for the potential confounding effect of CEOs' overconfidence. To further isolate the unique effects of narcissism, we follow the approach employed by Boamah (2021). In Column 3 of Panel A, we utilize the narcissism residual obtained from regressing narcissism on overconfidence, which removes any shared components of overconfidence from the measure of narcissism. The narcissism residual, free from any shared components with overconfidence, continues to have a positive association with opportunistic insider trading. The results further strengthen our confidence that the relationship between CEOs' narcissism and opportunistic insider trading is not driven solely by the overlapping components between narcissism and overconfidence.

6.2 Incorporating More Control Variables

In this subsection, we expand our analysis by considering extra control variables that may influence CEOs' insider trading behaviors. Firstly, we incorporate the variable *Idiosyncratic Risk,* which captures the stock's level of riskiness. We hypothesize that CEOs may adjust their opportunistic trading behaviors in response to higher stock risk. Secondly, we introduce the variable *Independent Audit Comm,* which captures cases where the audit committee consists entirely of independent auditors. This corporate governance measure may restrict CEOs' opportunistic insider trading. Additionally, we include the variable *Shares Directors Own* as another corporate governance measure. Directors who own more shares in the company have a

stronger incentive to monitor the CEO, potentially leading to a decrease in opportunistic insider trading. Lastly, we add the variable *Duality*, which proxies the CEOs' power and is a binary variable indicating whether the CEO also serves as the company's Chairman. A dual CEO, with increased authority, may conduct more opportunistic insider trading.

Panel B of Table 8 presents the results. To enhance the robustness of our findings, we introduce one additional control variable at a time to our main specifications in Columns 1-3 and 5-7. Furthermore, we simultaneously include all the additional controls in one regression in Columns 4 and 8. The results indicate our main findings remain unchanged after incorporating these additional control variables, enhancing the robustness of our findings.

6.3 Testing a Nonlinear Relationship

Inspired by Holtzman and Donnellan (2015), we extend our analysis to explore the potential nonlinear relationship between CEOs' narcissism and opportunistic insider trading. To investigate this, we introduce a squared term for narcissism in our regression models, as specified in Panel C of Table 8. The results indicate that including the squared term does not significantly impact opportunistic insider trading. This finding supports the validity of our main model specifications, suggesting that a linear association best characterizes the relationship between CEOs' narcissism and opportunistic insider trading.

6.4 Exploring Alternative Fixed Effects Specifications

Lastly, we utilize alternative fixed effects specifications to explore the impact of CEOs' narcissism on opportunistic insider trading and find similar results. Instead of including industry fixed effects and year fixed effects, we include Industry × Year fixed effects for each pair of industry and year combination. The results presented in Panel D of Table 8 remain consistent.

7. Conclusion

In conclusion, this study unveils the multifaceted nature of narcissism as a personality trait and its potential impact on individuals' thoughts and behaviors. Specifically, our investigation focuses on the relevance of narcissism among CEOs and its impact on their opportunistic insider trading behaviors, which potentially causes abnormal market reactions and raising regulatory concerns. By quantifying CEOs' narcissism through a numerical score derived from their language usage in Q&A sessions of earnings calls, we establish that CEOs with elevated levels of narcissism demonstrate a greater inclination towards opportunistic insider trading. This finding aligns with the hypothesis that exploitative personal gain motivates narcissistic CEOs.

To address concerns related to endogeneity, we employ multiple identification strategies, such as coarsen exact matching, instrumental variable approach, Heckman's two-step sample selection approach model, and falsification test. Our cross-sectional analysis reveals that the impact of CEOs' narcissism on opportunistic insider trading is more pronounced among CEOs with limited legal knowledge and weaker monitoring pressures. This highlights the significance of legal expertise and external monitoring as mitigating factors in the relationship between CEO narcissism and opportunistic insider trading. Furthermore, a comprehensive set of robustness checks reinforces the validity of our primary findings.

Overall, our empirical findings emphasize the significance of narcissism as a crucial personality trait influencing CEOs' engagement in opportunistic insider trading. This study sheds light on the complex interplay between CEOs' personality traits and their behaviors, contributing to a deeper understanding of corporate governance dynamics.

References

Aabo, T., Jacobsen, M. L., & Stendys, K. (2022). Pay me with fame, not mammon: CEO narcissism, compensation, and media coverage. *Finance Research Letters*, 46, 102495.

Aktas, N., De Bodt, E., Bollaert, H., & Roll, R. (2016). CEO narcissism and the takeover process: From private initiation to deal completion. *Journal of Financial and Quantitative Analysis*, 51(1), 113-137.

Akbas, F., Jiang, C., & Koch, P. D. (2020). Insider investment horizon. *The Journal of Finance*, *75*(3), 1579-1627.

American Psychiatric Association. 2013. Diagnostic and statistical manual of mental disorders: DSM-5 (5th ed.). Washington, DC: American Psychiatric Publishing

Ali, U., & Hirshleifer, D. (2017). Opportunism as a firm and managerial trait: Predicting insider trading profits and misconduct. *Journal of Financial Economics*, 126(3), 490-515.

Anderson, R., Jiang, C., & Su, B. (2022) Lawyer CEOs and Corporate Innovation. *Working Paper*.

Anderson, R. & Kim, J.H. (2022) CEO Narcissism and the Agency Cost of Debt. *Working Paper*.

Blackwell, M., Iacus, S., King, G., & Porro, G. (2009). cem: Coarsened exact matching in Stata. *The Stata Journal*, *9*(4), 524-546.

Boamah, E. (2021). Narcissistic CEOs Promise More than they Deliver: A Case from Share Repurchases.

Buser, S. and Cruz, L., 2016. A clear and present danger: Narcissism in the era of Donald Trump. s.l.:Chiron Publications.

Brunell, A. B., Gentry, W. A., Campbell, W. K., Hoffman, B. J., Kuhnert, K. W., & DeMarree, K. G. (2008). Leader emergence: The case of the narcissistic leader. *Personality and Social Psychology Bulletin*, 34(12), 1663-1676.

Campbell, W.K., Goodie, A.S. and Foster, J.D., 2004. Narcissism, confidence, and risk attitude. Journal of behavioral decision making, 17(4), pp.297-311.

Campbell, W. K. & Foster, J. D., 2007. The narcissistic self: Background, an extended agency model, and ongoing controversies. *The Self*, Volume 115, p. 138.

Capalbo, F., Frino, A., Lim, M. Y., Mollica, V., & Palumbo, R. (2018). The impact of CEO narcissism on earnings management. *Abacus*, 54(2), 210-226.

Chatterjee, A., & Hambrick, D. C. (2007). It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly*, 52(3), 351-386.

Chen, T., Harford, J., & Lin, C. (2015). Do analysts matter for governance? Evidence from natural experiments. *Journal of Financial Economics*, *115*(2), 383-410.

Cohen, L., Malloy, C., & Pomorski, L. (2012). Decoding inside information. *The Journal of Finance*, 67(3), 1009-1043.

Dai, L., Fu, R., Kang, J. K., & Lee, I. (2013). Internal corporate governance and insider trading. *Working Paper*.

Dai, L., Parwada, J. T., & Zhang, B. (2015). The governance effect of the media's news dissemination role: Evidence from insider trading. *Journal of Accounting Research*, *53*(2), 331-366. Ellul, A. and Panayides, M., (2018) Do financial analysts restrain insiders' informational advantage? *Journal of Financial and Quantitative Analysis*, 53(1), 203-241.

Edmans, A., 2014. Blockholders and corporate governance. Annu. Rev. Financ. Econ., 6(1), pp.23-50.

Fu, X., Kong, L., Tang, T., & Yan, X. (2020). Insider trading and shareholder investment horizons. *Journal of Corporate Finance*, 62, 101508.

Goergen, M., Renneboog, L. and Zhao, Y., 2019. Insider trading and networked directors. *Journal of Corporate Finance*, 56, pp.152-175.

Grosch, W. N., 1994. Narcissism: shame, rage and addiction. Psychiatric quarterly, Volume 65, p. 49–63.

Ham, C., Lang, M., Seybert, N., & Wang, S. (2017). CFO narcissism and financial reporting quality. *Journal of Accounting Research*, 55(5), 1089-1135.

Ham, C., Seybert, N., & Wang, S. (2018). Narcissism is a bad sign: CEO signature size, investment, and performance. *Review of Accounting Studies*, 23(1), 234-264.

Hambrick, D.C. and Mason, P.A., 1984. Upper echelons: The organization as a reflection of its top managers. Academy of management review, 9(2), pp.193-206.

Henderson, M. T., Hutton, I., Jiang, D., & Pierson, M. (2017). Lawyer CEOs. *Working Paper*.

Hillier, D., Korczak, A., & Korczak, P. (2015). The impact of personal attributes on corporate insider trading. *Journal of Corporate Finance*, *30*, 150-167.

Holtzman, N. S. and Donnellan, M. B., 2015. The roots of Narcissus: Old and new models of the evolution of narcissism. In: Evolutionary perspectives on social psychology. s.l.:Springer, p. 479–489.

Ingersoll, A. R., Glass, C., Cook, A., & Olsen, K. J. (2019). Power, status and expectations: How narcissism manifests among women CEOs. *Journal of Business Ethics*, 158(4), 893-907.

Jeng, L.A., Metrick, A., Zeckhauser, R., 2003. Estimating the returns to insider trading: a performance-evaluation perspective. *Review of Economics and Statistics*, 85, 453–471.

John, K., & Lang, L. H. (1991). Insider trading around dividend announcements: Theory and evidence. *The Journal of Finance*, 46(4), 1361-1389.

Jordan, C. H., Giacomin, M., & Kopp, L. (2014). Let go of your (inflated) ego: Caring more about others reduces narcissistic tendencies. *Social and Personality Psychology Compass*, *8*(9), 511-523.

Kacperczyk, M., & Pagnotta, E. S. (2019). Chasing private information. *The Review of Financial Studies*, 32(12), 4997-5047.

Kashmiri, S., Nicol, C. D., & Arora, S. (2017). Me, myself, and I: influence of CEO narcissism on firms' innovation strategy and the likelihood of product-harm crises. *Journal of the Academy of Marketing Science*, 45(5), 633-656.

Lakonishok, J., & Lee, I., (2001). Are insider trades informative? *Review of Financial Studies*, 14, 11–79.

Maccoby, M. (2000) Narcissistic leaders. *Harvard Business Review*, 78, 69-69.

Malhotra, S., Reus, T. H., Zhu, P., & Roelofsen, E. M. (2018). The acquisitive nature of extraverted CEOs. *Administrative Science Quarterly*, 63(2), 370-408.

Malmendier, U. and Tate, G., 2005. CEO overconfidence and corporate investment. The journal of finance, Volume 60, p. 2661–2700.

Massa, M., Qian, W., Xu, W., & Zhang, H. (2015). Competition of the informed: Does the presence of short sellers affect insider selling? *Journal of Financial Economics*, 118(2), 268-288.

Matsumoto, D., Pronk, M., & Roelofsen, E. (2011). What makes conference calls useful? The information content of managers' presentations and analysts' discussion sessions. *The Accounting Review*, 86(4), 1383-1414.

Olsen, K.J., Dworkis, K.K. and Young, S.M., 2014. CEO narcissism and accounting: A picture of profits. Journal of management accounting research, 26(2), pp.243-267.

Park, S. W., Ferrero, J., Colvin, C. R., & Carney, D. R. (2013). Narcissism and negotiation: Economic gain and interpersonal loss. *Basic and Applied Social Psychology*, *35*(6), 569-574.

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.

Pham, M. H. (2020). In law we trust: Lawyer CEOs and stock liquidity. *Journal of Financial Markets*, 50, 100548.

Popper, M. (2002). Narcissism and attachment patterns of personalized and socialized charismatic leaders. *Journal of Social and Personal Relationships*, 19(6), 797-809.

Raskin, R., & Shaw, R. (1988). Narcissism and the use of personal pronouns. *Journal of Personality*, 56(2), 393-404.

Regnaud, D. A. (2014). The relationship between top leaders' observed narcissistic behaviors and workplace bullying (Doctoral dissertation, Walden University).

Reina, C. S., Zhang, Z., & Peterson, S. J. (2014). CEO grandiose narcissism and firm performance: The role of organizational identification. *The Leadership Quarterly*, 25(5), 958-971.

Rijsenbilt, A., & Commandeur, H. (2013). Narcissus enters the courtroom: CEO narcissism and fraud. *Journal of Business Ethics*, 117(2), 413-429.

Rosenthal, S. A., & Pittinsky, T. L. (2006). Narcissistic leadership. *The Leadership Quarterly*, 17(6), 617-633.

Seyhun, H. N. (1986). Insiders' profits, costs of trading, and market efficiency. *Journal of Financial Economics*, 16(2), 189-212.

Seyhun, H. N. (1988). The January effect and aggregate insider trading. *The Journal of Finance*, 43(1), 129-141.

Seyhun, H. N. (1992). Why does aggregate insider trading predict future stock returns? *The Quarterly Journal of Economics*, 107(4), 1303-1331.

Skaife, HA, Veenman, D, Wangerin D. 2013. Internal control over financial reporting and managerial rent extraction: evidence from the profitability of insider trading. *Journal of Accounting and Economics*, 55, 91-110.

Suk, I., & Wang, M. (2021). Does target firm insider trading signal the target's synergy potential in mergers and acquisitions? *Journal of Financial Economics*, *142*(3), 1155-1185.

Volmer, J., Koch, I. K., & Göritz, A. S. (2016). The bright and dark sides of leaders' dark triad traits: Effects on subordinates' career success and well-being. *Personality and Individual Differences*, 101, 413-418.

Wang, K., Wang, R., Wei, K. C., Zhang, B., & Zhou, Y. (2022). Insider sales under the threat of short sellers: New hypothesis and new tests. *The Accounting Review*, *97*(2), 427-451.

Appendix A: Variable Definitions

Variable	Definition
Analyst Coverage	The number of financial analysts covering the company
Blockholders	The number of blockholders with more than 5% shareholding in the company
Book to Market	Book value of equity over market value of equity
CEO Age	The age of the CEO
CEO Tenure	The number of years since the CEO appointment year to the year of measurement.
Cumulative Return	The cumulative stock return for the last twelve months
Duality	A binary variable indicating if the CEO is also Chairman of the board
Female CEO	A binary variable indicating if the CEO is female
Idiosyncratic Risk	Yearly average of the standard deviation of residuals from the Fama-French daily regressions
Independent Audit Comm	A binary variable indicating if the firm has an audit committee that is composed of 100% independent auditors
Independent Director	The fraction of board directors that are independent
Insider Experience	The number of years since the CEO's first open-market transaction
Insider Trading	The ratio between the shares of CEO's insider sales in a certain year and the CEO's shareholdings of the prior year.
Kids Indicator	A binary variable indicating if the CEO has any kid(s)
Lawyer CEO	A binary variable indicating if the CEO has a law degree
Leverage	Total debt over total assets
Total Assets	Natural log of total assets
Narcissism	Natural log of one plus the ratio of first-single pronouns to all first pronouns used by the CEO during the Q&A section of earnings call
Narcissism Indicator	A binary variable indicating if the narcissism level of the CEO is greater than median of each year and industry
Narcissism_Residual	The residual from regressing narcissism on overconfidence
Opport Insider Trading	The ratio between the shares of CEO's opportunistic insider sales in a certain year and the CEO's shareholdings of the prior year. Opportunistic insider trades are any insider trades besides routine insider trades. Routine insider trades are defined as the repeated insider transaction occur in the same month of the year for three consecutive years.
Overconfidence	CEO's overconfidence measured through CEO options holdings
Participate	A binary variable indicating if the CEO participates in opportunistic insider trading actions.
ROA	Net income over total assets
Shares Director Own	The fraction of common shares outstanding held by all directors
Siblings Indicator	A binary variable indicating if the CEO has any sibling(s)
Top Paid General Counsel	A binary variable indicating if the General Counsel is among the top five paid executives in the company

Table 1 Summary Statistics

This table presents the summary statistics of variables used in our analysis. Panel A reports the descriptive statistics of the full sample, including mean, median, standard deviation (SD), maximum, minimum, and the number of observations. Panel B reports the T-tests results of univariate analysis comparing the mean difference of variables between firms with CEOs of above-the-median narcissism and firms with CEOs of below-the-median narcissism.

Panel A: Descriptive Statistics for the Full Sample

	Full Sample (N=2,139)				
Variable	Mean	Median	SD	Min	Max
Analyst Coverage	0.13	0.00	0.34	0.00	1.00
Blockholders	0.10	0.00	0.29	0.00	1.00
Book to Market	0.35	0.30	0.26	-0.09	1.32
CEO Age	56.72	57.00	6.33	36.00	81.00
CEO Tenure	7.89	7.00	5.61	0.00	26.00
Cumulative Return	0.24	0.20	0.33	-0.45	1.45
Duality	0.44	0.00	0.50	0.00	1.00
Female CEO	0.04	0.00	0.20	0.00	1.00
Idiosyncratic Risk	0.10	0.09	0.04	0.03	0.23
Independent Audit Comm	1.00	1.00	0.05	0.00	1.00
Independent Director	0.87	0.89	0.06	0.50	1.00
Insider Trading	0.47	0.24	0.73	0.01	5.04
Insider Experience	8.16	8.00	5.48	0.00	24.00
Kids Indicator	0.91	1.00	0.28	0.00	1.00
Lawyer CEO	0.07	0.00	0.26	0.00	1.00
Leverage	0.22	0.20	0.17	0.00	0.76
Narcissism	0.21	0.20	0.07	0.08	0.39
Narcissism Indicator	0.46	0.00	0.50	0.00	1.00
Opport Insider Trading	0.35	0.18	0.50	0.00	3.31
ROA	0.07	0.07	0.07	-0.21	0.30
Shares Directors Own	0.02	0.00	0.04	0.00	0.34
Siblings Indicator	0.82	1.00	0.38	0.00	1.00
Top Paid General Counsel	0.39	0.00	0.49	0.00	1.00
Total Assets	8.07	7.97	1.50	5.05	11.72

Panel B: Univariate Analysis

	Firms with less narcissistic CEOs	Firms with more narcissistic CEOs		
Variable	Mean	Mean	Difference	T-Statistics
Analyst Coverage	0.13	0.13	0.00	0.30
Blockholders	0.10	0.09	0.01	0.40
Book to Market	0.35	0.35	0.01	0.45
CEO Age	56.28	57.23	-0.95	-3.50***
CEO Tenure	7.61	8.23	-0.62	-2.55***
Cumulative Return	0.23	0.24	0.00	-0.30
Duality	0.43	0.44	-0.01	-0.55
Female CEO	0.04	0.04	0.00	0.10
Idiosyncratic Risk	0.10	0.10	0.00	-2.00**
Independent Audit Comm	1.00	1.00	0.00	-0.75
Independent Director	0.87	0.86	0.00	0.55
Insider Trading	0.44	0.51	-0.08	-2.35**
Insider Experience	7.65	8.76	-1.11	-4.70***
Kids Indicator	0.94	0.89	0.05	3.70***
Lawyer CEO	0.06	0.08	-0.02	-1.70*
Leverage	0.22	0.22	0.00	0.00
Narcissism	0.17	0.26	-0.09	-46.35***
Narcissism Indicator	0.00	1.00	-1.00	.
Opport Insider Trading	0.32	0.38	-0.06	-2.80***
ROA	0.07	0.07	0.00	-0.45
Shares Directors Own	0.02	0.02	0.00	1.15
Siblings Indicator	0.84	0.80	0.04	2.25**
Top Paid General Counsel	0.39	0.39	0.00	-0.15
Total Assets	8.02	8.11	-0.09	-1.40

Table 2 CEO Narcissism and Insider Trading – Main Results

This table reports the baseline OLS regression results of the relationship between the CEOs' narcissism and opportunistic insider trading with the full sample. Industry fixed effects and Year fixed effects are included. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

	(1)	(2)
Dependent Variable =	*Opport Insider Trading*	
Narcissism	0.482*	
	(1.90)	
Narcissism Indicator		0.054**
		(2.02)
Total Assets	0.024**	0.024**
	(2.08)	(2.15)
Book to Market	-0.150**	-0.153**
	(-2.28)	(-2.31)
Leverage	0.000	0.008
	(0.00)	(0.08)
ROA	0.141	0.143
	(0.63)	(0.65)
Independent Director	-0.075	-0.075
	(-0.25)	(-0.25)
Cumulative Return	0.062*	0.058*
	(1.77)	(1.68)
Female CEO	-0.063	-0.066
	(-0.97)	(-1.02)
CEO Age	-0.000	0.000
	(-0.01)	(0.02)
CEO Tenure	0.001	0.001
	(0.42)	(0.44)
Insider Experience	-0.003	-0.003
	(-0.95)	(-0.88)
Constant	-0.087	0.006
	(-0.30)	(0.02)
Observations	2,139	2,139
Adjusted R-squared	0.050	0.050
Industry FE	Yes	Yes
Year FE	Yes	Yes

Table 3 CEO Narcissism and Opportunistic Insider Trading – Matched Sample

This table reports the baseline OLS regression results of the relationship between the CEOs narcissism and opportunistic insider trading using coarsened exact matching. The firms with CEOs of above-the-median narcissism and firms with CEOs of below-the-median narcissism are matched one-to-one on three continuous background variables: CEO's age, tenure, and insider trading experience, which are coarsened using four equally spaced strata, as well as the exact value of year and industry without coarsening. Other CEO characteristics such as gender and firm characteristics such as total assets, book to market ratio, leverage, and ROA are not statistically different between the two groups (see Panel B of Table 1), and hence are not used as the background variables for matching. Panel A reports the differences in background variables of the two groups before and after matching. Panel B shows the baseline regression results with the matched sample. Industry fixed effects and Year fixed effects are included. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

Panel A: Checking Data Balance with T-Tests on Continuous Background Variables Before and After Matching

		Before Matching				After Matching			
Variable	Sample	Observations	Mean	Difference	T- statistics	Observations	Mean	Difference	T- statistics
CEO Age	More Narcissistic CEOs	984	57.23	-0.95	-3.50***	438	56.41	-0.45	-1.27
	Less Narcissistic CEOs	1,155	56.28			438	55.96		
CEO Tenure	More Narcissistic CEOs	984	8.23	-0.62	-2.55***	438	7.02	-0.29	-0.88
	Less Narcissistic CEOs	1,155	7.61			438	6.73		
Insider Experience	More Narcissistic CEOs	984	8.76	-1.11	-4.70***	438	7.13	-0.27	-0.78
	Less Narcissistic CEOs	1,155	7.65			438	6.89		
Total		2,139				876			

Panel B: Baseline Regression Results using Matched Sample

	(1)	(2)
Dependent Variable =	*Opport Insider Trading*	
Narcissism	0.879***	
	(2.60)	
Narcissism Indicator		0.088**
		(2.36)
Total Assets	0.031*	0.031*
	(1.79)	(1.84)
Book to Market	-0.102	-0.104
	(-0.95)	(-0.96)
Leverage	-0.052	-0.038
	(-0.34)	(-0.24)
ROA	0.346	0.365
	(1.14)	(1.21)
Independent Director	-0.189	-0.227
	(-0.41)	(-0.50)
Cumulative Return	0.044	0.038
	(0.87)	(0.76)
Female CEO	-0.009	-0.020
	(-0.10)	(-0.21)
CEO Age	-0.007	-0.007
	(-1.62)	(-1.54)
CEO Tenure	0.005	0.005
	(0.74)	(0.76)
Insider Experience	0.001	0.001
	(0.19)	(0.26)
Constant	0.472	0.575
	(1.05)	(1.29)
Observations	876	876
Adjusted R-squared	0.063	0.059
Industry FE	YES	YES
Year FE	YES	YES

Table 4 CEO Narcissism and Insider Trading – Instrumental Variables and 2SLS

This table provides the Two-stage Least Squares regression results of instrumental variables. We use hand-collected CEOs' familial background status as instrumental variables for CEO narcissism, namely *Kids Indicator* (whether the CEO has any kids) and *Siblings Indicator* (whether the CEO has any siblings). Panel A shows the results for the first stage regressions, which indicate the instrumental variables are negatively associated with CEOs' narcissism levels. Panel B shows the results of the second stage regressions, which indicate that the instrumented CEOs' narcissism is positively associated with opportunistic insider trading. Industry fixed effects and Year fixed effects are included. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

Panel A: First Stage of 2SLS

	(1)	(2)
Dependent Variable =	*Narcissism*	*Narcissism*
Kids Indicator	-0.023***	
	(-4.66)	
Siblings Indicator		-0.011***
		(-2.66)
Total Assets	0.002**	0.002*
	(2.07)	(1.68)
Book to Market	-0.008	-0.008
	(-1.28)	(-1.21)
Leverage	0.020**	0.025***
	(2.10)	(2.62)
ROA	0.003	0.008
	(0.13)	(0.34)
Independent Director	-0.023	-0.018
	(-0.93)	(-0.74)
Cumulative Return	-0.007	-0.007
	(-1.61)	(-1.53)
Female CEO	-0.002	-0.001
	(-0.31)	(-0.14)
CEO Age	0.001***	0.001***
	(2.88)	(3.11)
CEO Tenure	0.000	0.000
	(0.65)	(0.73)
Insider Experience	0.001***	0.001***
	(3.99)	(3.82)
Constant	0.184***	0.164***
	(6.09)	(5.54)
Observations	2,139	2,139
Adjusted R-squared	0.088	0.083
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel B: Second Stage of 2SLS

	(1)	(2)	(3)
Dependent Variable =	*Opport Insider Trading*		
Narcissism	5.401**		
(Instrumented - *Kids Indicator*)	(2.29)		
Narcissism		14.890**	
(Instrumented - *Siblings Indicator*)		(2.43)	
Narcissism			6.307***
(Instrumented – *Kids Indicator* and *Siblings Indicator*)			(2.61)
Total Assets	0.008	-0.023	0.005
	(0.63)	(-0.86)	(0.37)
Book to Market	-0.099	-0.002	-0.090
	(-1.60)	(-0.01)	(-1.38)
Leverage	-0.121	-0.354*	-0.143
	(-1.10)	(-1.68)	(-1.26)
ROA	0.103	0.032	0.097
	(0.50)	(0.09)	(0.44)
Independent Director	0.021	0.204	0.038
	(0.08)	(0.48)	(0.15)
Cumulative Return	0.095**	0.159*	0.101**
	(2.16)	(1.88)	(2.19)
Female CEO	-0.055	-0.040	-0.053
	(-0.88)	(-0.33)	(-0.80)
CEO Age	-0.004	-0.011*	-0.004
	(-1.30)	(-1.75)	(-1.47)
CEO Tenure	0.000	-0.002	0.000
	(0.08)	(-0.34)	(0.01)
Insider Experience	-0.009**	-0.021**	-0.010**
	(-2.35)	(-2.28)	(-2.53)
Constant	-0.821*	-2.237**	-0.956**
	(-1.91)	(-2.19)	(-2.15)
Observations	2,139	2,139	2,139
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 5 CEO Narcissism and Insider Trading – Heckman Two-Step Selection Model

This table provides the Heckman two-step selection model results. The first step regression (i.e., selection equation) studies the determinants of the decision to engage in opportunistic insider trading and includes an additional variable, *Routine Insider Trades.* Following Massa et al. (2015), we use the number of routine insider trades as the identifying predictor following their logic that routine insider trades are used as camouflage to hide opportunistic insider trades. The second step regression (i.e., outcome equation) includes the Inverse Mill's ratio, generated from the first step, to control for the selection bias. Specifically, the Heckman two-step selection model is estimated using the following equations:

1st step (Selection equation): Participate = Routine Insider Trades + Controls

2nd step (Outcome equation): Opport Insider Trading = Narcissism + Inverse Mills Ratio + Controls

Industry fixed effects and Year fixed effects are included. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)
Dependent Variable =	*Participate*	*Opport Insider Trading*	
	1st Step	2nd Step	
Narcissism		0.281**	
		(2.18)	
Narcissism Indicator			0.041**
			(2.55)
Routine Trades	1.358***		
	(20.33)		
Inverse Mill's Ratio		0.110***	0.109***
		(5.03)	(4.99)
Total Assets	-0.014	0.022***	0.023***
	(-0.95)	(3.46)	(3.50)
Book to Market	-0.340***	-0.176***	-0.179***
	(-4.08)	(-4.63)	(-4.73)
Leverage	-0.144	0.004	0.007
	(-1.12)	(0.07)	(0.12)
ROA	1.099***	0.158	0.160
	(3.65)	(1.33)	(1.35)
Independent Director	1.123***	0.086	0.082
	(3.32)	(0.60)	(0.58)
Cumulative Return	0.379***	0.071***	0.070***
	(6.24)	(2.70)	(2.66)
Female CEO	0.080	-0.028	-0.030
	(0.83)	(-0.64)	(-0.68)
CEO Age	0.006*	0.001	0.001
	(1.82)	(0.43)	(0.45)
CEO Tenure	-0.019***	-0.000	-0.000
	(-5.13)	(-0.25)	(-0.25)
Insider Experience	0.090***	0.003	0.003
	(23.88)	(1.41)	(1.44)
Constant	-0.296	-0.218	-0.156
	(-0.44)	(-0.91)	(-0.65)
Observations	5,682	2,139	2,139
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 6 CEO Narcissism and Insider Trading – Falsification Test

This table provides the falsification test results. The dependent variables are opportunistic insider trading one year ago in Columns 1 and 2, opportunistic insider trading two years ago in Columns 3 and 4, and opportunistic insider trading three years ago in Columns 5 and 6. Industry fixed effects and Year fixed effects are included. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable =	*Opport Insider Trading t-1*		*Opport Insider Trading t-2*		*Opport Insider Trading t-3*	
Narcissism	0.573		0.362		0.282	
	(1.64)		(0.81)		(0.79)	
Narcissism Indicator		0.040		0.014		0.052
		(1.15)		(0.32)		(1.07)
Total Assets	0.012	0.013	0.013	0.014	-0.017	-0.017
	(0.80)	(0.86)	(0.72)	(0.80)	(-0.80)	(-0.80)
Book to Market	-0.270***	-0.276***	-0.176	-0.184	0.017	0.019
	(-2.70)	(-2.74)	(-1.56)	(-1.62)	(0.14)	(0.16)
Leverage	0.015	0.028	-0.083	-0.081	0.225	0.231
	(0.12)	(0.21)	(-0.62)	(-0.60)	(1.33)	(1.37)
ROA	-0.203	-0.205	0.005	-0.006	0.489	0.491
	(-0.71)	(-0.72)	(0.02)	(-0.02)	(1.37)	(1.39)
Independent Director	-0.090	-0.094	0.007	-0.003	-0.287	-0.281
	(-0.25)	(-0.26)	(0.01)	(-0.01)	(-0.56)	(-0.55)
Cumulative Return	-0.037	-0.042	0.002	-0.001	-0.118	-0.121
	(-0.65)	(-0.76)	(0.02)	(-0.01)	(-1.55)	(-1.58)
Female CEO	-0.118	-0.119	-0.227**	-0.226**	-0.175	-0.171
	(-1.23)	(-1.23)	(-2.06)	(-2.05)	(-1.41)	(-1.36)
CEO Age	0.001	0.001	0.002	0.003	0.002	0.002
	(0.20)	(0.26)	(0.55)	(0.56)	(0.52)	(0.54)
CEO Tenure	-0.003	-0.003	-0.003	-0.002	-0.005	-0.005
	(-0.76)	(-0.76)	(-0.40)	(-0.37)	(-0.98)	(-0.97)
Insider Experience	-0.005	-0.005	-0.006	-0.005	-0.008	-0.008
	(-1.26)	(-1.12)	(-1.11)	(-1.01)	(-1.50)	(-1.51)
Constant	0.206	0.319	-0.083	-0.010	0.228	0.270
	(0.48)	(0.78)	(-0.17)	(-0.02)	(0.41)	(0.48)
Observations	1,081	1,081	860	860	669	669
Adjusted R-squared	0.066	0.063	0.045	0.043	0.076	0.077
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Table 7 CEO Narcissism and Opportunistic Insider Trading – Cross-Sectional Analysis

This table reports the cross-sectional analysis on the relationship between CEOs' narcissism and opportunistic insider trading by diving the full sample into subsamples based on legal knowledge (Panel A) and external monitoring pressure (Panel B). CEO's legal knowledge or sensitivity is proxied by whether the CEO has law education background (*Lawyer CEO*) and an influential General Counsel (*Top Paid General Counsel*). The subsample is divided based if the firm is led by a lawyer CEO and has an influential General Counsel in each year. External monitoring pressure is proxied by the number of financial analysts (*Analyst Coverage*) and blockholders (*Blockholders*). The subsample is divided based on the median of financial analysts amount and blockholders amount in each year. Industry fixed effects and Year fixed effects are included. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

Panel A: Legal Knowledge/Sensitivity

	(1)	(2)	(3)	(4)
Dependent Variable =	*Opport Insider Trading*			
	Lawyer CEO		*General Counsel*	
	No	Yes	No	Yes
Narcissism	0.487*	-0.478	0.588**	0.396
	(1.86)	(-0.37)	(2.00)	(1.18)
Log Assets	0.022*	0.037	0.012	0.037*
	(1.90)	(0.56)	(0.98)	(1.79)
Book to Market	-0.177***	-0.035	-0.237***	0.017
	(-2.77)	(-0.13)	(-3.05)	(0.17)
Leverage	-0.082	0.607	0.062	-0.099
	(-0.74)	(1.04)	(0.50)	(-0.62)
ROA	0.091	-0.009	0.121	0.242
	(0.39)	(-0.01)	(0.48)	(0.80)
Indp. Director	0.216	-2.480	-0.100	-0.050
	(0.93)	(-1.24)	(-0.37)	(-0.07)
Cum. Return	0.039	0.366	0.070*	0.053
	(1.32)	(1.51)	(1.87)	(0.79)
Female CEO	-0.041	-0.170	-0.106	-0.031
	(-0.63)	(-0.73)	(-1.29)	(-0.23)
CEO Age	-0.001	0.011	-0.000	0.001
	(-0.34)	(0.58)	(-0.08)	(0.15)
CEO Tenure	0.002	-0.016	-0.003	0.006
	(0.67)	(-0.90)	(-0.92)	(1.22)
Insider Experience	-0.003	0.009	-0.005	0.002
	(-0.98)	(0.55)	(-1.48)	(0.41)
Constant	-0.240	1.982	0.146	-0.025
	(-0.88)	(1.29)	(0.44)	(-0.05)
Observations	1,985	154	1,302	837
Adjusted R-squared	0.055	0.127	0.073	0.049
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Panel B: External Monitoring

	(1)	(2)	(3)	(4)
Dependent Variable =	*Opport Insider Trading*			
	Analyst Coverage		*Blockholders*	
	Low	High	Low	High
Narcissism	0.531**	-0.162	0.526*	-0.225
	(2.04)	(-0.24)	(1.91)	(-0.41)
Total Assets	0.032**	-0.029	0.017	0.120*
	(2.42)	(-0.86)	(1.48)	(1.82)
Book to Market	-0.170**	0.121	-0.180***	0.023
	(-2.53)	(0.61)	(-2.90)	(0.16)
Leverage	-0.015	-0.211	0.058	-0.403*
	(-0.13)	(-0.73)	(0.50)	(-1.82)
ROA	0.158	-0.214	0.205	-0.514
	(0.65)	(-0.42)	(1.01)	(-0.79)
Independent Director	-0.134	-0.022	-0.158	0.435
	(-0.42)	(-0.03)	(-0.52)	(0.63)
Cumulative Return	0.060	0.066	0.049	0.197*
	(1.57)	(0.61)	(1.31)	(1.80)
Female CEO	-0.077	-0.066	-0.078	0.052
	(-1.04)	(-0.52)	(-1.15)	(0.35)
CEO Age	-0.001	0.009	-0.001	0.010
	(-0.38)	(1.40)	(-0.24)	(1.14)
CEO Tenure	0.004	-0.013*	0.001	0.003
	(1.21)	(-1.85)	(0.18)	(0.36)
Insider Experience	-0.003	-0.003	-0.003	-0.006
	(-1.05)	(-0.36)	(-1.04)	(-0.56)
Constant	-0.051	0.079	0.101	-1.163
	(-0.17)	(0.09)	(0.35)	(-1.27)
Observations	1856	283	1935	204
Adjusted R-squared	0.059	0.020	0.051	0.112
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Table 8 CEO Narcissism and Opportunistic Insider Trading – Robustness

This table shows the results of a rich battery of robustness checks. In Panel A, we remove any overlapping component of overconfidence from narcissism. We include an option-based overconfidence measure in Columns 1 and 2, and we include the residual from regressing narcissism on overconfidence in Column 3. In Panel B, we add more control variables that could potentially affect CEOs' opportunistic insider trading. We include the idiosyncratic volatility in Columns 1 and 5, the presence of independent audit committee and the fraction of shares owned by all directors in Columns 2 and 6, the indicator whether the CEO is also the Chairman in Columns 3 and 7, and all the above-mentioned variables together in Columns 4 and 8. In Panel C, we replicate our main specifications using an alternate measure of insider trading, which is the overall insider trading including both opportunistic and routine insider trading. In Panel D, we test a nonlinear relationship between CEOs' narcissism and opportunistic insider trading. In Panel E, we include Industry × Year fixed effects for each pair of industry and year combination. Industry fixed effects and Year fixed effects are included in Panel A to D. Standard errors are clustered at the firm level, t-statistics are reported in the parenthesis, and ***, **, * indicate statistical significance at the 1%, 5%, and 10% level, respectively. All variables are defined in Appendix A.

Panel A: Removing Confounding Effect of Overconfidence

	(1)	(2)	(3)
Dependent Variable =		*Opport Insider Trading*	
Narcissism	0.488*		
	(1.93)		
Narcissism Indicator		0.056**	
		(2.08)	
Narcissism Residual			0.488*
			(1.92)
Total Assets	0.021*	0.021*	0.024**
	(1.84)	(1.91)	(2.08)
Book to Market	-0.118*	-0.121*	-0.149**
	(-1.84)	(-1.87)	(-2.28)
Leverage	0.012	0.020	0.000
	(0.11)	(0.18)	(0.00)
ROA	0.134	0.136	0.140
	(0.61)	(0.62)	(0.63)
Independent Director	-0.066	-0.066	-0.074
	(-0.22)	(-0.22)	(-0.25)
Cumulative Return	0.054	0.051	0.062*
	(1.52)	(1.43)	(1.77)
Female CEO	-0.064	-0.067	-0.063
	(-1.00)	(-1.05)	(-0.97)
CEO Age	0.000	0.000	-0.000
	(0.01)	(0.04)	(-0.01)
CEO Tenure	0.000	0.001	0.001
	(0.15)	(0.17)	(0.42)
Insider Experience	-0.003	-0.002	-0.003
	(-0.87)	(-0.81)	(-0.95)
Overconfidence	0.076***	0.077***	
	(2.76)	(2.79)	
Constant	-0.094	0.001	0.014
	(-0.33)	(0.00)	(0.05)
Observations	2,139	2,139	2,139
Adjusted R-squared	0.057	0.057	0.054
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Panel B: Including Additional Control Variables

Dependent Variable =	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Opport Insider Trading				
Narcissism	0.498*	0.492**	0.482*	0.510**				
	(1.96)	(1.98)	(1.90)	(2.05)				
Narcissism Indicator					0.057**	0.056**	0.054**	0.058**
					(2.13)	(2.07)	(2.01)	(2.17)
Total Assets	0.012	0.022*	0.026**	0.013	0.013	0.022*	0.027**	0.013
	(0.97)	(1.87)	(2.26)	(1.00)	(1.02)	(1.93)	(2.32)	(1.04)
Book to Market	-0.116*	-0.139**	-0.154**	-0.109*	-0.118*	-0.142**	-0.157**	-0.111*
	(-1.77)	(-2.14)	(-2.37)	(-1.69)	(-1.80)	(-2.18)	(-2.39)	(-1.72)
Leverage	-0.012	-0.002	-0.008	-0.026	-0.004	0.006	-0.000	-0.018
	(-0.11)	(-0.02)	(-0.07)	(-0.24)	(-0.04)	(0.05)	(-0.00)	(-0.17)
ROA	0.105	0.146	0.138	0.105	0.107	0.148	0.140	0.107
	(0.48)	(0.66)	(0.62)	(0.48)	(0.49)	(0.67)	(0.63)	(0.49)
Independent Director	-0.084	-0.042	-0.052	-0.026	-0.085	-0.042	-0.054	-0.026
	(-0.28)	(-0.14)	(-0.17)	(-0.08)	(-0.28)	(-0.14)	(-0.18)	(-0.09)
Cumulative Return	0.071**	0.065*	0.061*	0.073**	0.067*	0.061*	0.057	0.069**
	(2.01)	(1.84)	(1.73)	(2.06)	(1.92)	(1.75)	(1.64)	(1.98)
Female CEO	-0.066	-0.067	-0.061	-0.067	-0.069	-0.070	-0.064	-0.071
	(-1.01)	(-1.02)	(-0.95)	(-1.04)	(-1.06)	(-1.07)	(-1.00)	(-1.09)
CEO Age	-0.001	0.000	0.000	-0.000	-0.001	0.000	0.000	-0.000
	(-0.29)	(0.03)	(0.14)	(-0.10)	(-0.26)	(0.06)	(0.17)	(-0.07)
CEO Tenure	0.001	0.001	0.002	0.002	0.001	0.001	0.002	0.002
	(0.33)	(0.33)	(0.71)	(0.61)	(0.35)	(0.34)	(0.71)	(0.62)
Insider Experience	-0.001	-0.003	-0.003	-0.001	-0.001	-0.003	-0.003	-0.001
	(-0.47)	(-0.93)	(-0.94)	(-0.41)	(-0.40)	(-0.86)	(-0.88)	(-0.34)
Idiosyncratic Risk	-1.183***			-1.261***	-1.192***			-1.268***
	(-3.00)			(-3.21)	(-3.03)			(-3.23)
Independent Audit Comm		-0.207		-0.238*		-0.181		-0.211
		(-1.45)		(-1.77)		(-1.28)		(-1.59)
Shares Directors Own		0.467		0.461		0.481		0.475
		(1.10)		(1.08)		(1.08)		(1.07)
Duality			-0.042	-0.051			-0.041	-0.050
			(-1.20)	(-1.46)			(-1.18)	(-1.44)
Constant	0.161	0.092	-0.127	0.339	0.259	0.160	-0.033	0.412
	(0.55)	(0.28)	(-0.44)	(1.04)	(0.88)	(0.49)	(-0.11)	(1.26)
Observations	2,139	2,139	2,139	2,139	2,139	2,139	2,139	2,139
Adjusted R-squared	0.056	0.051	0.051	0.059	0.055	0.051	0.050	0.058
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Panel C: Considering the Nonlinear Relationship

	(1)	(2)
Dependent Variable =	*Opport Insider Trading*	
Narcissism	0.449**	0.670*
	(2.01)	(1.80)
Narcissism Squared	1.430	6.898
	(0.43)	(1.24)
Total Assets	0.024**	0.024
	(2.10)	(1.32)
Book to Market	-0.147**	-0.288***
	(-2.26)	(-2.59)
Leverage	0.002	-0.007
	(0.02)	(-0.04)
ROA	0.145	0.177
	(0.65)	(0.40)
Independent Director	-0.074	-0.189
	(-0.25)	(-0.48)
Cumulative Return	0.062*	-0.011
	(1.78)	(-0.24)
Female CEO	-0.065	0.125
	(-1.00)	(0.43)
CEO Age	-0.000	-0.000
	(-0.04)	(-0.05)
CEO Tenure	0.001	-0.000
	(0.40)	(-0.09)
Insider Experience	-0.003	-0.001
	(-0.92)	(-0.10)
Constant	0.013	0.238
	(0.04)	(0.53)
Observations	2,139	2,139
Adjusted R-squared	0.050	0.080
Industry FE	Yes	Yes
Year FE	Yes	Yes

Panel D: Using Alternative Fixed Effects Specifications

	(1)	(2)
Dependent Variable =	*Opport Insider Trading*	
Narcissism	0.513*	
	(1.87)	
Narcissism Indicator		0.052*
		(1.92)
Total Assets	0.026**	0.027**
	(2.12)	(2.19)
Book to Market	-0.144**	-0.148**
	(-2.00)	(-2.04)
Leverage	-0.007	0.001
	(-0.07)	(0.01)
ROA	0.170	0.175
	(0.70)	(0.73)
Independent Director	-0.064	-0.065
	(-0.20)	(-0.21)
Cumulative Return	0.061*	0.058
	(1.71)	(1.62)
Female CEO	-0.073	-0.076
	(-1.17)	(-1.21)
CEO Age	-0.000	0.000
	(-0.00)	(0.04)
CEO Tenure	0.000	0.000
	(0.08)	(0.09)
Insider Experience	-0.002	-0.002
	(-0.76)	(-0.68)
Constant	-0.027	0.047
	(-0.09)	(0.16)
Observations	2,139	2,139
Adjusted R-squared	0.020	0.019
Industry×Year FE	Yes	Yes