Narcissistic CEOs promise more than they deliver: A case from Share Repurchases

November 2021

EFM Classification Code: 720 - Behavioural Finance Issues

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Abstract

The paper examines how CEO narcissism affects a firm's likelihood of share repurchase announcement. Using the novel signature size measure of narcissism, we find that firms with narcissist CEOs are more likely to make repurchase announcements and announce higher repurchase amounts. However, they are unlikely to make the actual repurchase and are likely to repurchase a small amount if they do. The announcement effect is pronounced in poor-governed firms. Further, actual repurchases only happen when the repurchase can be made at a discount. To mitigate endogeneity concerns, we use a matched sample and difference in difference analysis and find a statistically significant and supportive result. Finally, controlling for overconfidence and using an alternative measure of narcissism provide supportive and more robust results.

Keywords: CEO, M&A, narcissism, share repurchase, undervaluation

"When even the Sage of Omaha is doing it, the trend for companies to buy back their own shares seems unstoppable." - Financial Times (2018)

1. Introduction

Share repurchase has been a debatable political topic in recent years. Repurchase has attracted negative comments from both Democratic and Republican presidential candidates of the US 2020 election. According to Goldman Sachs, S&P500 companies repurchased a record US$ 806 billion of shares in 2018, well above the USD 550 billion in 2017[1]. While substantial research has focused on the timing of repurchase announcement, the influence of firm characteristics, and institutional pressures, key organisational leaders' role in the repurchase decisions have been largely missing thus far[2]. Except for Banerjee, Humphery-Jenner, Nanda, et al., (2018), the effect of CEOs' psychological characteristics on repurchase decisions has been rarely explored. This is surprising considering the documented evidence of firm executives' influence on firm decisions (Bertrand & Schoar, 2003; Hambrick & Mason, 1984). In fact, the upper echelons theory suggests that firm executives' decisions are influenced by their personalities, values, limited cognitive mind, experience, and available information (Chatterjee & Hambrick, 2007). Also, Carpenter et al. (2004) report that top executives of a firm make decisions based on their past experiences, present and future aspirations. Executives focus not only on their self-interest but also on their ambitions, confidence levels, narcissism, pride, arrogance, and overestimated abilities (Hayward & Hambrick, 1997). In line with this, executives are likely to make irrational decisions based on their inherent characteristics. Hence, the personal attributes of executives affect both the rational and irrational choices of a firm. In light of this, this study focuses on an important question that the literature has left unanswered – do some managerial behavioural traits influence their repurchase decisions? Simply put, are there some traits of managers that make them announce more repurchase than other managers? The study addresses this critical question by focusing on *CEO narcissism*. The study tests whether narcissistic CEOs make more repurchase announcements than other CEOs and, if so, what factors influence their announcements.

Research has indicated some similarities between narcissism and other behavioural traits like overconfidence, which has been well studied in the finance literature[3]. Yet, narcissism has distinctive features that make it very relevant for repurchase activities in its own right. First, the grandiose nature and the constant sense of superiority of narcissists are expected to affect their repurchase decisions if they occupy an influential position such as the CEO. Thus, considering the prime undervaluation motive of repurchases, one would expect a narcissist's grandiosity, which often exaggerates their achievements, to distort the perceived value they have for their firms and influence them to make repurchase announcements. Second, narcissists have a constant sense of entitlement, attention, praise, and admiration, which is likely to fuel their repurchase announcement and the timing of their actual repurchases. Third, researchers have established that narcissism is not just a clinical disorder but a personality trait that can be measured and scored (Rijsenbilt & Commandeur, 2013), making it possible to empirically assess its impact on corporate outcomes. Indeed, current research has documented the influence of CEO narcissism on firm decisions and outcomes such as acquisitions, Foreign direct investment, investment and

[1] See; US Companies Cling to Share Buybacks despite Collapse in Profits | Financial Times
[2] For repurchase literature see: Bonaimé, 2012; Bonaimé et al., 2014; Brav et al., 2005; Comment & Jarrell, 1991; Dann, 1981; Eisdorfer et al., 2015; Grullon & Ikenberry, 2000; Grullon & Michaely, 2004; Ikenberry et al., 1995; Isa & Lee, 2014; Vermaelen, 1981.
[3] For Overconfidence literature see: Banerjee, Humphery-Jenner, Nanda, et al., 2018; Campbell et al., 2004; Deshmukh et al., 2013; Huang et al., 2016; Malmendier & Tate, 2005.

earning management (Al-Shammari et al., 2019; Buyl et al., 2019; Chatterjee & Hambrick, 2007; Ham et al., 2018; Rijsenbilt, 2011).

Following Ham et al. (2018), this study constructs CEO narcissism using the signature area per character narcissism measure. The study's sample consists of 7,816 firm-year observations of S&P500 firms over the period 2000 to 2018. The first analysis of the study examines the impact of CEO narcissism on the likelihood of share repurchase announcement. The study finds that narcissistic CEOs are more likely to announce a share repurchase, and when they decide to announce, they tend to repurchase higher dollar amounts. Despite the documented undervaluation motive of repurchase announcement (Dittmar, 2000), we find that narcissistic CEOs announce share repurchase even when their companies' shares are performing well. Because of the grandiose nature of narcissistic CEOs, they perceive their companies as undervalued even when they are not.

The governance structure of a firm appears to influence the repurchase activities of narcissistic CEOs. Li & Tang, (2010) find a positive relationship between CEO hubris and risk-taking, especially when the CEO has greater managerial discretion. This indicates that a well-governed firm where managerial discretion is strictly monitored is likely to mitigate a narcissistic CEO's impact. Consistent with this view, we find that narcissistic CEOs doubling as the chair of the board of directors are more likely to announce a share repurchase and target a higher dollar amount to be repurchased.

Further, we examine the likelihood of a narcissistic CEO to make an actual repurchase and the actual dollar amount repurchased. The study finds that narcissistic CEOs are less likely to make an actual repurchase and when they decide to repurchase, they allocate less dollar amount towards such activities. Also, narcissistic CEOs make actual repurchases at prices lower than the market price. This indicates that narcissistic CEOs are better at timing the market for their actual repurchase activities.

A potential concern of this study is that the appointment of CEOs can be endogenous. That is, some board members are interested in some personal characteristics of a CEO before an appointment. This means that a firm may appoint a narcissistic CEO because of their narcissistic traits and hence such appointments can be endogenous. Ham et al. (2018) find that narcissist CEOs perform poorly, and companies may consider such characteristics before appointments. This may be a motivation for some firms to employ some CEOs with some particular characteristics. If firms appointing narcissist CEOs are also more likely to announce share repurchase, then there is some level of selection bias. Further, if firms that make frequent repurchase announcements also prefer to appoint narcissistic CEOs, there is an endogeneity concern.

The study addresses endogeneity concerns using two methods. First, we regressed CEO narcissism against a set of antecedent and contemporaneous variables. Antecedent variables are measured in the year prior to the appointment of the CEO. These variables are meant to control for the CEO's entry conditions. We also include the Fama-French (1997) 48 industry classification to capture the likelihood of a narcissist CEO being drawn to some specific industries. We generate predicted score based on the model and include that as an endogeneity control in our baseline model. In a robustness test, we exclude the predicted narcissism and our results still remains the same. This supports the hypothesis that narcissist CEO frequently announce a share repurchase than non-narcissist CEOs. Second, using CEO exogenous turnover events, we find an increase in the likelihood of repurchase announcements following CEO turnover events where the departing CEO is replaced with another

with a higher narcissism score. This indicates that narcissist acts differently from non-narcissist in terms of repurchasing decisions.

Finally, the study results are robust after controlling for CEO overconfidence and using an alternative measure of narcissism. Prior research has indicated that there are some similarities between narcissism and overconfidence. To ensure this does not influence our results, we construct the option-based measure of overconfidence and control for that in our baseline regression. Our results remain unchanged after controlling for CEO overconfidence, indicating that the CEOs' narcissism trait (beyond their overconfidence) partly influences the frequent share repurchase announcements that are observed recently. Also, we find some inconsistent results between CEO narcissism and overconfidence, which shows that both traits are different. First, CEO narcissism is negatively associated with financial performance, while CEO overconfidence is positively associated (Ham et al., 2018). Second, narcissistic CEOs are less likely to make an actual repurchase, whereas overconfident CEOs are more likely to make actual repurchases and allocate a larger dollar amount for that (Banerjee et al., 2018). From the above, the study concludes that the results reported are not driven by the overconfidence of a CEO. Using an alternative measure of CEO narcissism (CEO pronoun usage), we find consistent results to support the hypothesis that narcissistic CEOs make more share repurchase announcements.

Our study contributes to several strands of the literature. First, the results contribute to the literature on the impact of CEO narcissism on corporate decision-making. The study introduces an additional motive for the growing share repurchase activities: *CEO narcissism*. This provides an insightful addition that share undervaluation may not be the prime motive for share repurchase announcements. However, narcissistic CEOs' grandiose nature makes them always perceive their companies as undervalued.

The paper also makes some indirect contributions to the corporate governance literature. We find support for Li & Tang's (2010) report that poor governance escalates the impact of CEO discretion in firms. We demonstrate this by finding a significant positive relationship between repurchase announcement and narcissistic CEO doubling as the chairperson of the board of directors.

The results of this study have important implications for policymakers and managers. As firm CEOs are key decision-makers, their psychological traits – narcissism- are essential for the firm's decisions. Although research has associated CEO narcissism with authority, self-reliance and supremacy that can foster leadership effectiveness, promote company performance, and be attractive to loyal employees (Hogan and Kaiser 2005; Maccoby 2000). Narcissistic CEOs are likely to act on their characteristics to perceive their companies as undervalued and announce more repurchases. Thus, when companies are recruiting CEOs, they should consider their psychological traits and capabilities, which may also influence the firms' path for share repurchases

The rest of the paper is organised as follows. Section 2 provides literature on share repurchase and CEO narcissism. Section 3 describes how data is collected, the definition of key variables, and the sample construction. Section 4 presents empirical analysis and the baseline results of the study. In Section 5, we address endogeneity concerns, and Section 6 concludes the study.

2 Data and Sample Selection

To test the relationship between CEO narcissism and share repurchases, the current study uses a firm-year panel dataset. The sample begins with all firms that have been in the S&P500 in the period between 2000 and 2018 (882 unique firms and 2245 unique CEOs). We limit our study period to 2000 because we collect some data from Boardex that do not have data prior to 2000. We delete financial (SIC codes 6000-6999) and utility (SIC code 4900-499) firms (208 unique firms and 514 unique CEOs were deleted). Further, we delete firms and CEO observations where we are unable to collect information on the CEO narcissism score (97 unique firms and 613 unique CEOs deleted). The final panel dataset consists of 7,686 firm-year observations for 577 unique firms and 1,118 unique CEOs.

To identify repurchase announcements made by the 577 unique firms over the period 2000 to 2018, we search the Thomson One database. Repurchase announcement is included in our sample if the firm report either the dollar value of shares they intend to repurchase or the percentage of shares they sought to repurchase. We now define our announcement indicator variable, which is equal to one when a firm makes a repurchase announcement and zero otherwise. In addition, we examines the dollar amount of shares the firm targets to repurchase.

Like Grullon & Michaely (2002), we collect data on actual share repurchases from Compustat. This allows us to create our actual repurchase indicator, which takes the value of one when a firm makes an actual repurchase in a year and zero otherwise, and examines the dollar amount a firm spends on repurchase in a fiscal year. From Compustat and Boardex, we obtain a set of control variables that might influence a firm and a CEO's decision to announce and/or repurchase shares. We then merge the data on CEO narcissism and other firm and CEO-level control variables that might affect share repurchase decisions.

3.1 Measuring CEO Narcissism

Previous research has indicated that it is challenging to get CEOs to complete the narcissism personality inventory (NPI) since firm executives are reluctant to take a personality test. Hence, an unobtrusive measure such as signature size is used to capture the narcissism traits. Ham et al. (2018) report that the area per character signature size measure of narcissism correlates with the Narcissistic Personality Inventory (NPI) scores. The authors demonstrate the robustness of this in many ways, even after controlling for overconfidence. In addition to the novel nature of the measure, the study chooses to use it to capture CEO narcissism because it is theoretically grounded in psychology and personality literature (Zweigenhaft, 1977). We obtain every CEO's most recent signature from the annual report or the proxy statement. In cases where the CEO's signature is not present in the proxy statement or annual report, we check other online sources for the CEO's signature.

For example, Warren Buffet, CEO of Berkshire Hathaway's signature was retrieved from a report he shared online[4]. Signature size is measured as the area per character. A rectangle is drawn around each CEO's signature, where each side of the rectangle touches the extreme endpoints of the signature. The area is the length × width (in centimetres) of the rectangle. The number of characters in the CEO's sign name then divides the area. Since narcissism is a stable personality trait as detailed by the psychology literature (Raskin & Terry, 1988), we compare the current CEO's signature to that of the early years of the CEO appointment to ensure that the CEO's signature

[4] See https://www.worthpoint.com/worthopedia/warren-buffett-autograph-signed-1729242578

does not change over time. In instances where there is a change in CEO signature, we use the recent signature. For example, Frank Martire of Fidelity National Information Service had different signatures in 2009[5] and 2013[6]. To validate our signature size measure, we compare our descriptive statistics with that of Ham et al. (2018) by limiting our sample to their sample period and find a mean of 0.485, which is similar to the of 0.493 reported by Ham et al. (2018).

3.2 Other control variables

Data on the firm and CEO-level control variables that might influence a CEO's decision to repurchase shares were collected from Boardex, Datastream and Compustat. Firm-level control variables include firm size, leverage, market to book, prior year stock return, cash holding, cashflow, cash flow volatility, capital expenditure and dividend. CEO-level controls include age, gender, duality, board size, percentage of shares owned by CEO, CEO tenure, CEO equity-linked compensation and outside directorship. All these variables are defined in the appendix.

3.3 Descriptive statistics

After merging the hand-collected CEO narcissism score with all firm and CEO-related data, we winsorise all variables at the 1st and 99th percentile to eliminate all outliers, which may influence the results of the study. Table 1 reports summary statistics for all the variables used for the study. Panel A reports summary statics for firm related characteristics while Panel B reports CEO-related summary statistics. Panel A of Table 1 reports that, on average, 17.2% of the sample announce a repurchase and 67.9% make the actual repurchase. CEOs can make a bargain profit of 1.5% of the actual repurchase price on average. The sample mean profitability is 15%, with a mean capital expenditure of 4.9% of total assets; cash is 13.9% of the total asset on average.

From Panel B, the mean CEO age is 56 years, CEO tenure is five years, and the Female CEOs comprise 3.4% of the sample. On average, CEOs own 6% of company shares, and the average narcissism score is 0.479, ranging from 0.107 to 2.062.

Table 2 reports the Pearson Correlation matrix for the variables used in the study. The narcissism score is negatively correlated with the profitability of the firm. This is not surprising considering the reported negative relationship between firm performance (ROA) and CEO narcissism (Ham et al., 2018). In addition, there is a positive correlation between CEO narcissism and the repurchase announcement, while there exists a negative relationship between CEO narcissism and actual repurchase.

[Insert Table 1 & 2 Here]

4 Baseline Analysis

4.1 Are narcissist CEOs more likely to announce share repurchases?

One of this study's primary objectives is to examine the relationship between CEO narcissism and the announcement of share repurchases. This is first understood by using a logit regression model where the dependent

[5] See page 6 of 2009 Fidelity National Information Service Annual Report
[6] See page 5 of 2013 Fidelity National Information Service Annual Report

variable is the announcement indicator (see equation 1). Also, we capture the relationship between narcissism and the targeted amount of repurchase using a Tobit regression model (see equation 2).

$$Announcement\ Indicator_{i,t} = \alpha + \beta Nacissism_{i,t} + \theta X_{i,t} + \varphi Y_{i,t} + \delta_t + \theta_i + \varepsilon_k \ldots\ldots (\mathbf{1})$$
$$Announcement\ Value_{i,t} = \alpha + \beta Nacissism_{i,t} + \theta X_{i,t} + \varphi Y_{i,t} + \delta_t + \theta_i + \varepsilon_k \ldots\ldots\ldots (\mathbf{2})$$

In the above equations, the announcement indicator is a dummy variable equals one if a firm announces a repurchase in a fiscal year and zero otherwise. The announcement value is a targeted repurchase dollar amount scaled by the firm's total assets at the end of the fiscal year. Narcissism is a measure of CEO narcissism. X and Y are vectors of CEO and firm-level control variables that may affect a CEO's decision to announce shares repurchase. δ_t and θ_i represent year fixed effects industry fixed effects respectively. We estimate the announcement indicator regression with a logit model, and the announcement value regression with a Tobit model with a lower bound of zero. In both models, standard errors are clustered by firm.

The results of the regression analysis are reported in Table 3. Columns 1 and 3 examine the likelihood of a narcissist CEO announcing a repurchase. Columns 2 and 4 examine the targeted dollar amount of shares a narcissist CEO intends to repurchase. In columns 3 and 4, the primary variable of interest, narcissism, is an indicator variable - *Highly narcissist Dummy* which takes the value of one if CEO narcissism score is greater than the 75th percentile score of the sample narcissism and 0 otherwise. The results indicate that narcissist CEO have a greater likelihood of announcing a share repurchase and a significantly larger dollar amount of the targeted shares to be repurchased. The results are significant even with or without year and industry fixed effects. The reported results are economically meaningful; from column 1, a one standard deviation increase in the area per character narcissism measure leads to a 16.1% increase in the likelihood of a share repurchase announcement. Also, a one standard deviation increase in the area per character narcissism measure increases the dollar amount of targeted repurchase by 25.3% (see column 2).

Further, a high narcissist CEO (above 75% narcissism score) has a 20.6% likelihood of announcing a repurchase and increases the dollar amount of repurchase by 43%. Prior research has documented that narcissists have a strong sense to reaffirm their prestige and power among their peers and hence are expected to act on these desires by announcing more repurchases (Raskin & Terry, 1988). Narcissist CEOs have a continuous need to dominate the environment and perceive the world as a stage and continuously seek the protagonist's role (Gerstner et al., 2013). Narcissist CEOs have a strong sense of superiority and have a grandiose view. They consider themselves unique, hence taking advantage by announcing more repurchases to give room for when and how much to repurchase without going back to the board for approval. More so, unlike dividends, a CEO does not commit to complete or distribute cash regularly to shareholders after announcing a repurchase. The flexible nature of a repurchase allows a narcissist CEO to take advantage and announce more repurchases. Further, the grandiose nature of narcissist CEO may distort the view they have for their firm and consider them as undervalued whiles they are not.

From Table 3, we find that young CEOs are more likely to announce a share repurchase. The more a CEO grows older, the lesser the frequency of repurchase announcements they make and the dollar value of the targeted amount. The findings are consistent with Hambrick & Mason (1984), suggesting that older CEOs have less physical and mental ability to be chasing new and challenging ideas and hence unlikely to take the risk to announce

or repurchase share. Male CEOs are more likely to announce repurchases than female CEOs. From the table, firms with larger cash are likely to announce a repurchase and target a larger dollar amount to repurchase. This explains that companies who do not face financial constraints are more likely to announce repurchase and target a larger dollar amount to repurchase. Also, firms with low growth opportunities are likely to announce a repurchase and target to purchase a higher dollar amount of shares. The coefficient of other control variables used in the study is consistent with prior research findings.

[Insert Table 3 Here]

4.2 Identification Test

4.2.1 Endogeneity Concern

The above results suggest that there is a strong association between CEO narcissism and the likelihood of share repurchase announcement. However, the appointment of a narcissist CEO by a firm may be endogenous. According to Malmendier & Tate (2005), some companies are more interested in the personal characteristics of a CEO before an appointment. This means that a firm may appoint a narcissistic CEO because of such narcissistic traits, and hence the appointment of such CEOs may be endogenous. Some boards may even consider the narcissist characteristics of a CEO before an appointment. Ham et al. (2018) find narcissist CEOs perform poorly and companies may consider such characteristics before appointments. This may be a motivation for some firms to employ some CEOs with some particular characteristics. If firms appointing narcissist CEOs are also more likely to announce share repurchase, then there is some level of selection bias.

4.2.1.1 Selection Bias

We control for the possibility of narcissist CEO selected to some firms with certain characteristics by following a two-stage process (Petrenko et al., 2016). First, we regress the area per character narcissism measure against a set of antecedent and contemporaneous variables. Using antecedent variables, we are able to capture the entry condition for the CEO and these variables are measured in the year prior to the individual appointed the CEO of the firm. These variables include; firm size, Cash flow, Cash flow volatility, Research and Development, ROA, Slack, Market to Book, Capital Expenditure, Dividend pay-out, Book Leverage, Stock Return. Like Petrenko et al., 2016, we account for the possibility that narcissist CEO tendencies may be stimulated by early improvement in performance, hence we include change in ROA in the first year of CEO appointment (Chatterjee & Hambrick, 2007). We also include the following variables in the first year of the CEO appointment: CEO duality, CEO share ownership and board size. Further, we control for the possibility of a narcissist CEO drawn into some industries by including the 48 Fama & French industry classification. Using this regression model, we finally predicted narcissism score for each CEO and include that as an endogeneity control in our baseline regression. We report the results of this analysis in Panel A of Table 4. From Panel A of Table 4, our result is statistically and qualitatively similar to our baseline regression. This indicates that the appointment of narcissist CEOs in our sample is not driven by some firm and CEO related characteristics.

4.2.1.2 Exogenous CEO turnover

In addition to the above analysis, we also attempt to address the above endogeneity concern highlighted above using exogenous CEO turnover. We examine the effect of CEO narcissism on the announcement of repurchase

when the level of CEO narcissism changes around exogenous CEO turnover events. Following Eisfeldt & Kuhnen, (2013)(Eisfeldt & Kuhnen, 2013) and Fee et al., (2013), we define CEO exogenous turnover as events in which the CEO of a firm is changed because of health conditions or death or natural retirement due to age. From our sample, we identify 233 firms with CEO exogenous turnover with 115 firms where the narcissism score of the replacing CEO is greater than the departing CEO. We merge the turnover sample with our repurchase data and keep only turnover events where there is at least one share repurchase in the years before or after the exogenous CEO turnover.

To better establish the relationship between narcissist CEOs repurchasing announcement activities, we estimate a difference in difference regression around CEO turnover with the equation below.

$$Announcement\ Indicator_{i,t} = \alpha + \beta_1 Nas\_Coming_{i,t} \times Post_{i,t} + \beta_2 Nas\_Coming_{i,t} + \beta_3 Post_{i,t} + Controls + \varepsilon_k \quad (3)$$

$$Announcement\ Value_{i,t} = \alpha + \beta_1 Nas\_Coming_{i,t} \times Post_{i,t} + \beta_2 Nas\_Coming_{i,t} + \beta_3 Post_{i,t} + Controls + \varepsilon_k \quad (4)$$

Nas_Coming is a dummy variable equal to one for firm-year observations where the replacement CEO has a narcissism score greater than the departing CEO and zero otherwise. Post is a dummy variable equal to one for firm-year observations after a change in CEO and zero for years before CEO change. The variable of interest in this analysis is $Nas\_Coming_{i,t} \times Post_{i,t}$ and the coefficient β_1 is indicative of the impact of CEO narcissism on share repurchase announcements. The baseline results indicate an increase in the likelihood of repurchase announcements following CEO turnover events where there is an increase in narcissism. The results can be impacted by confounding events and hence we restrict firm year observations to four years before and after turnover events. The results of this analysis are presented in Panel B of Table 4.

Consistent with the baseline results, the coefficient $\beta_1$is positive and significant even with or without controls. Overall, the results support the interpretation of our analysis. Our results remain significant even after dropping the year of CEO change to prevent the influence of departing and replacing CEOs in that year. Our results explain that CEO narcissism plays a key role in the repurchase announcements of firms.

4.2.2 Controlling for CEO Overconfidence

Research has indicated some similarities between narcissism and other behavioural traits like overconfidence which has been well studied in the finance literature[7]. Considering this, a potential concern of this study is that the narcissism measure used might be measuring the overconfidence of a CEO. To ensure that the overconfidence of a CEO does not influence our results, we construct an overconfidence measure using the CEO's options holdings (Malmendier & Tate, 2005; Banerjee et al., 2018). CEOs have their human capital concentrated in the company they manage and would rationally exercise and cash out any stock option that is in the money to diversify their firm-specific risk (Korczak & Liu, 2014). However, keeping a highly vested in the money stock option would indicate some form of overconfidence of the CEO. CEO overconfidence is defined as the measure of how in the

[7] For Overconfidence literature see: Banerjee, Humphery-Jenner, & Nanda, 2018; Banerjee, Humphery-Jenner, Nanda, et al., 2018; T. C. Campbell et al., 2011; Deshmukh et al., 2013; Goel & Thakor, 2008; Huang et al., 2016; Humphery-Jenner et al., 2016; Malmendier & Tate, 2005

money CEO options are, which is calculated by dividing the value per option[8] by the share price at the end of the fiscal year. Like Banerjee et al. (2018), we use a continuous overconfidence variable.

In this study, we control for CEO overconfidence in two ways. First, we run the baseline regression controlling for CEO overconfidence (including CEO overconfidence in our model as an independent variable). From columns 1&2 of Table 4 below, our results remain unchanged. Second, we regress overconfidence on narcissism and predict the residual from the regression (residual narcissism) and use that in place of CEO narcissism in our basline model. This procedure takes away the part of narcissist behaviour affected by overconfidence. From columns 3&4 of Table 4, we find a positive and significant relationship between narcissism and the likelihood of repurchase announcement which supports our baseline analysis. Further to that, unreported results show CEO narcissism is associated with poor financial performance measured by Return on Asset and operating cashflow (Ham et al., 2018). However, CEO overconfidence is positively associated with firm performance. Considering the above set of results and discussions, the study concludes that the results reported are not driven by the overconfidence of a CEO.

[Insert Table 4 Here]

5.0 Additional Analysis

5.1 Does CEO power facilitate repurchase announcements by Narcissist CEOs?

Narcissist CEOs with more power in an organisation are likely to face less resistance from the board and are likely to make more repurchase announcements. Bonaimé et al. (2014) report that poorly executed repurchase decisions are common in firms with poor corporate governance. Further, CEO hubris and risk-taking abilities are higher when the CEO has more power and discretion without resistance (Li & Tang, 2010). This implies that a narcissist CEO with more power – a CEO who is not subject to scrutiny or opposition is likely to act on their own beliefs and repurchase based on their distorted views. One way to increase the power of a CEO is by appointing him/her as the chair of the board of directors (Duality).

There are several studies on the impact of a CEO also serving as the chairperson of the board of directors on firm outcomes. Early research by Donaldson & Davis (1991) finds that CEOs with dual roles as chair of the board lead to a concentration of power. Even though the separation of CEO and chair of board protect shareholders' interest as argued by the agency theory, the study finds that the concentration of power improves operational efficiency. Alternatively, Patton & Baker (1987) report that the dual role of a CEO as chair of the board causes some agency problems. This is because the board's role in supervising the CEO on behalf of shareholders is lost. Also, CEO duality can negatively affect a company's performance since the supervision function of the board of directors is weakened by duality.

From the above, narcissist CEOs with more power, as evidenced by their dual role are likely to act on their distorted views and announce more share repurchase since such CEOs are insulated from internal and external

[8] Value per option is defined as value of unexercised exercisable option divided by number of the unexercised exercisable option)

discipline. The study captured the role of duality in narcissist repurchase announcement decision with the models below:

$$Announcement\ Indicator_{i,t} = \alpha + \beta_1 Nacissism_{i,t} \times Duality_{i,t} + \beta_2 Nacissism_{i,t} + \beta_3 Duality_{i,t} + \theta X_{i,t} + \varphi Y_{i,t} + \delta_t + \theta_i + \varepsilon_k \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . \mathbf{(5)}$$

$$Announcement\ Value_{i,t} = \alpha + \beta_1 Nacissism_{i,t} \times Duality_{i,t} + \beta_2 Nacissism_{i,t} + \beta_3 Duality_{i,t} + \theta X_{i,t} + \varphi Y_{i,t} + \delta_t + \theta_i + \varepsilon_k \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots . \mathbf{(6)}$$

Duality is an indicator variable equal to one if the CEO holds a dual role as chair of the board and zero otherwise. We modify the baseline model to include an interaction of Duality and CEO Narcissism. All other variables are defined in the appendix.

The results in Table 5 indicates that the coefficient of the interaction term of narcissism and duality (β_1) is positive and significant in both models. Economically, the results mean that narcissist CEOs with more power evidenced by their dual role as chairperson of the board are likely to announce more repurchase and target to repurchase a larger amount of shares because of their grandiose, constant quest for attention and selfish beliefs. The reported results are economically meaningful; a one standard deviation increase in the narcissism of a CEO with a dual role as the chair of the board will increase the likelihood of a repurchase announcement by 32.1%. Comparing this to the above results in Table 3, the dual role of a narcissistic CEO as the chair of the board increases the frequency of announcing a repurchase by approximately 5%. Also, a one standard deviation increase in the narcissism of a CEO with a dual role as the chair of the board will increase the dollar amount of targeted repurchase by 30.1% (see column 2 of Table 5). The above analysis indicates that the repurchase announcement activities of narcissist CEOs are more pronounced in poorly governed firms.

[Insert Table 5 Here]

5.2 Are Narcissist CEOs sensitive to stock undervaluation when announcing repurchases?

One of the most prevailing reasons behind the US growing share repurchase activities is the undervaluation hypothesis. Managers use the announcement of share repurchase to signal to the market that their firms are undervalued. The promise to disburse cash to shareholders through the repurchase announcement is seen as a positive signal for the firm's future earnings potential. This could also signal that the firm is currently undervalued without any promising future cash flow. According to Comment & Jarrell (1991), a firm has an incentive to repurchase its shares when it is considered undervalued. They further assert that firms with recent negative returns are mainly regarded as undervalued and likely to repurchase their shares.

Previous studies has reported that narcissist CEOs have grand views about themselves; they overestimate their capabilities, see themselves as unique among their colleagues, and are unlikely to accept other people's opinions, even that of their employees'. Considering the grandiose nature of narcissist CEOs, they are likely to see their companies as undervalued even if they are not and announce repurchases. In examining this, the sample is divided into two groups - *Undervalued* and *Non-undervalued* firms, consistent with Comment & Jarrell (1991). A firm is classified as undervalued if the previous year's stock return is negative, and the opposite is classified as not undervalued. We further introduce an additional sample for this analysis called *highly non-undervalued*. This sample includes only firms with prior year stock returns greater than the 75th percentile of the sample stock return.

This is to help understand whether the distorted view of a narcissist affects their repurchase activities despite their company shares being far away from undervalued. We would expect narcissist CEOs to announce repurchase even when their firms have a positive prior-year stock return. We run the same regression as in equations 1 and 2 above using the samples and report results in Table 6.

From Table 6, columns 1&2 report regression results for the undervalued sample (negative prior-year return), columns 3&4 reports result for the non-undervalued sample (positive prior-year return), and 5&6 report result for the highly non-undervalued sample. From the results, there is a positive relationship between narcissist CEO in undervalued firms and the frequency of share repurchase announcements. However, this is insignificant. Also, in instances where a narcissist CEO in undervalued firms announces a repurchase, they target a larger dollar amount (see column 2). This is expected because when firms are undervalued, CEOs who are even not narcissists are likely to announce a large dollar amount of shares to be repurchased. Further, we find the relationship between narcissism and share repurchase to be positive and statistically significant for both the frequency of repurchase announcement and the dollar amount of shares targeted in firms that are not undervalued. From column 3, a one standard deviation increase in the area per character signature size narcissism measure leads to an 18.3% increase in the frequency of announcing a share repurchase and a 25.9% increase in the dollar amount of the targeted shares to be repurchased (see columns 3 & 4 of Table 6). Further to the above, the highly non-undervalued sample also exhibits a positive relationship between CEO narcissism and the frequency of announcement and targeted dollar amount. The relationship in this sample is stronger; a one standard deviation increase in the CEO narcissism score leads to a 39.4% increase in the frequency of announcing a share repurchase (see columns 5).

Considering the above, narcissist CEOs' frequent repurchase activities are related to distorted undervaluation views they have for their firms, unlike Brav et al. (2005), who report that managers who announce share repurchase rank undervaluation (negative prior-year return) as the prime motive. Our results in Table 6 indicate that narcissist managers do not rank undervaluation as a primary reason for repurchase announcement. The grandiose nature of the narcissist CEO influence how they view their companies. They consider their companies as undervalued whilst they are not because they perceive their companies to have a value above what is reported by the market. This distorted view of narcissist CEOs influences them to announce repurchases to indicate their disagreement with how their shares are priced. The above discussion shift the attention squarely from undervaluation to CEO narcissism as an explanation for the growing share repurchase announcement.

[Insert Table 6 Here]

4.5 Are narcissistic CEOs more likely to make actual share repurchases?

From the above discussion, it is essential to examine the likelihood of a narcissistic CEO making an actual repurchase of the shares announced. This is examined using a logit model, where the dependent variable is an actual repurchase indicator that is equal to one when a firm makes an actual repurchase in a year as reported by Compustat and zero otherwise. The study uses a Tobit model to examine the relationship between narcissism and the dollar amount of actual repurchase. Using the same independent variables in equations 1 and 2 above, the study examines these relationships.

The results of the regression analysis are reported in Table 7. Columns 1 and 3 examine the likelihood of a narcissist CEO making an actual repurchase. Columns 2 and 4 examine the actual dollar amount of shares a

narcissist CEO repurchase. In columns 3 and 4, the main variable of interest, narcissism is an indicator variable - Highly narcissist Dummy equal 1 if CEO narcissism score is greater than the 75th percentile score of sample CEO narcissism and 0 otherwise.

The results in Table 7 show a negative relationship between narcissist CEOs and the likelihood of actual repurchase and the dollar amount of actual repurchase. This holds even in regression with or without control variables. The results in column 1 of Table 7 indicate that a one standard deviation increase in the area per character narcissism measure leads to a 14.7% less likelihood of a CEO making an actual repurchase. Also, from column 3, a high narcissist CEO (above 75% narcissism score) has a 15.6% less likelihood of making an actual repurchase and this is significant at 5%. Bonaimé (2012) suggests that there is a reputational cost of not completing a repurchase announcement. The study finds that larger firms are more likely to make an actual share repurchase. This is consistent with Jagannathan & Stephens (2003), who find large firms to be frequent repurchases. Also, the study finds profitable firms to be efficient repurchasers. This explains that profitable firms have enough cash to cater for existing investment opportunities and also transfer cash to shareholders.

Consistent with expectations, the study finds CEOs with more control in the organisation by holding a dual role as the chairperson and CEO to be positively related to the likelihood of an actual repurchase. This means that CEOs with dual roles have more influence on the board, which enables them to undertake actual repurchase activities without resistance. Further, the number of outside directors on the board, which indicates the level of CEO's connectedness is positively related to the frequency of actual repurchases. This explains that firms with more outside directors on their board are likely to uphold their reputation by fulfilling their repurchase announcement promise. Finally, like Stephens & Weisbach (1998), the study finds that actual share repurchases are negatively related to prior year stock performance, indicating that firms are likely to make more actual repurchase depending on the level of their perceived undervaluation.

[Insert Table 7 Here]

4.6 Do narcissistic CEOs repurchase at bargain price?

Extant finance literature has established the timing and performance of repurchase announcements extensively (Vermaelen, 1981; Dann, 1981). However, the timing of an actual repurchase can be very different from the timing of the announcement. In this section, the study investigates whether narcissist CEOs repurchase their shares at prices that are below market price. Narcissist CEOs are very selfish and will only act for their benefit or the benefit of their firm. We would expect a narcissist CEO to repurchase at a discount for the benefit of their firm. According to a survey by Brav et al. (2005), CEOs consider share repurchase to be more flexible than dividends and hence use such flexibility to time the market and repurchase shares when prices are low. In December 2003, the Securities and Exchange Commission amended Rule 10b-18. The new amendment requires firms to report all information related to their actual repurchase activities in the quarterly financials. Considering the rule, repurchasing at lower prices will be difficult since it prevents firms from bidding up the price. In this regard, the study limits the sample to periods after 2004 to have information on the actual repurchase price.

We start this analysis by considering the difference between annual repurchase price and annual share price, which is called "*Bargain*" in this study. The annual repurchase price is the average quarterly repurchase price from Compustat, and the market price is calculated as the average monthly closing price. Like Ben-Rephael et al.

(2014), we define the variable of interest, *Bargain*, for year t and firm i, as the average share price less the average annual repurchase price paid by a firm divided by the average market price. A negative *Bargain* means the firm repurchases at a price higher than the market price, and a positive *Bargain* means otherwise. From Table 1, the mean *Bargain* from the sample is 1.5%, indicating that, on average, firms in the sample repurchase at prices lower than the market price.

$$Bargain = \frac{MktPrice - RepPrice}{MktPrice} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \boldsymbol{eq.7}$$

Table 8 reports the panel and logit regression results of bargain and narcissism scores with firm and CEO-related control variables. Columns 1 and 3 have the continuous variable bargain, while columns 2 and 4 have an indicator variable "*good bargain,*" which is one when the bargain is positive and zero otherwise. Remember that looking at the definition of the bargain variable, the more positive the *Bargain*, the more favourable the price of the repurchase. Accordingly, the more positive the coefficient of the narcissism variable, the lower the price the narcissist CEO is repurchasing shares.

Table 8 shows a positive coefficient for narcissism, which indicates that narcissist CEOs can repurchase shares below market prices. This indicates that narcissist CEOs can time the market and buy shares at lower prices. From column 2 of Table 8, a one standard deviation increase in the narcissism score leads to a 10% likelihood of a CEO repurchasing below market price. This indicates that narcissist CEOs are efficient repurchasers and are good at timing the market. This results reenforce the selfish nature of narcissist CEOs. They are less likely to make an actual repurchase of their shares and only do so when it is to their benefit.

[Insert Table 8 Here]

6 Robustness Test

5.3 Alternative Measure of CEO Narcissism

In an attempt to check the robustness of my main hypothesis in this study, we use an alternative measure of narcissism. Rankin and Shaw (1988) find a correlation between the ratio of first-person singular pronouns to first-person plural pronouns usage with the NPI scores. This is robust after controlling for some traits like extraversion, neuroticism, and locus of control. Using this measure of narcissism, Aktas et al. (2016) finds CEO narcissism to be associated with high bid premiums in acquisitions and a low probability of deal completion. We replace the area per character signature size measure of narcissism with the first-person pronoun usage of a CEO in the Quarterly conference call. Using machine learning software (R-studios), we tabulate the personal pronoun usage by CEOs in the quarterly conference calls in the first two years in office as a CEO. We only focused on the questions and answers section of the conference call since the presentation aspect can be scripted and may be difficult for narcissist CEOs to express their narcissistic features. The narcissism score is measured as the ratio of first-person singular pronouns to total first-person pronouns in the CEO speech in the questions and answers section of the quarterly conference calls. Replacing pronoun usage as the main independent variable in equations 1&2, we test the baseline analysis and report the results in Table 9. The estimated coefficient of the pronoun usage for the announcement indicator and value regression are 0.278 and 0.039 respectively, which are all statistically

significant. These results further confirm our baseline analysis that narcissistic CEOs are more likely to make repurchase announcements and announce large repurchase values.

[Insert Table 9 Here]

6 Conclusion

In this paper, we contribute to the existing literature on managerial characteristics and their impact on corporate decisions by examining the influence of CEO narcissism and their repurchase activities. The existing literature has focused on how narcissism affects the performance, earnings management, and CEO's risk-taking activities. This paper aims to extend the literature by examining how the narcissism of a CEO affects their share repurchase activities.

The study uses the area per character signature size (Ham et al., 2018 and Zweigenhaft, 1977) to measure CEO narcissism. We find that narcissistic CEOs are more likely to announce a share repurchase and target to repurchase a higher dollar amount. Further, narcissistic CEOs do not repurchase shares because of the undervaluation hypothesis documented by (Comment & Jarrell, 1991) and (Dittmar, 2000). Narcissistic CEO announce repurchase because of their grandiose nature. They perceive their companies' shares as undervalued even when they are not undervalued and announce a repurchase to disagree with how the market has priced their shares.

Also, we find governance to play a role in the repurchase behaviour of a narcissistic CEO. In firms where a narcissistic CEO holds a dual role as the board of directors' chairperson are more likely to act on their behavioural biases and announce more repurchases. However, we find that narcissistic CEOs are less likely to make an actual repurchase and allocate less dollar amount to the actual repurchase in the firm they manage. When narcissistic CEOs make an actual repurchase, they repurchase at a price below the market price.

The findings of this paper contribute to the literature on CEO narcissism and share repurchases. The growing repurchase activities in corporate America have attracted many debates, and our results indicate that repurchase activities are more prone to some particular types of firms. Narcissistic managed firms are more likely to perceive their firms as undervalued because of their grandiose nature influencing them to announce more repurchase to disagree with how the market is pricing them. The paper's findings indicate that proper governance is essential to control the excessive repurchase activities of these CEOs.

The results of this study have important implications for policymakers and managers. As firm CEOs are key decision-makers, their psychological traits – narcissism- are essential for the firm's decisions. Although research has associated CEO narcissism with authority, self-reliance and supremacy that can foster leadership effectiveness, promote company performance, and be attractive to loyal employees (Hogan and Kaiser 2005; Maccoby 2000). Narcissistic CEOs are likely to act on their grandiose views to perceive their companies as undervalued and announce more repurchases. Thus, when companies are recruiting CEOs, they should consider their psychological traits and capabilities, which may also influence the firms' path for share repurchases

Tables and Appendix

Appendix: Description of Variables

The table provides a detailed description of the key variables used in the study with sources. All continuous variables are winsorized at 1%.

Firm related	Description	Source
Profitability	Operating income before depreciation scaled by the book value of totals assets	Compustat
Cash flow	Income before extraordinary items plus depreciation, scaled by book value of total assets.	Compustat
Cash flow volatility	Standard deviation of annual operating cashflow (OIBDP) scaled by total assets over the previous 3 years.	Compustat
Research and Development	Ratio of Research and development cost to total asset	Compustat
Slack	Cash and short-term investments scaled by the book value of total assets.	Compustat
Market to Book	Market value of Asset scaled by the book value of asset.	Compustat
Firm Size	Natural logarithm of the book value of total assets.	Compustat
Capital Expenditure	Measured as capital expenditures (CAPX) over total assets (AT).	Compustat
Cash Dividend payout	Annual cash dividends scaled by Net incomes (NI) during the measurement period. When net incomes are zero or negative, cash dividend payout is set to missing.	Compustat
Book Leverage	Long-term debt plus current debt, scaled by book value of asset.	Compustat
Announcement Indicator	This is an indicator variable equal to one if a firm announce a repurchase in a year and zero otherwise.	Thormsonone
Actual repurchase Indicator	An indicator variable equal to one if a firm make an actual repurchase in a year and zero otherwise.	Thormsonone/ Compustat
Announcement Value	Target repurchase dollar amount scaled by total asset.	Compustat
Actual repurchase value	Actual cash repurchase scaled by total asset.	Compustat
Return	Measured as the average monthly return for a year.	CRSP
Bargain	This is the percentage difference between the average market price and the average quarterly repurchase price. We compute the market price as the monthly average of daily closing prices from CRSP.	CRSP/Compustat
Good Bargain	This is an indicator variable equal to 1 if Bargain is greater than zero and 0 otherwise.	CRSP/Compustat

CEO Related	Description	Source
CEO Age	Age of a CEO in a year	Execucomp
CEO Tenure	Measured as the number of years that the CEO has been the CEO of the company	Execucomp
CEO Gender	This is an indicator variable that is equal to one if the CEO is a male and zero otherwise.	Execucomp
Equity-linked Compensation	Equity-linked compensation as a percentage of total compensation (TDC1). Equity-linked compensation is defined as option awards plus stock awards. Suppose equity-linked compensation based on this definition cannot be calculated because of missing data. In that case, equity-linked compensation is alternatively defined as total compensation (TDC1) – salary plus bonus (TOTAL_CURR) – non-equity compensation (NONEQ_INCENT).	Execucomp
CEO Share ownership	CEO Share ownership is the natural logarithm of the number of shares that are owned by the CEO at the end of the year excluding options granted	Execucomp
CEO Duality	Duality is an indicator variable which is one when the CEO is also the chairman of the board and zero otherwise	Datastream
Outside Directors	Outside Directors is measured as the ratio of the number of outside directors to total directors on the board of the company at the end of a year.	Execucomp
Executive Option Grant	Executive option is the natural log of the total option granted to executives in year t+1	Execucomp
Narcissism Variable	Narcissism score is the area per character signature size measure of narcissism	
Highest Narcissism Dummy	An indicator variable that is equal to 1 if a CEO's narcissism score is greater than the 75th percentile and zero otherwise	

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Table 1: Summary Statistics

The table presents descriptive statistics for firm and CEO related variables used in the study for the period 2000 to 2018. N, SD, Min, Median and Max denote the number of observations, Standard deviation, Minimum, Median and Maximum number of each variable used, respectively. Detailed description of these variables is explained in Appendix.

	N	Mean	Std. Dev.	Min	Median	Max
Panel A: Firm Related						
Repurchase Indicator	7686	0.172	0.378	0.000	0.000	1.000
Actual Repurchase Indicator	7686	0.679	0.467	0.000	1.000	1.000
Announced Value	7686	0.026	0.092	0.000	0.000	1.371
Actual Repurchase	7686	0.039	0.061	0.000	0.013	0.516
Profitability	7685	0.151	0.083	-0.565	0.145	0.463
Firm Size	7686	8.930	1.325	5.339	8.837	12.762
Research and Development	7686	0.028	0.048	0.000	0.005	0.299
Market to Book	6924	1.822	1.366	0.227	1.422	14.176
Capital Expenditure	7668	0.049	0.043	0.004	0.035	0.326
Cash Dividend payout	7672	0.245	0.585	-4.638	0.152	8.765
Cash flow volatility	5830	0.027	0.038	0.001	0.017	0.576
Cash flow	7584	0.102	0.083	-0.712	0.104	0.360
Slack	7686	0.139	0.142	0.000	0.089	0.777
Book Leverage	7686	0.259	0.177	0.000	0.243	1.011
Stock Return	7293	0.012	0.032	-0.136	0.012	0.192
Bargain	4607	0.015	0.101	-0.622	0.009	0.933
Panel B: CEO Related						
CEO Narcissism Score	7686	0.479	0.260	0.107	0.416	2.062
Highest Narcissism Dummy	7686	0.250	0.433	0.000	0.000	1.000
CEO Age	7604	56.139	6.317	37.000	56.000	77.000
CEO Gender	7686	0.966	0.181	0.000	1.000	1.000
CEO Share ownership	7512	5.959	1.713	0.000	5.833	12.387
CEO Tenure	7380	5.227	4.945	0.200	3.800	31.600
CEO Duality	6316	0.711	0.453	0.000	1.000	1.000
CEO Equity linked Compensation	7662	0.468	0.481	0.000	0.527	7.405
Outside Directors	6316	0.799	0.129	0.143	0.833	0.933
Executive Option Grant	7681	0.128	0.269	0.000	0.000	1.758

Table 2: Pearson Correlation Matrix

The table presents the Pearson correlation between the variables used in the regression analysis. Variables with statistical significance at the 1%, 5% and 10% are indicated in **bold**. All variables have been winsorized at 1%. Detailed description of these variables is explained in Appendix.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Repurchase Indicator	1													
2	Actual Repurchase Indicator	**0.23**	1												
3	Announced Value	**0.63**	**0.14**	**1**											
4	Actual Repurchase	**0.26**	**0.44**	**0.31**	1										
5	Bargain	**0.03**	0.02	**0.03**	**-0.03**	1									
6	Profitability	**0.13**	**0.23**	**0.17**	**0.41**	-0.01	1								
7	Firm Size	**0.03**	**0.15**	**-0.03**	**-0.05**	**-0.07**	**-0.07**	1							
8	Research and Development	**0.03**	**-0.05**	**0.09**	**0.14**	**0.1**	**-0.09**	**-0.17**	1						
9	Market to Book	**0.1**	**0.05**	**0.12**	**0.31**	**0.16**	**0.48**	**-0.25**	**0.35**	1					
10	Capital Expenditure	-0.01	**-0.09**	-0.01	**-0.06**	-0.02	**0.17**	0.01	**-0.16**	**-0.02**	1				
11	Cash Dividend payout	-0.01	**0.04**	-0.02	-0.01	-0.01	**0.07**	**0.13**	**-0.07**	-0.01	**-0.04**	1			
12	Cash flow volatility	**-0.06**	**-0.16**	-0.01	**-0.05**	**0.03**	**-0.04**	**-0.11**	**0.13**	**0.07**	**0.18**	**-0.05**	1		
13	Cash flow	**0.12**	**0.22**	**0.15**	**0.35**	0.02	**0.78**	-0.01	**-0.11**	**0.4**	**0.18**	**0.07**	**-0.03**	1	
14	Slack	**0.02**	0.01	**0.1**	**0.2**	**0.11**	**0.03**	**-0.23**	**0.59**	**0.44**	**-0.18**	**-0.06**	**0.17**	**0.03**	1
15	Book Leverage	**-0.06**	**-0.07**	**-0.06**	**-0.09**	**-0.05**	**-0.13**	**0.15**	**-0.17**	**-0.16**	**-0.02**	**0.09**	**0.03**	**-0.21**	**-0.25**
16	Stock Return	**-0.05**	**-0.09**	**-0.02**	**-0.06**	**0.24**	**0.05**	**-0.1**	0.01	**0.19**	**-0.07**	0.01	**0.06**	**0.13**	**0.1**
17	Narcissism Score	**0.03**	**-0.02**	0.01	**-0.02**	**0.05**	**-0.07**	**0.03**	**0.02**	-0.02	-0.01	**0.03**	-0.02	**-0.07**	**0.02**
18	CEO Age	**-0.03**	**0.08**	**-0.04**	-0.01	**-0.03**	**0.04**	**0.11**	**-0.12**	**-0.05**	**0.02**	**0.05**	-0.02	**0.04**	**-0.12**
19	Gender	0.01	**-0.04**	-0.02	0.01	0.01	-0.01	**-0.05**	0.01	**-0.02**	**0.03**	**-0.03**	**0.04**	-0.01	0.02
20	CEO Share ownership	**-0.02**	0.02	**-0.02**	-0.01	0.02	0.01	**0.14**	0.01	**0.08**	**0.1**	-0.02	0.01	**0.04**	**0.07**
21	CEO Tenure	**-0.02**	**0.02**	**-0.02**	0.02	0.02	0.02	0.01	**0.05**	**0.08**	**0.08**	-0.01	**-0.03**	**0.05**	**0.05**
22	Duality	-0.01	0.02	-0.01	-0.02	-0.02	**0.07**	**0.14**	**-0.12**	**-0.04**	**0.06**	**0.04**	**-0.07**	**0.08**	**-0.12**
23	Equity linked Compensation	**0.04**	**0.19**	**0.02**	**0.12**	**-0.03**	**0.01**	**0.18**	**0.03**	**-0.01**	**-0.02**	**0.06**	0.01	0.01	-0.01
24	Outside Directors	**0.08**	**0.22**	**0.057**	**0.11**	**-0.03**	**-0.04**	**0.17**	**0.05**	**-0.08**	**-0.07**	**0.04**	-0.01	-0.02	0.01

Table 2b: Pearson Correlation Matrix

The table presents the Pearson correlation between the variables used in the regression analysis. Variables with statistical significance at the 1%, 5% and 10% are indicated in **bold**. All variables have been winsorized at 1%. Detailed description of these variables is explained in Appendix.

		15	16	17	18	19	20	21	22	23	24
15	Book Leverage	1									
16	Stock Return	**-0.05**	1								
17	Narcissism Score	-0.01	0.01	1							
18	CEO Age	**0.05**	-0.01	**-0.02**	1						
19	Gender	**-0.02**	0.01	0.01	**0.04**	1					
20	CEO Share ownership	**-0.05**	-0.01	0.01	**0.2**	0.01	1				
21	CEO Tenure	**-0.05**	**0.02**	**0.02**	**0.38**	**0.07**	**0.39**	1			
22	Duality	**-0.03**	-0.01	0.01	**0.17**	**0.03**	**0.16**	**0.1**	1		
23	Equity linked Compensation	**0.09**	**-0.08**	**0.02**	**0.07**	**-0.07**	**-0.02**	0.01	**-0.14**	1	
24	Outside Directors	**0.11**	0.01	-0.01	**0.04**	**-0.05**	**-0.12**	0.01	**-0.09**	**0.33**	1

Table 3: Share Repurchase Announcement and CEO Narcissism

The table reports the logit and tobit regression results of the effect of CEO narcissism on the likelihood of share repurchase announcement and the dollar amount of shares announced. All dependent and independent variables are described in the appendix. The models include both year and Fama-French (1997) 48 industry fixed effects. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Announcement Indicator***	***Announcement Value***	***Announcement Indicator***	***Announcement Value***
	(1)	*(2)*	*(3)*	*(4)*
CEO Narcissism Score	0.592***	0.088***		
	(2.96)	(3.14)		
High Narcissism Dummy			0.434***	0.058***
			(3.67)	(3.57)
CEO Age	-0.018*	-0.002	-0.017*	-0.002
	(-1.90)	(-1.54)	(-1.87)	(-1.49)
CEO Gender	0.431*	0.024	0.446*	0.027
	(1.67)	(0.51)	(1.75)	(0.58)
CEO Share ownership	-0.038	-0.005	-0.042	-0.006
	(-1.10)	(-1.01)	(-1.19)	(-1.10)
CEO Tenure	-0.002	-0.001	-0.002	-0.001
	(-0.09)	(-0.60)	(-0.12)	(-0.65)
CEO Duality	-0.047	-0.004	-0.044	-0.003
	(-0.42)	(-0.23)	(-0.39)	(-0.18)
Equity linked Compensation	-0.087	-0.014	-0.085	-0.015
	(-0.71)	(-0.82)	(-0.71)	(-0.88)
Outside Directors	1.857***	0.270***	1.886***	0.276***
	(3.26)	(3.19)	(3.31)	(3.26)
Profitability	4.640***	0.926***	4.641***	0.920***
	(3.41)	(4.68)	(3.43)	(4.67)
Firm Size	0.132**	0.016**	0.133**	0.016**
	(2.41)	(2.01)	(2.43)	(2.05)
Research and Development	3.793**	0.859***	3.765**	0.857***
	(2.06)	(3.07)	(2.06)	(3.10)
Market to Book	-0.313***	-0.035***	-0.309***	-0.034***
	(-4.50)	(-3.27)	(-4.49)	(-3.21)
Capital Expenditure	2.441	0.190	2.090	0.144
	(1.35)	(0.72)	(1.15)	(0.55)
Cash Dividend payout	-0.231***	-0.037***	-0.237***	-0.038***
	(-2.86)	(-2.86)	(-2.95)	(-2.92)
Cash flow volatility	-4.958**	-0.548*	-5.092**	-0.567*
	(-2.26)	(-1.68)	(-2.34)	(-1.75)
Cash flow	2.690*	0.282	2.595*	0.270
	(1.95)	(1.37)	(1.89)	(1.33)
Slack	1.133**	0.193**	1.048*	0.180**
	(2.07)	(2.46)	(1.94)	(2.32)
Book Leverage	-0.660*	-0.082*	-0.674*	-0.085*
	(-1.70)	(-1.66)	(-1.77)	(-1.76)
Stock Return	-0.380	-0.223	-0.304	-0.210
	(-0.23)	(-0.79)	(-0.19)	(-0.75)
Con	-3.196***	-0.602***	-3.073***	-0.583***
	(-3.54)	(-4.52)	(-3.45)	(-4.42)
Observation	4616	4653	4616	4653
R-Square	0.099	0.155	0.101	0.156

Table 4: Endogeneity Concern

Panel A: Controlling for Selection Bias

The table reports the logit and tobit regression results of the effect of CEO narcissism on the likelihood of share repurchase announcement and the dollar amount of shares announced controlling for endogeneity. All dependent and independent variables are described in the appendix. The models include both year and Fama-French (1997) 48 industry fixed effects. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Announcement Indicator***	***Announcement Value***	***Announcement Indicator***	***Announcement Value***
	(1)	(2)	(3)	(4)
CEO Narcissism Score	0.568***	0.087***		
	(2.77)	(2.98)		
High Narcissism Dummy			0.432***	0.059***
			(3.57)	(3.52)
Endogeneity Control	0.046	-0.097	0.092	-0.087
	(0.02)	(-0.24)	(-1.28)	(-0.21)
Controls	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observation	4494	4529	4494	4529
R-Square	0.099	0.154	0.101	0.155

Panel B: Exogenous CEO turnover events

This table presents estimates from the Difference-in-Difference (DID) regressions of the association between CEO Narcissism and Share repurchase announcements around CEO turnover event (-3, +3). For each CEO turnover occurring in year t, we classify firm year observation into per [t-3, t-1] and post [t+1, t+3] turnover period. The Post variable takes the value of one in [t+1, t+3] and zero in [t-3, t-1]. Nas_Coming is a dummy variable equal to one for firm year observations where the replacement CEO has a narcissism score greater than the departing CEO and zero otherwise. The interaction term of the Nas_Coming and Post dummy is our variable of interest. The dependent variable is Repurchase Indicator (Announcement Value) in column 1 & 2 (3&4). All control variables are defined in Appendix. t-statistics are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Announcement Indicator		***Announcement Value***	
	(1)	(2)	(3)	(4)
Nas_Coming	-0.380	-0.217	-0.076**	-0.048
	(-1.59)	(-0.78)	(-2.09)	(-1.28)
Post	0.132	-0.841**	0.022	-0.111**
	(0.67)	(-2.39)	(0.71)	(-2.37)
$Nas\_Coming * Post$	0.504*	0.655**	0.091*	0.112**
	(1.93)	(1.99)	(1.89)	(2.21)
Cons	-2.168*	-1.109	-0.393**	-0.303
	(-1.89)	(-0.54)	(-2.22)	(-1.08)
Controls	No	Yes	No	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observation	1595	1095	1621	1096
R-square	0.099	0.159	0.137	0.246

Panel C: Controlling for CEO Overconfidence

The table reports the baseline regression after controlling for CEO Overconfidence. All Firm and CEO related variables are described in the appendix. The models include both year and industry fixed effects. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Announcement Indicator***	***Announcement Value***	***Announcement Indicator***	***Announcement Value***
CEO Narcissism	0.585***	0.087***		
	-2.93	-3.11		
CEO Overconfidence	0.35	0.048		
	-1.64	-1.54		
Residual Narcissism			0.738**	0.106***
			(2.57)	(2.73)
CEO Related Control variables	Yes	Yes	Yes	Yes
Firm Related Control Variables	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observation	4614	4651	4614	4651
R-square	0.100	0.156	0.099	0.154

Table 5: Narcissist CEO Power and Share repurchase Announcement

The table reports the logit and tobit regression results of the impact of CEO power on narcissist likelihood of share repurchase announcement and the dollar amount of shares announced. All dependent and independent variables are described in the appendix. The models include both year and Fama-French (1997) 48 industry fixed effects. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Announcement Indicator***	***Announcement Value***
	(1)	*(2)*
CEO Narcissism Score	-0.041	-0.015
	(-0.12)	(-0.30)
CEO Duality	-0.498**	-0.075**
	(-2.24)	(-2.28)
CEO Narcissism*CEO Duality	0.925**	0.148**
	(2.21)	(2.42)
CEO Age	-0.018*	-0.002
	(-1.93)	(-1.56)
CEO Gender	0.335	0.010
	(1.31)	(0.22)
CEO Share ownership	-0.030	-0.004
	(-0.86)	(-0.77)
CEO Tenure	-0.002	-0.001
	(-0.11)	(-0.64)
Equity linked Compensation	-0.090	-0.015
	(-0.75)	(-0.84)
Outside Directors	1.806***	0.261***
	(3.19)	(3.10)
Profitability	4.636***	0.922***
	(3.45)	(4.72)
Firm Size	0.130**	0.015*
	(2.38)	(1.95)
Research and Development	3.853**	0.880***
	(2.10)	(3.14)
Market to Book	-0.317***	-0.035***
	(-4.56)	(-3.31)
Capital Expenditure	2.524	0.203
	(1.40)	(0.77)
Cash Dividend payout	-0.222***	-0.035***
	(-2.76)	(-2.78)
Cash flow volatility	-4.927**	-0.557*
	(-2.28)	(-1.73)
Cash flow	2.743**	0.294
	(2.02)	(1.46)
Slack	1.152**	0.196**
	(2.11)	(2.50)
Book Leverage	-0.659*	-0.081
	(-1.68)	(-1.61)
Stock Return	-0.560	-0.248
	(-0.34)	(-0.87)
Con	-2.908***	-0.556***
	(-3.19)	(-4.13)
Observation	4616	4653
R-Square	0.101	0.157

Table 6: Repurchase Announcement, Narcissism and Undervaluation

The table reports the regression of the relationship between repurchase announcements and CEO narcissism of undervalued and non-undervalued firms. All models include industry and year fixed effects and clustered by firm. Detailed variable definitions are indicated in appendix. Statistical significance at the 1%, 5% and 10% is denoted by ***, ** and * respectively with t-statistics in parenthesis.

	Undervalued		**Non-undervalued**		**Highly non-undervalued**	
Dependent Variable	***Announcement Indicator***	***Announcement Value***	***Announcement Indicator***	***Announcement Value***	***Announcement Indicator***	***Announcement Value***
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
CEO Narcissism score	0.497	0.066***	0.648***	0.086***	1.063***	0.168***
	(1.36)	(4.26)	(2.93)	(2.86)	(3.01)	(3.04)
CEO Age	0.001	0.002***	-0.026***	-0.004**	-0.022	-0.004
	(0.04)	(12.33)	(-2.64)	(-2.52)	(-1.26)	(-1.39)
CEO Gender	0.360	-0.027**	0.340	0.016	0.346	-0.010
	(0.61)	(-2.36)	(1.36)	(0.39)	(0.97)	(-0.12)
CEO Share Ownership	-0.052	-0.014***	-0.028	-0.002	-0.076	-0.012
	(-0.81)	(-8.19)	(-0.74)	(-0.36)	(-1.14)	(-1.10)
CEO Tenure	-0.007	-0.002**	0.001	-0.001	0.035	0.004
	(-0.29)	(-2.23)	(0.06)	(-0.32)	(1.30)	(1.06)
CEO Duality	0.168	0.032***	-0.117	-0.016	-0.141	-0.009
	(0.78)	(3.30)	(-0.94)	(-0.88)	(-0.65)	(-0.27)
CEO Compensation (Equity)	-0.136	-0.023**	-0.056	-0.011	-0.468*	-0.081*
	(-0.69)	(-2.52)	(-0.37)	(-0.53)	(-1.71)	(-1.74)
Outside Directors	1.156	0.169***	1.950***	0.288***	2.898***	0.524***
	(1.09)	(12.30)	(3.02)	(3.10)	(2.76)	(2.98)
Firm Profitability	3.758*	0.878***	4.895***	0.936***	7.754**	1.481***
	(1.94)	(15.93)	(2.88)	(3.96)	(2.42)	(3.48)
Firm Size	0.035	0.001	0.152***	0.021**	0.151*	0.029*
	(0.42)	(1.14)	(2.58)	(2.57)	(1.71)	(1.83)
Research and Dev.	2.843	0.827***	4.130**	0.876***	3.079	0.974*
	(0.96)	(7.88)	(2.01)	(2.90)	(1.12)	(1.86)
Growth	-0.245**	-0.037***	-0.323***	-0.032***	-0.347***	-0.037*
	(-2.25)	(-8.47)	(-4.00)	(-2.73)	(-3.10)	(-1.85)
Capital Expenditure	5.343	0.680***	2.086	0.061	1.053	-0.074
	(1.57)	(5.68)	(1.09)	(0.24)	(0.35)	(-0.16)
Dividend	-0.271**	-0.043***	-0.255**	-0.035**	-0.056	0.003
	(-2.04)	(-9.88)	(-2.27)	(-2.21)	(-0.18)	(0.07)
Cash flow volatility	-5.720	-0.775***	-3.429	-0.368	-3.347	-0.415
	(-1.11)	(-5.04)	(-1.38)	(-0.96)	(-0.97)	(-0.73)
Cash Flow	2.338	0.247***	2.229	0.224	-0.305	-0.120
	(1.03)	(4.39)	(1.21)	(0.83)	(-0.08)	(-0.28)
Slack	1.155	0.212***	1.227**	0.195**	2.074**	0.328**
	(1.31)	(5.76)	(2.06)	(2.28)	(2.43)	(2.30)
Leverage	-1.595**	-0.201***	-0.302	-0.035	-1.090*	-0.249**
	(-2.27)	(-8.33)	(-0.74)	(-0.68)	(-1.84)	(-2.51)
Stock Return	10.477*	1.093***	-4.740**	-0.523	-8.199*	-1.193
	(1.66)	(4.21)	(-1.99)	(-1.48)	(-1.78)	(-1.58)
Cons	-3.353*	-2.248***	-1.449	-0.466***	-3.693**	-0.739***
	(-1.79)	(-194.98)	(-1.44)	(-3.25)	(-2.35)	(-2.64)
Observation	1282	1358	3268	3295	1074	1131
R-square	0.157	0.262	0.097	0.154	0.133	0.211

Table 7: Actual Share Repurchase and CEO Narcissism

The table reports the logit and tobit regression results of the effect of CEO narcissism on the likelihood of actual share repurchase and the dollar amount of actual shares repurchased. All dependent and independent variables are described in appendix. The models include both year and Fama-French (1997) 48 industry fixed effects. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Announcement Indicator***	***Announcement Value***	***Announcement Indicator***	***Announcement Value***
	(1)	*(2)*	*(3)*	*(4)*
CEO Narcissism Score	-0.674**	-0.012**		
	(-2.45)	(-2.32)		
High Narcissist Dummy			-0.366**	-0.005*
			(-2.41)	(-1.67)
CEO Age	-0.004	-0.000	-0.005	-0.000
	(-0.33)	(-1.16)	(-0.38)	(-1.17)
CEO Gender	0.550	0.015**	0.537	0.015**
	(1.50)	(2.03)	(1.50)	(2.02)
CEO Share ownership	-0.057	-0.002	-0.054	-0.002
	(-1.20)	(-1.46)	(-1.13)	(-1.36)
CEO Tenure	-0.019	-0.000	-0.017	-0.000
	(-1.11)	(-0.03)	(-1.02)	(-0.02)
CEO Duality	0.384**	0.008**	0.387**	0.008*
	(2.43)	(1.98)	(2.42)	(1.94)
CEO Equity linked Compensation	-0.118	0.002	-0.108	0.002
	(-0.86)	(0.76)	(-0.76)	(0.81)
Outside Directors	1.775**	0.056***	1.752**	0.055***
	(2.56)	(3.28)	(2.51)	(3.17)
Profitability	6.938***	0.355***	6.896***	0.356***
	(4.12)	(8.39)	(4.11)	(8.38)
Firm Size	0.305***	0.003**	0.302***	0.003**
	(4.32)	(2.25)	(4.24)	(2.19)
Research and Development	-2.230	0.225***	-2.114	0.225***
	(-0.88)	(2.67)	(-0.83)	(2.68)
Market to Book	-0.188**	-0.001	-0.192**	-0.001
	(-2.13)	(-0.37)	(-2.18)	(-0.39)
Capital Expenditure	-4.331**	-0.205***	-4.140*	-0.204***
	(-2.04)	(-4.40)	(-1.95)	(-4.39)
Cash Dividend payout	-0.128	-0.007***	-0.119	-0.007***
	(-1.51)	(-3.49)	(-1.43)	(-3.51)
Cash flow volatility	-4.733***	-0.080*	-4.674***	-0.079
	(-2.67)	(-1.65)	(-2.67)	(-1.64)
Cash flow	2.299*	0.120***	2.454*	0.122***
	(1.70)	(3.14)	(1.82)	(3.20)
Slack	1.616**	0.032	1.639**	0.033*
	(2.31)	(1.62)	(2.36)	(1.67)
Book Leverage	-0.905*	0.014	-0.898*	0.014
	(-1.83)	(1.06)	(-1.83)	(1.09)
Stock Return	-1.605	-0.125***	-1.684	-0.128***
	(-1.12)	(-2.91)	(-1.17)	(-2.97)
Con	-3.216***	-0.105***	-3.432***	-0.111***
	(-2.68)	(-4.23)	(-2.94)	(-4.53)
Observation	4646	4653	4646	4653
R-Square	0.233	0.379	0.233	0.378

Table 8: Repurchase Price Timing and CEO Narcissism

The table reports the panel and logit regression results of the effect of CEO narcissism on repurchase price timing. All dependent and independent variables are described in the appendix. The models include both year and Fama-French (1997) 48 industry fixed effects. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Bargain***	***Good Bargain***	***Bargain***	***Good Bargain***
	(1)	*(2)*	*(3)*	*(4)*
CEO Narcissism Score	0.039**	0.319*		
	(2.14)	(1.83)		
High Narcissist Dummy			0.026**	0.175*
			(2.18)	(1.80)
CEO Age	-0.000	0.002	-0.000	0.002
	(-0.53)	(0.23)	(-0.55)	(0.27)
CEO Gender	-0.008	0.072	-0.006	0.081
	(-0.48)	(0.33)	(-0.37)	(0.37)
CEO Share ownership	0.002	-0.034	0.002	-0.036
	(0.89)	(-1.07)	(0.82)	(-1.14)
CEO Tenure	-0.000	0.009	-0.000	0.008
	(-0.43)	(0.67)	(-0.52)	(0.64)
CEO Duality	-0.009*	-0.088	-0.008	-0.086
	(-1.65)	(-0.94)	(-1.51)	(-0.91)
CEO Compensation (Equity)	-0.009**	0.003	-0.009**	0.001
	(-2.19)	(0.03)	(-2.18)	(0.01)
Outside Directors	0.058	-0.626	0.061	-0.609
	(1.53)	(-1.20)	(1.62)	(-1.17)
Profitability	-0.154*	-2.947***	-0.157*	-2.964***
	(-1.75)	(-2.87)	(-1.81)	(-2.88)
Firm Size	-0.014*	-0.193***	-0.015**	-0.191***
	(-1.96)	(-4.77)	(-2.07)	(-4.74)
Research and Development	0.100	-2.977*	0.111	-2.985*
	(0.50)	(-1.83)	(0.56)	(-1.83)
Market to Book	0.009**	0.245***	0.009**	0.246***
	(2.11)	(4.60)	(2.13)	(4.61)
Capital Expenditure	-0.067	0.882	-0.062	0.779
	(-0.56)	(0.66)	(-0.52)	(0.59)
Cash Dividend payout	0.004	-0.138**	0.005	-0.142**
	(1.26)	(-2.17)	(1.27)	(-2.21)
Cash flow volatility	-0.054	-0.480	-0.060	-0.520
	(-0.71)	(-0.38)	(-0.78)	(-0.41)
Cash flow	0.095	-0.542	0.096	-0.591
	(1.00)	(-0.61)	(1.01)	(-0.67)
Slack	0.037	0.428	0.036	0.401
	(1.07)	(0.89)	(1.04)	(0.84)
Book Leverage	0.006	0.101	0.003	0.093
	(0.26)	(0.37)	(0.15)	(0.34)
Stock Return	-0.044	1.142	-0.044	1.191
	(-0.47)	(0.92)	(-0.47)	(0.96)
Con	-0.188	2.940***	-0.172	3.051***
	(-1.23)	(3.57)	(-1.12)	(3.77)
Observation	3327	4300	3327	4300
R-square	0.060	0.080	0.061	0.080

Table 9: Alternative Measure of Narcissism

The table report regression results using another measure of Narcissism (CEO Pronoun Usage). All dependent and independent variables are described in appendix. The t-statistics reported in parentheses are based on standard errors, clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Dependent Variable	***Announcement Indicator*** (1)	***Announcement Value*** (2)
CEO Narcissism Score (Pronouns)	0.278***	0.039**
	(2.62)	(2.39)
CEO Age	-0.020*	-0.002
	(-1.91)	(-1.24)
CEO Gender	0.154	-0.019
	(0.64)	(-0.38)
CEO Share ownership	-0.053	-0.008
	(-1.31)	(-1.22)
CEO Tenure	-0.008	-0.002
	(-0.38)	(-0.78)
CEO Duality	-0.107	-0.011
	(-0.85)	(-0.59)
CEO Compensation (Equity)	-0.083	-0.014
	(-0.57)	(-0.69)
Outside Directors	2.244***	0.296***
	(3.45)	(2.86)
Profitability	3.660**	0.776***
	(2.39)	(3.47)
Firm Size	0.175***	0.021**
	(2.86)	(2.33)
Research and Development	4.384**	0.966***
	(2.19)	(3.06)
Market to Book	-0.295***	-0.031**
	(-3.75)	(-2.57)
Capital Expenditure	1.617	0.101
	(0.79)	(0.33)
Cash Dividend payout	-0.189*	-0.030*
	(-1.94)	(-1.95)
Cash flow volatility	-4.950**	-0.587
	(-2.08)	(-1.63)
Cash flow	3.538**	0.405*
	(2.29)	(1.70)
Slack	0.820	0.156*
	(1.31)	(1.71)
Book Leverage	-0.715	-0.080
	(-1.58)	(-1.37)
Stock Return	-1.495	-0.411
	(-0.81)	(-1.31)
Con	-2.864***	-0.553***
	(-2.83)	(-3.53)
Observation	3636	3676
R-square	0.1092	0.1614