ORIGINAL ARTICLE

Me, myself and I: CEO narcissism and selective hedging

Emanuele Bajo[1] | Håkan Jankensgård[2] | Nicoletta Marinelli[3]

[1]Department of Economics, University of Bologna, Bologna, Italy

[2]Department of Business Administration and Knut Wicksell Centre for Financial Studies, Lund University, Lund, Sweden

[3]Department of Economics and Law, University of Macerata, Macerata, Italy

Correspondence
Nicoletta Marinelli, Department of Economics and Law, University of Macerata, via Crescimbeni 14, 62100 Macerata, Italy.
Email: nicoletta.marinelli@unimc.it

Abstract

In this paper, we test the hypothesis that CEO narcissism influences firms' hedging behaviour. Our empirical evidence, based on hand-collected data on derivative positions in the U.S. oil and gas industry, suggests that firms with a narcissistic CEO hedge more selectively. Furthermore, we find that these firms reduce selective hedging comparatively more following a sharp price collapse that sent the industry into a state of distress. This result is in line with the 'narcissistic paradox': While scoring high on self-esteem and grandiosity in the normal case, such individuals are also inherently fragile and liable to crumble when faced with adversity.

KEYWORDS
derivatives, narcissism, risk management, selective hedging

JEL CLASSIFICATION
G30, G32

1 | INTRODUCTION

According to upper echelon theory, a firm's policies are shaped by the attributes and preferences of its top decision makers. Compared with classical economic theory, which presents the firm as an anonymous unit that solely exists to maximise economic rents, upper echelon theory 'humanises' the analysis of the firm's policies. The big takeaway from this line of research is that firms do not merely respond dispassionately to external stimuli. Rather, the idiosyncratic characteristics of the individuals running the firm have turned out to have significant explanatory power, leading to a wide range of new insights about firm behaviour (see Hambrick, 2007, for a useful summary of upper echelon theory).

In this study, we focus on CEO narcissism as it relates to corporate risk management. As it turns out, a nontrivial fraction of corporate CEOs have traits identifiable as narcissistic. Narcissism is a condition associated with an exaggerated sense of self-importance and need for admiration. The narcissistic individual furthermore lacks empathy and will, therefore, pursue the goal of social praise even at the expense of others. Importantly, narcissistic traits in corporate leaders have been shown to influence the behaviour of firms (Aktas et al., 2016; Chatterjee & Hambrick, 2007; Olsen & Stekelberg, 2016; Olsen et al., 2014). To offer a very brief summary of this study, managers classified as narcissistic are more prone to risk-seeking, extravagant and fraudulent behaviour.

The present study develops and examines the hypothesis that narcissistic managers are more likely to engage in selective hedging. Selective hedging has been defined as the practice of varying the size and timing of hedging ratios based on market views and is widespread among firms (Adam et al., 2015). Although the importance of CEO traits for the decision to hedge has been documented (Croci et al., 2017; Kumar & Rabinovitch, 2013), no study to date has investigated the role of narcissism in driving speculative outcomes, such as the practice of selective hedging. We argue that selective hedging fits a certain feature of the narcissistic condition well, namely, that the craving for admiration is continuous (Morf & Rhodewalt, 2001). Narcissistic people require a steady stream of self-image reinforcement and must, therefore, undertake bold and highly visible actions at frequent intervals. Selective hedging, in our view, offers an arena for continuous and confident action that suits the psychological needs of narcissistic managers, that is, it generates attention that reinforces the manager's self-image. Speculative actions, such as leaving important risk exposures unhedged in the attempt of exploiting a view on future prices, will appear bold and decisive to respected peers inside the organisation, thus satisfying the narcissist's craving for attention and admiration.

This paper also brings attention to an intriguing but under-researched aspect of narcissism with the potential to influence corporate policy: The 'narcissism paradox' (Aabo & Eriksen, 2018; Elliot & Thrash, 2001). The paradox refers to the fact that narcissistic individuals, on a deeper level, have low self-esteem and a fragile self. It is, therefore, plausible that, when faced with distress and setbacks, narcissistic managers are more likely to crumble. According to Morf and Rhodewalt (2001), narcissism implies being prone to extremes, such as euphoria and despair. A deflated psychological state following a shock to corporate performance could be expected to lead to less selective hedging, which is predicated on the idea of being able to outwit the market through superior insight and skill. The interpretation is in line with the results in Buyl et al. (2019), who find lower rates of post-shock recovery in firms led by narcissistic CEOs after the financial crisis of 2007–2009.

The data bears out the prediction that narcissistic managers are more inclined to engage in selective hedging. As in many other studies on corporate risk management (e.g., Jin & Jorion, 2006), we use hand-collected data on derivative positions of oil and gas producers for

our empirical analysis. In this industry, the market price exposure is of strategic importance, which virtually guarantees CEO involvement, as we also document later on in the manuscript by analysing how frequently CEOs mention the hedging firm decisions during the quarterly earnings calls. Specifically, we find that in virtually all firms (92% of the sample) CEOs report about hedging.

The association between selective hedging and CEO narcissism is confirmed in univariate regressions as well as controlling for traditional factors that are known to influence firms' hedging behaviour and it is robust to various modifications in the empirical design. In particular, it is unaffected by including measures of managerial overconfidence in the model. Although narcissism is generally viewed as a stable personality trait, whereas overconfidence is not, the two conditions are in some respects overlapping and generate similar predictions (Aktas et al., 2016). The conclusion also holds when we look at the subsample of firms who experience a change of CEO during the time window of investigation. In fact, as the choice of the CEO is endogenous to the firm, it might be argued that some, perhaps unobservable, firm characteristics may simultaneously drive the choice of a narcissist CEO and the willingness to bear oil price risk. Looking at CEO turnovers, we first show that there is no systematic association between CEO narcissism and firm. In other words, when a firm replaces its CEO, it is equally likely that CEO with a high or low narcissist score will be chosen. Second, we document that when a more (less) narcissistic CEO is hired, the company engages in higher (lower) selective hedging. Without claiming that this empirical approach represents a solid identification strategy, we believe it partially mitigates endogeneity concerns.

The evidence also suggests that, consistent with the paradox, narcissistic CEOs react differently to adversity. Using a moderation model involving the collapse in the oil price in Q4 2014 we find that narcissistic managers reduced selective hedging comparatively more after the shock. The collapse, which was unanticipated by analysts and forward markets, sent the industry into a state of severe distress. The relative decrease in selective hedging following the shock goes against the view that narcissistic managers provide strong and decisive decision-making in challenging times. In this view, the narcissist is unfazed by setbacks and feels neither regret nor remorse, because she is always capable of finding someone else to blame (Vogel, 2006). Our interpretation is corroborated by an analysis of firm-specific distress. We find that narcissistic CEOs are associated with less selective hedging in firms that have negative operating cash flows.[1] For the same reasons that an industry-wide crisis could deflate the vulnerable egos of narcissistic CEOs, experiencing negative cash flows is liable to trigger a sense of self-doubt that leads to less selective hedging.

This study contributes primarily to the literature on selective hedging. Our study is the first to investigate how CEO narcissism influences corporate derivative usage. Taken as a whole, evidence illustrating the connection between managerial traits and speculative behaviour is scarce. The paper most closely related to ours is Adam et al. (2015), who finds that firms hedge more selectively following past gains, which the author suggests boosts confidence. Also connecting selective hedging with managerial traits, Beber and Fabbri (2012) report that younger, MBA-trained and less experienced managers score higher on their measure of variability in notional amounts.

The study also contributes to the broader literature of how CEO narcissism relates to corporate policies. This stream of literature has looked at the relationship between CEO

---

[1]According to Andrade and Kaplan (1998), negative cash flows are a proxy for economic distress.

narcissism and several firm dimensions. For instance, prior studies have examined how CEO narcissism affects firm behaviour such as firm strategy and performance volatility (Chatterjee & Hambrick, 2007), the M&A process (Aktas et al., 2016), accounting choices (Olsen et al., 2014) and tax avoidance (Olsen & Stekelberg, 2016). Besides the empirical investigation of CEO narcissism and corporate hedging, we contribute theoretically by developing the hypothesis regarding how narcissistic managers are likely to perform in times of distress and setbacks.

The remaining of the paper is organised as follows: Section 2 illustrates the related literature and develops the main hypotheses; Section 3 describes the sample, the variable construction and the empirical design; Section 4 presents the results and the robustness checks and, finally, Section 5 concludes.

2 | LITERATURE AND HYPOTHESES DEVELOPMENT

Narcissism is a personality trait with both cognitive and behavioural dimensions. There is broad consensus about its distinguishing features, grounded in psychology theory (Aktas et al., 2016). At the core of narcissism lie three things: An exaggerated need for admiration, an elevated sense of self-importance and a lack of empathy for others (American Psychiatric Association, 1994). The narcissistic individual engages in elaborate strategies to maintain a positive sense of self and to preserve their self-esteem by gaining the admiration of others.

Narcissism is ubiquitous in the business world. de Vries (2004, p. 188) states that narcissism is 'at the heart of leadership' and that rising to the top of an organisation may in fact be facilitated by a dose of narcissism. The narcissistic tendencies of business leaders are frequently commented on by analysts and the business press (Vogel, 2006). Narcissism among corporate executives also seems to be rising over time (Engelen et al., 2016).

According to a growing body of academic research, it matters if there are narcissistic individuals on the executive team. The literature has paid specific attention to the fact that the narcissist's elevated self-image will lead to relative optimism and overconfidence, which in turn skews their assessment of the distribution of payoffs (Shapira, 1995). The literature has found that individuals with narcissistic traits generally take more risks (e.g., Foster et al., 2009; Maccoby, 2004). They have also been shown to be more prepared to tamper with financial accounts, or even engage in fraudulent behaviour as a means to preserve their positive self-image (Rijsenbilt & Commandeur, 2013).

Acquisitions are an excellent vehicle for narcissistic CEOs to get the centre stage. The adrenaline rush from devising and negotiating major deals can be substantial, and there is an upswing in attention from analysts, the business press and investment bankers alike. Chatterjee and Hambrick (2007) observe that firms with CEOs thus classified indeed make acquisitions more frequently. Aktas et al. (2016) show that having a narcissistic CEO impacts various other aspects of the takeover process.

Acquisitions are comparatively rare events, however. The narcissist's craving for admiration and external self-affirmation, in contrast, is continuous and 'chronic' (Morf & Rhodewalt, 2001). The narcissist needs applause at frequent intervals, requiring a steady stream of self-image reinforcement. To obtain such applause, the narcissist must regularly undertake challenging or bold tasks that are highly visible to a respected audience. It should be noted that this audience does not have to consist of external 'spectators' such as analysts and the business press, as might be the case with large-scale acquisitions (see for instance Petrenko et al., 2014).

We argue that the firm's hedging decision offers the narcissistic CEO precisely such a venue for continuous self-affirmation. Firms are known to frequently change the composition of their hedging derivative portfolios to benefit from a perceived superior insight about future market developments. This practice is known as selective hedging, which can be defined as changing the size and timing of hedging transactions according to market views (Adam et al., 2015; Stulz, 1996). Speculative behaviour with respect to derivative usage is widespread among firms (Adam & Fernando, 2006; Adam et al., 2017; Brown et al., 2006; Géczy et al., 2007). These studies generally find considerable 'excess volatility' in hedge ratios when compared to the fundamentals that ought to determine corporate hedging. Empirical research has furthermore found selective hedging to be related to managerial power, a precondition for psychological traits to have an influence (Jankensgård, 2019).

Narcissistic CEOs may be drawn to derivatives as a direct consequence of their ex-aggerated self-esteem, believing in their inherent ability to outwit the market. If this is the case, it may appear to be more about anticipated rewards from risk-taking than admiration-seeking per se. Here, it is important to see that selective hedging refers to varying a hedge ratio according to market views, which is not the same thing as risk-taking in the sense of taking uncovered and purely speculative positions. A CEO wanting to maximise risk—and upside potential—would leave the exposures unhedged. What is more, managerial compensation packages are typically convex functions of corporate performance, suggesting that most CEOs' financial incentives would be to not hedge at all (Croci et al., 2017). In spite of these incentives to the contrary, the literature has observed widespread hedging and excessive fluctuations in hedge ratios.

The need for continuous attention in fact presents a stand-alone argument for an association between narcissism and selective hedging. Even in the absence of specific beliefs about the markets, such managers would be attracted to derivative usage as a means to enhance one's self-image. Making bets using derivatives draws attention and may help sustain a perception of the manager as bold and decisive. This leads to our first hypothesis.

H1: *Narcissistic CEOs are associated with more selective hedging*

An aspect of narcissism that has attracted less attention in the literature is that the inflated self-esteem is fragile. The narcissistic individual may in fact harbour deep-seated negative feelings about the self (see, e.g., Rosenthal & Pittinsky, 2006). This combination of the grandiose and vulnerable has been referred to as the 'narcissistic paradox' (Elliot & Thrash, 2001).

The dark side of the narcissistic paradox is thus that self-esteem is fragile and may crumble when faced with adversity (Cheng et al., 2013). Narcissistic individuals have been shown to be more susceptible to mood swings, particularly if criticised (Rhodewalt et al., 1998). They also tend to react more strongly to negative feedback than others (e.g., Kernis & Sun, 1994).

This literature suggests that Hypothesis 1 is conditional on an absence of adverse events that could trigger the narcissistic paradox. If, on the contrary, the firm is afflicted by a severe enough setback a narcissistic CEO might feel deflated because of the incongruence between the observable reality and the grandiose ambitions harboured by such individuals. Feeling 'low' and beset by self-doubt would in turn lead to a reassessment of one's powers to beat the market through selective hedging.

H2 (a): *Following an adverse event, firms with a narcissistic CEO reduce selective hedging more relative non-narcissistic CEOs*

However, we must also consider an alternative outcome to the possibility that narcissistic managers are more likely to crumble when struck by adversity. A view exists in the psychology literature that narcissism might actually be a desirable trait in a distressed situation because such individuals thrive in times of uncertainty and when faced with difficult tasks. Nevicka et al. (2013), for example, argue that individuals choose narcissistic leaders when the uncertainty about the business environment is high because they project a sense of confidence, strength and decisiveness. Their grandiose self-perception and hunger for recognition can help them overcome obstacles put in their path. According to Vogel (2006), the narcissist excels at finding something or someone else to blame for setbacks and is, therefore, unhampered by external circumstances. He is furthermore less likely to be depressed, anxious and sensitive to stress.If this line of reasoning is descriptive and narcissists are emboldened in times of distress, we would narcissistic CEOs to become more daring in their use of derivatives when faced with adversity.

H2 (b): *Following an adverse event, firms with a narcissistic CEO increase selective hedging more relative non-narcissistic CEOs*

3 | DATA AND METHODOLOGY

3.1 | Sample

The sample used in this study consists of publicly traded oil and gas producers in the U.S. (SIC code 1311) between Q1 2013 and Q2 2016. The advantages of using the oil and gas industry for studies of corporate hedging are well known. It is one of very few to disclose sufficiently detailed information about derivative positions. Jin and Jorion (2006) argue that it is a homogenous industry, yet it exhibits significant variation in hedge ratios. Furthermore, according to Bakke et al. (2016), the industry's cash flow volatility is high enough to make risk management economically important. For our purpose, the economic significance makes this industry ideal for studying the connection between CEO narcissism and selective hedging as the strategic nature of the oil price exposure virtually guarantees CEO oversight and involvement.[2]

Firms are eligible for inclusion if they are headquartered in the U.S., publicly listed and have at least $1mn in total assets in all years. We furthermore require that 10-Qs (quarterly reports) be available from the online EDGAR database and that firms report their derivative positions in sufficient detail to quantify different hedging strategies.[3] The latter criterion essentially means that firms must report their hedging position in tabular form. Fortunately, most firms use this form of disclosure. Firms that report a value-at-risk or a sensitivity measure, which are also allowed under U.S. accounting rules, are deleted because the information is insufficient to determine the extent and type of hedging.

---

[2]We further address this point in the robustness section by restricting the analysis to those firms for which we find supportive evidence of the CEO involvement in the hedging decision.

[3]Hedging positions are identified by carefully reading the 10-Ks, as well as through a keyword search. Search words are: 'item 7a', 'hedg', 'derivative', 'market risk', 'swap', 'collar', 'forward', 'put option' and 'risk management'.
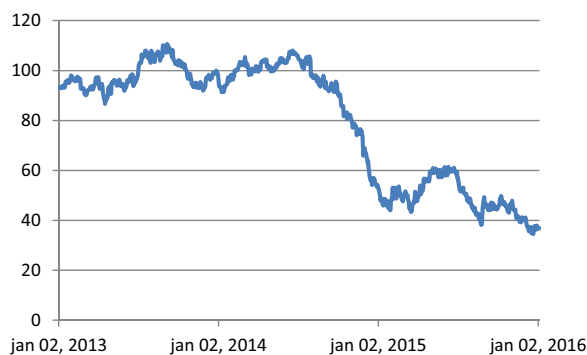
FIGURE 1 West Texas Intermediate (WTI) spot price ($ per barrel). This figure presents the history of spot oil price (WTI) in the time span Q1 2013–Q1 2016

The results in the baseline tests are based on a balanced sample of firms.[4] Balancing the sample has the advantage that we can study the same set of firms in two different sets of circumstances (pre- and post-shock). Avoiding drastic changes in sample composition is preferred given our interest in investigating the impact of adversity on the relation between CEO narcissism and selective hedging. However, in Section 4.4, we return to this issue and report the results also from an unbalanced sample.

All financial statement data and industry-specific operating data are obtained from Compustat. This renders a total of 2420 firm-quarters, corresponding to 221 unique firms. Balancing the sample brings the number of observations to 2089. Selective hedging, production, or financial data was available or possible to code for 1019 of these observations. However, because the object of the study is CEO narcissism, we are ultimately constrained only to those firms with earnings call transcripts from which we can extract narcissism scores. This requirement reduces sample size to 920 quarter-firm observations in the main model specification, corresponding to 83 unique firms.

The sample period spans the sudden, dramatic and unexpected decline in the oil price in the last quarter of 2014. This represents an exogenous shock to default risk, which ushered in a state of profound distress in the industry. After fluctuating for a prolonged period at an elevated price level and very low levels of implied and realised volatility, the oil price roughly halved within the space of one quarter (Figure 1). Throughout 2011 and Q3 2014 the oil price (West Texas Intermediate) averaged $96, never dipping below $80. In January 2015, the oil price was trading at roughly 50% of that average. In the last month of 2015, the average price was down to $37. Although a modest decline appeared before Q4, the fall accelerated in early October and, in particular, following the OPEC announcement on 27 November 2014, when the organisation changed its policy objective from price targeting (abandoning its desired price range) to market-share stabilisation. Andrén (2016) shows that the accelerated fall that got underway in October was unforeseen by industry analysts and forward markets. For example, a poll of 30 analysts by Reuters, dated 1 October, predicted a Brent crude price of $103 for 2015. Even as late as 26 October 2014, Goldman Sachs revised their price forecast for

---

[4]Specifically, firms are required to have at least three quarters both before and after the shock to be included in the sample.

Q1 2015 from \$100 to \$85. In the same week, CIBC World Markets maintained their 2015 Brent average price of \$100. Further underscoring the degree to which the collapse was unpredicted by markets, an analysis of net trading patterns in oil futures contracts on NY-MEX indicates speculative trading on increasing oil prices (Andrén, 2016).

3.2 | Variable construction

CEO narcissism. We construct the narcissism metric following Aktas et al. (2016), computing the proportions of first-person singular (I, me, my, mine, myself) to total first-person pronouns (I, me, my, mine, myself, we, us, our, ours, ourselves) in CEO speech from the transcript of the earnings calls. As Aktas et al. (2016) point out, this metric highly correlates with Narcissistic Personality Inventory (NPI) scores and it is robust after controlling for sociodemographic characteristics as well as personal traits.[5] We acknowledge that there are alternative measures of narcissism.[6] However, linguistic style is a form of expressive behaviour, reflecting the most dominant and consistent personality traits of an individual (Hogben, 1977). Moreover, as Aktas et al. (2016) argue, among these alternative indicators, the first-person pronoun usage is the one that best captures the multifaceted dimensions of narcissism. Finally, unlike compensation-based measures, this approach relies on publicly available information and it does not cause severe sample drop-outs due to the firm coverage in Thomson ExecuComp database.[7] On the contrary, despite by definition narcissism is a complex construct and any metric is necessarily imperfect, the score used in Aktas et al. (2016) and in this paper is based on a single-item scale and, therefore, may fail fully capturing the multifarious personality of a narcissist.

The transcripts of CEO interviews have been retrieved using Thomson Eikon and the search yields to 3284 documents from 126 CEOs. We first isolate the speech of CEOs from those documents, filtering out any other participants of the call (mainly, CFOs and Analysts), in the section 'Questions and Answers' (Q&A). The reason why we only focus on the Q&A section is to separate management's prepared remarks from the unscripted question and answer portion of the call, where more likely any narcissist attitude would emerge. To identify the pronouns without the risk of false attribution, we have used the Natural Language Toolkit (NLTK), a python tool commonly used in computational linguistic for classification, tokenisation, stemming, tagging, parsing and semantic reasoning functionalities.[8] For each transcript, we first count the number of occurrences of first-person singular (I, me, mine and myself) and total

---

[5]The NPI is a questionnaire aimed at providing a narcissism score for individuals, assessing narcissistic personality disorder along four dimensions: Exploitativeness/entitlement, leadership/authority, superiority/arrogance and self-absorption/self-admiration.

[6]Chatterjee and Hambrick (2007) propose five different indicators. In addition to the first-person pronoun, they measure CEO narcissism looking at the prominence of the CEO's photograph in the company's annual report; the CEO's prominence in the company's press releases; the CEO's cash compensation divided by that of the second-highest paid executive in the firm and the CEO's noncash compensation divided by that of the second-highest-paid executive in the firm.

[7]As discussed above, we are constrained by the presence of earnings call transcripts that reduces the number of firms included in our sample. The combined requirement of earnings call transcripts and data on compensation, would have dramatically reduced by 50% the size of our sample (from 83 to 41 firms).

[8]For robustness, we have verified the correctness of the attribution on a random sample of our transcripts using another commonly used software in textual analysis (Stanford part of speech tagger) as well as manual inspection, finding, in both these approaches, no differences from the outcome obtained using NLTK.

—WILEY�ñ ⎿817

first-person pronouns (I, me, my, myself, mine, we, us, our, ours and ourselves) in the speech of the CEO. Then, we consolidate these figures across all the available transcripts over the entire CEO tenure within our sample period and calculate the ratio as follows:

$$\text{CEO}_{\text{Narcissism}} = \frac{\sum \text{I, me, mine, myself}}{\sum \text{I, me, mine, myself, we, our, ours, ourselves}}.$$

This approach leads to a single and time-invariant measure of CEO narcissism at the CEO level.

Selective hedging is calculated following the definition in Adam et al. (2017). This way of measuring selective hedging involves computing the standard deviation of the residuals from a model that predicts the firm's hedge ratio based on known determinants of corporate hedging. This methodology explicitly controls for any selection bias associated with estimating the speculation of firms that hedge, as it is based on a two-step model where the first step is addressed to predict the probability to hedge and the second models the magnitude of hedging.[9]

Hedge ratio is computed as the sum of linear hedging contracts and put option contracts bought with a maturity of less than 12 months, scaled by expected production within the next 12 months (barrels of oil equivalents). Linear contracts consist of forwards, futures and price swaps, that is, derivative instruments in which the payoff is a linear function of the underlying commodity. Natural gas is converted into barrels of oil equivalents using the standard assumption that 6 Mcf of gas has the same energy content as one barrel of oil. Expected production is assumed to be equal to actual production (i.e., perfect foresight).

Other variables. We define Assets as the total book value of assets (in $ million, Compustat item #Q44). Size is defined as the natural logarithm of assets. Market-to-Book is defined as the market value of equity (Compustat items CSHO* PRCC_F) divided by the book value of equity (Compustat item SEQQ). Leverage is the book value of debt scaled by total assets (Compustat item DTQ). Cash is defined as cash and cash equivalents (Compustat item #Q36) scaled by total assets. Negative EBIT is a binary variable that takes the value 1, if Operating income (Compustat item #Q21) is negative, 0 otherwise. Dividend payer is a dummy variable that takes the value one if the firm pays a cash dividend in the fiscal year (Compustat item #A21). Distance-to-default is calculated based on Merton's distance-to-default measure (Badoer et al., 2020).

3.3 | Empirical model

The most basic test of the effect of CEO narcissism on corporate hedging takes the following form:

$$\text{SH}_{i,t} = a + \beta \, \text{CEO } narcissism_i + \gamma \, Z_{i,t} + \varepsilon_{i,t}. \tag{1}$$

In Equation (1) $\text{SH}_{i,t}$ is a measure of selective hedging of firm i at time t. CEO narcissism$_i$ is a measure of the CEO's degree of narcissism in firm i and Z_{it} is an array of control variables. For the moderation analysis, we incorporate the exogenous shock described in Section 3.1 into the empirical design (Equation 2). This involves adding an indicator variable POST$_t$ that equals one after the shock (for any t between Q4 2014 through Q2 2016) and zero before as well as an

---

[9]As in Adam et al. (2017), we include firm size, the market-to-book ratio, dividend policy, liquidity and leverage as determinants of hedging.

interaction term between CEO narcissism and the shock indicator. The estimate of interest is given by the coefficient β_3. It indicates how firms with a narcissistic CEO changed their hedging behaviour post-shock relative firms with non-narcissistic CEOs.

$$\text{SH}_{i,t} = a + \beta_1 \, CEO \, narcissism_i + \beta_2 \text{POST}_t + \beta_3 \text{POST}_t \times CEO \, narcissism_i + \gamma \, Z_{i,t} + \varepsilon_{i,t}.$$
(2)

An important aspect of Equation (2) is that the shock is presumed to affect the attitude of narcissistic managers towards selective hedging. However, this does not imply that the level of narcissism itself is expected to change after the shock because this variable, as we discuss and document later in the paper, is a stable personality trait. Instead, what is affected is the narcissistic managers' response, or attitude, towards selective hedging given the new economic environment characterised by severe industry and firm-level distress.

4 | RESULTS

4.1 | Descriptive statistics

In Table 1 descriptive statistics are reported. The mean CEO narcissism score is 0.20, which is consistent with previous literature. Chatterjee and Hambrick (2007) report a mean score of 0.21 in their sample, whereas Aktas et al. (2016) find a mean narcissism score of 0.215 for acquiring CEOs and 0.185 for target CEOs. The mean of the selective hedging measure is somewhat higher

TABLE 1 Descriptive statistics

This table reports summary statistics for variables used in the study. CEO narcissism is computed following Aktas et al. (2016) as the proportions of first-person singular (I, me, my, mine, myself) to total first-person pronouns (I, me, my, mine, myself, we, us, our, ours, ourselves) in CEO speech from the transcript of the earnings calls. Selective hedging is calculated following the definition in Adam et al. (2017). Total assets (million) is the total book value of assets. Market-to-book is the market value of equity divided by the book value of equity. Leverage is the book value of debt scaled by total assets. Distance-to-default is Merton's measure of distance-to-default. Cash is cash and cash equivalents scaled by total assets. Dividend is a dummy variable that takes the value one if the firm pays a cash dividend in the fiscal year. Negative EBIT is a dummy that takes the value 1, if Operating income is negative, 0 otherwise. All variables are winsorized at 1% level.

	N	**Mean**	**p25**	**p50**	**p75**	*SD*
CEO narcissism	920	0.20	0.15	0.19	0.23	0.06
Selective hedging	920	0.16	0.06	0.11	0.17	0.21
Total assets	920	5208	54	802	3928	11,078
Market-to-book	920	3.15	0.66	1.44	2.88	13.55
Leverage	920	0.46	0.29	0.40	0.52	0.28
Distance-to-default	920	4.75	0.78	4.11	7.69	5.01
Cash	920	0.04	0.00	0.01	0.05	0.06
Dividend	920	0.49	0.00	0.00	1.00	0.50
Negative EBIT	920	0.48	0.00	0.00	1.00	0.50

(0.16 vs. 0.11) than the mean value reported in Adam et al. (2017), suggesting that the oil and gas industry is more prone to speculative behaviour. The table also reports a number of other control variables commonly used in the selective hedging literature. Other studies have shown that larger, more profitable and low-levered companies engage more in selective hedging. Accordingly, in this study, we use the market size (as proxied by the total asset), the market valuation (as proxied by the market-to-book ratio), the financial leverage (debt-to-asset ratio) and the amount of cash, the Merton distance-to-default measure to account for default risk and a dividend dummy to control for the documented driving factors of selective hedging. The table shows that the median (average) firm has \$802 (5208) million total asset, 1.44 (3.15) market-to-book ratio, 40% (46%) debt-to-asset ratio and 1% (4%) cash-to-asset and finally 49% of the companies pay out dividends during the sample period. The table also reports the descriptive statistics for one additional control variable: A dummy variable (Negative EBIT) that takes the value of one when the operating income is negative (48% of the firm-year observations).

Table 2 reports differences in mean values for subsamples based on the average value for CEO narcissism. Firms with above-mean scores on CEO narcissism are smaller and hold slightly less cash.

TABLE 2   High versus low CEO narcissism

This table reports the mean of the considered variables, distinguishing between firms whose CEO is more versus less narcissistic than the sample mean. CEO narcissism is computed following Aktas et al. (2016) as the proportions of first-person singular (I, me, my, mine, myself) to total first-person pronouns (I, me, my, mine, myself, we, us, our, ours, ourselves) in CEO speech from the transcript of the earnings calls. Size is the natural logarithm of assets. Distance-to-default is Merton's measure of distance-to-default. Market-to-book is the market value of equity divided by the book value of equity. Cash is cash and cash equivalents scaled by total assets. Dividend is a dummy variable that takes the value one if the firm pays a cash dividend in the fiscal year. Leverage is the book value of debt scaled by total assets. Negative EBIT is a dummy that takes the value 1, if Operating income is negative, 0 otherwise. Selective hedging is calculated following the definition in Adam et al. (2017). Pre-shock indicates the pre-shock period (Q1 2013 through Q3 2014). Post-shock indicates the post-shock period (Q4 2014 through Q2 2016). All variables are winsorized at 1% level. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

| | CEO narcissism | | | | | |
| | Below sample mean | | Above sample mean | | | |
	Observations	Mean	Observations	Mean	Difference	
Size	515	6.40	405	5.90	0.50	***
Distance-to-default	515	4.80	405	4.68	0.12	
Market-to-book	515	3.61	405	2.58	1.03	
Cash	515	0.04	405	0.03	0.01	*
Dividend	515	0.44	405	0.59	−0.15	***
Leverage	515	0.44	405	0.47	−0.03	*
Negative EBIT	515	0.50	405	0.47	0.03	
Selective hedging						
Overall sample years	515	0.15	405	0.18	−0.03	*
Pre-shock	258	0.14	216	0.20	−0.06	***
Post-shock	257	0.16	189	0.14	0.02	

They also show a higher propensity to pay out dividends and higher leverage, while we observe no difference in terms of levels of default risk, market valuations or the percentage of quarters in which companies end up with negative operating income. More importantly, Table 2 documents the first univariate result for the relationship between CEO narcissism and selecting hedging. Looking at the entire sample period, companies managed by more narcissistic CEOs are associated with a larger use of selective hedging (0.18 vs. 0.15), where the 3% difference is statistically significant at the 10% threshold. However, if we restrict the analysis to the pre-shock period (Q1 2013–Q3 2014), the same difference raises to 6% (which represents one-third with respect to the cross-section average) and a 1% level of statistical significance.

4.2 | Baseline results

Table 3 contains our baseline regressions. In all models, the dependent variable is Selective hedging. Model 1 is a univariate model with CEO narcissism as the sole independent variable. The results indicate that this variable is significant in explaining selective hedging at the 5% level. The significance is not only limited to the standard statistical thresholds, it is also economically sizeable. One standard deviation in CEO narcissism (0.06) increases selective hedging by 8.2% (evaluated in terms of the unconditional mean).

In Model 2, we add two variables that address Stulz's theory of selective hedging: Distance-to-default and Size. The former captures default risk (or financial health more generally), whereas the latter is a proxy for information advantage. The theory is supported with respect to size. Larger firms that supposedly enjoy an information advantage hedge more selectively. The findings in the literature are somewhat mixed with respect to firm size. Adam et al. (2015) and Beber and Fabbri (2012) find that large firms hedge less selectively but Géczy et al. (2007) and Jankensgård (2019) reach the opposite conclusion.

For Distance-to-default the expectation is a positive sign (selective hedging increasing in financial health) because financially weak firms are more likely to find deviations from the optimal hedge ratio more costly. However, this variable fails to predict selective hedging. The relationship between CEO narcissism and selective hedging is unaffected and continues to be significant at the 5% level.

Models 3–5 add the full set of control variables from the literature on selective hedging. Some of these are statistically significant in explaining selective hedging. Although Distance-to-default is not significant, the results do support the idea that financially more stable firms hedge more selectively in that paying a dividend, which is usually taken as a sign of financial health, is positively related to selective hedging. Firms with more growth opportunities (market-to-book), however, hedge less selectively. This could indicate that firms with growth prospects find it too costly to deviate from optimal hedging as doing so increases the risk of underinvestment (Froot et al., 1993). Similar to Beber and Fabbri (2012), we find no association between selective hedging and leverage.

4.3 | CEO narcissism and distress

In this section, we present the results of tests related to Hypothesis 2, concerning the impact of adversity on narcissistic CEO's tendency to hedge more selectively. The proxy for adversity is the regime shift caused by the oil price collapse in the fourth quarter of 2014 as captured by the

TABLE 3 Selective hedging and CEO narcissism

This table reports the coefficients of ordinary least squares regressions of Selective hedging on CEO narcissism and other control variables. Selective hedging is calculated following the definition in Adam et al. (2017). CEO narcissism is computed following Aktas et al. (2016) as the proportions of first-person singular (I, me, my, mine, myself) to total first-person pronouns (I, me, my, mine, myself, we, us, our, ours, ourselves) in CEO speech from the transcript of the earnings calls. Size is the natural logarithm of assets. Distance-to-default is Merton's measure of distance-to-default. Market-to-book is the market value of equity divided by the book value of equity. Cash is cash and cash equivalents scaled by total assets. Dividend is a dummy variable that takes the value one if the firm pays a cash dividend in the fiscal year. Leverage is the book value of debt scaled by total assets. Negative EBIT is a dummy that takes the value 1, if Operating income is negative, 0 otherwise. All our specifications include time fixed effects (FE). All variables are winsorized at 1% level. Robust standard errors are in parenthesis. *, ** and *** denote statistical significance at 10, 5, and 1 percent, respectively. *** denote statistical significance at 10%, 5% and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)
CEO narcissism	0.2187**	0.2401**	0.2225**	0.2172*	0.2186*
	(0.111)	(0.114)	(0.113)	(0.112)	(0.113)
Size		0.0080***	0.0073***	0.0068***	0.0067***
		(0.002)	(0.002)	(0.002)	(0.002)
Distance-to-default		0.0029	0.0025	0.0030	0.0029
		(0.002)	(0.002)	(0.002)	(0.002)
Market-to-book				−0.0012***	−0.0012***
				(0.000)	(0.000)
Cash			−0.0129	−0.0283	−0.0269
			(0.093)	(0.093)	(0.092)
Dividend			0.0258**	0.0258**	0.0264**
			(0.013)	(0.013)	(0.013)
Leverage				0.0125	0.0126
				(0.028)	(0.028)
Negative EBIT					−0.0074
					(0.018)
Intercept	0.1012***	0.0250	0.0226	0.0230	0.0254
	(0.026)	(0.034)	(0.035)	(0.039)	(0.040)
Observations	920	920	920	920	920
R^2	0.032	0.049	0.053	0.058	0.059
Time FE	Yes	Yes	Yes	Yes	Yes

binary variable Post. As discussed, the unexpected shock created a laboratory in financial distress.

Before reporting the results, a legitimate question is whether the shock affects the level of narcissism among CEOs in the sample. It is possible that the dire circumstances dented any

narcissistic tendencies, leading to a reduction in our measure of narcissism. To check this point, we compute the CEO narcissism score for every year and then calculate a difference-in-means test for the pre- and post-periods. The results (unreported) show that the difference in the mean is statistically indistinguishable from 0. Therefore, there is no significant drop in CEO narcissism post-shock. This is consistent with the view that narcissism is a stable personality trait (as opposed to a 'mood' or 'state' such as the level of overconfidence). For further robustness, we also regress CEO narcissism computed on a quarterly basis against the Post and the Negative EBIT dummy along the control variables to check if there is any relationship between the use of the first-person pronoun and firm financial conditions. We find no statistical significance between the narcissism score and after-shock quarters or quarters when firms experience negative EBIT.

Table 4 shows that, when CEO narcissism is interacted with Post, the coefficient on the interaction term is negative, suggesting a relative *decrease* in selective hedging by narcissistic CEOs conditional on an adverse event (significant at the 5% level.) This result supports Hypothesis 2a. The decrease is also economically significant. In fact, the interaction term almost completely off-sets the positive baseline association. The result of the interaction with Post should be interpreted as saying that in the crisis period there is no difference in the hedging behaviour of narcissistic and non-narcissistic CEOs. The difference in the pre-shock period, however, is significant at the 1% level. Combining this result with the stability of the narcissism score across the two states of nature, this evidence indicates that it is the narcissistic CEOs' *response* to the change in circumstances that causes the relative drop in selective hedging. According to this interpretation, the shock essentially triggers the latent 'vulnerability'-condition that is postulated by the narcissism-paradox.[10]

A possible caveat is that the Post dummy alone does not fully capture the existence of a potential situation of firm distress and that, due for instance to different hedging behaviour before the Q4 2014, the impact of the oil price drop has affected each firm in different following periods or with different intensity. To control for this potential problem, we employ an alternative empirical strategy. We use a firm-specific distress dummy (as opposed to Post, which is industry-specific) labelled Negative EBIT, which takes the value of one, if the Operating income is negative in a given quarter. Experiencing negative cash flow is a clear and highly visible indicator of underperformance. A high probability of bankruptcy is a less tangible dimension than failing to generate a profit at the operational level, which will be harder for a narcissistic CEO to rationalise and explain away. On the basis of the firm-specific distress variable (Negative EBIT) and its interaction with the CEO narcissism, Model 3 of Table 4 shows that the effect is very much in line with the Post × CEO narcissism interaction variable both in sign and in coefficient magnitude, further supporting Hypothesis 2a. It might be argued that a negative operating income may not be an effect of the induced shock if the company was already poorly performing before the Q4 of 2014. To reassure that it is the shock that caused the condition of distress, we rerun our baseline model on the subsample of firms that were profitable before the shock and that turn to negative operating income after the shock. Results are reported in Model 4 of Table 4 and are consistent with previous findings.

Another possible source of concern is if the firms led by narcissistic CEOs were more aggressive risk-takers during the shale gas boom that preceded the price collapse. If so, the

---

[10]By adding time fixed effects and dropping the Post variable, the interaction term between CEO narcissism and Post is still negative and significant.

TABLE 4 Selective hedging, CEO narcissism and distress

This table reports the coefficients of ordinary least squares regressions of Selective hedging on CEO narcissism, proxies for adversity and other control variables. Selective hedging is calculated following the definition in Adam et al. (2017). CEO narcissism is computed following Aktas et al. (2016) as the proportions of first-person singular (I, me, my, mine, myself) to total first-person pronouns (I, me, my, mine, myself, we, us, our, ours, ourselves) in CEO speech from the transcript of the earnings calls. Post is a dummy equal to 1 in the post-shock period (Q4 2014 through Q2 2016). Negative EBIT is a dummy that takes the value 1, if Operating income is negative, 0 otherwise. Shale is the natural logarithm of a count-measure of the number of hits on the search term 'Shale' in quarterly reports. Size is the natural logarithm of assets. Distance-to-default is Merton's measure of distance-to-default. Market-to-book is the market value of equity divided by the book value of equity. Cash is cash and cash equivalents scaled by total assets. Dividend is a dummy variable that takes the value one if the firm pays a cash dividend in the fiscal year. Leverage is the book value of debt scaled by total assets. Model 3 uses Negative EBIT as a proxy of firm-specific distress and includes time fixed effects (FE). Model 4 runs the regression on the subsample of firms experiencing negative operating income exclusively after the shock (after Q4 2014). Model 5 adds Shale as an additional control variable. All variables are winsorized at a 1% level. Robust standard errors are in parenthesis. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)
CEO narcissism	0.5389***	0.5021***	0.4282***	0.8108***	0.4849***
	(0.176)	(0.172)	(0.163)	(0.263)	(0.168)
Post	0.1055**	0.1141**		0.2084***	0.1148**
	(0.044)	(0.047)		(0.073)	(0.047)
Post × CEO narcissism	−0.6229***	−0.5609**		−0.7285**	−0.5528**
	(0.222)	(0.224)		(0.341)	(0.221)
Negative EBIT		−0.0018	0.0812*	−0.0501	−0.0025
		(0.016)	(0.045)	(0.038)	(0.016)
Negative EBIT × CEO narcissism			−0.4434**		
			(0.224)		
Shale					−0.0011**
					(0.001)
Size		0.0059***	0.0066***	−0.0004	0.0065***
		(0.002)	(0.002)	(0.004)	(0.002)
Distance-to-default		0.0029	0.0028	0.0079**	0.0031
		(0.002)	(0.002)	(0.003)	(0.002)
Market-to-book		−0.0010***	−0.0011***	−0.0018**	−0.0010***
		(0.000)	(0.000)	(0.001)	(0.000)
Cash		−0.0629	−0.0406	−0.0773	−0.0526
		(0.093)	(0.093)	(0.139)	(0.093)
Dividend		0.0289**	0.0262**	0.0745***	0.0330**
		(0.013)	(0.013)	(0.019)	(0.013)

(Continues)

TABLE 4 (Continued)

	(1)	(2)	(3)	(4)	(5)
Leverage		0.0042	0.0089	0.0557	0.0094
		(0.028)	(0.028)	(0.046)	(0.028)
Intercept	0.0643**	0.0017	−0.0134	−0.1091	0.0022**
	(0.032)	(0.044)	(0.044)	(0.068)	(0.221)
Observations	920	920	920	475	920
R^2	0.013	0.037	0.062	0.094	0.041
Time FE	No	No	Yes	No	No

heavy exposure to shale would imply a higher marginal production cost and a higher vulnerability to falling prices. These circumstances could be conducive to a relatively larger reduction in financial health, which, in turn, could negatively impact the firm's ability to engage in selective hedging post-shock. To investigate this possibility, we conduct a word count in 10-Qs (quarterly reports) using 'shale' as a search term. We then use the natural logarithm of the number of hits as an additional control variable (alternatively we use a dummy variable that takes the value 1, if the number of hits is above zero). Model 5 shows that, while exposure to shale reduces selective hedging, the conclusions with respect to CEO narcissism are unchanged. In fact, in direct tests (unreported) we find no systematic relation between shale gas exposure and CEO narcissism, reducing concerns that more aggressive pre-shock risk-taking is driving the association between the two.

4.4 | Robustness tests

Table 5 reports the results from several additional regressions in which we challenge the baseline results.

4.4.1 | CEO overconfidence

As noted previously, narcissism is a stable psychological trait, in contrast to overconfidence, which is a temporary and contextual phenomenon. Certain aspects of narcissism—feelings of grandiosity and superiority—are, however, observationally equivalent to overconfidence. As a result, a potential concern is that narcissism may capture the effect of overconfidence, which has been already shown to affect selective hedging. We compute the variable CEO overconfidence as in Campbell et al. (2011), who use an adjusted version of Malmendier and Tate (2008)'s measure. Both these metrics count the number of occurrences of the confident keywords 'optimistic', 'optimism', 'confidence' and 'confident' and the non-confident keywords 'reliable', 'cautious', 'conservative', 'practical', 'frugal' and 'steady'. In terms of differences, whereas Malmendier and Tate (2008) use journalists' perceptions of the CEO from leading business publications, Campbell et al. (2011) base their measure on CEO speech. As in Aktas et al. (2016), the same transcripts of CEO speech are used as those

TABLE 5 Robustness analysis

This table reports the results of our robustness analysis. In Panel A, Model 1 adds CEO overconfidence to the set of controls. CEO overconfidence is based on CEO speech and is calculated by dividing the number of confident words at the CEO level by the sum of the total number of confident and nonconfident utterances. Model 2 runs the regression in the subsample of firms whose CEO turned over during the sample period. Model 3 includes some CEO characteristics. Option-based compensation is computed as the percentage of option awards on total compensation. Cash compensation is defined as the salary and bonus of the CEO in the fiscal year and is included as natural logarithm. CEO age is the age of the CEO as obtained from ExecuComp. CEO near retirement is a dummy equal to one, if the CEO age is 60 or above. Founder is a dummy equal to 1, if the CEO is also a founder of the firm. Model 4 runs the regression in the subsample of firms whose CEO discusses about hedging at least once in the sample period during quarterly earnings call interviews, while Model 5 further restricts the analysis to those firms whose CEO frequently discusses about hedging (i.e., where the relative number of quarterly earnings call transcripts with CEO discussing hedging is above the sample median). In Panel B, Model 1–2–3 show the coefficients of ordinary least squares regressions of Selective hedging on CEO narcissism and distress adding alternative proxies for corporate governance alongside the usual set of control. Board size and Independent directors (as a percentage of Board size) are retrieved from the 10-K reports and proxy statements filed with the SEC through the EDGAR system. Institutional ownership is a dummy equal to 1, if the percentage of firm capital held by institutional investors is higher than the median of the sample. In Panel C, Model 1 shows the coefficients of ordinary least squares regressions of Selective hedging on CEO narcissism and distress using alternative computation of Selective hedging. Selective hedging is calculated as in Adam et al. (2017) adding firm fixed effects to the second step. Model 2 adds the Hedge ratio as an additional control. Hedge ratio is computed as the sum of linear hedging contracts and put option contracts bought with a maturity of less than 12 months, scaled by expected production within the next 12 months (barrels of oil equivalents). Model 3 reports the coefficient of the second-stage from a two-step Heckit; the first step (unreported) is a probit where the dependent variable is a dummy equal to 1, if transcripts of CEO are available and the control variables are market value and the average number of analyst estimates along with the control variables in model 5 Table 3. Model 4 runs the regression using the unbalanced sample. Model 5 reports the results of random effect estimation with robust standard errors clustered at the firm level. The control variables, whose coefficients are not reported, are the same as those in model 2 Table 4. All variables are winsorized at a 1% level. Robust standard errors are in parenthesis. *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.

	Panel A					Panel B		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
CEO narcissism	0.5132***	0.2977**	0.4076*	0.4179**	0.6263**	0.4614***	0.3892**	0.5253***
	(0.173)	(2.114)	(0.246)	−0.174	−0.267	(0.170)	(0.193)	(0.177)
Post	0.3063***	−0.0141	0.1302*	0.0950**	0.2244***	0.1099**	0.1023**	0.1215**
	(0.071)	(−0.723)	(0.073)	−0.048	−0.085	(0.047)	(0.052)	(0.048)
Post × CEO narcissism	−0.6089***		−0.7277**	−0.4584**	−0.9609**	−0.5448**	−0.4655*	−0.5874**
	(0.220)		(0.314)	−0.225	−0.39	(0.227)	(0.252)	(0.228)
CEO overconfidence	0.0110							
	(0.065)							
Post × CEO overconfidence	−0.2824***							
	(0.090)							

(Continues)

TABLE 5 (Continued)

	Panel A					Panel B		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)
Option-based compensation			−0.1569***					
			(0.048)					
Cash compensation			−0.0035					
			(0.030)					
CEO age			0.0008					
			(0.002)					
CEO near retirement			−0.0257					
			(0.033)					
Founder			−0.0359					
			(0.031)					
Board size						0.0042		
						(0.004)		
Independent directors							−0.1465**	
							(0.054)	
Institutional ownership								−0.0004*
								(0.000)
Intercept	0.0915*	0.0515	−0.0753	−0.0016	−0.0377	−0.0184	0.1402	0.0312
	(0.048)	(0.648)	(0.255)	−0.047	−0.077	(0.053)	(0.0577)	(0.044)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	920	326	480	887	496	912	824	920
R^2	0.051	0.090	0.093	0.034	0.082	0.038	0.043	0.039

	Panel C				
	(1)	(2)	(3)	(4)	(5)
CEO narcissism	0.2153***	0.5476***	0.4731***	0.6033***	0.5605***
	(0.063)	(0.170)	(0.168)	(0.174)	(0.212)
Post	0.0503***	0.0978**	0.1168**	0.1262***	0.1232**
	(0.018)	(0.046)	(0.050)	(0.046)	(0.051)
Post × CEO narcissism	−0.2932***	−0.5574**	−0.5443**	−0.6635***	−0.4021**
	(0.084)	(0.221)	(0.233)	(0.224)	(0.202)
Hedge ratio			−0.1583***		
			(0.030)		
Intercept	0.0604***	0.0906**	−0.0094	−0.6635***	0.0268
	(0.016)	(0.043)	(0.045)	(0.224)	(0.070)
Control variables	Yes	Yes	Yes	Yes	Yes
Observations	920	920	920	977	920
R^2	0.067	0.078	0.039	0.036	0.0107

used for the narcissism indicator and we create an overconfidence measure by summing the number of confident and nonconfident occurrences at the CEO level and dividing the confident words by the sum of the total number of confident and nonconfident utterances. The resulting CEO overconfidence measure is a variable ranging from 0 to 1, with 1 indicating that only confident utterances were made (maximum level of overconfidence). First, we notice that CEO narcissism is unlikely to capture the CEO overconfidence as the two variables have a very low correlation.[11] Second, we add the CEO overconfidence as well as its interaction with the Post dummy to our baseline regression (Model 1, Table 5). Interestingly, the coefficient on CEO overconfidence is not statistically significant,[12] whereas the interaction variable Post × CEO overconfidence is negative and significant, similarly with the behaviour of the narcissist CEOs. However, the results, more importantly, indicate that the association between selective hedging and CEO narcissism is unchanged compared to the baseline regressions.

4.4.2 | Endogenous firm-CEO matching

A legitimate concern is that the relationship between CEO narcissism and selective hedging is endogenous. In fact, one might argue that the association could be due to some (unobservable) firm characteristics that simultaneously drive the choice of a narcissist CEO and the speculative behaviour towards the oil price risk. Was this the case, the observed selective hedging would not be caused by the CEO narcissism but rather by some firm characteristics (i.e., the risk preference of the board of directors) that, in turn, drive the selection of a narcissist CEO. To dispel this concern, we restrict the analysis to the subsample of firms where we observe a CEO turnover during the sample period. This procedure reduces the number of firms in the sample from 83 to 30 and the number of firm-quarter observations from 920 to 326. We first verify if the narcissism score associated with the new CEO is close to one of the departing officer. If this is the case, it cannot rule out the hypothesis of a nonrandom association between the firm (unobservable) characteristics and the narcissism of its CEO. To respond to this question, for each of the 30 firms where we observe a CEO turnover, we look at the transitions from high-to-low narcissism scores. More specifically, defining high (low) score a firm whose CEO shows a narcissism score above (below) the median, we identify four possible transitions after the turnover that are companies moving from a high narcissist CEO to another high narcissist CEO, from a low narcissist to another low narcissist and, finally from a low to a high narcissist and vice versa. Should companies show a preference for a given level of CEO narcissism, transitions should concentrate on the two subgroups: High-to-high and low-to-low. On the contrary, should narcissism be a trait that is randomly distributed, we should observe a fairly even distribution across the four possible classes. Following this approach, we find that the distribution is uniform across the classes, with eight cases for each transition high-to-low and low-to-high and seven cases for each transition high-to-high and low-to-low, therefore rejecting the concern of systematic matching between firm and CEO narcissism.

---

[11]The correlation between CEO narcissism and CEO overconfidence is −0.03, which is not statistically different from zero.

[12]This result is in contrast to Adam et al. (2015), who show that overconfidence is positively related with selective hedging. However, these authors measure overconfidence indirectly, inferring it from managers' reactions to past gains and losses related to hedging positions.

Having reassured that narcissism scores are different between CEOs serving the same company, Table 5, Model 2 reports the results of our baseline regression only for the firms whose CEO has turned during the sample period. If the CEO narcissism were only capturing the effect of some firm-specific characteristics that we do not (or cannot) control for, this variable should no longer be significant as the same company has now two different CEOs, with a different level of narcissism, in duty during the observation period. The regression shows instead that CEO narcissism holds its statistical significance.[13]

4.4.3 | Firm-specific CEO characteristics

In the baseline regression, we provide some evidence on the positive association between the level of CEO narcissism score and firm selective hedging. However, financial literature has shown that some CEO characteristics are likewise associated with the hedging propensity or the level of selective hedging. To verify that the evidence on CEO narcissism is robust to these characteristics, we have collected CEO-specific variables from Thomson Execucomp. This reduces the size of our sample to 480 firm-quarter observations and 41 unique firms (out of 83). Model 3 of Table 5 reports the result of our baseline regression where we add several CEO-specific variables. Specifically, we include compensation variables, such as the (log of) salary and bonus of the CEO in the fiscal year (Cash compensation) and the percentage of option-based on total compensation (Option-based compensation), the age of the CEO (CEO age and CEO near retirement which is a dummy equal to one, if the CEO age is 60 or above) and finally a dummy equal to 1, if the CEO is also a founder of the firm (Founder).[14] Baseline regression results are largely confirmed after controlling for CEO characteristics. Although the statistical significance of the coefficients slightly weakens, also due to the drop in sample size, the association between CEO narcissism as well as its interaction with the Post dummy remains unaltered.

4.4.4 | CEO involvement on hedging decisions

A legitimate doubt is whether CEOs are deeply involved with the decision to fully or partially hedge the oil risk exposure. We argue that in the oil and gas industry the decision to hedge is of utmost importance and considered a strategic decision that guarantees the CEO involvement. The size of the risk exposure, combined with the oil price volatility, creates highly sizeable effects in the company income that are a direct function of the hedge ratio. For this reason, a CEO would hardly overlook this strategic decision. However, to provide more reassurance regarding the CEO personal involvement, we have searched in the earnings call transcripts, the words 'hedge', 'hedging' and 'hedged'. Out of 961 transcripts, we find that in 782 of them, which accounts for 81% of the total sample, there is explicit mention of the firm hedging policy. This is transcript level evidence that hedging is an important topic for sample firms and likely consider relevant issues for the top firm executive. At the firm level, the frequency of

---

[13]Although we still include the Post dummy to capture the cross-section shift in selective hedging after the oil price shock, we do not add the Post × CEO narcissism interaction variable as we cannot entirely observe the same CEO before and after the shock.

[14]We do not include a dummy for gender as we have no female CEO in the final sample.

occurrences in which CEOs report about company hedging is even more striking, with the CEO citing hedging at least once in the sample period in 92% (76 out of 83) of firms. Model 4 restricts the analysis to those 76 firms only, hence excluding the companies for which we have no evidence of any type of CEO mention about the firm hedging decision. To further challenge our results, in Model 5, we further require that hedging is a topic regularly discussed by the CEO during the sample period and take the subsample of firms whose CEO frequently presents hedging-related topics (i.e., where the relative number of transcripts with CEO discussing hedging is above the sample median). In both these two models the results remain unaltered.[15]

4.4.5 | Selective hedging and corporate governance

The practice of selective hedging is potentially detrimental to firm value. As a result, good corporate governance mechanisms may reduce the firm propensity to engage in this risky activity. Along this line, for instance, Adam et al. (2017) show that larger boards speculate more than firms with smaller boards. To verify if the documented relationship between selective hedging and CEO narcissism holds after controlling for different corporate governance mechanisms, we add (Panel B) three models where we include board size, percentage of independent directors and, to account also for external monitoring, institutional investors ownership in our specifications.[16] Model 1 reports the baseline regression along with usual controls and the board size as measured by the number of directors.[17] We notice no effect of board size on the propensity for firms to engage in selective hedging practices. More importantly, the inclusion of the board size does not affect the relationship between selective hedging and the CEO narcissism, along with its interaction with the Post dummy. In Model 2, we add, as additional proxy for internal monitoring governance mechanism, the percentage of independent directors. Although the availability of this variable slightly reduces the sample size, we observe a negative association between the proportion of outside directors and the size of firm selective hedging, suggesting that independent directors are indeed an effective mechanism to reduce the CEO discretion regarding the decision of what proportion of financial risk has to be hedged. However, despite the moderative effect of the larger presence of independent directors, CEO narcissism continues to be positively associated with selective hedging and results from baseline regressions are largely unaffected. The third model reports the results of the inclusion of a dummy variable that takes the value of one when the institutional ownership is higher than the median of the sample (Institutional ownership). Although we observe a mild reduction of firm selective hedging when the institutional ownership is higher,

---

[15]To verify whether narcissistic CEOs discharge responsibilities in the event of bad performance, we also regress (unreported) CFO turnover against CEO narcissism and proxies of performance. However, we find no statistically significant association between CFO turnover and CEO narcissism as well as CFO turnover and after-shock or negative EBIT.

[16]We collect data on board size and independent directors from the 10-K reports and proxy statements filed with the SEC through the EDGAR system. Independent directors are determined in accordance with the corporate governance standards of the NASDAQ Stock Market for listed companies. Institutional ownership data set is from Refinitiv Eikon and it includes quarterly information on ownership stake by institutional investors (specifically, the following Refinitiv Eikon categories have been included: Bank and Trust, Brokerage Firms, Endowment Fund, Hedge Fund, Hedge Fund Portfolio, Independent Research Firms, Insurance Company, Investment Advisor, Investment Advisor/Hedge Fund, Mutual Fund, Pension Fund Portfolio, Private Equity, Research Firm, Sovereign Wealth Fund, Venture Capital).

[17]In unreported regressions, we find similar results using a dummy variable equal to 1 when the board size is larger than the sample median.

in line with the argument that external monitoring may increase the firm propensity to constantly hedge financial risks, the documented relationship between CEO narcissism and selective hedging holds true.

4.4.6 | Other robustness checks

Panel C of Table 5 likewise reports a battery of additional robustness checks. To account for possible omitted variable bias, we follow Adam et al. (2017) and in Model 1 we replicate our measure of selective hedging based on a two-step model by adding firm-fixed effects to the second stage of the Heckman regression predicting the magnitude of hedging. As can be seen, the main conclusions are unaffected.

In Model 2 we instead control for the possibility that the way selective hedging is defined is sensitive to the overall level of hedging. This could possibly confound the results in that the baseline results on narcissism are driven by differences in hedging intensity rather than variability in hedging. Model 2 confirms that hedging intensity indeed matters to selective hedging: The higher the hedge ratio, the lower the tendency to hedge selectively. But this does not affect our conclusions with respect to CEO narcissism, which continues to be significant at the 1% level. The interaction term with the Post variable in fact displays the same statistical significance compared to the results in Table 4.

Models 3 and 4 address the possibility that our analysis could be tainted by sample selection bias. In particular, Model 3 reports the coefficient of the second-stage from a two-stage selection model; since our main analysis is ultimately constrained to those firms with earning call transcripts, the first step (unreported) is a probit where the dependent variable is a dummy equal to 1, if the transcript of CEO speech is available. As in Aktas et al. (2016), in the first stage, the average number of analyst estimates and market value are used as instruments along with the control variables used in the baseline regression. CEO narcissism and its interaction with Post are statistically significant at similar levels to those previously reported. Finally, Model 4 uses an unbalanced sample rather than the balanced sample in the baseline results.[18] Conclusions are unaffected across the board.

Finally, Model 5 incorporates random effect estimation and standard errors clustered at the firm level. Again, we conclude that our results with respect to CEO narcissism are robust. In untabulated regressions, we also cluster errors by CEO. The conclusions remain the same also in this case.

5 | CONCLUSIONS

In this study, we develop and test the hypothesis that narcissistic CEOs hedge more selectively. Given the widespread usage of derivatives among firms and the well-documented high levels of narcissism among corporate leaders, this is an important question to bring evidence on. The empirical evidence we present suggests that CEO narcissism is associated with more selective hedging.

---

[18]This use of the unbalanced sample explains the modest difference in the number of observations (977 as opposed to 920 in the baseline models).

Research on how senior executives' narcissistic tendencies affect a firm's policies tends to naturally gravitate towards big and 'glamorous' corporate activities, such as acquisitions and strategy-making. This is not surprising considering that a narcissist indeed craves the massive attention and excitement that comes with such transformative events. Our results bring attention to the fact that CEO narcissism may also affect value-relevant policies that do not directly attract external attention, but likely gain praise from internal peers and generate a constant supply of attention. An oft-neglected dimension of narcissism is that the need for positive self-image reinforcement is continuous. The narcissist needs applause at frequent intervals and may be tempted to use corporate resources to maintain the illusion of grandiosity even in more mundane circumstances.

Choosing derivative positions based on market views seems widely accepted among corporates, yet this practice can be viewed as part of the agency problem of risk management. Presently, there exists scarce, if any, evidence suggesting that firms are successful at timing the markets. Selective hedging does, however, lead to less predictability and transparency about firm performance. Boards of directors in firms headed by CEOs with narcissistic tendencies should be aware of their above-average propensity to hedge selectively and possibly seek to rein in excessive usage of derivatives that is lacking in due diligence.

The results in this study also point to an area where more research is needed: The possibility that the effect of CEO narcissism on corporate policies is state-dependent. We document a significant relative decrease in the influence of narcissism on selective hedging in adverse circumstances. We have advanced the interpretation that such individuals are more prone to extremes; not just to feelings of grandiosity but also to a sense of defeat and despair that can be traced back to fundamentally low self-esteem. Future research should further explore to which extent the impact of CEO narcissism on corporate policies is mediated by changes in external circumstances.

ACKNOWLEDGMENT

REFERENCES

Aabo, T., & Eriksen, N. B. (2018). Corporate risk and the humpback of CEO narcissism. *Review of Behavioral Finance*, 10, 252–273.

Adam, T. R., & Fernando, C. S. (2006). Hedging, speculation, and shareholder value. *Journal of Financial Economics*, 81, 283–309.

Adam, T., Fernando, C. S., & Golubeva, E. V. (2015). Managerial overconfidence and corporate risk management. *Journal of Banking and Finance*, 60, 195–208.

Adam, T. R., Fernando, C. S., & Salas, J. M. (2017). Why do firms engage in selective hedging? Evidence from the gold mining industry. *Journal of Banking and Finance*, 77, 269–282.

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, 113–137.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.).

Andrade, G., & Kaplan, S. N. (1998). How costly is financial not economic distress? Evidence from highly leveraged transactions that became distressed. *Journal of Finance*, 53, 1443–1493.

Andrén, N. (2016). *Corporate governance and firm performance: Evidence from the oil price collapse of 2014–2015*. Knut Wicksell Working Paper 2016:5.

Badoer, D. C., Dudley, E., & James, C. M. (2020). Priority spreading of corporate debt. *The Review of Financial Studies*, 33, 261–308.

Bakke, T., Mahmudi, H., Fernando, C., & Salas, J. (2016). The causal effect of option pay on corporate risk management. *Journal of Financial Economics*, *120*, 623–643.

Beber, A., & Fabbri, D. (2012). Who times the foreign exchange market? Corporate speculation and CEO characteristics. *Journal of Corporate Finance*, *18*, 1065–1087.

Brown, G. W., Crabb, P. R., & Haushalter, D. (2006). Are firms successful at selective hedging? *The Journal of Business*, *79*, 2925–2949.

Buyl, T., Boone, C., & Wade, J. B. (2019). CEO narcissism, risk-taking, and resilience: An empirical analysis in U.S. commercial banks. *Journal of Management*, *45*, 1372–1400.

Campbell, T., Gallmeyer, C., Johnson, M., Rutherford, S. J., & Brooke, S. (2011). CEO optimism and forced turnover. *Journal of Financial Economics*, *101*, 695–712.

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*, 351–386.

Cheng, J. T., Tracy, J. L., & Miller, G. E. (2013). Are narcissists hardy or vulnerable? The role of narcissism in the production of stress-related biomarkers in response to emotional distress. *Emotion (Washington, D.C.)*, *13*, 1004–1011.

Croci, E., Del Giudice, A., & Jankensgård, H. (2017). CEO age, risk incentives and hedging strategy. *Financial Management*, *46*, 687–716.

Elliot, A., & Thrash, T. (2001). Narcissism and motivation. *Psychological Inquiry*, *12*, 216–219.

Engelen, A., Neumann, C., & Schmidt, S. (2016). Should entrepreneurially oriented firms have narcissistic CEOs? *Journal of Management*, *42*, 698–721.

Foster, J. D., Shenesey, J. W., & Goff, J. S. (2009). Why do narcissists take more risks? Testing the roles of perceived risks and benefits of risky behaviors. *Personality and Individual Differences*, *47*, 885–889.

Froot, K. A., Scharfstein, D. S., & Stein, J. C. (1993). Risk management: Coordinating corporate investment and financing policies. *Journal of Finance*, *48*, 1629–1658.

Géczy, C. C., Minton, B. A., & Schrand, C. M. (2007). Taking a view: Corporate speculation, governance, and compensation. *Journal of Finance*, *62*, 2405–2443.

Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review*, *32*, 334–343.

Hogben, G. (1977). Linguistic style and personality. *Language and Style*, *10*, 270–284.

Jankensgård, H. (2019). Does managerial power increase selective hedging? Evidence from the oil and gas industry. *Journal of Risk and Financial Management*, *12*, 1–18.

Jin, Y., & Jorion, P. (2006). Firm value and hedging: Evidence from U.S. oil and gas producers. *Journal of Finance*, *61*, 893–919.

Kernis, M. H., & Sun, C. R. (1994). Narcissism and reactions to interpersonal feedback. *Journal of Research in Personality*, *28*, 4–13.

Kumar, P., & Rabinovitch, R. (2013). CEO entrenchment and corporate hedging: Evidence from the oil and gas industry. *Journal of Financial and Quantitative Analysis*, *48*, 887–917.

Maccoby, M. (2004). Narcissistic leaders: The incredible pros, the inevitable cons. *Harvard Business Review*, *82*, 92–101.

Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, *89*, 20–43.

Morf, C. C., & Rhodewalt, F. (2001). Unraveling the paradoxes of narcissism: A dynamic self-regulatory processing model. *Psychological inquiry*, *12*, 177–196.

Nevicka, B., de Hoogh, A. H. B., van Vianen, A. E. M., & ten ten Velden, F. S. (2013). Uncertainty enhances the preference for narcissistic leaders. *European Journal of Social Psychology*, *43*, 370–380.

Olsen, K. J., Dworkis, K. K., & Young, S. M. (2014). CEO narcissism and accounting: A picture of profits. *Journal of Management Accounting Research*, *26*, 243–267.

Olsen, K. J., & Stekelberg, J. (2016). CEO Narcissism and corporate tax sheltering. *Journal of the American Taxation Association*, *38*, 1–22.

Petrenko, O. V., Aime, F., Ridge, J., & Hill, A. (2014). Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. *Strategic Management Journal*, *37*, 262–279.

Rhodewalt, F., Madrian, J. C., & Cheney, S. (1998). Narcissism, self-knowledge organization, and emotional reactivity: The effect of daily experiences on self-esteem and affect. *Personality and Social Psychology Bulletin*, *24*, 75–87.

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

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

Shapira, Z. (1995). *Risk taking: A managerial perspective*. Russell Sage Foundation.

Stulz, R. M. (1996). Rethinking risk management. *Journal of Applied Corporate Finance*, *9*, 8–25.

Vogel, C. (2006). A field guide to narcissism. *Psychology Today*, *39*, 68–74.

de Vries, M. K. (2004). Organizations on the couch: A clinical perspective on organizational dynamics. *European Management Journal*, *22*, 183–200.

How to cite this article: Bajo, E., Jankensgård, H., & Marinelli, N. (2022). Me, myself and I: CEO narcissism and selective hedging. *European Financial Management*, 28, 809–833. https://doi.org/10.1111/eufm.12328