

Me, myself and I: CEO Narcissism and Selective Hedging

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Abstract

In this paper we test the hypothesis that CEO narcissism influences firms' hedging behaviour. Unlike rare but transformative events like acquisitions, derivative usage offers the narcissistic manager a convenient stage for bold and decisive action that generates a continuous supply of attention. It therefore represents a compelling setting for investigating whether narcissism impacts corporate policies. The 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 also find that these firms reduce selective hedging comparatively more following a sharp and unexpected 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.

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1. Introduction

According to upper echelons 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 maximize economic rents, upper echelon theory "humanizes" the analysis of 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 non-trivial 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 (Chatterjee and Hambrick 2007, Aktas et al. 2016, Olsen et al. 2014, Olsen and Stekelberg 2015). To offer a very brief summary of this research, 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 transactions based on market views, and is widespread among firms (Adam et al, 2015). We argue that selective hedging fits a certain feature of the narcissistic condition well, namely that the craving for admiration is continuous (Morf and 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 bold action that suits the psychological needs of narcissistic managers, i.e. it generates attention that reinforces the manager's self-image.

The data bears out the prediction that narcissistic managers are more inclined to engage in selective hedging. We test the narcissism-hypothesis of selective hedging using hand-collected data on derivative positions of oil and gas producers. In this industry, the market price exposure is of strategic importance, which virtually guarantees CEO involvement. The result holds in univariate regressions as well as controlling for traditional factors that are known to influence firms' hedging behaviour. The conclusion is robust to various modifications in the empirical design. In particular, it is unaffected by including measures of managerial overconfidence in the model. While 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).

Using a Difference-in-Difference-methodology (DiD) 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 he is always capable of finding someone else to blame (Vogel, 2006).

To explain the shock-induced decrease in selective hedging among narcissistic CEOs we instead appeal to the 'narcissism paradox' (Elliott and Thrash, 2001; Aabo and Eriksen, 2019). 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 the massive collapse in industry prospects and widespread firm-level distress, 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 the shock 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 Buyt et al (2019), who find lower rates of post-shock recovery in firms led by narcissistic CEOs after the financial crisis of 2007-9.

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. According to Andrade and Kaplan (1997), negative cash flows are a proxy for economic distress. Financial distress, on the other hand, is related to excessive use of leverage in this dichotomy. 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.

The DiD-methodology employed in this study helps to address concerns that the relationship between CEO narcissism and selective hedging is endogenous. The association could be due to a firm-characteristic if the board of directors has a preference for speculative behaviour and therefore chooses managers that fit this profile. But the endogeneity-story does not predict that firms with narcissistic managers decrease selective hedging more following the shock. The DiD-results therefore suggest that CEO narcissism is the mechanism that drives the tendency to hedge selectively.

This study contributes primarily to the literature on selective hedging. Our study is the first to investigate how CEO narcissism influences corporate derivative usage. On the 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 narcissism and several firm dimensions. For instance, prior studies have examined how CEO narcissism affects firm behavior such as firm strategy and performance volatility (Chatterjee and Hambrick 2007), the M&A process (Aktas et al. 2016), accounting choices (Olsen et al. 2014), and tax avoidance (Olsen and Stekelberg 2015). 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.

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 (APA, American Psychiatric Association, 1994). The narcissistic individual engages in elaborate strategies in order 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. Kets de Vries (2004: 188) states that narcissism is “at the heart of leadership” and that rising to the top of an organization 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. Maccoby 2000; Foster, Shenese, and Goff 2009). 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 and 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, on the other hand, is continuous and "chronic" (Morf and 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. For these reasons, narcissists do not take well to boredom because it creates a mismatch between inner ambitions and external goals (see e.g. Wink and

Donahue, 1997). As a result, such individuals tend to engage in “sensation-seeking” (Emmons, 1981).

We argue that the firm’s portfolio of derivative instruments offers the narcissistic CEO precisely such a venue for continuous self-affirmation. Firms are known to frequently change the composition of their 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 (Stulz, 1996; Adam et al, 2015). Speculative behaviour with respect to derivative usage is widespread among firms (Brown, Crabb, and Haushalter, 2006; Adam and Fernando, 2006; Géczy, Minton, and Schrand, 2007; Adam et al, 2017). 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 selective hedging as a direct consequence of their exaggerated self-esteem, believing in their inherent ability to outwit the market. However, the need for continuous attention 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 way to enhance one’s self-image. Making bets using derivatives draws attention and staves off boredom at the same time, 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, for example, Rosenthal and Pittinsky, 2006). This combination of the grandiose and vulnerable has been referred to as the ‘narcissistic paradox’ (Elliott and Thrash, 2011).

The dark side of the narcissistic paradox is thus that the self-esteem is fragile and may crumble when faced with adversity. Narcissistic individuals have been shown to be more susceptible to mood swings, particularly if criticized (Rhodewalt, Madrian, and Cheney, 1998). They also tend to react more strongly to negative feedback than others (e.g., Kernis and 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 other hand, 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, De Hoogh, Van Vianen, and Ten Velden (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 set-backs, and is therefore unhampered by external circumstances. He is furthermore less likely to be depressed or anxious, and is less sensitive to stress.

If this line of reasoning is descriptive, and narcissists are emboldened in times of distress, we would expect 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 to 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 US (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. The strategic nature of the oil price exposure virtually guarantees CEO oversight and involvement.

Firms are eligible for inclusion if they are headquartered in the US; 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.¹ 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.

The results in the baseline tests are based on a balanced sample of firms². 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 the robustness section 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 2,424 firm-quarters, corresponding to 221 unique firms. Balancing the sample brings the number of observations to 1,983. Selective hedging, production, or financial data was available or possible to code for 1,019 of these observations. However, since the object of the study is CEO narcissism, we are

¹ Hedging positions are identified by carefully reading the 10-Ks, as well as through a keyword search. Examples of search words are: “item 7a,” “hedg,” “derivative,” “market risk,” “swap,” “collar,” “forward,” “put option,” and “risk management.”

² Specifically, firms are required to have at least three quarters both before and after the shock to be included in the sample.

ultimately constrained only to those firms with sufficiently detailed data on CEOs. This requirement reduces sample size to 920 in the main model specification.

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 realized volatility, the oil price roughly halved within the space of one quarter (Figure D). Throughout 2011 and Q3 2014 the oil price (WTI) 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. While a modest decline appeared prior to Q4 the fall accelerated in early October and, in particular, following the OPEC announcement on November 27, 2014 when the organization changed its policy objective from price targeting (abandoning its desired price range) to market-share stabilization. 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 October 1st, predicted a Brent crude price of \$103 for 2015. Even as late as October 26, 2014, Goldman Sachs revised their price forecast for 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 NYMEX indicates speculative trading on *increasing* oil prices (Andrén, 2016).

[INSERT FIGURE 1 ABOUT HERE]

3.2 Variable construction

CEO Narcissism. We construct the narcissism metric following Chatterjee and Hambrick (2007), 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. The transcripts of CEO interviews have been retrieved using Thomson Eikon and the search yields to 3,284 documents from 126 CEOs. With the help of a specially created computer software we have isolated 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.

In order 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, tokenization, stemming, tagging, parsing, and semantic reasoning functionalities. 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.

Finally, we have counted the number of occurrences of pronouns for each transcript and computed at the CEO-level the CEO narcissism as follows:

$$\text{CEO_Narcissism} = \frac{\sum_{I,me,mine,myself}}{\sum_{I,me,mine,myself,we,our,ours,ourselves}}$$

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.

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 1 bbl of oil. Expected production is assumed to be equal to actual production (i.e. perfect foresight).

Overconfidence. We compute the overconfidence measure 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 nonconfident keywords "reliable," "cautious," "conservative," "practical," "frugal," and "steady." In terms of differences, while 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 used for the narcissism indicator and we create an overconfidence measure by summing the number of confident and non-confident occurrences at the CEO level and dividing the confident words by the sum of the total number of confident and non-confident 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).

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. *Neg Cash Flow* is a binary variable that takes the value 1 if Operating income before depreciation (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. The treatment indicator is labelled *Post*, which takes the value 1 in Q4 2014 through Q2 2016, 0 otherwise.

4. Results

4.1 Descriptive stats

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, while Aktas et al. (2015) 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 (0.18 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.

[INSERT TABLE 1 ABOUT HERE]

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 more cash. They also have higher levels of default risk, lower valuations, and a higher propensity to pay out dividends. Finally, they also exhibit more selective hedging, at least in the pre shock period.

[INSERT TABLE 2 ABOUT HERE]

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. 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, but is also economically sizeable. One standard deviation in CEO narcissism increases selective hedging by 7.4% (evaluated in terms of the unconditional mean).

In Model 2 we add two variables that target 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 is 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. Several of these are statistically significant in explaining selective hedging. While 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 prospect find it too costly to deviate from optimal hedging since doing so increases the risk of underinvestment (Froot, Scharfstein, and Stein, 1993).

[INSERT TABLE 3 ABOUT HERE]

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 4th quarter

of 2014 as captured by the binary variable *Post*. As discussed, the unexpected shock created a laboratory in financial distress. Table 4 reports the results.

[INSERT TABLE 4 ABOUT HERE]

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 on 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.

These findings are further corroborated by an analysis of firm-specific distress, based on the variable *Neg Cash Flow*. 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 rationalize and explain away. The result on the interaction with *Neg Cash Flow* suggests that there is no difference in the tendency for selective hedging if the narcissistic CEO runs a firm that experiences negative cash flow, again supporting Hypothesis 2a.

The results in Table 4 also address the issue of endogeneity. The baseline association between CEO narcissism and selective hedging could happen spuriously if both are consistent with some firm characteristics outside the model. One way this could come about is if the board of directors has a preference for speculative behaviour and

therefore hire narcissist CEOs who are more inclined to use derivatives for this purpose. While this line of argumentation also leads to the expectation of a positive baseline-association, the endogeneity-story does not predict the negative effect following adversity. If the baseline result is a firm characteristic, it would be constant across states.

Another source of endogeneity 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 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 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). 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.

A question that arises naturally is whether the shock affected 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 mean is indistinguishable from 0. Therefore, there is no statistically 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').

Instead, it indicates that it is the narcissistic CEOs' *response* to the change in circumstances that cause the relative drop in selective hedging.

4.4 Further robustness tests

In this section we continue to explore the robustness of our results. Table 5 reports the results from several additional regressions in which we challenge the baseline results. In Model 1 we add firm-fixed effects to the second step of the model predicting our selective hedging variable to account for possible omitted variable-bias, as in Adam et al (2017). As can be seen, the main conclusions are unaffected. In Model 2 Overconfidence is added to the model. As noted previously, narcissism is generally considered a stable personality trait whereas overconfidence is not. However, certain aspects of narcissism – feelings of grandiosity and superiority – are observationally equivalent to overconfidence. A potential concern is that narcissism only captures the effect of overconfidence. The results in Model 2 indicate that the results with respect to narcissism are essentially unchanged compared to the baseline regressions. Contrary to expectations, the coefficient on Overconfidence is negative. This is also in contrast to Adam et al (2015). However, these authors measure overconfidence indirectly, inferring it from managers' reactions to past gains and losses related to hedging positions.

In Model 3 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 3 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.

Model 4 provides an additional test to control for endogeneity. One might argue that, since the choice of the CEO is endogenous, the level of CEO narcissism may capture some (likely, unobservable) firm characteristics. In order to dispel this doubt, we follow Dittmar and Duchin (2015) and restrict the analysis on the subsample of firms that have changed their CEO. The resulting sample reduction (from 920 to 326) in the number of observations is the result of only including firms whose CEOs turned over during our 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 CEO now serves in two different companies. The regression shows instead that CEO narcissism holds its statistical significance. The interaction with the *Post* variable also falls below the standard confidence interval, in spite of the sizeable sample reduction.

Models 5 and 6 address the possibility that our analysis could be tainted by sample selection bias. In particular, Model 5 reports the coefficient of the second-stage from a two-stage selection model; 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 instrument 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 6 uses an

unbalanced sample rather than the balanced sample in the baseline results.³ Conclusions are unaffected across the board.

[INSERT TABLE 5 ABOUT HERE]

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.

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 also may affect value-relevant policies that are executed "under the radar". An oft-neglected dimension of narcissism is that the need for positive self-image reinforcement is continuous. The narcissist does not want to be bored, 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

³ This use of the unbalanced sample explains the modest difference in the number of observations (977 as opposed to 920 in the baseline models).

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 a 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.

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APPENDIX

Figure I

WTI spot price (\$ per barrel)

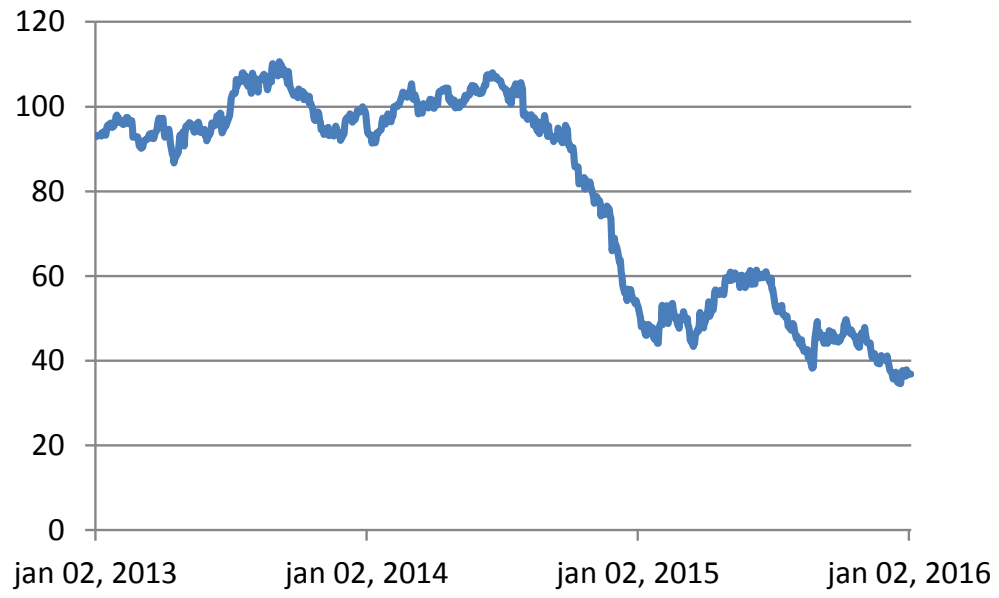


Table 1. Descriptive statistics

This Table reports summary statistics for variables used in the study. *Total Assets* 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. *Negative Ebit* is a dummy that takes the value 1 if Operating income before depreciation is negative, 0 otherwise. *Dividend* is a dummy variable that takes the value one if the firm pays a cash dividend in the fiscal year. *Selective Hedging* is calculated following the definition in Adam et al (2017). *CEO Narcissism* is computed following Chatterjee and Hambrick (2007) 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. All variables are winsorized at 1% level.

| | N | Mean | p25 | p50 | p75 | Sd |
|---------------------|------|---------|-------|--------|---------|----------|
| Total Assets | 1983 | 4081.36 | 20.64 | 213.71 | 2007.91 | 10521.29 |
| Market to book | 1949 | 2.83 | 0.51 | 1.24 | 2.46 | 13.79 |
| Leverage | 1964 | 0.41 | 0.18 | 0.34 | 0.50 | 0.39 |
| Distance to default | 1369 | 4.85 | 0.73 | 3.98 | 7.81 | 5.23 |
| Cash | 1983 | 0.08 | 0.00 | 0.02 | 0.09 | 0.15 |
| Negative Ebit | 1983 | 0.59 | 0.00 | 1.00 | 1.00 | 0.49 |
| Dividend | 1983 | 0.38 | 0.00 | 0.00 | 1.00 | 0.48 |
| Selective Hedging | 1148 | 0.18 | 0.06 | 0.12 | 0.17 | 0.25 |
| CEO Narcissism | 1274 | 0.20 | 0.16 | 0.20 | 0.24 | 0.06 |

Table 2. Mean Differences

This Table reports the mean of the considered variables, distinguishing between firms whose CEO is more *vs* less narcissistic than the sample mean. *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 before depreciation is negative, 0 otherwise. *Selective Hedging* is calculated following the definition in Adam et al (2017). *CEO Narcissism* is computed following Chatterjee and Hambrick (2007) 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. All variables are winsorized at 1% level. *, **, *** denote statistical significance at 1, 5, and 10 percent, respectively.

| | CEO narcissism | | | | | |
|-----------------------------|-------------------|------|-------------------|------|------------|-----|
| | Below sample mean | | Above sample mean | | Difference | |
| | Obs. | Mean | Obs. | Mean | | |
| Size | 674 | 6.54 | 600 | 5.76 | 0.78 | *** |
| Distance to default | 607 | 5.33 | 520 | 4.69 | 0.64 | ** |
| Market to book | 668 | 3.19 | 584 | 1.76 | 1.43 | ** |
| Cash | 674 | 0.05 | 600 | 0.06 | -0.01 | *** |
| Dividend | 674 | 0.48 | 600 | 0.56 | -0.08 | *** |
| Leverage | 668 | 0.42 | 589 | 0.43 | -0.01 | |
| Negative ebit | 674 | 0.50 | 600 | 0.48 | 0.02 | |
| Selective Hedging | | | | | | |
| <i>Overall sample years</i> | 557 | 0.15 | 436 | 0.18 | -0.03 | ** |
| <i>Pre shock</i> | 268 | 0.15 | 252 | 0.19 | -0.04 | ** |
| <i>Post shock</i> | 244 | 0.17 | 229 | 0.16 | 0.01 | |

Table 3. Selective hedging and CEO narcissism

This Table reports the coefficients of OLS regressions of Selective Hedging on CEO narcissism and other control variables. *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 before depreciation is negative, 0 otherwise. *Selective Hedging* is calculated following the definition in Adam et al (2017). *CEO Narcissism* is computed following Chatterjee and Hambrick (2007) 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. All our specifications include time fixed effects. All variables are winsorized at 1% level. Robust standard errors are in parenthesis. *, **, *** denote statistical significance at 1, 5, and 10 percent, respectively.

| | (1) | (2) | (3) | (4) | (5) |
|---------------------|-----------|-----------|-----------|------------|------------|
| 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) |
| CEO Narcissism | 0.2226** | 0.2401** | 0.2225** | 0.2172* | 0.2186* |
| | (0.108) | (0.114) | (0.113) | (0.112) | (0.113) |
| Intercept | 0.0961*** | 0.0250 | 0.0226 | 0.0230 | 0.0254 |
| | (0.025) | (0.034) | (0.035) | (0.039) | (0.040) |
| Observations | 993 | 920 | 920 | 920 | 920 |
| R-squared | 0.032 | 0.049 | 0.053 | 0.058 | 0.059 |
| Time FE | Yes | Yes | Yes | Yes | Yes |

Table 4. Selective hedging, CEO narcissism and distress

This Table reports the coefficients of OLS regressions of Selective Hedging on CEO narcissism, proxies for adversity and other control variables. *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 before depreciation is negative, 0 otherwise. *Selective Hedging* is calculated following the definition in Adam et al (2017). *CEO Narcissism* is computed following Chatterjee and Hambrick (2007) 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). *Shale* is the natural logarithm of a count-measure of the number of hits on the search term 'Shale' in quarterly reports. Model 3 includes time fixed effects. All variables are winsorized at 1% level. Robust standard errors are in parenthesis. *, **, *** denote statistical significance at 1, 5, and 10 percent, respectively.

| | (1) | (2) | (3) | (4) |
|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Size | | 0.0059*** (0.002) | 0.0066*** (0.002) | 0.0065*** (0.002) |
| Distance to default | | 0.0029 (0.002) | 0.0028 (0.002) | 0.0031 (0.002) |
| Market to book | | -0.0010*** (0.000) | -0.0011*** (0.000) | -0.0010*** (0.000) |
| Cash | | -0.0629 (0.093) | -0.0406 (0.093) | -0.0526 (0.093) |
| Dividend | | 0.0289** (0.013) | 0.0262** (0.013) | 0.0330** (0.013) |
| Leverage | | 0.0042 (0.028) | 0.0089 (0.028) | 0.0094 (0.028) |
| Negative Ebit | | -0.0018 (0.016) | 0.0812* (0.045) | -0.0025 (0.016) |
| CEO Narcissism | 0.4655*** (0.165) | 0.5021*** (0.172) | 0.4282*** (0.163) | 0.4849*** (0.168) |
| Post | 0.0895** (0.042) | 0.1141** (0.047) | | 0.1148** (0.047) |
| Post * CEO_Narcissism | -0.4803** (0.214) | -0.5609** (0.224) | | -0.5528** (0.221) |

| | | | | |
|--------------------------------|----------|---------|-----------|-----------|
| Negative Ebit * CEO Narcissism | | | -0.4434** | |
| | | | (0.224) | |
| Shale | | | | -0.0011** |
| | | | | (0.001) |
| Intercept | 0.0752** | 0.0017 | -0.0134 | 0.0022** |
| | (0.030) | (0.044) | (0.044) | (0.221) |
| Observations | 993 | 920 | 920 | 920 |
| R-squared | 0.008 | 0.037 | 0.062 | 0.041 |
| Time FE | No | No | Yes | No |

Table 5. Robustness analysis

This Table reports the results of our robustness analysis. Model 1 shows the coefficients of OLS 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 and 3 include additional control variables, that are CEO overconfidence and Hedge Ratio, respectively. *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. *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 4 runs the regression in the subsample of firms whose CEO turned over during the sample period. Model 5 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 average number of analyst estimates along with the control variables in model 5 Table 3. Model 6 runs the regression using the unbalanced sample. The control variables, whose coefficients are not reported, are the same as those in model 2 Table 4. All variables are winsorized at 1% level. Robust standard errors are in parenthesis. *, **, *** denote statistical significance at 1, 5, and 10 percent, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------|-----------------------|-----------------------|---------------------------|----------------------|----------------------|-----------------------|
| CEO Narcissism | 0.2153*** (0.063) | 0.4844*** (0.176) | 0.5476*** (0.170) | 0.6645*** (0.219) | 0.4731*** (0.168) | 0.6033*** (0.174) |
| Post | 0.0503*** (0.018) | 0.1185** (0.047) | 0.0978** (0.046) | 0.1336** (0.060) | 0.1168** (0.050) | 0.1262*** (0.046) |
| Post * CEO Narcissism | -0.2932*** (0.084) | -0.5653** (0.225) | -0.5574** (0.221) | -0.7063** (0.283) | -0.5443** (0.233) | -0.6635*** (0.224) |
| CEO Overconfidence | | -0.1474*** (0.048) | | | | |
| Hedge Ratio | | | - 0.1583*** (0.030) | | | |
| Intercept | 0.0604*** (0.016) | 0.0915* (0.048) | 0.0906** (0.043) | -0.0091** (0.080) | -0.0094 (0.045) | -0.6635*** (0.224) |
| Control variables | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 920 | 920 | 920 | 326 | 920 | 977 |
| R-squared | 0.067 | 0.051 | 0.078 | 0.102 | 0.039 | 0.036 |