

CEO narcissism and the takeover process: From private initiation to deal completion

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Abstract

CEOs are known to play a central role in large investment decisions such as mergers and acquisitions. The literature thus far has mainly focused on the impact of CEO characteristics on the wealth effect associated with the acquisition decision. This paper goes a step further by analyzing the influence of CEO's personality trait on three dimensions of the takeover process: deal initiation, length of the private takeover process, and the probability of completing an announced deal. The adopted personality trait is CEO narcissism, which is measured using patterns of personal pronoun usage in more than 1,700 transcripts of CEO speech. Information on the private part of the takeover process is collected from Security and Exchange Commission (SEC) filings. Our main findings can be summarized as follows. More narcissistic acquiring CEOs are more likely to be the initiator of the transaction. Compared to their less narcissistic peers, they also tend to negotiate faster during the private part of the process, and they are more likely to complete the transaction. Additional analyses show that target CEO narcissism is associated with higher bid premiums and lower acquirer abnormal returns. Our results make a strong case for the impact of CEO psychological characteristics on many dimensions of the takeover process.

Key words: mergers and acquisitions; takeover process; CEO; narcissism; hubris; overconfidence

1. Introduction

The recent mergers and acquisitions literature documents the importance of CEO psychological characteristics in explaining acquisitiveness and value effects (Malmendier and Tate, 2008). A separate stream of research has provided detailed analyses of the private takeover process which reveal many new features of takeover transactions (Boone and Mulherin, 2007, 2009; Aktas et al., 2010). Our paper aims to link the insights gained from these two streams of research by documenting the effect of CEO psychological characteristics on the takeover process, including its private aspects.

The importance of CEO psychological characteristics in the M&A context was first suggested in Roll (1986). The paper describes how losses to acquiring shareholders on the announcement of a deal may be caused by hubristic CEOs who overbid for a target as they overestimate both synergies and their ability to extract them. Subsequently, researchers in strategic management and in finance have tested the empirical implications of the hubris hypothesis. Their findings show that more hubristic CEOs tend to offer higher bid premiums (Hayward and Hambrick, 1997), and that the markets react less favorably to acquisitions carried out by overconfident CEOs (Malmendier and Tate, 2008).

Research on the private part of the takeover process has described its hitherto undocumented complexity. One-on-one negotiations do not seem to be the overwhelmingly dominant selling procedure that the literature previously reported. Boone and Mulherin (2007) document that half of all deals are some form of auction with more than one potential bidder, the remainder being friendly one-on-one negotiations. This figure far exceeds the proportion of competitive deals inferred from public takeover contests. For example, Betton et al. (2009) report that around 8% of their sample of public takeover contests involves multiple bidders. Deal initiation (i.e., whether the target or the acquirer initiates the transaction) has become a topic of research in itself. In a wider study of the effects and determinants of deal initiation, Simsir (2009) reports that around 59% of transactions are initiated by acquirers.

We identify two areas which existing research fails to address completely. First, in the M&A literature, papers deal almost exclusively with the link between the CEO's psychological characteristics and value effects and the propensity to acquire, but do not consider the multiple aspects of the takeover process (e.g., bidding behavior, initiation, private process length, deal completion). Second, to the best of our knowledge, research to date only analyzes the effect of the psychological characteristics of the acquiring CEO. However, an M&A transaction is a negotiation process involving two parties, and the interplay between the acquiring and target CEO has been largely ignored by the literature. Our study addresses these two issues by bridging the gap between

research into the private takeover process and the effect of both target and acquirer CEO psychological characteristics.

We choose to focus on CEO narcissism as, although it is related to hubris and overconfidence, it has distinctive features which enable us to make unambiguous predictions about the effect of acquirer CEO narcissism. Narcissistic individuals must continuously undertake actions which reinforce their self image and maintain their ideal ego (Buss and Chiodo, 1991; Chatterjee and Hambrick, 2007). The interpersonal aspect is also important: narcissists are manipulative and lack empathy (American Psychiatric Association 1994), a feature which is likely to be of paramount importance in the context of merger negotiations. An additional advantage of narcissism is that it is a well-defined concept which is grounded in psychology theory, and researchers in psychology have developed theoretically-grounded indirect measures which can be used to capture narcissism in large samples of individuals. Finally, the existing literature in strategic management makes a convincing case for the importance of CEO narcissism in explaining firm activities and outcomes (Kets de Vries and Miller 1985; Chatterjee and Hambrick 2007).

We measure the narcissism of acquirer and target CEOs by analyzing personal pronoun usage. The use of first person singular pronouns in speech is correlated with narcissism scores captured using tried and tested direct measures (Raskin and Shaw, 1988). We estimate a narcissism score for the CEOs in our M&A sample by calculating the proportion of first person singular pronouns to total first person pronouns in CEO speech taken from transcripts of interviews. We are able to estimate narcissism scores for both acquiring and target CEOs for a sample of 146 M&A deals over the period 2002 to 2006. The mean narcissism score for acquirer CEOs is 0.215, while that of target CEOs is 0.185. The difference is statistically significant and shows that, on average, acquirer CEOs in our sample tend to be more narcissistic than target CEOs.

We consider the takeover process from the acquirer CEO perspective. We relate the degree of narcissism of the acquirer CEO to three dimensions of the takeover process: the identity of the party initiating the takeover process (i.e., whether the initiator of the transaction is the target or the acquirer), the length of the private takeover process, and the likelihood of completing the announced transaction. We choose to emphasize these three aspects because they have been less extensively studied in the academic literature than other aspects of M&A, such as the propensity to acquire and value effects. Research into the private part of the takeover process is relatively recent and until the work of Boone and Mulherin (2007), there was no established methodology enabling researchers to capture private aspects such as deal initiation and private process length. To take into account the interplay between acquirer and target CEOs during merger negotiations, we also include target CEO

narcissism as an explanatory variable of interest in our multivariate models. We finally provide additional results on the effects of CEO narcissism on the bid premium and market reactions around the announcement date.

Our empirical results confirm the effect of CEO narcissism on the different aspects of the takeover process. The analysis of deal initiation shows that narcissistic acquirer CEOs are more likely to initiate the transaction. We also document that acquiring CEO narcissism is negatively related to the length of the private takeover process. Narcissistic acquirers are also more likely to complete the initiated transaction. These findings are consistent with the motivational aspect of narcissism, as narcissists need to undertake highly visible actions to continuously reinforce their self-image. We document moreover that target CEOs with higher degree of narcissism are able to extract higher bid premiums from private merger negotiations. Consequently, our results indicate that announcement abnormal returns to acquirer shareholders are negatively related to target CEO narcissism. In our sample, acquirer CEO narcissism seems to affect neither bid premium nor wealth effects (abnormal returns) for acquirer shareholders. Our results are robust to alternative specifications of the narcissism measure, and also to additional tests taking into account the potential simultaneity between deal initiation and choice of selling procedure (auction versus negotiation) and possible endogeneity between the choice of selling procedure and bid premium/returns.

Our paper complements previous studies that provide evidence of CEO behavioral biases (such as hubris, narcissism and overconfidence) which affect acquisition behaviors. Hayward and Hambrick (1997) report that hubristic acquirers tend to offer higher premiums to target shareholders. Chatterjee and Hambrick (2007) show that the degree of acquiring CEO narcissism is positively related to the number and size of acquisitions in the computer industry. Malmendier and Tate (2008) document that acquirer CEO overconfidence negatively affects acquirer abnormal returns, and has a positive effect on firm acquisitiveness. In contrast to previous literature, we emphasize that the whole takeover process from deal initiation to deal completion is influenced by CEOs' narcissism and that the interplay between target and acquirer psychological traits has a substantial influence on the outcomes of the takeover process.

The paper is organized as follows. Section 2 introduces the narcissism concept, reviews its importance in explaining CEO behavior, and describes the private takeover process. It then goes on to lay out our hypotheses for the effect of CEO narcissism on the takeover process. Section 3 is given over to the presentation of our data and our methodology. Section 4 summarizes our main findings and robustness checks. Section 5 concludes.

2. CEO narcissism and the takeover process

The recent M&A literature has provided new and relevant insights into two novel areas: the process by which private negotiations or auctions take place and the effect of the psychological characteristics of CEOs on firm performance. In this section, we present the main conclusions of these two streams of research. The first subsection defines the narcissism concept, positions narcissism relative to other psychological characteristics and motivates the use of the narcissism concept within the M&A setting. The second subsection summarizes the principal findings in the literature analyzing the effect of CEO psychological characteristics on firm behavior in general and within the M&A setting. A final subsection provides details of the takeover process, and goes on to lay out our main testable hypotheses.

2.1 Narcissism

Narcissism is a complex multidimensional concept which traces its ancestry back to Freud's founding works (Freud, 1914). In the personality psychology tradition, narcissism is an ego-pathology whose sufferers exhibit a number of symptoms. These are detailed in the DSM IV (American Psychiatric Association, 1994), and provide a description of narcissistic personality disorder along with a list of diagnostic criteria for use by clinicians (see Appendix 1). According to the DSM IV, narcissistic personality disorder is "*a pervasive pattern of grandiosity (in fantasy or behavior), need for admiration, and lack of empathy, beginning by early adulthood and present in a variety of contexts*" (p. 717). The diagnostic criteria describe individuals who are characterized by an exaggerated sense of their own importance which causes them to overestimate their abilities and achievements. They require excessive admiration from others and tend to undertake grandiose and highly visible actions in order to continuously reinforce their egos. They have a grossly overdeveloped sense of entitlement and display arrogance or contempt towards others. In addition, they are interpersonally exploitative and unscrupulously use others to their own ends, as they have little capacity for empathy or understanding.

Narcissism is related to both overconfidence and hubris, which have already been studied in the M&A context. Overconfidence is defined as the "better than average" effect (Langer, 1975). The concept belongs to the cognitive psychology tradition, and as such describes one particular type of cognitive bias among all those which co-exist within an individual (for a review of overconfidence, see Hoffrage, 2004). Overconfidence is related to narcissism in that it overlaps with the latter's cognitive aspect. However, the definition of overconfidence does not cover two important aspects of narcissism. First, it does not describe the need for the continuous reinforcement of the ideal ego which causes the individual to act repeatedly in ways which reinforce their self-image (Buss and

Chiodo, 1991). Second, it does not provide predictions about the relationships of overconfident individuals with others, while narcissistic individuals are known to be interpersonally exploitative and to lack empathy (American Psychiatric Association, 1994). The relational aspect is of paramount importance when examining the M&A deal process, because we can expect that the narcissism of both the acquirer and target CEO will be an important factor in explaining how the negotiations take place and the deal plays out.

The first attempt to provide a proper clinical definition of hubris has only recently been made in the psychology literature (Owen and Davidson, 2009). This new clinical definition displays some overlap with narcissistic personality disorder, as seven out of its fourteen symptoms correspond to items present in the Diagnostic Criteria for Narcissistic Personality Disorder (American Psychiatric Association 1994). The other seven items are either linked to other personality disorders or are unique to hubris syndrome. Hubris syndrome as described by Owen and Davidson (2009) is certainly relevant to the CEO context as it is designed to be applied to business and political leaders. However, researchers are not yet able to put forward an unambiguous indirect measure based on the proposed clinical definition of hubris.

Our analysis of psychological characteristics leads us to conclude that narcissism is a suitable candidate for studying takeover process effects for four main reasons. First, there is broad consensus about the definition of narcissism and it is grounded in psychology theory. Second, it is a multi-faceted concept which enables us to capture cognitive, motivational and interpersonal effects. The motivational aspect defines narcissists' continuous need for admiration and reinforcement, and the interpersonal aspect characterizes the manipulative nature of narcissists and their lack of empathy (American Psychiatric Association 1994). Third, it is possible to capture narcissism in large samples of individuals using measures validated by research in psychology (Raskin and Shaw 1988). Finally, previous research using both case study approaches (Kets de Vries and Miller, 1985) and the analysis of large samples (Chatterjee and Hambrick 2007) provides evidence that CEO narcissism is important in explaining certain organizational activities and performances.

2.2. CEO psychological characteristics and firm behavior

The study of CEO psychological characteristics in the M&A context is rooted in the hubris hypothesis (Roll, 1986), which puts forward the idea of CEO hubris as a way to explain the puzzling average losses accruing to acquiring shareholders on the announcement of an acquisition. Hubris causes CEOs to bid too high for a target, both because they overestimate the value of the existing synergies and have an unrealistic view of their managerial capabilities. As hubristic CEOs tend to bid too high, they

are more often successful in the competition to buy targets. Ex-post observable samples of M&As therefore include a substantial proportion of hubristic acquirers.

Empirical papers have sought to test the hubris hypothesis by establishing a link between acquirer CEO hubris and disappointing market reactions. Hayward and Hambrick (1997) show that acquirer CEO hubris is positively related to bid premium. Malmendier and Tate (2008) demonstrate that the markets react less favorably to acquisition announcements made by overconfident CEOs compared to those made by their non-overconfident counterparts. These studies and others have also examined the acquisitiveness of overconfident CEOs. Malmendier and Tate (2008) find that overconfident CEOs are more likely to carry out acquisitions, and that these are more likely to be diversifying acquisitions. Similar findings are reported by Chatterjee and Hambrick (2007), who show that narcissistic CEOs carry out more and larger acquisitions than those who are less narcissistic. Billett and Qian (2008) are able to infer the development of overconfidence in acquiring CEOs, which is due to self-attribution bias, by examining value effects through a series of acquisitions.

There is every reason to expect that CEOs' psychological characteristics affect more than their propensity to acquire and the value effects of acquisition, as there is ample evidence in recent literature that executive psychological characteristics set the tone at the top of the firm and matter for a range of firm decisions and strategies. Kets de Vries and Miller (1985), relying on an individual clinical approach, show that narcissistic top managers are more likely to undertake actions which are personally beneficial to them, even if these are likely to damage the interests of the organization. Studies based on large samples of firms provide additional evidence for the importance of the CEO's psychological characteristics. The investment decisions of firms run by overconfident CEOs are more sensitive to cash flow (Malmendier and Tate, 2005; Lin et al., 2005). The capital structure of the firm is affected by the overconfidence of top executives, with more overconfident CEOs taking on higher levels of debt (Malmendier et al., 2010). Li and Tang (2010) find, in a sample of Chinese firms, that those of hubristic CEOs have a greater propensity to take risks. Finally, Chatterjee and Hambrick (2007) show that the operating and market performance of firms led by narcissistic CEOs is more extreme and more volatile than that of firms run by less narcissistic CEOs. While the desirability of the effects described is debatable, some research shows how, in certain contexts, CEO hubris or overconfidence can be advantageous characteristics, because they enable CEOs to overcome their natural risk-aversion and undertake more risky or innovative projects with potentially higher returns to shareholders (Goel and Thakor, 2008; Hirschleifer et al., 2010).

Given that the psychological characteristics of CEOs are felt over a wide range of firm decisions, activities and outcomes, we can expect the influence of the CEO to be much in evidence throughout the different dimensions of the takeover process.

2.3. The takeover process and empirical predictions

Building on the theoretical analysis provided by Hansen (2001), Boone and Mulherin (2009) propose a practical framework for analyzing the takeover process, as shown in Figure 1. They divide the takeover process into eleven steps, starting with the initiation of the transaction (either by the target or the acquirer) and ending with the completion of the deal. Of these eleven steps, seven take place before the deal is made public. Much of the takeover process therefore takes place privately before the public announcement of the deal. To depict the takeover process, researchers use, following Boone and Mulherin (2007), the merger background section of relevant Securities and Exchange Commission (SEC) filings, which is a rich source of information about the private process (see, e.g., Aktas et al., 2010; Fich et al., 2010; Guo et al., forthcoming).

(Insert Figure 1 about Here)

Most existing research on CEO characteristics and M&A focuses on acquirer CEOs (see, e.g., Hayward and Hambrick, 1997; Malmendier and Tate, 2008; Chatterjee and Hambrick, 2007). We therefore appraise the takeover process from the acquirer perspective. Our study aims to examine the effect of acquirer CEO narcissism on certain aspects of the takeover process. We formulate hypotheses for three aspects which appear to us to be particularly likely to be influenced by acquirer CEO narcissism. First, we examine the impact of acquirer CEO narcissism on deal initiation. Second, we analyze the length of the private part of the takeover process (from the beginning of the takeover process to public announcement of the takeover agreement) in the light of acquirer CEO narcissism. Third, we look at whether acquirer CEO narcissism affects the likelihood of the deal going through. We also recognize that the takeover process is the result of interplay between two parties, the acquirer and the target. We therefore include target CEO narcissism in our analyses (where available) in order to account for the effect of the interaction between individuals which is present during the takeover process.

Deal initiation. Few studies have been carried out to date on the determinants of deal initiation. A notable exception is Simsir (2009), who carries out an exploratory study of the determinants of acquirer and target initiation as part of a wider study. The author does not include variables representing CEO psychological characteristics in his analysis, but his work does provide us with a number of control variables which are shown to influence whether the acquirer or the target is the initiating party, such as leverage and firm size. It is known that overconfident CEOs tend to make

more acquisitions than their non-overconfident counterparts (see, e.g., Malmendier and Tate, 2008), but we have no information about whether such acquirers tend on average to participate in sale processes initiated by the target, or whether these acquirers are on average the initiator of the takeover process. We therefore base our expectations about deal initiation on the behavioral predictions inherent in the narcissism concept. The motivational aspect of narcissism, as emphasized by Chatterjee and Hambrick (2007), implies that narcissistic acquiring CEOs need to undertake large stakes initiatives in order to receive the attention they require to maintain their ideal ego. We therefore expect that *the higher the acquirer CEO narcissism, the more likely it is that he/she will be the initiator of the transaction.*

Length of the private takeover process. There are hardly any papers which deal specifically with the determinants of the length of the takeover process, a notable exception being Jemison and Sitkin (1986).¹ The authors put forward a complete model of the acquisition process from the beginning of the interaction between the two interested parties to the integration of the target. The first part of the model explicitly describes the factors which affect the speed of the deal process from deal beginning to announcement and, as far as we are aware, has never been tested empirically. The authors point out that a hasty private takeover process is likely to result in a less successful deal, as "*premature closure can reduce the opportunity for more careful and dispassionate consideration of issues*" (p. 151). The model predicts the factors which hasten the closure of the deal and posits that higher levels of acquiring CEO overconfidence will cause the deal to be made more quickly. Other factors which are predicted to affect the speed at which the private part of the takeover process reaches a conclusion are decision-making under ambiguity, target resistance, board characteristics, regulatory obstacles and prior acquisition experience. If we relate the Jemison and Sitkin (1986) model to the literature on narcissism, we can formulate the following prediction. The motivational aspects of narcissism will likely cause narcissistic acquiring CEOs to seek push the deal through as quickly as possible so that they can reap the ego benefits of the attention and hoped-for admiration that the announcement of the deal will bring. We expect therefore that *the higher the narcissism of the acquiring CEO, the shorter the private takeover process from the initiation of the transaction to the public announcement of the agreement.*

¹ Another exception is Coff (1999), who examines the determinants of the negotiation time for acquisitions made by firms in knowledge intensive industries. However, Coff ignores the private part of the takeover process in his paper and defines negotiation time as the number of days between the announcement date and deal closing. Moreover, the author does not include CEO effects in the analysis.

Probability of completing an announced deal. During the nineties, around 10% of domestic deals announced by listed U.S. acquirers between 1990 and 1999 were cancelled (see, e.g., Bates and Lemmon, 2003; Luo, 2005). The risk of the transaction not going through is known as the deal risk in the merger arbitrage terminology. This risk is due to the fact that there is uncertainty surrounding the effective completion of the deal. Investors may, for example, perceive that there is a risk that target shareholders will not approve the deal. In some cases, acquirer shareholders may also be required to vote, further increasing levels of uncertainty. In addition, regulatory (antitrust) authorities may intervene, increasing the likelihood that the deal will not be allowed to go through, or that it will only be approved on a modified basis. The literature has documented several determinants of the probability of completing an announced deal, such as target termination fees, golden parachutes due to target CEOs, and expected synergies (see, e.g., Bates and Lemmon, 2003; Luo, 2005; Fich et al., 2010). However, little is known about the effect of CEOs' personal traits on the probability of a given deal going through. We have already emphasized that the continuous reinforcement needs of narcissistic CEOs should lead them to push the deal through quickly during the private process. Once narcissistic CEOs have announced the deal and obtained initial media exposure, the need for continuous reinforcement should motivate them to demonstrate their ability to see the deal through, as failing to complete the transaction would cast them in a bad light that would be unacceptable for their self-image and might also compromise their ability to make new acquisition attempts in the future. We therefore expect *a positive relation between the likelihood of the deal going through and the level of acquirer CEO narcissism.*

To sum up, to satisfy their continuous reinforcement needs, narcissistic CEOs are expected to be more often the initiator of the takeover process, to negotiate more quickly during the private part of the process and to have a higher completion rate. Therefore, once a given transaction is over, narcissistic CEOs would be free to move on to their next takeover process or visible action in order to feed their self-image.

In additional analyses we also consider the effect of acquirer and target CEO narcissism on market reactions and bid premium, as our first person pronoun based narcissism measure enables us to include both CEOs on an equal footing. As far as we are aware, the link between acquiring CEO narcissism and M&A performance has not been studied in prior research; and studies have not considered the effect of the target CEO at all.² Chatterjee and Hambrick (2007) find, however, that

² Prior research has shown a negative association between acquirer CEO overconfidence and short term acquirer returns (Malmendier and Tate, 2008); acquirer CEO hubris and long term acquirer returns (Hayward

CEO narcissism is linked to more extreme levels of general firm performance, which can be either positive or negative. We therefore examine the relationship between both acquirer and target CEO narcissism and M&A performance (market reactions and bid premium) without establishing precise expectations.

3. Data and methods

3.1. Sample

Our sample of acquisitions covers deals announced over the period 2002 to 2006 and is extracted from the Securities Data Company's (SDC) US Mergers and Acquisitions Database. As the data required for the construction of the first person pronoun narcissism measure (see below) is only available on a systematic basis from 2002, we are unable to analyze deals from earlier years. We identify deals in which both the acquirer and the target are US listed firms. For information on the private part of the takeover process we are reliant on the Securities and Exchange Commission (SEC) 14A and S-4 filings for mergers, and 14D filings for tender offers, which are only available for listed firms. In addition, the narcissism variable is constructed using examples of CEO speech from fair disclosure wires, which are also only available for listed firms. We then limit our sample to deals in which the acquirer increases its shareholdings in the target from less than 50% to 100%, and as we focus on significant acquisitions, in which the deal value provided by SDC is greater than \$1 million and represents at least 1% of the acquirer's market value (see Masulis et al., 2007). This provides us with a sample of 656 deals. The sample is reduced to 146 deals due to the non-availability of material required to estimate some of our key variables. We require the availability of the relevant SEC filings providing the background to the transaction, sufficient material to estimate the first person pronoun narcissism measure for both the acquirer and target CEOs, and the Gompers et al. (2003) corporate governance (GIM) index to control for the quality of acquirer governance.

The sample of deals which we use to analyze the probability of deal completion is drawn up starting from our sample of 146 deals. We identify all deals (above 1 million USD) undertaken by the acquirer CEOs in our sample in the window year – 2 to year +2 with respect to the announcement date of existing deals. This provides with a sample of 1,131 completed and uncompleted deals made by the acquiring CEOs in our initial sample³.

and Hambrick, 1997) and a positive association between acquirer CEO hubris and bid premium (Hayward and Hambrick, 1997).

³ The number of deals in this sample is significantly higher than in the sample used for other analyses because we are constrained neither by the availability of details of the private part of the deal process obtained from SEC filings nor by the availability of target CEO narcissism data.

3.2. Variables

In this subsection we present the variables we use in our analysis. We first describe the construction of the narcissism indicator, which is our variable of interest. We then define the three aspects of the takeover process which constitute our dependent variables. Finally, we provide details of the control variables which we use in our different analyses, classifying them into deal, acquirer and target characteristics. Variable definitions are given in Appendix 2.

3.2.1. Narcissism indicator

The long pedigree of the narcissism concept has led to the development of theoretically-grounded indirect measures (Raskin and Shaw, 1988), which can be applied in large samples. The narcissism measure we use is suggested by the work of Chatterjee and Hambrick (2007), who include a first person pronoun measure of narcissism in a 5-item narcissism index. A study carried out by Raskin and Shaw (1988) shows that the proportion of first person singular pronouns to first person plural pronouns used in speech is correlated with narcissistic personality inventory (NPI) scores.⁴ The authors demonstrate the robustness of this finding to various factors. First, the correlation between first person pronoun usage and NPI scores is robust to age, gender and the content of the speech analyzed. Second, the correlation persists even when other personality traits (extraversion, neuroticism, psychoticism and locus of control) are controlled for. Finally, the correlation between NPI scores and personal pronoun usage is only found in first person pronoun usage, and is not found in second- or third-person pronoun usage.

The narcissism indicator is estimated using the proportion of first person singular (*I, me, my etc*) to first person plural pronouns (*We, us, our etc*) in CEO speech. This indicator enables us to capture the richness of the narcissism concept using a measure which can be estimated from publicly available information. An additional advantage of the first person pronoun narcissism indicator is that it enables us to estimate the level of narcissism for acquirer and target CEOs on an equal footing. This is an important requirement given the importance of interpersonal effects predicted by the characteristics of the narcissism concept.

The first step in the construction of the narcissism indicator is the identification of acquirer and target CEOs in our M&A sample. Most acquiring CEOs are readily identifiable using the Execucomp

⁴ The NPI is a questionnaire, originally based on the diagnostic criteria for narcissistic personality disorder, which provides a narcissism score for individuals and enables the measurement of narcissism in large samples rather than on a case-by-case basis (for examples of studies validating the NPI, see e.g., Emmons, 1987; Raskin and Hall, 1979; Raskin and Hall, 1981). It measures narcissism along four dimensions: exploitativeness/entitlement, leadership/authority, superiority/arrogance and self-absorption/self-admiration.

database. However, the majority of target CEOs are not included in Execucomp and are therefore identified by hand using the SEC filings relative to the transaction. We then obtain samples of CEO speech in interviews with analysts or journalists from the Lexis Nexis Academic and The Wall Street Transcript databases, following Chatterjee and Hambrick (2007). We find transcripts for the year prior to the beginning of the deal process, the year the deal process began and then for all years until deal completion. This involves a manual search on the relevant databases using the CEO's name for the years in question. Although Raskin and Shaw (1988) show that the narcissism indicator is robust to topic, as a precaution we avoid interviews whose subject is announced as a merger or an acquisition, to avoid any possible influence of the deal itself on the narcissism measure, and also those discussing litigation because of the specific nature of the language used. We further exclude transcripts of annual general meetings, which risk being scripted, and any analyst interviews in which the CEO simply makes a presentation and fails to respond spontaneously to analyst questions.

The search for transcripts of CEO interviews yields 1,780 documents for 334 CEOs. The vast majority of the transcripts are made up of conference calls with analysts, either quarterly earnings calls or industry-specific calls. Typically, the conference involves at least three participants from the firm, and sometimes more. In addition to the CEO, the CFO and the Head of Investor Relations are also present, with other executive officers in some firms. We manually clean the interviews of any speech which is not that of the CEO (an example of clean CEO speech is provided in Appendix 3). Using a specially created computer program, we count the number of occurrences of first person singular and first person plural pronouns for each CEO. The variable *CEO total narcissism* is equal to the proportion of first person singular pronouns to all first person pronouns in the interviews and is estimated for both the acquiring and target CEOs involved in each deal. We also create a variable reflecting the difference between acquiring and target CEO narcissism by subtracting target CEO total narcissism from acquiring CEO total narcissism by deal.

Descriptive statistics for the narcissism variables are provided in Panel A of Table 1. The mean narcissism score for acquiring CEOs is 0.215, which is around 0.03 higher than that of target CEOs. The difference in means is significant at the 1% level (unreported), indicating that the acquiring CEOs are, on average, more narcissistic than the target CEOs in our sample. We also note a wide range of levels of narcissism, as the minimum score for both acquirer and target CEOs is less than 10% and the maximum score is in excess of 40% in both cases.

(Insert Table 1 about here)

3.2.2. *Dependent variables*

We create the variables characterizing the private part of the takeover process using the merger background section of the SEC filings relating to each deal, which we access using the EDGAR information retrieval system. The initiating party is readily identifiable in the text of the filing. In the case of target initiation, this may take the form of the board mandating the CEO or an external advisor to seek opportunities to combine with or be acquired by another firm. In the case of acquirer initiation, the board may decide to pursue a strategy of external growth. We code the acquirer initiation variable as 1 if the acquirer initiated, and zero otherwise. We exclude deals where the identity of the initiating party is impossible to determine.

We estimate the length of the private takeover process as the difference between the date at which the takeover process began and the announcement date. The date at which the takeover process began corresponds to the date at which one of the parties involved made the decision to initiate the deal and is found in the merger background section of the SEC filings.⁵ The announcement date is provided by the SDC database. The variable *private takeover process length* is the number of months elapsed between the beginning of the takeover process and the announcement date of the takeover agreement.

To test the prediction on the probability of completing an announced deal, we create a dependent variable which is an indicator variable taking value 1 for deals identified as completed in the SDC database. Of the 1,131 deals which match our criteria, 208 are identified as withdrawn, a proportion which is somewhat higher than that cited in previous papers on the subject (Bates and Lemmon, 2003; Luo, 2005).

The *bid premium* variable is the four-week bid premium provided by the SDC database. It corresponds to the share price offered by the winning bidder to target shareholders deflated by the price of the target four weeks prior to the announcement date. To assess market reactions to the takeover announcement, we use the acquirer cumulative abnormal returns (CARs), which are computed as in Fuller et al. (2002) and Moeller et al. (2004). More specifically, we use the Beta-one model, which subtracts the daily market portfolio return from the daily return of each company. We use an 11-day event window centered on the announcement date.

⁵ If the beginning of a takeover process is described in the merger background section of the SEC filings, but nothing happens over the following 12 months, we qualify the beginning of the next process as a new takeover process.

The summary statistics presented in Panel B of Table 1 show that, in our sample, nearly 60.27% of deals are initiated by the acquirer, which is consistent with both Simsir (2009) and Aktas et al. (2010), who find that around 60% of deals are initiated by acquirers between the mid-1990s and 2007. The mean bid premium in our sample is 36.14%, which is slightly lower than in other research which consistently reports bid premiums of around 40% (see, e.g., Betton et al. 2008). Average acquirer CARs are -1.67%, which is consistent with the findings of Moeller et al. (2005). The authors show that, among other factors, value destruction is more prevalent in the acquisition of public targets and in larger firms. By construction, our sample contains only public targets and acquirers are typically large firms, implying that negative acquirer CARs are to be expected.

3.2.3. Control variables

We include deal characteristics control variables in our analyses. Summary statistics are provided in Panel C of Table 1. Following Boone and Mulherin (2007), we identify deals as a negotiation if, according to the relevant SEC filings, the target only enters into discussions with a single potential acquirer, and an auction if several potential acquirers are mentioned. The proportion of auctions in our sample is similar to that of Boone and Mulherin (2007), who report 50.5% of auctions for the period 1989 to 1999, while we find 50.68%, suggesting that the proportion of auctions is relatively stable over time. The variable *cash dummy* indicates that 40.10% of the deals in our sample are all-cash deals, which is consistent with Boone and Mulherin (2007) whose sample contains 37% of all cash deals. Using the Fama-French 49 industry classification scheme, the dummy variable *horizontal deal* identifies whether the acquirer and the target are both from the same industry. 64.08% of the transactions are classified as horizontal deals.

To assess whether the private negotiations between the acquirer (or potential acquirers) and the target take place within an active M&A market we use the variable *liquidity index*, which is designed to capture the intensity of M&A activity in a particular sector. Following Schlingemann et al. (2002), we estimate this variable as the ratio of the value of corporate control transactions in a particular year to the total book value of assets of firms in the same two-digit SIC code during the same year.

Finally, we use the SEC filings information on the private takeover process to create a dummy variable identifying multiple-bidder transactions. Not all auctions lead effectively to formal bids by potential acquirers; in some cases, only one bidder puts in a bid at the end of the auction process. While nearly half of our sample deals are auctions, in only 34% of them does more than one potential acquirer put in a formal bid.

Our analyses require controlling for acquiring firm characteristics. Summary statistics are provided in Panel C of Table 1. We proxy for the governance quality of the acquirer using the GIM index

(Gompers et al., 2003). The mean governance score of the acquirers in our sample is 9.47, which is close to that in Masulis et al. (2007) who find a mean score of 9.45 in their sample of acquirers. The mean size (market value of equity) of the acquiring firms in our sample is \$16.6 billion, which is somewhat larger than, for example, Boone and Mulherin (2007) who report a mean acquirer size of \$10.58 billion. The mean leverage ratio of the acquiring firms in our sample is 21%, higher than the 17% reported by Billett and Qian (2008). However, the authors estimate leverage using long-term debt only, while we also include current debt, implying a higher leverage ratio. Panel C of Table 1 indicates that 25.17% of our sample acquirers operate in a regulated industry. To assess the acquirer M&A experience we provide also the number of deals carried out by the acquiring firms in our sample in the previous twenty-four months. The mean number of acquisitions is 0.39, with values ranging from 0 to 5.

Summary statistics for the control variables relating to target firms are also provided in Panel C of Table 1. The mean size of target firms in our sample is \$2.90 billion, which is similar to that reported in Boone and Mulherin (2007) whose average target size is \$2.69 billion. *Target runup* is defined as in Betton et al. (2009) as the target average abnormal return over the period $[-42, -6]$ days prior to the announcement date. We include a dummy variable identifying target firms which are listed on the NYSE / AMEX, to control for the fact that these may be qualitatively different to those which are listed on the Nasdaq. The former represent thirty-one percent of the target firms in our sample. The *concentration of target sales* is a proxy for the complexity of the target's operations. It is estimated as the Herfindahl-Hirschman concentration index of the firm's sales (the sum of squares of sales share by business and geographic segments). We use information on industry segments and geographic data from the Compustat database to carry out this estimation. Finally, *target idiosyncratic risk* is the standard deviation of abnormal returns from day -241 through day -42 relative to the announcement date (in percent per day). The targets in our sample have a mean idiosyncratic risk of 2.76%, which is consistent with Boone and Mulherin (2007) whose estimate for the same variable is 2.3%.

3.3. Econometric methods

The chosen econometric estimators for our multivariate analyses depend on the nature of the dependent variable. The deal initiation and the deal completion variables are binary. We therefore use a probit specification, classically estimated by log-likelihood function maximization. We refer to the exploratory research of Simsir (2009) in order to define our control variables for the deal initiation regression. These include acquirer characteristics (leverage, size and regulated industry), target characteristics (size) and the intensity of the M&A market in a particular sector which we

proxy with the variable *liquidity index*. We control for private targets, deal size and horizontal deals in the deal completion analysis.

Private takeover process length is a count data variable (the number of months between the beginning of the takeover process and the announcement date). This leads us to choose a count data model estimator. Initial estimations using a Poisson estimator show that the takeover process length variable displays overdispersion in our sample – the assumption that the expected takeover process length is equal to the variance of the takeover process length is strongly rejected, which risks leads to model misspecification for the Poisson estimator. As a consequence we opt for the negative binomial model (the Negbin 2 model, see Greene (2008, pp. 912)), which allows for overdispersion. Estimates are obtained by log-likelihood function maximization. The control variables are from Jeminson and Sitkin's (1986) model.⁶ We proxy for decision making under conditions of ambiguity using the variable *concentration of target sales*, which captures the geographical and business segment based complexity of the target. According to Jeminson and Sitkin (1986), the more complex the deal, the more difficult the valuation process and the more the decision process takes place in a situation of ambiguity. We represent participant commitment by the *target initiated dummy* and board approval by the *GIM index* variable (more entrenched CEOs are less subject to board supervision). We include a regulatory obstacle variable in the form of *acquirer in regulatory industry* and control for prior acquisition experience with *acquirer M&A experience*. Finally, we proxy for the financial capabilities of acquiring company using its leverage.

For the acquirer CARs and the bid premium regressions, we use standard ordinary least squares with control variables from Betton et al. (2009).⁷ We use identical variable definitions to Betton et al. (2009), with the exception of poison pill, a proxy for governance quality, which we represent using the *GIM index*, and *multiple bidders* which we define with reference to the description of the private takeover process in the merger background section of the relevant SEC filings, rather than relying on the number of public bidders reported in the SDC database.

We report *p*-values obtained using a percentile *t* bootstrap procedure (see Horowitz 2001), except for the deal completion regression. For each multivariate analysis, we bootstrap student statistics of each coefficient using the following procedure. From the original data matrix, we draw, with replacement, one thousand bootstrap samples with the same number of observations as in the

⁶ We exclude certain factors in the original model from our analysis, such as perceived need for secrecy and the isolation of the decision-making team, because of the impossibility of capturing them using a reliable indicator.

⁷ We exclude certain control variables from our analysis as there are less than 5 observations for which the variable is different to zero (penny stock (target), toehold size and hostile deal).

original sample. For each of the bootstrap samples, we estimate the corresponding multivariate model. This provides us with bootstrap coefficient estimates and corresponding bootstrap *t*-statistics. Finally, we tabulate the empirical distribution of the bootstrap *t*-statistics for each coefficient and use this distribution to test the significance of the regression coefficients. We use case-by-case resampling to ensure that our results are robust to heteroskedasticity.

4. Results

4.1. Narcissism and the takeover process

Deal initiation. We first analyze the effect of CEO narcissism on deal initiation. We expect that higher levels of acquirer CEO narcissism increase the likelihood that the acquiring firm is the initiator of transaction. The results of the probit estimation of the factors affecting the likelihood of acquirer deal initiation are provided in Table 2. Column (1) presents the results of the analysis when both acquirer and target CEO narcissism are entered into the model along with control variables. The positive and significant coefficient on the acquirer CEO narcissism variable confirms our hypothesis, as it shows that higher narcissism scores among acquiring CEOs increase the likelihood of the acquirer CEO initiating the deal. The coefficient on target CEO narcissism is negative but not significant. Our equivocal results for target CEO narcissism are perhaps unsurprising given that narcissistic target CEOs are likely to want to remain independent to maintain self-image but may prefer to take the initiative if they feel that it is becoming in some way inevitable that their firm be acquired.

(Insert Table 2 about here)

Column (2) of Table 2 presents the results of the deal initiation analysis when the difference between acquirer and target CEO narcissism is included as an explanatory variable in the probit regression. The difference variable is significant and the coefficient is positive, implying that the higher the level of acquiring CEO narcissism compared to target CEO narcissism, the more likely it is that the acquirer initiates the deal. Of the control variables included in our regression, only acquirer leverage and the dummy variable identifying whether the acquirer is in a regulated industry are significant.

Private deal length. We posit that the higher the level of acquiring CEO narcissism, the shorter the private deal length from the beginning of the deal process to the public announcement of the takeover agreement. Column (1) of Table 3 presents the results of the negative binomial regression for the length of the private takeover process. The negative and highly significant coefficient on the acquirer CEO narcissism variable provides strong support for our hypothesis, as the higher the level of acquirer CEO narcissism, the shorter the length of the private takeover process. This is consistent

with the motivational and interpersonally exploitative aspects of narcissism (American Psychiatric Association 1994; Chatterjee and Hambrick 2007). As in the case of deal initiation, the coefficient on target CEO narcissism is insignificant, meaning that either their level of narcissism has little bearing on the length of the private takeover process, or two potentially competing effects of target CEO narcissism (the desire to remain independent as opposed to the wish to control events) cannot be distinguished in our data.

(Insert Table 3 about here)

Column (2) includes the difference between acquirer and target CEO narcissism in the regression specification that explains the private takeover process length. The coefficient on the narcissism difference variable is negative and marginally significant with a p -value of 0.09, implying that the greater the difference between acquirer and target CEO narcissism, the shorter the deal length.

Several of the other factors which are predicted to affect the length of the private takeover process in the Jemison and Sitkin (1986) model are significant in our sample. First, the coefficient on the GIM index is negative and significant, implying that a higher GIM score (poorer quality governance) is associated with a shorter negotiation time. This would be consistent with the idea that poorly governed firms are unable to curb the actions of CEOs. Second, acquirer acquisition experience is negative and significant. Our results suggest that prior acquisition experience leads to a shorter private takeover process, which contradicts the predictions of Jemison and Sitkin (1986) who posit that prior experience could cause acquirers to be more careful, thereby slowing the process down. Finally, while Jemison and Sitkin (1986) include relative size as a factor influencing the length of the private takeover process, they do not make a specific prediction for the direction of the effect. In our results the coefficient on *relative size* is negative and significant, signifying that the greater the deal size compared to the acquirer's market value, the shorter the private deal process. This could be due to the fact that larger targets are less opaque and are therefore easier to value.

Deal completion. The results for the determinants of deal completion are consistent with our expectations, as the coefficient on the acquirer CEO narcissism variable is positive and highly significant (p -value = 0.01). This means that higher levels of acquirer CEO narcissism make it more likely that an announced deal will go on to be completed. This result is explained by the motivational effects of narcissism, which cause the acquirer CEO to ensure a positive outcome to the deal process in order to reinforce his / her self-image and avoid the damage to the ego which would result from a failure to deliver.

(Insert Table 4 about here)

4.2. Additional evidence

Bid premium. Results for the bid premium tests are presented in Table 5. The positive and significant coefficient on target CEO narcissism provides support for the idea that narcissistic target CEOs are more able to extract higher bid premiums from merger negotiations. This result is consistent with the motivational aspect of narcissism emphasized by Chatterjee and Hambrick (2007) – highly narcissistic target CEOs can maintain their self-image by obtaining a high premium for their shareholders, thereby compensating in some measure for the blow of losing independence. The negative and significant coefficient on the difference variable implies that the higher the level of acquirer CEO narcissism compared to target CEO narcissism, the lower the bid premium. This is consistent with the idea that manipulative narcissistic acquiring CEOs may be able to browbeat their less narcissistic counterparts during talks.

(Insert Table 5 about here)

The results for the control variables are broadly consistent with existing literature. The coefficient on the GIM index variable is negative and significant, a result which would be consistent with the idea that better governed firms bid for targets with higher synergies.

Acquirer cumulative abnormal returns. The results presented in column (1) of Table 6 provide strong support for the idea that higher levels of target CEO narcissism are linked to more negative market reactions, as the coefficient on the target CEO narcissism variable is negative and significant. These results are consistent with the idea that investors are somewhat wary of a highly narcissistic target CEO, because they might well be perceived as manipulators who are able to put pressure on a less narcissistic acquirer to achieve a good price. The coefficient associated with the variable *acquirer CEO total narcissism* is positive, but insignificant. Our results do not provide, therefore, any evidence that highly narcissistic acquirer CEOs generate lower cumulative abnormal returns for their shareholders. These findings contrast with those of Malmendier and Tate (2008), who show that acquiring CEO overconfidence is linked to less favorable market reactions. This may be due to the different CEO psychological characteristics analyzed. Column (2) of Table 5 presents our results for the narcissism difference variable. The coefficient on the difference variable is positive and significant, implying that investors seem to react more favorably when the acquiring CEO is much more narcissistic than the target CEO. Taken together, the results presented for the effect of CEO narcissism on acquirer cumulative abnormal returns seem to suggest that there are positive perceptions of highly narcissistic acquirers. This is consistent with the idea that narcissism may be a desirable characteristic in a CEO, at least in some circumstances (Maccoby 2000; Rosenthal and Pittinsky 2006).

(Insert Table 6 about here)

The coefficients on the control variables in our regression are mostly in the expected direction. The negative coefficient for the GIM index suggests that worse governed firms have a greater tendency to destroy value on the announcement of a deal. The coefficient on the multiple bidders variable is negative and significant, a result which is consistent with Betton et al. (2009). The competition induced by the existence of multiple bidders is no doubt perceived by investors as a signal that the winning bidder might have overbid to win the takeover contest.

4.3. Robustness checks

In this section we describe and discuss the robustness checks we carry out to address two potential issues with our analyses. First, we examine the characteristics of the narcissism indicator to ensure its reliability as a measure. Second, we address issues of simultaneity and endogeneity which arise in some of our regressions. For brevity, the robustness checks are not tabulated. They are available upon request from the authors.

4.3.1. Robustness of the narcissism measure

Analyses of the narcissism variable show a positive and significant correlation between the indicator and the amount of material (text) used to estimate it. To neutralize the effect of the number of characters on the narcissism indicator, we create a second narcissism variable for all CEOs, which is equal to the residuals of the regression of total CEO narcissism on the number of characters in the material used to estimate total narcissism. We also create a difference variable for the adjusted narcissism measure by subtracting target CEO adjusted narcissism from acquiring CEO adjusted narcissism by deal. Untabulated results show that all our findings are robust to the adjusted narcissism measure.

Another potential issue with the narcissism indicator is that the variable reflecting the difference between acquirer and target CEO narcissism is a raw difference which does not take into account the level of CEO narcissism. It is however likely that a difference of, for example, 0.03 between two highly narcissistic CEOs is less meaningful than the same difference between two CEOs with low levels of narcissism. We therefore create a new difference variable, which equals the raw difference between acquirer and target CEO narcissism divided by total acquirer CEO narcissism by deal. As for the adjusted narcissism measure, all our initial findings for the raw difference in narcissism variable are replicated for the relative difference variable (unreported results).

As a final check on the narcissism indicator, we verify whether there is a correlation between the level of acquirer and target CEO narcissism. We find a significant and positive correlation. While it is

not the purpose of this paper to speculate on why such a correlation might exist⁸, we control for its possible effects by creating a fourth difference variable made up of the residuals of the regression of acquirer CEO total narcissism on target CEO total narcissism, thereby neutralizing the impact of the attraction of CEOs for others with similar levels of narcissism. Once again, untabulated results show that all our findings are robust to this alternative specification of the difference between acquirer and target CEO narcissism, with the exception of the bid premium and acquirer cumulative abnormal returns regression in which the narcissism difference variable has the expected sign, with a p -value somewhat above conventional levels of significance.

4.3.2. Simultaneity and endogeneity issues

Our deal initiation results are potentially biased by the fact that the decision to initiate a deal is simultaneous with the choice of the selling procedure (auction versus negotiation). The simultaneous choice may well be determined by a latent factor. Examples of this type of latent factor are suggested by the merger background section of the SEC filings. For example, a board member of a target firm may know a potential advisor, leading the board to simultaneously decide to sell the firm and contact an advisor to organize an auction. The presence of a latent variable implies that carrying out separate probit analyses of the determinants of deal initiation and choice of the selling procedure would cause the residuals of the two regressions to be correlated. We correct for this potential issue using a bivariate probit model (see Greene 2008 pp. 817), which is suitable for the simultaneous estimation of two equations whose dependent variable is dichotomous. Estimates are obtained by log-likelihood function maximization. The unreported results of the bivariate probit analysis confirm our original results for deal initiation, with a positive and significant coefficient (p -value 0.02) on the acquirer CEO narcissism variable.

Our results for bid premium and acquirer cumulative abnormal returns may also be affected by a failure to take into account the choice of the selling procedure. It is likely that the acquiring or target firm which initiates the deal chooses the selling procedure according to its anticipation of the future bid premium and cumulative abnormal returns, and that the deal type subsequently affects the bid premium and cumulative abnormal returns. We follow Boone and Mulherin (2007) in controlling for the potential endogeneity between the choice of the selling procedure and bid premium / cumulative abnormal returns. We use a two-stage least squares approach, in which the dependent variable models the selling procedure (i.e., a dummy equal to 1 in the case of an auction, and zero

⁸ One possible interpretation of this finding is that non-narcissistic CEOs keep away from those who are highly narcissistic so as to avoid falling prey to their manipulative tendencies.

otherwise) in the first stage.⁹ In the second stage regression, the dependent variable is either the bid premium or the acquirer cumulative abnormal returns. The results of the two-stage least squares regression for both bid premium and cumulative abnormal returns (unreported) confirm our main results, with a positive and significant coefficient (p -value=0.1) on the target CEO narcissism variable in the former and a negative and significant coefficient on the target CEO narcissism variable (p -value=0.06) in the latter.

5. Conclusion

We study three aspects of the takeover process in the light of CEO narcissism, including two aspects of the private deal process. We choose to study narcissism as it is a well-defined psychological concept for which there exists a validated indirect measure. We formulate empirical predictions for the effect of acquirer CEO narcissism on deal initiation, the length of the private deal process and the probability of completing an announced deal. We include target CEO narcissism in our analyses in order to take into account the effect of the interplay between the two main protagonists in the takeover process. We show that the effects of CEO narcissism are discernable through all the three aspects of the takeover process we analyze: (i) the likelihood of deal initiation by the acquiring firm increases in the narcissism of its CEO; (ii) higher levels of acquiring CEO narcissism are linked to a shorter length of time between the beginning of the deal process and the announcement of the deal and (iii) there is a positive relationship between the probability of deal completion and acquirer CEO narcissism. In additional analyses, we examine the effect of CEO narcissism on the bid premium and on market reactions. Our findings show that higher levels of target CEO narcissism are associated with higher bid premiums and lower announcement returns to acquiring firm shareholders. Taken together, our results make a strong case for considering the effect of the psychological characteristics of CEOs on all aspects of the takeover process.

⁹ Angrist and Krueger (2001) point out that using linear regression in the first stage, even when the dependent variable is dichotomous, provides consistent estimates in the second stage.

References

- Aktas, N., E. de Bodt, and R. Roll, 2010. Negotiations under the threat of an auction. *Journal of Financial Economics*, 98(2), 241–255.
- American Psychiatric Association, 1994. *Diagnostic and statistical manual of mental disorders (4th Edition)*, Washington, DC: Author.
- Angrist, J.D. and A. B. Krueger, 2001. Instrumental variables and the search for identification: From supply and demand to natural experiments. *Journal of Economic Perspectives*, 15(4), 69–85.
- Bates, T.W. and M.L. Lemmon, 2003. Breaking up is hard to do? An analysis of termination fee provisions and merger outcomes. *Journal of Financial Economics*, 69(3), 469–504.
- Betton, S., B. E. Eckbo and K. S. Thorburn, 2008. Corporate Takeovers. B. E. Eckbo ed. *Handbook of Corporate Finance: Empirical Corporate Finance*. Elsevier/North-Holland, Ch. 15, 289–427.
- Betton, S., B. E. Eckbo and K. S. Thorburn, 2009. Merger negotiations and the toehold puzzle. *Journal of Financial Economics*, 91(2), 158–178.
- Billett, M.T. and Y. Qian, 2008. Are overconfident CEOs born or made? Evidence of self-attribution bias from frequent acquirers. *Management Science*, 54(6), 1037–1051.
- Boone, A. L. and J. H. Mulherin, 2007. How are firms sold? *Journal of Finance*, 62(2), 847–875.
- Boone, A. L. and J. H. Mulherin, 2009. Is there one best way to sell a company? Auctions versus negotiations and controlled sales. *Journal of Applied Corporate Finance*, 21(3), 28–37.
- Buss, D. M. and L. M. Chiodo, 1991. Narcissistic acts in everyday life. *Journal of Personality*, 59, 179–215.
- Chatterjee, A. and D. C. Hambrick, 2007. It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly*, 52(3), 351–386.
- Coff, R. W., 1999. How buyers cope with uncertainty when acquiring firms in knowledge-intensive industries: Caveat emptor. *Organization Science*, 10(2), 144–161.
- Emmons, R. A., 1987. Narcissism: Theory and measurement. *Journal of Personality and Social Psychology*, 52(1), 11–17.
- Fich, E. M., A. L. Tran, and R. A. Walkling, 2010. On the importance of golden parachutes. Available at SSRN: <http://ssrn.com/abstract=1425211>.
- Freud, S., 1914. On narcissism: An introduction. A. Morrison, ed. *Essential Papers on Narcissism*. New York University Press.
- Fuller, K., J. Netter, and M. Stegemoller, 2002. What Do returns to acquiring firms tell us? Evidence from firms that make many acquisitions. *Journal of Finance*, 57(4), 1763–1793.
- Goel, A. M. and A. V. Thakor, 2008. Overconfidence, CEO selection, and corporate governance. *Journal of Finance*, 63(6), 2737–2784.
- Gompers, P., J. Ishii, and A. Metrick, 2003. Corporate governance and equity prices. *Quarterly Journal*

- of Economics*, 118(1), 107.
- Greene, W., 2008. *Econometric Analysis*. Sixth Edition, Prentice Hall.
- Guo, S., E. S. Hotchkiss, and W. Song, forthcoming. Do buyouts (still) create value? *Journal of Finance*.
- Hansen, R.G., 2001. Auctions of companies. *Economic Inquiry* 24, 125–142.
- Hayward, M. L. A. and D. C. Hambrick, 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly*, 42(1), 103–127.
- Hirshleifer, D., A. Low and S. H. Teoh, 2010. Are overconfident CEOs better innovators? Available at SSRN: <http://ssrn.com/abstract=1598021>.
- Hoffrage, U., 2004. Overconfidence. R. F. Pohl, ed. *Cognitive Illusions: A Handbook on Fallacies and Biases in Thinking, Judgement and Memory*. New York: Psychology Press, pp. 235–254
- Horowitz, J.L., 2001. The Bootstrap. J.J. Heckman and E. Leamer, eds. *Handbook of Econometrics Volume 5*. Elsevier, pp. 3159–3228.
- Jemison, D. B. and S. B. Sitkin, 1986. Corporate acquisitions: A process perspective. *Academy of Management Review*, 11(1), 145–163.
- Kets de Vries, M.F.R. and D. Miller, 1985. Narcissism and leadership: An object relations perspective. *Human Relations*, 38(6), 583–601.
- Langer, E. J., 1975. The illusion of control. *Journal of Personality and Social Psychology*, 32, 311–328.
- Li, J. and Y. Tang, 2010. CEO hubris and firm risk taking in China: The moderating role of managerial discretion. *Academy of Management Journal*, 53(1), 45–68.
- Lin, Y., S. Hu and M. Chen, 2005. Managerial optimism and corporate investment: Some empirical evidence from Taiwan. *Pacific-Basin Finance Journal*, 13(5), 523–546.
- Luo, Y., 2005. Do insiders learn from outsiders? Evidence from mergers and acquisitions. *Journal of Finance*, 60(4), 1951–1982.
- Maccoby, M., 2000. Narcissistic leaders: The incredible pros, the inevitable cons. *Harvard Business Review*, (Jan - Feb), 69–77.
- Malmendier, U. and G. Tate, 2005. CEO overconfidence and corporate investment. *Journal of Finance*, 60(6), 2661–2700.
- Malmendier, U. and G. Tate, 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1), 20–43.
- Malmendier, U., G. Tate and J. Yan, 2010. Managerial beliefs and corporate financial policies. *NBER Working Paper*, 13124.
- Masulis, R. W., C. Wang and F. Xie, 2007. Corporate governance and acquirer returns. *Journal of Finance*, 62(4), 1851–1889.
- Moeller, S. B., F. P. Schlingemann and R. M. Stulz, 2004. Firm size and the gains from acquisitions. *Journal of Financial Economics*, 73(2), 201–228.
- Moeller, S. B., F. P. Schlingemann and R. M. Stulz, 2005. Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave. *Journal of Finance*, 60(2), 757–782.

- Owen, D. and J. Davidson, 2009. Hubris syndrome: An acquired personality disorder? A study of US Presidents and UK Prime Ministers over the last 100 years. *Brain*, 132(5), 1396–1406.
- Raskin, R. and C. S. Hall, 1979. A narcissistic personality inventory. *Psychological Reports*, 45, 590.
- Raskin, R. and C. S. Hall, 1981. The narcissistic personality inventory: Alternative form reliability and further evidence of construct validity. *Journal of Personality Assessment*, 45(2), 159–162.
- Raskin, R. and R. W. Shaw, 1988. Narcissism and the use of personal pronouns. *Journal of Personality*, 56(2), 393–404.
- Roll, R., 1986. The hubris hypothesis of corporate takeovers. *Journal of Business*, 59(2), 197–216.
- Rosenthal, S. A. and T. L. Pittinsky, 2006. Narcissistic leadership. *Leadership Quarterly*, 17(6), 617–633.
- Schlingemann, F. P., R. M. Stulz and R. A. Walkling, 2002. Divestitures and the liquidity of the market for corporate assets. *Journal of Financial Economics*, 64(1), 117–144.
- Simsir, A.S., 2009. The information content of deal initiation in mergers and acquisitions. *Working paper, Sabanci University*.

Appendix 1. Diagnostic criteria for narcissistic personality disorder

A pervasive pattern of grandiosity (in fantasy or behavior), need for admiration, and lack of empathy, beginning by early adulthood and present in a variety of contexts, as indicated by five (or more) of the following:

- (1) has a grandiose sense of self-importance (e.g., exaggerates achievements and talents, expects to be recognized as superior without commensurate achievements)
- (2) is preoccupied with fantasies of unlimited success, power, brilliance, beauty, or ideal love
- (3) believes that he or she is "special" and unique and can only be understood by, or should associate with, other special or high-status people (or institutions)
- (4) requires excessive admiration
- (5) has a sense of entitlement, i.e., unreasonable expectations of especially favorable treatment or automatic compliance with his or her expectations
- (6) is interpersonally exploitative, i.e., takes advantage of others to achieve his or her own ends
- (7) lacks empathy: is unwilling to recognize or identify with the feelings and needs of others
- (8) is often envious of others or believes that others are envious of him or her
- (9) shows arrogant, haughty behaviors or attitudes

Source: DSM IV, Diagnostic and Statistical Manual of Mental Disorders, fourth edition, 1994. 301.81, p. 717

Appendix 2: Variable Definitions

Variable	Description
Panel A. CEO narcissism	
Acquirer CEO total narcissism	Total number of first person singular pronouns divided by total number of first person pronouns used in acquirer CEO speech. CEO speech is obtained from interviews available on the Lexis Nexis Academic database.
Target CEO total narcissism	Total number of first person singular pronouns divided by total number of first person pronouns used in target CEO speech. CEO speech is obtained from interviews available on the Lexis Nexis Academic database.
Difference in acquirer and target narcissism	For each transaction, this variable subtracts target CEO total narcissism from acquiring CEO total narcissism.
Panel B. Dependent variables	
Acquirer initiated dummy	Dummy variable: 1 if the acquirer initiated the deal, zero otherwise. Information is collected from the merger background section of the relevant SEC filing.
Private takeover process length	The number of months elapsed between the beginning of the deal process and the SDC announcement date. Information is collected from the merger background section of the relevant SEC filing.
Deal completion dummy	Dummy variable: 1 if the deal is identified as completed in the SDC database.
Bid premium	The SDC four-week premium: the share price offered by the winning bidder to target shareholders deflated by the price of the target four weeks prior to the announcement date.
Acquirer CARs	Acquirer cumulative abnormal returns from day -5 to day +5, relative to the announcement date. Daily abnormal returns are from the Beta-one model, which subtracts the daily market portfolio return from the daily return of each firm.
Panel C. Control variables	
<i>Deal characteristics</i>	
Auction dummy	Dummy variable: 1 if the deal is an auction (i.e., more than one potential bidder is mentioned in the merger background section of the relevant SEC filing); 0 otherwise.
Relative deal size	Ratio of deal size (total value of the consideration paid by the acquirer, excluding fees and expenses) to acquirer size.
Deal size	Total value of consideration paid by the acquirer (\$ million)
Cash dummy	Dummy variable: 1 if the payment is exclusively in cash, 0 otherwise.
Multiple bidders dummy	Dummy variable: 1 if more than one potential bidder is mentioned in the Background to the merger section of the relevant SEC filing.
Horizontal deal dummy	Dummy variable: 1 for deal in which both the bidder and the target are in the same Fama-French industry (using the 49 industry classification scheme).
Liquidity index	Computed as in Schlingemann et al. (2002) at the two-digit SIC code level for each year. It corresponds to the ratio of the value of corporate control transactions in a year to the total book value of assets of firms in the same two-digit SIC code during that year.
<i>Firm characteristics</i>	
Acquirer GIM index	Gompers et al. (2003) corporate governance quality index. Higher index levels correspond to lower quality governance.
Acquirer size	Market value of acquirer equity (number of shares outstanding multiplied by the stock price) at day -42 relative to the announcement date in billions of dollars. The regressions use the natural log of this variable.
Acquirer leverage	Total of long term debt plus current debt divided by total assets.
Acquirer in regulated industry	Dummy variable: 1 if the acquirer is in a regulated industry (SIC codes 48-

	49; 60-69).
Acquirer M&A experience	Number of deals carried out by the acquiring firm over the previous 24 months prior to the announcement date. To construct this variable, we considered a sample of M&A deals that included public, private, U.S., and non-U.S. targets with a deal size above \$1 million and equal to at least 1% of the acquirer's market value.
Target size	Market value of target equity (number of shares outstanding multiplied by the stock price) at day -42 relative to the announcement date in billions of dollars. The regressions use the natural log of this variable.
Target runup	Target average cumulative abnormal return over the period [-42, -6] using a value-weighted market model following Betton et al. (2009)
Target turnover	Following Betton et al. (2009), target turnover is estimated as the average daily trading volume as a fraction of target shares over the period [-166, -42)
Target NYSE/AMEX listed	Dummy variable: 1 if the target firm is listed on the NYSE or AMEX exchanges; 0 otherwise.
Concentration target sales	The Herfindahl-Hirschman concentration index of the target's sales (the sum of squares of sales shares by business and geographic segments). Sales by business and geographic segments are obtained using the Compustat Segment database.
Target idiosyncratic risk	Standard deviation of abnormal returns from day -241 to day -42 relative to the announcement date (in percent per day). Abnormal returns are obtained using the beta-one model, which subtracts the daily market portfolio return from the daily return of each company.
Private target	Dummy variable: 1 if the target is a private firm and 0 otherwise.

Appendix 3: Sample of CEO speech after cleaning.

FD (Fair Disclosure) Wire May 9, 2006 Tuesday Q1 2006 Kos Pharmaceuticals Earnings Conference Call – Final.
Source: Lexis-Nexis Academic database

CEO: Adrian Adams. This excerpt represents 641 words out of a total 5,202 words spoken by the CEO during this conference call. We have 9 transcripts of this type for Adrian Adams.

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Well, as you know, I think that we presented the top line data in our last earnings release. Obviously, our key focus is to get this data published, and obviously the reason we've not shared the overall results is not to prejudice that publication, so we anticipate that data being published during the second half of this year, and we're looking forward to the rollout of that optimized formulation in the first quarter of next year, and as you know, the results overall showed a 41% reduction in the overall severity of flush and a 42 to 43% reduction in the duration of flush, significance of the .0001 level, so we're excited about the data. We anticipate launching that formulation during the next few months. We are very excited about 1040 milligram strength. The overall goal in dislipidemia therapy, and with our strategy with our customers, is to get more and more patients up to the highest effective dose, that gives them the protection that they require, and the life saving benefits that are offered. And we believe that the 1040 milligram strength of Advicor, which by the way, was the dose that was used in the [Advocare] study, which demonstrated superiority over Lipitor and Zocor. We believe that that is going to help us even broaden further the Advicor patient base with regard to , the impact and overall financials, obviously, would not given specific guidance in relation to Advicor, but we'll certainly, this will allow more patients to get, not just Advicor therapy, but also a more effective dose, so we're very excited about it and I think that our doctors will be as well.

The trial that we presented? Yes, obviously it's already done and we're focused on, obviously, publishing that and we will be submitting the sNDA for that during the early part of the third quarter. We anticipate this will be a relatively simple turnaround with the FDA, hence our confidence in rolling out this new formulation in the early part of next year. I would also like to emphasize, in keeping with our good success over the course of time, I think we have ongoing life cycle management initiatives in support of our overall business strategy, and I'll be communicating those over the course of the next year or so.

In terms of providing the earning break down for the quarter?

Yes. Niaspan, for the quarter, was on a reported basis, about 100 million, and Advicor about 23.5.

You're welcome.

I'll cover the second part of that question. As we mentioned during the call, the CMS initial decision that was made towards the end of last year, we believe, did have an impact on prescribing trends during the first quarter of this year. Interestingly enough, part D, we believe, actually had a positive impact on prescription trends in the chronic disease area. In fact if you look at the trends in the cholesterol market, more specifically, we saw an increase in growth of that market as it moved into the first part of this year, or like the second half of last year. Because of the CMS decision we were not able to participate in the growth. In addition to that, some of the patients that obviously were on Niaspan, perhaps, wouldn't be covered under part D started to switch to other plans, and we believe that is one of the reasons why our prescription trend during the first quarter of this year softer than anticipated. Having got a positive decision from CMS, and this was a great win for Kos, and indeed, patients and doctors, we've obviously optimistic that prescribing trends will get better and in the end, nothing is changed in relation to our highly differentiated position and obviously all of the data in relation to clinical trends is moving in our favor.

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Figure 1. Timing of Takeover Process

This figure provides a timeline of the takeover process based on Boone and Mulherin's (2009) 11-step model. The private takeover process corresponds to the period from the initiation of the transaction to the public announcement of the merger agreement. The public takeover process is the period from the public announcement to the completion of the transaction.

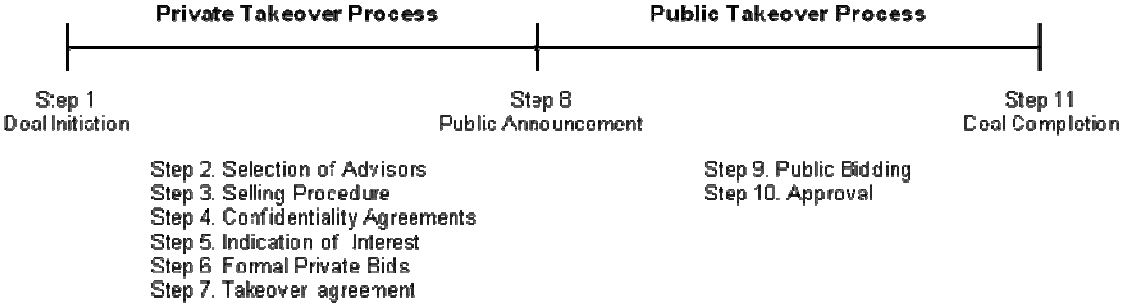


Table 1. Summary statistics

This table reports summary statistics for our sample of acquisitions. Our sample of acquisitions covers deals announced over the period 2002 to 2006 and is extracted from the Securities Data Company's (SDC) US Mergers and Acquisitions Database. The extraction criteria used are presented in Section 3.1. For dummy variables the table displays only the mean, which corresponds to the proportion of the variable. Variable definitions are in Appendix 2. Panel A focuses on CEO narcissism, which is the variable of interest. Panel B provides summary statistics of the dependent variables characterizing the deal process. Panel C displays summary statistics for the control variables grouped in terms of deal and firm characteristics. *N* denotes the sample size.

Variable	Mean	Median	Minimum	Maximum	N
Panel A. CEO narcissism					
Acquirer CEO total narcissism	0.215	0.204	0.076	0.449	146
Target CEO total narcissism	0.185	0.166	0.008	0.432	146
Panel B. Dependent variables					
Acquirer initiated dummy	60.27%				146
Private takeover process length (months)	7.30	6.00	0.00	25.00	144
Bid premium	36.14%	27.57%	-14.64%	200.67%	141
Acquirer CARs	-1.67%	-0.95%	-22.75%	26.67%	143
Panel C. Control variables					
<i>Deal characteristics</i>					
Auction dummy	50.68%				146
Relative deal size	0.35	0.13	0.01	3.78	146
Cash dummy	40.10%				146
Multiple bidders dummy	34.48%				145
Horizontal deal dummy	64.08%				142
Liquidity index	3.77%	1.99%	0.00%	36.40%	142
<i>Firm characteristics</i>					
Acquirer GIM index	9.47	9.00	3.00	16.00	129
Acquirer size (market value in \$Bn)	16.60	6.95	0.25	137.23	143
Acquirer leverage	0.21	0.18	0.00	0.79	143
Acquirer in regulated industry	25.17%				143
Acquirer M&A experience	0.39	0.00	0.00	5.00	143
Target size (market value in \$Bn)	2.90	0.71	0.037	48.28	136
Target runup	1.93%	1.43%	-40.81%	44.13%	136
Target turnover	10.55	8.35	0.72	82.55	136
Target NYSE/AMEX listed	30.88%				136
Concentration target sales	0.62	0.50	0.16	1.00	136
Target idiosyncratic risk	2.76%	2.60%	0.69%	8.86%	143

Table 2. Deal initiation and CEO narcissism

This table reports the estimation of a probit model to analyze the determinants of deal initiation. The dependent variable is a dummy variable identifying acquirer-initiated transactions. Our sample of acquisitions covers deals announced over the period 2002 to 2006 and is extracted from the Securities Data Company's (SDC) US Mergers and Acquisitions Database. The extraction criteria used are presented in Section 3.1. Variable definitions are in Appendix 2. The goodness of fit is measured by the likelihood-ratio (LR) statistic. *% Correct Prediction* denotes the percentage of transactions correctly classified by the corresponding probit model. *P*-values are bootstrapped according to the method described in Section 3.3.

Independent variable	(1)		(2)	
	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	-1.277	0.00	-1.010	0.00
<i>Variable of Interest</i>				
Acquirer CEO total narcissism	2.807	0.05		
Target CEO total narcissism	-1.003	0.30		
Difference in acquirer and target narcissism			1.821	0.08
<i>Control variable</i>				
Acquirer leverage	1.005	0.09	0.902	0.12
Acquirer size	0.067	0.31	0.076	0.26
Target size	0.088	0.20	0.093	0.20
Acquirer in regulated industry	-0.470	0.09	-0.490	0.07
Liquidity index	-2.288	0.19	-2.106	0.21
Number of observations	135		135	
Likelihood ratio χ^2	10.855		10.065	
% Correctly predicted	65.19%		66.67%	

Table 3. Length of the private takeover process and CEO narcissism

This table reports the estimation of a negative binomial regression where the dependent variable is the length of the private takeover process, which corresponds to the number of months from the beginning of the process to the takeover announcement. Our sample of acquisitions covers deals announced over the period 2002 to 2006 and is extracted from the Securities Data Company's (SDC) US Mergers and Acquisitions Database. The extraction criteria used are presented in Section 3.1. Variable definitions are in Appendix 2. *P*-values are bootstrapped according to the method described in Section 3.3.

Independent variable	(1)		(2)	
	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	3.230	<i>0.01</i>	2.711	<i>0.00</i>
Acquirer CEO total narcissism	-1.972	<i>0.02</i>		
Target CEO total narcissism	0.178	<i>0.69</i>		
Difference in acquirer and target narcissism			-0.932	<i>0.09</i>
Concentration target sales	-0.143	<i>0.33</i>	-0.156	<i>0.31</i>
Target initiated dummy	0.194	<i>0.08</i>	0.211	<i>0.07</i>
GIM index	-0.076	<i>0.02</i>	-0.063	<i>0.03</i>
Acquirer in regulated industry	-0.155	<i>0.19</i>	-0.147	<i>0.22</i>
Acquirer M&A experience	-0.129	<i>0.02</i>	-0.126	<i>0.03</i>
Acquirer leverage	-0.053	<i>0.78</i>	0.104	<i>0.60</i>
Relative size	-0.198	<i>0.05</i>	-0.187	<i>0.06</i>
Gamma	0.673	<i>0.00</i>	0.718	<i>0.00</i>
Number of observations	122		122	
log-likelihood	963.069		961.423	

Table 4. Deal completion and acquirer CEO narcissism

This table reports the estimation of a probit model to analyze the determinants affecting the probability of completing an announced deal. The dependent variable is a dummy variable identifying deals that are defined as completed in the SDC database. The sample contains acquisitions announced by the acquirers for whom the first person pronoun measure has been estimated. The extraction criteria used are presented in Section 3.1. Variable definitions are in Appendix 2. The goodness of fit is measured by the likelihood-ratio (LR) statistic. % *Correct Prediction* denotes the percentage of transactions correctly classified by the corresponding probit model.

Independent variable	Coef.	<i>p</i> -value
Intercept	1.151	0.00
Acquirer CEO total narcissism	2.027	0.01
Dummy: private target	0.477	0.00
Horizontal deal	-0.935	0.00
Cash dummy	-0.848	0.00
Number of observations		1,131
Likelihood ratio χ^2		305.61
% Correctly predicted		88.77%

Table 5. Bid premium and CEO narcissism

This table reports ordinary least square regression where the dependent variable is the bid premium. Our sample of acquisitions covers deals announced over the period 2002 to 2006 and is extracted from the Securities Data Company's (SDC) US Mergers and Acquisitions Database. The extraction criteria used are presented in Section 3.1. Variable definitions are in Appendix 2. *P*-values are bootstrapped according to the method described in Section 3.3.

Independent variable	(1)		(2)	
	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	0.694	0.00	0.783	0.00
Acquirer CEO total narcissism	-0.273	0.23		
Target CEO total narcissism	0.634	0.03		
Difference in acquirer and target narcissism			-0.472	0.02
Target size	-0.046	0.01	-0.045	0.01
Target runup	0.435	0.03	0.435	0.03
Turnover	0.001	0.35	0.001	0.36
Target NYSE/AMEX listed	-0.066	0.22	-0.069	0.20
GIM index	-0.023	0.03	-0.025	0.02
Cash dummy	0.171	0.00	0.179	0.00
Multiple bidders dummy	-0.037	0.30	-0.044	0.26
Horizontal deal	0.085	0.04	0.081	0.04
Number of observations	123		123	
Adjusted R ²	0.231		0.234	
F stat	4.662		5.134	

Table 6. Acquirer announcement CARs and CEO narcissism

This table reports ordinary least square regression where the dependent variable is the 11-day acquirer cumulative abnormal returns (CARs), centered on the announcement day. Our sample of acquisitions covers deals announced over the period 2002 to 2006 and is extracted from the Securities Data Company's (SDC) US Mergers and Acquisitions Database. The extraction criteria used are presented in Section 3.1. Variable definitions are in Appendix 2. *P*-values are bootstrapped according to the method described in Section 3.3.

Independent variable	(1)		(2)	
	Coef.	<i>p</i> -value	Coef.	<i>p</i> -value
Intercept	0.072	0.11	0.053	0.18
Acquirer CEO total narcissism	0.052	0.26		
Target CEO total narcissism	-0.130	0.03		
Difference in acquirer and target narcissism			0.095	0.05
Target size	-0.003	0.41	-0.003	0.35
Target runup	-0.063	0.11	-0.063	0.09
Turnover (x 10 ³)	-0.288	0.41	-0.293	0.39
Target NYSE/AMEX listed	-0.007	0.42	-0.007	0.47
GIM index	-0.003	0.12	-0.003	0.13
Cash dummy	0.005	0.45	0.003	0.59
Multiple bidders dummy	-0.016	0.08	-0.015	0.09
Horizontal deal	-0.027	0.01	-0.026	0.01
Number of observations	123		123	
Adjusted R ²	0.041		0.045	
F stat	1.527		1.638	