

# CEO NARCISSISM AND THE TAKEOVER PROCESS

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## Abstract

We examine the influence of both acquirer and target CEO narcissism on the takeover process. We measure CEO narcissism 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 in Security and Exchange Commission (SEC) filings. Our main findings are that (1) Higher levels of acquirer CEO narcissism make it more likely that the buying firm initiates the deal; (2) More narcissistic acquiring CEOs are associated with a shorter the private takeover process from the initiation of the transaction to the public announcement of the agreement; (3) Higher levels of target CEO narcissism are linked to higher bid premiums; and (4) Acquiring firm shareholders react less favorably to a takeover announcement when the target CEO is more narcissistic. Our results make a strong case for the impact of CEO psychological characteristics on many dimensions of the takeover process.

## 1. Introduction

Recent literature in mergers and acquisitions (M&A) has shown the importance of CEO psychological characteristics in explaining acquisitiveness and value effects (Malmendier and Tate 2008). A separate stream of M&A research has provided detailed analyses of the private takeover process which reveal many new features of takeover transactions (Boone and Mulherin 2007, 2009). 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. First, one-one-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 bidder, the remaining half being 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. Second, deal initiation 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 41% of transactions are initiated by targets.

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, process length). Second, research to date in M&A only analyzes the effect of the psychological characteristics of the acquiring CEO. However, an M&A transaction is a 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 for five main reasons. First, narcissism is a well-defined concept and is grounded in psychology theory. There is a generally accepted list of clinical criteria for

diagnosing narcissistic personality disorder (American Psychiatric Association 1994). Second, narcissism is a multi-dimensional concept which means that it predicts attitudes (cognitive aspect), behaviors (motivational aspect) and the way narcissists behave towards others (interpersonal aspect). The cognitive aspect of narcissism probably overlaps somewhat with overconfidence as it states that narcissists consider themselves to be superior to others (Chatterjee and Hambrick, 2007). The motivational aspect defines narcissists' constant need for admiration, and the interpersonal aspect characterizes the manipulative nature of narcissists and their lack of empathy (American Psychiatric Association 1994), which are of paramount importance in an M&A deal involving acquiring and target CEOs. Third, narcissism is an ambivalent concept. While it is generally considered to be an ego-pathology (American Psychiatric Association 1994), it may also have some properties which are desirable in CEOs (Maccoby 2000). Fourth, it is possible to capture narcissism in large samples of individuals using theoretically-grounded indirect measures (Raskin and Shaw 1988). Finally, 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 estimating 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 the acquiring and target CEOs for a sample of 137 M&A deals over the period 2002 to 2006. The mean narcissism score for acquirer CEOs is 0.211, while that of target CEOs is 0.181. 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 four aspects of the takeover process, which we relate to the degree of narcissism of both acquirer and target CEOs: 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, the bid premium and market reactions around the announcement date. We expect that higher levels of acquiring CEO narcissism will make it more likely that the acquirer initiates the transaction and will lead to a shorter private takeover process. We posit that narcissistic target CEOs will extract higher bid premiums from the merger negotiations, and that higher target CEO narcissism will lead to less favorable market reactions towards the acquiring firm. Our results support all four of our hypotheses. The analysis of deal initiation shows that narcissistic acquirer CEOs are more often the initiator of the transaction. Our second set of tests shows that acquiring CEO narcissism is negatively related to the length of the private takeover process. These findings are consistent with the motivational aspect of narcissism, as narcissists need to undertake highly visible actions to feed their self-image (Chatterjee

and Hambrick 2007). Higher levels of target CEO narcissism are linked to higher bid premiums and to lower returns to acquiring firm shareholders, suggesting that the interpersonally exploitative aspect of narcissism (American Psychiatric Association 1994) causes narcissistic target CEOs to extract a better price from negotiations and engenders an unfavorable reaction among acquiring firm 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 the selling procedure (auction versus negotiation) and possible endogeneity between the choice of the selling procedure and bid premium/returns.

Our paper makes three main contributions to the existing literature. First, we examine the effect of CEO narcissism on the takeover process for both target and acquirer CEOs on a matched sample of deals. Second, we analyze the effect of CEO narcissism over the whole private takeover process, starting with deal initiation and going through to the announcement of the merger agreement. Third, we study the effect of narcissism on the takeover process because it is a well-defined concept grounded in psychology theory and we are able to measure it in our sample of CEOs using a theoretically sound indirect measure validated in research in psychology.

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. Narcissism, CEO behavior and the takeover process**

Recent papers in M&A research have provided new and relevant insights into two novel areas: the process by which deals occur and the effect of the psychological characteristics of CEOs on the outcome of the deal. In this section, we present the main conclusions of these two streams of research. The first subsection summarizes the principal findings in the literature analyzing the effect of CEO psychological characteristics on firm behavior. The second subsection defines the narcissism concept, positions narcissism relative to other psychological characteristics and describes the measure of narcissism used in this paper. A final subsection provides details of the takeover process, and goes on to develop our main testable hypotheses.

### **2.1 CEO psychological characteristics and firm behavior**

Research into the effects 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. 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 existing literature that top executive psychological characteristics matter for a range of firm decisions and strategies. 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). Chatterjee and Hambrick (2007) analyze the effect of CEO narcissism on firms and find that higher levels of narcissism are associated with greater strategic dynamism, a

finding echoed by Li and Tang (2010) who find, in a sample of Chinese firms, that the firms of hubristic CEOs have a greater propensity to take risks. 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, such as the decision to initiate a deal, the duration of the private process, bidding behavior and value creation effects.

## **2.2 Narcissism**

*The narcissism concept* 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 which are detailed in the DSM IV (American Psychiatric Association 1994), the reference manual of the American Psychiatric Association. The DSM IV provides 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*" (301.81, p. 717). There are nine items in the diagnostic criteria and an individual is considered to suffer from narcissistic personality disorder if they display behaviors or attitudes reflecting at least five of the criteria. 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. 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.

Research carried out in the latter half of the 20th century contributed new ways to understand narcissism. Researchers such as Raskin and Hall (1979) study both the positive and negative aspects of narcissism, linking the presence of a degree of narcissism to the development of a healthy level of self-esteem. These approaches led to the development of the narcissistic personality inventory (NPI), which measures narcissism along four dimensions: exploitativeness/entitlement, leadership/authority, superiority/arrogance and self-absorption/self-admiration (for examples of studies validating the NPI, see e.g., Emmons 1987; Raskin and Hall 1981). 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.

***Narcissism and CEO behavior*** Work in strategic leadership has demonstrated the importance of narcissism in the business context. Kets de Vries and Miller (1985) use an individual clinical approach to show how narcissistic top managers affect the organization and colleagues. Such leaders are more likely to undertake actions which are personally beneficial to them, due to their continuous need to maintain their ego through actions which will bring visibility and admiration, even if these are likely to damage the interests of the organization. In addition, their lack of empathy and manipulative nature means that they tend to exploit colleagues without giving them due recognition and may even attempt to silence those whose voice objections. Lubit (2002) provides an enlightening case study of William Agee, former CEO of Morrison Knudson, whose behaviors bear witness to a high degree of narcissism. Among other acts, Agee surrounded himself with yes-men, consistently manipulated the board and diversified the firm into areas way beyond its core competencies. Chatterjee and Hambrick's (2007) study of a large sample of CEOs in US hardware and software industries provides further evidence for the effects of narcissism on the organization. One of the main findings is that higher levels of CEO narcissism are associated with more large-stakes strategic initiatives, such as diversifying into new sectors and carrying out more and larger acquisitions. In addition, the operating and market performance of firms led by narcissistic CEOs is more extreme than that of firms run by less narcissistic CEOs.

Narcissism is made up of four aspects which make it an interesting and rich concept for study, especially in the M&A context. First, it comprises a cognitive aspect as "*narcissism entails a belief in one's superior qualities*" (Chatterjee and Hambrick 2007, p. 354). Second, it includes a motivational aspect as narcissists have a continuous need for admiration (American Psychiatric Association 1994; Chatterjee and Hambrick 2007), leading them to act repeatedly in ways which reinforce their self-image (Buss and Chiodo 1991). In the M&A context, it is therefore likely that narcissistic CEOs will have a vested ego-interest in carrying out deals in a way which will be beneficial to their need for admiration. Third, items 6 through 9 of the Diagnostic Criteria for Narcissistic Personality Disorder (American Psychiatric Association 1994) describe several narcissistic behaviors which predict how narcissists may behave towards others. Item 6, which states that narcissists are interpersonally exploitative, is particularly relevant to the M&A context because it suggests that a highly narcissistic CEO might well manipulate a less narcissistic counterpart with little regard for his/her interests. In addition, if a highly narcissistic leader's ego is threatened, narcissistic rage may ensue (Horowitz and Arthur 1988), which could have the potential to reinforce the dominance of the more narcissistic of the two CEOs involved in an M&A deal. Finally, narcissism is an ambivalent concept. While case study approaches have tended to demonstrate the damaging aspects of narcissistic CEOs (Kets de Vries and Miller 1985; Lubit 2002), Maccoby (2000) introduces the idea of productive and unproductive



narcissists. The possible ambivalence of narcissism is further analyzed by Rosenthal and Pittinsky (2006), who question the whole "good versus bad" debate surrounding the concept. In addition, narcissistic leaders display certain characteristics which are socially desirable and which may cause observers to anticipate positive firm performance (Bollaert and Petit 2010). The equivocal nature of narcissism has some interesting implications in the M&A context. Whilst Hayward and Hambrick (1997) and Malmendier and Tate (2008) clearly show that the markets react unfavorably to acquisition announcements by hubristic or overconfident acquiring CEOs, the same might not necessarily be true of announcements made by narcissistic CEOs. The possibility that narcissism cuts both ways is suggested by the findings of Chatterjee and Hambrick (2007), who provide evidence that firms run by narcissistic CEOs turn in more extreme performance – either better or worse.

***Narcissism, hubris and overconfidence*** In this section, we describe how narcissism is related to 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 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 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, by the authors' own admission, the definition is as yet in its infancy and it still has to undergo an evaluation process in order to assess its validity.

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. Third, narcissism does not have unequivocally negative effects, which should enable us to provide a more

subtle analysis of the takeover process and value effects. Finally, previous research using both case study approaches (Kets de Vries and Miller 1985; Lubit 2002) and the analysis of large sample effects (Chatterjee and Hambrick 2007) provides evidence that CEO narcissism is of paramount importance in explaining certain organizational activities and outcomes.

***The 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 NPI scores. 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 to first person plural pronouns 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.

### **2.3 The private takeover process**

Recent work in the M&A field has documented the different steps of the private takeover process (Boone and Mulherin 2007). The public part of the takeover process, which starts with the public announcement of the deal and ends with its completion, is well-documented and surprisingly shows a very low number of multiple-bidder takeover contests. For example, in Betton et al. (2009) only 862 deals out of 10,806 cases involve multiple bidders, a rate of around 8%. If the private part of the takeover process is examined, the proportion of auctions is substantially higher. Using information from Securities and Exchange Commission (SEC) filings, Boone and Mulherin (2007) document that over half of their sample of deals are in fact auctions. More particularly, the merger background section of relevant filings is a rich source of information about the private process. Boone and Mulherin (2009) identify eleven steps from the beginning of the private takeover process to deal completion, as shown in Figure 1. Of these eleven steps, seven take place before the deal is made public.

(Insert Figure 1 about Here)

Our study aims to examine the effect of acquirer and target CEO narcissism on the takeover process, including the private aspects. We focus on the four aspects which appear to us to be particularly likely to be influenced by CEO narcissism. First we examine the impact of acquirer and target 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). Third, we look at the bid premium, which is the main element of the takeover agreement. Finally, we consider the effect of acquirer and target CEO narcissism on market reactions.

***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. While existing papers in M&A show that overconfident CEOs tend to make more acquisitions than their non-overconfident counterparts (see, e.g., Malmendier and Tate 2008), we have no information about whether the acquirer actually initiates the takeover process in these cases. 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 posit that the higher their narcissism, the more likely it is that they will initiate a deal.

**HYPOTHESIS 1** The higher the narcissism of the acquiring CEO, the more likely it is that he/she will initiate the deal.

As far as highly narcissistic target CEOs are concerned, a precise expectation is difficult to establish. On the one hand, the motivational aspects of narcissism could well make it difficult for them to give up the independence which they enjoy as the CEO of an unaffiliated firm. On the other hand, if they anticipate that an acquisition is for some reason unavoidable, they may well wish to keep the initiative by taking the lead in the process. We do not therefore formulate a hypothesis for the effect of target CEO narcissism on deal initiation.

***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).<sup>1</sup> 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 the deal beginning to the announcement of the deal and, as far as we are aware, has never been tested empirically. The model predicts that higher levels of acquiring CEO overconfidence will cause the deal to be made more quickly, although there are no predictions about target CEOs. 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 experience 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. In addition, the interpersonally exploitative nature of highly narcissistic CEOs could enable them to manipulate the target CEO and so further accelerate the takeover process.

**HYPOTHESIS 2** 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.

As in the case of deal initiation, the situation appears to be ambiguous for target CEOs. The motivational argument suggests that highly narcissistic target CEOs might resist a loss of independence which would be bad for their self-image, causing the deal process to be slowed. In an alternative view, the interpersonal exploitation argument suggests that highly narcissistic target CEOs might attempt to push the deal through quickly with maximum benefit to themselves through deceptive manipulation of other parties (Lubit 2002). As a result of this ambiguity, we do not formulate a hypothesis for the effect of target CEO narcissism on the length of the takeover process.

**Bid premium** The determinants of bid premium have received attention from researchers in M&A both generally (for a review, see Betton et al. 2008) and in the context of CEO psychological characteristics. The predictions in Roll (1986) suggest that hubristic acquiring CEOs will overbid for the target, and this hypothesis finds subsequent support in empirical tests. For example, Hayward and Hambrick (1997) show that CEO hubris is positively associated with bid premiums. If we make an analogy between hubris and narcissism, the literature in finance would seem to suggest that

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<sup>1</sup> 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.

narcissistic CEOs tend to overbid for targets. However, the nature of narcissism implies that this prediction is not so clear-cut. One of the most striking characteristics of narcissists is that they are interpersonally exploitative (American Psychiatric Association 1994). This implies that a highly narcissistic acquiring CEO could browbeat a less narcissistic target CEO into accepting a lower bid premium. We are therefore unable to formulate a precise hypothesis for the effect of acquiring CEO narcissism on the bid premium.

We have been unable to identify any papers in which the effect of target CEO psychological characteristics on bid premium is discussed. If we refer to the motivational aspects of narcissism, we can expect that highly narcissistic target CEOs will hold out for a higher bid premium. If a narcissistic CEO's firm is acquired, the loss of independence will be a severe blow to his / her ego – pulling off a deal does not have the same reinforcing effect on the ideal ego as it does for an acquiring CEO who takes control. It is therefore likely that the narcissistic target CEO has every reason to obtain the highest bid premium possible in order to maintain self image.

**HYPOTHESIS 3** The higher the level of target CEO narcissism, the higher the bid premium.

**Market reaction** The market's reaction to the announcement of M&A deals has received wide ranging attention from academics (for a review, see Betton et al. 2008). Some papers have also analyzed market reactions in the light of the psychological characteristics of CEOs. In a short term event study, market reactions to acquisition announcements are negatively related to acquiring CEO overconfidence (Malmendier and Tate 2008). If we believe that narcissism can be assimilated with hubris or overconfidence, we expect unfavorable investor reactions to acquisition announcements by narcissistic acquiring CEOs. Given the specific characteristics of narcissism, however, market reactions could also be positive. The markets might recognize that a highly narcissistic acquiring CEO is in a position to manipulate a less narcissistic target, as interpersonal exploitation is a major feature of narcissism (American Psychiatric Association 1994), and thereby obtain real synergies for a lower price. A positive market reaction would also be consistent with the literature in strategic leadership and leadership studies which underlines the potential positive aspects of narcissism (Maccoby 2000; Rosenthal and Pittinsky 2006). Given the contradictory nature of the existing literature, we do not formulate a hypothesis for the effect of acquiring CEO narcissism on market reactions.

As far as we are aware, there are no papers which deal specifically with the effect target CEO psychological characteristics might have on market reactions. We put forward predictions for this effect using an argument which is symmetrical with the one made for the possible positive effect of narcissistic acquiring CEOs: the markets might read the presence of a highly narcissistic target CEO in a deal as a sign that he / she has been able to bring undue influence to bear on the acquiring CEO and

has therefore held out for an unreasonably high price. We therefore expect that target CEO narcissism will be negatively related to acquirer announcement returns.

**HYPOTHESIS 4** The higher the level of target CEO narcissism, the lower the announcement returns to acquiring shareholders.

### 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 deal process we are reliant on the Securities and Exchange Commission (SEC) filings relating to the deal process (14A and S-4 for mergers; 14D 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 137 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.

#### 3.2 Variables

In this section 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 four 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.

***Narcissism indicator*** We use a first person pronoun based indicator of CEO narcissism, based on the work of Raskin and Shaw (1988). The indicator is based on the proportion of first person singular pronouns (*I, me, my etc*) to first person plural pronouns (*We, us, our etc*) in CEO speech. While Chatterjee and Hambrick (2007) use the narcissism indicator based on first person pronoun usage as part of an index also including four business-related items, we use it as a stand-alone measure as

research in psychology shows that first person pronoun use is correlated with NPI scores (Raskin and Shaw 1988).

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 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. 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 0.211, 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

***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 when 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.<sup>2</sup> 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.

One of the most important outcomes from private takeover negotiations is the bid premium offered by the acquirer to target shareholders in exchange for their shares. 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.

The summary statistics presented in Panel B of Table 1 show that, in our sample, nearly 61.3% of deals are initiated by the acquirer, which is consistent with Aktas et al. (2010) who find that 59.9% of deals are initiated by acquirers over the years 1994 to 2007. The mean bid premium in our sample is 34.9%, which is lower than in other research which consistently reports bid premiums of around 40% (see, e.g., Betton et al. 2008). Average acquirer CARs are -1.5%, 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.

***Control variables: (a) Deal characteristics*** We include deal characteristics control variables in our analyses. Summary statistics are provided in Panel C of Table 1. Following Boone and Mulherin

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<sup>2</sup> 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 beginning.



(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 49.64%, suggesting that the proportion of auctions is relatively stable over time. The variable *cash dummy* indicates that thirty-nine percent of the deals in our sample are all-cash deals, which is consistent with Boone and Mulherin (2007) whose sample contains thirty-seven percent 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. 62.50% 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.

**Control variables: (b) Acquirer characteristics** 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 9.38, 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 \$16.67 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 24.8% of our sample acquirers operate in a regulated industry. *Acquirer M&A experience* represents 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 0.38, with values ranging from 0 to 5.

**Control variables: (c) Target characteristics** Summary statistics for the control variables relating to target firms are provided in Panel C of Table 1. The mean size of target firms in our sample is \$2.89

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 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 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 2.74%, which is consistent with Boone and Mulherin (2007) whose estimate for the same variable is 2.3%.

### 3.3 Econometric methods

We carry out four distinct multivariate analyses to test each of our hypotheses. The chosen econometric estimators for our multivariate analyses depend on the nature of the dependent variable. The deal initiation variable is a binary variable. 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*.

*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 leading to overestimated *p*-values 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.<sup>3</sup> 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

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<sup>3</sup> 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.

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 the parent company using *acquirer leverage*.

For the acquirer CARs and the bid premium regressions, we use standard ordinary least squares with control variables from Betton et al. (2009).<sup>4</sup> 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). 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 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 results

**Deal initiation** In this section, we analyze our tests of hypothesis 1 concerning deal initiation. We expect that higher levels of acquirer CEO narcissism increase the likelihood that the acquiring firm initiates the deal. 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 hypothesis 1, 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, implying that the ambiguity in the effect of target CEO narcissism we identified in our literature review cannot be disentangled empirically in our sample. Our equivocal results for target CEO

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<sup>4</sup> 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).

narcissism are 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. Neither of these two effects seems to dominate in our sample.

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 marginally significant at traditional levels ( $p$ -value=0.11) 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*** Hypothesis 2 posits that the higher the level of acquiring CEO narcissism, the shorter the private deal length from the beginning of the deal process to announcement. 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 hypothesis 2, 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 the two potentially competing effects of target CEO narcissism (the desire to remain independent as opposed to manipulative control of events) cannot be distinguished in our data.

Insert Table 3 about here

Column (2) includes the difference in 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 although it is not significant at conventional levels.

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.

***Bid premium*** Results for the tests of hypothesis 3 are presented in Table 4. The positive and significant coefficient on target CEO narcissism provides support for hypothesis 3, which predicts 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 coefficient for acquiring CEO narcissism is positive and, although it is not significant at conventional levels, the relatively low *p*-value provides some support for the idea that higher levels of narcissism are linked to lower bid premiums. Our findings contrast with those for hubristic CEOs reported by Hayward and Hambrick (1997), and can be attributed to the interpersonally exploitative aspect of narcissism (American Psychiatric Association 1994), which causes highly narcissistic acquirers to dominate during merger discussions. This interpretation receives further support from the results for the difference in acquiring and target CEO narcissism variable. 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 manipulatively narcissistic acquiring CEOs may be able to browbeat their less narcissistic counterparts during talks.

Insert Table 4 about here

The results for the control variables are broadly consistent with existing literature. The signs on target runup and turnover and the cash dummy are in the same direction as those in Betton et al. (2009), even if these variables are not significant in our results. 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*** Hypothesis 4 predicts that higher levels of target CEO narcissism are linked to more negative market reactions. The results presented in column (1) of Table 5 provide strong support for this hypothesis, 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 without being significant at conventional levels ( $p$ -value=0.16). 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 (1) 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 5 about here

The coefficients on the control variables in our regression are mostly in the expected direction, despite the fact that some are not significant. 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.

#### **4.2 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.

***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 completely 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 exist<sup>5</sup>, 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 acquirer cumulative abnormal returns regression in which the narcissism difference variable has the expected positive sign, with a  $p$ -value of 0.12, slightly above conventional levels of significance.

***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

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<sup>5</sup> 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.

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 otherwise) in the first stage.<sup>6</sup> In the second stage regression, the dependent is either the bid premium or the acquirer CARs. The results of the two-stage least squares regression for cumulative abnormal returns (unreported) confirm our main results, with a negative and significant coefficient on the target CEO narcissism variable ( $p$ -value=0.08) and a positive and significant coefficient on the difference in CEO narcissism variable ( $p$ -value=0.08). The same is not true, however, of the two-stage least squares bid premium regression, in which the CEO narcissism results are insignificant.

## 5. Conclusion

We document the effect of both target and acquirer CEO narcissism on the takeover process, including its private aspects. We choose to study narcissism as it is a well-defined psychological concept for which there exists a validated indirect measure. We show that the effects of CEO narcissism are discernable through all the four 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; higher levels of target CEO narcissism are associated with (iii) higher bid premiums and (iv) 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.

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<sup>6</sup> 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.



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## **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   |
|--|---|
| <b>Panel A. CEO narcissism</b>               |   |
| 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.  |
| <b>Panel B. Dependent variables</b>          |   |
| 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.   |
| 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.  |
| <b>Panel C. Control variables</b>            |   |
| <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.   |
| 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. |

### 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.

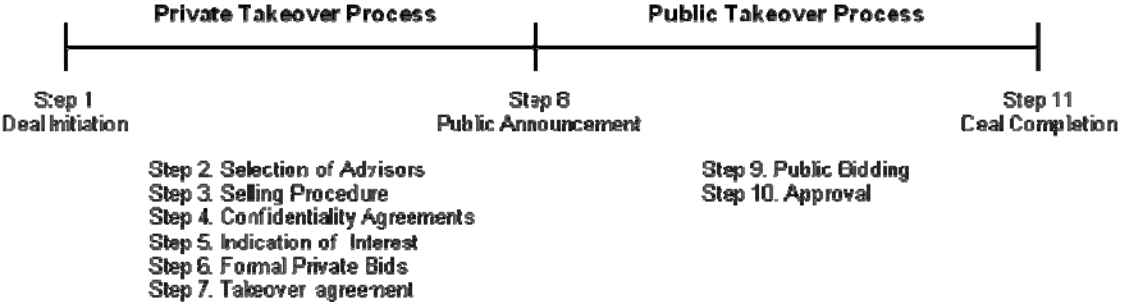
You're welcome.

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 used extraction criteria 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   |
|--|--------|--------|---------|---------|-----|
| <b>Panel A. CEO narcissism</b>           |        |        |         |         |     |
| Acquirer CEO total narcissism            | 0.211  | 0.196  | 0.076   | 0.449   | 137 |
| Target CEO total narcissism              | 0.181  | 0.163  | 0.008   | 0.432   | 137 |
| <b>Panel B. Dependent variables</b>      |        |        |         |         |     |
| Acquirer initiated dummy                 | 61.31% |        |         |         | 137 |
| Private takeover process length (months) | 7.43   | 6.00   | 0.00    | 25.00   | 135 |
| Bid premium                              | 34.87% | 27.62% | -14.64% | 161.19% | 135 |
| Acquirer CARs                            | -1.46% | -0.95% | -22.75% | 26.67%  | 137 |
| <b>Panel C. Control variables</b>        |        |        |         |         |     |
| <i>Deal characteristics</i>              |        |        |         |         |     |
| Auction dummy                            | 49.64% |        |         |         | 137 |
| Relative deal size                       | 35.76% | 13.07% | 1.05%   | 378.26% | 137 |
| Cash dummy                               | 39.42% |        |         |         | 137 |
| Multiple bidders dummy                   | 33.58% |        |         |         | 137 |
| Horizontal deal dummy                    | 62.50% |        |         |         | 136 |
| Liquidity index                          | 3.82%  | 1.99%  | 0.00%   | 36.40%  | 136 |
| <i>Firm characteristics</i>              |        |        |         |         |     |
| Acquirer GIM index                       | 9.38   | 9.00   | 3.00    | 16.00   | 123 |
| Acquirer size (market value in \$Bn)     | 16.67  | 6.86   | 0.25    | 137.23  | 137 |
| Acquirer leverage                        | 0.21   | 0.18   | 0.00    | 0.79    | 137 |
| Acquirer in regulated industry           | 24.82% |        |         |         | 137 |
| Acquirer M&A experience                  | 0.38   | 0.00   | 0.00    | 5.00    | 137 |
| Target size (market value in \$Bn)       | 2.89   | 0.75   | 0.05    | 48.28   | 130 |
| Target runup                             | 1%     | 1%     | -41%    | 42%     | 130 |
| Target turnover                          | 10.74  | 8.41   | 0.72    | 82.55   | 130 |
| Target NYSE/AMEX listed                  | 30.00% |        |         |         | 130 |
| Concentration target sales               | 0.61   | 0.50   | 0.16    | 1.00    | 130 |
| Target idiosyncratic risk                | 2.74%  | 2.59%  | 0.69%   | 8.86%   | 137 |

**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                                    | -1.387 | 0.00            | -1.099 | 0.00            |
| <i>Variable of Interest</i>                  |        |                 |        |                 |
| Acquirer CEO total narcissism                | 2.708  | 0.06            |        |                 |
| Target CEO total narcissism                  | -0.630 | 0.46            |        |                 |
| Difference in acquirer and target narcissism |        |                 | 1.612  | 0.11            |
| <i>Control variable</i>                      |        |                 |        |                 |
| Acquirer leverage                            | 1.050  | 0.08            | 0.933  | 0.12            |
| Acquirer size                                | 0.086  | 0.25            | 0.095  | 0.19            |
| Target size                                  | 0.072  | 0.28            | 0.082  | 0.26            |
| Acquirer in regulated industry               | -0.533 | 0.06            | -0.550 | 0.06            |
| Liquidity index                              | -2.323 | 0.21            | -2.113 | 0.21            |
| Number of observations                       | 129    |                 | 129    |                 |
| Likelihood ratio $\chi^2$                    | 11.237 |                 | 10.262 |                 |
| % Correctly predicted                        | 65.12% |                 | 65.12% |                 |

**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 used 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                                    | 3.311   | <i>0.01</i>     | 2.716   | <i>0.01</i>     |
| Acquirer CEO total narcissism                | -2.090  | <i>0.01</i>     |         |                 |
| Target CEO total narcissism                  | 0.079   | <i>0.85</i>     |         |                 |
| Difference in acquirer and target narcissism |         |                 | -0.951  | <i>0.11</i>     |
| Concentration target sales                   | -0.151  | <i>0.32</i>     | -0.151  | <i>0.34</i>     |
| Target initiated dummy                       | 0.171   | <i>0.08</i>     | 0.193   | <i>0.09</i>     |
| GIM index                                    | -0.080  | <i>0.01</i>     | -0.064  | <i>0.03</i>     |
| Acquirer in regulated industry               | -0.123  | <i>0.26</i>     | -0.125  | <i>0.24</i>     |
| Acquirer M&A experience                      | -0.128  | <i>0.03</i>     | -0.122  | <i>0.03</i>     |
| Acquirer leverage                            | -0.060  | <i>0.78</i>     | 0.112   | <i>0.62</i>     |
| Relative size                                | -0.194  | <i>0.04</i>     | -0.185  | <i>0.06</i>     |
| Gamma  | 0.718   | <i>0.00</i>     | 0.770   | <i>0.00</i>     |
| Number of observations                       | 116     |                 | 116     |                 |
| log-likelihood                               | 938.672 |                 | 936.765 |                 |

**Table 4. 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 used 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                                    | 0.657  | 0.00            | 0.685  | 0.000           |
| Acquirer CEO total narcissism                | -0.316 | 0.13            |        |                 |
| Target CEO total narcissism                  | 0.431  | 0.06            |        |                 |
| Difference in acquirer and target narcissism |        |                 | -0.378 | 0.04            |
| Target size (LN market value)                | -0.026 | 0.07            | -0.025 | 0.07            |
| Target runup                                 | 0.167  | 0.19            | 0.164  | 0.23            |
| Turnover                                     | -0.001 | 0.40            | -0.001 | 0.40            |
| Target NYSE/AMEX listed                      | -0.108 | 0.03            | -0.109 | 0.02            |
| GIM index                                    | -0.025 | 0.01            | -0.025 | 0.01            |
| Cash dummy                                   | 0.164  | 0.00            | 0.167  | 0.00            |
| Multiple bidders dummy                       | 0.001  | 0.94            | -0.001 | 0.97            |
| Horizontal deal                              | 0.054  | 0.11            | 0.052  | 0.10            |
| Number of observations                       | 117    |                 | 117    |                 |
| Adjusted R <sup>2</sup>                      | 0.221  |                 | 0.228  |                 |
| F stat                                       | 4.300  |                 | 4.809  |                 |

**Table 5. 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 used 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                                    | 0.075  | 0.15            | 0.066  | 0.13            |
| Acquirer CEO total narcissism                | 0.077  | 0.16            |        |                 |
| Target CEO total narcissism                  | -0.117 | 0.05            |        |                 |
| Difference in acquirer and target narcissism |        |                 | 0.099  | 0.03            |
| Target size (LN market value)                | -0.005 | 0.22            | -0.006 | 0.20            |
| Target runoff                                | -0.021 | 0.41            | -0.020 | 0.41            |
| Turnover (x 10 <sup>3</sup> )                | -0.007 | 0.98            | -0.004 | 0.99            |
| Target NYSE/AMEX listed                      | 0.002  | 0.84            | 0.002  | 0.80            |
| GIM index                                    | -0.003 | 0.16            | -0.003 | 0.13            |
| Cash dummy                                   | 0.002  | 0.80            | 0.001  | 0.89            |
| Multiple bidders dummy                       | -0.018 | 0.09            | -0.017 | 0.09            |
| Horizontal deal                              | -0.025 | 0.02            | -0.024 | 0.02            |
| Number of observations                       | 117    |                 | 117    |                 |
| Adjusted R <sup>2</sup>                      | 0.025  |                 | 0.032  |                 |
| F stat                                       | 1.293  |                 | 1.431  |                 |