Fich, E. M., Tran, A. & Walkling, R. A. (2013). On the importance of golden parachutes. Journal of Financial and Quantitative Analysis, 48(6), pp. 1717-1753. doi: 10.1017/S002210901300063X

On the Importance of Golden Parachutes*

Eliezer M. Fich
LeBow College of Business
Drexel University
3141 Chestnut Street
Philadelphia, PA 19104, USA
+1-215-895-2304
efich@drexel.edu

Anh L. Tran
Cass Business School
City University London
106 Bunhill Row
London EC1Y 8TZ, UK
+44-207-040-5109
anh.tran@city.ac.uk

Ralph A. Walkling
LeBow College of Business
Drexel University
3141 Chestnut Street
Philadelphia, PA 19104, USA
+1-215-895-4920
rw@drexel.edu

July 16, 2012

Abstract

In acquisitions, target CEOs face a moral hazard: any personal gain from the deal could be offset by the loss of the future compensation stream associated with their jobs. Larger, more important, parachutes provide greater relief for these losses. To explicitly measure the moral hazard target CEOs face, we standardize the parachute payment by the expected value of their acquisition-induced lost compensation. We examine 851 acquisitions from 1999-2007, finding that more important parachutes benefit target shareholders through higher completion probabilities. Conversely, as parachute importance increases, target shareholders receive lower takeover premia while acquirer shareholders capture additional rents from target shareholders.

JEL classification: D82; G34; J33

Keywords: Golden Parachutes; Acquisitions; Moral Hazard; Reservation Premium

* For very helpful comments, we thank Alberto Banal, Leonce Bargeron, Roland Battie, Jie Cai, David Denis, Diane Denis, Naveen Daniel, Bill Greene, Raj Gupta, Shane Heitzman, Richard Jaffe, Kathy Kahle, Harold Mulherin, Lalitha Naveen, Micah Officer, Matthew Rhodes-Kropf, Javier Suarez, David Yermack, members of the Advisory Board of Drexel's Center for Corporate Governance, seminar attendees at the Cass Business School, Drexel University, Erasmus University, Fordham University, IESEG School of Management, Syracuse University, SUNY Binghamton, University of South Florida, Vlerick Leuven Gent Management School, session participants at the XVII Finance Forum held at IESE, the 2009 USC Law School Conference on Empirical Legal Studies, the University of Oregon 2010 Research Conference honoring the scholarly contributions of Larry Dann, and the 2011 meetings of the KPMG PhD Project. We also appreciate the constructive comments and insightful reviews provided by an anonymous referee. Eliezer M. Fich gratefully acknowledges financial support from the Center for Research Excellence at the LeBow College of Business. All errors are our responsibility.

"Companies receiving federal aid are going to have to disclose publicly all the perks and luxuries bestowed upon senior executives, and provide an explanation to the taxpayers and to shareholders as to why these expenses are justified. And we're putting a stop to these kinds of massive severance packages we've all read about with disgust; we're taking the air out of golden parachutes."

President Barack Obama
February 4, 2009[1]

I. Introduction

Golden parachutes are more controversial today than when they first appeared over twenty years ago. Advocates argue that parachutes are a necessary part of a competitive pay package required to attract and retain talented executives. It is also argued that parachutes are beneficial to shareholders since they induce senior managers to "do the right thing" in the event of an acquisition attempt. Opponents object to parachutes because they are linked to a change in control of a company, not to its continuing or past performance. Detractors portray parachutes as guaranteeing managers "pay-for-failure," regardless of shareholder returns. Headlines from the popular press regularly criticize golden parachutes and express widespread concern about managerial excess and the lack of pay-for-performance related to parachute payments.

Government actions with regard to parachutes mirror the controversy. On January 25, 2011, by a 3-2 vote, the Securities and Exchange Commission (SEC) approved an amendment that adds Section 14A to the Securities Exchange Act of 1934, bowing to pressure from institutional investors and other corporate governance activist groups. Under this amendment, companies soliciting votes to approve a merger, acquisition, or similar business combination need to disclose golden parachute compensation arrangements. The new law also requires these firms to conduct a separate shareholder advisory vote to approve golden parachute compensation.[2]

[1] The full speech by president Obama can be viewed at: http://www.whitehouse.gov/blog_post/new_rules/
[2] The new rules affect Section 14d-10(a)(2) of the 1934 Securities Act which provides a safe harbor enabling the compensation committee of a target's board of directors to grant golden parachutes or other benefits to its executives during a tender offer negotiation. The SEC approved the safe harbor provision on October 18, 2006.

The preceding discussion suggests that the controversy surrounding golden parachutes is alive and well. At the heart of the controversy over parachutes is a moral hazard problem: target CEOs have direct influence over actions that provide personal benefit or loss at the possible expense of their shareholders. To address the moral hazard issue on a modern sample of firms, we study 851 acquisition offers during 1999-2007 to learn whether parachutes benefit the executives receiving them, the shareholders in the firms that grant them, or both. From an academic perspective, these issues are similar to classic themes in the literature: incentive alignment and managerial interest.[3]

Academic research has greatly enhanced our knowledge of parachutes, but to date, empirical analyses have not explicitly modeled the financial tradeoff meeting target CEOs. The moral hazard problem is best captured by recognizing the relative takeover related gains and losses experienced by the person (arguably) most responsible for the completion and terms of a merger – the target CEO. Consequently, we re-examine existing hypotheses on a recent sample of acquisitions using a measure of parachute importance that mirrors the moral hazard the target CEO encounters. It scales the parachute payment by the expected pay loss this CEO incurs if the merger is completed.

Our tests reveal that a one standard deviation increase in parachute importance is associated with an increase of 6.9 percentage points in deal completion. Our tests also indicate that parachute provisions affect the wealth of target CEOs and target shareholders in a non-trivial manner. On average, target CEOs cash in about $4.9 million from parachutes when their firms are sold. Conversely, a one standard deviation increase in parachute importance is associated with a drop in premia of about 2.6 percentage points. This shortfall implies a reduction of $127 million in deal value for the average transaction in our sample.

Given the effect of parachutes on both merger completion probabilities and takeover premia, we examine whether it makes sense for target CEOs to accept a lower premium (even with a larger

[3] Incentive alignment and managerial interest are hypotheses often studied in settings prone to agency problems; see, for example, Jensen and Meckling (1976).

parachute) because the value of their target-equity-based portfolio (which depends on the takeover premium) will decline. Similarly, is it logical for shareholders to provide a parachute to their CEO if this benefit might make them worse-off in case of a merger?

To address rationality concerns related to target shareholders we follow the method in Comment and Schwert (1995) and estimate an *unconditional premium* regression. We find that the unconditional premium is a positive function of *the presence* of a golden parachute. This result indicates that including a parachute provision in the CEO's compensation contract is associated with a net gain to shareholders. This finding is significant not only because it shows that it is indeed rational for shareholders to provide a parachute to their CEOs but also because it suggests that what really matters (during mergers) is the parachute's *relative importance*, not just its mere presence.

In our sample, the unconditional probability of deal completion is 87.8% and the mean takeover premium offered is around 35.9%. As noted above, a one standard deviation increase in parachute importance raises the probability of merger completion by 6.9 percentage points but lowers the takeover premium by 2.6 percentage points. These estimates imply that the *expected appreciation* accruing to the target CEO's equity-based portfolio is the same (at 31.5%) with or without such increase in parachute importance. Given this evidence, the actions of target CEOs that get more important parachutes appear perfectly rational. Interestingly, these results also imply that the *expected premium* to target shareholders is essentially the same even with an increase in parachute importance. This raises the possibility that target shareholders are not really hurt by more important parachutes. In fact, risk averse shareholders might prefer the same expected payoff with less risk (higher probability of deal completion). In a similar fashion, a *certainty equivalent* argument can explain the actions of target CEOs in settling for certain lower premia (and the consequent triggering of their merger pay package) rather than bargaining for higher premia at a possible risk to deal completion. That is, the negotiated premium represents the target CEO's own *reservation premium* which provides this executive with a certainty equivalent of his or her lost compensation.

We also analyze the investor reactions to the acquisition announcement of the publicly traded bidders in our sample. These tests reveal that as the importance of the parachute to target CEOs increases, bidding firms earn higher merger announcement returns. This finding indicates that deals in which the target CEO gets a relatively more important parachute exhibit a wealth transfer from shareholders of the target to shareholders of the buyer.

We identify a number of empirical issues that could raise concerns related to endogeneity or to other econometric biases. First, parachutes are endogenously chosen which introduces the potential of self-selection bias. Second, since firms do not randomly become takeover targets, our analyses might be vulnerable to sample selection bias. Third, because industry and/or time trends could affect the incidence of mergers and the way executive pay is structured, our tests might be prone to an omitted variables bias. Fourth, since parachutes are common provisions in many compensation contracts, their effect might be anticipated and impounded in a target's price. Accordingly, our analysis could be susceptible to anticipation bias. Fifth, foreknowledge of the premium a potential target could command in the event of a takeover might dictate how that firm structures a merger-related parachute for its CEO. Under this scenario, the direction of causality would be reversed.

To address the issues described above, we use different empirical specifications and econometric methods. Our multivariate tests control for self-selection endogeneity with the Heckman (1979) approach. We use the same procedure to address sample selection issues by controlling for the probability that a firm becomes a takeover target. Also, to account for anticipation bias, we employ the multistage process in Comment and Schwert (1995) and divide parachutes into predictable and surprise components. To control for an omitted variables bias, our multivariate tests include year and industry fixed effects. To consider reverse causality concerns, we estimate several two-stage instrumental variable systems. The inverse association between parachute importance and premia remains under the different empirical specifications and econometric techniques we employ. In

addition, our results are robust to alternative parachute proxies including a measure of parachute importance that scales its value by the value of the merger pay package received by the target CEO.

Aside from the econometrics issues noted above, it is possible that the results herein obtain because the bargaining power of targets offering more important parachutes is low and not because their CEOs give away rents. To assuage such concern, we add controls that potentially capture the target's bargaining power. Rhodes-Kropf and Kadyrzhanova (2011) argue that characteristics (such as the level of industry concentration) that allow managers to delay takeovers have a significant bargaining effect. Consequently, our Heckman (1979) selection equation of the probability of becoming a target controls for the Herfindahl index to proxy for the firm's power in its own industry. Additionally, our multivariate tests control for target initiated deals because the results in Aktas, de Bodt, and Roll (2010) suggest that this variable is a reasonable proxy for the target's bargaining power. Our regressions also include input-output/sales-purchases (independent) variables between the target and the acquirer industries similar to those in Ahern (2012). He argues that these customer-supplier variables capture the market power of the parties to an acquisition and, therefore, help account for the role of product markets on bargaining outcomes in mergers. Our results are robust to these different controls for bargaining power.

Our work provides a better understanding of the wealth effects and incentives of merger-related exit pay to target CEOs. This evidence is relevant in the ongoing policy debate regarding best practices in corporate governance. Our results are consistent with the following interpretation: as the importance of the parachute to target CEOs increases they negotiate an offer up to their own *reservation premium* which provides them with a certainty equivalent that is proportional to their expected lost compensation. At the same time, acquirers experience higher returns which might be a manifestation of the lower premium. Therefore, conditional on receiving a bid, (i) target CEOs are partially made whole for their personal losses, (ii) target shareholders are worse-off, and (iii) bidder shareholders are better-off. This evidence appears consistent with the managerial interest hypothesis

of golden parachutes. Nonetheless, this interpretation of our findings ignores the fact that parachutes also increase the probability of receiving and completing a bid and thus, increase the welfare of target shareholders. Once this factor is considered it is possible that target shareholders are better-off (they obtain a completed bid they would not have otherwise received), and bidder shareholders are also better-off because they get a good deal conditional on making a bid. Under this interpretation of our findings, more important parachutes align the incentives of target shareholders and target CEOs: these executives achieve their own interests while still completing advantageous deals for their shareholders.

This paper contributes to the literature as follows. First, we provide an updated analysis on an unresolved topic. To our knowledge, even recent published papers on parachutes [Hartzell, Ofek, and Yermack (2004) and Bange and Mazzeo (2004)] use samples ending in 1997 and 1990, respectively. Because the last ten to fifteen years have arguably witnessed the most dramatic changes in corporate governance in history, analyzing parachutes in the current decade is important.[4] As the President's recent comments indicate, golden parachutes remain a controversial tool of corporate governance.

Second, we develop a new measure of the importance of parachutes. It reflects the moral hazard issue faced by target CEOs, generally the single most important executive in merger negotiations. Our measure, which scales the parachute payment by the expected pay loss this CEO incurs if the merger is completed, is unlike those in the extant literature. Indeed, existing studies in this literature either control for the presence of a parachute or assess the increased acquisition costs related to the parachute. However, none measures the importance of the parachute to the target CEO.[5] We show that the certainty equivalent of the lost compensation to target CEOs is proportional to the expected

[4] Cheffins (2009) chronicles numerous governance regulatory changes occurring in the U.S. during 1990-2007.

[5] Among published papers in the literature studying parachutes, Knoeber (1986), Denis and Serrano (1996), Cotter, Shivdasani and Zenner (1997), Evans, Noe, and Thornton Jr (1997), Agrawal and Knoeber (1998), Hartzell, Ofek, and Yermack (2004), and Bange and Mazzeo (2004) use dummy variables to capture the presence of a parachute. Others studies like Lambert and Larcker (1985), Machlin, Choe, and Miles (1993), and Lefanowicz, Robinson, and Smith (2000) divide the value of the parachute by the target's market value of equity.

value of that compensation. This result indicates that our measure of parachute importance is unique in that it captures the incentives CEOs face when their firms become acquisition targets.

Third, existing studies focus on the impact parachutes have on the performance of the firms granting these benefits. We advance this literature by also examining the potential effect of the parachute given to the target CEO on the return to shareholders in the acquiring firm.

Fourth, our empirical evidence supports the theoretical prediction in Ross (2004) that the overall structure of a pay schedule (even one markedly convex) could result in more (instead of less) risk-aversion. Ross argues that attitudes towards risk depend not only on the convexity of an agent's compensation schedule, but also on how the overall schedule maps into more (or less) risk averse regions of the agent's utility function to the extent it can undo the impact of convex (or concave) pay schedules. Our findings suggest that the relative importance of the parachute curtails the convexity that equity-based pay imposes upon the target CEO's utility function. Importantly, under this interpretation, our results offer a plausible answer to a paradox in the literature showing that target CEOs often accept lower premia in exchange for benefits [like unscheduled option grants (Fich, Cai, and Tran, 2011), augmented parachutes or bonuses (Hartzell, Ofek, and Yermack, 2004), or jobs in the merged firm (Wulf, 2004)] that are unlikely to fully cover their merger-related personal losses.

The paper proceeds as follows. Section II describes our data. Section III contains our empirical analyses. Section IV addresses a number of robustness issues. Section V concludes.

II. Data and Sample Characteristics

We begin with a base sample of 4,381 mergers and acquisitions (M&A) announced during 1999-2007 and tracked in the Securities Data Company's (SDC) M&A database. We require the target to be a publicly traded U.S. firm and exclude spinoffs, recapitalizations, exchange offers, repurchases, self-tenders, privatizations, acquisitions of remaining interest, partial interests or assets, and transactions in which deal value is less than $1 million. From this group, we keep 3,521 deals in

which targets have stock return and accounting data available from the Center for Research in Securities Prices (CRSP) and Compustat, respectively. We lose 278 deals because premium data are missing from SDC and from other sources such as CRSP, LexisNexis, or Factiva. After filtering out deals in which governance data for targets are not available from RiskMetrics, our final sample consists of 851 offers.

A. Target and Deal Characteristics

We read the S-4, DEFM14A, SC-TO, and DEF14A proxies filed with the SEC by the target and/or acquiring firm. From these proxies we obtain information on the sale procedure, the party that initiates the deal, and the date merger negotiations begin. Panel A of Table 1 reports the offer characteristics in our sample. Among the 851 transactions, about 18% are tender offers and 7% are hostile takeovers. These statistics compare favorably to those in Officer (2003). His sample of acquisitions during 1988-2000 consists of about 20% tender offers and 8% hostile deals. Similar to Moeller, Schlingemann and Stulz (2005), almost 55% of the transactions in our sample are paid in cash. The deals we study have a completion rate close to 88%, which is comparable to that in Officer (2003) who reports a completion rate of 83%. We follow the procedure in Boone and Mulherin (2007) to identify the start of merger negotiations and the party responsible for initiating the deal. We find that in over 39% of all deals the target firm initiates the sale. Aktas, de Bodt, and Roll (2010) find that in about 42% of the cases they study target firms initiate the merger. Grinstein and Hribar (2004) report a mean deal value of $4.7 billion for the transactions they examine which is similar to the $4.76 billion mean value in our sample.

Panel B of Table 1 contains key financial characteristics for the target firms in our sample. The average (median) market value of equity is $3.302 billion ($0.991 billion) and leverage accounts for 26% (25%) of total assets. These statistics are comparable to those of Boone and Mulherin (2007) who report a mean market capitalization of $2.7 billion and Bates and Lemmon (2003) who report an

average leverage of 23.3%. Targets in our sample have a median market-to-book ratio of 1.42, which is close to the median ratio of 1.69 reported by Officer (2003) for the same variable.

B. Target CEO Characteristics

In Panel C of Table 1, we report the target CEO's characteristics. On average, 57% of all CEOs also chair their boards and almost 13% are their firm's founders. The average (median) CEO is 54 (55) years old, owns 4.6% (1.8%) of the firm's common equity, and has been the chief executive for about 7 (5) years. These characteristics concur with those in Hartzell, Ofek, and Yermack (2004) who report the following CEO statistics: mean age of 54, average equity ownership of 3.6%, and median tenure of 5 years.

We collect compensation data from proxy statements filed by each target with the SEC. In some instances, we supplement these data with information in the Execucomp database. Key compensation characteristics for target CEOs in our sample appear in Panel D of Table 1. Bebchuk and Grinstein (2005) report an average of $5.01 million in total CEO compensation.[6] During the last year in office prior to the deal, the average CEO in our sample earns about $5.4 million in annual total pay.

C. Lost Compensation

CEOs that sell their firms forfeit the compensation they would earn if they were to remain in office. We follow the methodology and assumptions in Yermack (2004) and in Fich, Cai, and Tran (2011) to calculate the expected lost pay for the target CEOs in our sample. First, we use information on their current compensation, their restricted stock, and their option holdings as reported in proxy statements before the merger announcement. Second, we assume that all CEOs retire by age 65 and that CEOs who are at least 65 years old expect to stay in office one more year before retiring. Third, we assume that the probability of departure increases by 4% each year due to acquisitions, delistings, or other turnover reasons. Fourth, we assume that salary and bonus increase by 2% from that

[6] Specifically, they report an average total compensation of $9.41 million for CEOs of S&P500 firms, $3.94 million for CEOs of MidCap400 firms and $2.05 million for CEOs of SmallCap600 firms during 1993-2003.

received during the year prior to the acquisition when firm performance is above the Fama and French (1997) median industry ROA. Fifth, we assume that the probability of departure increases by an additional 2% if the company performs below the industry median. Finally, we use a real rate of 3% to discount cash flows. Fich and Shivdasani (2007) estimate that the present value of lost income for CEOs expected to remain in office for another seven years is $45.5 million. On average, the present value of the expected lost pay for target CEOs in our sample is close to $40 million. Given our estimates, it appears that employment termination due to a takeover triggers non-trivial wealth losses for target CEOs.

D. Parachute Provisions for Target CEOs

Many boards of directors provide parachutes to their CEOs. We obtain information on these provisions from the last proxy filed by the targets prior to the merger announcement, the S-4 proxy filed by the acquirers, and/or the DEFM14A proxy filed by the targets following the merger announcement. Among the 851 targets, 735 (or about 86%) have a golden parachute in place for their CEOs before merger negotiations begin. From the target CEO's employment agreement, we are able to estimate the size of the parachute. Specifically, when a parachute is provided, the employment agreement often stipulates that the parachute payment is based on a multiple of the executive's regular cash compensation. Panel D of Table 1 shows that the mean (median) parachute payment is $4.87 million ($2.55 million).[7]

Section 280G of the Internal Revenue Code states that: "if the present value of a change-in-control payment (golden parachute) exceeds the safe harbor (three times the average taxable compensation over the five most recent calendar years preceding the change-in-control, less $1), the company loses tax deductions for these excess amounts. Additionally, the executive is required to

[7] It is important to emphasize that parachute payments might be subject to either a "single trigger" or a "double trigger" provision. Under a single trigger, the CEO obtains the parachute payment because a change-in-control occurs or because he or she is terminated without cause. Under a "double trigger" the CEO receives payment if he or she is terminated without cause or quits for good reason after the change in control. Our results continue to hold when we control for whether a single or double trigger is necessary to obtain the parachute payment.

pay a 20% excise tax on the excess payment." Given this tax rule, it would be reasonable to assume that most firms would set the multiple used to value a golden parachute to three. Consistent with this assumption, the information in Panel D of Table 1 indicates that at least 75% of our target firms use a multiple of 3 or lower to value a parachute. Nonetheless, in our sample, the highest parachute valuation multiple equals 5.25.

E. Temporal and Industrial Distribution of Parachute Importance

As noted earlier, we measure the relative importance of golden parachutes to target CEOs by dividing the value of the parachute by the compensation these executives expect to forego when their firms are acquired. In Panel A and Panel B of Table 2, we show the distribution of parachute importance in our sample over time and across industries, respectively. Our parachute importance measure appears generally stable over time, albeit slightly larger in 2002.

The information in Panel A of Table 2 also shows that the annual number of mergers is higher at the beginning and at the end of our sample period, which coincides with periods of economic expansion when the stock market valuation is higher. Shleifer and Vishny (2003) and Rhodes-Kropf and Viswanathan (2004) show that stock market health drives merger activity. The temporal distribution of our sample appears in line with the merger activity reported in these studies.

The industrial distribution of our sample (reported in Panel B of Table 2) is also similar to that reported in the existing M&A literature and to the actual distribution in the base sample from SDC. For example, Officer (2003) reports that 2% of his sample are firms in durable consumer goods, 17.4% in business equipment, 7.8% in shops, and 4.6% in chemicals. The percentage of targets in our sample that belong to those same industries is quite similar: 2.7%, 20.1%, 10%, and 2.1%, respectively. In addition, the base acquisition sample from SDC has 22.6% of targets in business equipment, 3.8% in telecommunications, and 8.9% in the healthcare industry. Analogously, the incidence in our final sample is 20.1%, 4%, and 8.9% for those same industries, respectively.

III. Empirical Analyses

A. Determinants of Parachute Importance

In Table 3, we run three Tobit models to study the importance of parachutes for target CEOs. We run Tobit models because the dependent variable (the ratio of the parachute's size to the present value of lost pay to the CEO) is left-hand censored. The regressions control for target firm, target CEO, and target firm governance characteristics that could affect the relative importance of parachutes; these are defined in the legend accompanying Table 3. All models include year and industry fixed effects.

Our results indicate that the relative importance of parachutes for target CEOs decreases in larger firms. In addition, the marginal effect implied by our estimates indicates that the importance of parachutes decreases by 14.3 percentage points when the target CEO is also the firm's founder. Other estimates imply that parachute importance increases by about 0.9 percentage points with a one standard deviation increase in the Gompers, Ishii, and Metrick (2003) G index: firms with greater takeover defenses are more likely to give their CEOs greater parachutes in case of a merger. In addition, according to model (3) in Table 3, parachute importance increases for target CEOs aged 62 or older.

B. Parachute Importance and Merger Completion

Golden parachutes might be a symptom of managerial entrenchment. In fact, the presence of a parachute is one of the 24 anti-takeover provisions tracked by the RiskMetrics and indexed by Gompers, Ishii, and Metrick (2003). Given this, golden parachutes may increase a firm's ability to defeat a takeover attempt (Malatesta and Walkling, 1988). Nonetheless, the empirical evidence related to the parachutes' effect on takeover probability is mixed.[8]

[8] For instance, whereas Cotter and Zenner (1994) do not find an association between parachutes and the likelihood of a successful takeover, Machlin, Choe, and Miles (1993) and Bebchuk, Cohen and Wang (2010) do.

In Table 4, we examine the relation between parachute importance and deal completion. One presumes that completed deals are beneficial to target shareholders since premia are generally paid and in the case of mergers and tender offers the target shareholders have the option of not approving the deal. Hence, in Table 4, we report the estimation of two variants of a fixed effects logit model in which the dependent variable equals "1" for completed deals and "0" for withdrawn deals. Officer (2003) and Bates and Lemmon (2003) estimate similar models. Therefore, the control variables in our regressions are similar to theirs. The exception, of course, is our proxy of parachute importance.

The tests in Table 4 also include control variables to proxy for the potential bargaining power of the parties to the deal. We add a dummy for target initiated deals. Following Ahern (2012), we also include input-output/sales-purchases variables (for the target and acquirer industries). Ahern notes that these variables control for the effect of product markets on bargaining outcomes in mergers.

Because golden parachutes are endogenously determined, in model (1) of Table 4 we control for endogenous self-selection by using the Heckman (1979) inverse Mill's ratio (λ_1). Moreover, since firms do not randomly become takeover targets, in model (2) we control for sample selection by using a different inverse Mill's ratio (λ_2) based on a regression of the probability of becoming an acquisition target.[9]

Results for the control variables in Table 4 are consistent with those in the existing M&A literature. Transactions are about 9.5 percentage points more likely to materialize if there is a target termination fee. This marginal effect is comparable to that of 11 percentage points in Officer (2003). Tender offers are 4.2 percentage points more likely to go through, as are mergers in which the parties to the transaction are in the same industry. As in Bates and Lemmon (2003), deals are less likely to be completed if there is prior bidding or if the deal is hostile.

[9] The Parachute Heckman self-selection and the target Heckman self-selection involve a first-stage estimation of the probability of having a golden parachute and the probability of being a target, respectively. We report these first-stage models, both of which are estimated in a sample of 14,157 firm-years, in Tables A1 and A2 of the Appendix. In the second stage, the inverse Mill's ratio derived from the first stage model is included in the estimation as a variable to control for endogenous self-selection.

Of primary interest is the result that deal completion increases with the importance of the parachute. The marginal effect implied by the estimates in Table 4 indicates that a one standard deviation increase in parachute importance raises the probability of deal completion by 6.9 percentage points. This finding could be consistent with the incentive alignment hypothesis in that larger parachutes motivate target CEOs to complete the deal. Target CEOs care about deal completion because they can cash in their parachutes and their equity-based portfolio in full since all restrictions and vesting periods disappear when the target firm ceases to exist as a standalone firm.

C. Parachute Importance and Acquisition Premia

Payments under parachute provisions can strengthen a target's bargaining position with the bidding firm (Comment and Schwert, 1995). However, studies examining the association between parachutes and the premia paid for target firms provide mixed evidence. For example, Cotter and Zenner (1994), Bange and Mazzeo (2004), and Lefanowicz, Robinson, and Smith (2000) find no association while Bebchuk, Cohen and Wang (2010) report an inverse association. Hartzell, Ofek, and Yermack (2004) examine situations in which the value of the parachute to the target CEO is augmented prior to deal completion. They show that such augmentations are not associated with the premium paid for the target company. None of these studies, however, defines the parachute in terms specifically related to the moral hazard dilemma the target CEO confronts: the gain from the parachute relative to the expected loss of future pay to this executive if the deal is completed.

We use the four-week premium reported by SDC as the dependent variable in a set of eight regressions similar to those in Bargeron, Schlingemann, Stulz, and Zutter (2008).[10] These premium regressions are reported in Table 5. The independent variables of interest are four different proxies based on the golden parachute payment to the target CEO. These variables are: in model (1), the value of the parachute divided by the present value of the expected lost pay to the target CEO; in model (2), a dummy variable set to "1" if the CEO's compensation contract includes a parachute

[10] Following Officer (2003) we restrict this premium measure to 2 (or 200%) to avoid extreme outliers.

provision; in model (3), the natural logarithm of the payments we identify as parachute compensation; and in model (4), the multiple used to calculate the value of the parachute. Although the first proxy is designed to measure the relative impact of the parachute on the target CEO's wealth in particular, the remaining proxies also measure the importance of the parachute in general. For each proxy, we estimate the premium regression model twice: once controlling for self-selection and then controlling for sample selection. All other independent variables are defined in the legend accompanying Table 5.

The estimates in models (1A) and (1B) of Table 5 indicate that a one standard deviation increase in parachute importance is associated with a decrease in premia of 2.6 percentage points. This drop in premia translates to an average decline of $127 million in terms of deal value.

The coefficients related to the other parachute proxies in models (2), (3), and (4) are also negative and significant. The estimates in model (2) indicate that when the parachute has zero importance to the target CEO takeover premia increase by 6.2 percentage points. The estimates in model (3) imply a drop in premia of 4.8 percentage points for a $1 million dollar increase in the value of the parachute. According to model (4), targets experience a 1.8 percentage point decline in premia for a one unit increase in the parachute multiple. Consequently, the estimates related to the proxies in models (2), (3), and (4) also document an inverse association between parachute importance and takeover premia. However, the interpretation that arises from these proxies is not as economically informative as that arising from model (1). This occurs because it is possible that parachutes of the same value (or those calculated with the same multiple) deliver very different incentives. Therefore, by standardizing the value of the parachute by the pay target CEOs expect to give up, we are able to more accurately assess the incentives of parachutes during acquisitions.

The estimates for other independent variables in Table 5 are consistent with the existing M&A literature. We also find that acquisition premia increase with recent excess returns, liquidity, and in deals structured as tender offers. Bid premia also increase with rumors, prior bidding, and the

existence of a target termination fee. As in Hartzell, Ofek, and Yermack (2004) and Bargeron, Schlingemann, Stulz, and Zutter (2010), we do not find an association between the premia paid and whether the target CEO gets a job in the merged firm.

Notably, bargaining power affects the gains to target shareholders in mergers: bid premia are around 5% lower in deals initiated by the target firm. This result agrees with those in Fich, Cai, and Tran (2011). They also document an inverse association between premia and target initiated deals. In addition, bid premia decrease in the size of the target company, in deals by private acquirers, and in situations when the CEOs near retirement age. This last result is consistent with the findings in Jenter and Lewellen (2011). They show that premia are eight to ten percentage points lower when the target firm has a retirement-age CEO.

D. Rationality Considerations

Several papers in the M&A literature document (but do not explicitly recognize) a potential paradox. Specifically, studies find that target CEOs often accept lower premia when they obtain a benefit that is unlikely to totally make up for their takeover-related personal losses. For example, Hartzell, Ofek, and Yermack (2004) show that when target CEOs get extraordinary personal treatment (such as a parachute augmentation or a merger bonus), target shareholders receive a lower premium. Likewise, Wulf (2004) reports that target CEOs trade takeover premia for a powerful job in the merged firm. Fich, Cai, and Tran (2011) document a similar result when the benefit involves unscheduled stock option grants approved during non-public merger negotiations.

Our results on golden parachutes suggest a similar paradox for both the target CEOs and their shareholders. From the target CEOs' perspective, a decrease in the takeover premium will create a private loss for these CEOs (due to a drop in the value of their equity-based portfolio) which their parachutes might not fully cover.[11] This raises a question: why would target CEOs with parachutes

[11] The equity-based portfolio contains the target CEOs' (and their immediate family's) share-ownership in the firm, stock options, and restricted stock.

consent to a lower premium if doing so possibly makes them worse-off? From the target shareholders' perspective, a similar question emerges: why would they include a golden parachute provision in their CEO's pay contract if this benefit makes them worse-off at the time of an acquisition bid?

D.1. Target CEOs

For the transactions we study, the unconditional probability that an acquisition is completed is approximately 87.8% and the average takeover premium offered is about 35.9%. Ceteris paribus, in this base case, the appreciation of the target CEO's equity-based portfolio is a function of an expected takeover premium of approximately 31.51%. Nonetheless, our results indicate that a single standard deviation increase in parachute importance raises the probability of deal completion by about 6.9 percentage points but lowers the premium by around 2.6 percentage points. Under these circumstances, we estimate the expected takeover premium to be approximately 31.52%. Consequently, it appears that the expected appreciation of the target CEO's equity-based portfolio is about the same in the base case and in the presence of a more important parachute. A certainty equivalent argument can also explain the actions of target CEOs. Rather than bargain hard for higher premia and risk not completing the deal, target CEOs settle for smaller, but certain premia which insure deal success and, at the same time, partially make these CEOs whole for their expected personal losses.[12] Put differently, by increasing the target CEO's total merger payout relative to the expected value of his or her lost compensation, the parachute gets the CEO up to or past the certainty equivalent of that expected lost compensation.

Hence, the behavior we document for these target CEOs appears rational because their actions reveal that they are (i) utility maximizing agents (that get more satisfaction from current consumption

[12] In fact, target CEOs are probably better-off in the latter case. They get a relatively larger parachute and (if the deal is completed) they can cash in their equity-based portfolio in full since all stock restrictions and option vesting periods are lifted when the target ceases to exist as a standalone firm.

than from deferred consumption), and (ii) risk averse agents (that always prefer the same excepted payoff with less risk).[13]

Under a similar logic, target shareholders might not be at a disadvantage when their CEO gets a more important parachute because they get essentially the same *expected premium* with or without an increase in the importance of the parachute. In fact, target shareholders are probably better-off when their CEO gets a more important parachute because under these circumstances they get a completed bid they would not otherwise have received.

We note that the finding that target CEOs settle for a lower premium (even CEOs with an equity-based portfolio that includes option grants and other stock pay) conforms to the theories in Ross (2004). He argues that attitudes towards risk depend not only on the convexity of an agent's compensation schedule, but also on how the overall schedule maps into more (or less) risk averse areas of the agent's utility function. Ross states that the mapping of the overall compensation schedule can undo the impact of convex (or concave) pay schedules. Our findings suggest that raising the importance of the parachute mitigates the convexity that equity-based pay imposes in the target CEO's utility function which, in turn, makes the target CEO more risk averse.

D.2. Target Shareholders

Using the method in Comment and Schwert (1995), we estimate an *unconditional* premium regression in a sample of 14,157 firm-years with data available from CRSP, Compustat, and RiskMetrics during 1999-2007. In this regression, which is reported as model (1) in Table 6, the key independent variable is a parachute (0,1) indicator. As in Comment and Schwert, we set the premium to zero in nontakeover firm-years. The estimates in model (1) of Table 6 show that the presence of a parachute is a positive and statistically significant function of the unconditional premium. This result

[13] Our results indicate that by acquiescing to a lower premium, target CEOs potentially give up substantial value related to their stock and option holdings. This finding is consistent with those in Huddart and Lang (1996). They show that top managers tend to exercise options long before expiration (often around vesting dates and following price run-ups), sacrificing, on average, 50% of their Black-Scholes value.

indicates that a parachute is associated to an unconditional net gain to shareholders.[14] Consequently, this evidence suggests that providing their CEOs with a parachute appears to be a perfectly rational choice for target shareholders.[15] Moreover, when the parachute provision is first put in place, it is unlikely that shareholders know (i) whether (or when) their firm will become an acquisition target or (ii) how relatively important (to the CEO) the parachute will turn out to be in case of a merger. This lack of foreknowledge also rationalizes the shareholders' choice with regards to including a parachute provision in their CEO's compensation contract.

E. Anticipation Bias

It is no surprise to the market that many firms offer parachutes to their CEOs. Moreover, Jensen and Zimmerman (1985) argue that stock prices might reflect the anticipation of a takeover premium if a golden parachute reveals that a takeover is more likely. To recognize this, we follow the methodology of Comment and Schwert (1995) and replace the (0,1) indicator for the presence of a parachute with variables related to the anticipated and surprise components of the parachute. These components are estimates from the parachute prediction regression reported as model (2) of Table A1. We estimate this prediction regression in a sample of 14,157 firm-years with data available from CRSP, Compustat, and RiskMetrics during 1999-2007. The predictable component is an estimate of the probability that the target CEO's compensation contract includes a parachute provision. The surprise component is computed as the parachute indicator minus the estimated probability that the target CEO has a parachute.

In models (2) and (3) of Table 6 we present two regressions of the *conditional* takeover premium in which the parachute components are the independent variables of interest. For reference and in the

[14] Our interpretation is based on Comment and Schwert's (1995, p.30) assertion that "The estimated effect of antitakeover measures on the unconditional premium is of interest because it is a net effect of a decrease in the premium if antitakeover devices deter offers and an increase if they increase premiums in successful takeovers."

[15] In addition, existing academic work provides additional rationales for the shareholder's approval of a parachute for their CEO, particularly when the firm is not a takeover target. For example, it is argued that parachutes (i) encourage managerial human capital investment in the firm (i.e.: Knoeber, 1986 and Berkovitch and Khanna, 1991), (ii) prompt top managers to eliminate redundant or inefficient operations (i.e.: Lambrecht and Myers, 2007), and (iii) promote innovation (Francis, Hasan, and Sharma, 2009 and Manso, 2010).

spirit of Comment and Schwert (1995), in both tests we include the estimate for the parachute dummy from separate similarly structured premium regressions that do not include the golden parachute components.

The coefficient on the surprise parachute variable in models (2) and (3) of Table 6 is negative and significant, indicating that the unanticipated effect of a golden parachute is associated with lower bid premia. In contrast, the predictable parachute component does not attain statistical significance. Therefore, the most we can conclude is that the known existence of golden parachutes is already impounded in a target's value. Nonetheless, this conclusion is important because it validates the view that it is not the mere presence of a parachute, but its relative importance to the target CEO, that matters. Consequently, it is plausible that the unanticipated negative effect captured by the surprise parachute variable in the conditional premium tests reflects the amount by which parachutes wind up insulating target CEOs from personal losses.

F. Parachute Importance and Acquirer Returns

The foregoing results indicate that as the level of parachute importance increases, the premia paid to target firms decrease and the probability of deal completion increases. Because of this trade-off, our tests show that target shareholders get the same *expected premium* despite an increase in the importance of the parachute to their CEO. Since the premium paid for targets and the probability of deal success may also affect the bidder, we now evaluate whether the importance of parachutes to target CEOs affects the acquirer shareholders' wealth.

To test whether (and how) the importance of parachutes to target CEOs affects the returns to acquirers, in Table 7, we run two ordinary least squares (OLS) regressions of the three-day merger announcement cumulative abnormal return (CAR) meeting the 459 publicly traded bidders in our sample. We follow the M&A literature in order to properly specify our acquirer return regressions. For instance, both models in Table 7 control for deal, market, and bidder characteristics similar to those in Moeller, Schlingemann, and Stulz (2005) and Masulis, Wang, and Xie (2007). Model (2) of

Table 7 includes target characteristics similar to those in Moeller (2005) and Wang and Xie (2009) as additional controls.[16] The independent variable of interest in Table 7 is our proxy of parachute importance: the value of the golden parachute scaled by the expected pay compensation to the target CEO.

The estimates in Table 7 indicate that acquirer returns increase as the level of parachute importance to the target CEO increases. A one standard deviation increase in parachute importance is associated with an increase in bidder returns of 0.7%. This increase translates into a gain of $205 million in terms of market capitalization for the average bidder in our sample. This finding conflicts with the notion that target shareholders are not worse-off when their CEO gets a more important parachute because they get essentially the same *expected premium*. Instead, our bidder returns tests document a transfer of rents from target shareholders to acquirer shareholders when target CEOs have more important parachutes. Our previous results indicate that it is rational for target shareholders to implement a golden parachute. But as we have also noted, it is impossible for future targets to precisely anticipate the timing of the bid or the relative importance of golden parachutes to the CEO. An unintended consequence is that parachutes that turn out to be overly generous can cause target CEOs to become more risk averse and (perhaps needlessly) surrender rents to the bidding firm. At the same time, the fact that acquirer returns are higher is another manifestation of the lower bid premium (the other is the higher probability of completing the deal). As a result, the evidence that acquirer shareholders are better-off when more important parachutes are provided to the target CEOs is not inconsistent with the finding that target shareholders also benefit because they get a completed bid they would not have otherwise received.

[16] The control variables in Table 7 yield results similar to those in other papers. As in Moeller, Schlingemann, and Stulz (2005), bidder size is negatively related to the acquirer return. Like Masulis, Wang, and Xie (2007), the competitive industry indicator yields positive coefficients while the bidder G index and the relative size variable yield negative coefficients.

IV. Additional Tests

In this section, we describe alternative tests we conduct in order to assess the robustness of the preceding results.

A. Reverse Causality

A key test of the incentive alignment vs. managerial interest hypotheses is the relation of the parachute to the premium paid in the acquisition. The analyses in Table 5 document an inverse association between parachute importance and takeover premia. However, companies expecting a low premium if they become takeover targets might provide a more generous (and important) parachute to their CEOs. Under this possibility, the direction of causality would be reversed.

To address whether the endogenous choice between parachute importance and deal premia affects the results presented in Table 5, we estimate four different systems of simultaneous equations following the methodology in Maddala (1983). Each system uses a different golden parachute proxy. In all systems, bid premia and the individual parachute proxy are provided as the two endogenous variables. For every system, the parachute variable and bid premia instruments are separately estimated from first-stage regressions. The second-stage tests consist of an OLS regression of bid premia on the parachute instrument and a regression of the parachute proxy on the instrument for the bid premia, respectively. The standard errors in these tests are adjusted for the fact that the instrumental variables for the parachute and bid premia are estimated.

To identify the simultaneous system, we must exclude one exogenous variable from each of the two second-stage regression equations. For the parachute equation, we must satisfy the *relevancy condition* with a variable that is correlated with the parachute after controlling for all other exogenous variables. The same variable will satisfy the *exclusion restriction* if it is uncorrelated with the error term of the second-stage premium regression. For this variable we use the CEO founder (0,1) dummy. Table 3 indicates that this variable is significantly related to our parachute proxy. Prior research by Moeller (2005) and the estimates in Table 5 show that the founder (0,1) dummy is

unrelated to premia. For the premium equation, we use the target's excess stock return during the year prior to the acquisition. This variable appears to satisfy the relevancy condition and the exclusion restriction. A recent study by Aktas, de Bodt, and Roll (2010), as well as the results in Table 5, shows that a target's prior excess return is related to the bid premium. The evidence in both Table 3 and Table A1 indicates that the excess return variable is not related to the parachute.

Table 8 presents our simultaneous equations analyses. In Panel A of Table 8 we use the importance of the parachute relative to the lost compensation as our proxy for the parachute. After accounting for endogeneity, the parachute instrument in the second-stage premium regression is negative and statistically significant. In contrast, the premium instrument in the second-stage parachute regression is not different from zero. This last result indicates that bid premia are unrelated to parachute importance and provides no evidence of causation running in the reverse direction. The interpretation that arises from our second stage premium regression is similar to those in Table 5. According to our estimates, a 10 percentage point increase in parachute importance with respect to the expected lost compensation is associated with a reduction in premia of about 3 percentage points.

In Panel B of Table 8 we use the other three parachute proxies described earlier. For each of these proxies, we also estimate a simultaneous system consisting of two first-stage and two second-stage regressions. To conserve space, we only report the two second-stage regressions for each system. The tests in Panel B of Table 8 also document an inverse and significant association between the parachute instrument and bid premia. However, the same tests reveal no association between the premium instrument and the golden parachute dependent variables. Overall, the results of our simultaneous equations analyses lend no support to the conjecture that causality runs in the reverse direction. [17]

[17] We note that the simultaneous system in which we use the parachute indicator (0,1) only reveals that there is no reverse causality. The economic effect of the parachute is not readily interpretable from the second stage premium regression that uses this indicator as the parachute proxy (Maddala, 1983).

B. Alternative Scaling of the Parachute Payment

In the preceding tests, we assess the relative importance of parachutes by scaling their value by the expected lost compensation to target CEOs if the deal is completed. There are least two issues of potential concern with this measure of parachute importance. First, as noted in Section II.C, we use current pay as the main input to estimate the lost compensation to the target CEO upon an acquisition. While our tests control for immediate past performance, the literature shows that current pay is typically a function of multiple years of performance.[18] Consequently, if pay reacts with a lag to cumulated poor performance, the current pay used in the lost compensation calculation could be high. This issue could be relevant because we use excess returns for the identification in the simultaneous systems tests. While excess returns may not be related to the existence of the parachute, they may be related to its importance through the compensation effect described above. Second, we note that to fully understand the incentives of the target CEOs, we would need to consider how the change in value in their existing firm-specific equity-based portfolios (plus accelerated vesting, etc.) affects their expected wealth loss due to a merger. However, neither our measure of parachute importance nor the other proxies we use in our earlier tests consider the magnitude of the target CEOs' equity-based payoff.

To address the issues just noted, we scale the parachute payment by a totally different measure: the value of the total merger pay-package to the target CEO.[19] This proxy, which considers the target CEO's equity-based payoff, tracks the importance of the parachute relative to the entire acquisition-related compensation the executive gets.

In Table 9, we replicate earlier tests using the alternative proxy of parachute importance. Specifically, Panel A in Table 9 presents premium regressions similar to those reported in Table 5.

[18] See, for example, Boschen and Smith (1995).

[19] As in Hartzell, Ofek, and Yermack (2004), this package includes common equity and stock option appreciation, the parachute, and, in some cases, a special merger bonus. The average merger pay package drawn by target CEOs in our sample is worth almost $36 million.

These tests document an inverse and statistically significant association between parachute importance (relative to the merger pay package) and premia. Based on the coefficient estimates, a 5 percentage point increase in parachute importance is associated with a decline in premia of 2.2 percentage points. This decline is economically meaningful: for the average sample target the lower premia imply a shortfall of about $108 million in terms of deal value.[20]

Panel B in Table 9 presents simultaneous regression analyses similar to those in Panel B of Table 8. Consistent with our earlier tests, whereas the premium instrument is not statistically significant in the parachute regression, the parachute instrument is negative and significant in the premium regression. In addition, in untabulated tests we find that a one standard deviation increase in the alternative measure of parachute importance increases (i) the probability of merger completion by 8.5 percentage points and (ii) the return to the acquirer firms by 0.34%. Overall, the analyses on the importance of the parachute relative to the merger pay-package generate inferences similar to those obtained using our other proxy of parachute importance.

C. Takeover Premia Alternatives

The estimates presented in Tables 5, 6, 8, and 9 are based on the four-week premium reported by SDC. We re-estimate all target premia using (i) the combined method in Officer (2003), (ii) the *CAR* running from 20 days before the deal announcement (AD-20) until the day after (AD+1) following Jarrell and Poulsen (1989) and, (iii) the cumulated returns over the (-42, +126) window as in Schwert (1996). Our results continue to hold when we use these alternative premium measures. For example, using the combined premium (Officer, 2003), we estimate that a one standard deviation increase in

[20] We are sensitive that the results that obtain when we scale the parachute by the merger pay package are driven by the fact that the offer price is used to value the equity components of the merger pay package. To address this issue and purge the offer price from the merger pay package, we record each target's stock price six weeks prior to the start of merger negotiations. We use this price and the Black-Scholes methodology to value all the stock options held by the target CEO. Similarly, we use this price to value all stock and restricted stock owned by the target CEO. With these new values, we re-estimate the dollar amount of the merger pay package six weeks prior to the start of merger negotiations. Finally, we standardize the parachute by this alternative estimate of the merger pay package. This ratio becomes the key independent variable in regressions similar to those in Table 9. The results from these tests produce inferences similar to those in the main text: higher parachute importance is related to lower premia.

parachute importance (relative to the target CEO's expected lost pay) is related to a target premium that is 3.1 percentage points lower. This shortfall triggers a decline of about $152 million in deal value for the average sample target. This result is similar to those tabulated. [21]

D. Clustering

The industrial distribution of our sample, which we report in Panel B of Table 2, exhibits some clustering in Business Equipment. We re-estimate all of the premium regressions in Tables 5 and 9 clustering the standard errors by the target's 2-digit SIC and also by their Fama and French (1997) 48 industry groups. The target premium results related to all of our parachute proxies are robust to clustering the standard errors by the targets' industrial classification.

E. Selection Issues

The deal completion tests in Table 4 and the target premia regressions in Tables 5 and 9 use the methodology in Heckman (1979) to control for self-selection (because firms can choose to offer a parachute) and for sample selection (since companies do not randomly become takeover targets). The self-selection and sample selection inverse Mill's ratios we use in our tests are respectively based on the first stage regressions we report as model (3) of Table A1 and model (4) in Table A2. In employing Heckman's model, it is important to correctly specify the first stage regressions. Hence, our first stage tests are constructed following Agrawal and Knoeber (1998), Palepu (1986), Comment and Schwert (1995), and Bates, Becher and Lemmon (2008). The results in these first stage regressions conform to the evidence in prior work. For example, in Table A1 the coefficient for target size is consistent with the findings in Agrawal and Knoeber (1998). In Table A2, the estimates

[21] Following Officer (2003), we first estimate a premium based on "component" data using the aggregate value of cash, stock, and other securities offered by the bidder to target shareholders as reported by SDC. We then estimate premia based on "initial price" and "final price" data based on the initial offer and final offer price, respectively. These prices are also reported by SDC. All three premium measures are deflated by the target's market value 42 trading days prior to the bid announcement. The "combined" premium is based on the "component" measure if it is greater than 0 and less than 2; otherwise the premium relies on the "initial price" measure (or on the "final price" measure if initial price data are missing).

for target size, poison pill, and classified board are in line with those in Palepu (1986), Comment and Schwert (1995), and Bates, Becher and Lemmon (2008), respectively.

When we employ the Heckman methodology we find that none of the selection controls in Tables 4, 5, and 9 attain statistical significance at conventional levels. Therefore, we interpret these findings to indicate that our analyses are immune to selection issues. Nonetheless, this interpretation assumes that our first stage Heckman (1979) regressions are properly specified. The correspondence of our first stage estimates to the extant literature suggests that this assumption is reasonable.[22]

F. Bargaining Power

We recognize that with a fixed amount of synergies, a lower premium will directly increase the bidder return. This possibility raises the issue of whether the bargaining power of the target is low or whether the target CEO gives away rents due to more important parachutes. Moreover, if the selection model fails to capture the relations between firm-specific bargaining power, the parachute terms, and being selected as a target, this issue is not mitigated with the two-stage approach we perform. As a result, it is imperative to account for the role of bargaining power because it directly impacts the inferences we can draw from our tests.

We implement a number of empirical controls to alleviate the bargaining power-related concerns just described. First, the selection equation of the probability of becoming a takeover target (Table A2) controls for the Herfindahl index to capture a firm's power in it its own industry. This choice is motivated by the argument in Rhodes-Kropf and Kadyrzhanova (2011) that characteristics (such as the level of industry concentration) that allow managers to delay takeovers have a significant bargaining effect. Second, when appropriate, our tests control for "target initiated deals," a variable

[22] We re-calculate the inverse Mill's ratio from a regression that augments the parachute determinants model in Agrawal and Knoeber (1998). This alternative first stage regression is reported as model (1) in Table A1. We then use the alternate self-selection inverse Mill's ratio in the tests in Tables 4 and 5. The findings are similar to those reported and the self-selection control remains statistically insignificant. We also produce two other sample selection inverse Mill's ratios using regressions (1) and (2) in Table A2 as the first stage models. These regressions expand the specifications in Palepu (1986) and in Comment and Schwert (1995), respectively. We again use the alternative inverse Mill's ratios in Tables 4 and 5: all results hold and the sample selection controls remain insignificant.

shown to affect the distribution of gains during mergers (Aktas, de Bodt, and Roll, 2010), and, therefore, a reasonable proxy for a target's bargaining power. We also control for input-output/sales-purchases variables between the target and the bidder industries. Ahern (2012) argues that these customer-supplier relations proxy for the market power of the merger participants and help account for the role of product markets on bargaining outcomes in mergers. Our results prove robust to controls for bargaining power.

G. Tax Regulations and the Sarbanes-Oxley Act

On February 19, 2002, the Internal Revenue Service proposed new regulations to Section 280G of the Internal Revenue Code.[23] The new regulations provide amendments and clarifications to those issued on May 5, 1989, and apply to parachute payments occurring on or after January 1, 2004. The amendments clarify that the safe harbor related to change-in-control payments is three times the average taxable compensation over the five most recent calendar years prior to the change-in-control. It also states that a company that exceeds the safe harbor will lose tax deductions for the excess amounts and that the executive would be liable for a 20% excise tax on the excess payment.

A 2008 study by RiskMetrics finds that the new tax regulations have done little to reduce parachute payments.[24] In particular, the study reports that two-thirds of the companies in the S&P 500 index disclose that they would provide excise tax gross-ups to their top executives. The excise tax gross-ups essentially free the executive from personally paying the excise tax on excess parachute payments. The RiskMetrics study shows that excise tax gross-ups are a costly benefit, since it generally takes at least $2.50 and as much as $4 to cover each $1 of excise tax that must be "grossed-up." In addition, other companies that do not provide the gross-up benefit may increase parachute payments in order to mitigate the excise tax to their executives. For our purposes, it is possible that

[23] See: REG-209114-90 at http://www.irs.gov/pub/irs-regs/20911490.pdf

[24] See: "Gilding Golden Parachutes: the Impact of Excise Tax Gross-Ups" by Kosmas Papadopoulos at http://www.riskmetrics.com/docs/2008ExciseTax

the new Section 280G rules may have affected the size of parachutes, and, in turn, the relative importance of these benefits.

To investigate the potential effect of the new tax rules on parachutes, we revisit the regressions reported in Table 3 related to the relative importance of parachutes. In an untabulated test similar to that in model (1) of Table 3, we include a dummy variable for deals initiated after February 19, 2002. This variable also controls for the effect of other potentially important events that occur during 2002. For example, due to the new rules contained in the Sarbanes-Oxley Act of 2002 (SOX), many firms curbed the equity-based pay given to top managers while increasing their base salary (Chhaochharia and Grinstein, 2009). This pay redistribution could partially account for an increase in parachute importance. Nonetheless, the estimate for the 2002 indicator is not statistically significant.

We also examine whether the shareholder wealth effects related to the importance of parachutes change following the passing of SOX. In unreported analyses, we estimate premium regressions similar to those in model (1) in Table 5. In these tests we add a control variable that interacts our parachute importance proxy with a dummy variable for merger deals occurring after the enactment of SOX. These tests reveal that after SOX a one standard deviation increase in parachute importance is associated with a statistically significant decline in deal value of about $148 million. While this marginal effect is higher than that of $127 million we estimate for the entire sample period, the pre- and post-SOX point estimates are not statistically different. We also add a similar interaction term to an acquirer return regression similar to those reported in Table 7. This additional test shows that after SOX increasing parachute importance by a single standard deviation raises the return to the acquirer by almost 1%. In general, according to the robustness tests in this section, the reported parachute wealth effects related to both target and acquirer shareholders continue to obtain after SOX.

H. Changes of Parachute Importance during Merger Negotiations

The vast majority of parachutes we examine are in place in the CEOs' compensation contract *before* their firms become takeover targets. We note that 116 out of 851 target CEOs in our sample

(about 14%) do not have a parachute prior to the start of merger negotiations. However, 23 of the 116 firms that do not offer a parachute put one in place once merger talks begin. In addition, 30 of the 735 firms that do have parachutes for their CEOs raise their value during merger negotiations. Removing these 53 observations from our sample does not alter our results. We also run premium regressions similar to those in Table 5 in which the key independent variable is a dummy that is "1" if targets either augment the size of an existing golden parachute or put one in place during negotiations (the 53 cases described above). Similar to Hartzell, Ofek, and Yermack (2004), the estimates for this variable are negative but not statistically significant.

V. Summary and Conclusions

The debate surrounding golden parachutes -- particularly during acquisitions -- has recently intensified. Advocates argue that, during mergers, parachutes induce target CEOs to act in the best interest of their shareholders. Opponents claim that it is unfair to provide managers in the acquired firm with a financial safety net despite the fortunes of their shareholders. Regulatory actions have intensified this controversy: new securities laws mandate the disclosure of parachute compensation during mergers. We summarize this controversy with the following research question: when a firm becomes a takeover target, do parachutes align the incentives of the target managers receiving them and the shareholders in the targeted firms that grant them? We frame this question in the context of well-known hypotheses in corporate finance: incentive alignment and managerial interest.

We test these hypotheses in a recent sample of 851 acquisitions bids during 1999-2007 using a novel measure of *parachute importance* that captures the moral hazard meeting the target CEO. Our measure scales the parachute payment by the expected pay loss this CEO incurs if the merger is completed.

In our M&A sample, the unconditional probability of deal completion is 87.8% and the average premium offered is 35.9%. We find that a one standard deviation increase in parachute importance

raises this probability to 94.7% but lowers the premium to 33.3% These estimates imply that the *expected premium is* very similar (at 31.5%) with or without an increase in parachute importance. This result suggests that it is rational for target CEOs to accept a lower premium when they have a more important parachute because the expected value of their equity-based portfolio is unaltered. We also find a positive association between parachutes and the unconditional takeover premium indicating that their presence yields an unconditional net gain to shareholders. This result indicates that it is also rational for shareholders to give their CEO a parachute.

The fact that raising the importance of parachutes does not alter the expected premium suggests that these provisions are not really harmful to the target shareholders. Our results indicate that with a more important parachute target CEOs negotiate a takeover price that reflects their own *reservation premium*. This premium leads to a *certainty equivalent*: CEOs accept a lower bid premium to both insure bid success and trigger the receipt of their merger pay package. We also examine the returns accruing to our sample bidders upon merger announcement. These tests reveal that bidder returns increase in parachute importance. This result documents a transfer of wealth from shareholders of the target to shareholders of the acquirer. At first glance, this finding appears consistent with the managerial interest hypothesis. Nonetheless, the fact that acquirers are able to execute a good deal when more important parachutes are provided to target CEOs does not undermine the conclusion that target shareholders also benefit from golden parachutes because they get a completed bid they would have not otherwise received. In sum, our results show that conditional on a merger, target shareholders are worse-off than they would have been in a deal without a parachute for the target CEO, but they are unconditionally better-off because with a parachute a merger is more likely to occur.

From a public policy perspective, our paper informs the ongoing debate about the effectiveness of golden parachutes and provides timely evidence related to recently-passed securities laws regulating parachute provisions during acquisitions.

From an academic perspective, our paper has broad implications for the empirical literature studying whether (and how) the structure of managerial compensation affects firm value. In this context, our measure of parachute importance (which reflects the moral hazard issue target CEOs confront) provides a new, unique, and economically informative prism to examine the incentives of parachutes. Indeed, a distinct attribute of our measure of parachute importance is that it leads to a certainty equivalent that is proportional to the expected lost compensation for target CEOs. In addition, our empirical evidence conforms to the theoretical prediction in Ross (2004). He argues that attitudes towards risk depend not only on the convexity of an agent's overall pay schedule, but also on how the schedule maps into more (or less) risk averse areas of the agent's utility function to the extent that the mapping can remove the effect of convex (or concave) compensation schedules. Our findings suggest that a relatively more important parachute alters how (and where) the target CEO's entire pay schedule maps into his utility function thereby making the executive more risk averse. Under this possibility, our results offer a solution to the paradox in the literature showing that target CEOs negotiate lower takeover offers when they get personal benefits even though it is improbable that the value of those benefits always makes these CEOs whole from their acquisition-related personal losses.

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TABLE 1
Sample Description

This table describes our sample which consists of 851 mergers and acquisitions announced during 1999-2007 and tracked in the Securities Data Company's (SDC) merger and acquisition database in which the target is a publicly traded U.S. company and the deal value is at least $1 million. For selecting the sample, we require that target firms have stock return, accounting, and governance data available from the Center for Research in Security Prices (CRSP), Compustat, and RiskMetrics (formerly the Investor Responsibility Research Center) database, respectively. In Panel A, deal status, mode of acquisition, method of payment, and deal attitude are obtained from SDC. As in Officer (2003), we classify a deal as a hostile takeover if the bid is recorded by SDC as ''hostile'' or ''unsolicited''. Information on sale procedure and initiator is obtained from reading the merger background filed with the SEC. As in Boone and Mulherin (2007), auction refers to cases in which the selling firm contacts multiple potential buyers while negotiation focuses on a single buyer. Initiator is the party that first contacts the other party in the sale process. A deal is in the same industry if both the target and the acquirer belong to the same Fama and French (1997) 48-industry classification. In Panel B, all financial variables are measured at the end of the fiscal year before the merger announcement date. Market-to-book is market value of equity divided by book value of equity. Leverage equals the book value of debt divided by market value of assets. Deal value is obtained from SDC. In Panel C, ownership is the percentage of stock and options owned by the CEO. Market value of ownership is measured as of 20 trading days before the announcement date. In Panel D, compensation data are as of the end of the fiscal year before the announcement date. Estimated lost compensation is the estimated present value of the CEO's lost compensation when his/her firm is sold as in Fich, Cai, and Tran (2011). We obtain information on the golden parachute payment from the last proxy filed by the targets prior to the merger announcement, the S-4 proxy filed by the acquirers, and/or the DEFM14A proxy filed by the targets following the merger announcement.

Panel A. Deal Characteristics

	Mean	Median
Completion (0,1)	0.878	
Tender offer (0,1)	0.182	
Stock payment (0,1)	0.162	
Cash payment (0,1)	0.549	
Hostile takeover (0,1)	0.069	
Auction (0,1)	0.337	
Target initiated (0,1)	0.393	
Same industry (0,1)	0.561	
Deal value ($ billion)	4.758	1.544

Panel B. Target Characteristics

	Mean	Median
Market value ($ billion)	3.302	0.991
Market-to-book	1.734	1.422
Leverage	0.260	0.248

Panel C. Target CEO Characteristics

	Mean	Median
Chairman (0,1)	0.570	
Founder (0,1)	0.128	
Compensation committee member (0,1)	0.013	
Age (years)	54.390	55.000
Tenure (years)	7.165	4.786
Ownership (%)	4.632	1.836
Market value of ownership ($ million)	96.079	22.728

Panel D. Target CEO Compensation and Golden Parachute Characteristics

	Mean	First quartile	Median	Third quartile
Salary and bonus ($ million)	1.662	0.636	0.940	1.525
Total compensation ($ million)	5.366	1.170	2.615	5.022
Parachute (0,1)	0.864			
Parachute multiple	2.225	2.000	2.999	3.000
Parachute value ($ million)	4.873	1.482	2.553	4.573
Lost compensation ($ million)	39.896	7.501	16.387	36.524

TABLE 2
Parachute Importance

The sample consists of 851 acquisitions announced during 1999-2007 described in Table 1. In Panel A we provide the temporal distribution of our sample. In Panel B, we report the industrial classification of the deals we study using the Fama French (1997) 12-industry classification. Both panels in this table provide information about our proxy for parachute importance. We measure the importance of the parachute for the target CEO as Parachute / Lost Compensation.

Panel A. Temporal Distribution

			Parachute / Lost Compensation	
Year	*N*	%	Mean	Median
1999	160	18.80	0.283	0.122
2000	132	15.51	0.255	0.119
2001	69	8.11	0.214	0.145
2002	29	3.41	0.310	0.113
2003	46	5.41	0.254	0.124
2004	77	9.05	0.201	0.112
2005	97	11.40	0.226	0.117
2006	121	14.22	0.226	0.135
2007	120	14.10	0.291	0.125

Panel B. Industrial Classification

			Parachute / Lost Compensation	
Industry	*N*	%	Mean	Median
Nondurable consumer goods	44	5.17	0.262	0.104
Durable consumer goods	23	2.70	0.201	0.160
Manufacturing	94	11.05	0.311	0.158
Energy	43	5.05	0.279	0.146
Chemical	18	2.12	0.556	0.137
Business equipment	171	20.09	0.171	0.071
Telecommunication	34	4.00	0.327	0.119
Utilities	49	5.76	0.294	0.213
Shops	85	9.99	0.235	0.151
Health	76	8.93	0.166	0.112
Finance	112	13.16	0.359	0.156
Other	102	11.99	0.189	0.120

TABLE 3
Determinants of Parachute Importance

The sample consists of 851 acquisitions announced during 1999-2007 described in Table 1. The dependent variable in both Tobit models is (Parachute/Lost Compensation). All financial variables are measured at the end of the fiscal year before the merger announcement date. Q is defined as the book value of assets minus the book value of equity plus the market value of equity, divided by the book value of assets. Free cash flow is operating income before depreciation minus interest expenses, income taxes, and capital expenditures, scaled by book value of total assets. Firm age is the number of years from incorporation until the merger announcement date. High R&D (0,1) equals one if the target's industry is in the top quartile of all industries sorted annually by industry-median R&D scaled by assets (similar to the method used by Masulis, Wang, and Xie, 2007). G index is constructed by adding 24 antitakeover provisions tracked by RiskMetrics as in Gompers, Ishii, and Metrick (2003). As in Hartzell, Ofek, and Yermack (2004), a CEO is near retirement age when s/he is at least 62 years old at the time of the acquisition. Tenure is the number of years the CEO has been in the chief executive position until the merger announcement date. Insider ownership and institutional ownership are the percentage of common stock owned by each group, respectively. Percent of independent directors is the fraction of independent directors on board. All ownership variables are measured as a percentage of common equity. Other variables are self-explanatory or defined elsewhere. We report White (1980) heteroskedasticity consistent *p*-values in parentheses. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = Parachute / Lost Compensation		
	Model (1)	Model (2)	Model (3)
Intercept	-5.489***	-5.382***	-5.382***
	(0.001)	(0.001)	(0.001)
Target Characteristics			
Log (Assets)	-0.023*	-0.028**	-0.036**
	(0.066)	(0.031)	(0.017)
Q	-0.014	-0.013	-0.003
	(0.351)	(0.414)	(0.831)
Leverage	0.087	0.107	0.139*
	(0.218)	(0.143)	(0.093)
Free cash flow	-0.084	-0.078	-0.022
	(0.657)	(0.677)	(0.899)
Log (Firm age)	-0.023	-0.030	-0.005
	(0.285)	(0.174)	(0.790)
Prior year excess return	-0.175	-0.193	-0.149
	(0.380)	(0.369)	(0.530)
High R&D (0,1)	0.244	0.189	0.097
	(0.560)	(0.650)	(0.802)
CEO Characteristics			
Founder (0,1)	-0.168***	-0.153***	-0.143***
	(0.001)	(0.004)	(0.003)
Compensation committee member (0,1)	0.172	0.181	0.194
	(0.177)	(0.158)	(0.101)
Number of outside directorships	-0.023	-0.025	-0.038
	(0.463)	(0.431)	(0.193)
Chairman (0,1)	0.000	-0.013	-0.009
	(0.991)	(0.687)	(0.756)
Log (Age)	1.491***	1.455***	
	(0.001)	(0.001)	
Near retirement age (0,1)			0.653***
			(0.001)
Tenure	0.009***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)
Ownership	0.001	0.000	0.001
	(0.385)	(0.947)	(0.389)
Option value / Total compensation	-0.279***	-0.281***	-0.269***
	(0.001)	(0.001)	(0.001)
Governance Characteristics			
G index (minus parachute)		0.011*	0.010*
		(0.090)	(0.092)
Pct of independent directors		0.061	0.093
		(0.506)	(0.273)
Insider ownership (excluding CEO)		-0.002	-0.002
		(0.214)	(0.198)
Institutional ownership		0.001	0.002
		(0.210)	(0.168)
Year and industry fixed effects	Yes	Yes	Yes
N	851	851	851
Adjusted R^2	0.258	0.264	0.283
Pr>χ^2	0.001	0.001	0.001

TABLE 4
Parachute Importance and Deal Completion

The sample consists of 851 acquisitions announced during 1999-2007 described in Table 1. The dependent variable in the logit models equals one if the proposed merger is ultimately consummated. The key independent variable in both models is (Parachute/Lost compensation). Target termination fee (0,1) equals one if the target has a termination fee provision in the merger contract. Cash payment (0,1) equals one if the deal is paid entirely in cash. Regulated industry (0,1) equals one if the target's industry belongs to railroads, trucking, airlines, telecommunications, or gas and electric utilities. Target input/Acquirer output is the industry-level percentage of dollars of target industry input for each acquirer industry output dollar. Target purchases/Acquirer sales is the percentage of all acquirer industry sales purchased by the target industry. As in Ahern (2012), we calculate these two measures of customer-supplier relationship between the target and the acquirer using data from the U.S. Bureau of Economic Analysis Input-Output 'Use' and 'Make' tables. The Parachute Heckman lambda and the Target Heckman lambda involve a first-stage estimation of the probability of having a golden parachute and the probability of becoming a target as in Model (3) and Model (4) of Tables A1 and A2, respectively. In the second stage, the inverse Mill's ratio from the first stage model is included in the estimation as a variable to control for endogenous self-selection. Other variables are self-explanatory or defined elsewhere. We report White (1980) heteroskedasticity consistent *p*-values in parentheses. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable = 1 if the Deal is Completed	
	Model (1)	Model (2)
Intercept	-1.194	-1.251
	(0.632)	(0.607)
Parachute / Lost compensation	1.574**	1.571**
	(0.028)	(0.030)
Target termination fee (0,1)	1.442***	1.456***
	(0.001)	(0.001)
Target lockup (0,1)	-0.517	-0.552
	(0.645)	(0.621)
Prior bidding (0,1)	-2.502***	-2.524***
	(0.001)	(0.001)
Cash payment (0,1)	0.162	0.169
	(0.704)	(0.691)
Tender offer (0,1)	1.345***	1.352***
	(0.009)	(0.008)
Hostile deal (0,1)	-3.010***	-2.991***
	(0.001)	(0.001)
Regulated industry (0,1)	-0.383	-0.406
	(0.699)	(0.680)
Same industry (0,1)	1.060***	1.046***
	(0.003)	(0.004)
Target initiated (0,1)	0.146	0.156
	(0.666)	(0.645)
Target input / Total acquirer output	-0.458	-0.449
	(0.931)	(0.933)
Target purchases / Total acquirer sales	0.090	0.065
	(0.984)	(0.988)
CEO near retirement (0,1)	-0.393	-0.342
	(0.465)	(0.522)
CEO-chairman (0,1)	0.170	0.146
	(0.631)	(0.676)
CEO equity ownership	-0.013	-0.013
	(0.506)	(0.517)
Log (Target's Assets)	-0.262**	-0.256**
	(0.032)	(0.039)
Parachute Heckman lambda	-0.146	
	(0.576)	
Target Heckman lambda		-0.088
		(0.731)
Year and industry fixed effects	Yes	Yes
N	851	851
Adjusted R^2	0.451	0.451
Pr>χ^2	0.001	0.001

TABLE 5
Golden Parachutes and Acquisition Premia

The sample consists of 851 acquisitions announced during 1999-2007 described in Table 1. The dependent variable in the ordinary least squares (OLS) models is the acquisition premium as reported by SDC, which is calculated as the offer price divided by the target's stock price four weeks before the merger announcement date. Model (1) uses the parachute importance relative to the expected lost compensation to the target CEO as the main independent variable. Model (2) uses the parachute (0,1) as the key independent variable. The independent variable of interest in model (3) is the natural log of the parachute payment to the target CEO. The main independent variable in model (4) is the parachute multiple. Prior year excess return is the cumulative abnormal return during the one year window ending 20 trading days prior to the merger public announcement, calculated from the market model using the CRSP value-weighted return as the benchmark with an estimation period of one year prior to the beginning of the above window. Overconfident CEO (0,1) is defined as Malmendier and Tate's (2005) long-holder measure and follows Hall and Liebman's (1998) option classification procedure. It equals one if the target firm's CEO owns options at the beginning of the last year of the options' life that are at least 40% in the money. Target CEO post-deal employment (0,1) equals one if the target CEO already holds or obtains either a directorship or an executive appointment such as CEO of the acquirer or a subsidiary, chief financial officer, chief operating officer, chairman, vice-chairman, president, or vice-president in the bidder firm after deal completion. In case of withdrawn deals, it equals one if the target CEO already holds any of the positions just described or if the merger proxy states that the target CEO will be employed by the bidder upon deal completion. Rumor (0,1) equals one if the deal is rumored as reported in SDC. Litigation (0,1) equals one if the deal has associated litigation reported in SDC. Time to completion measures the number of days to close the transaction from the time it is announced. One year change in IP index is the difference in the industrial production index over one year period before the merger. Other variables are self-explanatory or defined elsewhere. All regressions include year and industry fixed effects. We report White (1980) heteroskedasticity consistent *p*-values in parentheses. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model (1)		Model (2)		Model (3)		Model (4)	
	(A)	(B)	(A)	(B)	(A)	(B)	(A)	(B)
Intercept	0.305	0.292	0.519***	0.531***	0.495***	0.508***	0.483**	0.494***
	(0.324)	(0.345)	(0.007)	(0.006)	(0.010)	(0.008)	(0.012)	(0.010)
Golden Parachute Measures								
GP / Lost compensation	-0.058**	-0.060**						
	(0.023)	(0.017)						
Parachute (0,1)			-0.063**	-0.062**				
			(0.032)	(0.026)				
log (Parachute value)					-0.007*	-0.007**		
					(0.050)	(0.040)		
Parachute multiple							-0.018*	-0.018**
							(0.052)	(0.045)
Target Characteristics								
Log (Assets)	-0.020**	-0.016**	-0.016*	-0.013	-0.014*	-0.011	-0.013*	-0.011
	(0.010)	(0.048)	(0.051)	(0.116)	(0.090)	(0.183)	(0.095)	(0.185)
Q	-0.011	-0.013	-0.010	-0.011	-0.010	-0.011	-0.011	-0.012
	(0.283)	(0.219)	(0.327)	(0.282)	(0.316)	(0.271)	(0.280)	(0.240)
Leverage	0.095**	0.096**	0.066	0.066	0.067	0.067	0.069	0.069
	(0.049)	(0.047)	(0.184)	(0.185)	(0.177)	(0.178)	(0.167)	(0.166)
Free cash flow	-0.080	-0.075	-0.097	-0.094	-0.087	-0.084	-0.089	-0.086
	(0.512)	(0.538)	(0.451)	(0.463)	(0.498)	(0.511)	(0.489)	(0.502)
Liquidity	0.169***	0.174***	0.116*	0.120*	0.112*	0.117*	0.114*	0.118*
	(0.006)	(0.005)	(0.061)	(0.052)	(0.070)	(0.060)	(0.065)	(0.056)
Prior year excess return	0.088***	0.088***	0.099***	0.098***	0.098***	0.098***	0.098***	0.097***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Target CEO & Board Characteristics								
CEO near retirement (0,1)	-0.013	-0.010	-0.047*	-0.047*	-0.047*	-0.046*	-0.047*	-0.046*
	(0.675)	(0.760)	(0.076)	(0.081)	(0.080)	(0.086)	(0.081)	(0.087)
Overconfident CEO (0,1)	-0.015	-0.016	-0.007	-0.007	-0.007	-0.007	-0.008	-0.007
	(0.456)	(0.451)	(0.716)	(0.731)	(0.730)	(0.744)	(0.707)	(0.717)
CEO-chairman (0,1)	-0.025	-0.026	-0.021	-0.021	-0.021	-0.020	-0.022	-0.022
	(0.209)	(0.194)	(0.307)	(0.310)	(0.315)	(0.318)	(0.286)	(0.284)
CEO-founder (0,1)	0.033	0.036	0.019	0.019	0.019	0.020	0.020	0.021
	(0.275)	(0.242)	(0.538)	(0.526)	(0.524)	(0.511)	(0.515)	(0.498)
CEO's tenure	0.002	0.002	0.001	0.001	0.002	0.002	0.002	0.002
	(0.299)	(0.285)	(0.359)	(0.351)	(0.326)	(0.319)	(0.283)	(0.278)
CEO's equity ownership	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.476)	(0.432)	(0.585)	(0.552)	(0.594)	(0.559)	(0.611)	(0.577)
CEO post-deal employment (0,1)	0.019	0.016	0.020	0.019	0.020	0.019	0.020	0.018
	(0.314)	(0.397)	(0.289)	(0.326)	(0.287)	(0.325)	(0.303)	(0.343)
G index (minus parachute)	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002

	(0.528)	(0.606)	(0.562)	(0.615)	(0.556)	(0.611)	(0.575)	(0.626)
Board ownership	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.407)	(0.392)	(0.160)	(0.164)	(0.157)	(0.161)	(0.169)	(0.170)
Pct of independent directors	0.017	0.005	0.026	0.023	0.027	0.024	0.024	0.021
	(0.772)	(0.924)	(0.649)	(0.689)	(0.639)	(0.680)	(0.675)	(0.723)
Deal Characteristics								
Private acquirer (0,1)	-0.048	-0.049*	-0.062**	-0.062**	-0.061**	-0.062**	-0.061**	-0.061**
	(0.107)	(0.100)	(0.042)	(0.039)	(0.042)	(0.040)	(0.045)	(0.043)
Cash payment (0,1)	0.073***	0.071***	0.066***	0.065***	0.066***	0.065***	0.065***	0.065***
	(0.002)	(0.002)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)
Tender offer (0,1)	0.090***	0.089***	0.104***	0.103***	0.104***	0.103***	0.103***	0.102***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hostile (0,1)	0.064*	0.066*	0.052	0.053	0.053	0.054	0.053	0.054
	(0.092)	(0.085)	(0.171)	(0.163)	(0.164)	(0.157)	(0.165)	(0.158)
Same industry (0,1)	-0.004	-0.008	0.001	-0.001	0.001	-0.001	0.001	-0.001
	(0.867)	(0.720)	(0.951)	(0.978)	(0.951)	(0.977)	(0.979)	(0.950)
Rumor (0,1)	0.087**	0.083**	0.085**	0.084**	0.085**	0.084**	0.084**	0.082**
	(0.024)	(0.031)	(0.027)	(0.030)	(0.026)	(0.029)	(0.030)	(0.033)
Litigation (0,1)	-0.096	-0.092	-0.105	-0.103	-0.105	-0.103	-0.100	-0.098
	(0.312)	(0.333)	(0.270)	(0.277)	(0.270)	(0.277)	(0.294)	(0.304)
Prior bidding (0,1)	0.075***	0.074**	0.062**	0.062**	0.064**	0.064**	0.063**	0.063**
	(0.009)	(0.010)	(0.030)	(0.029)	(0.026)	(0.026)	(0.029)	(0.029)
Toehold (0,1)	-0.002	0.004	0.003	0.008	0.004	0.008	0.003	0.008
	(0.962)	(0.927)	(0.941)	(0.861)	(0.933)	(0.851)	(0.938)	(0.861)
Target termination fee (0,1)	0.045*	0.047*	0.045*	0.047*	0.045*	0.046*	0.044*	0.046*
	(0.072)	(0.058)	(0.070)	(0.062)	(0.073)	(0.064)	(0.076)	(0.067)
Time to completion	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.405)	(0.388)	(0.443)	(0.430)	(0.452)	(0.438)	(0.467)	(0.454)
Target initiated deal (0,1)	-0.054***	-0.055***	-0.053***	-0.053***	-0.053***	-0.053***	-0.053***	-0.054***
	(0.004)	(0.004)	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Target input / Total acquirer output	0.174	0.174	0.110	0.101	0.102	0.092	0.120	0.112
	(0.505)	(0.505)	(0.668)	(0.695)	(0.692)	(0.720)	(0.638)	(0.662)
Target purchases / Total acquirer sales	-0.298	-0.298	-0.223	-0.217	-0.217	-0.211	-0.230	-0.224
	(0.195)	(0.194)	(0.321)	(0.336)	(0.335)	(0.350)	(0.307)	(0.320)
One year change in IP index	-0.004	-0.004	-0.002	-0.002	-0.002	-0.001	-0.002	-0.001
	(0.745)	(0.756)	(0.879)	(0.904)	(0.895)	(0.920)	(0.896)	(0.918)
Parachute Heckman lambda	-0.014		-0.002		-0.003		-0.004	
	(0.341)		(0.884)		(0.865)		(0.805)	
Target Heckman lambda		-0.024		-0.016		-0.016		-0.015
		(0.113)		(0.316)		(0.308)		(0.344)
Adjusted R^2	0.226	0.228	0.236	0.237	0.235	0.236	0.235	0.236
p-value of F-test	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

TABLE 6
Unconditional Premia and Predicted and Surprise Parachute Analyses

This table presents ordinary least squares (OLS) regressions of the relation of acquisition premia with golden parachutes, antitakeover provisions, financial data, and characteristics of the takeover as in Comment and Schwert (1995). The dependent variable is the acquisition premium as reported by SDC. In Model (1), the sample consists of pooled time-series cross-sectional data of 14,157 firm-years with data available from CRSP, Compustat, and RiskMetrics during 1999-2007. In this unconditional premium regression, the takeover premium is set to zero in non-takeover firm-years. In Models (2) and (3), the sample consists of 851 deals described in Table 1. All financial characteristics are averaged over three fiscal years. Predicted parachute is the fitted parachute and surprise parachute is the error term from Model (3) of Table A1. These two variables enter Models (2) and (3) in this table separately from the Parachute (0,1). Other variables are self-explanatory or defined elsewhere. The *p*-values are White (1980) heteroskedasticity consistent and adjusted for clustering by firms. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model (1)		Model (2)		Model (3)	
	coefficient	*p*-value	coefficient	*p*-value	coefficient	*p*-value
Intercept	0.025	0.119	0.966***	0.001	0.848***	0.004
Parachute (0,1)	0.006***	0.001	-0.076**	0.012	-0.069**	0.012
Predicted parachute			-0.202	0.412	-0.163	0.405
Surprise parachute			-0.069**	0.031	-0.066**	0.030
Poison pill (0,1)	0.003**	0.039	0.016	0.400	0.010	0.590
Classified board (0,1)	-0.005	0.895	-0.004	0.860	-0.017	0.374
Supermajority to approve merger (0,1)	-0.004	0.135	-0.026	0.467	-0.019	0.533
Delaware incorporation (0,1)	0.002	0.333	-0.008	0.708	-0.010	0.607
Log (Assets)	-0.003***	0.001	-0.015*	0.072	-0.013	0.101
Q	-0.002**	0.018	-0.018*	0.061	-0.016	0.104
Leverage	0.007	0.194	0.094*	0.062	0.087*	0.074
Liquidity	0.006	0.331	0.097	0.242	0.105*	0.089
Free cash flow	-0.006	0.203	-0.120	0.387	-0.109	0.392
Prior year excess return	0.043	0.305	0.095***	0.001	0.089***	0.001
CEO near retirement (0,1)					-0.041*	0.098
Private acquirer (0,1)					-0.051*	0.089
Cash payment (0,1)					0.063***	0.006
Tender offer (0,1)					0.107***	0.001
Hostile (0,1)					0.047	0.217
Same industry (0,1)					0.000	0.995
Prior bidding (0,1)					0.060**	0.031
Target termination fee (0,1)					0.043*	0.084
Target initiated deal (0,1)					-0.048**	0.011
Target input / Total acquirer output					0.169	0.509
Target purchases / Total acquirer sales					-0.258	0.249
Year and industry fixed effects	Yes		Yes		Yes	
N	14157		851		851	
Adjusted R^2	0.028		0.179		0.235	
p-value of *F*-test	0.001		0.001		0.001	

TABLE 7
Parachute Importance and Acquirer Returns

From the original 851 acquisitions announced during 1999-2007 described in Table 1, we examine 459 offers made by U.S. public bidders in which data for these firms are available from CRSP, Compustat and RiskMetrics. We run ordinary least squares (OLS) regressions of acquirer returns similar to those in Moeller, Schlingemann, and Stulz (2005) and Masulis, Wang, and Xie (2007). The dependent variable is the acquirer's cumulative abnormal return over the three days around the merger announcement date, calculated as the residual from the market model estimated during the (-272, -21) interval. The main independent variable is the parachute importance relative to the expected lost compensation to the target CEO. The competitive industry (0,1) equals one if the bidder's industry is in the bottom quartile of all industries sorted annually by the Herfindahl index. An industry's Herfindahl index is computed as the sum of squared market shares of all firms in the industry using data on sales (as in Masulis, Wang, and Xie, 2007). The unique industry (0,1) equals one if the bidder's industry is in the top quartile of all industries sorted annually by industry-median product uniqueness. Product uniqueness is defined as selling expenses scaled by sales (as in Masulis, Wang, and Xie, 2007). As in Schlingemann, Stulz, and Walkling (2002), liquidity index is the liquidity of the market for corporate control for the target firm's industry. This variable is defined as the value of all corporate control transactions for US$1 million or more reported by SDC for each year and industry divided by the total book value of assets of all Compustat firms in the same industry and year. Other variables are self-explanatory or defined elsewhere. The reported *p*-values are White (1980) heteroskedasticity consistent. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model (1)		Model (2)	
	coefficient	*p*-value	coefficient	*p*-value
Intercept	0.142	0.137	0.209**	0.046
Parachute importance	0.015*	0.056	0.017**	0.031
Deal Characteristics				
Relative size	-0.038***	0.001	-0.031***	0.001
Stock payment (0,1)	-0.026***	0.005	-0.028***	0.003
Tender offer (0,1)	0.013	0.266	0.011	0.342
Friendly deal (0,1)	0.032**	0.023	0.033**	0.021
Prior bidding (0,1)	0.003	0.776	0.002	0.868
Toehold (0,1)	0.040	0.157	0.035	0.229
Same industry (0,1)	0.002	0.819	0.005	0.571
Target initiated (0,1)	0.008	0.314	0.005	0.472
Target input / Total acquirer output	-0.237	0.241	-0.201	0.330
Target purchases / Total acquirer sales	0.003	0.985	0.052	0.720
Market Characteristics				
Competitive industry (0,1)	0.015*	0.072	0.014*	0.083
Unique industry (0,1)	-0.034***	0.001	-0.038***	0.001
Liquidity index	-0.012	0.583	-0.032	0.202
One year macroeconomic change	-0.009**	0.029	-0.008*	0.055
Bidder Characteristics				
Log (Assets)	-0.001**	0.013	-0.001**	0.012
Q	0.002**	0.025	0.002**	0.031
Leverage	-0.019	0.467	-0.014	0.581
Free cash flow	0.019	0.585	0.025	0.475
Prior year stock returns	0.008	0.224	0.006	0.357
G index	-0.003**	0.049	-0.003*	0.062
Board size	-0.004	0.767	-0.001	0.992
Delaware firm (0,1)	-0.004	0.590	-0.001	0.420
Target Characteristics				
Q			0.000	0.963
Leverage			-0.023	0.520
Free cash flow			0.087	0.501
Prior year stock returns			-0.001	0.978
G index			-0.003*	0.075
Board size			-0.031*	0.066
Delaware firm (0,1)			-0.001	0.928
CEO near retirement (0,1)			-0.011	0.370
CEO-chairman (0,1)			-0.005	0.537
CEO ownership			0.000*	0.069
Independent board (0,1)			0.006	0.631
Board ownership			0.000	0.312
Year and industry fixed effects	Yes		Yes	
N	459		459	
Adjusted R^2	0.215		0.216	
p-value of *F* test	0.001		0.001	

TABLE 8
Simultaneous Equations Analyses

This table reports simultaneous equations regressions in which we treat golden parachute and acquisition premium as endogenous variables. We analyze 851 acquisitions announced during 1999-2007 described in Table 1. We report simultaneous equations results using the relative importance of parachute to the lost compensation (GP/LC) in Panel A and those using the parachute dummy, the parachute value, and the parachute multiple in Panel B. The instruments in the second stage regressions equal the fitted value from the first stage regression. We use probit regressions when the dependent variable is the parachute dummy and ordinary least squares (OLS) regressions otherwise. Other variables are self-explanatory or defined elsewhere. We report White (1980) heteroskedasticity consistent *p*-values in parentheses. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Simultaneous Equations Using the Relative Importance of Parachute to Lost Compensation (GP/LC)

	Model (1A)		Model (1B)	
	1st stage	2nd stage	1st stage	2nd stage
Dependent Variable =	GP / LC	Premium	Premium	GP / LC
Intercept	0.224***	0.464***	0.370***	0.294***
	(0.007)	(0.001)	(0.001)	(0.002)
GP / LC (instrument)		-0.419**		
		(0.037)		
Premium (instrument)				-0.019
				(0.538)
Log (Assets)	-0.023***	-0.026***	-0.017***	-0.026***
	(0.010)	(0.002)	(0.005)	(0.005)
Q	0.000	0.010	0.010	0.002
	(0.980)	(0.346)	(0.277)	(0.910)
Leverage	0.050	0.154**	0.133**	0.075
	(0.577)	(0.027)	(0.026)	(0.406)
Free cash flow	0.064	-0.063	-0.089	0.047
	(0.688)	(0.606)	(0.400)	(0.767)
Liquidity	-0.040	0.056	0.073	-0.027
	(0.570)	(0.313)	(0.128)	(0.711)
Prior year excess return	-0.143	0.702***	0.762***	
	(0.538)	(0.001)	(0.001)	
CEO near retirement (0,1)	0.674***	-0.242	-0.041*	0.667***
	(0.001)	(0.142)	(0.095)	(0.001)
CEO-chairman (0,1)	-0.009	-0.001	0.002	-0.009
	(0.737)	(0.949)	(0.891)	(0.750)
CEO-founder (0,1)	-0.132***		0.055	-0.122***
	(0.001)		(0.344)	(0.003)
CEO tenure	0.010***	0.003	-0.001	0.010***
	(0.001)	(0.181)	(0.486)	(0.001)
Overconfident CEO (0,1)	-0.050	-0.041*	-0.020	-0.054
	(0.176)	(0.093)	(0.295)	(0.156)
CEO equity ownership	0.001	0.000	0.000	0.001
	(0.481)	(0.857)	(0.813)	(0.499)
Pct. of independent director	0.104	-0.045	-0.088*	0.088
	(0.151)	(0.480)	(0.070)	(0.229)
Adjusted R^2	0.131	0.139	0.288	0.129
Regression's *p*-value	0.001	0.001	0.001	0.001

Panel B. Simultaneous Equations Using Alternative Parachute Proxies

	GP proxy = GP (0,1)		GP proxy = *log* (GP value)		GP proxy = GP multiple	
	Model (2A)	Model (2B)	Model (3A)	Model (3B)	Model (4A)	Model (4B)
	2nd stage	2nd stage	2nd stage	2nd stage	2nd stage	2nd stage
Dependent Variable =	Premium	GP proxy	Premium	GP proxy	Premium	GP proxy
Intercept	0.389***	0.380	0.538***	3.381***	0.460***	0.721***
	(0.001)	(0.372)	(0.001)	(0.001)	(0.001)	(0.010)
GP proxy (instrument)	-0.116**		-0.054*		-0.136*	
	(0.044)		(0.075)		(0.071)	
Premium (instrument)		-0.584		-0.757		-0.165
		(0.143)		(0.258)		(0.532)
Log (Assets)	-0.013**	0.025	-0.001*	0.281***	0.001*	0.124***
	(0.048)	(0.560)	(0.063)	(0.001)	(0.062)	(0.001)
Q	0.004	-0.050	0.004	-0.103	0.001	-0.067*
	(0.704)	(0.432)	(0.701)	(0.321)	(0.946)	(0.099)
Leverage	0.121**	-0.029	0.141**	0.246	0.197***	0.487*
	(0.044)	(0.944)	(0.038)	(0.713)	(0.010)	(0.065)
Free cash flow	-0.209*	-1.090	-0.110	-0.445	-0.163	-0.557
	(0.087)	(0.180)	(0.362)	(0.704)	(0.193)	(0.229)
Liquidity	0.055	-0.114	0.024	-0.841	0.023	-0.352*
	(0.262)	(0.724)	(0.691)	(0.115)	(0.702)	(0.095)
Prior year excess return	0.710***		0.730***		0.744***	
	(0.001)		(0.001)		(0.001)	
CEO near retirement (0,1)	-0.079***	-0.351	-0.063**	-0.438	-0.058**	-0.136
	(0.008)	(0.227)	(0.032)	(0.307)	(0.038)	(0.207)
CEO-chairman (0,1)	0.040	0.328***	0.037	0.640***	0.026	0.175**
	(0.115)	(0.009)	(0.179)	(0.001)	(0.266)	(0.027)
CEO-founder (0,1)		-0.446***		-0.981***		-0.397***
		(0.007)		(0.001)		(0.001)
CEO tenure	-0.002	-0.010	-0.001	-0.011	0.000	0.004
	(0.205)	(0.215)	(0.375)	(0.488)	(0.777)	(0.524)
Overconfident CEO (0,1)	-0.021	-0.026	-0.016	0.048	-0.020	-0.007
	(0.255)	(0.843)	(0.445)	(0.819)	(0.336)	(0.936)
CEO equity ownership	-0.001	-0.003	0.000	-0.006	0.000	-0.002
	(0.465)	(0.393)	(0.576)	(0.466)	(0.600)	(0.528)
Pct of independent director	0.090	1.486***	0.063	2.732***	0.053	1.019***
	(0.396)	(0.001)	(0.552)	(0.001)	(0.597)	(0.001)
Adjusted R^2	0.188	0.105	0.136	0.130	0.129	0.127
Regression's *p*-value	0.001	0.001	0.001	0.001	0.001	0.001

TABLE 9
Analyses of Golden Parachutes Relative to the Merger Pay Package

This table reports robustness tests of the importance of golden parachutes relative to the merger pay package on acquisition premium. Panel A shows the premium regressions and Panel B shows the simultaneous equations results. The key independent variable is the importance of the parachute relative to the merger pay package (GP/MPP). Other variables are self-explanatory or defined elsewhere. We report White (1980) heteroskedasticity consistent *p*-values in parentheses. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Premium Regressions Using the Relative Importance of Parachute to the Merger Pay Package

	Model (1)		Model (2)	
	coefficient	*p*-value	coefficient	*p*-value
Intercept	0.642***	0.001	0.656***	0.001
GP / MPP	-0.444***	0.001	-0.442***	0.001
Target Characteristics				
Log (Assets)	-0.036***	0.001	-0.033***	0.001
Q	-0.011	0.274	-0.012	0.233
Leverage	0.055	0.247	0.053	0.258
Free cash flow	-0.036	0.769	-0.034	0.782
Liquidity	0.080	0.176	0.085	0.150
Prior year excess return	0.117***	0.001	0.116***	0.001
Target CEO & Board Characteristics				
CEO near retirement (0,1)	-0.048*	0.058	-0.048*	0.060
Overconfident CEO (0,1)	-0.016	0.419	-0.015	0.442
CEO-chairman (0,1)	-0.022	0.248	-0.022	0.264
CEO-founder (0,1)	-0.000	0.988	-0.001	0.985
CEO's tenure	-0.001	0.535	-0.001	0.554
CEO's equity ownership	0.001	0.228	0.001	0.226
CEO post-deal employment (0,1)	0.017	0.364	0.015	0.396
G index (minus parachute)	0.000	0.957	0.000	0.901
Board ownership	0.001	0.221	0.001	0.237
Pct of independent directors	0.052	0.345	0.051	0.351
Deal Characteristics				
Private acquirer (0,1)	-0.062**	0.033	-0.063**	0.030
Cash payment (0,1)	0.044**	0.050	0.043*	0.052
Tender offer (0,1)	0.098***	0.001	0.097***	0.001
Hostile (0,1)	0.035	0.331	0.036	0.319
Same industry (0,1)	0.010	0.639	0.008	0.698
Rumor (0,1)	0.087**	0.018	0.085**	0.020
Litigation (0,1)	-0.101	0.266	-0.101	0.266
Prior bidding (0,1)	0.073***	0.007	0.073***	0.007
Toehold (0,1)	-0.024	0.560	-0.020	0.639
Target termination fee (0,1)	0.036*	0.068	0.037*	0.062
Time to completion	0.000	0.201	0.000	0.193
Target initiated deal (0,1)	-0.039**	0.034	-0.039**	0.031
Target input / Total acquirer output	0.134	0.584	0.122	0.617
Target purchases / Total acquirer sales	-0.174	0.417	-0.166	0.388
One year change in IP index	-0.001	0.916	-0.001	0.947
Parachute Heckman lambda	-0.003	0.819		
Target Heckman lambda			-0.017	0.263
Adjusted R^2	0.230		0.231	
p-value of *F*-test	0.001		0.001	

Panel B. Simultaneous Equations Using the Relative Importance of Parachute to the Merger Pay Package

	Model (1)		Model (2)	
	1st stage	2nd stage	1st stage	2nd stage
Dependent Variable =	GP / MPP	Premium	Premium	GP / MPP
Intercept	0.645***	0.715***	0.370***	0.845***
	(0.001)	(0.001)	(0.001)	(0.001)
GP / MPP (instrument)		-0.534**		
		(0.025)		
Premium (instrument)				-0.054
				(0.219)
Log (Assets)	-0.049***	-0.043***	-0.017***	-0.058***
	(0.001)	(0.001)	(0.005)	(0.001)
Q	-0.017*	0.001	0.010	-0.011
	(0.080)	(0.902)	(0.277)	(0.186)
Leverage	0.048	0.159***	0.133**	0.120**
	(0.437)	(0.004)	(0.026)	(0.032)
Free cash flow	0.075	-0.050	-0.089	0.026
	(0.495)	(0.608)	(0.400)	(0.790)
Liquidity	-0.129***	0.004	0.073	-0.090**
	(0.009)	(0.947)	(0.128)	(0.044)
Prior year excess return	-0.213	0.541***	0.762***	
	(0.401)	(0.001)	(0.001)	
CEO near retirement (0,1)	0.016	-0.032	-0.041*	-0.007
	(0.536)	(0.150)	(0.095)	(0.775)
CEO-chairman (0,1)	0.032*	0.020	0.002	0.033**
	(0.086)	(0.267)	(0.891)	(0.046)
CEO-founder (0,1)	-0.104***		0.055	-0.074***
	(0.001)		(0.344)	(0.004)
CEO tenure	-0.004***	-0.003*	-0.001	-0.005***
	(0.003)	(0.080)	(0.486)	(0.001)
Overconfident CEO (0,1)	-0.020	-0.030*	-0.020	-0.031*
	(0.301)	(0.081)	(0.295)	(0.077)
CEO equity ownership	-0.003***	-0.002	0.000	-0.003***
	(0.001)	(0.107)	(0.813)	(0.001)
Pct. of independent director	0.194***	0.015	0.088	0.146***
	(0.001)	(0.820)	(0.170)	(0.001)
Adjusted R^2	0.135	0.143	0.298	0.137
Regression's *p*-value	0.001	0.001	0.001	0.001

Appendix. Heckman (1979) First Stage Regressions

TABLE A1
Probability of Having a Golden Parachute

This table presents regressions of the first stage Heckman (1979) selectivity correction on the probability of having a golden parachute. Both regressions are logit models that use 14,157 firm-years with data available from CRSP, Compustat, and RiskMetrics during 1999-2007. Model (1) includes the takeover threat variable from Agrawal and Knoeber (1998), which is defined as the relative frequency of acquisitions in the two-digit SIC industry of a firm among all Compustat firms over the next three years. Model (2) includes poison pill and classified board variables among others as in Comment and Schwert (1995) and Bates, Becher, and Lemmon (2008). Model (3) controls for industry concentration with the Herfindahl-Hirschman Index using sales. All firm financial characteristics are averaged over three fiscal years. The *p*-values in parentheses are White (1980) heteroskedasticity consistent and adjusted for clustering by firms. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model (1)	Model (2)	Model (3)
Intercept	1.363***	0.341	0.227
	(0.001)	(0.119)	(0.388)
Log (Assets)	-0.028***	-0.021**	-0.021**
	(0.003)	(0.033)	(0.033)
Q	-0.085***	-0.074***	-0.074***
	(0.001)	(0.001)	(0.001)
Leverage	0.416***	0.392***	0.393***
	(0.001)	(0.001)	(0.001)
Sale growth	0.001	0.000	0.000
	(0.504)	(0.708)	(0.718)
Liquidity	-0.671***	-0.577***	-0.577***
	(0.001)	(0.001)	(0.001)
Free cash flow	0.179**	0.181**	0.181**
	(0.026)	(0.032)	(0.032)
Prior year excess return	0.651	0.414	0.413
	(0.246)	(0.477)	(0.478)
Takeover threat	0.222*		
	(0.072)		
Poison pill (0,1)		0.683***	0.683***
		(0.001)	(0.001)
Classified board (0,1)		0.215***	0.216***
		(0.001)	(0.001)
Supermajority to approve merger (0,1)		-0.001	-0.001
		(0.989)	(0.974)
Delaware incorporation (0,1)		-0.032	-0.032
		(0.202)	(0.203)
Herfindahl-Hirschman Index			0.478
			(0.434)
Year and industry fixed effects	Yes	Yes	Yes
N	14,157	14,157	14,157
Adjusted R^2	0.094	0.149	0.149
p-value of *F*-test	0.001	0.001	0.001

TABLE A2
Probability of Becoming a Takeover Target

This table presents regressions of the first stage Heckman (1979) selectivity correction on the probability of becoming a takeover target. All models are logit regressions that use 14,157 firm-years with data available from CRSP, Compustat, and RiskMetrics during 1999-2007. Model (1) uses variables similar to those in Palepu (1986). Model (2) includes a poison pill indicator variable as in Comment and Schwert (1995). Model (3) augments the specification Bates, Becher, and Lemmon (2008). Model (4) controls for industry concentration with the Herfindahl-Hirschman Index using sales at the industry level. All firm financial characteristics are averaged over three fiscal years. The *p*-values in parentheses are White (1980) heteroskedasticity consistent and adjusted for clustering by firms. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	Model (1)	Model (2)	Model (3)	Model (4)
Intercept	-2.246***	-2.279***	-2.463***	-2.518***
	(0.001)	(0.001)	(0.001)	(0.001)
Log (Assets)	-0.099***	-0.101***	-0.103***	-0.103***
	(0.001)	(0.001)	(0.001)	(0.001)
Q	-0.073***	-0.074***	-0.069***	-0.069***
	(0.001)	(0.001)	(0.001)	(0.001)
Leverage	0.177	0.158	0.120	0.121
	(0.122)	(0.136)	(0.298)	(0.296)
Sale growth	0.000	0.000	0.000	0.000
	(0.952)	(0.798)	(0.942)	(0.946)
Liquidity	0.010	0.018	0.038	0.039
	(0.942)	(0.887)	(0.776)	(0.774)
Free cash flow	-0.216	-0.190	-0.220	-0.220
	(0.282)	(0.413)	(0.277)	(0.277)
Prior year excess return	0.093	0.090	0.040	0.041
	(0.919)	(0.918)	(0.965)	(0.965)
Poison pill (0,1)		0.100***	0.073*	0.073*
		(0.008)	(0.071)	(0.071)
Control share law (0,1)		-0.133		
		(0.300)		
Business combination law (0,1)		-0.005		
		(0.942)		
Classified board (0,1)			-0.077**	-0.076*
			(0.050)	(0.051)
Golden parachute (0,1)			0.213***	0.213***
			(0.001)	(0.001)
Supermajority to approve merger (0,1)			-0.093	-0.093
			(0.101)	(0.102)
Delaware incorporation (0,1)			0.111***	0.111***
			(0.006)	(0.006)
Herfindahl-Hirschman Index				0.229
				(0.813)
Year and industry fixed effects	Yes	Yes	Yes	Yes
N	14,157	14,157	14,157	14,157
Adjusted R^2	0.069	0.072	0.077	0.077
p-value of *F*-test	0.001	0.001	0.001	0.001