ESSAYS ON EXECUTIVE COMPENSATION

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Essays on Executive Compensation

Thesis directed by Associate Professor Yonca Ertimur and Professor Bjorn Jorgensen

In the first chapter of my dissertation I explore renegotiation of change in control payments. Mergers provide a unique setting in which to observe renegotiation of compensation contracts. In most firms, the chief executive officer (CEO) is promised a substantial change in control (CIC) payment if his firm is acquired and he is terminated because of a merger. In practice, target CEOs frequently renegotiate the value and composition of these payments during the merger process. Because target CEO turnover around mergers is very high, researchers such as Lambert and Larcker (1985) and Harris (1990) posit that CIC payments serve to compensate target CEOs for loss of expected utility. Using this research as a guide, I investigate whether deviations from expected outcomes are consistent with the Fama (1980) notion of ex post settling up, managerial opportunism, and the target CEO's private information about the expected success of the merger. I find that the most informative aspect of renegotiation of CIC agreements is new information about the renegotiation skill or the governance environment of the acquirer. I find no evidence that renegotiation of CIC agreements harms target firm shareholders.

In the second chapter of my dissertation, co-authored with Bjorn Jorgensen and Naomi Soderstrom, we explore rounding of compensation. We extend prior studies by incorporating inferences from the tax, earnings management and psychology literatures to explore discontinuities in the distributions of salary compensation, bonus compensation, and option grants that are unrelated to determinants derived from traditional agency theory. We document discontinuities at amounts evenly divisible by 100,000 or 10,000. Empirical analyses provide evidence that the sensitivity of bonus compensation to performance is lower when bonus

compensation is rounded. We find evidence that rounding of bonus compensation has behavioral effects that improve future operating performance, consistent with Akerlof's (1982) theory of gift exchange. We also find evidence that rounding is more common in firms where agency conflicts are more prevalent.

To my daughters. You *can* have your cake and eat it too, kiddos.

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CHAPTER 1: RENEGOTIATIONS OF TARGET CEOS' PERSONAL BENEFITS DURING MERGERS AND ACQUISITIONS

1. Introduction

Mergers provide a unique setting in which to observe renegotiation of executive compensation contracts. Analytical research explores a number of settings in which renegotiation of compensation may be optimal, but little empirical research has investigated these sorts of renegotiations. I investigate what leads to renegotiation of merger-related compensation and what the implications of renegotiation are for target and acquiring firm shareholders. Using hand-collected data on target CEOs' merger-related compensation for a sample of 141 mergers completed between 2008 and 2011, I find a negative association between renegotiation outcomes and acquiring firms' announcement period returns, consistent with renegotiation outcomes being informative to acquiring firms' shareholders.

In most firms, the CEO is promised a substantial change in control (CIC) payment if he is terminated because of a merger. In practice, target CEOs frequently renegotiate the value and composition of these benefits during the merger process. In contrast to renegotiation of ongoing executive compensation contracts, renegotiation of target CEOs' merger-related personal benefits involves an identifiable triggering event, where both pre-negotiation expectation and post-negotiation realization of benefits are publicly available, and where the renegotiated benefits are likely material to the target CEO.

The intent of CIC agreements may help explain both when renegotiation occurs and implications of renegotiation. Prior literature explores three hypotheses about the purpose of target CEOs' CIC benefits. These explanations are not mutually exclusive, but they lead to different predictions for outcomes of renegotiation of CIC benefits. The first hypothesis argues

that CIC benefits insure target CEOs against loss of future utility in case of an acquisition (Lambert and Larcker, 1985; Harris, 1990). Turnover of target firm management around acquisitions is very high, and target CEOs must be insured against a potential loss of employment so that they do not resist acquisition offers that serve the interests of shareholders. Consistent with this notion of insurance, CIC benefits are structured so that a target CEO receives a cash payment (the "golden parachute") if he is terminated because of the merger, but nothing if he is employed by the merged firm. If CIC payments serve only to insure managers in case of an acquisition, then there will be no renegotiation of benefits when target firms are acquired. In my sample, just over 50% of target CEOs renegotiate the value and composition of their CIC benefits. Of the 141 CEOs in my sample, 57 (40.4%) renegotiated their CIC benefits upward and 14 (9.9%) renegotiated their CIC benefits downward. The frequency with which CIC payments are renegotiated suggests they serve some purpose beyond insurance.

The second hypothesis says that CIC payments may play a role in ex post settling up (Knoeber, 1986). According to this argument, compensation contracts can include an implicit agreement to defer a portion of compensation until the end of the contract, when the outcomes of the agent's actions are known. CIC payments to target CEOs upon acquisition may formalize this implicit agreement, in which case I expect to find a positive association between the target firm's performance before the merger and the outcome of renegotiation. I do not find evidence of this association, but I do find a negative association between the multiple of compensation upon which the expected CIC payment is based[1] and the renegotiation outcome. This suggests that shareholders pressure target CEOs into accepting levels of benefits that are not excessive.

The third hypothesis posits that CIC payments may be payments to opportunistic CEOs. The target CEO is responsible for renegotiating not only his personal benefits, but also for

[1] Golden parachutes are calculated as multiples of current or prior cash compensation.

negotiating the merger price. Target shareholders usually receive merger consideration that is substantially in excess of the target firm's market price per share; this excess is the merger premium. Empirical researchers have investigated whether target CEOs behave opportunistically at the expense of target firm shareholders, though they limit their examinations to cases in which target CEOs appear to receive increases in personal benefits. Wulf (2004); Hartzell, Ofek, and Yermack (2004); and Fich, Cai, and Tran (2011), among others, find that target CEOs trade personal benefits for merger premiums, though Bargeron et al. (2012) find no evidence of such a trade-off. If target firm CEOs behave opportunistically, then I expect to find a negative association between merger-related changes in shareholder wealth and renegotiation outcomes.

Target CEOs clearly have an informational advantage over acquirers, and a target CEO's private information regarding the probable success of the merger may also help explain trade-offs between shareholder wealth and target CEO's personal benefits. If the target CEO has misgivings about the merger's success, he will be less inclined to bargain aggressively for greater merger consideration. Doing so may increase the risk that his private information will be revealed, which could, in turn, reduce the probability of merger completion and the value paid for the target firm. Using the merger premium and the target firm's abnormal return around the merger announcement as measures of changes in target shareholder wealth, I test for an association between changes in shareholder wealth and outcomes of renegotiations of target CEOs' personal benefits. Like Bargeron et al. (2012), I fail to detect an association.

Next, I turn my attention to the implications of renegotiation for the success of the merger. If the target CEO has misgivings about the merger's success, he will also be less inclined to bargain aggressively for personal benefits. Thus I expect to find a positive association between renegotiation outcomes and the target CEO's resistance to the merger. Using the length of time

between the merger announcement and its completion, and the change in the offer price as proxies for the target CEO's resistance to the merger, I fail to detect such an association.

Similarly, if the target CEO's private expectations about the success of the merger are accurate, then I expect to find a positive association between renegotiation outcomes and proxies for merger success. Surprisingly, I find a *negative* association between renegotiation outcomes and returns to the acquirer around the announcement of the merger. Renegotiation outcomes may thus inform acquiring firm shareholders about the negotiation skill of the acquiring firm's management. If, for example, the target CEO is unsuccessful in negotiating for additional benefits, then the renegotiation outcome may indicate that the acquiring firm's management has better-than-expected negotiation skills. Alternatively, the renegotiation outcome might inform acquiring firm shareholders about the governance of the acquiring firm. If acquiring firm shareholders observe that the target CEO renegotiated for more than he was originally promised, they may worry that the acquiring firm's governance is more permissive than they believed prior to observing the outcome of renegotiation.

My findings contribute to the literatures on both renegotiation of executive compensation and executive compensation during mergers and acquisitions. While agency literature explores renegotiation of executive compensation, the empirical research in this area is sparse. I use a unique setting to investigate what leads to renegotiation and the implications of renegotiation. I also contribute to the literature on trade-offs target CEOs make between personal benefits and target shareholder benefits during mergers and acquisitions. Unlike prior empirical research, my research design allows me to explore the implications of both increases and decreases in target CEOs' personal merger-related benefits.

2. Change in control payment theory and hypothesis development

CIC benefits consist of a number of components, both financial benefits and benefits related to employment in the merged firm. Prominent among these benefits are golden parachutes—cash payments promised in the case of a termination because of a change in control. The term "golden parachute" applies exclusively to cash paid upon merger-related termination, the value of which is specified within a CIC agreement. Typical CIC agreements allow for one of two outcomes. If the target CEO is employed by the merged firm after the merger, he does not receive any type of payment. If he is *not* employed by the merged firm, the target CEO receives the golden parachute. While these terms are specified in the CIC agreement, target CEOs, target firms, and acquirers frequently renegotiate all aspects of the agreement during the merger negotiation. Target CEOs may receive various payments in addition to, or instead of, the golden parachute, including bonuses or payments for noncompete agreements or consulting arrangements. Target CEOs are also sometimes granted additional equity. I refer to the sum of golden parachute and additional cash or equity payments as the CIC payment. In addition to financial benefits, a target CEO may obtain employment benefits, such as a job or a directorship at the merged firm. I refer to the package of merger-related benefits, including the CIC payment and employment benefits, as CIC benefits.[2] I present a summary of target CEOs' CIC benefits for my sample in the appendix.

Intent and mechanisms of CIC payments

Prior literature explores three hypotheses to explain why firms grant CIC payments to CEOs. These explanations are not mutually exclusive, but they lead to different predictions for

[2] For example, the CIC agreement for Mr. Cooke, CEO of SYS Technologies, promised a cash payment (i.e., a golden parachute) of $583,000 if he was terminated as a result of an acquisition. Mr. Cooke renegotiated the composition and value of his CIC benefits. Rather than receiving a golden parachute, he received a position in the merged firm and a $700,000 CIC payment structured as a merger bonus.

outcomes of renegotiation of CIC benefits. The first hypothesis is that target CEOs must be insured against losses of expected utility in the case of a change in control because their interests naturally conflict with the interests of target firm shareholders. Business combinations are profitable for target shareholders because target shareholders usually realize significant gains when their firm is acquired. For target CEOs, however, the future is less certain, as they face a potential loss of utility from employment and personal benefits associated with control of the target firm. Hartzell, Ofek, and Yermack (2004) find evidence consistent with a very high potential loss of utility following a merger. Using a sample of 311 mergers announced from 1995 to 1997, they find that approximately 50% of target CEOs become employed by the merged firm immediately following a merger and that subsequent turnover for these individuals is very high. Overall, they find that, three years after a merger, almost 58% of target CEOs have retired, cannot be located as employees of large firms, or are employed by a nonprofit organization. Thus, a CIC payment could function to induce a target CEO to accept a merger offer that is in the interests of the target firm's shareholders, even if it results in losses of expected utility for the CEO.

Prior research finds support for the hypothesis that CIC payments serve to insure target CEOs against losses of expected utility in the case of a change in control. Harris (1990) analytically demonstrates that CIC payments can benefit target firm shareholders. The target CEO has incentives to negotiate more of the merger-related synergy away from the acquirer to offset his expected utility loss, which also results in larger gains for target firm shareholders. However, in cases where capture of the total value of the merger-related synergy is insufficient to offset the target CEO's loss of expected utility, Harris demonstrates that a CIC payment optimally induces the target CEO to accept a merger offer that benefits target firm shareholders.

Lambert and Larcker (1985) find that firms' returns, when they announce adoption of a golden parachute provision, are positive, and that the implied reduction in conflict of interest between target CEOs and target firm shareholders is more valuable for firms with higher probabilities of receiving takeover bids. Cotter and Zenner (1994) find that target CEOs are less likely to resist tender offers when mergers result in larger increases in personal wealth. Lefanowicz, Robinson, and Smith (2000) find that target firm merger premiums are increasing in the ratio of lost salary to the value of target CEO stock holdings and that golden parachutes reduce this effect.

If the only purpose of CIC payments is to insure CEOs against possible loss of utility, then, assuming CIC benefits are negotiated efficiently when they are first included in employment contracts, there should be no renegotiation during merger negotiations. In Section 3 I provide descriptive evidence that renegotiation does occur.

A second hypothesis says that CIC payments function as deferred compensation. Fama (1980) argues that, because agents are not residual claimants of the entire value of the firm, they will consume excess perquisites during their tenures. Fama suggests that, to preclude this behavior, contracts include an implicit agreement that the principal will evaluate the agent when the agent's tenure concludes and make an ex post "settling up" payment. Knoeber (1986) posits that CIC payments formalize this otherwise implicit arrangement in cases in which the precision of the signal of the agent's performance improves over time. In cases where compensation is both deferred and implicitly contracted, an opportunistic acquirer could terminate target firm managers without settling up. To protect against these opportunistic acquirers, the board of directors adopts a golden parachute plan for managers.[3] Knoeber (1986) finds some empirical

[3] Knoeber (1986) argues that golden parachute provisions are not necessary in cases of negotiated mergers because acquirers must negotiate with the boards of directors of potential target firms. However, neither target firms

evidence that golden parachute provisions are more common in firms where benefits to deferring compensation are larger and that CEOs with golden parachute provisions are more likely to receive deferred compensation. Consistent with the notion of ex post settling up, Agrawal and Walkling (1994) find that compensation of target CEOs retained at the merged firm is negatively associated with measures of the target CEO's abnormal compensation prior to the merger.

If CIC payments function as deferred compensation and the target CEO's annual employment contract and CIC agreement do not fully compensate him for firm performance, then firm performance will be positively associated with renegotiation outcomes. Alternatively, firm performance could indicate the target CEO's bargaining power—better recent firm performance would enable him to better bargain with the acquirer, and vice versa. In either case, prior firm performance will be positively associated with renegotiations of merger-related benefits. This leads to my first hypothesis:

> **H1:** Target firm performance is positively associated with negotiated increases in merger-related benefits.

The third explanation prior literature proposes is that CIC payments reflect the incentives of opportunistic managers. That is, target CEOs negotiate personal benefits in exchange for merger benefits that accrue to target firm shareholders. While target CEOs frequently lose their executive positions, they may obtain other benefits during merger negotiations (e.g., increases in CIC payments or directorships at the merged firm).

Prior research on whether target CEOs trade personal merger-related benefits for merger premiums provides mixed results.[4] In a small sample of mergers of equals, Wulf (2004) finds

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nor target CEOs can predict which type of merger (negotiated or tender offer) they will be subject to, which may explain why most firms adopt some form of CIC agreement.

[4]CIC payments may also reflect managerial opportunism because CIC payments insure CEOs against the disciplinary effects of the market for corporate control. Manne (1965) argues that the threat of takeover of a firm

evidence that target CEOs accept lower premiums for their firms when they have successfully negotiated for more control in the merged firm. Hartzell, Ofek, and Yermack (2004) find that employment in the merged firm and membership on the board of the merged firm are negatively associated with target merger premiums. Bargeron et al. (2012), however, fail to find evidence that retention of target CEOs in the merged firm has any association with target merger premiums when the acquirer is a public or private operating firm. They find a positive association between merger premiums and target CEO retention when the acquirer is a private equity firm. Both Hartzell, Ofek, and Yermack (2004) and Fich, Rice, and Tran (2011) find that merger-related bonuses are negatively associated with target merger premiums. Fich, Cai, and Tran (2011) find that grants of unscheduled options are also negatively associated with target merger premiums but that shareholders benefit from an increased likelihood of merger completion when target firms grant unscheduled options to target CEOs. Fich, Tran, and Walkling (2013) find evidence that, as the values of golden parachutes increase in importance to target CEOs, target shareholders receive lower merger premiums, which suggests that golden parachutes benefit target CEOs at the expense of shareholders. If renegotiated CIC payments reflect managerial opportunism, then the association between renegotiated outcomes and changes in target shareholder wealth will be negative because the target CEO is trading off personal benefits for benefits that accrue to all shareholders.

Target CEOs have private information regarding the probable success of mergers, and this information may also help explain the association of renegotiation outcomes with changes in target shareholder wealth. If the target CEO has private information that the merger is likely to

encourages managers to act in accordance with the interests of shareholders to avoid takeover and subsequent termination. Because CIC payments reduce target CEOs' loss of expected utility in the case of a change in control, CEOs with CIC agreements in place may be less threatened by a potential takeover and may consequently run the firm less efficiently.

be less successful than the acquirer believes, he may be concerned that revealing his private information would reduce the probability of merger completion or reduce the value paid for the target firm. If the target CEO is withholding private information about the prospects of the merger outcome, then renegotiation outcomes will be positively associated with changes in target shareholder wealth because the CEO will be reluctant to bargain aggressively on behalf of target firm shareholders and risk revealing his private information. I present my second hypothesis in null form because the alternative explanations for the association between renegotiation outcomes and changes in shareholder wealth (managerial opportunism and information asymmetry) result in different predictions for the direction of the association. My second hypothesis is:

H2: Changes in target shareholder wealth are *not* associated with renegotiation outcomes.

Similarly, if the target CEO has private expectations about the success of the merger that differ from those of the acquirer, he may offer little resistance to the merger and not bargain aggressively for personal benefits to reduce the risk of revealing his private information. In this case, the target CEO's resistance to the merger will be positively associated with changes in merger-related benefits. This leads to my third hypothesis:

H3: Target CEO resistance is positively associated with renegotiation outcomes.

If not renegotiating or reducing merger-related benefits indicates that the target CEO is withholding unfavorable private information, then the performance of the merged firm may be worse in cases where the target CEO did not renegotiate for improved merger-related benefits. In that case, I expect the association between renegotiation outcomes and post-merger performance to be positive. This leads to my fourth and final hypothesis:

H4: The performance of the merged firm is positively associated with renegotiation outcomes.

Renegotiation and common agency literature

Two areas of prior research that relate to my study are renegotiation of employment agreements and common agency theory. While these two areas of research inform my setting, they do not offer directly testable hypotheses because of differences between the assumptions in the literature and the acquisition setting I study. Prior research investigates how expectations of renegotiation affect the structure of ongoing compensation contracts. If there is a lag between when the agent chooses his effort and when the outcome of his effort is known, it can be optimal to insure the agent against risk after he acts. However, the expectation of renegotiation and full insurance can weaken or distort incentives in the current period (Fudenberg and Tirole, 1990; Hermalin and Katz, 1991; Ma, 1991; Ma, 1994; Matthews, 1995). One effect of the anticipation of renegotiation is the "ratchet effect." Analytical research predicts that, if both parties agree to renegotiate contract terms after the first period, the principal may benefit by using the agent's prior-period performance as a measure of expected performance. Accordingly, the agent may have incentives to underperform in the first period to avoid being evaluated based on ever-increasing expectations of performance—i.e., the ratchet effect (e.g., Indjejikian and Nanda, 1999).[5] In such cases, both parties may be better off if signals of performance are "garbled" (i.e., subject to earnings management), aggregated, or delayed (Demski and Frimor, 1999; Indjejikian and Nanda, 1999). Leone and Rock (2002) find evidence of ratcheting in budgets of a large multinational corporation. Indjejikian and Nanda (2002) find evidence that, in setting compensation, firms avoid the ratchet effect by discounting performance from prior periods

[5]Christensen, Feltham, and Sabac (2003) argue that the source of inefficiency in the contract contemplated by Indjejikian and Nanda (1999) is not due to the ratchet effect but rather to the principal's inability to commit ex ante to the second-period incentive rate.

when they establish target bonuses. My setting differs from this literature because the renegotiation that I examine does not affect a contract governing future performance, but rather the terms of a separation payment.

Common agency theory also relates to target CEO compensation during an acquisition. In common agency models, multiple principals contract with a single agent (Bernheim and Whinston, 1986). In acquisitions, the agent (the target CEO) has an existing CIC agreement with the target firm (the original principal). At the point of the acquisition, the target CEO suddenly becomes accountable to the acquirer, who is, effectively, an additional principal. While both my setting and common agency settings contemplate contracts among multiple principals and a single agent, the common agency literature does not consider the introduction of a second principal into a partially completed contract.

3. Sample selection and renegotiation outcomes

Sample selection

I obtain my initial sample of mergers from the SDC database. I include mergers, excluding going private, spin-off, and recapitalization transactions, between US targets and US acquirers completed between 2008 and 2011. For my analysis, I draw on the details of both agreed-upon and paid CIC benefits, which requires that I have both the target firm's annual proxy statement prior to the merger and a merger proxy statement. The SEC increased compensation disclosure requirements for top managers' equity holdings and CIC payments beginning in December of 2006. Regulators also standardized assumptions used in valuing CIC payments, resulting in consistently calculated estimates of CIC payments and standardized details of equity holdings in annual proxy statements filed after mid-December 2006. I collect the majority of my data from merger proxy statements. But if compensation or equity data are

not included in the merger proxy statements, I collect data from annual proxy statements from the year prior to the merger. Thus, for consistency, I begin my sample in 2008. To be able to use ex post measures of merger success, I restrict my sample to mergers completed by the end of 2011. To ensure that merger proxy statements containing information on renegotiation of CIC payments and other personal benefits are available, I include only completed negotiated mergers.[6] To ensure that each transaction is undoubtedly a change in control and thus triggers the CIC agreement, I require that the target firm be wholly owned by the acquirer after the merger. I exclude observations in which the target and acquirer are closely related, such as when target CEO is also the CEO or chairman of the acquirer, or when parent companies consolidate subsidiaries. I also exclude mergers in which the target firm has multiple CEOs at the time of the merger, since I cannot determine which individual was primarily responsible for merger negotiations. I require that both target and acquirer firms be included in both CRSP and Compustat databases. This results in an initial sample of 146 mergers. For five mergers, I cannot obtain the information necessary to determine whether target CEOs' personal benefits were renegotiated, resulting in a final sample of 141 mergers.

Table 1 panel A presents the industry distributions of target and acquiring firms. As evidenced by the similar distributions, most target and acquiring firms are within the same two-digit GICS code.[7] The healthcare, financials, and information technology industries have the highest numbers of mergers during the sample period, for both target and acquiring firms. Other

[6]Firms must file proxy statements S-4 or DEFM14A when shareholders vote on a proposed business combination. In the case of a tender offer, in which the acquirer offers to buy target stock directly from target shareholders, a vote by the target firm is generally not required, in which case the information on renegotiation of CIC payments would not be available.

[7]I use GICS codes for my analyses because prior research indicates that GICS codes may be a more suitable measure of industry than are SIC, NAICS, or MSCI codes. For example, Sanjeev, Lee, and Oler (2003) find that GICS codes better explain stock return co-movements, cross-sectional variations in valuation multiples, forecasted and realized growth rates, research and development expenditures, and some financial ratios than do other industry definitions.

industries have similar numbers of mergers, though mergers in the utilities and consumer staples industries are comparatively rare. In untabulated analyses, I find that industry is not significantly correlated with renegotiations of target benefits. Table 1 panel B presents the frequencies of mergers during my sample period. My sample period coincides with the recent financial crisis, but no association between the number of mergers and macroeconomic conditions stands out. (More mergers were completed during 2008 and 2010 than 2009 or 2011.) In untabulated analyses, I find that the year of merger completion is not significantly correlated with renegotiations of target CEOs' personal benefits.

Renegotiation outcomes

The first step in understanding renegotiation of target CEOs' personal benefits and the association of renegotiation outcomes with merger performance is to categorize these renegotiation outcomes. The notion that CIC payments are intended to insure against loss of utility in the case of a change in control is consistent with the design of most CIC agreements. Typically, CIC agreements allow for a cash payment—the golden parachute—only if the target CEO is not employed by the merged firm; he receives no golden parachute if he is employed by the merged firm after the merger. These are the two sets of benefits that the target CEO expects to receive absent renegotiation (golden parachute, if he is not employed by the merged firm; or employment at the merged firm only). In practice, target CEOs, target firms, and acquirers renegotiate sets of benefits that are very different from those delineated in the CIC agreement. The value of the CIC payments can vary, and whether they are made does not always depend upon the employment (or non-employment) of the target CEO at the merged firm.

To begin my assessment of whether target CEOs renegotiated CIC agreements, I identify how the CIC payment reported in the merger proxy statement differs from the CIC payment

Table 1: Sample description

Panel A: Distribution of mergers by industry

	Target firms		Acquiring firms	
GICS industry	Observations	Percent	Observations	Percent
Energy	8	6%	7	5%
Materials	2	1%	3	2%
Industrials	13	9%	12	9%
Consumer Discretionary	5	4%	5	4%
Consumer Staples	2	1%	2	1%
Health Care	24	17%	21	15%
Financials	41	29%	41	29%
Information Technology	37	26%	41	29%
Telecommunication Services	6	4%	6	4%
Utilities	3	2%	3	2%
Totals	141		141	

Panel B: Distribution of mergers by year

	Completion year				
Completion month	2008	2009	2010	2011	Total
January	2	1	4	2	9
February	7	0	6	3	16
March	4	0	1	0	5
April	4	1	6	3	14
May	4	3	2	3	12
June	2	1	4	1	8
July	5	2	4	1	12
August	7	3	4	1	15
September	1	1	4	0	6
October	7	7	3	0	17
November	3	5	3	0	11
December	6	5	5	0	16
Total	52	29	46	14	141

promised prior to the merger. I identify changes in cash payments promised, which include adjustments to golden parachutes, bonuses, payments for noncompete agreements and consulting arrangements, and increases in the value of retirement plans. I also identify changes in the target CEO's equity holdings, including restricted stock grants, option grants, and common stock grants associated with the merger. To determine the dollar value of restricted stock grants, I use the value of the grant provided in the merger proxy statement. If the dollar value of the restricted stock grant is not provided in the merger proxy statement, I estimate the value of the restricted stock as the value of the granting firm's stock as of the merger.[8] To determine the dollar value of unrestricted common stock grants, I use the value of the granting firm's stock as of the merger. I partition the differences between CIC payments promised in the CIC agreement and renegotiated CIC payments into four categories: increased, unchanged, decreased but greater than zero, and decreased to zero. I next identify whether the target CEO is employed by the merged firm or, if he is not employed by the merged firm, whether he joins the board of directors of the merged firm.

Table 2 summarizes the possible outcomes of renegotiation of target CEOs' CIC benefits. Combining the four possible changes in CIC payments (increased, unchanged, decreased but greater than zero, and decreased to zero) with the three states of employment (employed by the merged firm, only holding a board seat at the merged firm, neither employed nor holding a board seat) results in 12 possible renegotiation outcomes. I partition renegotiation outcomes into three categories: (i) those in which target CEOs receive more personal benefits because of the merger than were delineated in the CIC agreement, (ii) those in which target CEOs receive the same benefits because of the merger as were delineated in the CIC agreement, and (iii) those in which

[8]In one merger, the target CEO was granted target firm options at-the-money as of the consummation of the merger, so these options technically have no value.

Table 2: Renegotiation outcomes

Panel A: Frequencies of renegotiation outcomes

	Employment outcome			
Change in CIC payment	Employed by the merged firm	Board seat only	Not employed by the merged firm, no board seat	Totals
Increased	Better off	Better off	Better off	
	14	4	22	40
Unchanged	Better off	Better off	Indifferent	
	4	7	49	60
Decreased, >0	Better off	Indeterminate	Worse off	
	6	0	14	20
Decreased to 0	Indifferent	Indeterminate	Worse off	
	21	0	0	21
Totals	45	11	85	141

Panel B: Renegotiation outcome summary

Outcome	n	%
Better off	57	40.4%
Indifferent	70	49.6%
Worse off	14	9.9%
Indeterminate	0	0%
Total	141	

I combine the four possible changes in the CIC payment (increased, unchanged, decreased but greater than zero, and decreased to zero) with the three states of employment (employed by the merged firm, only holding a board seat at the merged firm, neither employed nor holding a board seat), resulting in 12 possible renegotiation. Target CEOs are worse off after renegotiation if they reduce their CIC payments but do not obtain either employment or a board seat at the merged firm. Target CEOs are better off after renegotiation if they renegotiate increases in CIC payments, regardless of the employment outcome, or if their CIC payments are unchanged from those promised in the CIC agreement but they obtained either employment or a board seat at the merged firm. Target CEOs are also better off if they negotiated a reduced, but nonzero, CIC payment and obtained employment in the merged firm. Target CEOs are indifferent after renegotiation if they receive the benefits they were promised in the CIC agreement (either employment at the merged firm with no CIC payment or a CIC payment with no employment at the merged firm).

target CEOs receive fewer benefits as because of the merger than were delineated in the CIC agreement. For parsimony, I refer to these three categories as "better off," "indifferent," and "worse off," respectively.

Table 2 presents the frequencies of each of these outcomes. Target CEOs are indifferent to the outcome of renegotiation if they receive the benefits delineated in the CIC agreement (either employment at the merged firm with no CIC payment or a CIC payment with no employment at the merged firm). Seventy (49.6%) of the target CEOs in my sample are indifferent after renegotiation. Target CEOs are worse off after renegotiation if their CIC payments have been reduced, and they do not obtain either employment or a board seat at the merged firm. Fourteen (9.9%) of the target CEOs in my sample are worse off. Target CEOs are better off after renegotiation if they renegotiate increases in CIC payments, regardless of the employment outcome. They are better off if their CIC payments are unchanged from those promised in the CIC agreement, and they also obtained either employment or a board seat at the merged firm. And target CEOs are better off if they negotiated a reduced, but nonzero, CIC payment and obtained employment in the merged firm. Fifty-seven (40.4%) of the target CEOs in my sample are better off.

Due to the difficulty of placing values on benefits from future employment and board membership, I use an indicator variable to measure changes in benefits as a result of renegotiation. I set the value of *Renegotiation* to two, one, or zero if the CEO is better off, indifferent, or worse off after renegotiation, respectively.

4. Research design and results of main analyses

Association of target performance with renegotiation of CIC benefits

To test my first hypothesis, that target firm performance prior to the merger is positively associated with renegotiation outcomes, I estimate the following equation:

$$Renegotiation = \alpha + \beta_1 Performance + \beta_2 Multiple + \beta_3 Liquidity + \beta_4 TargetSize + \beta_5 RelativeSize + \beta_6 Age + \varepsilon \quad (1)$$

In my examination of the association of target performance with renegotiation of CIC benefits, I use accounting measures of performance rather than market measures. Using accounting measures ensures that information leakage about the possibility of a pending business combination or, in some instances, a looming bankruptcy does not contaminate the measure.[9] I use two measures of accounting performance (*Performance*). My first is industry-adjusted return on assets measured over the year ending in the quarter prior to the merger announcement (*TargetROA*). I measure performance over a full year to reduce the effects of seasonality, and I use quarterly data to allow for a more immediate measure of performance than annual data. My second measure of performance is operating cash flows scaled by total assets for the year ending prior to the merger announcement (*TargetCF*). I use cash flows to avoid measuring accrual earnings management because target firms may engage in accrual earnings management to make themselves appear to be more attractive merger targets. Because acquirers have access to private information about target firms, they may be less likely to be misled by accrual earnings management than are other parties, making cash flows the more relevant measure of performance. Target firms are usually underperformers, and table 3 panel A demonstrates that, as expected, the industry-adjusted return on assets for target firms in the year that ended prior to the merger announcement (*TargetROA*) is slightly negative. However, target firms have operating

[9]Hartzell, Ofek, and Yermack (2004) and Fich, Cai, and Tran (2011) include excess returns as a performance measure to explain values of negotiated cash payments and unscheduled option grants, respectively. In neither study are the associations significant.

Table 3: Summary statistics for regression variables

Panel A: Descriptive statistics for regression variables

	Mean	Median	Min	Max	Standard Deviation
Renegotiation	1.312	1	0	2	0.645
TargetROA	-0.033	-0.003	-1.391	0.490	0.201
TargetCF	0.000	0.001	-0.631	0.385	0.130
MergedCF	-0.001	-0.009	-15.090	5.678	1.457
Executory	154.800	132	0	643	91.730
OfferChange	-0.025	-0.020	-0.444	0.835	0.150
Premium	1.421	1.351	0.312	6.122	0.548
AcquirerCAR (-1/+1)	-0.014	-0.012	-0.236	0.230	0.072
TargetCAR (-1/+1)	0.353	0.284	-0.581	3.043	0.399
AcquirerCAR (-20/+1)	-0.005	0.000	-0.376	0.439	0.110
TargetCAR (-20/+1)	0.371	0.307	-0.689	2.882	0.424
Impairment	0.121	0	0	1	0.327
Multiple	2.046	2.000	0.000	5.000	1.037
Liquidity	0.753	1.000	0.000	1.000	0.381
Age	54.940	54.000	38.000	73.000	7.189
TargetSize	12.420	12.440	8.604	17.690	1.929
AcquirerSize	14.990	14.910	10.210	19.680	2.118
RelativeSize	0.834	0.840	0.506	1.088	0.108
Related	0.908	1	0	1	0.290
Cash	0.449	0.345	0.000	1.000	0.422

Table 3 (*continued*)

Panel B: Pearson and Spearman correlations of selected regression variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Renegotiation		-0.018	-0.085	-0.048	0.063	0.042	0.163*	-0.090	0.102	-0.230***	0.104	0.055
		(0.831)	(0.317)	(0.574)	(0.457)	(0.625)	(0.053)	(0.290)	(0.228)	(0.006)	(0.218)	(0.518)
(2) TargetROA	0.016		0.520***	-0.173**	0.020	0.163*	-0.033	-0.010	-0.134	-0.018	-0.150*	-0.051
	(0.847)		(0.000)	(0.040)	(0.816)	(0.054)	(0.694)	(0.910)	(0.115)	(0.831)	(0.077)	(0.549)
(3) TargetCF	-0.056	0.582***		-0.223***	0.124	0.201**	-0.088	0.006	-0.149*	-0.090	-0.196**	-0.020
	(0.512)	(0.000)		(0.008)	(0.143)	(0.017)	(0.298)	(0.941)	(0.077)	(0.291)	(0.020)	(0.811)
(4)MergedCF	-0.091	-0.034	0.000		-0.008	0.002	-0.022	-0.130	-0.037	0.003	-0.032	-0.040
	(0.286)	(0.690)	(1.000)		(0.921)	(0.982)	(0.799)	(0.123)	(0.663)	(0.969)	(0.708)	(0.637)
(5) Executory	0.074	0.008	0.088	0.018		-0.024	-0.017	-0.149*	-0.112	-0.214**	-0.222***	0.002
	(0.382)	(0.925)	(0.301)	(0.836)		(0.776)	(0.844)	(0.079)	(0.188)	(0.011)	(0.008)	(0.980)
(6) OfferChange	0.073	-0.142*	-0.205**	-0.017	0.111		0.263***	-0.068	-0.108	-0.133	0.034	-0.103
	(0.391)	(0.093)	(0.015)	(0.842)	(0.191)		(0.002)	(0.421)	(0.201)	(0.117)	(0.687)	(0.226)
(7) Premium	0.058	-0.040	-0.070	0.093	-0.051	0.189**		-0.002	0.648***	-0.040	0.781***	-0.008
	(0.499)	(0.636)	(0.408)	(0.274)	(0.551)	(0.025)		(0.978)	(0.000)	(0.641)	(0.000)	(0.925)
(8) AcquirerCAR (-1/+1)	-0.072	0.094	0.099	0.123	-0.056	-0.071	-0.013		0.222***	0.461***	0.205**	-0.150**
	(0.398)	(0.265)	(0.241)	(0.147)	(0.509)	(0.403)	(0.882)		(0.008)	(0.000)	(0.015)	(0.075)
(9) TargetCAR (-1/+1)	0.030	-0.321***	-0.343***	0.127	-0.091	0.172**	0.521***	0.046		0.085	0.787***	-0.001
	(0.720)	(0.000)	(0.000)	(0.134)	(0.281)	(0.041)	(0.000)	(0.592)		(0.318)	(0.000)	(0.995)
(10) AcquirerCAR (-20/+1)	-0.197**	0.022	0.035	0.021	-0.052	-0.191**	0.215**	0.455***	0.048		0.152*	-0.031
	(0.019)	(0.798)	(0.682)	(0.803)	(0.538)	(0.024)	(0.010)	(0.000)	(0.574)		(0.071)	(0.715)
(11) TargetCAR (-20/+1)	0.029	-0.191**	-0.233***	0.153**	-0.112	0.163*	0.806***	0.095	0.838***	0.257***		0.002
	(0.733)	(0.023)	(0.006)	(0.071)	(0.186)	(0.053)	(0.000)	(0.265)	(0.000)	(0.002)		(0.980)
(12) Impairment	0.057	-0.012	-0.045	-0.002	0.056	-0.070	0.140*	-0.166*	-0.004	0.012	0.078	
	(0.499)	(0.891)	(0.598)	(0.982)	(0.508)	(0.409)	(0.099)	(0.050)	(0.964)	(0.888)	(0.359)	

Renegotiation is a categorical variable set to zero if the target CEO receives fewer benefits than expected prior to the merger negotiation, set to one if the target CEO receives the same value of benefits as expected prior to the merger negotiation, and set to two if the target CEO receives more personal benefits than expected prior to the merger negotiation. *TargetROA* is industry-median adjusted return on assets for the four quarters ending prior to the merger announcement. I calculate firm-level ROA as earnings before interest and taxes (EBIT) scaled by average total assets, both taken from the Compustat quarterly update database. *TargetCF* is industry-median adjusted operating cash flows for the fiscal year ending prior to the merger announcement. I calculate firm-level operating cash flows as cash flows from operations scaled by average total assets, both taken from the Compustat annual update database. *MergedCF* is the difference between the industry-adjusted cash flows after the merger and the industry-adjusted cash flows prior to the merger. Firm-level adjusted cash flows are industry-median adjusted operating cash flows scaled by sales, both taken from the Compustat annual update database. I use the book value of assets at year-end to create weighted average of industry-adjusted cash flows for the target and acquirer the year ending prior to the merger announcement. *MergedCF* is the difference between industry-adjusted cash flows of the merged firm the year beginning after the effective date of the merger less the weighted average industry-adjusted cash flows of the target and acquirer from the year ending

Table 3 (*continued*)

prior to the merger announcement. *Executory* is the number of days between the announcement and completion dates, both taken from the SDC database. *OfferChange* is the difference between the initial offer price, reported by SDC or hand-collected, and the final price per share, reported by SDC or hand-collected, scaled by the initial offer price. *Premium* is the ratio of the final price per share, reported by SDC or hand-collected, divided by the target price per share 28 days prior to the merger announcement, taken from the CRSP database. *AcquirerCAR (-1/+1) {TargetCAR (-1/+1)}* is the three-day, market-model adjusted cumulative abnormal return to the acquirer {target} centered on the announcement date reported in SDC. *AcquirerCAR (-20/+1) {TargetCAR (-20/+1)}* is the 21-day, market-model adjusted cumulative abnormal return to the acquirer {target} beginning 20 days prior to and ending one day after the announcement date reported in SDC. I estimate the market model over the interval (-301, -46) days. *MergedCAR (-1/+1)* is the weighted average of *AcquirerCAR (-1/+1)* and *TargetCAR (-1/+1)*. Weights were calculated using the market value of equity of each firm 28 days prior to the merger announcement. *MergedCAR (-20/+1)* is the weighted average of *AcquirerCAR (-20/+1)* and *TargetCAR (-20/+1)*. Weights were calculated using the market value of equity of each firm 28 days prior to the merger announcement. *Multiple* is the multiple of base salary upon which the expected golden parachute is based. *Liquidity* is the percentage of the target CEO's equity holdings in the target firm upon which liquidity restrictions will lapse because of the merger. *Age* is the target CEO's age at the time of the merger. *TargetSize* is the natural log of the target firm's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database. *AcquirerSize* is the natural log of the acquirer's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database. *RelativeSize* is *TargetSize/AcquirerSize. Related* is an indicator variable set to one if the acquirer and target firm are within the same two-digit GICS industry as reported by Compustat. *Cash* is the percentage of the acquisition price paid in case, taken from the SDC database. The sample size for this analysis is 141 mergers. Spearman correlations are presented below the diagonal, and Pearson correlations are presented above the diagonal. p-values are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

cash flows that are very close to those of industry firms; table 3 panel A shows that the mean of *TargetCF* is zero. I include the multiple of base compensation on which the target CEO's golden parachute is calculated (*Multiple*).[10] A large golden parachute multiple may indicate that a target CEO has either substantial power within his firm or good negotiation skills. If the golden parachute multiple proxies for either power or negotiation skills, then the association between the CEO's golden parachute multiple and the renegotiation outcome will be positive, since more powerful CEOs or more skilled ones are more likely to renegotiate effectively. Alternatively, CEOs with larger golden parachute multiples may be constrained from negotiating additional personal merger-related benefits because stakeholders would consider them excessive, in which case the association between the CEO's golden parachute multiple and the renegotiation outcome will be negative. Interestingly, table 3 panel A shows that the mean and median golden parachute multiples are less than three, suggesting that either tax limitations on golden parachute deductions are nonbinding, or that promising a relatively lower golden parachute multiple has signaling benefits.

I address whether changes in the liquidity of target CEOs' holdings affect renegotiation of their merger-related benefits. During merger negotiations, the target and acquirer agree on post-merger treatment of restricted stock, vested options, and unvested options. Target CEOs may be willing to forego cash benefits, or increases in cash benefits, in exchange for reductions of restrictions on their equity holdings. I assume options, restricted stock, and common stock in the firm in which the target CEO is employed are subject to liquidity restrictions. I also assume that cash and common stock in the merged firm, if the CEO is not employed by the merged firm,

[10]Bebchuk, Martijn, Cremers, and Peyer (2011) propose the relative value of the CEO's compensation to the compensation of the remaining top executives as a measure of CEO power or agency conflicts. I choose to measure the relative importance or power of the CEO using a proxy directly related to the contract in question, the CIC contract.

are not subject to liquidity restrictions. To capture the change in the liquidity restrictions on a target CEO's holdings because of a merger, I first calculate the total dollar value of each type of holding based on the merger consideration. I next classify whether liquidity restrictions changed because of the merger based on the types of original holdings, the treatment of the holdings in the merger, the type of merger consideration received and whether the CEO is employed by the merged firm. For each observation, I then calculate the percentage of the CEO's holdings on which liquidity restrictions were reduced (*Liquidity*).

Consistent with prior studies of changes in CIC payments, I control for both relative size of the target to the acquirer (*RelativeSize*) and absolute size of the target (*TargetSize*). Size measures proxy for the effects of bargaining power since larger target firms and relatively larger target firms have more bargaining power with the acquirer than do smaller or relatively smaller firms. Finally, I control for the target CEO's age (*Age*) because older CEOs likely have less expected utility loss and may have less incentive to negotiate for personal benefits.

Table 4 presents the results of tests of the association between pre-merger performance of the target firm and renegotiation outcomes. I estimate equation 1 using an ordered probit model.[11] Panel A presents the coefficient estimates from the model. However, the marginal effects at each level of renegotiation outcome are more informative in interpreting the effects of performance on renegotiation outcomes. Table 4 panel B presents the marginal effects for the regression of renegotiation outcomes on industry-adjusted cash flows (*TargetCF*). I do not detect an association between *TargetCF* and renegotiation outcomes. I do, however, find that each unit increase in the value of the golden parachute multiple (*Multiple*) increases the chance of the target CEO renegotiating to be worse off by 3.2%. Similarly, each unit increase in *Multiple*

[11] Standard errors are assumed to have a normal distribution in the probit model, while they are assumed to have a logistical distribution in the logit model. My inferences are unchanged when I use an ordered logit model.

Table 4: Tests of the association between pre-merger performance and renegotiation outcomes

$$Renegotiation = \alpha + \beta_1 Performance + \beta_2 Multiple + \beta_3 Liquidity + \beta_4 TargetSize + \beta_5 RelativeSize + \beta_6 Age + \varepsilon \quad (1)$$

Panel A: Ordered probit regression coefficient estimates

		Pre-merger performance measured as	
	Expected direction	Industry adjusted cash flows scaled by assets (*TargetCF*)	Industry adjusted earnings scaled by assets (*TargetROA*)
Performance	(+)	-0.337	0.450
		(-0.39)	(0.80)
Multiple	?	-0.214**	-0.220**
		(-2.08)	(-2.12)
Liquidity	(-)	-0.277	-0.281
		(-1.02)	(-1.03)
TargetSize	(+)	0.047	0.025
		(0.72)	(0.39)
RelativeSize	(+)	0.683	0.508
		(0.62)	(0.46)
Age	(-)	-0.035**	-0.039***
		(-2.34)	(-2.60)
Constant		-2.812**	-3.469***
		(-2.24)	(-2.74)
n		141	141
Pseudo R-squared		0.063	0.064

Panel B: Marginal effects for the regression of renegotiation outcomes on industry adjusted cash flows scaled by assets (*TargetCF*)

	Renegotiation=0	Renegotiation=1	Renegotiation=2
TargetCF	0.051	0.080	-0.131
	(0.39)	(0.36)	(-0.39)
Multiple	0.032**	0.051	-0.083**
	(1.97)	(1.36)	(-2.08)
Liquidity	0.042	0.066	-0.107
	(1.01)	(0.92)	(-1.02)
TargetSize	-0.007	-0.011	0.018
	-(0.72)	(-0.62)	(0.72)
RelativeSize	-0.103	-0.162	0.264
	(-0.62)	(-0.52)	(0.62)
Age	0.005**	0.008**	-0.014**
	(2.20)	(2.42)	(-2.34)

Table 4 (*continued*)

Panel C: Marginal effects for the regression of renegotiation outcomes on industry adjusted earnings scaled by assets (*TargetROA*)

	Renegotiation=0	Renegotiation=1	Renegotiation=2
TargetROA	-0.067	-0.107	0.174
	(-0.80)	(-0.79)	(0.80)
Multiple	0.033**	0.052**	-0.085**
	(2.01)	(1.96)	(-2.12)
Liquidity	0.042	0.067	-0.109
	(1.02)	(1.01)	(-1.03)
TargetSize	-0.004	-0.006	0.010
	(-0.39)	(-0.39)	(0.39)
RelativeSize	-0.076	-0.121	0.197
	(-0.46)	(-0.46)	(0.46)
Age	0.006***	0.009**	-0.015***
	(2.40)	(2.33)	(-2.60)

Renegotiation is a categorical variable set to zero if the target CEO receives fewer benefits than expected prior to the merger negotiation, set to one if the target CEO receives the same value of benefits as expected prior to the merger negotiation, and set to two if the target CEO receives more personal benefits than expected prior to the merger negotiation. *TargetROA* is industry-median adjusted return on assets for the four quarters ending prior to the merger announcement. I calculate firm-level ROA as earnings before interest and taxes (EBIT) scaled by average total assets, both taken from the Compustat quarterly update database. *TargetCF* is industry-median adjusted operating cash flows for the fiscal year ending prior to the merger announcement. I calculate firm-level operating cash flows as cash flows from operations scaled by average total assets, both taken from the Compustat annual update database. *Multiple* is the multiple of base salary upon which the expected golden parachute is based. *Liquidity* is the percentage of the target CEO's equity holdings in the target firm upon which liquidity restrictions will lapse because of the merger. *Age* is the target CEO's age at the time of the merger. *TargetSize* is the natural log of the target firm's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database. *RelativeSize* is *TargetSize/AcquirerSize.* The sample size for this analysis is 141 mergers. z-statistics are reported in parentheses. Marginal effects are calculated at the mean. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

decreases the chance of the target CEO renegotiating to be better off by 8.3%. This result indicates that *Multiple* may not capture the negotiating power of the target CEO, since target CEOs with low golden parachute multiples are able to renegotiate for more favorable merger-related benefits. I also find that each year of age increases the chance of renegotiating down by 0.5%, and that each year of age decreases the chance of renegotiating up by 1.4%. This result is consistent with older CEOs having smaller losses of expected utility. The inferences from table 4 panel C, marginal effects for the regression of renegotiation outcomes on industry-adjusted return on assets (*TargetROA*), are very similar. Only *Multiple* and *Age* are significantly associated with renegotiation outcomes, and the directions of the associations are the same as in the *TargetCF* regression.

Association of renegotiation of CIC benefits with target shareholder wealth

To test my second hypothesis, that there is no association between renegotiation outcomes and changes in shareholder wealth, I estimate the following equation:

$$WealthChange = \alpha + \beta_1 Renegotiation + \beta_2 TargetSize + \beta_3 RelativeSize + \beta_4 Related + \beta_5 Cash + \varepsilon \quad (2)$$

To investigate the association of renegotiation of CIC benefits with target shareholder wealth (*WealthChange*), I use two measures of the change in target shareholder wealth. The first measure is the premium paid to the target shareholders, calculated as the ratio of the per share merger consideration to the target price per share four weeks prior to the merger announcement (*Premium*). The second measure is the target firm CAR around the announcement of the merger (*TargetCAR*). To allow for information leakage, I use two event windows to calculate the announcement window CAR to the target: -1 to +1 trading days around the announcement and the longer window of -20 to +1 trading days around the announcement. Consistent with prior

literature, table 3 panel A shows that *TargetCAR* is negative for both event windows. Consistent with smaller targets having less negotiating power, prior literature finds that the size of the target (*TargetSize*) and the relative size of the target to the acquirer (*RelativeSize*) are negatively associated with changes in target shareholder wealth. I also include a control for the relatedness of the firms (*Related*), though I make no prediction about the direction of the association. Finally, I include a control for how much of the merger is paid for in cash (*Cash*), as prior literature has found that cash acquisitions are positively associated with changes in target shareholder wealth (Cai and Vijh, 2007; Fich, Cai, and Tran, 2011).

Table 5 presents the results of testing the association between renegotiation outcomes and changes in target shareholder wealth. I estimate equation 2 using OLS regression. I do not detect an association between renegotiation outcomes and the target firm premium, short-window target returns, or longer window target returns. As expected, both absolute and relative size are negatively associated with changes in target shareholder wealth, likely because of the lower negotiating power of smaller firms.

Association of renegotiation of CIC benefits with resistance

To test my third hypothesis, that target CEO resistance to the merger is positively associated with renegotiation outcomes, I estimate the following equation:

$$Resistance = \alpha + \beta_1 Renegotiation + \beta_2 Multiple + \beta_3 Liquidity + \beta_4 TargetSize + \beta_5 RelativeSize + \beta_6 Related + \varepsilon \quad (3)$$

I use two proxies for target CEO resistance (*Resistance*): the length of the executory period and the change in the offer price. I measure the length of the executory period as the number of days between the announcement and completion dates of the merger as reported in SDC (*Executory*). I measure the change in the offer price as the percentage change from the

Table 5: Tests of the association between renegotiation outcomes and changes in target shareholder wealth

$$WealthChange = \alpha + \beta_1 Renegotiation + \beta_2 TargetSize + \beta_3 RelativeSize + \beta_4 Related + \beta_5 Cash + \varepsilon \quad (2)$$

		Changes in target shareholder wealth measured as		
	Expected direction	*Premium*	*TargetCAR (-1/+1)*	*TargetCAR (-20/+1)*
Renegotiation	?	0.069	0.045	0.045
		(1.01)	(0.99)	(0.90)
TargetSize	(-)	-0.056**	-0.042**	-0.054***
		(-2.00)	(-2.26)	(-2.68)
RelativeSize	(-)	-1.006*	-1.451***	-1.203***
		(-1.90)	(-4.17)	(-3.18)
Related	?	-0.039	0.039	0.031
		(-0.25)	(0.39)	(0.28)
Cash	(+)	0.017	0.014	0.068
		(0.15)	(0.18)	(0.83)
Constant		2.890***	1.981***	1.926***
		(6.93)	(7.22)	(6.45)
n		141	141	141
Adjusted R-squared		0.093	0.254	0.219

Premium is the ratio of the final price per share, reported by SDC or hand-collected, divided by the target price per share 28 days prior to the merger announcement, taken from the CRSP database. *TargetCAR (-1/+1)* is the three-day, market-model adjusted cumulative abnormal return to the target centered on the announcement date reported in SDC. I estimate the market model over the interval (-301, -46) days. *TargetCAR (-20/+1)* is the twenty one-day, market-model adjusted cumulative abnormal return to the target beginning twenty days prior to and ending one day after the announcement date reported in SDC. I estimate the market model over the interval (-301, -46) days. *Renegotiation* is a categorical variable set to zero if the target CEO receives fewer benefits than expected prior to the merger negotiation, set to one if the target CEO receives the same value of benefits as expected prior to the merger negotiation, and set to two if the target CEO receives more personal benefits than expected prior to the merger negotiation. *RelativeSize* is *TargetSize/AcquirerSize,* where *TargetSize* is the natural log of the target firm's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database and *AcquirerSize* is the natural log of the acquirer's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database. *Cash* is the percent of the acquisition price paid in case, taken from the SDC database. *Related* is an indicator variable set to one if the acquirer and target firm are within the same two-digit GICS industry as reported by Compustat. t-statistics are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

initial offer price per share to the final offer price per share, scaled by the initial offer price (*OfferChange*). Table 3 panel A shows that the change in the offer price (*OfferChange*) is slightly negative, which is likely driven by stock-for-stock mergers in which acquirer's stock price decreases because of the merger announcement. (Table 3 panel B shows that *AcquirerCAR (-20/+1)* is significantly negatively associated with *OfferChange*.) I include the CEO's golden parachute multiple (*Multiple*) in my analysis to control for the power or negotiation skills of the CEO or the likelihood that his CIC benefits will be considered excessive. I do not predict the direction of the association between *Multiple* and measures of resistance because powerful or skillful CEOs could have incentives to offer more or less resistance to mergers depending on their individual circumstances. Cai and Vijh (2007), who also use the length of the executory period as a proxy for resistance, find that its length is negatively associated with the illiquidity of target CEOs' holdings (*Liquidity*), because target CEOs with higher liquidity discounts are less likely to resist mergers. They also find that the length of the executory period is positively associated with the size of target firms (*TargetSize*), because larger mergers simply take longer. I control for both the bargaining power of the target firm and the relative complexity of the target's operations to the acquirer's operations by using the relative size of the target (*RelativeSize*). Finally, I include a measure of relatedness because, if the target and acquirer are within the same industry, the merger is more likely to be subject to regulatory scrutiny, increasing the length of the executory period. To proxy for relatedness, I create an indicator variable set to one if the target and acquirer are within the same two-digit GICS code (*Related*).[12]

Table 6 presents results of tests of the association between renegotiation outcomes and target CEO resistance to the merger. I estimate the regression of *Executory* on *Renegotiation*

[12] I do not include the number of bidders in my main analysis because the number of bidders exhibits very little variation in my sample. In unreported sensitivity analysis, I find that my inferences are unchanged if I control for the number of bidders.

using Poisson regression,[13] and I estimate the regression of *OfferChange* on *Renegotiation* using OLS regression. I find that renegotiation outcomes are positively associated with the length of the executory period. This finding is consistent with either target CEOs with private information about mergers choosing not to bargain hard so as not to risk revealing that information, or target CEOs delaying mergers to negotiate for more of the merger synergy.[14] However, I find no association between the change in the offer price and renegotiation outcomes. Contrary to the results of Cai and Vijh (2007), I find that the association between the value of the target CEO's holdings on which liquidity restrictions are reduced (*Liquidity*) and the length of the executory period is positive, suggesting that CEOs offer more resistance to mergers when they have less liquid holdings. Conversely, I find that *Liquidity* and the change in the offer price are negatively associated. Consistent with mergers in the same industry being subject to regulatory scrutiny, I find that *Related* is positively associated with the length of the executory period.

Association of renegotiation of CIC benefits with merger performance

To test my fourth hypothesis, that the association of renegotiation of CIC benefits with merger performance is positive, I use a number of proxies for performance. First, I determine whether the acquiring firm reports an impairment of merger-related goodwill.[15] However,

[13] When I use a tobit model truncated at zero the association between *Renegotiation* and *Executory* is not different from zero.

[14] The use of subjective measures of target CEO performance in determining the value of the ex post settlement predicted by Fama (1980) may help explain the positive association between the resistance of the target CEO to the merger with renegotiation outcomes. Theoretical work suggests that subjectivity allows firms to correct for dysfunctional actions that might be induced by contracts based solely on objective performance measures, particularly in contracts that include multiple performance measures (Baker, Gibbons, and Murphy, 1994; Baiman and Rajan, 1995; Budde, 2007). In acquisitions, the target CEO is likely to be evaluated on numerous dimensions, so subjective performance measures may be valuable in determining the renegotiated value of his personal merger-related benefits. I cannot rule out that the target CEO is offering more resistance to the merger to facilitate the renegotiation of his personal benefits, which are based on subjective measures of performance.

[15] Additional reasonably straightforward measures of merger success are the propensity to divest the target firm for performance-related problems or to issue restatements because of the merger. In my sample, only 16 acquirers had restatements after the effective date of the merger. In most cases, the description of the reason for the restatement was ambiguous, and I was unable to confirm whether the restatement related to the merger itself. Only two firms undertook divestitures after the effective dates of the mergers.

Table 6: Tests of the association between renegotiation outcomes and target CEO resistance

$$Resistance = \alpha + \beta_1 Renegotiation + \beta_2 Multiple + \beta_3 Liquidity + \beta_4 TargetSize + \beta_5 RelativeSize + \varepsilon \quad (3)$$

		Resistance measured as	
	Expected direction	Length of the executory period (*Executory*)	Change in the target offer price (*OfferChange*)
Renegotiation	(+)	0.093***	0.003
		(8.48)	(0.17)
Multiple	?	0.073***	-0.018
		(10.24)	(-1.39)
Liquidity	(-)	0.110***	-0.071**
		(5.86)	(-2.09)
TargetSize	(+)	0.040***	0.008
		(9.60)	(1.01)
RelativeSize	(+)	1.094***	-0.032
		(14.08)	(-0.23)
Related	(+)	0.376***	-0.019
		(13.05)	(-0.44)
Constant		2.91***	0.006
		(43.09)	(0.05)
n		141	141
Pseudo R-squared		0.161	0.018

Executory is the number of days between the announcement and completion dates, both taken from the SDC database. *OfferChange* is the difference between the initial offer price, reported by SDC or hand-collected, and the final price per share, reported by SDC or hand-collected, scaled by the initial offer price. *Renegotiation* is a categorical variable set to zero if the target CEO receives fewer benefits than expected prior to the merger negotiation, set to one if the target CEO receives the same value of benefits as expected prior to the merger negotiation, and set to two if the target CEO receives more personal benefits than expected prior to the merger negotiation. *Liquidity* is the percentage of the target CEO's equity holdings in the target firm upon which liquidity restrictions will lapse because of the merger. *TargetSize* is the natural log of the target firm's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database. *Related* is an indicator variable set to one if the acquirer and target firm are within the same two-digit GICS industry as reported by Compustat. t-statistics are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

goodwill impairments are infrequent, which limits my ability to detect an association between impairment and renegotiated merger-related benefits. I thus consider two additional measures that can be applied to all observations. Much of the finance literature uses the cumulative abnormal return (CAR) to the acquirer around the merger announcement to measure the success of a merger in expectation. This measure assumes that the market assimilates publicly available information efficiently into the stock price of the acquirer (Andrade, Mitchell, and Stafford, 2001). Two limitations of using the acquirer's CAR around the announcement are that it captures (i) *expectations* of future performance and (ii) only publicly available information. If, as I hypothesize, some target CEOs have private information about the merged firm's prospects, the acquirer's CAR may not be associated with renegotiation outcomes. For my final measure of post-merger performance, I follow Healy, Palepu, and Ruback (1992); Ghosh (2001); and Heron and Lie (2002) and measure changes in operating cash flows the first full year after completion of the merger.

Goodwill impairment

To test the association between goodwill impairment and renegotiation outcomes I estimate the following equation:

$$Impairment = \alpha + \beta_1 Renegotiation + \beta_2 Premium + \beta_3 Goodwill + \beta_4 TargetSize + \beta_5 AcquirerSize + \beta_6 Related + \beta_7 Cash + \varepsilon \quad (4)$$

Using the Compustat database, I identify all instances of nonzero goodwill impairment that occur after the effective dates of mergers in my sample. I then read 10-K disclosures for each impairment to determine whether the impairment is related to a merger in my sample. I include cases of impairments that can be linked to mergers in my sample, setting an indicator variable to one if the merger resulted in a subsequent impairment and zero otherwise

(*Impairment*). I find 17 of 141 mergers result in goodwill impairments. My measure, however, likely understates the frequency of goodwill impairments that will result from the mergers in my sample, as Hayn and Hughes (2006) find that the mean (median) length of time from merger to goodwill write-down is 4.7 (4.0) years.

Hayn and Hughes (2006) find that merger characteristics are better predictors of goodwill impairments than are merged-firm performance characteristics. While the majority of their sample is from the pre-SFAS 142 period, robustness checks on the subsample of firms for which data was available in the post-SFAS 142 period yield consistent results. In a sample spanning both pre- and post-SFAS 142 periods, Li et al. (2011) also find that merger characteristics, especially proxies for overpayment, are informative in predicting goodwill impairments. Consistent with both studies, I include the premium paid for the target firm, measured as the offer price divided by the target firm's stock price four weeks before the merger announcement (*Premium*), the percentage of the merger cost assigned to goodwill (*Goodwill*), and the proportion of the merger cost paid in cash (*Cash*). Consistent with Li et al. (2011), I also include *Related*, defined above, which may identify mergers that are outside the acquirer's primary business; *TargetSize*, also defined above; and *AcquirerSize*.[16]

Acquirers' announcement period CAR

To test the association between the acquirer's announcement period CAR and renegotiation outcomes, I estimate the following equation:

$$AcquirerCAR = \alpha + \beta_1 Renegotiation + \beta_2 AcquirerSize + \beta_3 RelativeSize + \beta_4 Related + \beta_5 Cash + \varepsilon \quad (5)$$

[16] Li et al. (2011) also find that the number of bidding firms is positively associated with goodwill impairments. In my sample, the number of bidders exhibits little variation and having more than one bidder perfectly predicts that goodwill will not be impaired. I therefore exclude the number of bidders from my analysis.

My second measure of merger performance is the acquirer's CAR around the announcement of the merger (*AcquirerCAR*), measured as the market-model adjusted return from the day before the announcement to the day following the announcement. To allow for information leakage, I also use a longer announcement window beginning 20 days prior to the announcement, similar to Andrade, Mitchell, and Stafford (2001); Cai and Vijh (2007); and Fich, Rice, and Tran (2011). Consistent with prior literature, table 3 panel A shows that *AcquirerCAR* is negative for both event windows. Prior literature (e.g. Fich, Cai, and Tran, 2011; Moeller, Schlingemann, and Stulz, 2004) finds that deal characteristics such as acquirer size (*AcquirerSize*), relative size (*RelativeSize*), relatedness of the firms (*Related*), and the percentage of the deal value paid in cash (*Cash*) are associated with the CAR to the acquirer. Variables are defined as in previous analyses.

Operating cash flows

To test the association between changes in the acquirer's cash flows and renegotiation outcomes I estimate the following equation:

$$MergedCF = \alpha + \beta_1 Renegotiation + \beta_2 Cash + \varepsilon \quad (6)$$

My final measure of merger performance is changes in industry-adjusted operating cash flows of the merged firm, similar to Healy, Palepu, and Ruback (1992); Ghosh (2001); and Heron and Lie (2002). I use cash flows from operations scaled by sales to measure performance. A common measure of performance, return on assets, is problematic in mergers because the type of financing typically used affects the value of both income and book or market values of assets. Financing choices do not, however, affect the value of cash flows from operations or sales. Similar to prior work, I generate industry-median adjusted cash flows for the year ending prior to the merger announcement for both the target and acquirer. I then use the pre-merger book value

of assets to create a weighted average of industry-adjusted cash flows to approximate the performance of the pre-merger firm. I generate industry-median adjusted cash flows for the year beginning after the effective date of the merger. My measure of performance (*MergedCF*) is the difference between industry-adjusted cash flows of the merged firm after the merger and the weighted average industry-adjusted cash flows of the target and acquirer prior to the merger announcement. In contrast to Healy, Palepu, and Ruback (1992), table 3 panel A shows that the change in industry-adjusted cash flows between the pre-merger and post-merger periods (*MergedCF*) is negative. I include a control for the portion of the purchase price paid in cash (*Cash*) because all-cash mergers tend to outperform those paid for with stock.

Table 7 presents the results of tests of the association between merged firm performance and renegotiation outcomes. I first use a probit model to test equation 4.[17] I do not find that renegotiation outcomes are associated with reporting goodwill impairments. Consistent with Li et al. (2011), I find that the premium paid for the target firm is positively associated with goodwill impairments. I also find that the size of the acquirer is positively associated with goodwill impairments, and that the size of the target relative to the acquirer is negatively associated with goodwill impairments. I next estimate equations 5 and 6 using OLS regression and find that renegotiation outcomes are negatively associated with shareholders' expectations of future performance, measured as *AcquirerCAR (-20/+1)*. The negative association suggests that shareholders expect the merged firm to underperform if the target CEO negotiated for better personal benefits. The renegotiation outcome between the target CEO and the acquirer may inform acquiring firm shareholders about the negotiating skills of the acquiring firm's management. If the target CEO succeeds in renegotiating for an improved outcome, then the acquiring firm shareholders may learn that the acquiring firm's managers are relatively poor

[17] My inferences are the same if I use a logit model rather than a probit model.

Table 7: Tests of the association between renegotiation outcomes and merged firm performance

$$Impairment = \alpha + \beta_1 Renegotiation + \beta_2 Premium + \beta_3 Goodwill + \beta_4 TargetSize + \beta_5 AcquirerSize + \beta_6 Related + \beta_7 Cash + \varepsilon \quad (4)$$

$$AcquirerCAR = \alpha + \beta_1 Renegotiation + \beta_2 AcquirerSize + \beta_3 RelativeSize + \beta_4 Related + \beta_5 Cash + \varepsilon \quad (5)$$

$$CFChange = \alpha + \beta_1 Renegotiation + \beta_2 Cash + \varepsilon \quad (6)$$

		Post-merger performance measured as			
	Expected direction	*Impairment*	*AcquirerCAR (-1/+1)*	*AcquirerCAR (-20/+1)*	Change in industry-adjusted cash flows (*MergedCF*)
Renegotiation	(+)	0.065	-0.008	-0.033**	-0.204
		(0.25)	(-0.83)	(-2.30)	(-1.06)
Premium	(+)	0.496*			
		(1.73)			
Goodwill	(+)	0.000			
		(0.72)			
TargetSize	?	0.355**			
		(2.46)			
AcquirerSize	?	-0.524***	-0.001	-0.003	
		(-3.30)	(-0.35)	(-0.64)	
RelativeSize	?		0.001	-0.042	
			(0.01)	(-0.44)	
Related	(-)	-0.104	-0.020	-0.024	
		(-0.20)	(-0.92)	(-0.74)	
Cash	(-)	0.646	0.014	0.015	0.024
		(1.61)	(0.89)	(0.61)	(0.08)
Constant		0.944	0.024	0.135	0.255
		(0.56)	(0.29)	(1.08)	(0.81)
n		141	141	141	141
Pseudo or Adjusted R-squared		0.187	-0.018	0.014	-0.006

Impairment is an indicator variable set to one if the merged firm reported an impairment of goodwill related to the sample merger. *AcquirerCAR (-1/+1)* is the three-day, market-model adjusted cumulative abnormal return to the acquirer centered on the announcement date reported in SDC. *AcquirerCAR (-20/+1)* is the twenty one-day, market-model adjusted cumulative abnormal return to the acquirer beginning twenty days prior to and ending one day after the announcement date reported in SDC. I estimate the market model over the interval (-301, -46) days. *MergedCF* is the difference between the industry-adjusted cash flows after the merger and the industry-adjusted cash flows prior to the merger. Firm-level adjusted cash flows are industry-median adjusted operating cash flows scaled by sales, both taken from the Compustat annual update database. I use the book value of assets at year end to create weighted average of industry-adjusted cash flows for the target and acquirer the year ending prior to the merger announcement. *MergedCF* is the difference between industry-adjusted cash flows of the merged firm the year beginning after the effective date of the merger less the weighted average industry-adjusted cash flows of the target and acquirer from the year ending prior to the merger announcement. *Renegotiation* is a categorical variable set to zero if the target CEO receives fewer benefits than expected prior to the merger negotiation, set to one if the target CEO receives the same value of benefits as expected prior to the merger negotiation, and set to two if the target CEO receives more personal benefits than expected prior to the merger negotiation. *Premium* is the ratio of the final price per share, reported by SDC or hand-collected, divided by the target price per share 28 days prior to the merger announcement, taken from the CRSP database. *Goodwill* is the amount of goodwill booked by the acquirer because of the merger, taken from the SDC database. *RelativeSize* is *TargetSize/AcquirerSize,* where *TargetSize* is the natural log of the target firm's market value

Table 7 (*continued*)
of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database and *AcquirerSize* is the natural log of the acquirer's market value of equity 28 days prior to the merger announcement, calculated as the number of shares outstanding times the price per share, both taken from the CRSP database. *Related* is an indicator variable set to one if the acquirer and target firm are within the same two-digit GICS industry as reported by Compustat. *Cash* is the percent of the acquisition price paid in case, taken from the SDC database. t-statistics are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

negotiators. Alternatively, the renegotiation outcome might inform acquiring firm shareholders about the governance of the acquiring firm. If acquiring firm shareholders observe that the target CEO renegotiated for more than he was originally promised, they may be concerned that the acquiring firm's governance is more permissive than they previously believed.

5. Sensitivity tests

In addition to using multiple functional forms for regressions, I perform a number of sensitivity tests. First, I change the definition of *Renegotiation*. If target CEOs expect CIC payments to be renegotiated, then the acts of either not renegotiating or renegotiating downward can be considered equally indicative of the target CEO either withholding private information or being unsuccessful in negotiating. Using the outcomes documented in table 2 panel A, I set *Renegotiation* equal to zero in cases in which target CEOs are either indifferent or worse off, rather than treating them as separate outcomes. I set *Renegotiation* equal to one if the target CEO is better off after renegotiation. My inferences are unchanged. I next redefine *Renegotiation* by excluding target CEOs who are worse off after renegotiation because these CEOs may face different constraints than do other target CEOs. In this case, I set *Renegotiation* equal to one if the CEO is better off after renegotiation and equal to zero if he is indifferent between agreed-upon and realized outcomes. Again, my inferences are unchanged.

Next, I consider whether the target CEO's golden parachute multiple relative to the multiple of other employees is a better measure of CEO power or negotiation skill than is the absolute multiple. A relatively higher golden parachute multiple may indicate that a CEO is relatively more important than other executives or that he has more power or better negotiation skills. I define *RelativeMultiple* to be the golden parachute multiple of the target CEO adjusted for the next-highest multiple used to calculate another executive's golden parachute. In tests of

hypotheses one and two, I either replace *Multiple* with *RelativeMultiple* or include both *Multiple* and *RelativeMultiple* in analyses. In both cases, my inferences are unchanged. In neither case is *RelativeMultiple* significantly different from zero.

In 2008, Congress passed the Emergency Economic Stabilization Act of 2008, which established the Troubled Asset Relief Program (TARP). Upon a change in control, recipients of TARP funds may pay CEOs only for services already performed. This restriction precludes golden parachutes, accelerated vesting of options and restricted stock, and other forms of compensation commonly provided to target CEOs when a firm is acquired. While none of the target firms in my sample are TARP recipients, the enhanced scrutiny of payments to CEOs of financial services firms may have contributed to lower realizations of CIC payments. I include an indicator variable set to one if the target firm is in the financial services industry and zero otherwise. The coefficients on this variable are not significantly different from zero, and my inferences remain unchanged.

In calculating test statistics for the significance of regression coefficients (betas), we rely on asymptotic theory to assume that standard errors are Normally distributed. Due to my relatively small sample, asymptotic normality may not hold and my reported significance levels may be inappropriate. To address this concern, I follow Noreen (1989) and use approximate randomization, which tests the null hypothesis that the dependent variable is unrelated to the vector of independent variables. To generate the distributions of regression coefficients under the null hypothesis, I randomly reassign the value of the dependent variable to the vector of independent variables and calculate regression coefficients. I repeat this process many times (1,000), then compare the value of regression coefficients I observe in my sample to the distribution generated under the null hypothesis. If the dependent and independent variables are

related, then the values of regression coefficients calculated from my sample will be unusual relative to those calculated using randomization. My results are sensitive to the assumption of asymptotic normality; the association between *AcquirerCAR* and *Renegotiate* reported in table 7 becomes insignificant.

I also make minor changes to calculations of variables that do not change my inferences. I use levels of market values as measures of size, rather than logged values. I use market-adjusted rather than market-model adjusted returns, and I calculate the change in ROA using annual rather than quarterly data.

6. Conclusions and future work

Mergers provide a unique setting in which to observe renegotiation of compensation contracts. In most firms, the CEO is promised substantial CIC payments if his firm is acquired and he is terminated as a result. In practice, target CEOs frequently renegotiate the value and compositions of these personal benefits during the merger process. Because target CEO turnover around acquisitions is very high, researchers posit that CIC payments serve to compensate target CEOs for losses of expected utility. Using this research as a guide to explain expected outcomes of CIC agreements, I investigate whether deviations from expected outcomes are consistent with the Fama (1980) notion of ex post settling up, managerial opportunism, and the target CEO's private information about the expected success of the merger. I find that the most significant aspect of renegotiation of target CEO merger-related personal benefits is new information provided about the negotiation skill or the governance of the acquirer. I find no evidence that renegotiation of target CEOs' merger-related personal benefits harms target firm shareholders.

Future work

Changes in the regulatory and disclosure environments in recent years may have affected both the propensity for target CEOs to renegotiate merger-related benefits and the outcomes of those renegotiations. In 1992, the SEC increased disclosure requirements for compensation data. Lo (2003) finds that investors perceived a benefit to this increased disclosure. Similarly, in 2006, the SEC updated disclosure requirements for CIC payments in annual proxy statements. Additionally, as part of the Dodd-Frank Act passed by Congress in 2009, the SEC began to require publicly traded firms to allow shareholders to vote whether to approve golden parachutes (SEC Rule 14a-21(a)). Shareholders may approve a golden parachute during a "say-on-pay" vote well before a merger happens. But if the provision was not previously approved, or if the terms of the provision changed between the approval and the merger, then the golden parachute is subject to an advisory vote. The final rule also includes increased disclosures around golden parachutes.

Analytical research predicts that renegotiation is likely to occur when the agent chooses an effort that substantially precedes the realization of the performance measure outcome. Assuming that the agent is risk averse and the principal is risk neutral, it can be optimal to insure the agent against risk once he chooses his action. However, the agreement by both parties to renegotiate the employment contract can weaken, or even undermine, the incentive effects of the contract in the near term (e.g., Fudenberg and Tirole, 1990; Ma, 1994). Insurance of the agent against risk after he chooses his action may explain why CIC payments are generally paid in cash and why they allow for full vesting of options and lapses of restrictions on restricted stock. When the target CEO leaves the target firm, he has made all of the effort choices he will make, and it can be optimal to insure him against risk that affects the outcome. In the case of an acquisition,

however, the acquirer may choose enter into a renegotiation to adjust the CIC payment so that it holds the CEO accountable for past actions (i.e., renege on the promise of full insurance). It would be informative to investigate the characteristics of acquirers and target CEOs who agree to such changes.

CHAPTER 2: UNUSUAL PATTERNS IN EXECUTIVE COMPENSATION

1. Introduction

Much of the compensation literature bases empirical analyses on factors derived from economic theory. However, a stream of literature documents two discontinuities in the distribution of CEO compensation such as firm performance, that appear unrelated to typical factors derived from theory. Rose and Wolfram (2000, 2002) explore a discontinuity in CEO salary compensation around $1 million, which they argue is due to limitations on the tax deductibility of certain executive pay under section 162(m) of the tax code. At the other end of the spectrum, Hamm, Jung, and Wang (2012), investigate the surprisingly large number of CEOs who receive no more than $1 in salary. These discontinuities may help explain why cash compensation appears to be relatively insensitive to firm performance (Hall and Liebman 1998). Based upon prior literature in earnings management and psychology, we identify additional discontinuities in the distributions of CEO salary and bonus compensation and option grants.

We first present histograms of unscaled components of executive compensation. Consistent with Rose and Wolfram (2000, 2002), we identify a peak in the distribution of CEO compensation around $1 million in histograms of salary compensation. The histograms also indicate a peak at the far left of the distribution of unscaled CEO salary compensation, which is consistent with Hamm et al. (2012). Following earlier papers on rounding patterns in reported earnings by Carslaw (1988) and earnings per share (EPS) by Thomas (1989) and Das and Zhang (2003), we provide evidence of additional discontinuities where companies are more likely to award CEOs salary and bonus compensation and option grants exactly divisible by 100,000 or 10,000.

We next investigate how these discontinuities affect the strength and interpretation of common compensation regressions. Our empirical analyses provide evidence that factoring in these discontinuities increases the strength of the association between compensation(salary and option grants) and traditional agency theory-driven factors. We then investigate how these discontinuities affect the relation between compensation and firm performance. We find that the incidence of rounded salaries, bonuses, and option grants is, on average, higher than predicted by agency theory-based factors. We further find that the relation between accounting performance and bonus is lower in cases where the bonus is rounded.

We then proceed to investigate whether rounded compensation appears to be the result of efficient contracting or rent extraction.[18] Akerlof's theory of gift exchange (Akerlof, 1982) and the efficiency wage literature find that employees who are paid more reciprocate by delivering better performance. In accordance with these theories, CEOs may perceive additional salary, bonus, or option grants that are less associated with performance to be gifts. If that is true, future ROA should be positively associated with rounding. We find this for bonus compensation. To the extent that these patterns result from agency conflicts, rounded compensation should be associated with measures of governance that indicate agency conflicts within the firm. In our final analysis, we find evidence that rounding of each type of compensation we consider is associated with proxies for agency conflicts, consistent with managerial rent extraction.

The remainder of the paper is organized as follows. In Section 2, we review relevant literature. In Section 3, we explore the extent of different types of discontinuities in the distribution of CEO cash compensation. In Section 4, we investigate the implications of rounded compensation. In Section 5, we discuss future work and conclude.

[18] One or both of these effects could occur in our sample. Our analyses thus indicate which of them appears to dominate in a given setting but cannot rule out the existence of one effect versus the other.

2. Literature Review

Arguments developed in the compensation literature and related empirical models are typically derived from theories of optimal contracting. If, however, factors excluded from the models drive contract choice, such as taxes or behavioral biases, our ability to detect the hypothesized relations between actual compensation and theoretical factors in models may be constrained. We may also misinterpret the relations between compensation factors and compensation in empirical analysis. One consideration omitted from most empirical literature is the prevalence of discontinuities in the distribution of compensation. While some discontinuities are documented in the literature, empirical models exploring agency theory-driven factors associated with compensation have not considered these discontinuities.[19]

The following sub-sections describe existing findings from the tax, economics, accounting, marketing, and psychology literatures concerning discontinuities. Not all of these literatures specifically focus on compensation, but they suggest where we are likely to find evidence of discontinuities.

Salary Discontinuity at $1 Million

In 1993, the U.S. Congress passed legislation limiting the tax deductibility of non-performance-based compensation to top executives to $1 million per year (Internal Revenue Code Section 162(m)). Thus, beginning in tax year 1994, tax-driven discontinuities appear in the distribution of salaries at $1 million. This discontinuity can result in econometric issues for empirical analyses. Rose and Wolfram (2000, 2002) find evidence that the cap created a "focal

[19] An exception in the theoretical literature is Fedyk (2007), who examines earnings discontinuities in the context of an agency model. Her model implies that not only will there be discontinuities in earnings (as explored in the empirical accounting literature) but also that there will be discontinuities in compensation related to firm characteristics.

point" for salary compensation.[20] This focal point may not only drive down salaries that theoretically should be above $1 million to meet the cap, but in addition, firms that theoretically would pay less than the cap may respond by increasing pay to meet it. Therefore, an observation of $1 million in salary compensation may be artificially increased or decreased due to tax incentives.[21] Perry and Zenner (2001) document that firms close to the $1 million threshold reduced salaries below the threshold in 1994 and that growth rates in salaries decreased from 1994 through the end of their sample period, 1996. This tax-driven reduction in variation of the dependent variable will make it more difficult for empirical models to evaluate the relation between various forms of compensation and agency theory-driven factors.

Salary Discontinuity at $0 or $1

In the late 1970s, Chrysler Corporation was in deep financial trouble. While the company was lobbying the government for help, its CEO, Lee Iacocca, agreed to a $1 salary (Kimes 2011). At the time, Iacocca appeared in television commercials, saying that this demonstrated his confidence in the company. Since then, a surprisingly high number of CEOs have received salaries of $1, including Steve Jobs of Apple, Eric Schmidt of Google, and John Mackey of Whole Foods. Many of these companies have not experienced the same financial woes as Chrysler, so other reasons likely explain why a CEO would be willing to accept such a low salary.

Hamm et al. (2012) find evidence that three factors drive the choice to pay CEOs no more than $1: stakeholder pressures due to firm crises (e.g., Chrysler), incentive-alignment in

[20] In a much-publicized case, Richard Grasso, chairman and CEO of the New York Stock Exchange, was paid $1 million in salary but received almost $140 million in deferred compensation when he retired. This and similar cases, as well as backdating of stock options, led to the revision in the mandated disclosures in proxy statements regarding executive compensation.

[21] Before the $1 million cap, a disproportionate number of CEOs may have been earning exactly $1 million due to behavioral preferences. Based on our study, one would not conclude that the only reason for the discontinuity in CEO salary at $1 million is tax considerations.

firms moving toward equity-based pay, or symbolism, in cases where CEOs already received a lot of equity compensation. Loureiro, Makhija, and Zhang (2011) reject the hypothesis that $1 salaries are the outcome of optimal contracting. Instead, they find that CEOs receiving $1 salaries tend to be wealthy and powerful and use low salaries to avoid investor and public outrage over excessive total compensation or to divert attention from other self-serving conduct that these CEOs might engage in. Loureiro et al. (2011) also find evidence that, despite the $1 salaries, total compensation is comparable to similar firms.

Rounding in Other Settings

This phenomenon of rounding has been documented in several literatures in many different settings. Literature in psychology identifies zero and five as having high cognitive accessibility (Dehaene and Mehler, 1992) and finds that numbers ending in five are overrepresented to a lesser degree than numbers ending in zero (Baird, Lewis and Romer, 1970). Recent neuro-economic research is advancing our understanding of the human processing of numbers—see, for example, Rustichini et al. (2005). In the financial accounting literature, Carslaw (1988), Thomas (1989), Das and Zhang (2003), Grundfest and Malenko (2011), and Jorgensen, Lee, and Rock (2013) find similar patterns in unscaled reported earnings and in reported earnings per share (EPS). Herrmann and Thomas (2005), Cheong and Thomas (2011), and Dechow and You (2012) document unusual patterns in forecasts of EPS. For example, Herrmann and Thomas (2005), document that *forecasts* of EPS (rather than *reported* EPS) exhibit clustering around multiples of five cents. Their findings suggest that sell-side analysts do not actually forecast EPS directly, i.e., they do not think of EPS as a scaled number, (loosely) equal to net income divided by weighted average number of shares outstanding. In the finance literature, prior research documents clustering of share prices or returns on round values

(Osborne, 1962; Christie, Harris, and Schultz, 1994a, 1994b; Grossman et al., 1997; Bollen and Pool, 2009; Johnson, Johnson, and Shanthikumar, 2011). Amiram, Kalay, and Ozel (2012) show that coupon rates are set in increments of eighths. These results also relate to findings in the marketing literature. Marketing studies on pricing find that consumers process numbers beginning from the leftmost digit (Schindler and Kirby, 1997), resulting, for example, in use of prices such as $6.99 rather than $7.00. In consumer product pricing, the goal is to have consumers perceive prices as lower, resulting in a tendency to have a lower first digit.

Rounded Compensation

In addition to encountering discontinuities at specific numbers such as salaries of $1 million and $1, we expect to find discontinuities associated with more general rounding as documented in other academic disciplines. Because of required compensation disclosures, companies may face a tension in how they wish compensation to be perceived. From the perspective of the employees, including the CEO, the company's likely goal is to make salaries appear higher and thus attract or retain more talented employees. Thus a salary of $700,000 could be more likely than a salary of $699,999 because it will be perceived as being higher. On the other hand, some firms face political pressure to reduce the value of CEO compensation, and these firms might choose values that would be perceived by external parties as lower. In either case, the fundamental result is that the firm bases the compensation contract on something besides what agency theory would predict. Rather than making specific predictions for the direction of rounding, we initially focus on the incidence of rounding and investigate the association of rounding with future performance and proxies for agency conflicts.

3. Sample and Analysis of Discontinuities

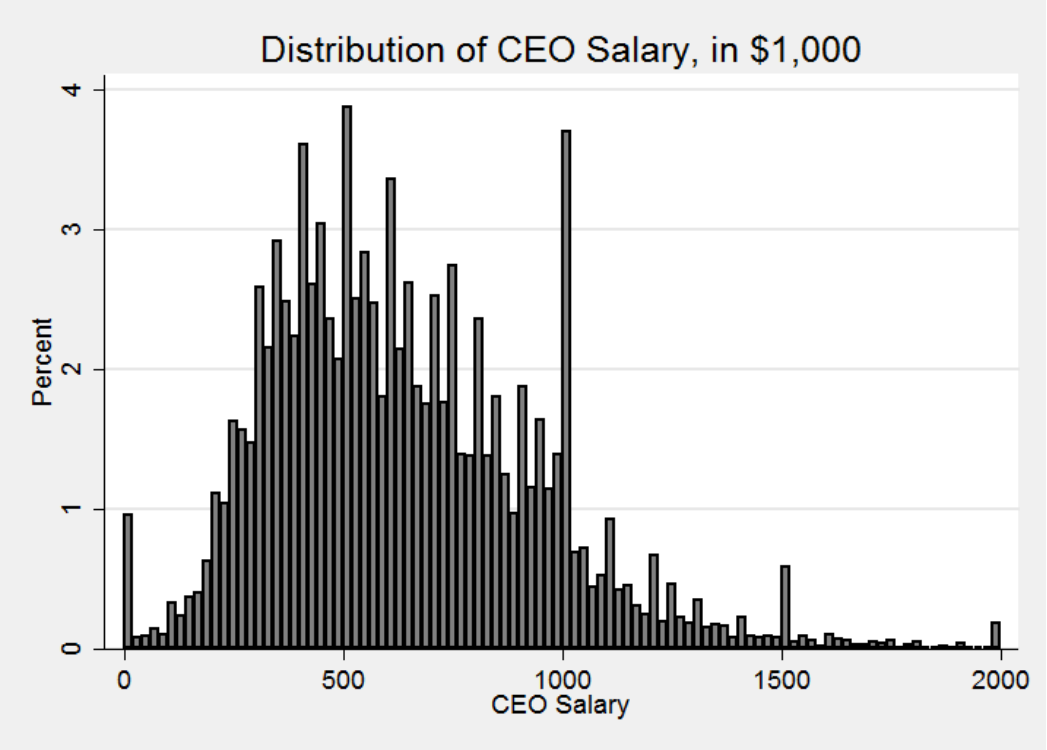
Our primary sample consists of all observations of CEO compensation (salary, bonus and option grants) from 1992 through 2010. We chose this period because of availability of compensation data from ExecuComp. We focus on cash components of compensation and option grants because the total value of equity compensation depends on stock price and is thus more difficult to round.

The first step in our analysis is to document the prevalence of rounded compensation. We define "rounded" to indicate values of salary, bonus, or option grants that are exactly divisible by either 100,000 or 10,000. For our multivariate analyses of salary compensation, we exclude observations of exactly $1 million to ensure that our results are not driven by the "focal point" previously documented in Rose and Wolfram (2000, 2002). To document the prevalence of discontinuities induced by rounding, we first present histograms of salary, bonus, and option grants. We then present tables summarizing the prevalence of rounding to amounts divisible by either 100,000 or 10,000.

Figure 1 presents a histogram of CEO salary compensation from 1992 to 2010. We arbitrarily truncate the histogram at $2 million for presentation purposes. Consistent with Rose and Wolfram (2000, 2002), Figure 1, Panel A, shows that a disproportionately large number of CEOs earn exactly $1 million. In our sample, approximately 3% (869) of the firm-year observations have salary compensation of exactly $1 million. Following Burgstahler and Dichev (1997), a formal test of smoothness of the distribution of CEO salaries reveals a statistically significant larger number of CEOs earning exactly $1 million than would be expected if the distribution were smooth ($p < .001$).[22]

[22] In unreported results, we document a similar pattern in CFO compensation as well.

Figure 1: Distribution of CEO Salary



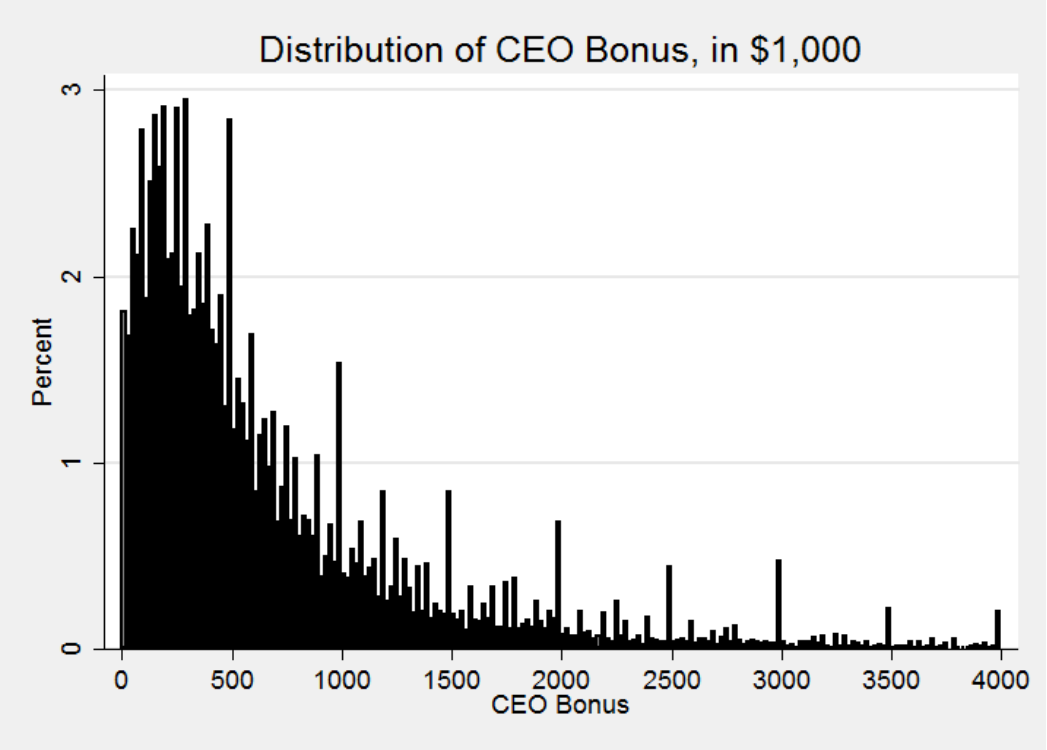
Salary is non-performance-based compensation of a fixed amount as reported in ExecuComp. The total number of CEO salary observations from 1992 through 2010 is 29,385. The width of bins in the histogram is $20,000. For legibility, CEOs who receive more than $2,000,000 were dropped. Of the observations in the bin containing $1,000,000 through $1,020,000, 869 represent observations in which CEOs earned exactly $1 million in salary.

In addition to the spike at $1 million, Figure 1 shows spikes at other values. One of the largest occurs in the first bin, where CEO salary is $0-$20,000. The distribution of salaries within the bin is not uniform; the bin is dominated by a significant number of CEOs (260) whose cash compensation is no more than $1. These observations were the subject of Hamm et al. (2012) and are consistent with the samples in that study and in Loureiro et al. (2011). Inspection also suggests that the distribution is not smooth, with potentially significant spikes primarily at values divisible by 100,000 and, in particular, at $1.5 million and $2 million, indicating the more general prevalence of other discontinuities.

In Figure 2 we present a histogram of the level of bonus compensation. Again, for presentation purposes, we exclude $0 bonuses and those greater than $4 million from the histogram. Note, however, that 10,515 observations, or approximately 35% of our sample, did not receive bonuses. We do not investigate the drivers of this discontinuity, but it is worth noting because, as with salary, this level of compensation is unlikely to be driven by the factors traditionally posited to determine compensation. Unless these observations are properly accounted for, their inclusion in traditional analyses of cash compensation will lower the power of statistical tests. Inspection of the histogram reveals spikes in bonus values at amounts divisible by 500,000, indicating that, like salary, the distribution of bonuses is not smooth.

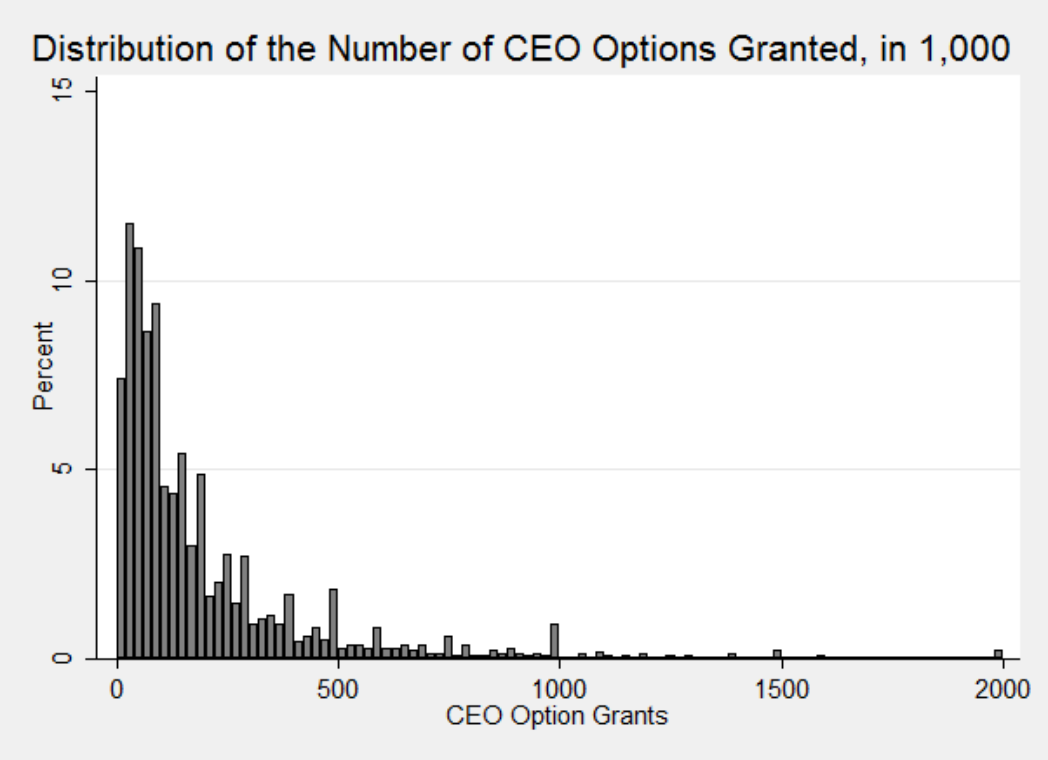
In Figure 3, we present a histogram of the number of option grants. Similar to bonus compensation, we excluded from the histogram 9,481 observations of no option grants, or 32% of the sample, and we truncated the upper end of the histogram at 2 million shares granted. Here, we observe clear spikes in the distribution at amounts divisible by 500,000.

Figure 2: Distribution of CEO Bonus



Bonus is performance-based cash compensation as reported in ExecuComp. The total number of CEO bonus observations during 1992 through 2010 is 29,385. The width of bins in the histogram is $20,000. For legibility, CEOs who received either $0 or more than $4,000,000 in bonus compensation were dropped.

Figure 3: Distribution of CEO Options Granted



The number of options granted is as reported in ExecuComp. The total number of CEO option grant observations from 1992 through 2010 period is 29,385. The width of bins in the histogram is 20,000 options. For legibility, CEOs who receive either zero options or more than 2,000,000 options were dropped.

In further examination of the discontinuities indicated in the histograms, we employ measures of rounding that are stricter in their definition. To allow separate examination of different forms of rounding, we create an indicator variable for each type of rounded compensation. If compensation amounts are exactly divisible by 100,000, 10,000, or 1,000, we set the indicator to one for the variables *CompDiv100k*, *Comp Div10k* and *CompDiv1k*, respectively, where "Comp" refers to salary, bonus, or option grants. We define *CompDiv10k* to include amounts evenly divisible by 10,000 but not 100,000. Similarly, we define *CompDiv1k* to include amounts evenly divisible by 1,000 but not 10,000 or 100,000. We also define indicator variables for observations of salaries that are $0 or $1 (*$0/1 Salary*), bonuses that are $0, and zero option grants (*$0 Bonus, 0 Options*)[23], and salary observations that are exactly $1 million (*$1M Salary*). In Table 1, Panel A, we present the means of each of these indicator variables. Clearly, rounding of compensation is fairly common and is present in similar magnitudes at each level of rounding. In our sample, 12% of salary, 10% of bonus, and 11% of option grant observations are divisible by 100,000. Further, 16% of salary, 10% of bonus, and 19% of option grant observations are divisible by 10,000 but not 100,000. Finally, 15% of salary, 9% of bonus, and 14% of option grant observations are divisible by 1,000 but not 10,000 or 100,000. As discussed above, we also observe a large number of observations of $0 or $1, and exactly $1 million in salary, and large portions of our sample did not receive bonus or option compensation. Because amounts divisible by 1,000 are unlikely to be economically significant to either firms or CEOs, we do not include them in subsequent analyses.

Table 1, Panel B, contains the distributions of salary, bonus, and option grants, as well as variables frequently used as economic determinants of compensation levels in compensation studies. These variables are defined in the table. Note that the median and maximum for salary,

[23] No firms in our sample paid a bonus of one dollar or granted only a single option.

Table 1: Descriptive Statistics

Panel A: Frequencies of Different Types of Rounding

	Salary	Bonus	Options
Divisible by 100k	12.49%	10.02%	11.19%
Divisible by 10k but not 100k	16.19%	10.01%	18.92%
Divisible by 1k but not 10k or 100k	14.76%	9.41%	14.43%
$0/1 Salary, $0 Bonus, 0 Options	0.88%	35.78%	32.27%
$1 Million Salary	2.96%		

Panel B: Distributions of Continuous Variables

	Mean	Median	Min	Max
Salary	656.660	600.000	0.000	8,100.000
Bonus	572.735	200.000	0.000	76,951.000
Options	176.197	53.750	0.000	120,000.000
SALES	4,787.966	1,172.180	-4,234.472	425,071.,000
MTB	3.414	2.145	-1,256.255	6,600.226
ROA	.092	.089	-4.178	1.122
RET	1.175	1.099	0.017	29.095

Salary is CEO cash salary as reported in ExecuComp in thousands of dollars. *Bonus* is CEO cash bonus paid as reported in ExecuComp in thousands of dollars. *Options* is the number of options granted to the CEO as reported in ExecuComp in thousands of options. *Cash* is CEO salary plus CEO bonus compensation. *Noncash* includes all other compensation paid to the CEO, as reported in ExecuComp. This includes Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted, Long-Term Incentive Payouts, and All Other Total. *SALES* is net sales in thousands of dollars as reported in Compustat. *MTB* is the market-to-book ratio calculated from Compustat. *ROA* is earnings before interest and taxes scaled by average total assets, both from Compustat. *ROA* is presented as a ratio. *RET* is the 12-month buy-and-hold return calculated from CRSP data. The sample size for this table is 29,385 observations.

Table 1 (*continued*)

Panel C: Pearson Correlations Between Rounding Indicators and Economic Determinants of Compensation Levels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) SalDiv100k	1															
(2) SalDiv10k	-0.166*	1														
(3) $0/1 Salary	-0.036*	-0.042*	1													
(4) $1 M Salary	-0.066*	-0.077*	-0.017*	1												
(5) BonDiv100k	0.089*	-0.021*	-0.019*	0.100*	1											
(6) BonDiv10k	0.040*	0.045*	-0.027*	0.004	-0.111*	1										
(7) $0 Bonus	0.005	-0.002	0.0932	0.002	-0.249*	-0.249*	1									
(8) OptDiv100k	0.026*	-0.015*	-0.002	0.018*	0.070*	0.018*	-0.058*	1								
(9) OptDiv10k	-0.019*	0.000	-0.028*	-0.013*	0.013*	0.045*	-0.091*	-0.172*	1							
(10) 0 Options	0.021*	0.025*	0.051*	0.001	-0.027*	-0.025*	0.134*	-0.245*	-0.334*	1						
(11) Salary	0.111*	-0.019*	-0.167*	0.162*	0.136*	-0.020*	0.051*	0.049*	-0.047*	-0.061*	1					
(12) Bonus	0.065*	-0.019*	-0.017*	0.127*	0.224*	0.044*	-0.289*	0.066*	0.001	-0.045*	0.272*	1				
(13) Options	0.011*	-0.005	0.028*	0.034*	0.053*	-0.001	-0.012*	0.156*	0.003	-0.148*	0.088*	0.100*	1			
(14) SALES	0.078*	-0.013*	0.027*	0.081*	0.105*	-0.010	0.006	0.017*	-0.036*	-0.038*	0.400*	0.218*	0.070*	1		
(15) MTB	-0.006	0.010*	-0.002	-0.003	0.003	-0.003	-0.004	-0.000	-0.002	-0.020	-0.008	0.002	0.008	-0.003	1	
(16) ROA	-0.010*	-0.003	-0.016*	-0.009	0.024*	0.010	-0.135*	-0.028*	0.004	-0.011*	0.059*	0.060*	-0.025*	0.026*	0.018*	1
(17) RET	0.003	0.005	-0.001	-0.006	0.040*	0.033*	-0.126*	0.026*	0.011*	-0.017*	-0.045*	0.048*	0.041*	-0.022*	0.029*	0.114*

SalaryDiv100k is an indicator variable set to one if CEO salary is evenly divisible by 100,000. *SalaryDiv10k* is an indicator variable set to one if CEO salary is evenly divisible by 10,000 but not 100,000. *$0/1 Salary* is an indicator variable set to one if CEO salary is $0 or $1. *$1M Salary* is an indicator variable set to one if CEO salary is exactly $1 million. *BonusDiv100k* is an indicator variable set to one if CEO bonus is evenly divisible by 100,000. *BonusDiv10k* is an indicator variable set to one if CEO bonus is evenly divisible by 10,000 but not 100,000. *$0 Bonus* is an indicator variable set to one if CEO bonus is $0. There are no observations of $1 bonus. *OptionsDiv100k* is an indicator variable set to one if CEO option grants are divisible by 100,000. *OptionsDiv10k* is an indicator variable set to one if CEO option grants are divisible by 10,000 but not 100.000. *0 Options* is an indicator variable set to one if no options are granted to the CEO. There are no observations of a single option being granted. *Salary* is CEO cash salary as reported in ExecuComp in thousands of dollars. *Bonus* is CEO cash bonus paid as reported in ExecuComp in thousands of dollars. *Options* is the number of options granted to the CEO as reported in ExecuComp in thousands of options. *Cash* is CEO salary plus CEO bonus compensation. *Noncash* includes all other compensation paid to the CEO, as reported in ExecuComp. This includes Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted, Long-Term Incentive Payouts, and All Other Total. *SALES* is net sales in thousands of dollars as reported in Compustat. *MTB* is the market-to-book ratio calculated from Compustat. *ROA* is earnings before interest and taxes scaled by average total assets, both from Compustat. *RET* is the 12-month buy-and-hold return calculated from CRSP data. * indicates statistical significance at the 10% level. The sample size for this table is 29,385 observations.

Table 1 (*continued*)

Panel D: Distributions of Governance Variables

	Mean	Median	Minimum	Maximum
Dual	0.7813	1	0	1
Board Size	9.6071	9	3	39
Insiders	0.3456	0.3333	0	1
Interlocking	0.0093	0	0	0.5
Over 69	0.1276	0	0	1
Busy	0.0977	0	0	4
Hired by CEO	0.3639	0.3333	0	1

Dual is an indicator variable set to one if the CEO is also the chairman of the board of directors. *Board Size* is the number of directors. *Insiders* is the percent of directors that are employees, former employees, or relatives of current employees. *Interlocking* is the percentage of outside directors who are employed by another firm on whose board an inside director sits. *Over Age 69* is the number of inside directors over the age of 69. *Busy* is the percentage of outside directors who sit on more than four boards. *Hired by CEO* is the percentage of directors appointed to the board after the CEO was hired, as a percentage of board size. All data are taken from RiskMetrics, with the exception of the CEO hire date used to calculate *Hired by CEO*, taken from ExecuComp. The sample size for this table is 11,485 observations.

Table 1 (*continued*)

Panel E: Pearson Correlations Between Rounding Indicators and Governance Measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) SalDiv100k	1															
(2) SalDiv10k	-0.166*	1														
(3) $0/1 Salary	-0.036*	-0.042*	1													
(4) $1 M Salary	-0.066*	-0.077*	-0.017*	1												
(5) BonDiv100k	0.089*	-0.021*	-0.019*	0.100*	1											
(6) BonDiv10k	0.040*	0.045*	-0.027*	0.004	-0.111*	1										
(7) $0 Bonus	0.010	-0.002	0.093*	0.002	-0.249*	-0.249*	1									
(8) OptDiv100k	0.026*	-0.015*	-0.002	0.018*	0.070*	0.018*	-0.058*	1								
(9) OptDiv10k	-0.019*	0.000	-0.028*	-0.013*	0.013*	0.045*	-0.091*	-0.172*	1							
(10) 0 Options	0.021*	0.025*	0.051*	0.001	-0.027*	-0.025*	0.134*	-0.245*	-0.334*	1						
(11) Dual	-0.003	-0.007	0.049*	0.049*	0.045*	-0.033*	-0.005	0.030*	-0.016*	-0.054*	1					
(12) Board Size	0.017*	0.000	-0.046*	0.073*	0.107*	0.013	-0.103*	-0.041*	-0.015*	-0.097*	-0.046*	1				
(13) Insiders	-0.005	0.008	0.013	-0.008	-0.011	0.022*	0.019*	-0.006	-0.004	0.116*	-0.174*	-0.090*	1			
(14) Interlocking	-0.008	0.009	0.010	0.016*	0.029*	-0.021*	-0.023*	-0.016*	-0.023*	0.018*	0.079*	0.084*	0.197*	1		
(15) Over 69	0.003	0.009	0.010	0.026*	0.011	0.008	0.051*	-0.018*	-0.007	0.097*	-0.118*	-0.029*	0.135*	-0.012	1	
(16) Busy	0.035*	-0.008	0.009	0.043*	0.076*	0.014*	-0.061*	0.027*	-0.001	-0.065*	0.151*	0.217*	0.031*	0.140*	-0.095*	1
(17) HiredbyCEO	-0.006	0.01	-0.004	0.026*	-0.006	-0.010	0.030*	-0.016*	-0.036*	0.063*	0.113*	-0.021*	0.047*	0.018*	-0.006	-0.069*

SalaryDiv100k is an indicator variable set to one if CEO salary is evenly divisible by 100,000. *SalaryDiv10k* is an indicator variable set to one if CEO salary is evenly divisible by 10,000 but not 100,000. *$0/1 Salary* is an indicator variable set to one if CEO salary is $0 or $1. *$1M Salary* is an indicator variable set to one if CEO salary is exactly $1 million. *BonusDiv100k* is an indicator variable set to one if CEO bonus is evenly divisible by 100,000. *BonusDiv10k* is an indicator variable set to one if CEO bonus is evenly divisible by 10,000 but not 100,000. *$0 Bonus* is an indicator variable set to one if CEO bonus is $0. There are no observations of $1 bonus. *OptionsDiv100k* is an indicator variable set to one if CEO option grants are divisible by 100,000. *OptionsDiv10k* is an indicator variable set to one if CEO option grants are divisible by 10,000 but not 100.000. *0 Options* is an indicator variable set to one if zero options are granted to the CEO. There are no observations of a single option being granted. *Dual* is an indicator variable set to one if the CEO is also the chairman of the board of directors. *Board Size* is the number of directors. *Insiders* is the percentage of directors who are employees, former employees, or relatives of current employees. *Interlocking* is the percent of outside directors who are employed by another firm on whose board an inside director sits. *Over Age 69* is the number of inside directors over the age of 69. *Busy* is the percentage of outside directors who sit on more than four boards. *Hired by CEO* is the percentage of directors appointed to the board after the CEO was hired, as a percentage of board size. All governance data are taken from RiskMetrics, with the exception of the CEO hire date used to calculate *Hired by CEO*, taken from ExecuComp. * indicates statistical significance at the 10% level. The sample size for this table is 11,485 observations.

bonus, and option grants are evenly divisible by 1,000, and four of the values are evenly divisible by 100,000.

In Table 1, Panel C, we present the correlations among our indicator variables as well as economic determinants of compensation identified in previous literature. While several variables in Panel C are significantly correlated at conventional levels, none of the correlations is large, indicating that multicollinearity is unlikely to confound our inferences.

In subsequent analyses, we investigate the roles that typical governance characteristics play in explaining whether firms tend to round compensation. Panel D of Table 1 presents the distributions of governance variables (drawn from Core, Holthausen, and Larcker, 1999) that we use in our models. Panel E presents the correlations of the governance variables with our rounding indicator variables. As before, all significant correlations are small. (Variables are defined in the tables.) Due to the availability of data for governance measures, the sample size for this analysis is smaller than our initial sample (11,485 observations).

Table 2 presents our investigation of the pervasiveness of rounded compensation. For our initial analysis, we focus on compensation that is exactly divisible by 100,000. Rounding to this level is likely to be more salient and material relative to rounding to 10,000 or 1,000 levels.[24] In the table, we tally the number of instances where the amounts of compensation components are exactly divisible by 50,000 or 100,000 and compare the frequencies of those observations to the frequencies of observations +/- 49,999 of the amount exactly divisible by 100,000. Thus the bolded column "x" represents a single number for compensation, while the other columns represent 49,999 possible numbers. Table 2, Panel A, presents results for salary compensation.

[24] To rule out the possibility that the numbers we employ represent database rounding by ExecuComp rather than actual compensation, we compared compensation reported by ExecuComp with proxy statement disclosures for a sample of companies including those in the "exact" bin and those in other bins. There were no differences in reported compensation between ExecuComp and the firms' proxy statement disclosures.

Table 2: Distribution of Compensation Components to Amounts Divisible by 100,000 (+/-$50,000)

Panel A: Distribution of Salary Observations

$x	$x-50,000	$x-49,999 to x-1	**$x**	$x+1 to x+49,999	$x-50,000 to x+49,999 (Total)	% Obs exactly $x-50,000	% Obs exactly $x
100,000	13	88	**34**	168	303	4%	11%
200,000	40	343	**111**	700	1194	3%	9%
300,000	143	1041	**283**	1401	2868	5%	10%
400,000	287	1646	**405**	1734	4072	7%	10%
500,000	298	1563	**555**	1650	4066	7%	14%
600,000	258	1480	**519**	1354	3611	7%	14%
700,000	298	1265	**344**	1122	3029	10%	11%
800,000	424	973	**356**	925	2678	16%	13%
900,000	226	765	**320**	702	2013	11%	16%
1,000,000	212	876	**869**	486	2443	9%	36%
1,100,000	92	336	**160**	289	877	10%	18%
1,200,000	52	195	**133**	158	538	10%	25%
1,300,000	77	146	**78**	88	389	20%	20%
1,400,000	23	89	**49**	53	214	11%	23%
1,500,000	10	63	**151**	47	271	4%	56%
1,600,000	5	41	**19**	41	106	5%	18%
1,700,000	5	27	**11**	20	63	8%	17%
1,800,000	15	13	**12**	10	50	30%	24%
1,900,000	1	16	**9**	10	36	3%	25%
2,000,000	3	7	**52**	8	70	4%	74%
2,100,0000 - 3,000,000	5	38	50	39	132	4%	38%
3,100,0000 - 4,000,000	3	12	12	12	39	8%	31%
4,100,0000 - 5,000,000	1	1	0	2	4	25%	0%
5,100,0000 - 6,000,000	0	1	2	3	6	0%	33%

For observations greater than $2 million each row represents the sum of observations at each $100,000 increment.

Table 2 (*continued*)

Panel B: Distribution of Bonus Observations

$x	$x-50,000	$x-49,999 to x-1	**$x**	$x+1 to x+49,999	$x-50,000 to x+49,999 (Total)	% Obs exactly $x-50,000	% Obs exactly $x
100,000	90	902	**171**	968	2131	4%	8%
200,000	160	1036	**176**	940	2312	7%	8%
300,000	184	844	**236**	789	2053	9%	11%
400,000	106	748	**168**	728	1750	6%	10%
500,000	125	587	**282**	558	1552	8%	18%
600,000	77	469	**135**	430	1111	7%	12%
700,000	83	404	**89**	329	905	9%	10%
800,000	112	282	**95**	274	763	15%	12%
900,000	49	243	**106**	210	608	8%	17%
1,000,000	44	200	**200**	174	618	7%	32%
1,100,000	37	172	**69**	181	459	8%	15%
1,200,000	29	140	**98**	134	401	7%	24%
1,300,000	60	111	**52**	115	338	18%	15%
1,400,000	35	94	**55**	89	273	13%	20%
1,500,000	10	75	**129**	71	285	4%	45%
1,600,000	7	67	**35**	72	181	4%	19%
1,700,000	17	65	**39**	56	177	10%	22%
1,800,000	34	64	**46**	52	196	17%	23%
1,900,000	10	57	**24**	55	146	7%	16%
2,000,000	18	58	**111**	37	224	8%	50%
2,100,000 - 3,000,000	76	214	**303**	197	790	10%	38%
3,100,000 - 4,000,000	30	64	**136**	86	316	9%	43%
4,100,000 - 5,000,000	7	36	**74**	39	156	4%	47%
5,100,000 - 6,000,000	7	25	**28**	23	83	8%	34%

For observations greater than $2 million each row represents the sum of observations at each $100,000 increment.

Table 2 (*continued*)

Panel C: Distribution of Option Grant Observations

x	x-50,000	x-49,999 to x-1	**x**	x+1 to x+49,999	x-50,000 to x+49,999 (Total)	% Obs exactly x-50,000	% Obs exactly x
100,000	759	3388	**968**	1944	7059	11%	14%
200,000	586	1207	**636**	800	3229	18%	20%
300,000	347	545	**385**	429	1706	20%	23%
400,000	122	331	**245**	240	938	13%	26%
500,000	88	194	**304**	144	730	12%	42%
600,000	32	116	**122**	123	393	8%	31%
700,000	40	81	**50**	63	234	17%	21%
800,000	91	50	**54**	47	242	38%	22%
900,000	23	41	**41**	48	153	15%	27%
1,000,000	14	35	**164**	26	239	6%	69%
1,100,000	15	33	**18**	25	91	16%	20%
1,200,000	5	12	**25**	16	58	9%	43%
1,300,000	10	12	**17**	10	49	20%	35%
1,400,000	3	14	**21**	13	51	6%	41%
1,500,000	3	7	**41**	8	59	5%	69%
1,600,000	0	13	**11**	7	31	0%	35%
1,700,000	3	9	**2**	10	24	13%	8%
1,800,000	2	6	**8**	8	24	8%	33%
1,900,000	0	11	**5**	11	27	0%	19%
2,000,000	0	2	**42**	4	48	0%	88%
2,100,000 - 3,000,000	12	12	**40**	23	87	14%	46%
3,100,000 - 4,000,000	3	8	**16**	13	40	8%	40%
4,100,000 - 5,000,000	1	8	**5**	8	22	5%	23%
5,100,000 - 6,000,000	0	2	**10**	4	16	0%	63%

For observations greater than 2 million options granted each row represents the sum of observations at each increment of 100,000 options granted.

Each row represents a range of salaries, in increments of $100,000, and centered on the even $100,000. In each row, few bins contain a larger number of observations than the bin representing exactly a $100,000 increment. The percentage of observations falling into this one-dollar-wide bin relative to the amounts on either side of $100,000 ranges from 9% to 74% for each row.[25] Panel B presents a similar analysis for bonus. Results are consistent with those in panel A. In panel B, the number of bonus observations falling on a number exactly divisible by 100,000 relative to the amounts on either side ranges from 8% to 47%.[26] Rounding to amounts divisible by 100,000 thus appears to create a significant discontinuity in the distribution of CEO cash compensation. In Panel C, we present the results of the same analysis for option grants. We find that between 14% and 88% of observations within 100,000 units of an amount divisible by 100,000 are exactly divisible by 100,000.[27]

Our untabulated analyses show similar results for amounts divisible by 10,000 (excluding those divisible by 100,000) for all three forms of compensation. Discontinuities clearly arise where compensation has been rounded to amounts divisible by 100,000 and 10,000.

4. Empirical Investigations of Discontinuities

Both our current examination of the distribution of CEO compensation and prior literature have revealed discontinuities both in general and specific to compensation. The existence of these discontinuities gives rise to a number of questions that we address in our subsequent analyses. First, we investigate whether accounting for these discontinuities improves the explanatory power of compensation regressions. Second, we investigate whether

[25] In addition to the many observations exactly divisible by 100,000, the first column also includes many observations divisible by 50,000, with the largest relative representation in the cells corresponding to amounts evenly divisible by 250,000. Note that CEO salaries of $750,000 and $1,750,000 are more common to award than $800,000 and $1,800,000, respectively.

[26] Similar to footnote 8, we also observe a propensity to award bonuses evenly divisible by 250,000. Note that CEOs are more commonly awarded bonuses of $750,000 and $1,250,000 than $800,000 and $1,300,000, respectively.

[27] Again, it is common to award options in numbers evenly divisible by 250,000 options.

discontinuities change the relation between performance measures and compensation. Third, we attempt to determine whether rounding to values divisible by 100,000 or 10,000 reflects efficient compensation or rent extraction.[28]

Characteristics of Rounded Compensation

Compared with unrounded observations, rounded observations likely have different relations with performance and other economic theory-based drivers and may be associated with other factors. Failure to consider the differences underlying these observations in agency-based empirical models likely results in a loss of power for statistical tests. Proper recognition of discontinuities in empirical models should therefore improve the fit of models used in traditional compensation research.

For our initial investigation of the impact of discontinuities, we require that firms have data available from ExecuComp, CRSP, and Compustat, resulting in an initial sample of 25,816 observations.

As a benchmark regression model, we ignore rounding in executive compensation and consider a regression of executive compensation on standard accounting and market performance measures.

Specifically, we consider the following equations:

$$Salary = \gamma_{0S} + \gamma_{1S} Lag\ ROA + \gamma_{2S} Lag\ RET + \gamma_{3S} Lag\ SALES + \gamma_{4S} Lag\ MTB + \gamma_{5S} Lag\ Noncash + \varepsilon \quad \text{(1-S)}$$

$$Bonus = \gamma_{0B} + \gamma_{1B} ROA + \gamma_{2B}\ RET + \gamma_{3B}\ SALES + \gamma_{4B} MTB + \gamma_{5B} Noncash + \varepsilon \quad \text{(1-B)}$$

$$Option = \gamma_{0O} + \gamma_{1O} ROA + \gamma_{2O} RET + \gamma_{3O} SALES + \gamma_{4O} MTB + \gamma_{5O} Cash + \varepsilon \quad \text{(1-O)}$$

[28] Note that some of the observations that we identify as rounded may indeed occur by chance or be driven by economic factors—economic factors that could result in an optimal level of compensation that is exactly divisible by 100,000 or 10,000. To the extent that these observations occur in our sample, we are less likely to find significant coefficients for our rounding indicators.

where the dependent variable is a component of compensation—either salary, bonus or option grants—and the primary independent variables are four common performance measures and economic determinants of compensation levels: *ROA* is return on assets; *RET* is the 12-month buy-and-hold stock return; *SALES* is net sales; *MTB* is the market-to-book ratio. *ROA* and *RET* are alternative measures of performance. *SALES* is a control for the well-documented association between the size of the firm and levels of compensation. *MTB* controls for investment opportunities (Smith and Watts, 1992). Because rounding of components of compensation may simply result in changing compensation mix, but not total compensation, we include controls for noncash compensation (*Noncash*) in salary and bonus regressions and a control for cash compensation (*Cash*) in the option grant regression. We use lagged values of economic drivers of compensation for salary but contemporaneous values for bonus and option grants, as these values are most likely used in setting compensation. In addition, we include fixed effects by two-digit SIC industry. All variables are formally defined in the table notes. In salary regressions, we exclude observations of exactly $1 million to ensure that our results are not driven by this previously documented discontinuity.[29] We also exclude observations where the dependent variable is zero (and $1 in the case of salary), resulting in differing sample sizes across our analyses. We believe that these observations are driven by factors other than economic determinants and rounding and thus would interfere with our analysis of the association between rounded compensation and performance measures.

In our first analysis, we compare the explanatory power of our baseline compensation model in Equation (1) with a model that includes controls for rounding. Specifically, we include

[29] In an untabulated analysis, we find that the rounding properties of CEO compensation do not differ in the first year of employment from later years.

controls for both levels and slope differences for rounded observations using the following model:

$$Salary = \beta_{0S} + \beta_{1S}RoundSal + \beta_{2S}Lag\ ROA + \beta_{3S}Lag\ RET + \beta_{4S}RoundSal * Lag\ ROA + \beta_{5S}RoundSal * Lag\ RET + \beta_{6S}Lag\ SALES + \beta_{7S}Lag\ MTB + \beta_{8s}Lag\ Noncash + \beta_{9S}Lag\ Noncash * RoundSal + \varepsilon \quad (2\text{-S})$$

$$Bonus = \beta_{0B} + \beta_{1B}RoundBonus + \beta_{2B}ROA + \beta_{3B}RET + \beta_{4B}RoundBonus * ROA + \beta_{5B}RoundBonus * RET + \beta_{6B}SALES + \beta_{7B}MTB + \beta_{8B}Noncash + \beta_{9B}Noncash * RoundBonus + \varepsilon \quad (2\text{-B})$$

$$Option = \beta_{0O} + \beta_{1O}RoundOptions + \beta_{2O}ROA + \beta_{30}RET + \beta_{40}RoundOptions * ROA + \beta_{5O}RoundOptions * RET + \beta_{6O}SALES + \beta_{7O}MTB + \beta_{8O}Cash + \beta_{9O}Cash * RoundOptions + \varepsilon \quad (2\text{-O})$$

where *RoundSal*, *RoundBonus*, or *RoundOptions*, are indicator variables set to one if compensation is divisible by either 100,000 or 10,000. Other variables are as previously defined. In Equation (2), we allow the coefficient estimates to vary based on whether the observation is rounded as discussed above. We include interaction terms for (*Lag) ROA* and (*Lag) RET* because these are the accounting- and market-based outcome measures that are frequently included in agency-theory-based models and we are interested in how the relations between these performance measures differ for observations of rounded compensation.

We compare the results of estimating Equations (1) and (2) using the Vuong (1989) test, which compares the fit of two models using the same sample without assuming that either model is true under the null hypothesis. We present the results of this comparison in Table 3. We find that the explanatory power of the benchmark regression is significantly improved for both salary

and option compensation. For the salary regression, the adjusted R-squared increases from 29.8% to 30.1% (Z-statistic of 1.6551), an increase of 1%. And for the option regression, the adjusted R-squared increases from 3.3% to 3.4% (Z-statistic of 2.1860), an increase of 3%.[30] Thus we find that controlling for these discontinuities, even in the simplest fashion, increases the power of models that explain executive compensation.

By estimating Equation (2), we can also test whether the relation between compensation and performance indicators differs for rounded observations. The parameter estimates of β_4 indicate differences for ROA, and the parameter estimates of β_5 indicate differences for returns. The coefficient β_4 is significant and negative only in the bonus regression. The sum of β_4 and β_2 in this model provides the total effect of ROA on bonus compensation. While this sum is significantly positive for bonuses, the relation between ROA and bonus compensation is much weaker for rounded observations.

In the salary regression, interaction coefficients β_4 and β_5 are insignificant. However, the total effect of ROA for rounded observations ($\beta_4 + \beta_2$) is significantly positive. These results indicate that, in aggregate, rounding to either 100,000 or 10,000 does not change the relation between either accounting performance or returns and salary compensation levels.[31]

In the simple regression that does not account for rounded option grants (Equation 1), the coefficient on returns is not significantly different from 0. This implies that the relation between returns and option grants cannot be detected. Once we account for rounded observations by

[30] The goodness of fit is comparable in prior studies, including Cadman, Klasa and Matsunaga (2010).

[31] In an untabulated analysis we modify Equation (2-S) to include a control for bonus compensation and we modify Equation (2-B) to include a control for salary compensation. Our inferences remain unchanged when we use these alternative specifications.

Table 3: Incremental Explanatory Power of Including Discontinuity Indicators in a Simple Compensation Regression

CEO Salary	No Indicator	Single Indicator	CEO Bonus	No Indicator	Single Indicator	CEO Options	No Indicator	Single Indicator
RoundSal		48.51***	RoundBon		209.3***	RoundOpt		80.38***
		(7.12)			(4.28)			(4.91)
Lag ROA	116.9***	124.4***	ROA	463.1***	796.5***	ROA	-378.5***	-207.1
	(6.74)	(4.74)		(4.75)	(5.83)		(-3.54)	(-1.41)
Lag RET	-19.45***	-15.28***	RET	36.06**	22.33	RET	81.22	87.43**
	(-5.12)	(-4.20)		(2.07)	(1.18)		(1.43)	(1.97)
Lag ROA*RoundSal		-8.341	ROA*RoundBon		-574.8***	ROA*RoundOpt		-210.2
		(-0.22)			(-3.21)			(-0.78)
Lag RET*RoundSal		-9.096	RET*RoundBon		26.12	RET*RoundOpt		-9.290
		(-1.58)			(0.75)			(-0.30)
Lag SALES	0.009***	0.009***	SALES	0.035***	0.0341***	SALES	0.004***	0.004***
	(11.33)	(11.33)		(9.45)	(9.44)		(2.80)	(3.23)
Lag MTB	-0.035**	-0.034**	MTB	-0.019	-0.025	MTB	0.218	0.223
	(-2.37)	(-2.28)		(-0.35)	(-0.45)		(0.74)	(0.77)
Lag Noncash	0.014***	0.0167***	Noncash	0.035***	0.039***	Cash	0.083***	0.076***
	(9.17)	(5.76)		(3.23)	(2.98)		(3.37)	(3.72)
Lag Noncash*RoundSal		-0.004	Noncash*RoundBon		-0.007	Cash*RoundOpt		0.008
		(-1.31)			(-0.37)			(0.27)
Constant	499.8***	484.6***	Constant	437.8***	368.0***	Constant	-53.33	-82.51
	(10.46)	(10.23)		(4.28)	(3.39)		(-0.59)	(-1.02)
Observations	22,387	22,387	Observations	16,706	16,706	Observations	17,742	17,742
Adjusted R-squared	0.298	0.301	Adjusted R-squared	0.212	0.214	Adjusted R-squared	0.033	0.034
Vuong Z-Statistic	1.655		**Vuong Z-Statistic**	1.316		**Vuong Z-Statistic**	2.186	
p-value	0.098		**p-value**	0.188		**p-value**	0.029	

RoundSal is an indicator variable set to one if CEO salary is evenly divisible by 10,000 or 100,000. *RoundBonus* is an indicator variable set to one if CEO bonus is evenly divisible by 10,000 or 100,000. *RoundOptions* is an indicator variable set to one if the number of options granted is evenly divisible by 10,000 or 100,000. *Salary* is CEO cash salary as reported in ExecuComp. *Bonus* is CEO cash bonus paid as reported in ExecuComp. *Options* is the number of options granted to the CEO as reported in ExecuComp. *Cash* is CEO salary plus CEO bonus compensation. *Noncash* includes all other compensation paid to the CEO, as reported in ExecuComp. This includes Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted, Long-Term Incentive

Table 3 (*Continued*)
Payouts, and All Other Total. *SALES* is net sales as reported in Compustat. *MTB* is the market-to-book ratio as reported in Compustat. *ROA* is earnings before interest and taxes scaled by average total assets as reported in Compustat. *ROA* is presented as a ratio. *RET* is the 12-month buy-and-hold return calculated from CRSP data. In *Salary* regressions, we exclude observations of $0, $1, or $1 million. In *Bonus* regressions, we exclude observations of $0 bonuses. In *Options* regressions, we exclude observations with zero options granted. Because salary is regressed on lagged values of independent variables, we exclude the first year of a CEO's employment. For consistency, we do the same for regressions of bonus and equity grants. We include two-digit SIC industry dummies and heteroskedasticity robust standard errors. t-statistics are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

including a simple indicator variable (Equation 2), the relation between returns and option grants becomes significantly positive.

The results of estimating Equation (2) also provide preliminary evidence on the direction of rounding. We find that, for all forms of compensation, rounded compensation is, on average, significantly higher than non-rounded compensation, i.e., β_1 is significantly positive.

We also estimate a variation of Equation (2) using separate indicators for rounding to amounts evenly divisible by 100,000 and amounts evenly divisible by 10,000 (untabled). Our inferences do not change, but the fit of the models improves. Including separate indicators for amounts divisible by 100,000 or 10,000 results in an adjusted R-squared of 30.6% for salary, 22.2% for bonus, and 5.1% for option grants.

Is Rounded Compensation More Likely Efficient or Rent Extraction?

In our next set of analyses, we attempt to determine whether rounded compensation is efficient compensation or rent extraction. In the prior analysis, we found that the relation between performance, measured as ROA, and salary is unaffected by considering salaries that have been on average rounded up from optimal salary compensation. Similar results hold for option grants. In the case of bonuses, however, the relation between performance and bonus weakens when bonuses are rounded. Akerlof's theory of gift exchange (Akerlof, 1982) and the efficiency wage literature find that employees who are paid a higher wage reciprocate by delivering better performance. CEOs may perceive additional salary, bonus, or option grants that are less associated with performance as gifts that should be reciprocated. If that is the case, then future ROA will be positively associated with rounding. If these patterns are the result of rent extraction, however, we should find that rounded compensation is linked with measures of governance that indicate agency conflicts within the firm.

Because the efficiency wage and rent extraction explanations for rounding are not mutually exclusive, our examinations test whether one or both of these effects are present in the cross-section. To do so, we continue to refine our measures of rounding. While we have some evidence that, on average, compensation is rounded up, our inferences differ when compensation is rounded up versus rounded down. The notion of rounding being viewed as a gift to CEOs, for example, only holds for compensation that has been rounded up. Hence we model predicted compensation using observations that are not round and apply the estimated coefficients from that regression to observations that we identify as rounded. We then calculate whether the actual value of observation is higher or lower than the predicted value. If the actual observation is greater (less) than the predicted value and within 99,999 units of the predicted value for values evenly divisible by 100,000, we then code the observation as rounded up (down). For example, if the predicted value of salary is 432,800 but the actual value is 500,000, we would identify that observation as having been rounded up. We do the same for values rounded to 10,000. If our definition of rounding up or down is too loose, we will succeed only in adding noise to our analyses and reducing the chance of finding significance.

In Table 4, we present descriptive statistics comparing predicted and actual compensation. In Panel A, we present the means of the six indicator variables we defined to indicate whether each type of compensation (salary, bonus, or option grants) was rounded up or down to amounts evenly divisible by 10,000 (and thus by 100,000, as well). Salaries appear to be rounded up and down with approximately the same frequency: 12.57% (12.97%) of salary observations are rounded up (down). Bonuses are more likely to be rounded down than up, as are option grants: 12.69% (16.95%) of bonus observations are rounded up (down), and 15.81% (26.87%) of option grants are rounded up (down). Overall, compensation may be rounded down

Table 4: Descriptive Statistics for Rounding Up or Down

Panel A: Frequencies of Rounding

	Rounded Up	Rounded Down
Salary	12.57%	12.97%
Bonus	12.69%	16.95%
Option Grants	15.81%	26.87%

Panel B: Degree of Rounding Up or Down

	Rounded Up	Rounded Down
Salary (in $1,000s)	262.517	183.634
Bonus (in $1,000s)	1,066.105	519.761
Option Grants (in 1,000s of options)	407.120	110.658

In Panel A, the values reported are the frequencies with which each type of compensation is rounded up or down to amounts divisible by 10,000 (including those amounts divisible by 100,000, accordingly). In Panel B, we present the differences between actual and predicted levels of compensation conditioned on whether the amount was rounded up or down to an evenly divisible amount.

more frequently than it is rounded up. However, the magnitude of rounding up is greater than the magnitude of rounding down in all cases, as is evident from Panel B. For example, while option grants are rounded down more frequently than they are rounded up, they are rounded up by a much larger amount. Clearly, there is a great deal of variation in the nature of rounding.

In our next analysis, we investigate why firms pay rounded compensation that, at first pass, might appear inconsistent with standard economic determinants of compensation. As previously discussed, rounded compensation may be consistent with Akerlof's theory of gift exchange (Akerlof, 1982) and the efficiency wage literature, in which case employees who are paid a higher wage due to rounding reciprocate by delivering better performance, which raises ROA. We thus regress future ROA on current salary, bonus, and option grants as well as indicators of discontinuities and controls for other determinants of ROA.

We estimate the following equations:

$$Lead\ ROA = \lambda_0 + \lambda_1 RoundComp + \mu_1 Comp + \mu_2 ROA + \mu_3 RET + \mu_4 SALES + \varepsilon \quad (3)$$

$$Lead\ ROA = \lambda_0 + \lambda_2 RoundUp + \lambda_3 RoundDown + \mu_1 Comp + \mu_2 ROA + \mu_3 RET + \mu_4 SALES + \varepsilon \quad (4)$$

Where *Lead ROA* is ROA the year following that in which compensation is granted; *RoundComp* refers to *RoundSal*, *RoundBonus*, or *RoundOptions;* and *Comp* refers to *Salary*, *Bonus*, or *Options*. *RoundUp* (*RoundDown*) is an indicator set to one if observations appear to have been rounded up (down) to a value evenly divisible by 10,000 (including amounts divisible by 100,000). All other variables are as previously defined.

Table 5 reports the results of estimating Equations (3) and (4). Using a single indicator for all forms of rounding (Equation 3), rounded salary and option grants are negatively associated with future ROA, although the sum of λ_0 and λ_1 does not significantly differ from

Table 5: Regressions of Lead ROA on Compensation Discontinuities

	Salary		Bonus		Option Grants	
	Single Indicator	Multiple Indicators	Single Indicator	Multiple Indicators	Single Indicator	Multiple Indicators
RoundedComp	-0.002*		0.002		-0.002**	
	(-1.74)		(1.61)		(-2.28)	
Rounded Up		-0.000		0.005***		-0.005***
		(-0.05)		(3.67)		(-3.15)
Rounded Down		-0.002		-0.001		-0.001
		(-1.55)		(-0.59)		(-0.52)
Comp	0.000***	0.000***	0.000	-0.000*	0.000	-0.000
	(5.48)	(4.75)	(-1.32)	(-1.83)	(-0.93)	(-0.50)
ROA	0.807***	0.807***	0.815***	0.815***	0.826***	0.827***
	(46.69)	(46.67)	(40.46)	(40.53)	(39.78)	(39.69)
RET	0.009***	0.009***	0.006***	0.006***	0.007***	0.007***
	(5.68)	(5.66)	(3.01)	(3.02)	(3.14)	(3.04)
SALES	0.000	0.000	0.000	0.000*	0.000	0.000
	(-1.14)	(-0.98)	(1.62)	(1.66)	(0.58)	(0.52)
Intercept	0.009	0.009	0.016**	0.017***	0.022**	0.023**
	(1.49)	(1.52)	(2.50)	(2.60)	(2.47)	(2.51)
Observations	24,346	24,346	15,628	15,628	15,977	15,977
Adjusted R-squared	0.681	0.681	0.683	0.683	0.686	0.686

RoundedComp refers to *RoundSal*, *RoundBonus*, or *RoundOptions*. *RoundSal* is an indicator variable set to one if CEO salary is evenly divisible by 10,000 or 100,000. *RoundBonus* is an indicator variable set to one if CEO bonus is evenly divisible by 10,000 or 100,000. *RoundOptions* is an indicator variable set to one if the number of options granted is evenly divisible by 10,000 or 100,000. *Comp* refers to *Salary*, *Bonus*, or *Options. Salary* is CEO cash salary as reported in ExecuComp. *Bonus* is CEO cash bonus paid as reported in ExecuComp. *Options* is the number of options granted to the CEO as reported in ExecuComp. *ROA* is earnings before interest and taxes scaled by average total assets as reported in Compustat. *ROA* is presented as a ratio. *RET* is the 12-month buy-and-hold return calculated from CRSP data. *SALES* is net sales as reported in Compustat. *MTB* is the market-to-book ratio as reported in Compustat. In *Salary* regressions, we exclude observations of $0, $1, or $1 million. In *Bonus* regressions, we exclude observations of $0 bonuses. In *Options* regressions, we exclude observations with zero options granted. Because salary is regressed on lagged values of independent variables we exclude the first year of a CEO's employment. For consistency, we do the same for regressions of bonus and equity grants. We include two-digit SIC industry dummies and heteroskedasticity robust standard errors. t-statistics are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

zero in the case of salary, indicating that the total effect of rounded salary observations on future ROA does not effectively differ from non-rounded observations. The sum of λ_0 and $\lambda_1$is significantly positive in the case of option grants, indicating that the total effect of rounded option grants on future ROA remains positive. Rounded bonuses have no discernible effect on lead ROA.[32] However, when we separate the observations into those that have been rounded up and those that have been rounded down (Equation 4), we reach different conclusions. We do not find an association between rounded salary (either rounded up or down) and future ROA. For option grants the coefficient on *RoundUp* is significantly negative. However, the sum of the coefficient on *RoundUp* and the constant term is significantly positive (t=1.89, p<.10), so the overall effect is non-negative. Our most interesting finding is that having bonuses that are rounded up to amounts evenly divisible by 100,000 is positively associated with future ROA. Our coefficient estimates reveal that future ROA is 0.55% higher for these observations than for non-rounded observations. Thus we find some evidence consistent with Akerlof's theory of gift exchange and the efficiency wage literature.

We cannot, however, rule out that some rounding is the result of rent extraction. CEOs may insist on compensation being rounded up, or companies may insist on compensation being rounded down when rounding is not optimal. In our final analysis, we regress each of the rounding indicator variables on governance characteristics that indicate agency conflicts within the firm. We use governance measures from Core et al. (1999), which are available from RiskMetrics.

We estimate the following equations as logit regressions:

[32] Note that the sum of λ_0 and $\lambda_4$does not differ from 0, again indicating that the total effect of these observations on future ROA does not differ from 0.

$$Round = \delta_0 + \delta_1 Dual + \delta_2 BoardSize + \delta_3 Insiders + \delta_4 Interlocking + \delta_5 OverAge69 + \delta_6 Busy + \delta_7 HiredbyCEO + \varepsilon \quad (5)$$

Where *Round* refers to *RoundUp* and *RoundDown* for salary, bonus, and option grants (a total of six regressions). *Dual* is an indicator variable set to one if the CEO is also the chairman of the board of directors. Prior empirical studies show that, if the CEO is also the chairman of the board, agency conflicts are more likely. *Board Size* is the number of directors. A larger board may be less efficient at oversight. *Insiders* is the percentage of directors who are employees, former employees, or relatives of current employees. *Interlocking* is the percentage of outside directors who are employed by another firm, on whose board an inside director sits. *Over Age 69* is the number of inside directors over the age of 69. Inside and interlocked directors may be less independent and thus less likely to refuse the requests of the CEO. Conversely, insiders may be better monitors because they are better informed about the company. *Busy* is the percentage of directors who serve on four or more boards.[33] Busy board members may not be able to devote as much effort to monitoring management. *Hired by CEO* is the number of directors appointed to the board after the CEO was hired, as a percentage of board size. These members may have been chosen by the CEO because they are more likely to agree with the CEO's requests. With the exception of *Insiders*, for which we make no prediction, the values of the governance variables are expected to be positively associated with agency conflicts.

The results of estimating Equation (5) are presented in Table 6. Overall, we find evidence consistent with the idea that agency conflicts are positively associated with

[33] Core et al. (1999) condition their definition of *Busy* on whether the director is retired. Because we do not have access to that data, we instead define directors as busy if they serve on four or more boards, the top 5% of the distribution of the number of boards on which directors serve.

Table 6: Regressions of Compensation Rounding on Governance Characteristics

	Salary		Bonus		Option Grants	
	Rounded Up	Rounded Down	Rounded Up	Rounded Down	Rounded Up	Rounded Down
Dual	0.422***	-0.348***	0.433***	-0.106	0.0744	-0.131**
	(5.11)	(-5.36)	(4.37)	(-1.30)	(0.96)	(-1.99)
Board Size	0.0896***	-0.0796***	0.0915***	-0.0133	-0.0785***	-0.0371***
	(9.46)	(-7.13)	(8.69)	(-1.12)	(-7.03)	(-3.94)
Insiders	-1.318***	0.887***	-1.001***	1.019***	0.501***	0.425***
	(-7.18)	(5.38)	(-4.86)	(5.28)	(2.78)	(2.68)
Interlocking	0.0617	0.350	-0.0308	-1.728*	-0.514	-2.021**
	(0.07)	(0.43)	(-0.03)	(-1.67)	(-0.56)	(-2.34)
Over Age 69	0.456***	-0.0256	0.129	0.688***	0.119	0.167
	(2.76)	(-0.17)	(0.66)	(4.02)	(0.69)	(1.09)
Busy	0.951***	-0.610***	1.294***	-0.489**	0.855***	-0.287*
	(6.20)	(-3.11)	(7.42)	(-2.28)	(5.10)	(-1.79)
Hired by CEO	0.277***	-0.143	0.221**	-0.128	0.0988	-0.0963
	(2.97)	(-1.52)	(2.05)	(-1.16)	(0.98)	(-1.09)
Intercept	-2.855***	-0.988***	-2.882***	-1.885***	-1.037***	-0.529***
	(-21.40)	(-7.56)	(-18.73)	(-12.52)	(-7.40)	(-4.41)
Observations	10,986	10,986	7,983	7,983	7,848	7,848
Pseudo R-squared	0.032	0.020	0.036	0.011	0.011	0.006

RoundedUp is an indicator set to one if the predicted value of a rounded observation is no more than 99,999 (9,999) units below the actual value of observation if the observation is rounded to an amount evenly divisible by 100,000 (10,000). *RoundedDown* is an indicator set to one if the predicted value of a rounded observation is no more than 99,999 (9,999) units above the actual value of observation if the observation is rounded to an amount evenly divisible by 100,000 (10,000). *Dual* is an indicator variable set to one if the CEO is also the chairman of the board of directors. *Board Size* is the number of directors. *Insiders* is the percentage of directors who are employees, former employees, or relatives of current employees. *Interlocking* is the percentage of outside directors who are employed by another firm on whose board an inside director sits. *Over Age 69* is the number of inside directors over the age of 69. *Busy* is the percentage of outside directors who sit on more than four boards. *Hired by CEO* is the percentage of directors appointed to the board after the CEO was hired, as a percentage of board size. Governance variables are taken from RiskMetrics, with the exception of the CEO hire date used to calculate *Hired by CEO*, taken from ExecuComp. In *Salary* regressions, we exclude observations of $0, $1, or $1 million. In *Bonus* regressions, we exclude observations of $0 bonuses. In *Options* regressions, we exclude observations with zero options granted. Because salary is regressed on lagged values of independent variables we exclude the first year of a CEOs employment. For consistency, we do the same for regressions of bonus and equity grants. t-statistics are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

rounding up and negatively associated with rounding down. For salary compensation, we find that *Dual*, *BoardSize*, and *Busy* are positively associated with rounding up and negatively associated with rounding down for amounts divisible by either 100,000 or 10,000. We find the same pattern for *OverAge69* and *HiredByCEO*, although the results are not always significant.

Our results for rounding of bonus compensation are similar. *Dual*, *BoardSize*, *Busy*, and *HiredByCEO* are positively associated with rounding up. *Interlocking* and *Busy* are negatively correlated with rounding down, while *Insiders* shows the opposite relation. *OverAge69*, however, is positively associated with rounding down. In the case of option grants, *Dual*, *BoardSize*, *Interlocking*, and *Busy* are all significantly negatively associated with rounding down, as anticipated, and *Busy* is also significantly positively associated with rounding up. *BoardSize*, however, is negatively associated with all types of rounding of option grants, consistent with larger boards being less likely to approve grants of rounded values of options, even though larger boards approve rounded values of salary and bonuses. In subsequent analyses, it would be informative to determine whether this is true because larger boards are more likely to hire compensation consultants, who, in turn, are less likely to recommend rounded values of option grants. We generally find that *Insiders* is negatively associated with rounding up and positively associated with rounding down (the exception being that it is positively associated with rounding up option grants). This result is consistent with Core et al. (1999), who find that *Insiders* is negatively associated with total compensation. In sum, we believe that the results of estimating Equation (5) are consistent

with agency conflicts resulting in boards allowing CEOs to round compensation up and with less agency conflict resulting in boards rounding compensation down.[34]

5. Conclusion

Empirical studies of the relation between compensation and accounting performance focus on agency theory-based predictions. These studies do not address other factors that may influence the form of compensation contracts. We identify and explore the effects of discontinuities in CEO compensation that are due to factors besides agency concerns. We document discontinuities at amounts evenly divisible by 100,000 or 10,000. These observations are likely driven, at least in part, by the psychology of how humans react to numbers. We further show that taking these discontinuities into account not only improves the explanatory power of compensation models but also affects how accounting performance and compensation appear to be associated. Empirical analyses provide evidence that the sensitivity of bonus compensation to performance is lower when bonus compensation is rounded. We also explore some behavioral consequences of rounding compensation and find evidence that firms benefit from providing rounded bonus compensation amounts to CEOs. We find evidence that rounding is more common in firms where agency conflicts are more prevalent.

Rounding compensation may also be the result of a more general practice in the firm to round numbers, including earnings or earnings per share. Another unresolved question is

[34] In an untabulated analysis we create a single indicator variable, *LowGovernance*, with which to measure firms' overall governance structure. We generate indicator variables set to one for *BoardSize*, *Insiders*, *Interlocking*, *OverAge69*, *Busy*, and *HiredbyCEO* if the value of an observation is above the median. We then sum the indicator variables and *Dual*. Finally, we set *LowGovernance* equal to one if the resulting sum is above the median value. We regress the six rounding indicators (*RoundUp* and *RoundDown* for salary, bonus and option grants) on *LowGovernance*. Our inferences from this specification are the same as those presented in Table 6. We find that firms are more likely to round salaries and bonuses up when agency conflicts are more prevalent, and that firms are more likely to round salaries, bonuses, and options down when those agency conflicts are less prevalent.

why the tendency for round CEO compensation predicts future operating performance. At first pass this might address whether the decision to round is a result of sub-optimal contracting. However, CEOs may be attracted by round numbers in compensation, or round numbers may possess certain innate qualities that are desirable.

Future research may also consider rounding in other settings, such as dollar value of option grants. Research in this area could also be expanded to include other executives whose compensation distribution also exhibits discontinuities. Internal Revenue Code Section 162(m) applies not only to CEOs but also to acting CFOs and the top three executives, whose compensation must be reported to the SEC. To our knowledge, the literature on CFO compensation, for example, does not take any discontinuities into account.

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APPENDIX: TARGET CEOS' MERGER-RELATED BENEFITS

Target CEOs' merger-related personal benefits take a number of forms, including cash payments, increases in equity holdings, reductions in restrictions on equity holdings, post-merger employment in the merged firm, and board membership in the merged firm. Cash payments to target CEOs most often include a payment from target firm shareholders to the target CEO, the golden parachute, which is specified in the CEO's ongoing employment agreement. The golden parachute is a multiple of the CEO's prior cash compensation because Section 280(G) of the Internal Revenue Code only allows firms to deduct golden parachutes that are up to three times the value of the CEO's "base" pay, generally cash pay. Target CEOs may also obtain additional cash payments negotiated as part of the merger agreement.[35] These payments are frequently structured as non-compete agreements, completion bonuses, retention bonuses, or consulting agreements. In addition to cash, some CEOs are also granted equity by the target or the acquirer. The form of equity granted varies, but options and restricted stock are most common.

Target CEOs may also benefit from changes in trading restrictions on their equity holdings. The treatment of unvested options and restricted stock in the merger frequently allows target CEOs to exchange previously restricted equity in the target firm for cash, or for less restricted equity in the merged firm. CIC agreements typically provide for acceleration of vesting of options and for lapsing of restrictions on restricted shares, so that the previously restricted shares are converted to unrestricted common shares in the target firm, which are

[35] IRC Section 280(G) excludes payments that are "reasonable compensation for personal services to be rendered on or after the date of the change" or "reasonable compensation for personal services actually rendered before the date of the change," which may be a motivating factor for how these payments are structured.

then exchanged for merger consideration. In some mergers, options, whether vested or unvested, are cashed out (i.e., the holders are given cash in the amount of the difference between the value of the target shares and the exercise price), while in others the acquirer converts options in the target firm to options in the merged firm, and does the same for restricted stock. While target CEOs employed by the merged firm are still subject to insider trading restrictions even on unrestricted common stock, target CEOs that are not employed by the merged firm usually have no such restrictions.

Beyond financial benefits paid to target CEOs because of a merger, target CEOs are frequently rewarded with employment in the merged firm or directorships. In these cases the CEOs receive not only financial benefits, but also power and prestige.

Table A1 panel A presents a summary of merger-related benefits promised and paid to target CEOs. In my sample 31.9% of target CEOs become employed by the merged firm, while only 15.6% obtain directorships. These frequencies are much lower than those reported in Hartzell, Ofek and Yermack (2004). In their sample, target CEOs became officers in the merged firm in 50.3% of mergers, and became directors in 57.1%. While the authors do not describe the industry concentration of their sample, the differences in the frequencies of employment at the merged firm and directorship between my sample and theirs are likely driven by acquisitions resulting from the economic downturn.

The majority of the CIC payment promised to target CEOs is in the form of golden parachutes. The average expected golden parachute is just over $3.55M, and the vast majority of target CEOs were promised a golden parachute; 91.5% of the observations are non-zero. While the magnitudes of the value of increased retirement or other payments and additional target equity promised are large, they are driven by relatively few non-zero

Table A1: Target CEOs' personal merger-related benefits

Panel A: Descriptive statistics for target CEOs' personal merger-related benefits

	Mean	Median	Minimum	Maximum
Employment outcomes				
Employed by merged firm	0.319	0	0	1
Director at merged firm	0.156	0	0	1
CIC payment promised				
Golden parachute promised	3,557,556	1,190,000	0	40,808,768
Increased retirement promised	207,224	0	0	12,469,919
Value of equity promised	248,670	0	0	35,062,500
Total CIC payment promised	4,013,450	1,190,000	0	63,262,500
CIC payment paid				
Golden parachute paid	2,767,921	931,500	0	51,058,768
Bonus	155,440	0	0	5,250,000
Consulting agreement	44,952	0	0	2,800,000
Noncompete, confidentiality or other pay	102,271	0	0	10,913,662
Value of additional target common stock	277,330	0	0	34,603,500
Value of merged firm restricted stock	44,835	0	0	2,092,500
Total CIC payment paid	3,413,542	1,211,398	0	51,058,768
Value of target firm holdings				
Unexercisable, in-the-money options	1,072,457	0	0	32,554,078
Exercisable, in-the-money options	3,264,811	8,606	0	146,015,584
Restricted stock	2,428,771	230,526	0	35,750,000
Common stock	24,093,620	1,720,002	0	1,434,071,552
Total value of target firm holdings	30,859,659	4,353,760	0	1,476,943,360

Table A1 (*continued*)

Panel B: Pearson and spearman correlations of target CEOs' personal merger-related benefits

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Merged firm employment		0.165*	-0.230***	-0.121	-0.058	-0.666***	-0.083	0.333***	0.169**	-0.187**	0.055	0.123	0.249***	0.036
		(0.051)	(0.006)	(0.156)	(0.493)	(0.000)	(0.330)	(0.000)	(0.047)	(0.027)	(0.522)	(0.147)	(0.003)	(0.672)
(2) Director at merged firm	0.167		0.155**	-0.032	-0.037	-0.053	0.112	-0.012	0.011	-0.081	-0.010	-0.037	0.044	-0.058
	(0.048)		(0.068)	(0.708)	(0.668)	(0.536)	(0.187)	(0.892)	(0.901)	(0.344)	(0.904)	(0.668)	(0.608)	(0.498)
(3) GP promised	-0.116	-0.002		0.230***	0.142*	0.641***	0.149*	-0.253***	-0.064	0.058	-0.047	-0.096	-0.145*	0.334***
	(0.172)	(0.978)		(0.006)	(0.095)	(0.000)	(0.078)	(0.003)	(0.454)	(0.494)	(0.583)	(0.262)	(0.087)	(0.000)
(4) Increased retirement	-0.099	-0.042	0.375***		-0.022	0.223***	0.215**	-0.060	-0.103	-0.091	-0.060	-0.022	-0.045	0.026
	(0.242)	(0.624)	(0.000)		(0.794)	(0.008)	(0.011)	(0.481)	(0.224)	(0.287)	(0.481)	(0.794)	(0.598)	(0.765)
(5) Equity promised	-0.058	-0.036	0.333***	-0.013		-0.102	0.710***	-0.020	0.222***	0.272***	0.386***	-0.007	-0.015	0.135
	(0.496)	(0.669)	(0.000)	(0.881)		(0.229)	(0.000)	(0.820)	(0.008)	(0.001)	(0.000)	(0.933)	(0.865)	(0.111)
(6) GP paid	-0.283***	-0.067	0.824***	0.489***	-0.038		0.001	-0.232***	-0.170**	0.074	-0.187**	-0.102	-0.149*	0.175**
	(0.001)	(0.430)	(0.000)	(0.000)	(0.655)		(0.989)	(0.006)	(0.044)	(0.384)	(0.027)	(0.229)	(0.078)	(0.039)
(7) Addl target C.S.	-0.065	-0.011	0.330***	-0.001	0.992***	-0.034		-0.028	0.135	0.174**	0.262***	-0.010	-0.021	0.118
	(0.445)	(0.900)	(0.000)	(0.988)	(0.000)	(0.690)		(0.746)	(0.111)	(0.040)	(0.002)	(0.905)	(0.809)	(0.164)
(8) Merged firm R.S.	0.252***	-0.066	-0.086	-0.026	-0.015	-0.072	-0.017		-0.001	-0.079	-0.053	-0.020	0.354***	0.106
	(0.003)	(0.442)	(0.312)	(0.758)	(0.863)	(0.401)	(0.846)		(0.994)	(0.352)	(0.537)	(0.820)	(0.000)	(0.213)
(9) Bonus	0.031	0.018	0.0870	-0.034	0.067	0.028	0.064	-0.037		0.068	0.192**	-0.034	-0.068	0.034
	(0.718)	(0.836)	(0.304)	(0.690)	(0.434)	(0.740)	(0.454)	(0.662)		(0.425)	(0.023)	(0.694)	(0.427)	(0.688)
(10) Consulting	-0.104	0.005	0.295***	-0.026	0.901***	-0.029	0.892***	-0.030	0.046		0.149*	-0.029	-0.059	-0.013
	(0.218)	(0.957)	(0.000)	(0.757)	(0.000)	(0.733)	(0.000)	(0.722)	(0.591)		(0.079)	(0.731)	(0.487)	(0.880)
(11) Noncompete, etc.	-0.023	-0.044	0.316***	-0.017	0.981***	-0.048	0.972***	-0.019	0.061	0.883***		-0.020	-0.039	-0.005
	(0.785)	(0.608)	(0.000)	(0.845)	(0.000)	(0.570)	(0.000)	(0.823)	(0.471)	(0.000)		(0.820)	(0.645)	(0.950)
(12) Target options	0.123	-0.036	-0.042	-0.013	-0.007	-0.038	-0.008	-0.015	-0.019	-0.015	-0.009		-0.015	0.009
	(0.145)	(0.669)	(0.620)	(0.881)	(0.933)	(0.655)	(0.925)	(0.863)	(0.823)	(0.863)	(0.913)		(0.865)	(0.912)
(13) Merged firm options	0.250***	0.044	-0.081	-0.026	-0.014	-0.070	-0.016	0.270***	-0.038	-0.030	-0.019	-0.014		-0.172
	(0.003)	(0.602)	(0.342)	(0.761)	(0.865)	(0.413)	(0.849)	(0.001)	(0.652)	(0.726)	(0.825)	(0.865)		(0.042)
(14) Value of target equity	0.114	-0.074	0.280***	0.001	0.080	0.005	0.078	0.013	0.008	0.063	0.073	-0.017	-0.039	
	(0.179)	(0.387)	(0.001)	(0.996)	(0.344)	(0.956)	(0.360)	(0.875)	(0.929)	(0.458)	(0.388)	(0.846)	(0.649)	

Employed by the merged firm is an indicator set to one if the target CEO is hired by the merged firm and zero otherwise. *Director at merged* firm is an indicator set to one if the target CEO is appointed to the board of directors at the merged firm and zero otherwise. *GP promised* is the value of the GP payment promised in the CIC agreement as reported in the merger proxy statement. *Increased retirement* is the value of additional credits to retirement plans because of a change in control as reported in the merger proxy statement. *Equity promised* is the value of equity promised in the CIC agreement, calculated based on the merger consideration. *GP paid* is the value of the GP to be paid as reported in the merger proxy statement. *Additional target common stock* is the value of target stock granted based on the merger consideration. *Merged firm restricted stock* is the value of merged firm restricted stock granted based on the acquirer's stock price on the effective date of the merger. *Bonus*, *Consulting*, and *Noncompete, etc*. are values of negotiated cash payments as reported in the merger proxy statement. *Target options* is an indicator variable set to one if the target firm granted the target firm additional options. *Merged firm options* is an indicator variable set to one if the merged firm granted the target CEO additional options. *Value of target equity* is the value of the target CEO's holdings in the merged firm based on the merger consideration. The sample size for this analysis is 141 mergers. Spearman correlations are presented below the diagonal and Pearson correlations are presented above the diagonal. p-values are reported in parentheses. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels, respectively.

observations (two observations and ten observations, respectively). As in the case of the CIC payment promised, the majority of the CIC payment actually paid is in the form of golden parachutes, though a non-trivial portion of the payment is made in other forms of both cash (i.e., bonus, noncompete agreements, etc.) and equity (shares of the target firms' common stock or the merged firm's restricted stock). The average values of both the golden parachute paid and the total CIC payment paid are lower than the values promised because target CEOs accept employment positions at the merged firm and relinquish some or all of their CIC payments. Only 3.3% of CEOs receive options in the merged firm. The average target CEO received just over $30M in exchange for his target firm equity.

Table A1 panel B presents Pearson and Spearman correlations among target CEOs' personal benefits. As expected, CEOs who are employed by the merged firm are also more likely to have directorships, more likely to receive restricted stock and options in the merged firm, and more likely to receive lower golden parachutes. The value of golden parachutes promised is positively correlated with the values of other forms of CIC payments promised (increased retirement and grants of stock in the target firm), additional grants of target firm common stock, and the value of target firm equity. This suggests that CEOs with large golden parachutes also expect to obtain benefits in other forms. Finally, the value of the golden parachute *promised* is positively associated with alternative forms of cash compensation (bonus, noncompete, and consulting agreements), but the value of the golden parachute *paid* is not, suggesting that target CEOs trade reduced golden parachutes for alternative forms of cash compensation.