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CEO Turnover after Acquisitions: Are Bad Bidders Fired?

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ABSTRACT

We examine the relation between bidder returns and the probability of chief executive officer (CEO) turnover in acquiring firms. Using a sample of 714 acquisitions during 1990 to 1998, we find that 47% of CEOs of acquiring firms are replaced within 5 years, including 27% by internal governance, 16% by takeovers, and 4% by bankruptcy. A significant inverse relation exists between bidder returns and the likelihood of CEO turnover. This relation is not associated with governance structure. It also is not significantly different in stock versus cash acquisitions, which appears to be inconsistent with Shleifer and Vishny's theory of "stock market driven" acquisitions.

THIS PAPER EXAMINES WHETHER CHIEF EXECUTIVE OFFICER (CEO) turnover is related to the amount of value CEOs create or destroy through mergers and acquisitions. Mitchell and Lehn (1990) show that in the 1980s, the market for corporate control disciplined managers who made value-destroying acquisitions. However, little is known about whether internal governance mechanisms have been effective in providing this discipline or whether the takeover market continued to provide this discipline in the 1990s. While this issue is important in its own right, it is of particular interest in light of the decline in hostile takeover activity in recent years (Holmstrom and Kaplan (2001), Andrade, Mitchell, and Stafford (2001)).

This paper addresses the following questions. How frequently are managers of acquiring firms replaced following acquisitions? How often are managers replaced by internal governance as opposed to external control mechanisms such as takeovers and bankruptcy? Are managers who make value-reducing acquisitions more likely to be replaced than managers who make value-enhancing acquisitions? Are the size and structure of boards related to the likelihood that "bad bidders" will be replaced? Are bad bidders less likely to be fired if they serve as both chief executive officer (CEO) and chairman of the board? What role does ownership structure play in this process? Are managers who cancel

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value-destroying mergers less likely to be disciplined than managers who complete value-destroying mergers?

Anecdotal evidence suggests the presence of a link between "bad" acquisitions and subsequent management turnover. One good example is that of Quaker Oats' acquisition of Snapple Beverages in 1994. The announcement of Quaker Oats' acquisition of Snapple came at a time when Quaker itself was considered to be a likely takeover target. On the day of the announcement that Quaker would acquire Snapple for $1.7 billion in cash, Quaker's stock price fell by almost 10%, resulting in a 1-day loss of $493 million for Quaker's shareholders.[1] Three years later, after numerous problems involving the integration of Snapple with its Gatorade beverage unit, Quaker sold Snapple to Triarc for only $300 million. Shortly thereafter, Quaker's chairman and CEO, William Smithburg, was pressured by Quaker's stockholders to resign.

It was widely recognized that Smithburg's departure was directly related to the large amount of value that Quaker destroyed in its acquisition of Snapple Beverages. For example, the Associated Press reported that "Mr. Smithburg, who plans to step down after 16 years at the helm of Quaker, is blamed for the decision to pay $1.7 billion for Snapple in December 1994, and for holding on to the business despite its drain on profit." Smithburg himself noted upon his departure, "You can find a lot of things in hindsight and there's been a lot of criticism levied .... Clearly, it was a disappointment. I am fully accountable for (Snapple) and take responsibility for that. Sometimes the right thing to do is to cut your losses and move forward."

AOL's acquisition of Time Warner in 2000 also indicates a relation between value-decreasing mergers and management turnover. On January 10, 2000, AOL announced a $166 billion merger with Time Warner. At the time of the merger announcement, AOL's stock price suffered an abnormal decline of over 10%, resulting in a decline of more than $20 billion in its equity value.[2] AOL Time Warner's stock price declined substantially after the merger, with numerous press reports pointing to the merger of the two companies as a major source of the stock price decline.[3] In January 2003, Stephen Case, then

[1] Over a narrow event window surrounding the announcement (five trading days before the announcement through one trading day after the announcement), Quaker's stock price declined 10.14%, resulting in a $412 million loss of shareholder value. Over a longer window surrounding this announcement (five trading days before the announcement through 20 trading days after the announcement), Quaker's stock price declined 18.96%, resulting in a $958 million loss of shareholder value.

[2] Over a narrow event window surrounding the announcement (five trading days before the announcement through one trading day after the announcement), AOL's stock price declined 22.77%, resulting in a $42 billion loss of shareholder value. Over a longer window surrounding this announcement (5 trading days before the announcement through 20 trading days after the announcement), AOL's stock price declined 30.47%, resulting in a $56 billion loss of shareholder value.

[3] See, for example, "Case plans to step down as AOL Time Warner chairman" *Dow Jones Business News*, January 12, 2003, http://www.dowjones.com; Lisa Singhania, "Case to resign, calls AOL Time Warner merger a 'disappointment'" Associated Press, January 12, 2003, http://www.ap.org; "AOL Time Warner is learning that bigger isn't necessarily better" Hoover's Online, July 8, 2003, http://www.hoovers.com.

chairman of AOL Time Warner, resigned his position as chairman under pressure from shareholders. Press reports at the time linked Case's departure to AOL's acquisition of Time Warner. For example, the Associated Press stated that, "Blamed by shareholders for AOL Time Warner's sharp fall in fortunes, Steve Case said he will step down as chairman of the conglomerate he helped create—a marriage of old and new media first hailed as revolutionary but now struggling for a future." Similarly, the Associated Press reported, "Case, 44, said in a statement that he is stepping down because 'some shareholders continue to focus their disappointment with the company's post-merger performance on me personally.' "

To test whether the Quaker Oats and AOL Time Warner cases generalize to a larger sample, we examine the relation between acquisition announcement returns and subsequent CEO turnover for 714 firms that completed acquisitions during the period from 1990 through 1998. Of the 714 CEOs who effected the sample acquisitions, 407, or 57% of the sample, were replaced following the acquisitions in what we classify as "disciplinary CEO turnover." Of these 407 CEOs, 225 were replaced by internal governance, 142 by takeover, and 40 by bankruptcy. Furthermore, 338 of the 407 CEOs were replaced within 5 years of the merger or acquisition announcement. The incidence of CEO turnover is significantly lower for a sample of 210 firms that announced and then cancelled acquisitions: Only 74 of these firms, or 35% of the sample, replaced their CEOs after the cancellation of the acquisition.

We find that acquisition announcement returns for firms that subsequently replace their CEOs are highly negative and significantly lower than the corresponding returns for firms that do not subsequently replace their CEOs. Both logit estimates and hazard model analysis reinforce this result, indicating that it holds after controlling for other variables associated with CEO turnover. The logit and hazard model results also show that CEOs who cancel value-reducing acquisitions are significantly less likely to be replaced than CEOs who proceed with value-reducing acquisitions.

Among the CEOs that are replaced by internal governance, no significant relation exists between several corporate governance variables and the likelihood that "bad bidders" will be replaced. Specifically, the interaction of acquisition announcement returns and (i) board size, (ii) board independence, (iii) whether the CEO also serves as chairman, and (iv) ownership structure are not related to the probability of CEO turnover.

We draw two major inferences from the results. First, the results indicate that internal governance, takeovers, and the bankruptcy process discipline managers who make acquisitions that destroy value. Although the high frequency of negative bidder returns is sometimes cited as evidence of widespread agency problems, the evidence indicates that CEOs pay a price, in the form of their jobs, for making acquisitions that destroy value. This result suggests that corporate governance and the external market for corporate control generally work well in disciplining managers who pursue acquisitions to the detriment of their stockholders.

Second, the absence of an observable empirical relation between corporate governance variables and the probability that bad bidders will be replaced is consistent with the view that, on average, governance mechanisms are chosen optimally. If, for example, a significant negative relation were to exist between board size and the probability that bad bidders will be replaced, it would imply that firms with large boards make systematic, observable "mistakes" in choosing their board size. While the absence of a significant relation could mean that governance mechanisms "do not matter," it would more likely mean that firms choose these mechanisms optimally, such that no observable relation exists between these variables and the probability of CEO turnover.

Our data on CEO turnover also shed light on Shleifer and Vishny's (2003) theory of "stock market driven" acquisitions. According to this theory, acquisitions are often driven by an overvaluation of the acquiring firm's stock prices. That is, CEOs of acquiring firms, such as Stephen Case of AOL, take advantage of their companies' overvalued stock and use it as currency to acquire companies with valuable assets. Shleifer and Vishny posit that such a strategy is in the interests of the acquiring firms' stockholders:

> From our perspective, the central feature of this acquisition is not technological synergies, but rather the attempt by the management of the overvalued AOL to buy the hard assets of Time Warner to avoid even worse returns in the long run. In this acquisition, as in other deals involving high-technology acquirers with overvalued stock prices, long-run acquirer returns appear to be poor. However, according to our model, these returns are not as negative as they would have been had the acquisitions not taken place. When future writers condemn the merger spree of the late 1990s as manifesting misguided policies on the part of acquirers, they should focus on the alternative of not making these acquisitions (p. 295).

Shleifer and Vishny (p. 297) state further that "despite negative long-run returns, acquisitions for stock serve the interest of long-term shareholders of the bidder."

We find a significant inverse relation between long-run returns after acquisitions and the probability that CEOs are replaced. This relation is not less pronounced for stock versus cash acquisitions, which appears to challenge the prediction of Shleifer and Vishny's model. Indeed, the CEOs of acquiring firms with negative bidder returns are equally likely to be replaced, regardless of whether they used stock or cash as the method of payment in the acquisition. These results suggest that stock acquisitions (as well as cash acquisitions) associated with negative long-run bidder returns are destructive of value, otherwise these firms would not be more likely to replace their CEOs. This result appears to run counter to the theory that stock acquisitions associated with negative long-run bidder returns actually serve the interests of stockholders.

Section I reviews relevant literature and discusses the hypotheses that we test. Section II describes the sample and data we use in the tests. Section III explains empirical design and methods. Section IV presents empirical results, and Section V provides concluding comments.

I. The Relation between Bidder Returns and Subsequent CEO Turnover

A large body of research focuses on the relation between firm performance and the probability of CEO turnover. Several studies document a negative relation between the likelihood of non-routine CEO turnover and firm performance (Coughlan and Schmidt (1985), Warner, Watts, and Wruck (1988), Weisbach (1988), Gibbons and Murphy (1990), Murphy and Zimmerman (1993), Blackwell, Brickley, and Weisbach (1994), Kang and Shivdasani (1995)). Other studies document that the market for corporate control plays an important disciplinary role, as managerial turnover is high in firms that are targets of acquisitions, especially if their pre-acquisition performance is poor (Martin and McConnell (1991), Kini, Kracaw, and Mian (1995), Hadlock, Houston, and Ryngaert (1999), Harford (2003)). The evidence suggests that internal and external control mechanisms serve to discipline poorly performing managers.

The stock market's assessment of a firm's mergers and acquisitions activity provides an opportunity to examine the effectiveness of internal governance and external control mechanisms. First, although mergers and acquisitions (M&A) are approved by a firm's entire board of directors, they are usually initiated by the CEO and overseeing their progress is often considered to be one of a CEO's major responsibilities. Furthermore, there is considerable variation in both the short-run and long-run returns to acquiring firms. Thus, given the fact that CEOs are largely responsible for M&A activity and there is large variation in the valuation effects of M&A decisions, this is an ideal topic for studying the effectiveness of internal governance and external control mechanisms.

This study focuses on the relation between bidder returns and the likelihood of CEO turnover among acquiring firms. If a CEO completes an acquisition that creates shareholder value, then it is expected that he or she will be rewarded (e.g., with extended tenure as CEO). In contrast, if an acquisition destroys shareholder value, then it is expected that the CEO will face a higher probability of being replaced. This discipline can be imposed by the firm's board of directors or by external forces such as a takeover or bankruptcy. Thus, we expect an inverse relation between the value created by M&A activity and the probability of CEO turnover.

In an efficient capital market, the change in an acquiring firm's stock price around an acquisition announcement provides an unbiased estimate of whether the acquisition serves the interest of the acquiring firm's stockholders. Thus, the returns to acquiring firms around M&A announcements should be significantly lower for "bad" acquirers than for "good" acquirers, and in turn, CEOs of firms with significant negative abnormal stock returns around M&A announcements are more likely to be subsequently replaced. Therefore, we expect an inverse relation between bidder returns around acquisition announcements and the probability of subsequent CEO turnover.

Among firms that are not subject to the discipline of the external control market, we examine whether the relation between bidder returns and the probability of subsequent management turnover is related to characteristics of the board. Specifically, we test whether this relation is dependent on board size, the

proportion of the board that is independent, and whether or not the CEO also serves as chairman of the board. In addition, since the board acts as an agent for stockholders, we also examine the role that a firm's ownership structure plays in this process.

Board Size. An emerging literature on board size argues that large boards are ineffective monitors of managerial performance. For example, Jensen (1993, p. 865) argues that "keeping boards small can help improve their performance," and Yermack (1996) finds a significant inverse relation between board size and corporate values, and suggests that the line of causation runs from board size to value. Thus, if small boards are more effective monitors of managerial performance, the probability that a CEO is replaced after making a value-destroying acquisition should be higher for firms with small versus large boards.

An alternative hypothesis is that the relation between bidder returns and the probability of CEO turnover is unaffected by board size. Empirically, little is known about the relation between board size and the effectiveness of boards as monitors. It seems plausible that the free rider and coordination problems associated with large boards would impair their effectiveness as monitors (e.g., a board consisting of all shareholders), but at what point does this occur and how does it vary across companies? Thus, assuming that there are advantages and disadvantages associated with different board sizes (Lehn, Patro, and Zhao (2004)), if firms select board sizes that on average are appropriate for their circumstances, the relation between bidder returns and the probability of subsequent CEO turnover is likely to be unaffected by board size.

Board Independence. Several studies argue that independent directors serve an important monitoring role. For example, Weisbach (1988) finds that CEO turnover is more sensitive to firm performance when outsiders form a majority of the board and Hermalin and Weisbach (1988) find that boards are more likely to add outside directors after poor firm performance, which also suggests that outside directors serve a useful monitoring function. If this is the case, one might expect that the relation between bidder returns and the probability of subsequent CEO turnover is related to the independence of the acquiring firm's board, that is, the more independent the board, the higher the probability that bad bidders are replaced.

By reasoning similar to that above, an alternative hypothesis is that board independence does not affect the relation between bidder returns and the probability of subsequent CEO turnover. Insofar as there are both advantages (e.g., tighter monitoring) and disadvantages (e.g., higher information costs) associated with board independence, it is reasonable to expect that a firm chooses an optimal amount of board independence according to its circumstance. For example, biotechnology companies may prefer less board independence because the costs of conveying technical biotech information to independent directors are very high, whereas food processing firms may prefer more board independence because such information costs in this industry are fairly low. Thus, if board independence is chosen optimally, the relation between bidder returns

and the probability of subsequent CEO turnover is likely to be unrelated to board independence.

Leadership Structure. Many scholars and corporate governance activists argue that consolidating the positions of CEO and board chairman in one person impairs the monitoring function of a board. For example, Jensen (1993, p. 866) states that, "for the board to be effective, it is important to separate the CEO and chairman positions." Similarly, Fama and Jensen (1983) argue that the concentration of decision management and decision control in one individual reduces a board's monitoring effectiveness. Recently, Goyal and Park (2002) document a negative relation between the sensitivity of CEO turnover to firm performance and the combination of CEO and chairman duties. Accordingly, if consolidating the positions of CEO and board chairman in one person undermines the effectiveness of boards, one would expect the probability of CEO turnover to be lower for firms in which the CEO also serves as chairman.

An alternative view is that there are good economic reasons for consolidating the positions of CEO and board chairman in one person. Perhaps, most importantly, consolidating these positions economizes on the costs of transferring knowledge from the CEO to the board chairman. Brickley, Coles, and Jarrell (1997) argue that the prevalence of combining these two positions in one person suggests that, indeed, this leadership structure is efficient for most firms. Thus, if firms choose this leadership structure optimally, the relation between bidder returns and the probability of subsequent CEO turnover is likely to be unrelated to its leadership structure.

Ownership Structure. Since the board of directors ultimately is accountable to stockholders, we consider the role of ownership structure in the relation between bidder returns and the probability of subsequent CEO turnover. Beginning with Berle and Means (1932), economists generally recognize that an inverse relation exists between the diffusion of equity ownership and the incentives that stockholders have to monitor managers. Under the view that ownership structure is determined exogenously, one might expect that the relation between bidder returns and subsequent CEO turnover is associated with the diffusion of equity ownership, that is, the more diffuse the ownership, the better management is able to retain its position in the face of a value-destroying acquisition.

An alternative view is that ownership structure is chosen endogenously in a value-maximizing way (Demsetz and Lehn (1985)). Similar to the other governance variables, there are both advantages and disadvantages associated with diffuse versus concentrated ownership structures. If firms choose ownership structures optimally, then empirically no relation should exist between firm value and ownership structure. Furthermore, whether firms with more diffuse ownership structures are able to develop governance mechanisms that mitigate the potential agency problems associated with diffuse ownership is an open question. If this is the case, however, then the relation between bidder returns and the probability of subsequent CEO turnover should be unrelated to the diffusion of ownership structure.

A related measure of ownership structure is the percentage of equity held by managers. Many argue that firm performance is related to this measure of ownership (e.g., Mørck, Shleifer, and Vishny (1988)). The direction of this relation is not a given, however, as increased managerial ownership has the potential to both enhance firm performance because of the incentive effects of management ownership and impair firm performance because of the "entrenchment effect" of management ownership. Denis, Denis, and Sarin (1997) document a negative association between the probability of top executive turnover and the ownership stake of officers and directors, which is consistent with the entrenchment effect of management ownership. Similarly, we test whether the relation between bidder returns and subsequent CEO turnover is related to the percentage of equity held by managers. We use two measures of managerial ownership of equity, namely, the percent of equity held by the CEO and the percent of equity held by officers and directors.

II. Sample

The sample of mergers and acquisitions comes from Securities Data Company's (SDC) Mergers and Acquisitions database. We draw the initial sample from SDC based on the following criteria: (1) The merger or acquisition is announced between January 1, 1990 and December 31, 1998; (2) both the acquiring and target firms are publicly traded; (3) the forms of the deals are mergers and acquisitions; and, (4) the status of the deal is "completed." These criteria result in an initial sample of 2,699 mergers and acquisitions.

We require that all sample firms be listed on the Center for Research in Securities Prices (CRSP) database and Standard and Poor's COMPUSTAT Research Tape. We impose this filter because COMPUSTAT is the source of financial statement data and CRSP is the source of stock price data. This requirement reduces the sample size to 2,055 mergers and acquisitions.

We also require that the size of the target firm be at least 10% of the size of the acquiring firm. We impose this criterion to ensure that we include mergers and acquisitions that represent "large" investments by acquiring firms. We measure firm size as the sum of the book value of long-term debt, the book value of preferred stock, and the market value of common stock at the end of the year immediately preceding the year in which the merger or acquisition is announced. This filter further reduces the sample size to 926 mergers and acquisitions.

Furthermore, we require that information about CEO turnover be available for each acquiring firm. The main sources of CEO turnover information are proxy statements, company reports, and news wires. Proxy statements are also the source of information about acquiring firms' governance structures. After conducting a search of company reports and proxy statements from several sources, including the SEC Edgar database, LexisNexis, Thompson Research, and the LaserD/Global Access CD-ROM Collection at Harvard's Baker Library, we exclude an additional 88 mergers and acquisitions, because we are not able to identify information on CEO turnover from the sources

listed above for these firms. This results in a sample of 838 mergers and acquisitions.[4]

Seven hundred and fourteen different acquiring firms account for the 838 mergers and acquisitions. Of these, 109 firms completed more than one acquisition during the sample period, and in 94 of the 109 firms, the same CEO completed each acquisition. For these 94 firms, we include the first merger or acquisition during the period in the sample. Of the remaining 15 firms, different CEOs effected the different acquisitions. For these firms, we include the first acquisition made by each of the CEOs. Some of our empirical analyses require CEO age, tenure, or corporate governance data, and for those analyses, we only include those acquiring firms that have complete governance data.[5]

Of the 714 acquiring firms in the sample, 229 are delisted within 5 years of completing their acquisitions and before they had replaced their respective CEOs. Among the 229 firms, 176 and 53 were delisted because of a takeover and bankruptcy, respectively. The sample of 714 acquisitions is available on request.

III. Empirical Method

A. Definition of CEO Turnover

We initially define CEO turnover to include CEOs that are replaced by internal governance, takeovers, or bankruptcy. To define CEOs replaced by internal governance, we follow Parrino (1997) and classify CEO turnover as disciplinary if it is reported that the CEO is fired or forced to step down, or if the CEO departs due to unspecified policy differences. For other cases, if the departing CEO is under the age of 65 and the news announcement reports that the CEO

[4] Eighty-eight mergers and acquisitions are made by 77 different acquiring firms. We exclude these deals because information about CEO turnover is not available in all of the following databases: SEC Edgar, LexisNexis, Thompson Research, or the LaserD Collection at Harvard's Baker Library. The 77 acquiring firms in the 88 mergers and acquisitions are significantly smaller than the acquiring firms in the mergers and acquisitions included in the sample. For example, mean sales for acquiring firms in the excluded mergers and acquisitions is \$0.95 billion, versus \$2.28 billion for acquiring firms in the mergers and acquisitions we include in the sample. The difference in mean sales is significant at the 0.01 level (t-statistic of 2.17). Similar results hold when other proxies for size are used, including the book value of assets and the market value of equity, and also when median, instead of mean, values are used.

[5] Data on CEO age, tenure, and various governance variables are collected from the acquiring firm's proxy statement that is closest in time to the announcement of its corresponding merger or acquisition for the sample without CEO turnover and that is closest in time to the announcement of the CEO's departure. Again, our sources of proxy statements are SEC Edgar, LexisNexis, Thompson Research, and the LaserD Collection at Harvard's Baker Library. CEO age and tenure are available for 668 firms out of 714 acquiring firms. In our subsample of 485 acquiring firms not subject to takeovers and bankruptcy, we have 442 firms that have complete data on all the governance variables; the remaining 43 firms have missing observations for one or more governance variables. Firms are included in the regressions if they have data available for each variable in the regression equation. We report the actual number of observations along with the regression results. Our results remain the same when we base our analyses only on firms with complete data on all the governance variables.

is retiring but does not announce the retirement at least 6 months before the effective date, or, if the announcement does not report that the reason for the departure is related to death, poor health, or the acceptance of another position, then CEO turnover is classified as a disciplinary turnover.

To identify CEO turnover due to takeovers, we examine the first post-acquisition proxy statements of the firms that acquire our sample firms to determine if the CEO retains a position in the merged entity. If not, then we classify the observation as one involving CEO turnover. Otherwise, the observation is classified as one not involving CEO turnover. Similarly, to identify CEO turnover after bankruptcy, we examine each of the available post-acquisition proxy statements, company reports, or any related news articles to determine if the CEO is replaced during the bankruptcy process. If the delisted firm emerges from bankruptcy and the CEO retains a position in the new entity, we classify the observation as one not involving CEO turnover. If the firm does not emerge from the bankruptcy, but related company reports or news articles mention that the CEO is in charge of the reorganization, we also classify the observation as one not involving CEO turnover. Otherwise, we classify the observation as CEO turnover.

We obtain information about the circumstances surrounding CEO turnover from the Dow Jones News Retrieval services and from proxy statements. We define a dummy variable for CEO turnover that takes the value of one if the acquiring firm's CEO is replaced within 5 years of the merger or acquisition's announcement, and zero otherwise. Of the 714 CEOs in the sample, 338 are replaced involuntarily within 5 years, 69 are replaced involuntarily after 5 years, and 307 are not replaced involuntarily after their respective acquisitions.

B. Stock Market Analysis of Acquisitions

This paper employs event study methodology to measure the stock price effects associated with merger and acquisition announcements. The announcement date for each merger or acquisition is the date of the first announcement concerning the merger or acquisition that we identify from the Dow Jones News Retrieval service. Market model parameters are estimated over a period of 220 through 21 (i.e., [−220, −21]) trading days preceding the announcement date for each acquisition. We use the returns to the CRSP value-weighted index of the market portfolio as the measure of market returns. We estimate the abnormal returns for the acquiring firms on each day during the period of 5 trading days before the merger and acquisition announcements through 20 days after the announcements (i.e., [−5, 20]). As reported below, we estimate cumulative abnormal returns for acquiring firms over several windows surrounding the announcement dates.

C. Empirical Design

To examine the relation between bidder returns and the probability of CEO turnover, we estimate the logit model

$$prob(CEO\ Subsequent\ Turnover) = \exp(\alpha + BX)/(1 + \exp(\alpha + BX)), \quad (1)$$

where X is the vector of independent variables including cumulative abnormal returns (CAR), several corporate governance variables, CEO age and tenure, pre-merger performance, post-merger performance, and the relative size of the target firm to the acquiring firm.

Cumulative Abnormal Returns. CAR is the cumulative abnormal return to acquiring firms around the announcements of their respective mergers and acquisitions, measured over several event windows, including the abnormal return on the announcement date [0], the CAR measured one trading day before through one trading day after the announcement date [−1,1], the CAR measured one trading day before through five trading days after the announcement date [−1, 5], the CAR measured five trading days before through five trading days after the announcement date [−5, 5], and the CAR measured 5 trading days before through 20 trading days after the announcement date [−5, 20]. We expect the coefficient on CAR to be negative.

Corporate Governance Variables. For the sample of acquiring firms that are not delisted due to takeover or bankruptcy, we also include independent variables that measure their governance structures. We include the variables to test whether the relation between bidder returns and CEO turnover is associated with governance. Based on the discussion in Section I, we include a dummy variable that takes the value of one if the CEO of the acquiring company also serves as chairman of the board (*CEO/chairman*), board size (*Board size*), the proportion of the firm's board consisting of independent directors (*Board independence*), and the percentage of equity held by (i) the five largest blockholders (*Ownership concentration*), (ii) the CEO (*CEO ownership (%)*), and (iii) officers and directors (*Insider ownership (%)*). For the sample with CEO turnover, all governance data are taken from the acquiring firm's proxy statement that is closest in time to the announcement of the CEO's departure. For the sample without CEO turnover, governance data are taken from the acquiring firm's proxy statement that is closest in time to the announcement of its corresponding merger or acquisition.

Independent directors are defined as directors who are not employees, former employees, employees' relatives, or attorneys, accountants, investment bankers, or employees of any other firm that has contractual relations with the acquiring firm (Hermalin and Weisbach (1988), Mayers, Shivdasani, and Smith (1997)). We define equity ownership held by the CEO, by all insiders, and by the five largest blockholders as the beneficial ownership of equity plus the number of shares that could be acquired through the exercise of options within 60 days.

Since the sample consists of both good and bad bidders, a priori we have no reason to believe that the governance variables by themselves are associated with CEO turnover. Our main interest is in the coefficients of the interaction variables that consist of the product of each of the governance variables with CAR. For example, if smaller boards are more effective than larger boards in disciplining bad bidders, then the coefficient on the interaction of board size

and CAR is expected to be negative. If, on the other hand, the coefficient on this interaction term is not significant, then the relation between bidder returns and CEO turnover should be unaffected by this governance variable, which would suggest either that firms "select" this governance variable optimally (such that bad bidders are penalized regardless of board size), or that this variable is simply unimportant in explaining the turnover of bad bidders.

CEO Age and Tenure. Weisbach (1988), Murphy and Zimmerman (1993), and Goyal and Park (2002) find a significant positive relation between CEO turnover and CEO age. On the other hand, CEO age is also associated with longer tenure and perhaps more control of the firm: Older CEOs might have greater influence on the board, thereby reducing the likelihood of CEO turnover after an acquisition. Therefore, CEO age and tenure in the year of the acquisition are included as control variables.

Method of Payment. The literature documents that returns to acquiring firms are significantly more negative when acquiring firms use stock instead of cash as the method of payment in acquisitions (e.g., Servaes (1991), Franks, Harris, and Titman (1991)). This result is generally explained in terms of the signal associated with the use of stock in acquisitions. In particular, it is presumed that the use of stock as the method of payment signals to the market that the managers of the acquiring firm believe that their firm's stock is overvalued. To control for the possibility that negative returns in stock deals may be driven by information about the acquiring firm's value rather than by the acquisition itself, we include a dummy variable that takes the value of one if the deal is a stock or stock and cash deal, and zero otherwise. We also interact the dummy variable with CAR [−1,1].

Pre-Merger Performance. A negative relation between the likelihood of nonroutine top executive turnover and firm performance is documented in the literature.[6] Because executive turnover after mergers and acquisitions might be due to a firm's poor performance before the corresponding M&A transaction, we include a measure of the firm's performance before the M&A deal as an independent variable. Market-adjusted buy-and-hold returns (Pre-BHR (−3)) and cumulative abnormal returns (Pre-CAR (−3)) measured over the 3 years before through 20 days before the merger or acquisition announcement serve as two measures of pre-merger performance. In addition, we also use industry-adjusted return on assets (Pre-ROA) and return on equity (Pre-ROE).[7] We expect these variables to be inversely related to CEO turnover.

Post-Merger Performance. We also include proxies for post-merger performance as an independent variable. CEO turnover after a merger or acquisition might be due to a firm's poor performance after the corresponding M&A

[6] Studies by Coughlan and Schmidt (1985), Warner et al. (1988), Weisbach (1988), Gibbons and Murphy (1990), Murphy and Zimmerman (1993), Blackwell, Brickley, and Weisbach (1994), and Kang and Shivdasani (1995) document this relation.

[7] We make the industry adjustments by subtracting the industry median values from sample firms' corresponding accounting performance measures. The industry median is the median value of the industry portfolio formed by matching the three-digit SIC code from COMPUSTAT.

transaction. To control for this, a measure of the firm's post-merger performance is included as an independent variable. Market-adjusted buy-and-hold returns (Post-BHR (+3)) and cumulative abnormal returns (Post-CAR (+3)) measured over the 3 years after the completion of the merger or acquisition are included as independent variables. For firms with CEO turnover, we also calculate the market-adjusted buy-and-hold returns and cumulative abnormal returns between the merger or acquisition completion date and the date of the CEO departure. In addition, we include industry-adjusted return on assets (Post-ROA) and return on equity (Post-ROE) over the same period as measures of post-merger performance.[7] We expect these variables to be inversely related to the likelihood of CEO turnover.

IV. Empirical Results

A. Sample Descriptive Statistics

A.1. CEO Turnover

Table I provides the frequency of "CEO turnover" versus "No CEO turnover" for the full sample of 714 acquiring firms, the subsample of 485 acquiring firms not subject to takeover or bankruptcy, the 176 acquiring firms subject to takeovers, and the 53 acquiring firms subject to bankruptcy. Forty-seven percent of the CEOs (i.e., 338 CEOs) in the full sample are disciplined within 5 years of the acquisition. Among them, 27% (193 CEOs) are replaced by internal governance, 16% (116 CEOs) by takeovers, and 4% (29) by bankruptcy. This distribution indicates that close to half of the CEOs are replaced involuntarily after effecting a major merger or acquisition.

Table II reports the mean and median values of relevant variables for the full sample of 714 completed deals, and for two subsamples, namely, the 338 deals in which the acquiring firms' CEOs are replaced within 5 years of the merger or acquisition announcement, and the remaining 376 deals in which the acquiring firms' CEOs are not replaced within 5 years of the merger or acquisition announcement.

A.2. Relative Size of Targets to Acquirers

The market value of target firms, on average, is 62% of the market value of the corresponding acquiring firm. The table reveals no significant difference in the relative size of targets for acquiring firms with CEO turnover (58%) and those without CEO turnover (65%). The median ratio of the market value of targets to the market value of acquiring firms is smaller and also does not vary significantly across the two subsamples.

A.3. Method of Payment

On average, 82% of the sample firms use stock or a combination of stock and cash as a method of payment for the merger or acquisition. The frequency of

Table I

Sample Distribution and Frequency of CEO Turnover

This table reports the frequency of CEO turnover across different subsamples. "CEO turnover" under the total sample is defined as CEO replacement through internal control mechanisms, takeovers, or bankruptcy within 5 years of the merger or acquisition. "CEO turnover" under the subsample of "Acquiring firms not subject to takeover or bankruptcy" is defined as CEO replacement through internal control mechanisms only. "CEO turnover" under the subsample of "Acquiring firms subject to takeovers" is defined as CEO replacement due to takeovers, and "CEO turnover" under the subsample of "Acquiring firms subject to bankruptcy" is defined as CEO replacement via the bankruptcy process. The first column lists the number of acquiring firms in the total sample and each of the subsamples, the second and third columns provide the percentages of "CEO turnover" versus "No CEO turnover" in each of the subsamples and the total sample.

	Number of Acquiring Firms	% of Subsample	% of Total Sample
Total sample	714	100	100
CEO turnover	338	47.34	47.34
No CEO turnover	376	52.66	52.66
Acquiring firms not subject to takeovers or bankruptcy	485	100	67.93
CEO turnover	193	39.79	27.03
No CEO turnover	292	60.21	40.90
Acquiring firms subject to takeovers	176	100	24.65
CEO turnover	116	65.91	16.25
No CEO turnover	60	34.09	8.40
Acquiring firms subject to bankruptcy	53	100	7.42
CEO turnover	29	45.28	4.06
No CEO turnover	24	54.72	3.36

firms using stock versus cash as a method of payment does not differ significantly across acquiring firms with and without CEO turnover.

A.4. CEO Characteristics

The mean age of CEOs is 52.5 for the full sample. Little difference exists in the mean CEO age across the two subsamples. Similar results hold for the median age of CEOs.

The mean and median tenure of CEOs is significantly shorter for acquiring firms with CEO turnover than those without CEO turnover. For the full sample, mean (median) CEO tenure is 7.1 (5) years. For firms without CEO turnover, mean (median) CEO tenure is 8.06 (6) years. Mean (median) CEO tenure is 6.02 (4) years for firms with CEO turnover. The differences in both the mean and median values of this variable are significant at the 0.01 level.

The frequency with which CEOs also serve as chairman is high, and it does not differ significantly across the two subsamples. The mean and median values of the dummy variable that takes the value of one if the CEO also serves as chairman are 0.69 and one for the entire sample. The median value of the

Table II

Sample Descriptive Statistics—Completed Mergers

This table reports the mean and median values of relevant variables for the sample of 714 completed mergers and acquisitions. The CEO turnover sample consists of 338 firms that experience involuntary CEO turnover through either internal control mechanisms or external mechanisms within 5 years of the merger or acquisition. The remaining 376 firms are included in the "No CEO Turnover" sample. Relative size is the ratio of the market value of the target firm to the market value of the acquiring firm at the end of the year preceding the year in which the merger or acquisition is announced. Method of payment is the dummy variable ("Stock deal") that equals one if the payment for the merger or acquisition is stock or a combination of stock and cash, and equals zero otherwise. CEO age is measured as the age of the CEO at the time of the merger or acquisition announcement. CEO tenure is the length of time that the CEO held the position of CEO at the time of the merger or acquisition announcement. CEO/chairman takes the value of one if the CEO also holds the position of chairman of the board and zero otherwise. Pre-BHR (−3) is the acquiring firm's market-adjusted buy-and-hold returns during the 3 years before through 20 days before the merger and acquisition announcement, respectively. Pre-ROA is measured as the mean industry-adjusted return on assets over the 3 years before the merger and acquisition announcement. Pre-ROE is measured as the mean industry-adjusted return on equity over the 3 years before the merger and acquisition announcement. Post-BHR (+3) is the acquiring firm's market-adjusted buy-and-hold returns during the 3 years and 1 year after the merger and acquisition completion, respectively. Post-ROA is measured as the mean industry-adjusted return on assets over the 3 years after the merger and acquisition completion. Post-ROE is measured as the mean industry-adjusted return on equity over the 3 years after the merger and acquisition completion. *T*-statistics corresponding to the differences in means and *Z*-statistics corresponding to the differences in medians are displayed in parentheses.

	Total Sample ($N = 714$)		CEO Turnover ($N = 338$)		No CEO Turnover ($N = 376$)		Differences	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Relative size of target	0.62	0.33	0.58	0.32	0.65	0.34	−0.07	−0.02
							(−0.62)	(−0.33)
Method of payment								
Stock deal	0.82	1	0.83	1	0.81	1	0.02	0.00
							(0.67)	(0.67)
CEO characteristics								
CEO age	52.5	52	52.1	52	52.9	53	−0.86	−1
							(−1.39)	(−1.07)
CEO tenure	7.1	5	6.02	4	8.06	6	−2.04***	−2***
							(−3.99)	(−3.21)
CEO/chairman	0.69	1	0.69	1	0.70	1	−0.01	0
							(−0.23)	(0.23)
Pre-merger performance								
Pre-BHR (−3)	0.431	0.107	0.441	0.088	0.422	0.116	0.019	−0.028
							(0.15)	(−0.61)
Pre-ROA	−0.006	0.005	−0.031	0.003	0.015	0.007	−0.046***	−0.004***
							(−3.33)	(−2.88)
Pre-ROE	−0.054	0.006	−0.152	−0.013	0.032	0.025	−0.183**	−0.038***
							(−1.99)	(−3.34)
Post-merger performance								
Post-BHR (+3)	−0.111	−0.316	−0.242	−0.493	0.006	−0.186	−0.247*	−0.307***
							(−1.73)	(−3.43)
Post-ROA	0.003	0.003	−0.016	0.001	0.019	0.005	−0.035***	−0.004*
							(−2.77)	(−3.11)
Post-ROE	−0.064	0.020	−0.052	0.007	−0.075	0.029	0.023	−0.021*
							(0.21)	(−1.77)

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

variable is one for both subsamples of acquiring firms, that is, those with and without CEO turnover. The mean value is slightly lower (0.69) for acquiring firms with CEO turnover than for those without CEO turnover (0.70), but the difference is not significant.

A.5. Pre-merger Performance

Table II lists the mean and median values of several pre-merger performance variables for the entire sample and the two subsamples. The stock price performance of acquiring firms before their respective merger or acquisition does not differ significantly across firms with CEO turnover and those without CEO turnover. The mean (median) buy-and-hold return 3 years before the merger (Pre-BHR (−3)) is 43.1% (10.7%) for the entire sample. Firms with CEO turnover have a higher mean and lower median Pre-BHR (−3) (44.1% and 8.8%, respectively) than firms without CEO turnover (42.2% and 11.6%, respectively). Neither the difference in the means nor the medians is significant. Also, no significant difference exists in either the mean or median buy-and-hold return 1 year before the merger for between firms with CEO turnover (mean of 14.7%, median of 3.0%) and those without CEO turnover (mean of 9.8%, median of 1.0%).[8]

Similarly, the mean (median) cumulative abnormal returns 3 months before the merger is lower but not significantly so for firms with CEO turnover (mean of –0.79%, median of –2.97%) than for firms without CEO turnover (mean of 0.50%, median of –0.72%). Overall, the data indicate little difference in the pre-merger stock price performance of the two groups of firms.[8]

A significant difference exists across the two subsamples in industry-adjusted return on assets (Pre-ROA) during the 3 years before the respective merger. The mean (median) value of this variable is −3.1% (0.3%) for firms with CEO turnover versus 1.5% (0.7%) for firms without CEO turnover. The difference in both the mean and median values is significant at the 0.01 level. Similar results obtain for industry-adjusted return on equity (Pre-ROE) during the 3 years before the respective mergers.

A.6. Post-merger Performance

Table II also reports the mean and median values of two post-merger performance variables for the entire sample and the two subsamples. For the entire sample, the mean (median) buy-and-hold returns 3 years after the merger or acquisition is –11.1% (−31.6%). It is significantly lower at the 0.01 level, for firms with CEO turnover (mean of –24.2%, median of –49.3%) than those without CEO turnover (mean of 0.6%, median of –18.6%).[9]

[8] We do not report summary statistics on the acquiring firms' buy-and-hold returns 1 year before the announcements of their acquisitions and cumulative abnormal returns 3 months before the announcements in Table II for the sake of brevity.

[9] Similar results obtain on buy-and-hold and cumulative abnormal returns 1 year after the acquisition announcements, but are not reported in Table II for the sake of brevity.

Similar results obtain for post-merger accounting performance, as measured by the mean and median return on assets (Post-ROA) 3 years after the respective merger or acquisition. Industry-adjusted mean (median) Post-ROA is −1.6% (0.1%) for firms with CEO turnover versus 1.9% (0.5%) for firms without CEO turnover. The difference in both the mean and median values across the two subsamples is significant at the 0.01 level. Again, similar results obtain for the median industry-adjusted return on equity (Post-ROE) 3 years after the respective merger.

Overall, the data reveal that the post-merger stock price performance of acquiring firms with CEO turnover is significantly worse than the corresponding performance of acquiring firms without CEO turnover.

B. Bidder Returns

Table III lists the cumulative abnormal returns for acquiring firms over various event windows surrounding their respective acquisition announcements for the entire sample and various subsamples. The table shows significant differences in the announcement period returns for firms with versus without CEO turnover.

Announcement period returns are negative and statistically significant for the entire sample of acquisitions, a result that is consistent with the literature on returns to acquiring firms during the 1990s (Moeller, Schlingemann, and Stulz (2005)). The returns vary from −0.89% on day 0 to −2.15% over the [−5, 20] window. All returns shown in Table III for the entire sample are significant at the 0.01 level. Furthermore, only 40.2% of the day-0 returns are positive, which is significantly less than 50%. All of the other "percent positive" returns are significantly less than 50% at the 0.10 level.

Table III shows that negative bidder returns are more pronounced for firms with CEO turnover than for firms without CEO turnover. The day-0 return for firms with CEO turnover is −1.67%, which is significant at the 0.01 level. All other announcement period returns shown in Table III are negative and significant at the 0.01 level, with the most negative being the [−1, 5] return (−2.97%). Furthermore, only 37.42% of the day-0 returns are positive, which is significantly less than 50% at the 0.01 level. For the [−1,1], [−1, 5], and [−5, 5] event windows, the percentage of positive returns is 37.61%, 35.78%, and 36.70% respectively. All three of these percents are significantly lower than 50%. The percentage of positive returns for the [−5, 20] return is 41.59%, which is significantly lower than 50% at the 0.10 level.

In contrast, the returns to acquiring firms without CEO turnover are less negative and less significant across all event windows, as shown in Table III. The day-0 return for this subsample is −0.20%, which is not significant. The returns vary from −0.20% (day 0) to −1.77% ([−5, 20] window). Only the cumulative abnormal return over the [−1, 5] window is significant at the 0.01 level. Returns over other event windows are either significant at the 0.05 or 0.10 level or not significant at all. Furthermore, the percentage of returns that are positive ranges from 42.66% (day 0) to 45.65% ([−1,1]), and none are significantly

Table III

Abnormal Stock Market Performance of Acquiring Firms Associated with Merger and Acquisition Announcements

This table reports the abnormal and cumulative abnormal returns associated with the merger and acquisition announcements for the entire sample of completed mergers, the subsample of acquiring firms with a CEO disciplined by both the external and internal control mechanisms within 5 years, the subsample of acquiring firms without a CEO disciplined within 5 years, the subsample of acquiring firms that are not subject to takeovers or bankruptcy, and among these, the subsamples of CEO turnover versus No CEO turnover, the subsample of acquiring firms subject to takeovers, and among these, the subsamples of CEO turnover versus No CEO turnover, the subsample of acquiring firms subject to the bankruptcy process, and among these, the subsamples of CEO turnover versus NO CEO turnover. Cumulative abnormal returns (CARs) are calculated based on different event windows listed below. *Z*-statistics are in parentheses and the percentage of abnormal returns that are positive are listed below the *Z*-statistics.

Event window around announcement day	[0]	[−1, 1]	[−1, 5]	[−5, 5]	[−5, 20]
Total sample ($N = 714$)	−0.89%***	−1.27%***	−2.01%***	−1.58%***	−2.15%***
	(−7.079)	(−5.819)	(−6.044)	(−3.789)	(−3.362)
% positive	40.20%***	41.87%**	39.71%***	41.15%**	42.88%*
	(−3.307)	(−2.428)	(−3.569)	(−2.808)	(−1.895)
CEO turnover	−1.67%***	−2.27%***	−2.97%***	−2.22%***	−2.59%***
($N = 338$)	(−9.105)	(−7.141)	(−6.129)	(−3.657)	(−2.767)
% positive	37.42%***	37.61%***	35.78%***	36.70%***	41.59%*
	(−3.279)	(−3.215)	(−3.880)	(−3.547)	(−1.773)
No CEO turnover	−0.20%	−0.38%	−1.15%***	−1.01%*	−1.77%**
($N = 376$)	(−1.190)	(−1.305)	(−2.616)	(−1.821)	(−2.084)
% positive	42.66%	45.65%	43.21%	45.11%	44.02%
	(−1.456)	(−0.306)	(−1.247)	(−0.515)	(−0.933)
Acquiring firms not subject to takeovers or bankruptcy ($N = 485$)	−0.95%***	−1.33%***	−2.12%***	−1.61%***	−1.79%**
	(−6.366)	(−5.170)	(−5.389)	(−3.249)	(−2.353)
% positive	39.83%**	41.65%*	39.53%***	41.65%*	45.88%
	(−3.047)	(−2.257)	(−3.179)	(−2.257)	(−0.414)
CEO turnover	−2.06%***	−2.76%***	−3.82%***	−3.05%***	−2.40%*
($N = 193$)	(−9.165)	(−7.077)	(−6.416)	(−4.092)	(−2.090)
% positive	33.51%***	34.41%***	31.72%***	32.80%***	44.09%
	(−3.650)	(−3.415)	(−4.150)	(−3.856)	(−0.770)
No CEO turnover	−0.23%	−0.41%	−1.03%*	−0.67%	−1.39%
($N = 292$)	(−1.203)	(−1.239)	(−2.024)	(−1.050)	(−1.425)
% positive	43.90%	46.34%	44.60%	47.39%	47.04%
	(−0.976)	(−0.148)	(−0.740)	(−0.207)	(−0.088)
Acquiring firms subject to takeovers ($N = 176$)	−1.03%***	−1.71%***	−1.95%***	−2.02%***	−3.28%***
	(−4.926)	(−4.738)	(−3.534)	(−2.922)	(−3.088)
% positive	35.88%***	40.0%	38.24%*	38.82%*	35.29%**
	(−2.606)	(−1.529)	(−1.911)	(−1.837)	(−2.076)
CEO turnover	−1.26%***	−1.90%***	−2.14%***	−1.91%**	−3.35%***
($N = 116$)	(−4.510)	(−3.924)	(−2.900)	(−2.067)	(−2.351)
% positive	41.07%	41.7%	39.29%	39.29%	36.61%**
	(−1.127)	(−1.127)	(−1.506)	(−1.506)	(−2.074)
No CEO turnover	−0.58%	−1.35%*	−1.57%*	−2.22%**	−3.16%*
($N = 60$)	(−1.631)	(2.047)	(−1.682)	(−1.895)	(−1.750)
% positive	33.86%	37.29%	35.59%	37.29%	32.2%*
	(−1.196)	(−1.052)	(−1.316)	(−1.052)	(−1.844)

(*continued*)

Table III—*Continued*

Event window around announcement day	[0]	[−1, 1]	[−1, 5]	[−5, 5]	[−5, 20]
Acquiring firms subject	0.11%	0.82%	−1.14%	0.12%	−1.78%
to bankruptcy ($N = 53$)	(0.153)	(0.684)	(−0.625)	(0.053)	(−0.508)
% positive	57.69%*	50.0%	46.15%	44.23%	40.38%
	(1.813)	(0.699)	(−0.141)	(−0.137)	(−0.695)
CEO turnover ($N = 29$)	−0.72%	−1.34%	−1.63%	−0.04%	−3.03%
	(−0.717)	(−0.763)	(−0.610)	(−0.011)	(−0.587)
% positive	51.72%	34.48%	41.38%	41.38%	34.48%
	(0.723)	(−1.144)	(−0.397)	(−0.397)	(−1.144)
No CEO turnover	1.15%	3.53%***	−0.51%	0.32%	−0.21%
($N = 24$)	(1.343)	(2.376)	(−0.227)	(0.112)	(−0.48)
% positive	65.22%*	69.57%***	52.17%	47.83%	47.83%
	(1.915)	(2.334)	(0.658)	(−0.239)	(−0.239)

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

different from 50%. Figure 1 graphically depicts the pattern of stock returns around the M&A announcements for the entire sample and the two subsamples.

Table III also presents the corresponding bidder returns for the subsample of firms that are not subject to takeovers or bankruptcy within 5 years of their merger or acquisition. The day-0 return for the 485 firms that are not delisted is −0.95%, which is significant at the 0.01 level. The returns over the other event windows are negative and significant at the 0.05 level. Within this subsample, a substantial difference exists in the returns of acquiring firms with CEO turnover and those without CEO turnover. Among the 193 firms that replace their CEOs after the acquisition, the day-0 return is −2.06%, significant at the 0.01 level. The returns over the other event windows range from −2.4% ([−5, 20] window) to −3.82% ([−1, 5] window). Three of the other returns are significant at the 0.01 level and one is significant at the 0.10 level.

In contrast, bidder returns are not significantly different from zero for the 292 acquiring firms that do not replace their CEOs after their acquisitions. The day-0 return is −0.23% and not significant for this subsample. The returns over the other windows range from −0.41% to −1.39% and none are statistically significant. The results are consistent with the hypothesis that an inverse relation exists between bidder returns and the likelihood that CEOs of acquiring firms are replaced after acquisitions. Figure 2 graphically depicts the pattern of stock returns around the merger and acquisition announcements for this sample and its two subsamples.

Similar results hold for the subsample of 176 acquiring firms that are delisted due to takeovers within 5 years of their respective acquisition. Bidder returns are negative and significant across all five event windows for the entire subsample. The day-0 return is –1.03%, which is significant at the 0.01 level. The returns over the other four windows range from −1.71% to −3.28%, and all are significant at the 0.05 level.

Bidder returns are more negative for the 116 firms that are delisted because of a takeover in which the CEO is replaced than for the 60 firms in which the

Figure 1. Stock reaction to acquisition announcement. This figure shows the stock market reaction to the merger or acquisition announcement for the total sample of 714 acquiring firms, the subsample of 338 acquiring firms that replace their CEOs within 5 years of the merger or acquisition, and the subsample of 376 acquiring firms that do not replace their CEOs within 5 years of the merger or acquisition. The vertical axis is the stock market reaction to the acquisition announcement measured as the cumulative abnormal return from 5 days prior to the merger or acquisition announcement date to 40 days after the merger or acquisition announcement date. The horizontal axis is the days around the merger or acquisition announcement.

CEO retains his position. The day-0 return for delisted firms in which the CEO is replaced is −1.26% and is significant at the 0.01 level, whereas the similar figure is −0.58% and not significant for the acquiring firms in which the CEO is not replaced. Bidder returns over the other four event windows are negative and significant at either the 0.01 or 0.05 level for delisted firms that replace their CEOs. Among delisted firms that do not replace their CEOs, bidder returns are less negative and significant at the 0.10 level for the [−1,1], [−1.5], and [−5, 20] event windows.

Bidder returns demonstrate a similar pattern for the subsample of 53 firms that are delisted due to bankruptcy. The day-0 return for the 29 delisted firms in which the CEO is replaced is an insignificant –0.72%, though it is more negative than the positive (1.15%) day-0 return for the 24 delisted firms in which the CEO is not replaced. The same is true for bidder returns over other event windows.

The results from the univariate tests shown in Table III are consistent with the hypothesis that bad bidders are disciplined by both internal governance and external control mechanisms. The data indicate that CEOs pay a price, in the form of a higher likelihood of being replaced, for making acquisitions associated with stock price declines.

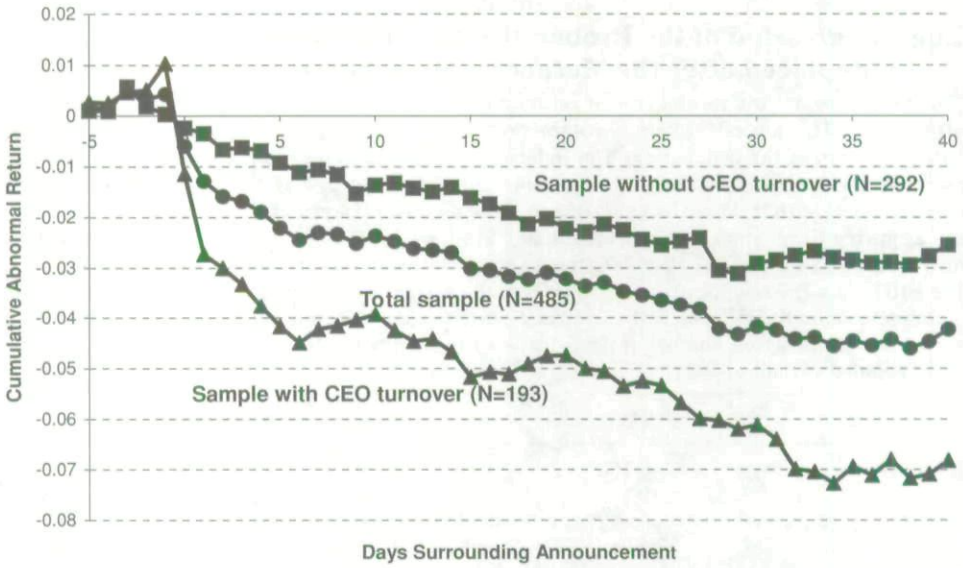

Figure 2. Stock reaction to acquisition announcement. This figure shows the stock market reaction to the merger or acquisition announcement for the sample of 485 acquiring firms that are not subject to takeover or bankruptcy, the subsample of 193 acquiring firms that replace their CEOs within 5 years of the merger or acquisition, and the subsample of 292 acquiring firms that do not replace their CEOs within 5 years of the merger or acquisition. The vertical axis is the stock market reaction to the acquisition announcement measured as the cumulative abnormal return from 5 days prior to the merger or acquisition announcement date to 40 days after the merger or acquisition announcement date. The horizontal axis is the days around the merger or acquisition announcement.

C. Logit Estimates of the Likelihood of CEO Turnover

To determine whether the results from the univariate tests hold after controlling for other variables associated with CEO turnover, we estimate several logit regression models in which the dependent variable is the probability that the acquiring firm's CEO is replaced within 5 years of the acquisition. The independent variables in each model include the cumulative abnormal return over the [−1,1] window surrounding the acquisition announcement (*CAR* [−1,1]), a dummy variable (*Stock deal*) that takes the value of one if the method of payment in the deal is either stock or a combination of stock and cash, and zero otherwise, CEO age, CEO tenure, the relative size of the target firm, and the firm's buy-and-hold stock return 3 years before through 20 days before the merger or acquisition announcement.[10] An interaction term of *Stock deal* with *CAR* [−1,1] and the firm's buy-and-hold stock returns 3 years after the completion of the merger or acquisition are also included in most of the equations. Table IV contains the results from the estimates. The coefficients are

[10] We replicate the logit regressions based on CARs measured over different event windows. The results do not change significantly.

Table IV

Logit Regression of the Probability That the Acquiring Firm's CEO Is Replaced after the Merger or Acquisition—Total Sample

This table provides the results of logit estimation based on the entire sample of 714 mergers and acquisitions. The dependent variable is the probability that the acquiring firm's CEO is replaced within 5 years of the acquisition. The independent variables include the cumulative abnormal stock return around the merger or acquisition announcement date (CAR [−1,1]), "Stock deal", a dummy variable that takes the value of one if the method of payment in the acquisition includes the acquiring firm's stock and zero otherwise, "Stock deal × CAR [−1,1]", the interaction of stock deal and CAR [−1,1], CEO age, CEO tenure, the relative size of the target, post-BHR (+3), and Pre-BRH (−3). The coefficients are estimates of the marginal effect on the probability of departure of an increase in the independent variable. *T*-statistics are shown in parentheses. Number of observations is the actual number of firms included in each regression that have complete data for each included variable.

	(1)	(2)	(3)	(4)	(5)
Intercept	0.163	−0.214	−0.215	0.248	0.235
	(2.10)	(−1.21)	(−1.21)	(0.41)	(0.36)
CAR [−1,1]	−0.692***	−0.682***	−0.645*	−0.749***	−0.814***
	(−3.01)	(−2.95)	(−1.66)	(−3.05)	(−3.26)
Stock deal		0.016	0.016	0.008	0.008
		(0.33)	(0.33)	(0.14)	(0.15)
Stock deal × CAR [−1,1]			−0.046		
			(−0.07)		
CEO age				−0.000	−0.000
				(−0.12)	(−0.16)
CEO tenure				−0.013***	−0.013***
				(−3.78)	(−3.84)
Relative size of target				−0.006	−0.005
				(−0.44)	(−0.35)
Pre-BHR (−3)				−0.003	−0.006
				(−0.25)	(−0.49)
Post-BHR (+3)					−0.128***
					(−3.42)
Pseudo-R^2 (%)	1.78	1.80	1.80	5.32	8.10
Number of observations	714	714	714	668	668

*** and * indicate significance at 1% and 10% levels, respectively.

estimated as the marginal effect on the probability of departure of an increase in the independent variable.[11]

[11] The marginal effects of the independent variables on the probability of CEO turnover are calculated from the logit coefficients in the following way. Given the formula for the logit regression, $P = \exp(a + bX)/(1 + \exp(a + bX))$, where P is the predicted probability of turnover, the derivative of this probability with respect to X is calculated as $dP/dX = -b\exp(a + bX)^2/(1 + \exp(a + bX))^2 + b\exp(a + bX)/(1 + \exp(a + bX)) = -bP^2 + bP$, where X is a vector of independent variables and b is a vector of coefficient estimates. dP/dX is calculated at the median of the regression. Δ Prob measures the change in the probability of CEO turnover, given a one-standard deviation change in the independent variable. All coefficients in the logit regressions are reported as the marginal effect on the probability.

The dependent variable in Table IV is the probability that the acquiring firm's CEO is replaced through internal governance, takeover, or bankruptcy within 5 years of the merger or acquisition. Data on bidder returns and CEO turnover are available for the full sample of 714 firms. However, data on CEO age or tenure are not available from the proxy statements for 46 firms. Hence, the logit equations in which CEO age and tenure enter as independent variables are estimated on a sample of 668 observations.

The coefficient on *CAR* [−1,1] is negative and significant in all the equations. This evidence is consistent with the hypothesis that CEOs who make value-reducing acquisitions are more likely to be replaced than CEOs who make value-increasing acquisitions. The coefficients on CEO tenure are negative and significant at the 0.01 level, indicating that longer CEO tenure is associated with a lower probability of turnover. The coefficients on both CEO age and the relative size of target firms are negative, but neither is significant.[12] No significant association exists between the pre-merger buy-and-hold return and the likelihood of CEO turnover. However, the post-merger buy-and-hold return (Post-BHR (+3)) has a significant and negative coefficient, indicating that post-merger stock price performance is associated with the probability of CEO turnover. Regression results in Table IV provide further evidence that both internal and external control mechanisms discipline CEOs that have made a value-reducing merger or acquisition.

D. Corporate Governance and CEO Turnover

We examine in more detail a subsample of 485 acquiring firms that are not delisted within 5 years of their respective acquisition. Insofar as CEOs of these companies are disciplined after making the acquisition, the discipline imposed is by internal governance as opposed to the external takeover market or bankruptcy process. As a result, we examine the association between CEO turnover and the governance variables for this subsample of firms.

D.1. Corporate Governance Variables

Table V presents evidence on the relation between the corporate governance variables and CEO turnover for the 485 firms that are not delisted within 5 years of their respective acquisition. The table reports data for three terciles of firms—those with the lowest, next-to-lowest, and highest returns associated with their respective M&A announcement. In Table V, the acquiring firms are ranked on the basis of a 3-day cumulative abnormal return measured from 1 day before through 1 day after the acquisition announcement. The results reported in Table V do not change substantially when other narrow windows surrounding the M&A announcement are used.

[12] The results are robust with respect to whether age is included as a continuous variable or as a dummy variable equal to one if CEO age is greater than or equal to 65, and zero, otherwise.

Table V

Corporate Governance Variables by Terciles Ranked by CAR [−1,1]

This table reports descriptive statistics of corporate governance variables for the 485 acquiring firms that are not subject to takeovers or bankruptcy, ranked into three groups by CAR [−1,1], which is the cumulative abnormal returns measure over the period of 1 day before through 1 day after the merger and acquisition announcement. The corporate governance variables include CEO/chairman, board size, board independence, ownership concentration, CEO ownership (%), and insider ownership (%). *T*-statistics to test for differences in means and *Z*-statistics to test for differences in medians are displayed in parentheses.

Firms Ranked by CAR [−1,1]	CEO/Chairman		Board Size		Board Independence		Ownership Concentration (%)		CEO Ownership (%)		Insider Ownership (%)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Lowest one third ($N = 161$)	0.71	1.0	9.37	9.0	0.54	0.56	24.24	20.22	4.89	1.75	11.98	6.86
With turnover (76)	0.72	1.0	9.06	8.0	0.54	0.56	23.33	18.60	3.71	1.85	10.76	6.86
Without turnover (85)	0.71	1.0	9.64	9.0	0.54	0.56	25.02	21.10	5.87	1.65	13.04	6.71
Differences	0.01	0	−0.58	−1.0	0	0	−1.69	−2.50	−2.16	0.20	−2.29	0.15
	(0.18)	(0.18)	(−0.90)	(−0.81)	(−0.04)	(0.01)	(−0.55)	(−0.31)	(−1.63)	(0.27)	(−0.99)	(0.29)
Second one third ($N = 162$)	0.69	1.0	10.43	10.0	0.56	0.60	21.10	16.24	3.85	1.10	11.20	6.37
With turnover (61)	0.72	1.0	10.95	10.0	0.58	0.63	17.02	11.64	2.13	0.67	9.43	6.0
Without turnover (101)	0.66	1.0	10.13	10.0	0.55	0.58	23.52	22.22	4.88	1.37	12.25	7.39
Differences	0.06	0	0.82	0	0.03	0.05	−6.51*	−10.58**	−2.74**	−0.70**	−2.82	−1.39
	(0.81)	(0.81)	(1.30)	(1.22)	(1.09)	(0.97)	(−1.94)	(−2.09)	(−2.06)	(−2.10)	(−1.38)	(−1.52)
Highest one third ($N = 162$)	0.72	1.0	9.39	9.0	0.53	0.55	29.78	24.10	6.69	1.90	16.19	8.80
With turnover (54)	0.67	1.0	9.51	10.0	0.55	0.57	29.42	24.60	4.43	1.25	14.11	7.78
Without turnover (108)	0.75	1.0	9.34	9.0	0.52	0.55	29.96	23.00	7.81	2.64	17.22	8.80
Differences	−0.08	0	0.17	1.0	0.03	0.02	−0.54	1.60	−3.38	−1.39*	−3.11	−1.02
	(−0.94)	(−0.94)	(0.28)	(0.02)	(0.80)	(0.63)	(−0.13)	(0.01)	(−1.51)	(−1.70)	(−1.04)	(−0.60)

** and * indicate significance at 5% and 10% levels, respectively.

As expected, the data show that CEO turnover is substantially higher for the firms in the lowest tercile than for either of the other two terciles. Of the 161 firms in the lowest tercile, 76 (47%) subsequently replace their CEOs within 5 years of the merger or acquisition and 85 do not. Among firms in the middle and highest terciles, only 61 (38%) and 54 (33%), respectively, replace their CEOs within 5 years of the acquisition. Average cumulative abnormal returns (CARs) for the event window [−1,1] are −10.70%, −1.51%, and 6.5% for the lowest, next-to-lowest, and highest tercile, respectively. Within each tercile, CARs are more negative for firms with CEO turnover than for firms without CEO turnover (−11.50% vs. −10.0% for the lowest tercile, −1.81% vs. −1.30% for the next-to-lowest tercile, and 5.70% vs. 6.90% for the highest tercile). The data are consistent with the hypothesis that CEOs who make value-reducing acquisitions are more likely to be replaced than CEOs who make value-enhancing acquisitions.

Among firms in the tercile with the lowest bidder returns, there is little difference in the governance characteristics of firms with and without CEO turnover. The percentage of firms in which the CEO also serves as board chairman is almost identical for firms that do (72%) and do not (71%) replace their CEOs. Hence, combining the positions of CEO and board chairman has no apparent association with the likelihood that CEOs who make value-reducing acquisitions are replaced.

Similarly, within the lowest tercile of firms, no significant difference exists in the mean and median board size of firms that replace their CEOs (mean of 9.06, median of 8) versus those that do not (mean of 9.64, median of 9). The mean and median percentage of the board consisting of independent directors is identical for both groups. Hence, there also is no apparent association between board characteristics and the likelihood of CEO turnover after acquisitions with highly negative bidder returns.

Table V documents no significant difference in the ownership structure of firms that do and do not replace CEOs who make bad bids within the lowest tercile of firms. The mean and median percentages of equity owned by outside blocks are slightly higher for firms without CEO turnover than for firms with CEO turnover, but neither of these differences is statistically significant. The mean percentage of equity held by the CEO is lower, but not significantly so, for firms with CEO turnover (3.71) than for firms without CEO turnover (5.87). However, the median value of this variable is slightly higher for firms with CEO turnover (1.85) than for firms without CEO turnover (1.65), though the difference is not statistically significant. Similarly, the mean percentage of equity owned by insiders (i.e., officers and directors) is lower for firms with CEO turnover than for firms without CEO turnover, but the median value is slightly higher for firms with CEO turnover than for firms without CEO turnover. Neither difference is significant.

It is also the case that within the other two terciles few significant differences exist in the mean and median values of the governance variables across firms that do and do not replace their CEOs. Two exceptions are that in the middle tercile, (i) the mean and median of ownership concentration by 5% blocks is

significantly lower (at the 0.10 and 0.05 level, respectively) for firms with CEO turnover than for firms without CEO turnover, and (ii) the mean and median CEO ownership is significantly lower (at the 0.05 level) for firms with CEO turnover than for firms without CEO turnover. These results are of less interest since the firms with the most negative bidder returns, and hence the firms most likely to replace their CEOs, reside in the lowest tercile. Overall, the univariate results in Table V show no systematic relation between the governance characteristics of firms and the likelihood that CEOs who make value-reducing acquisitions are replaced.

D.2. Logit Estimates of CEO Turnover

We also estimate a separate set of logit equations for the 485 acquiring firms that are not subject to takeover or bankruptcy. Each governance variable is included as an independent variable separately and each is interacted with the *CAR* [−1,1] to test whether the relation between the governance variable and the likelihood of CEO turnover varies by CAR. We also estimate one model that includes all of the governance variables and their corresponding interactions with the *CAR* [−1,1] as independent variables. Table VI contains the results from the estimates.

The coefficient on *CAR* [−1,1] is negative and significant at the 0.01 level in almost all of the equations. The only equations in which the estimated coefficient on *CAR* [−1,1] is not significant are ones in which *CAR* [−1,1] is interacted with other variables. The evidence provides strong support for the hypothesis that CEOs who make value-reducing acquisitions face a significantly higher probability of being replaced than CEOs who make value-increasing acquisitions. The coefficient on CEO tenure is consistently negative and significant at the 0.01 level, indicating that longer CEO tenure is associated with a lower probability of turnover. The coefficients on both CEO age and the relative size of target firms are positive, but neither is significant in any equation. The post-merger buy-and-hold return (Post-BHR (+3)) enters with a negative coefficient that is significant at the 0.01 level in each equation, indicating that post-merger stock price performance is a key determinant of CEO turnover. The results become stronger when post-merger performance for firms with CEO turnover is measured as the buy-and-hold return between merger or acquisition completion date and CEO departure date. The coefficients on the pre-merger buy-and-hold return (Pre-BHR (−3)) fluctuate between positive and negative, but they are not significant in any of the equations.[13]

None of the board variables, nor the interaction of the board variables with *CAR* [−1,1], enters the equations with significant coefficients. The coefficients on the dummy variable for CEOs who also serve as board chairmen

[13] We replicate the analyses by substituting various measures of accounting performance (industry-adjusted return on assets, return on equity, operating margin, and net margin) for stock price performance before and after the merger and acquisition announcement. We find that neither pre-M&A nor post-M&A accounting performance is significantly related to the likelihood of a CEO being replaced after completing the merger.

Table VI

Logit Regression of the Probability That the Acquiring Firm's CEO Is Replaced after the Merger or Acquisition—Firms Not Subject to Takeovers or Bankruptcy

This table provides the results of logit estimation based on the subsample of 485 acquiring firms that are not subject to takeovers or bankruptcy. The dependent variable is the probability that the acquiring firm's CEO is replaced within 5 years of the acquisition. The independent variables include the cumulative abnormal stock return around the merger or acquisition announcement date (CAR [−1,1]), "Stock deal", a dummy variable that takes the value of one if the method of payment in the acquisition includes the acquiring firm's stock and zero otherwise, "Stock deal × CAR [−1,1]", the interaction of stock deal and CAR [−1,1], CEO age, CEO tenure, the relative size of the target, post-BHR (+3), Pre-BRH (−3), CEO/chairman, the product of CEO/chairman and CAR [−1,1], board size, the product of board size and CAR [−1,1], board independence, the product of board independence and CAR [−1,1], ownership concentration, the product of ownership concentration and CAR [−1,1], CEO ownership (%), the product of CEO ownership (%) and CAR [−1,1], insider ownership (%), and the product of insider ownership (%) and CAR [−1,1]. The coefficients are estimates of the marginal effect of an increase in the independent variable on the probability of departure. ΔProb measures the change in the probability of CEO turnover, given a one-standard deviation change from the mean value of the independent variable, that is, the mean value minus one standard deviation. For dummy variables, the ΔProb is the change in the probability that the dummy variable equals zero to the probability that the dummy variable equals one. *T*-statistics are shown in parentheses. Number of observations is the actual number of firms included in each regression that have complete data for each included variable.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	−1.349	−1.470	−1.327	−1.119	−1.120	−1.508	−1.500	−1.564	−1.713
	(−1.75)	(−1.88)	(−1.70)	(−1.41)	(−1.41)	(−1.89)	(−1.87)	(−1.93)	(−2.05)
CAR [−1,1]	−0.788***	−0.123	−0.841***	−0.778***	−0.761	−0.974***	−0.903	−0.976***	−1.615*
	(−2.75)	(1.20)	(−2.88)	(−2.65)	(−1.40)	(−3.21)	(−1.11)	(−3.21)	(−1.90)
Stock deal	0.109*	0.115*	0.112*	0.111*	0.111*	0.127*	0.127*	0.125*	0.127*
	(1.68)	(1.80)	(1.70)	(1.69)	(1.69)	(1.93)	(1.92)	(1.90)	(1.92)
Stock deal		−1.101							
× CAR [−1,1]		(−1.59)							
CEO age	0.004	0.004	0.003	0.002	0.002	0.004	0.004	0.004	0.004
	(1.11)	(1.18)	(1.03)	(0.58)	(0.58)	(1.12)	(1.12)	(1.08)	(1.15)
CEO tenure	−0.012***	−0.012***	−0.012***	−0.013***	−0.013***	−0.013***	−0.013***	−0.012***	−0.013***
	(−3.07)	(−2.97)	(−3.07)	(−3.07)	(−3.07)	(−3.11)	(−3.11)	(−3.07)	(−3.10)
Relative size of target	0.007	0.007	0.009	0.012	0.012	0.012	0.012	0.012	0.013
	(0.48)	(0.49)	(0.55)	(0.82)	(0.82)	(0.85)	(0.85)	(0.85)	(0.89)

(*continued*)

Table VI—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Pre-BHR (−3)	0.002	0.001	−0.000	−0.002	−0.002	0.001	0.001	0.001	−0.000
	(0.14)	(0.12)	(−0.04)	(−0.16)	(−0.16)	(0.07)	(0.06)	(0.07)	(−0.04)
Post-BHR (+3)			−0.103***	−0.109***	−0.109***	−0.109***	−0.108***	−0.108***	−0.110***
			(−2.39)	(−2.48)	(−2.48)	(−2.47)	(−2.47)	(−2.46)	(−2.50)
CEO/chairman				0.035	0.034				
				(0.63)	(0.60)				
CEO/chairman × CAR [−1,1]					−0.023				
					(−0.04)				
Board size						−0.000	−0.000		
						(−0.02)	(−0.06)		
Board size × CAR [−1,1]							−0.009		
							(−0.09)		
Board independence								0.042	0.083
								(0.33)	(0.61)
Board independence × CAR [−1,1]									1.237
									(0.82)
Pseudo-R^2 (%)	6.71	7.36	8.71	8.73	8.73	9.98	9.98	10.01	10.19
Number of observations	465	465	465	449	449	458	458	458	458

	ΔProb	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Intercept	N/A	−1.338	−1.338	−1.143	−1.156	−1.243	−1.261	−1.108
		(−1.60)	(−1.59)	(−1.38)	(−1.40)	(−1.49)	(−1.51)	(−1.16)
CAR [−1, 1]	0.080	−0.939***	−1.153***	−0.931***	−1.064***	−0.945***	−0.839*	−1.766
		(−3.08)	(−2.28)	(−3.04)	(−2.95)	(−3.08)	(−1.94)	(−1.04)
Stock deal	−0.103	0.121*	0.120*	0.109	0.107	0.127*	0.129*	0.112
		(1.81)	(1.80)	(1.61)	(1.57)	(1.90)	(1.92)	(1.56)
Stock deal × CAR [−1, 1]								−0.408
								(−0.41)
CEO age	−0.026	0.003	0.003	0.003	0.003	0.003	0.003	0.003
		(1.03)	(1.01)	(0.80)	(0.82)	(0.92)	(0.94)	(0.70)
CEO tenure	0.081	−0.012***	−0.012***	−0.011***	−0.011***	−0.012***	−0.012***	−0.011***
		(−3.06)	(−2.99)	(−2.58)	(−2.57)	(−3.02)	(−3.02)	(−2.50)
Relative size of target	−0.012	0.013	0.012	0.011	0.011	0.014	0.014	0.011
		(0.90)	(0.84)	(0.74)	(0.72)	(0.93)	(0.97)	(0.74)
Pre-BHR (−3)	−0.002	−0.001	−0.001	0.001	0.001	−0.001	−0.001	0.000
		(−0.09)	(−0.12)	(0.08)	(0.10)	(−0.05)	(−0.04)	(0.04)
Post-BHR (+3)	0.095	−0.107***	−0.108***	−0.108***	−0.109***	−0.110***	−0.110***	−0.122***
		(−2.44)	(−2.44)	(−2.42)	(−2.42)	(−2.45)	(−2.45)	(−2.58)
CEO/chairman	−0.030							0.038
								(0.61)

(*continued*)

Table VI—*Continued*

	ΔProb	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CEO/chairman × CAR [−1, 1]								−0.268 (−0.39)
Board size	0.005							−0.004 (−0.51)
Board size × CAR [−1, 1]								0.008 (0.08)
Board independence	−0.012							0.028 (0.18)
Board independence × CAR [−1, 1]								0.741 (0.44)
Ownership concentration	0.019	−0.001 (−0.67)	−0.001 (−0.64)					0.000 (0.12)
Ownership concentration × CAR [−1, 1]			0.007 (0.54)					0.009 (0.62)
CEO ownership (%)	0.074			−0.007** (−2.00)	−0.007** (−2.01)			−0.008* (−1.74)
CEO ownership (%) × CAR [−1, 1]					0.030 (0.72)			0.056 (0.98)
Insider ownership (%)	0.041					−0.002 (−1.39)	−0.003 (−1.43)	−0.000 (−0.05)
Insider ownership × CAR [−1, 1]							−0.007 (−0.34)	−0.021 (−0.64)
Pseudo-R^2 (%)		9.93	10.01	11.18	11.32	10.62	10.65	11.97
Number of observations		457	457	452	452	456	456	442

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

(CEO/chairman) are slightly positive but not remotely significant. The coefficients on board size are close to zero and not significant. The coefficients on board independence are positive but not significant. None of the coefficients on the interaction of these variables with *CAR* [−1,1] is significant, indicating that the relation between bidder returns and the likelihood of CEO turnover is unrelated to the board characteristics.

One ownership variable enters the equations with significant coefficients. CEO ownership enters with a negative coefficient that is significant at the 0.05 level, indicating that higher CEO ownership is associated with a lower probability of CEO turnover. However, the interaction of CEO ownership and *CAR* [−1,1] is not significant, indicating that CEO ownership does not significantly affect the relation between bidder returns and CEO turnover. The coefficients on ownership concentration, insider ownership, and the interaction of these two variables with *CAR* [−1,1] are not significant.

When all of the governance variables are included as independent variables, only one, CEO ownership, enters with a significant coefficient. CEO ownership enters with a negative coefficient that is significant at only the 0.10 level. None of the interaction terms are significant. Overall, the results in Table VI show that the governance characteristics of firms generally do not affect the relation between bidder returns and the likelihood of CEO turnover.

The coefficient on the method of payment variable enters with a positive and significant coefficient in most of the equations. Furthermore, the coefficient on the interaction of the method of payment variable and *CAR* [−1,1] is negative but not significant. These results indicate that the relation between returns to acquiring firms and the probability of subsequent CEO turnover is not significantly different in stock versus cash deals. The results suggest that regardless of whether negative bidder returns in stock deals are attributed to information about the value of the acquiring firm or information about the acquisition, CEOs of acquiring firms face a significantly higher probability of replacement vis-à-vis CEOs of acquiring firms with higher bidder returns. Our results are robust to different definitions of the dummy variable for the method of payment, including, (i) defining the dummy variable as equal to one if the deal's payment is in stock and zero if the payment is in cash or a combination of stock and cash, and (ii) defining the dummy variable as equal to one if the payment is in stock and zero if the payment is in cash, excluding the mixed cash-plus-stock.

In addition to examining the relation between bidder returns and CEO turnover, we examine whether the sensitivity of CEO turnover to bidder returns varies with time after the merger or acquisition. We redefine CEO turnover as CEO replacement within 1 year (35 cases), 2 years (67 cases), 3 years (105 cases), and 4 years (131 cases) of the merger or acquisition. We then replicate the logit estimates based on the redefined dependent variables. The results do not change significantly.[14] The coefficient of CAR [−1,1] becomes more negative as more time is allowed for the acquiring firm's CEO to be replaced, but the coefficient on CAR [−1,1] is negative and significant regardless of which dependent variable is used.

[14] For the sake of brevity, we do not report the results in a table.

E. Hazard Analysis

In addition to the 338 CEOs who are disciplined within 5 years of the merger or acquisition, 69 CEOs are disciplined more than 5 years after the merger or acquisition but still within the sample period (1990–2004). Because the sample period terminates at the end of 2003, we are not able to observe any CEO turnover beyond 2004. Taking this truncation problem (i.e., our data are "right censored") into consideration, we reestimate the relation between bidder returns and the likelihood of CEO replacement using hazard model analysis.[15] We redefine CEO turnover to include all 407 CEOs that are replaced after mergers or acquisitions through the end of 2004. We count the number of days between the merger or acquisition announcement and the date of the CEO departure (the mean is 1,098 days, and the median is 955 days). As for the cases without CEO turnover, the time or duration is measured as the number of days between the date of M&A announcement and the end of sample period. Hazard analyses are performed on both the total sample of 714 firms and the subsample of 485 firms (among them, 224 CEOs are replaced after mergers or acquisitions through the end of 2004).

We first perform a proportionality test based on our data. The test shows no increasing or decreasing trend over time in the hazard ratio. We then estimate the following Cox proportional hazard function (Cox (1972)):

$$h_i(t) = \lambda_0(t) \exp^{X_i \beta}, \tag{2}$$

where $h_i(t)$ is the time-t hazard of the i^{th} individual, (i.e., the hazard of a CEO being replaced), $\lambda_0(t)$ is the baseline hazard at time t, and X_i is a vector of covariate values corresponding to the i^{th} individual, which includes the cumulative abnormal return over the [−1,1] window surrounding the acquisition announcement (*CAR* [−1,1]), CEO age, CEO tenure, the relative size of the target firm, the firm's buy-and-hold stock return 3 years before through 20 days before the merger or acquisition announcement, and corporate governance variables. Finally, β is a vector of coefficients to be estimated and is assumed to be the same for all individuals.

Table VII reports results from hazard model estimates. Overall, bidder return as measured by *CAR* [−1,1] is negatively related to the likelihood that a CEO "fails" (i.e., is replaced); this relation is significant (either at the 0.01 level or 0.10 level) in most specifications. Given that a CEO is not replaced at time $t - 1$, the probability that he/she is replaced (i.e., the "hazard rate") at time t is significantly higher for firms with more negative bidder returns. For firms whose bidder returns are above the median, the incidence of CEO replacement is only 65.9% of the incidence of CEO replacement by firms with below-median bidder returns. On the other hand, given that the CEO is still CEO at

[15] Several papers in the field of corporate finance use hazard models. Shumway (2001) uses a hazard model to predict bankruptcy. Pagano, Panetta, and Zingales (1998), and Denis et al. (1997) estimate multiple-period logit models, which can be thought of as hazard models, to examine the issues of going public and CEO turnover, respectively.

Table VII

Hazard Model Estimates on CEO Replacement

This table reports the results of hazard model estimates on CEO departure. Regressions (1) to (3) are based on the total sample of acquiring firms. Regressions (4) to (18) are based on the subsample of acquiring firms that are not subject to takeover or bankruptcy. The time variable is the number of days between the merger or acquisition announcement date and the announcement date of the CEO departure for firms with CEO turnover, or the end of the sample period for firms without CEO turnover. The explanatory variables include CAR [−1,1], the "Stock deal" dummy, the interaction term of "Stock deal" and CAR [−1,1], CEO age, CEO tenure, the relative size of the target firm, Pre-BHR (−3), CEO/chairman, the interaction of CEO/chairman and CAR [−1,1], board size, the product of board size and CAR [−1,1], board independence, the product of board independence and CAR [−1,1], ownership concentration, the product of ownership concentration and CAR [−1,1], CEO ownership (%), the product of CEO ownership (%) and CAR [−1,1], insider ownership (%), and the product of insider ownership (%) and CAR [−1,1]. *T*-statistics are shown in parentheses. Number of observations is the actual number of firms included in each regression that have complete data for each included variable.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CAR [−1,1]	−2.115***	−2.269***	−2.574*	−2.895***	−1.976*	−2.488***	−2.994***	−2.804***	−1.789
	(−3.54)	(−3.78)	(−1.65)	(−3.83)	(−1.69)	(−3.80)	(−2.12)	(−3.62)	(−0.89)
Stock deal	0.075	0.069	0.077	0.361	0.466**	0.394*	0.387*	0.430*	0.422*
	(0.53)	(0.49)	(0.55)	(1.62)	(2.01)	(1.74)	(1.71)	(1.86)	(1.83)
Stock deal			−0.536		−0.904				
× CAR {−1,1]			(−0.31)		(−1.33)				
CEO age	−0.000	−0.000	−0.000	0.008	0.010	0.008	0.008	0.010	0.010
	(0.02)	(0.06)	(−0.05)	(0.81)	(1.04)	(0.84)	(0.82)	(1.01)	(1.02)
CEO tenure	−0.033***	−0.033**	−0.033***	−0.034***	−0.036***	−0.037***	−0.037***	−0.036***	−0.037***
	(−3.72)	(−3.70)	(−3.67)	(−2.93)	(−3.00)	(−3.01)	(−3.02)	(−3.03)	(−3.08)

(*continued*)

Table VII—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Relative size of target	−0.009	−0.004	−0.010	0.002	0.004	0.012	0.013	0.013	0.014
	(−0.21)	(−0.09)	(−0.23)	(0.03)	(0.07)	(0.22)	(0.24)	(0.23)	(0.25)
Pre-BHR (−3)	−0.012	−0.016	−0.012	−0.012	0.005	0.001	−0.000	0.004	0.005
	(−0.43)	(−0.57)	(−0.42)	(−0.38)	(0.15)	(0.03)	(−0.00)	(0.11)	(−0.15)
CEO/chairman						−0.037	−0.010		
						(−0.04)	(−0.06)		
CEO/chairman × CAR [−1,1]							0.721		
							(0.43)		
Board size								0.008	0.002
								(0.43)	(0.12)
Board size × CAR [−1,1]									−0.127
									(0.54)
Post-BHR (+3)		−0.092***		−0.163***					
		(−2.14)		(−2.32)					
Model *p*-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Number of observations	668	668	668	465	465	449	449	458	458

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
CAR [−1,1]	−2.764***	−5.449***	−2.674***	−2.980***	−2.744***	−2.976***	−2.633***	−2.221**	−3.649
	(−3.60)	(−2.49)	(−3.42)	(−2.43)	(−3.54)	(−3.28)	(−3.41)	(−2.13)	(−0.90)
Stock deal	0.422*	0.424*	0.379	0.376	0.343	0.341	0.429*	0.435*	0.306
	(1.83)	(1.84)	(1.63)	(1.61)	(1.48)	(1.48)	(1.86)	(1.88)	(1.28)
Stock deal × CAR [−1,1]									−0.364
									(−0.13)
CEO age	0.010	0.010	0.009	0.009	0.008	0.008	0.008	0.009	0.009
	(1.04)	(1.08)	(0.90)	(0.88)	(0.79)	(0.80)	(0.85)	(0.88)	(0.80)
CEO tenure	−0.036***	−0.036***	−0.036***	−0.035***	−0.028***	−0.028***	−0.035***	−0.035***	−0.028***
	(−3.03)	(−3.01)	(−2.97)	(−2.92)	(−2.28)	(−2.28)	(−2.88)	(−2.89)	(−2.18)
Relative size of target	0.010	0.013	0.014	0.013	0.006	0.006	0.015	0.018	0.011
	(0.18)	(0.22)	(0.25)	(0.22)	(0.11)	(0.11)	(0.26)	(0.31)	(0.19)
Pre-BHR (−3)	0.002	0.003	−0.000	−0.000	0.008	0.009	0.003	0.003	0.007
	(0.06)	(0.09)	(−0.01)	(−0.01)	(0.25)	(0.27)	(0.09)	(0.09)	(0.20)
CEO/chairman									0.051
									(0.28)
CEO/chairman × CAR [−1,1]									−0.043
									(−0.24)
Board size									−0.019
									(−0.81)

(*continued*)

Table VII—*Continued*

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Board size									−0.175
× CAR [−1,1]									(−0.67)
Board independence	0.361	0.595							0.324
	(1.02)	(1.49)							(0.72)
Board independence		4.857							3.381
× CAR [−1,1]		(1.29)							(0.82)
Ownership concentration			−0.006*	−0.006					−0.001
			(−1.68)	(−1.60)					(−0.26)
Ownership concentration				0.011					0.027
× CAR [−1,1]				(0.32)					(0.72)
CEO ownership (%)					−0.032***	−0.031***			−0.032**
					(−2.65)	(−2.55)			(−2.03)
CEO ownership (%)						0.069			0.179
× CAR [−1,1]						(0.50)			(0.95)
Insider ownership (%)							−0.010*	−0.011**	0.001
							(−1.95)	(−2.00)	(0.10)
Insider ownership (%)								−0.036	−0.115
× CAR [−1,1]								(−0.59)	(−1.26)
Model *p*-value	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Number of observations	458	458	457	457	452	452	456	456	442

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

time $t - 1$ and holding everything else constant, when *CAR* [−1,1] increases by 1%, the hazard rate or the probability of CEO turnover at time t will drop by 1.8% to 5.5% depending on the specification of the equation in Table VII.[16] This indicates that CEOs who have made a value-destroying acquisition face a greater hazard of failure than CEOs who have made a value-enhancing acquisition. CEO age, the relative size of the target firm, and the buy-and-hold stock return before the merger or acquisition announcement are not significantly related to the survival of the CEO. CEO tenure has a negative and significant (generally at the 0.01 level) impact on the failure of the CEO. CEOs with longer tenure have a lower level of replacement risk. The coefficients on governance variables and their significance are similar to the logit estimates in Table VI. Only CEO ownership enters the equation with a significant coefficient—it is negative and significant at the 0.01 level. However, the interaction term with *CAR* [−1,1] is not significant.

Figures 3 and 4 plot the survival distribution function and the number of days that a CEO remains as CEO for the total sample of 714 acquiring firms and the subsample of 485 acquiring firms, respectively, based on three terciles of firms, that is, those with the lowest, next-to-lowest, and highest returns associated with their respective M&A announcement. Similar to Table V, the acquiring firms are ranked on the basis of a 3-day cumulative abnormal return measured from 1 day before through 1 day after the acquisition announcements (*CAR* [−1,1]).[16] The bottom line is the survival curve for the CEOs from the firms in the lowest tercile, the middle line depicts the survival curve for the CEOs from the firms in the next-to-lowest tercile, and the top line shows the survival curve for the CEOs from the firms in the highest tercile. Both figures reveal that CEOs of firms with lower stock returns around merger or acquisition announcement are faced with much lower survival rate compared with CEOs of firms with higher stock returns due to the merger or acquisition. This is more striking when we compare the top line (the highest tercile) with the bottom line (the lowest tercile). Test statistics for equality between the survival curves for the highest and lowest tercile firms show a significant (at 0.05 level) difference between the two survival curves.[17] The result is consistent with the negative association between CEO turnover and bidder return documented in the hazard model estimates in Table VII.

F. Cancelled Bids and CEO Turnover

In addition to firms that complete acquisitions during the sample period, a large number of firms initially announce, and then cancel, an acquisition. These

[16] Similar hazard model results and similar survival curves obtain when the CARs associated with M&A announcements are measured over different event windows.

[17] We perform homogeneity tests to examine if the survival curve of the highest tercile firms is significantly different from the survival curve of the lowest tercile firms. Both the log-rank and Wilcoxon statistics indicate significant difference (at the 0.05 level of the survival curves across the two subsamples of CEOs).

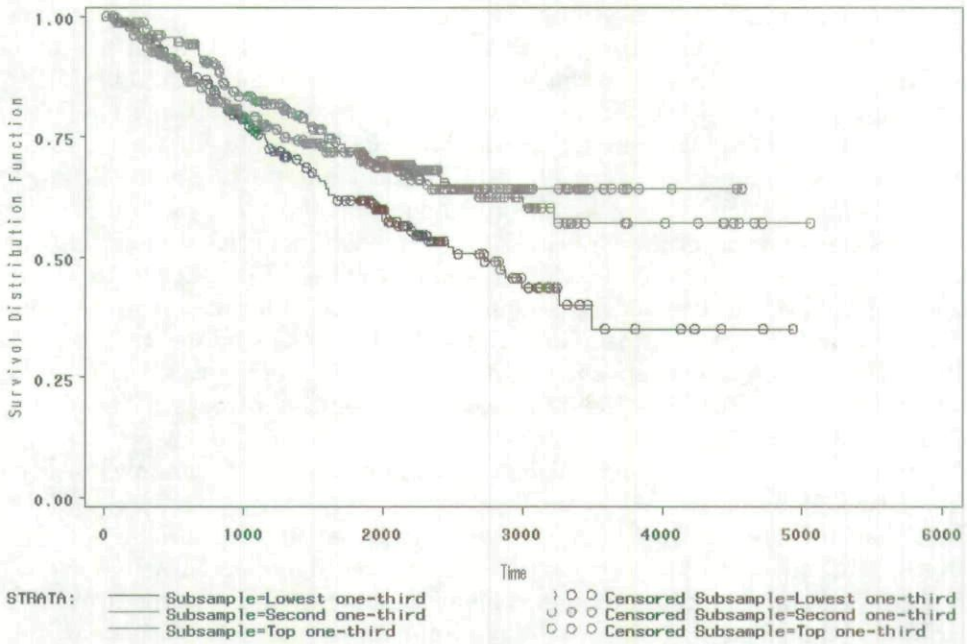

Figure 3. Survival function estimates and survival time. This figure plots the survival distribution function of CEOs from the total sample of 714 acquiring firms. The three lines are the graphic representations of the survival estimates of CEOs that belong to the three subsamples ranked on the basis of a 3-day cumulative abnormal return measured from 1 day before through 1 day after the acquisition announcements (CAR [−1,1]). The bottom line is the survival distribution function for the CEOs of firms in the lowest tercile ($N = 238$), the middle line depicts the survival distribution function for the CEOs of firms in the next-to-lowest tercile ($N = 238$), and the top line shows the survival distribution function for the CEOs of firms in the highest tercile ($N = 238$). Time is the number of days between the merger or acquisition announcement and the announcement date of the CEO departure for firms that replace their CEO, the announcement date of the subsequent bankruptcy or acquisition for firms that experience subsequent external discipline, or the end of our sample period for firms that do not experience CEO turnover.

firms are of interest since they allow us to test whether CEOs who cancel value-reducing acquisitions face a different probability of being replaced than CEOs who proceed with a value-reducing acquisition.

To collect a sample of cancelled acquisitions, we use a methodology that is similar to the one we use to collect the sample of completed mergers. We identify an initial sample of 625 cancelled acquisitions through SDC's Mergers and Acquisitions database by applying the same initial criteria used to identify the primary sample, with the exception that we require the status of the deal to be "withdrawn." Only 260 of the 625 cancelled acquisitions meet the requirement that the target and acquiring firm be listed on both CRSP and COMPUSTAT and that the value of the target firm be at least 10% of the value of the acquiring firm. The 260 cancelled mergers or acquisitions are withdrawn by 242 firms. Again, for firms that cancel more than one bid, we include the first cancelled acquisition. We exclude 32 acquisitions for which we are not able to identify CEO turnover information from either the proxy statements or news search.

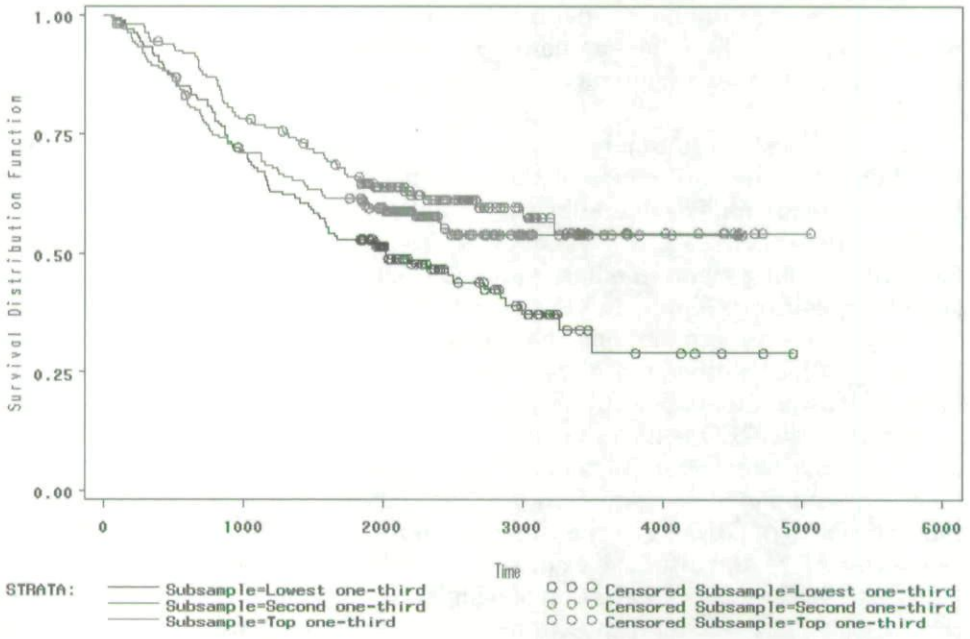

Figure 4. Survival function estimates and survival time. This figure plots the survival distribution function of CEOs from the subsample of 485 acquiring firms that are not subject to takeover or bankruptcy. The three lines present the survival estimates of the CEOs for three groups ranked on the basis of a 3-day cumulative abnormal return measured from 1 day before through 1 day after the acquisition announcements (CAR [−1,1]). The bottom line is the survival distribution function for the CEOs of firms in the lowest tercile ($N = 161$), the middle line depicts the survival distribution function for the CEOs of firms in the next-to-lowest tercile ($N = 162$), and the top line shows the survival distribution function for the CEOs of firms in the highest tercile ($N = 162$). Time is the number of days between the merger or acquisition announcement and the announcement date of their CEO departure for firms that replace their CEOs or the end of our sample period.

Of the resulting 210 firms, 42 CEOs are replaced within 5 years of canceling the merger or acquisition, 32 CEOs do not retain their positions because of a subsequent takeover or bankruptcy within 5 years of the cancellation, and 136 CEOs are not replaced.

We conduct a search of news stories on Factiva and LexisNexis to identify the reasons for a deal's cancellation. The results of the search indicate that 127 of the 210 cancelled deals are cancelled voluntarily by the acquiring firm.[18] Another 42 deals are cancelled because the acquiring firm is outbid by another firm. Seventeen deals are cancelled because according to news stories, the acquiring firm is "forced" to cancel the deals due to a variety of reasons (e.g., accounting problems, legal issues, unable to receive affirmative shareholder

[18] Voluntary cancellations of mergers or acquisitions including situations such as: acquiring firms reevaluate the deal and find that it is not in the interests of their shareholders, acquiring firms face the pressure of a decline in their stock price, the target firm asks for a higher price and the acquiring firm mentions that they do not want to pay a higher premium, or both firms mutually agree to call off the merger or acquisition, without giving any specific reasons.

vote, etc.). We are unable to identify the reasons for 24 of the cancellations. We also replicate the following empirical analyses by including only the 127 voluntarily withdrawn mergers or acquisitions, and the results do not change significantly.

Table VIII reports summary statistics for the sample of cancelled mergers. The mean and median values of the variables are comparable to the corresponding means and medians for the sample of completed acquisitions. The mean (median) *CAR* [−1,1] is −1.68% (−1.79%), which is more negative than the corresponding mean (median) value of *CAR* [−1,1] for the sample of completed acquisitions. Similarly, CARs over other event windows are more negative for cancelled acquisitions than for completed acquisitions, though only CAR [−5, 20] is significantly more negative for cancelled acquisitions than for completed acquisitions. Except for board size and the dummy variable indicating whether the CEO is also chairman, none of the mean or median values of the other governance variables differ significantly across the samples of cancelled and completed mergers. Similarly, no significant differences exist in the characteristics of CEOs (i.e., their age or tenure) nor the various performance measures before and after the acquisitions (results not reported).

To test whether the cancellation of acquisitions and, specifically, the cancellations of value-reducing acquisitions, are associated with CEO turnover, we estimate a modified version of the logit models reported in Tables IV and VI for the combined sample of completed and cancelled acquisitions. The dependent variable remains the probability that the acquiring firm's CEO is replaced within 5 years of the acquisition. The independent variables are identical to those included in the equations reported in Tables IV and VI, with one exception. In these equations, we include a dummy variable that takes the value of one if the acquisition is cancelled and zero otherwise. We also include the interaction of the dummy variable with *CAR* [−1,1] as an independent variable to test whether cancellation of a value-reducing acquisition affects the probability that the CEO is replaced. The results from the logit estimates are contained in Table IX.

The results reveal that *CAR* [−1,1] continues to be inversely related to the probability of CEO turnover. The relation is significant at the 0.01 level in most of the specifications reported in Table IX. All of the other independent variables, including the governance variables, have estimated coefficients that are similar to those reported in Tables IV and VI, and their significance levels also are similar. The coefficient on the dummy variable for cancelled acquisitions is negative and generally significant at the 0.01 level, indicating that CEOs who cancel acquisitions face lower probabilities of being replaced than CEOs who complete acquisitions. Furthermore, the coefficient on the interaction of the dummy variable and *CAR* [−1,1] is positive and significant at the 0.01 level in almost every equation, indicating that CEOs who cancel acquisitions associated with negative bidder returns face significantly lower probabilities of being replaced. This evidence complements the results in Tables IV and VI, and shows that the completion versus cancellation of value-reducing acquisitions significantly increases the probability that CEOs are replaced.

Table VIII

Sample Descriptive Statistics—Cancelled Mergers

This table reports the mean and median values of key variables for the sample of 210 cancelled mergers and acquisitions. The CEO turnover sample consists of 74 firms that experience involuntary CEO turnover through either internal control mechanisms or external mechanisms within 5 years of the cancelled merger or acquisition. The remaining 136 firms are included in the "No CEO Turnover" sample. Relative size is the ratio of the market value of the target firm to the market value of the acquiring firm at the end of the year preceding the year in which the merger or acquisition is announced. CEO age is measured as the age of the CEO at the time of the merger or acquisition announcement. CEO tenure is the length of time that the CEO held the position of CEO at the time of the merger or acquisition announcement. CEO/chairman takes the value of one if the CEO also holds the position of chairman of the board and zero otherwise. Pre-BHR(−3) is the acquiring firm's market-adjusted buy-and-hold returns during the 3 years before through 20 days before the merger and acquisition announcement, respectively. Pre-ROA is measured as the mean industry-adjusted return on assets over the 3 years before the merger and acquisition announcement. Post-BHR (+3) is the acquiring firm's market-adjusted buy-and-hold returns during the 3 years and 1 year after the merger and acquisition completion, respectively. Post-ROA is measured as the mean industry-adjusted return on assets over the 3 years after the merger and acquisition completion. CARs are cumulative abnormal returns for different event windows. *T*-statistics corresponding to the differences in means and *Z*-statistics corresponding to the differences in medians are displayed in parentheses. Among 210 firms, 178 firms are not subject to takeover or bankruptcy. Summary statistics (not reported) for the subsample of 178 firms are similar as those reported in this table.

	Total Sample ($N = 210$)		CEO Turnover ($N = 74$)		No CEO Turnover ($N = 136$)		Differences	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Relative size of target	0.83	0.51	0.77	0.60	0.85	0.46	−0.07	0.14
							(−0.34)	(1.58)
CEO characteristics								
CEO age	53.2	54	49.3	50	54.7	55	−5.50***	−5***
							(−3.23)	(−3.69)
CEO tenure	8.1	5	5	3.5	9.36	6	−4.36***	−1.5***
							(−3.10)	(−2.74)
CEO/chairman	0.79	1	0.64	1	0.85	1	−0.21***	0***
							(−3.00)	(−2.92)
Board characteristics								
Board size	10.4	10	9.66	9	10.7	10	−1.04	−1
							(−1.58)	(−0.97)
Board independence	0.56	0.56	0.55	0.56	0.56	0.56	−0.01	0.00
							(−0.23)	(0.18)
Ownership variables								
Ownership concentration	25.81	22.60	30.12	29.25	24.06	10.69	6.06	18.56*
							(1.60)	(1.84)
CEO ownership (%)	6.99	1.55	5.71	1.47	7.50	1.95	−1.79***	−0.48
							(−0.81)	(−1.03)
Insider ownership (%)	13.89	7.41	15.26	7.81	13.35	7.39	1.91	0.42
							(0.67)	(0.60)
Pre-merger performance								
Pre-BHR (−3)	0.53	0.15	0.72	0.18	0.43	0.14	0.29	0.04
							(1.06)	(0.11)
Pre-ROA	0.01	0.00	0.05	0.02	0.01	0.01	0.04	0.01
							(1.30)	(1.17)

(*continued*)

Table VIII—*Continued*

	Total Sample ($N = 210$)		CEO Turnover ($N = 74$)		No CEO Turnover ($N = 136$)		Differences	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Post-merger performance								
Post-BHR (+3)	−0.25	−0.41	−0.51	−0.63	−0.12	−0.29	−0.39***	−0.34**
							(−2.42)	(−2.01)
Post-ROA	0.01	0.00	0.01	−0.00	0.01	0.00	0.00	−0.00
							(0.06)	(−0.57)
M&A announcement CARs (%)								
CAR [0]	−1.25	−0.45	−1.04	−0.76	−1.36	−0.35	−0.32	−0.41
							(0.25)	(0.47)
CAR [−1, 1]	−1.68	−1.79	−2.39	−3.24	−1.30	−1.06	−1.098	−2.1
							(−0.99)	(−1.54)
CAR [−1, 5]	−3.07	−2.20	−5.14	−4.91	−1.96	−1.46	−3.18**	−3.45**
							(−2.03)	(−1.99)
CAR [−5, 5]	−2.96	−2.67	−4.74	−4.32	−2.51	−0.96	−2.23	−3.36**
							(−1.58)	(−2.07)
CAR [−5, 20]	−7.81	−6.10	−9.79	−6.45	−6.74	−5.24	−3.04	−1.21
							(−1.30)	(−1.25)

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

G. Implications for the Theory of "Stock Market Driven" Acquisitions

As discussed earlier, Shleifer and Vishny's (2003) theory of stock market driven acquisitions posits that the reason behind many acquisitions is an irrational overvaluation of the acquiring company's stock. According to this theory, managers serve the interests of their stockholders by using the overvalued equity to acquire companies with assets that are less overvalued. Shleifer and Vishny's theory leads them to predict that stock deals are associated with negative long-run returns to acquiring firms, as the negative long-run returns reflect the market's correction of its overvaluation of the acquiring firms. Their theory also leads them to conclude that stock deals benefit stockholders of acquiring firms, even in the face of negative long-run returns, since the overvalued stock enables the acquisition of hard assets that prevent an even more negative long-run return.

Our data enable a test of the Shleifer–Vishny predictions. As the previous logit equations reveal, CEO turnover in acquiring firms is inversely related to the acquiring firms' buy-and-hold returns 3 years after their respective acquisitions. If, in fact, stock deals benefit the stockholders of acquiring firms, as predicted by Shleifer and Vishny's theory, then the probability of CEO turnover should be lower in stock deals associated with negative long-run returns than in cash deals associated with negative long-run returns.

To verify this supposition, we replicate the logit equations reported in Table VI, focusing on two independent variables. The first is the dummy

Table IX

Logit Regression Modeling the Probability That the Acquiring Firm's CEO Is Replaced after the Acquisition—Completed and Cancelled Mergers

This table provides the results of a logit model in which the dependent variable is the probability that the acquiring firm's CEO is replaced within 5 years of the acquisition. Regressions (1) to (3) are based on the 714 completed and 210 cancelled mergers and acquisitions, that is, the total sample. Regressions (4) to (18) are based on 485 completed and 178 cancelled mergers and acquisitions, that is, the subsample of acquiring firms not subject to takeover or bankruptcy. The independent variables include the cumulative abnormal stock return around the merger or acquisition announcement date (CAR [−1,1]), "Cancelled," a dummy variable that takes the value of one if the merger or acquisition is cancelled and zero otherwise, "Cancelled × CAR [−1,1]," the interaction of cancelled with CAR [−1,1], CEO age, CEO tenure, the relative size of the target, post-BHR (+3), Pre-BRH (−3), CEO/chairman, the product of CEO/chairman and CAR [−1,1], board size, the product of board size and CAR [−1,1], board independence, the product of board independence and CAR [−1,1], ownership concentration, the product of ownership concentration and CAR [−1,1], CEO ownership (%), the product of CEO ownership (%) and CAR [−1,1], insider ownership (%), and the product of insider ownership (%) and CAR [−1,1]. The coefficients are estimates of the marginal effect on the probability of departure of an increase in the independent variable. "Number of observations" is the actual number of firms included in each regression that have complete data for each included variable. *T*-statistics to test the significance of coefficients are shown in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	1.371	1.581	1.54	0.948	0.063	0.217	0.210	−0.110	−0.155
	(2.72)	(3.08)	(2.98)	(0.16)	(0.10)	(0.35)	(0.34)	(−0.18)	(−0.24)
CAR [−1,1]	−0.766***	−0.612***	−0.678***	−0.533***	−0.821***	−0.860***	−1.325***	−1.080***	−1.463***
	(−3.52)	(−2.74)	(−3.01)	(−2.22)	(−2.93)	(−2.99)	(−2.60)	(−3.61)	(−2.13)
Cancelled	−0.289***	−0.331***	−0.335***	−0.148***	−0.127***	−0.110***	−0.111***	−0.107***	−0.109***
	(−6.82)	(−7.58)	(−7.62)	(−3.35)	(−2.74)	(−2.29)	(−2.27)	(−2.22)	(−2.26)
Cancelled		1.038*	1.059**		1.442***	1.419***	1.445***	1.628***	1.520***
× CAR [−1,1]		(1.92)	(1.97)		(2.28)	(2.22)	(2.23)	(2.53)	(2.28)
CEO age	−0.004	−0.003	−0.003	−0.001	−0.001	−0.002	−0.002	−0.001	−0.001
	(−1.62)	(−1.39)	(−1.36)	(−0.35)	(−0.31)	(−0.61)	(−0.66)	(−0.28)	(−0.29)

(*continued*)

Table IX—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CEO tenure	−0.011***	−0.012***	−0.011***	−0.013***	−0.013***	−0.013***	−0.013***	−0.013***	−0.013***
	(−4.03)	(−4.47)	(−4.40)	(−3.59)	(−3.68)	(−3.49)	(−3.51)	(−3.61)	(−3.61)
Relative size of target	−0.006	−0.006	−0.006	−0.004	−0.005	−0.002	−0.002	−0.002	−0.002
	(−0.50)	(−0.59)	(−0.53)	(−0.29)	(−0.33)	(−0.18)	(−0.11)	(−0.15)	(−0.14)
Pre-BHR (−3)	0.007	0.002	0.002	0.008	0.005	0.002	0.002	0.002	0.002
	(0.68)	(0.20)	(0.22)	(0.71)	(0.45)	(0.14)	(0.17)	(0.21)	(0.21)
Post-BHR (+3)			−0.032***			−0.051***	−0.051***	−0.067***	−0.067***
			(−2.48)			(−2.37)	(−2.38)	(−2.89)	(−2.87)
CEO/chairman						−0.006	−0.007		
						(−0.11)	(−0.14)		
CEO/chairman × CAR [−1,1]							0.653		
							(1.14)		
Board size								0.001	0.003
								(0.25)	(0.46)
Board size × CAR [−1,1]									0.047
									(0.63)
Pseudo-R^2 (%)	12.69	13.64	14.60	7.6	8.73	10.32	10.61	11.79	11.87
Number of observations	870	870	870	659	659	635	635	644	644

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Intercept	−0.247	−0.397	−0.007	−0.003	0.222	0.194	0.265	0.264	−0.059
	(−0.37)	(−0.59)	(−0.01)	(−0.00)	(0.34)	(0.30)	(0.40)	(0.40)	(−0.08)
CAR [−1,1]	−1.071***	−1.899***	−1.054***	−0.940**	−1.059***	−1.167***	−1.057***	−0.929***	−1.879
	(−3.58)	(−2.37)	(−3.49)	(−2.02)	(−3.45)	(−3.35)	(−3.47)	(−2.31)	(−1.51)
Cancelled	−0.094*	−0.096*	−0.105***	−0.107***	−0.100**	−0.099**	−0.108***	−0.109***	−0.094*
	(−1.84)	(−1.86)	(−2.16)	(−2.10)	(−1.97)	(−1.96)	(−2.18)	(−2.20)	(−1.70)
Cancelled	1.476***	1.414***	1.555***	1.534***	1.514***	1.514***	1.620***	1.605***	1.157
× CAR [−1,1]	(2.31)	(2.20)	(2.38)	(2.33)	(2.31)	(2.31)	(2.48)	(2.44)	(1.64)
CEO age	−0.001	−0.001	−0.001	−0.001	−0.002	−0.002	−0.002	−0.002	−0.001
	(−0.29)	(−0.21)	(0.27)	(−0.26)	(−0.57)	(−0.53)	(−0.54)	(−0.53)	(−0.40)
CEO tenure	−0.012***	−0.012***	−0.013***	−0.013***	−0.011***	−0.011***	−0.013***	−0.013***	−0.010***
	(−3.41)	(−3.45)	(−3.58)	(−3.59)	(−2.99)	(−3.00)	(−3.51)	(−3.51)	(−2.72)
Relative size of target	−0.001	−0.001	−0.002	−0.001	−0.001	−0.001	−0.001	−0.000	0.000
	(−0.09)	(−0.05)	(−0.13)	(−0.10)	(−0.09)	(−0.11)	(−0.04)	(−0.01)	(0.03)
Pre–BHR (−3)	0.003	0.004	0.002	0.002	0.003	0.003	0.001	0.001	0.006
	(0.30)	(0.37)	(0.18)	(0.19)	(0.23)	(0.26)	(0.13)	(0.13)	(0.50)
Post-BHR (+3)	−0.062***	−0.063***	−0.067***	−0.066***	−0.077***	−0.078***	−0.073***	−0.073***	−0.064***
	(−2.70)	(−2.72)	(−2.87)	(−2.87)	(−3.14)	(−3.15)	(−3.05)	(−3.05)	(−2.64)
CEO/chairman									0.006
									(0.11)

(*continued*)

Table IX—*Continued*

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
CEO/chairman									0.22
× CAR [−1,1]									(0.45)
Board size									−0.002
									(−0.22)
Board size									0.049
× CAR [−1,1]									(0.59)
Board independence	0.083	0.130							0.079
	(0.71)	(1.04)							(0.57)
Board independence		1.574							0.714
× CAR [−1,1]		(1.14)							(0.46)
Ownership concentration			−0.000	−0.001					0.001
			(−0.47)	(−0.50)					(0.92)
Ownership concentration				−0.004					−0.001
× CAR [−1,1]				(−0.32)					(−0.09)
CEO ownership (%)					−0.009***	−0.009***			−0.009***
					(−2.87)	(−2.78)			(−2.78)
CEO ownership (%) × CAR [−1,1]						0.025			0.055
						(0.68)			(1.05)
Insider ownership (%)							−0.003*	−0.003**	−0.000
							(−1.94)	(−1.98)	(−0.18)
Insider ownership (%) × CAR [−1,1]								−0.009	−0.023
								(−0.48)	(−0.77)
Pseudo-R^2 (%)	10.96	11.24	11.55	11.57	14.04	14.14	12.67	12.72	13.77
Number of observations	623	623	642	642	638	638	642	642	606

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

variable (*stock deal*) that takes the value of one if the method of payment in the deal is either stock or a combination of stock and cash, and zero otherwise. We replicate our analyses based on two alternative dummy variables, a dummy equal to one if the deal's payment is in stock and zero if the deal's payment is in cash or a combination of stock and cash, and a dummy variable equal to one for stock-based acquisitions and zero for cash-based acquisitions, excluding the mixed cash-plus-stock deals. The results (not reported) are robust to the different definitions of the dummy variable for the method of payment. The second independent variable is the *stock deal* dummy interacted with the acquiring firm's buy-and-hold return 3 years after the acquisition (Post-BHR (+3)). If Shleifer and Vishny's theory holds, then the coefficient on the interaction variable should be positive, indicating that CEOs who complete stock deals face a lower probability of replacement than their counterparts who complete cash deals. In addition to the percentage buy-and-hold return, we also define a dummy variable that is equal to one if the post-acquisition buy-and-hold return is negative, and zero if the post-acquisition buy-and-hold return is positive. We also interact this dummy variable with the *stock deal* dummy variable. The results again are robust to the different measures of post-merger performance. Table X presents the logit estimates.

The estimated coefficient on the *stock deal* dummy is positive in each logit equation, and significant (at the 0.05 or 0.10 level) in several specifications, revealing that CEO turnover is more likely in stock than in cash deals. Furthermore, the estimated coefficient on the interaction term of the *stock deal* dummy with the buy-and-hold return 3 years after the acquisition is negative and not significant in all specifications, which appears to challenge the prediction of the Shleifer–Vishny model.[19] The estimated coefficient on Post-BHR (+3) remains negative and significant (at the 0.10 level) in most specifications. The estimated coefficients of the other independent variables are largely unaffected by the inclusion of the method of payment dummy variable and the new interaction variable.

Table XI reports results from logit equations in which the likelihood of CEO turnover is estimated as a function of, among other variables, the announcement period returns and long-term post-acquisition returns, for stock and cash deals separately. The results show that the coefficient on bidder returns, as measured by *CAR* [−1,1], is negative (−0.943) and significant for the sample of 405 stock deals. In contrast, the coefficient on this variable is slightly negative (−0.005) and not significant for the sample of 80 cash deals. The difference in the coefficient across the two subsamples is significant at the 0.01 level. This evidence appears to be inconsistent with the predictions of the Shleifer–Vishny model, as it shows a greater sensitivity of CEO turnover to announcement period returns for stock versus cash deals. The coefficient on the post-acquisition buy-and-hold return is less negative for the sample of stock deals (−0.110) than it is for the sample of cash deals (−0.146), but the difference in the coefficients is not significant.

[19] The linear combination of the coefficients on Post-BHR (+3) and the stock deal dummy variable is negative and significant.

z

Table X

Method of Payment and CEO Being Replaced after the Acquisition

This table reports the results of logit estimates on the probability of CEO turnover after the acquisition for the sample of total 714 completed mergers and acquisitions (column (1) to column (3)) and the sample of 485 firms that either do not experience external control or experience internal CEO turnover (column (4) to column (7)). The independent variables include the cumulative abnormal stock return around the merger or acquisition announcement date (CAR [−1,1]), "Stock deal", a dummy variable that takes the value of one if the method of payment in the acquisition includes the acquiring firm's stock and zero otherwise, "Stock deal × CAR [−1,1]," the interaction of stock deal and CAR [−1,1], CEO age, CEO tenure, the relative size of the target, post-BHR (+3), "Post-BHR (+3) × stock deal," the interaction of stock deal and Post-BHR (+3), Pre-BRH (−3), CEO/chairman, the product of CEO/chairman and CAR [−1,1], board size, the product of board size and CAR [−1,1], board independence, the product of board independence and CAR [−1,1], ownership concentration, the product of ownership concentration and CAR [−1,1], CEO ownership (%), the product of CEO ownership (%) and CAR [−1,1], insider ownership (%), and the product of insider ownership (%) and CAR [−1,1]. The coefficients are estimates of the marginal effect on the probability of departure of an increase in the independent variable. *T*-statistics to test the significance of coefficients are shown in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	−0.234	−0.234	0.219	−0.863	−1.10	−1.433	−1.378
	(−1.23)	(−1.30)	(0.36)	(−3.47)	(−3.43)	(−1.79)	(−1.40)
CAR [−1,1]	−0.737***	−0.749*	−0.815*	−0.879***	−0.108	−0.898***	−1.873
	(−3.14)	(−1.68)	(−1.65)	(−3.16)	(−0.61)	(−3.00)	(−1.07)
Stock deal	0.016	0.016	0.008	0.085	0.138*	0.154*	0.188**
	(0.33)	(0.33)	(0.15)	(1.41)	(1.85)	(1.94)	(2.05)
Stock deal × CAR [−1,1]		−0.014	−0.015		−0.925		−0.529
		(−0.02)	(−0.02)		(−1.36)		(−0.50)
CEO age			−0.000			0.003	0.002
			(−0.11)			(0.92)	(0.54)
CEO tenure			−0.012***			−0.012***	−0.010***
			(−3.73)			(−2.99)	(−2.37)
Relative size of target			−0.006			0.004	0.004
			(−0.39)			(0.23)	(0.28)
Post-BHR (+3)	−0.026*	−0.025*	−0.028*	−0.126***	−0.170*	−0.172*	−0.261**
	(−1.85)	(−1.72)	(−1.70)	(−2.29)	(−1.65)	(−1.69)	(−2.04)
Post-BHR (+3)		−0.001	−0.003		−0.127	−0.136	−0.217
× stock deal		(−0.02)	(−0.08)		(−1.18)	(−1.16)	(0.61)
Pre-BHR (−3)			−0.003			−0.001	0.003
			(−0.25)			(−0.11)	(0.24)
CEO/chairman							0.037
							(0.58)
CEO/chairman							−0.109
× CAR [−1,1]							(−0.16)
Board size							−0.002
							(−0.32)
Board size × CAR [−1,1]							0.016
							(0.16)
Board independence							0.030
							(0.19)
Board independence							0.385
× CAR [−1,1]							(0.23)
Ownership concentration							0.000
							(0.30)
Ownership concentration							0.008
× CAR [−1,1]							(0.58)
CEO ownership (%)							−0.008*
							(−1.75)
CEO ownership (%)							0.058
× CAR [−1,1]							(1.02)
Insider ownership (%)							−0.001
							(−0.23)
Insider ownership (%)							−0.024
× CAR [−1,1]							(−0.74)
Pseudo-R^2 (%)	2.66	2.67	6.13	5.67	6.54	8.93	11.97
Number of observations	714	714	668	485	485	465	442

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table XI

Logit Estimates of CEO Being Replaced after the Acquisition—Stock versus Cash Deals

This panel reports the results of logit estimates on the probability of CEO turnover after the acquisition for the sample of stock deals (column (1) to column (3)) and the sample of cash deals (column (4) to column (6)). These two subsamples are created based on the 485 firms that either replace their CEOs subsequent to the merger or acquisition or do not experience CEO turnover. The independent variables include the cumulative abnormal stock return around the merger or acquisition announcement date (CAR [−1,1]), post-BHR (+3), CEO age, CEO tenure, the relative size of the target, and Pre-BRH (−3). Stock deals are those deals in which the method of payment in the acquisition includes the acquiring firm's stock. Cash deals are those deals paid only by cash. Similar results obtain when we create the stock deal sample and cash deal sample based on the total sample of 714 firms (not reported). Also, results do not change significantly when we define "Stock Deal" as the method of payment based on stock only and define "Cash Deal" either as the method of payment based on cash or a combination of cash and stock or with the method of payment based on cash only, excluding the deals paid by a combination of stock and cash. *T*-statistics to test the significance of coefficients are shown in parentheses.

	Stock Deal Sample			Cash Deal Sample		
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.470	−0.377	−0.740	−0.847	−1.119	−1.154
	(−4.31)	(−3.64)	(−0.95)	(−3.42)	(−3.50)	(−0.46)
CAR [−1,1]	−0.943***		−1.065***	−0.005		−0.235
	(−3.14)		(−3.23)	(−0.01)		(−0.38)
Post-BHR (+3)		−0.110***	−0.132***		−0.146*	−0.120
		(−3.84)	(−3.59)		(−1.67)	(−1.16)
CEO age			0.003			0.003
			(0.78)			(0.26)
CEO tenure			−0.009**			−0.024*
			(−2.05)			(−1.91)
Relative size of target			−0.054			0.009
			(−1.00)			(0.63)
Pre-BHR (−3)			0.005			−0.151*
			(0.36)			(−1.67)
Pseudo-R^2 (%)	3.49	2.53	8.26	0.001	0.35	13.96
Number of observations	405	405	390	80	80	75

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

Table XII provides further evidence on the relation between CEO turnover and both announcement period returns and post-acquisition returns for acquiring firms in stock versus cash deals. The mean *CAR* [−1,1] is −0.025 for stock deals versus 0.017 for cash deals, a difference that is consistent with the prior literature. A similar, albeit less pronounced, difference exists in the median CARs across the two samples. Among the 405 stock deals, the mean *CAR* [−1,1] for acquiring firms with CEO turnover is −0.043 versus −0.014 for acquiring firms with no CEO turnover. The difference is highly significant. Similarly, the median return for acquiring firms with CEO turnover is significantly more negative than the corresponding median for firms with no CEO turnover. Notwithstanding the fact that stock deals may involve a negative signal about the value of acquiring firms, the evidence on CEO turnover suggests

Table XII

Post-acquisition Performance and Method of Payment

This table presents the mean and median values of several measures of the long-run stock price performance of acquiring firms after the completion of mergers and acquisitions for stock versus cash deals. CAR [−1,1] is the cumulative abnormal return one trading day before through one trading day after the announcement date of the merger or acquisition made by the sample firms. Buy-and-hold returns are measured as the 3-year and 1-year market-adjusted buy-and-hold returns for acquiring after the completion dates of the acquisitions (Post-BHR (+3) and Post-BHR (+1)). CAR is the cumulative abnormal returns, measured 3 years (Post-CAR (+3)) and 1 year (Post-CAR (+1)) after the same dates. *T*-statistics to test for differences in means and *Z*-statistics to test for differences in medians are displayed in parentheses.

	Stock Deals								
	Total ($N = 405$)		CEO Turnover ($N = 168$)		No CEO Turnover ($N = 237$)		Difference		Difference between Cash Deal and Stock Deals
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	
CAR [−1,1]	−0.025	−0.020	−0.043	−0.032	−0.014	−0.015	−0.029*** (−3.23)	−0.017*** (−2.96)	
Post-BHR (+3)	−0.185	−0.387	−0.297	−0.660	0.128	−0.150	−0.425* (−1.83)	−0.510*** (−5.14)	
Post-BHR (+1)	−0.022	−0.121	−0.111	−0.174	0.040	−0.098	−0.152** (−2.07)	−0.076** (−1.98)	
Post-CAR (+3)	−0.678	−0.580	−0.901	−0.722	−0.522	−0.507	−0.379** (−2.04)	−0.215 (−1.34)	
Post-CAR (+1)	−0.211	−0.176	−0.254	−0.176	−0.181	−0.178	−0.073 (−0.98)	0.002 (0.41)	
	Cash Deals								
	Total ($N = 80$)		CEO Turnover ($N = 24$)		No CEO Turnover ($N = 56$)		Difference		
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
CAR [−1,1]	0.017	0.005	0.017	0.000	0.017	0.007	0.000 (0.01)	−0.007 (−1.12)	−0.042*** (−3.82)	−0.025*** (−4.133)
Post-BHR (+3)	−0.197	−0.384	−0.546	−0.648	−0.047	−0.320	−0.499* (−1.87)	−0.328* (−1.77)	0.012 (0.07)	−0.003 (−0.32)
Post-BHR (+1)	−0.077	−0.172	−0.256	−0.267	−0.000	−0.110	−0.256*** (−2.25)	−0.377*** (−2.15)	0.055 (0.60)	0.051 (0.108)
Post-CAR (+3)	−0.546	−0.413	−0.614	−0.241	−0.517	−0.453	−0.097 (−0.30)	0.212 (0.07)	−0.132 (−0.70)	−0.167 (−0.76)
Post-CAR (+1)	−0.165	−0.187	−0.234	−0.164	−0.136	−0.191	−0.098 (−0.86)	0.027 (0.72)	−0.045 (−0.68)	0.011 (0.68)

***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

that announcement period bidder returns in stock deals convey information about the quality of the acquisition. No significant difference exists in the announcement period returns of acquiring firms with and without CEO turnover.

Table XII also shows differences in the post-acquisition returns for stock versus cash deals. The mean buy-and-hold returns 3 years after the acquisitions are a similar −0.185 for stock deals versus −0.197 for cash deals. The median values of the returns also are almost identical, at −0.387 for stock deals versus −0.384 for cash deals. The table reveals significant differences in the post-acquisition buy-and-hold returns for acquiring firms with and without CEO turnover across both stock and cash deals. For example, the median buy-and-hold return for acquiring firms in stock deals with CEO turnover is −0.66, versus −0.648 for acquiring firms in cash deals with CEO turnover. The similarity in the post-acquisition returns for acquiring firms with CEO turnover across stock and cash deals appears to be inconsistent with the prediction of the Shleifer–Vishny model.

In addition to the logit estimates, the data allow for a direct test of another prediction of Shleifer and Vishny's theory, namely that "long-run returns to bidders are likely to be negative in stock acquisitions, and positive in cash acquisitions" (p. 297). Table IX reports the mean and median buy-and-hold returns 3 years after the acquisition for stock deals, stock and cash deals, and cash deals. As the table reveals, no significant difference exists in the long-run returns for stock versus cash deals. This evidence also appears to be inconsistent with the stock market driven theory of acquisitions.[20]

V. Conclusion

Academic research as well as the business press has focused a great deal of attention on whether corporate managers create value for shareholders when they effect acquisitions. This paper examines whether internal governance and external control mechanisms discipline managers who make value-reducing acquisitions.

Based on a sample of 714 firms that complete acquisitions during 1990 through 1998, we document that managers who make value-reducing acquisitions face a significantly higher probability of being replaced than managers who make value-enhancing acquisitions, either by internal governance, takeovers, or bankruptcy. In contrast, CEOs who cancel an acquisition after observing a diminution in their company's stock price face significantly lower replacement risk than their counterparts who proceed with value-reducing

[20] We test whether the incentives for using overvalued stock to finance acquisitions are greater for firms characterized by greater information asymmetries. We include a proxy for information asymmetries—the ratio of the market to book value of equity (*MBE*)—as an independent variable in the logit equations. We also include the interaction of *MBE* and *CAR* [−1,1] and the interaction of *MBE* and the post-acquisition buy-and-hold returns as independent variables in the logit equation. None of the coefficients enters with a significant coefficient, indicating that the relation between bidder returns and CEO turnover is not affected by information asymmetries, as measured by *MBE*.

acquisitions. Finally, among firms not subject to a takeover or bankruptcy, we find no association between a firm's governance characteristics and the probability that CEOs who make value-reducing acquisitions are replaced. This suggests that firms generally select the "right" governance structures, at least in the context studied in this paper.

We also find evidence that is inconsistent with the predictions of a recent paper by Shleifer and Vishny (2003), who argue that acquisitions are often driven by the purportedly overvalued stock of acquiring firms. We find that the probability of CEO turnover is not significantly related to the use of stock or cash in acquisitions, nor to the interaction of long-run bidder returns and a dummy variable for the method of payment in acquisitions. These results suggest that negative bidder returns are indicative of value-destroying acquisitions and not of managers using overvalued equity to make acquisitions that serve the interests of their stockholders.

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