What is the shareholder wealth impact of target CEO retention in private equity deals?☆

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ABSTRACT

There is a widespread belief among observers that a lower premium is paid when the target CEO is retained by the acquirer in a private equity deal because conflicts of interest lead her to negotiate less aggressively on behalf of the target shareholders. Our empirical evidence is not consistent with this belief. We find that, when a private equity acquirer retains the target CEO, target shareholders receive an acquisition premium that is larger by as much as 18% of pre-acquisition firm value when accounting for the endogeneity of the retention decision. Our evidence is consistent with what we call the "valuable CEO hypothesis." With this hypothesis, retention of the CEO can be valuable to private equity acquirers because, unlike public operating companies with managers in place, these acquirers have to find a CEO to run the post-acquisition company and the incumbent CEO may be the best choice to do so because she has valuable firm-specific human capital. When a private equity acquirer finds a target with a CEO who can manage the post-acquisition company better than other potential CEOs, we expect target shareholders to receive a larger premium because the post-acquisition value of the target is higher.

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1. Introduction

When acquiring the operating assets of a target firm, acquirers sometimes retain the target firm's chief executive officer (CEO). For example, Qiu et al. (2014) show that for a large sample of acquisitions, where both the acquirer and target are US public firms, the target CEO is retained by the acquirer in about 31% of deals. The existing literature generally finds that target shareholders do not benefit in the form of a larger premium and may even be hurt when a public acquirer retains the target CEO (see, e.g., Hartzell

et al., 2004; Wulf, 2004; Qiu et al., 2014). One explanation frequently advanced for this finding is that a self-interested target CEO bargains less forcefully on behalf of shareholders when retained by a public acquirer. We call the hypothesis that shareholders receive a lower premium when the CEO is retained by the acquirer the conflicts of interest hypothesis.

While previous studies have focused on acquisitions by public acquirers, no study to date has assessed how acquisition premiums differ in private equity acquisitions when the CEO is retained by the acquirer. This is surprising because it is widely perceived that CEO retention is much more common for private equity deals. We confirm this perception and find that the target CEO is retained in approximately 68% of deals involving a private equity acquirer in our sample. Investigating private equity deals is important because of the economic importance of such acquisitions and because many observers and courts have argued that the potential for conflicts of interest between the target CEO and shareholders are heightened in private equity deals.[1]

Retention of the CEO by the acquirer can benefit shareholders of firms acquired in private equity deals in a way that it does not in acquisitions by public acquirers. Unlike a public operating company with managers already in place to manage the acquired assets, a private equity firm has to put in place a team that will manage the acquired firm. All else equal, the private equity acquirer should value the target more if it expects that the target CEO will be better able to implement its strategy than other potential candidates and hence should pay a higher premium.[2] We call this hypothesis the valuable CEO hypothesis. In this paper, we present robust evidence consistent with the valuable CEO hypothesis. Specifically, based on a large sample of acquisitions, we find that in private equity deals target shareholders gain an additional 10% to 18% of pre-acquisition firm value when the acquirer retains the target CEO.

Our hypothesis about the value of CEO retention to the success of an acquisition is not new (e.g., Matsusaka, 1993). The literature recognizes that the decision to retain the target CEO is a joint decision by the acquirer and the target CEO (e.g., Buchholtz et al., 2003). Wulf and Singh (2011) argue that the target CEO may possess unique expertise arising from firm-specific investments that can be a source of long-term competitive advantage to the acquirer. Yet, they find that "[it] is not common for acquirers to retain target CEOs" in their study of acquisitions by public firms in the 1990s. We find that retention of the target CEO is much more common for acquisitions by private equity firms.

Financial market observers are well aware of the idea that a private equity acquirer often values retaining a target firm's CEO. For example, Privcap, a company that produces thought leadership content for the global private capital market, stated in a quarterly briefing in 2013 that "Private equity firms don't want to buy a company and watch the management team retire to a beach somewhere. They need the team to stay on, execute the plan, and drive success." Supporting this assertion, Tammy Hill, a managing partner of Transaction Advisory Services, said "That's absolutely true in the deals we see…our [private equity] clients aren't interested in seeing [target management] go away. Part of the investment they're making is in the management team, the top-level of management."[3] In an article published by the American Bar Association, Mark Jacobs, the co-chair of the Private Equity Litigation Subcommittee of the Commercial & Business Litigation Committee, writes, "When private equity firms acquire a new business, many of those firms hire former employees of the acquired business to stay in key positions after the transaction closes. Retained employees have valuable institutional knowledge crucial to achieving the business's goals as the business moves forward as a private-equity-backed venture."[4]

Note that our valuable CEO hypothesis predicts that a private equity acquirer pays more for a specific firm if the current CEO can most efficiently implement the acquirer's strategy. Hence, the hypothesis does not imply that CEO retention *always* leads to a higher percentage premium relative to acquisitions without target CEO retention. The private equity firm may find it more difficult to create additional value in a target with a valuable CEO when the CEO is maximizing value given the firm's current strategy and situation. However, conditional on the acquisition of the target, the private equity acquirer is better off with the target CEO managing the acquired firm if the CEO is valuable. To test our hypothesis, it is therefore important that we compare the premiums for acquisitions with CEO retention to premiums for acquisitions without retention for comparable firms.

Our finding that target shareholders receive a larger premium when their CEO is retained in an acquisition involving a private equity acquirer has, to the best of our knowledge, not been documented in the literature and is extremely robust. This larger premium is robust to controlling for whether an acquisition is a club deal and whether the target management is part of the acquisition team. Also, our result continues to hold when we use a premium estimate computed from 42 days prior to the announcement date of the winning bid to the acquisition completion date, when we use post-completion information to determine target CEO retention, when we allow firm and CEO characteristics to have a different relation with the premium depending on whether the CEO is retained, and when we control for various aspects of deal governance.

In our empirical analysis, we first estimate ordinary least squares (OLS) regressions where we control for variables that capture deal, target CEO, and target firm characteristics that the literature has identified as determinants of takeover premiums. In addition, to address concerns regarding potential selection bias and endogeneity of the CEO retention decision, we apply a standard Heckman (1979) correction and estimate an endogenous treatment instrumental variable specification. Jenter and Lewellen

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[1] For example, an article in the Financial Times notes that "[t]here are always conflict of interests between shareholders and managers of public companies, but they escalate when private equity firms hove into view. Take Justin King, chief executive of Sainsbury's, the supermarket chain. We are told that Kohlberg Kravis Roberts, CVC Capital Partners and Blackstone want him to stay if they buy the business and will no doubt give him a stake. Whose side is Mr. King now on?" (John Gapper, The Financial Times (February 5, 2007). Note, however, that a private equity acquisition can be an event where the incumbent CEO has the opportunity to sell shares. In this case, his interest may be better aligned with those of the shareholders as his proceeds increase in the premium.

[2] Additionally, the PE firm may view the acquisition as less risky and more valuable if they have confidence in the management team and can avoid the time consuming and potentially disruptive process of replacing management. We thank an anonymous referee for highlighting this motive for higher premiums.

[3] "The healthcare opportunity," by David Snow and Matthew Malone, Privcap Briefing (February 8, 2013).

[4] "Using Employees Retained after an Acquisition in Litigation," by Mark R. Jacobs, American Bar Association (August 16, 2012).

(2015) find that takeover premiums and target announcement returns are similar for retirement-age and younger CEOs. An indicator variable for whether the CEO is at retirement age or beyond convincingly satisfies the relevance criterion in explaining CEO retention. The empirical findings in Jenter and Lewellen (2015) that takeover premiums and target announcement returns are statistically not significantly different based on whether the CEO is at or beyond retirement age or younger suggest that our instrument satisfies the exclusion restriction. For the private equity acquirer sample we also consider an indicator variable for whether the CEO is the founder as an alternative instrument. We find similar results with our alternative instrument and when we estimate an overidentified system with both instruments. Despite the arguments and tests we present to support the validity of our instruments, we recognize that the choice of instruments is often controversial and subject to one's beliefs. To that end we also estimate Abadie and Imbens (2006) nearest-neighbor matching estimators, which do not depend on specifying an instrument. Our OLS regression results are confirmed by these alternative econometric approaches.

We also test a corollary of the valuable CEO hypothesis: a CEO who is not retained may engage in activities that compete with her former firm and hence decrease the value of the target firm through such activities. As expected, for acquisitions by a private equity acquirer we find a target is less valuable if the CEO is not retained and the former CEO can more easily compete with the target firm. In contrast, when the CEO is retained, there is no clear prediction for the relation between the premium and the ease with which the target CEO can compete with her former firm. We find no relation between the premium received by a target and the non-competition index developed by Garmaise (2011) when the target CEO is retained.

Based on our univariate results that premiums are lower for acquisitions involving a private equity acquirer with CEO retention than for acquisitions by public firms irrespective of CEO retention, an obvious possibility is that the target CEO could have prevented the target shareholders from receiving a larger premium from a public firm acquirer. Target shareholders could then be expropriated by the retention of their CEO even though they receive a larger premium than they would have if the target CEO had not been retained in a private equity deal.

Using an approach where we match firms acquired by a private equity acquirer and where the acquirer retains the CEO to similar firms in the same industry acquired around the same time by public firms without CEO retention, we show that the stock-price reaction to the acquisition announcement is similar for the two sets of firms. Hence, it appears that shareholders of firms acquired by a private equity acquirer where the CEO is retained would not have been better off on average if the firm had been acquired by a public firm without retaining the CEO. Also, if a private equity acquirer pays too little or is not the highest value acquirer, we would expect other firms, such as public firms or other private equity acquirers, to offer competing bids. Similarly, we would expect lowball bidders to put measures in place that would make it hard or expensive for competition to succeed. We show that none of these predictions are supported.

Lastly, we investigate whether a retained target CEO could have set the stage for a low premium acquisition by a private equity acquirer. For example, the CEO may drive down the target firm's market value ahead of the deal to facilitate a private equity transaction and make it more remunerative for the CEO. In particular, the target CEO could have depressed earnings ahead of the acquisition announcement. We find no evidence to support the hypothesis that retained CEOs depress the target firm's earnings ahead of the acquisition announcement.

2. The valuable CEO hypothesis, testable hypotheses, and related literature

When a private equity acquirer contemplates an acquisition, retention of the CEO is valuable if it increases the ratio of the post-acquisition value of the acquired company to the all-inclusive price paid for the target. We call this ratio the expected deal return for the bidder. In addition to increasing the post-acquisition value of the acquired company, retention can decrease the denominator if the target CEO's conflicts of interest lead her to bargain less aggressively for the shareholders. The conflicts of interest of the CEO in an acquisition could be poorly controlled because of agency conflicts between the CEO and shareholders. Thus, retention could both increase the numerator and decrease the denominator of the ratio as a CEO can be valuable at a firm where the conflicts of interest are poorly controlled.

We first present the valuable CEO hypothesis which predicts that the target CEO is retained when it increases the post-acquisition value of the acquired company. We then show how the valuable CEO hypothesis can interact with the conflicts of interest hypothesis. We conclude with a brief review of the literature.

2.1. The valuable CEO hypothesis

The valuable CEO hypothesis assumes that the potential conflicts of interest between the CEO and the shareholders when the firm becomes a target are well-enough controlled that the acquirer only gains from retaining the CEO when doing so increases the present value of the future cash flows of the combined firm compared to not retaining the CEO. In other words, the acquirer cannot increase the expected return of the deal by using retention to obtain a lower all-inclusive acquisition price, but can increase the return of the deal by using retention when the CEO is valuable after the acquisition.

With public acquirers, the acquisition is often integrated into existing operations. Further, the public acquirer has managers in place who can manage the acquired firm. With private equity acquirers, if the target CEO departs, the acquirer has to hire a new CEO. The hiring of a new CEO creates uncertainty about the outcome of the acquisition. Further, the existing CEO has considerable information about the target that can be used to implement the strategy of the private acquirer efficiently. Consequently, we expect that, everything else equal, CEO retention increases the present value of the post-acquisition cash flows more with private equity acquirers than with public acquirers.

A CEO's firm-specific human capital is a component of a firm's organizational capital. Eisfeldt and Papanikolaou (2013) show that it is not possible for the firm to wholly own the cash flows which rely on the output from the human capital of key talent of a firm. The key talent of the firm owns the cash flows from intangible capital to the extent that they are portable. However, the firm is in a strong position to share in cash flows from intangible capital that are tied to the firm and not portable. Hence, we would not expect a target CEO retained by an acquirer to be able to bargain for all the increase in the cash flows from the acquisition due to the CEO being retained. Instead, this increase in cash flows will be shared among the acquirer, the target shareholders, and the retained CEO. As a result, target shareholders earn a higher premium when the target CEO is retained by the acquirer provided that the agency conflict between shareholders and the CEO at the target is sufficiently controlled that the shareholders' gain increases when the present value of the cash flows to the acquirer from the acquisition increase.

It follows from this discussion that a higher frequency of CEO retention for acquisitions involving private equity firms does not imply that conflicts of interest are higher in acquisitions made by private equity firms than by public operating firms. This higher frequency could be observed if agency conflicts are well-controlled because, everything else equal, retaining the CEO is more valuable in private equity firm acquisitions. We call the hypothesis that the CEO is retained because doing so increases the present value of post-acquisition cash flows the valuable CEO hypothesis. The valuable CEO hypothesis predicts that, if the CEO is valuable and agency conflicts are sufficiently well-controlled, target shareholders benefit from CEO retention in the form of a higher premium.

The valuable CEO hypothesis can be formalized as follows. Let V be the post-acquisition value of the target acquired by a private equity acquirer without retention of the CEO, where V is a function of target, acquirer, and deal characteristics. If the CEO is valuable to the acquirer in that retention increases deal value, the value created under the valuable CEO hypothesis is $V + C$, where $C > 0$ is the increase in the post-acquisition value of the target if the CEO is retained. Hence, if a valuable CEO is retained, the acquisition creates more value. As long as the gains of an acquisition are shared with target shareholders, so that these shareholders receive more if the value created is higher, CEO retention means that the premium they receive is higher than if the CEO is not retained.

The valuable CEO hypothesis does not predict that premiums are always higher in absolute value when the CEO is retained. It predicts that the premium for the specific firm being acquired is higher if the CEO is retained than if she is not. The absolute value of the premium for that firm might be low because it has a valuable CEO, thus fewer post-acquisition changes can be implemented to create value. Whether having a valuable CEO reduces the value created by a private equity acquisition depends crucially on the nature of the changes implemented by the private equity firm after the acquisition. If the private equity firm implements a strategy that could not have been implemented by the target while it was a public firm, the wealth created by the acquisition will depend on whether the target has a valuable CEO only through the retention of the CEO. Alternatively, if the private equity firm mostly implements changes that could have been implemented by the target CEO before the acquisition, the value created will be less if the CEO is a valuable CEO as long as such a CEO would have managed the target better. It follows from this discussion that testing the valuable CEO hypothesis requires carefully controlling for the characteristics of the target firm that are affected by the quality of the target firm CEO.

2.2. Agency costs, the conflicts of interest hypothesis and the valuable CEO hypothesis

Target CEO retention may also result from poorly controlled agency conflicts between the CEO and target shareholders. For example, the acquirer may be able to acquire the target at a lower all-inclusive price by offering private benefits to the CEO, such as retention, that make her bargain less aggressively. Consequently, if target firms are subject to agency problems and if CEO retention does not increase post-acquisition expected cash flows, we expect the premium paid to shareholders to be lower with CEO retention than without. We call this hypothesis the conflicts of interest hypothesis. The literature has closely examined this hypothesis for public firm acquisitions, but not for acquisitions by private equity firms.

In general, we would expect agency conflicts between the CEO and shareholders to be imperfectly controlled at the target even if the CEO is valuable. These potential conflicts of interest between shareholders and the CEO may affect the premium even if the CEO is valuable. If this is the case, CEO retention would have two opposing effects on the size of the premium paid to target shareholders. First, retention would have a positive impact on the premium because CEO retention is valuable for the acquirer. Second, retention would have a negative impact on the premium because, in the presence of poorly controlled agency conflicts, the CEO uses some or all of her bargaining power to bargain for her own benefit at the expense of the shareholders. When agency problems are poorly controlled, it is possible that shareholders do not benefit at all from the retention of a valuable CEO. As agency problems become better controlled, shareholders receive a greater share of the increase in value resulting from the impact of CEO retention on the present value of post-acquisition cash flows.

In summary, whether target shareholders receive a higher premium if the CEO is retained depends on whether the CEO is valuable or not. If the CEO is valuable, the premium depends on the tradeoff between the positive impact due to an increase in post-acquisition cash flows and the negative impact on the premium from having the CEO pursuing her own interests at the expense of the target shareholders. As long as agency conflicts in the target firm are sufficiently controlled, the positive impact of retention on the premium dominates and target shareholders receive a higher premium if the target CEO is retained. Hence, evidence of a higher premium when the CEO is retained is evidence supportive of the valuable CEO hypothesis. In contrast, evidence of lower premiums when the CEO is retained is evidence that the adverse impact on the premium due to the target CEO's conflicts of interest swamps the positive effect of retention on the present value of post-acquisition cash flows.

2.3. Related literature

The most direct precedent in the literature for the valuable CEO hypothesis is Matsusaka (1993). He argues that for some acquisitions target management is the main asset acquired. He calls such acquisitions "managerial-synergy" acquisitions and shows that for a sample of mergers from the 1960s and early 1970s acquirer returns are larger when target management is retained. In contrast to Matsusaka (1993), Fich et al. (2014) do not find evidence of a positive impact from retaining the target CEO on the stock returns or operating performance of public acquirers. Our paper contributes to the theory and empirical work on "managerial-synergy" by examining the potential benefits of CEO retention in private equity deals.

Our paper also contributes to the literature that investigates the impact of the target CEO's potential conflicts of interest on premiums in acquisitions by public firms. In contrast to our results for acquisitions by private equity firms, this literature generally finds that target shareholder gains are unaffected or decrease if the private benefits, such as retention, that the target CEO receives through the acquisition are sufficiently large. Hartzell et al. (2004) use a sample of friendly acquisitions by public firms from 1995 to 1997 and conclude that the acquisition premium is smaller when the CEO receives high private benefits and especially so in situations where the agency conflict between the CEO and shareholders is exacerbated. Moeller (2005) predicts that target shareholders would receive more in an acquisition if the target CEO is less powerful because a powerful CEO bargains more for private benefits, and finds supportive evidence using a sample of acquisitions from the 1990s. McConnell and Martin (1991), based on a sample of tender offers from 1958 to 1984, find no difference in target abnormal returns whether the CEO of the target is retained or not. Wulf (2004) analyzes 53 merger-of-equals deals from 1991 through 1999 and shows that shareholders of firms acquired where the incumbent CEO remains with the corporation receive lower premiums relative to other deals. Similarly, Brewer et al. (2006) find that banking acquisitions where the target CEO is retained by the acquirer have lower premiums. Qiu et al. (2014) show a negative relation between target CEO retention and acquisition premiums for a sample of public acquirers and public targets. Ishii and Xuan (2010) find that social connections between the acquirer and the target make CEO retention more likely, lead to greater bonuses for the retained CEO, and make for a less successful acquisition. An exception to these findings in the literature is Fich et al. (2013), who provide support for their hypothesis that the purpose of merger bonuses is to incentivize the CEO to get low premium deals done.

The literature distinguishes between strategic and financial buyers. Strategic buyers find a target valuable because of potential synergies. Financial buyers do not exploit synergies, but implement a strategy for the stand-alone firm that creates more wealth than the strategy in place before the acquisition or put in place management that can run the firm more effectively than management in place before the acquisition. Gorbenko and Malenko (2014) show how valuations of targets differ between strategic and financial buyers. In their work, they do not account for the role of CEO retention in the valuations of financial buyers.

3. Sample construction and univariate analysis

To examine target CEO retention and the relevance of our valuable CEO hypothesis for explaining target shareholder returns, we construct a sample of acquisitions and determine whether the target CEO is retained by the acquiring firm. In addition to examining target CEO retention and its relation to target shareholder returns, we also account for factors generally thought to determine takeover premiums, including measures aimed at controlling for the confounding conflicts of interest effect. Any effect on target shareholder returns due to conflicts of interest biases against our ability to identify a marginal effect attributable to our valuable CEO hypothesis. However, as long as the magnitude of any effect attributable to our valuable CEO hypothesis is large enough to overcome any uncontrolled for effect due to the target CEO's conflicts of interest we would expect to find a positive association between the retention of the target CEO and target shareholder returns.

3.1. Sample construction

Our main sample of interest consists of acquisitions where the acquirer is a private equity firm and is drawn from the Securities Data Company's (SDC) U.S. Merger and Acquisition Database. We also collect a comparison sample of acquisitions from SDC where the acquirer is a public operating firm. We focus exclusively on cash-only deals in order to have an apples-to-apples comparison between the predominantly cash-financed deals involving a private equity acquirer and our comparison sample of deals by a public acquirer.[5] All acquisitions are completed majority acquisitions (i.e., the acquisition is for >50% of the target firm's shares), announced during the period 1994–2009 between U.S. acquirers and U.S. public targets in which the acquirer owns 100% of the shares of the target after the acquisition. Our sample starts in 1994 because we require access to the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR). We exclude acquisitions with non-operating targets, without disclosed deal value, and those labeled as spin-offs, recaps, self-tenders, exchange offers, repurchases, minority stake purchases, acquisitions of remaining interest, or privatizations. We further require each target firm to be in the Center for Research in Securities Prices (CRSP) and Compustat databases and to have a share code indicating a public firm (10, 11). We follow Schwert (1996) and require that the acquisition from first bid to completion takes place in no more than one year.

For deals listed in SDC as having a private firm acquirer, we check the Lexis-Nexis database for the acquisition press releases to verify whether a private equity acquirer is involved and remove acquisitions where the acquirer is a private operating firm. If the

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[5] For example, Bargeron et al. (2008) report that about 94% of the acquisitions involving a private bidder are cash only deals.

acquirer is a private equity acquirer, we use Lexis-Nexis to determine if the acquirer involves more than one private equity firm, in which case we consider it a club deal. We exclude all deals where the acquirer is a group of individual investors. With these criteria, our sample includes 252 deals by a private equity firm acquirer, of which 59 are club deals, announced from 1994 through 2009. In addition, for comparison purposes, our sample includes 928 deals by a public firm acquirer.

To determine whether the target CEO is retained, we use two methods: First, we search the merger documents filed with the SEC and, second, we search the internet for at least two years following completion of the deal. In the SEC merger documents, retention of the CEO is generally indicated by one of two types of statements. First, there are general statements about the retention of all of the target's officers, such as "the officers of the [target] Company at the Effective Time shall be elected to serve as the officers of the Surviving Corporation…" Second, more specific statements clearly identify the managers who will be retained. An example of such a statement is "the executive officers of Il Fornaio that are expected to remain officers of Il Fornaio following completion of the merger are Michael J. Hislop (President and Chief Executive Officer), Michael J. Beatrice (Executive Vice President of Operations) and Paul J. Kelley (Executive Vice President and Chief Financial Officer)."[6]

We do not classify deals as involving retention of the target CEO if the merger documents explicitly state that the CEO is retained for less than one year. For example, in the acquisition of FemRx Inc. by Johnson & Johnson Inc. in 1998, the merger document states: "Mr. Thompson and Dr. Savage, both founders of the Company, have agreed to stay with the Company for a period of six months at their respective current salaries and benefits in order to assist with the transition and integration…" A deal is also not classified as involving CEO retention if the merger document only has a statement regarding a consulting contract the CEO receives from the acquirer. Finally, we do not classify deals as deals with CEO retention if the target's CEO is offered a new employment agreement by the target firm before the merger unless there is language indicating the acquirer's intention to honor the agreement by retaining the CEO after the merger.

The 613 CEO retention cases in our sample are based on merger documents, and are thus based on pre-completion data. It is possible that a CEO whose retention was expected based on the information in the merger document ends up leaving the company for a variety of reasons. Alternatively, a CEO whose employment is expected to be terminated at completion of the deal on the basis of what was disclosed in the merger document may end up being retained after all. Given these possibilities, we also determine post-completion CEO retention based on information retrieved using internet searches.

For CEOs found to be retained by the acquiring firm based on post-completion internet searches, we determine their position in the new merged firm and their length of stay. The key finding of these searches is that there is a strong asymmetry in outcomes. For acquisitions by a private equity firm, the CEO is retained in 159 acquisitions and has the position of CEO in the new company in 93 cases. In contrast, for our sample of acquisitions by public firms, the CEO of the target is most likely to be retained as CEO of a subsidiary or as president of a subsidiary. Specifically, out of 379 acquisitions in which the CEO is retained based on the post-completion data, the CEO has one of these titles in 211 acquisitions. Interestingly, 87.3% of the retained CEOs in acquisitions involving a private equity acquirer stay at least two years. In contrast, 80.9% of retained CEOs in acquisitions by public firms stay at least two years. This difference between deals by private equity acquirers and public acquirers is significant at the 10% level.

3.2. The valuable CEO hypothesis and the role of target and deal characteristics

We flesh out predictions of the valuable CEO hypothesis for target and deal characteristics and show whether these predictions hold when we examine the univariate properties of target and deal characteristics. Table 1 shows deal, target CEO, and target firm characteristics for acquisitions involving a private equity acquirer. We present means for integer variables and medians for continuous variables. For comparison, we also show the same characteristics for acquisitions where the acquirer is a public operating firm. The target CEO is retained in 171 (67.86%) out of 252 deals by a private equity acquirer compared to the CEO being retained in 442 (47.63%) out of 928 deals by a public acquirer. To isolate the effect of our valuable CEO hypothesis we control for a broad range of other factors known to determine takeover premiums; we particularly aim to control for the confounding conflicts of interest effect. We discuss the implications of various firm and deal characteristics for the valuable CEO hypothesis and for the conflicts of interest hypothesis. Since firm and deal characteristics are correlated, comparisons of characteristics between acquisitions where the CEO is retained and where she is not should be treated cautiously.

Existing evidence indicates that club deals have a lower premium (see, e.g., Officer et al., 2010). We are taking no position on why the premium is lower. However, if the premium is lower because club deals reduce competition from other private equity firms, then we would expect CEO retention to be less likely for club deals with the conflicts of interest hypothesis since some of the premium reduction that would be obtained through CEO retention is presumably obtained because of the club deal. Our control variable CLUB_DEAL is a binary indicator variable that equals one for transactions where the acquirer is comprised of multiple private equity firms. For the 59 club deals, the target CEO is retained in 46 (77.97%) of the deals. For our private equity acquirers, 26.9% of the acquisitions where the CEO is retained are club deals versus 16.05% of the acquisitions where the target CEO is not retained. Hence retention is more likely for club deals, which is contrary to the prediction from the conflicts of interest hypothesis.

Involvement of the target management in the acquisition group heightens the potential for conflicts of interest between the target CEO and shareholders. The binary indicator variable MGMT equals one when the target management is part of the

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[6] In the few cases where the title of CEO is not used by the target firm we instead determine whether the highest ranking executive (e.g., President) is retained or not.

Table 1

Univariate analysis by acquirer type and target CEO retention.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. CLUB_DEAL is a binary indicator variable that equals one if the acquirer is comprised of more than one private equity firm. MGMT is a binary indicator variable that equals one if the target management is reported by SDC to be part of the acquirer group. TENDER is a binary indicator variable that equals one if the deal is reported by SDC to be a tender offer. CEO_FOUNDER is a binary indicator variable that equals one if the target CEO is the founder of the firm. RETIRE is a binary indicator variable that equals one if the target CEO is at least 65 years old. SEGMENTS is the number of business segments reported by Compustat when available or stated in the firm's most recent 10-K filing prior to the announcement date. CEO_OWN is the target CEO's fraction of ownership in the target firm reported in the most recent proxy statement prior to the announcement date. NON_CEO_INSIDE_OWN is the aggregate fraction of ownership in the target firm of all officers and directors, excluding the CEO, reported in the most recent proxy statement prior to the announcement date. LOGMVECPI is the natural log of the market value of equity from CRSP calculated as the natural log of the CPI-adjusted (2005 dollars) price of the stock times the number of shares outstanding 63 days prior to the announcement date. Financial leverage (DEBT) is calculated as the pre-deal book value of debt divided by the sum of the book value of debt and the market value of equity. OCF is the operating cash flow calculated as sales minus costs of goods sold, sales and general administrative expenses, and change in net working capital, divided by book value of assets. Q is Tobin's q calculated as the firm market value of assets divided by the book value of assets. IAQ is the industry-adjusted Tobin's q calculated as Tobin's q minus the median two-digit SIC code industry value of this variable. ARET_12 is the market-adjusted buy-and-hold return from day −316 to day −63 relative to the announcement date. STDEVAR is the standard deviation of the market model residuals from day −379 to day −127 relative to the announcement date. TARLIQ is the liquidity of the market for corporate control for the target firm's industry and is the value of all corporate control transactions for $1 million or more reported by SDC for each year and two-digit SIC code divided by the total book value of assets of all Compustat firms in the same two-digit SIC code and year. CAR is the 3-day cumulative abnormal returns around the announcement day, based on market model parameters. Mean [median] values for deals by private equity acquirers that are significantly different from the corresponding mean [median] value for deals by public acquirers denoted with [a], [b], or [c], are significant at the 1%, 5%, or 10% level, respectively. Within the acquirer groupings, differences in means [medians] between CEO retention and no CEO retention denoted with [α], [β], or [γ], are significant at the 1%, 5%, or 10% level.

	Private Equity Acquirers			Public Acquirers		
	CEO Retention	No CEO Retention	Difference	CEO Retention	No CEO Retention	Difference
n	171	81		442	486	
Mean Values:						
CLUB_DEAL	0.2690[a]	0.1605[a]	0.1085[β]	0.0000	0.0000	0.0000
MGMT	0.2339[a]	0.0617[b]	0.1722[α]	0.0023	0.0000	0.0023
TENDER	0.1754[a]	0.3086[b]	−0.1332[β]	0.4864	0.4444	0.0420
CEO_FOUNDER	0.2515[c]	0.1728	0.0786	0.1810	0.1790	0.0020
RETIRE	0.0526	0.1728[b]	−0.1202[α]	0.0543	0.0844	−0.0301[γ]
SEGMENTS	1.5439	1.6667[b]	−0.1228	1.4231	1.3724	0.0507
Median Values:						
CEO_OWN	0.0310	0.0370[b]	−0.0060	0.0251	0.0270	−0.0020
NON_CEO_INSIDE_OWN	0.0860	0.1031	−0.0171	0.0860	0.0760	0.0100
LOGMVECPI	5.0375	4.6270	0.4105[β]	5.1750	4.7889	0.3861[α]
DEBT	0.1498[a]	0.0954	0.0543	0.0755	0.0806	−0.0050
OCF	0.1289[a]	0.0889[b]	0.0400[α]	0.0997	0.0651	0.0338[α]
Q	1.2810[c]	1.1328[a]	0.1482[β]	1.4296	1.3426	0.0982
IAQ	−0.1697[c]	−0.3331[a]	0.1634[β]	−0.0687	−0.1141	0.0471[γ]
ARET_12	−0.1489	−0.1712	0.0222	−0.1413	−0.1729	0.0316
STDEVAR	0.0271[b]	0.0279	−0.0008	0.0312	0.0323	−0.0010
TARLIQ	0.0496[c]	0.0496	−0.0001	0.0470	0.0545	−0.0074[β]
Mean [Median] Values:						
CAR	0.2287[a]	0.1864[a]	0.0423	0.3287	0.3204	0.0083
	[0.1785[a]]	[0.1698[a]]	0.0087	[0.2559]	[0.2608]	−0.0049

acquisition group. In our sample of deals by a private equity acquirer, target management is part of the acquirer group in 23.39% of the acquisitions where the CEO is retained and in 6.17% of the acquisitions where she is not. The target management is virtually never part of the acquisition group when the acquirer is a public operating firm.

Tender offers are often associated with hostile deals where, in spite of the deal being potentially good for the target shareholders, the target CEO resists the acquisition to avoid losing control. With the valuable CEO hypothesis, we would expect the value of the CEO to be lower if the acquirer makes a tender offer and hence we would expect retention to be less likely with tender offers. TENDER is a binary indicator variable that equals one if the deal is reported by SDC to be a tender offer. We find that CEOs are less likely to be retained with tender offers for private equity acquisitions but not for public firm acquisitions.

Founder CEOs are likely to possess more firm-specific human capital and, therefore, the valuable CEO hypothesis predicts they are more likely to be retained. CEO_FOUNDER is a binary indicator variable that equals one if the target firm was founded by the target CEO. In Table 1, there is no significant difference in retention between founder CEOs and other CEOs for private equity offers or public firm acquisitions.

Under the valuable CEO hypothesis we expect retention to be less likely when the target CEO is at or beyond retirement age. In contrast, the conflicts of interest hypothesis has no clear prediction. On the one hand, hiring a CEO with a short horizon is cheaper and hence more likely if that CEO is retained to reduce the acquisition price. On the other, being retained is less valuable to a CEO with a short horizon. We use a binary indicator variable (RETIRE) that equals one for target CEOs who are of retirement age (65 years or older). For acquisitions by a private equity acquirer, CEOs who are retained are less likely to be of retirement age.

The larger the target CEO's ownership (CEO_OWN) in the target firm prior to the acquisition the more we would expect the target CEO's interests to be aligned with those of the target shareholders as long as the ownership is not so high as to facilitate entrenchment of the target CEO (see, e.g., Stulz, 1988). We find no difference in CEO ownership between acquisitions where the CEO is retained and where she is not, irrespective of the acquirer type.

Greater non-CEO insider ownership (NON_CEO_INSIDE_OWN) would make it harder for a target CEO to act in her own self-interest. Consequently, if conflicts of interest are an important determinant of retention, we would expect targets of acquisitions where the CEO is retained to have a lower fraction of non-CEO insider ownership. We find no difference between non-CEO insider ownership based on CEO retention for any acquirer type.

The valuable CEO hypothesis predicts that a target CEO is more likely to be retained if she is less of a generalist since generalists are more easily replaceable. CEOs of diversified firms are more likely to be generalists. We investigate the extent to which acquired firms are diversified using the number of reported business segments (SEGMENTS) as our measure of diversification. We collect SEGMENTS from the Compustat database and supplement this with data from 10-K filings in case of missing Compustat data. We find no difference in the number of segments between acquisitions whether the CEO is retained or not, regardless of acquirer type.

To the extent that larger firms are more successful firms, the valuable CEO hypothesis predicts that CEOs of larger targets are more likely to be retained. Further, larger targets are harder to integrate and may be more likely to operate as stand-alone entities after the acquisition so the value of retaining the CEO is greater. We use the log of the market value of equity in 2005 dollars (using the CPI) as our measure of size (LOGMVECPI). Acquisitions by a private equity acquirer, as well as public acquirer acquisitions, are associated with larger targets when the CEO is retained.

The valuable CEO hypothesis predicts that CEOs of firms with better performance are more likely to be retained. We consider four measures of performance: operating cash flow (OCF), Tobin's q (Q), industry-adjusted Tobin's q (IAQ), and the past twelve month stock return (ARET_12). We define operating cash flow as sales minus cost of goods sold, sales and general administrative expenses, and change in net working capital scaled by the book value of assets. For acquisitions by a private equity firm, the operating cash flow is higher when the CEO is retained than otherwise. A similar result holds for acquisitions by public firms.

Q is defined as the ratio of the firm's market value of assets (defined as the book value of assets minus the book value of equity plus the market value of equity) to the book value of assets. We would expect that the target CEO is more likely to be retained in high Q firms because a higher Q is associated with both better performance and more growth opportunities. The latter often require specialized knowledge on the part of the target CEO to be realized. In the case of acquisitions by a private equity firm, Q is significantly larger for targets where the CEO is retained. The difference in Q based on whether the CEO is retained or not is large and represents 13.08% of the Q of targets where the CEO is not retained by the private equity acquirer. In contrast, there is no difference in Q based on whether the target CEO is retained or not in acquisitions by public acquirers. Adjusting Q for the target firm's two-digit SIC industry median, we find that for both deals by private equity acquirers and public acquirers the industry-adjusted Q for targets where the CEO is retained is significantly larger than for cases where she is not.

Stock return performance, ARET_12, is measured as the market-adjusted buy-and-hold return for the 12 months prior to the run-up period or from day −316 to −63 relative to the announcement date. We would expect retention to be more likely with higher stock return performance, but that is not the case. We find no significant differences in stock return performance between the retention and non-retention subsamples irrespective of the acquirer type. Neither do we find any significant differences in stock return performance between any of the private equity acquirer subsamples and the public acquirer subsamples.

Firms with greater stock price idiosyncratic volatility are likely to be firms with greater information asymmetries (see e.g., Dierkens, 1991). CEO retention might be more valuable to the acquirer for such firms since it is more likely that the target CEO has non-public information that is useful to operate the firm. As our measure of idiosyncratic volatility, we use the volatility of the stock's market model residual (STDEVAR) for days −379 to −127. There is no difference in this measure between retention and no retention subsamples irrespective of the acquirer.

With the conflicts of interest hypothesis, we would expect that the premium decrease from retaining the target CEO would be less when the market for acquisitions is more liquid. Consequently, with the conflicts of interest hypothesis we would expect retention to be higher when the market for acquisitions is more liquid. In contrast, the valuable CEO hypothesis predicts that retention is unrelated to the liquidity of the takeover market since retention depends only on the impact of the CEO on future cash flows from the acquisition. TARLIQ measures the liquidity of the market for corporate control, as defined in Schlingemann et al. (2002), for the target firm's industry. We find that the liquidity of the market for acquisitions is the same whether the CEO is retained or not, which is not consistent with the conflicts of interest hypothesis.

Finally, we show the mean [median] values for the target premium measure (CAR). To calculate CAR, we use the CRSP database to collect daily return data for our sample of targets. CAR is defined as the three-day (−1, +1) cumulative market model abnormal return surrounding the announcement of the deal and based on the CRSP value-weighted index (e.g., Brown and Warner, 1985). We estimate market model parameters from day −379 to −127 relative to the first acquisition announcement day as in Schwert (1996). We find no significant difference based on CEO retention for deals completed by a private equity acquirer or by public acquirers. Not surprisingly given the results of Bargeron et al. (2008), CARs are significantly lower for acquisitions by a private equity firm than by public firms.

4. Probit analysis of target CEO retention

In this section we investigate the determinants of target CEO retention using probit regressions and, in particular, examine the probability of target CEO retention associated with a private equity acquirer.[7] In each specification, we control for the year of the

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[7] We obtain similar results when we use a logistic model specification.

acquisition announcement, the industry of the target firm, and for the deal, target CEO, and target firm characteristics shown in Table 1. The industry of the target firm is defined using the Fama-French 48 industry portfolios.

Model (1) estimates the probit regression for the sample of acquisitions by private equity acquirers. We find no association between the likelihood of the CEO being retained by a private equity acquirer and our indicator for a private equity club deal (CLUB_DEAL). We do find, as expected, that management involvement (MGMT) is positively associated and tender offers are negatively associated with CEO retention for deals by private equity acquirers. Founder CEOs are significantly more likely to be retained, which is consistent with the valuable CEO hypothesis. Also consistent with the valuable CEO hypothesis, CEOs of retirement age (RETIRE) are significantly less likely to be retained. Neither CEO nor non-CEO insider ownership is associated with the likelihood of CEO retention for acquisitions by a private equity acquirer. We would expect these variables to be significant if conflicts of interest between the target CEO and target shareholders are an important determinant of retention, as high insider ownership would mitigate those conflicts. As previously discussed, we would expect a CEO of a diversified firm to be a generalist and hence more likely to be replaced as she is more easily replaceable. The significant negative coefficient on the number of operating segments (SEGMENTS) is consistent with generalist CEOs lacking the firm-specific human capital that private equity firms value retaining.

In terms of target firm characteristics, we find that size (LOGMVECPI) and financial leverage (DEBT) have no significant association with the likelihood of CEO retention for deals by private equity acquirers. In contrast, an increase in operating cash flow (OCF) of one standard deviation increases the probability of retention by a statistically significant 5 percentage points. While the industry-adjusted Q is not significant, the prior stock return performance is significant, indicating that better stock return performance makes retention more likely. We find no relation between stock price volatility, which could proxy for information

Table 2

Probit analysis of target CEO retention.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. acquirer and a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. Model (1) uses the sample of private equity acquirers, Model (2) uses the sample of public acquirers, and Model (3) uses the sample of all acquirers. The dependent variable is CEO_RETENTION, which is a binary indicator variable that equals one for deals where the target CEO is retained by the acquirer. PE_ACQUIRER is a binary indicator variable that equals one if the acquirer is a private equity firm. All other variables are defined previous table headers. Regressions include year and Fama-French 48 target industry dummy variables. *p*-Values are in brackets and are based on heteroscedasticity-consistent standard errors. Coefficients denoted with [a], [b], or [c], are significant at the 1%, 5%, or 10% level.

CEO_RETENTION Probit regressions	Model 1	Model 2	Model 3
	Private Equity Acquirers	Public Acquirers	All Acquirers
PE_ACQUIRER			0.3626[a]
			[0.003]
CLUB_DEAL	0.1938		0.2812
	[0.488]		[0.195]
MGMT	1.1146[a]		0.7725[a]
	[0.000]		[0.004]
TENDER	−0.7043[b]	0.0246	−0.0497
	[0.013]	[0.810]	[0.598]
CEO_FOUNDER	0.7339[b]	0.0556	0.1776
	[0.019]	[0.646]	[0.101]
RETIRE	−1.1593[a]	−0.3692[b]	−0.4381[a]
	[0.008]	[0.033]	[0.006]
CEO_OWN	−1.3813	−0.0871	−0.2780
	[0.158]	[0.842]	[0.468]
NON_CEO_INSIDE_OWN	0.6683	0.6720[b]	0.6201[b]
	[0.191]	[0.015]	[0.010]
SEGMENTS	−0.2073[c]	0.0576	−0.0002
	[0.083]	[0.303]	[0.997]
LOGMVECPI	0.1157	0.1578[a]	0.1621[a]
	[0.216]	[0.000]	[0.000]
DEBT	0.1593	0.1269	0.2356
	[0.778]	[0.646]	[0.329]
OCF	1.2639[c]	0.3644	0.4571[c]
	[0.064]	[0.164]	[0.056]
IAQ	0.0743	−0.0114	0.0042
	[0.627]	[0.832]	[0.932]
ARET_12	0.6885[a]	0.0771	0.0964
	[0.007]	[0.369]	[0.224]
STDEVAR	0.8454	0.6384	1.2595
	[0.915]	[0.836]	[0.645]
TARLIQ	−1.8973[b]	−2.0583[a]	−1.7797[a]
	[0.037]	[0.010]	[0.001]
Constant	−6.7238[a]	4.1405[a]	3.7087[a]
	[0.000]	[0.000]	[0.000]
Year & Industry Indicators	YES	YES	YES
Observations	252	928	1180
Pseudo R-Squared	0.320	0.079	0.103

asymmetry, and the likelihood of CEO retention in deals by private equity acquirers. Finally, TARLIQ is associated with a lower probability of retention.

Model (2) shows probit regression estimates of the target CEO retention outcome for our comparison sample of acquisitions by public firms. We exclude CLUB_DEAL and MGMT from this specification since they are not applicable for the deals by public acquirers. In model (1) for private equity acquirer deals, tender offers, founder CEOs, number of segments, operating cash flow, and prior stock performance have significant coefficients, but in model (2) for deals by public acquirers, these coefficients are not significant. As with acquisitions by private equity firms, target CEOs at retirement age or in industries with active corporate control markets (TARLIQ) are significantly less likely to be retained. Importantly, non-CEO insider ownership has a significant positive coefficient for deals by public acquirers. To the extent that greater non-CEO insider ownership is associated with greater monitoring of the CEO, this result is inconsistent with the conflicts of interest hypothesis if retention takes place at the expense of target shareholders. The log of the market value of equity has a positive significant coefficient, indicating that CEOs of larger targets are more likely to be retained by public acquirers. Such CEOs might have more bargaining power, but they might also be harder to replace.

Table 3
OLS analysis of target returns.
The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. Models (1) and (2) use the sample of private equity acquirers, Models (3) and (4) use the sample of public acquirers, and Models (5) through (8) use the sample of all acquirers. For Models (1)–(6) the dependent variable is CAR. For Models (7) and (8) the dependent variable is WBC, the Fama-French size and book-to-market portfolio-adjusted buy-and-hold return from 42 trading days prior to the announcement of the winning bid to the completion date. CEO_RETENTION × PE_ACQUIRER is an interaction variable between CEO_RETENTION and PE_ACQUIRER. All other variables are defined previous table headers. Regressions include year and Fama-French 48 target industry dummy variables. *p*-Values are in brackets and are based on heteroscedasticity-consistent standard errors. Coefficients denoted with [a], [b], or [c], are significant at the 1%, 5%, or 10% level.

Premium OLS Regressions	Private Equity Acquirers		Public Acquirers		All Acquirers			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Dependent Variable	CAR3	CAR3	CAR3	CAR3	CAR3	CAR3	WBC	WBC
CEO_RETENTION	0.1059[b]	0.1119[b]	0.0252	0.0263	0.0233	0.0243	0.0629[b]	0.0630[b]
	[0.018]	[0.017]	[0.217]	[0.195]	[0.244]	[0.222]	[0.034]	[0.034]
CEO_RETENTION × PE_ACQUIRER					0.0738[c]	0.0770[c]	0.1174[c]	0.1196[c]
					[0.064]	[0.054]	[0.077]	[0.074]
PE_ACQUIRER					−0.1267[a]	−0.1283[a]	−0.2159[a]	−0.2149[a]
					[0.000]	[0.000]	[0.000]	[0.000]
CLUB_DEAL	−0.0572[c]	−0.0589[c]			−0.0415	−0.0425	0.0137	0.0105
	[0.090]	[0.072]			[0.171]	[0.164]	[0.801]	[0.847]
MGMT	−0.0208	−0.0179			0.0155	0.0179	−0.0998	−0.0982
	[0.653]	[0.682]			[0.699]	[0.651]	[0.115]	[0.118]
TENDER	0.0582	0.0622	0.0962[a]	0.0976[a]	0.0849[a]	0.0865[a]	0.1050[a]	0.1063[a]
	[0.314]	[0.282]	[0.000]	[0.000]	[0.000]	[0.000]	[0.002]	[0.002]
CEO_FOUNDER	0.0204		0.0119		0.0163		0.0318	
	[0.747]		[0.653]		[0.499]		[0.371]	
RETIRE	−0.0396		−0.0304		−0.0263		0.0124	
	[0.422]		[0.320]		[0.290]		[0.782]	
CEO_OWN	0.1733[c]	0.1785[c]	−0.0403	−0.0344	−0.0228	−0.0121	−0.1438	−0.1013
	[0.084]	[0.099]	[0.684]	[0.725]	[0.786]	[0.877]	[0.235]	[0.377]
NON_CEO_INSIDE_OWN	−0.0004	−0.0031	−0.0423	−0.0395	−0.0484	−0.0477	−0.0749	−0.0742
	[0.994]	[0.954]	[0.547]	[0.572]	[0.309]	[0.314]	[0.341]	[0.343]
SEGMENTS	0.0468[b]	0.0456[b]	0.0172	0.0169	0.0195[b]	0.0189[b]	0.0405[a]	0.0403[a]
	[0.023]	[0.030]	[0.130]	[0.140]	[0.042]	[0.049]	[0.005]	[0.005]
LOGMVECPI	−0.0308[c]	−0.0300[c]	−0.0239[b]	−0.0241[b]	−0.0262[a]	−0.0263[a]	−0.0394[a]	−0.0391[a]
	[0.052]	[0.052]	[0.036]	[0.034]	[0.004]	[0.004]	[0.002]	[0.002]
DEBT	0.3390[a]	0.3412[a]	0.0174	0.0156	0.0601	0.058	0.1822[b]	0.1807[b]
	[0.007]	[0.006]	[0.828]	[0.845]	[0.348]	[0.362]	[0.046]	[0.048]
OCF	0.3500[b]	0.3418[b]	−0.1471[b]	−0.1465[b]	−0.0578	−0.0578	−0.1421	−0.1422
	[0.015]	[0.016]	[0.043]	[0.044]	[0.396]	[0.395]	[0.174]	[0.172]
IAQ	0.0008	0.0039	−0.0293[b]	−0.0287[b]	−0.0235[b]	−0.0226[b]	−0.0134	−0.0127
	[0.974]	[0.867]	[0.018]	[0.020]	[0.031]	[0.038]	[0.413]	[0.439]
ARET_12	−0.1647[a]	−0.1666[a]	−0.0732[a]	−0.0738[a]	−0.0797[a]	−0.0808[a]	−0.1073[a]	−0.1089[a]
	[0.001]	[0.002]	[0.001]	[0.001]	[0.000]	[0.000]	[0.001]	[0.001]
STDEVAR	0.1868	0.2798	0.3674	0.4057	0.3876	0.4305	0.2790	0.3098
	[0.903]	[0.849]	[0.750]	[0.725]	[0.674]	[0.640]	[0.823]	[0.802]
TARLIQ	0.2530[b]	0.2367[c]	−0.1332	−0.1374	−0.0064	−0.0132	−0.054	−0.0506
	[0.037]	[0.053]	[0.236]	[0.222]	[0.930]	[0.857]	[0.666]	[0.686]
Constant	−0.2888	−0.288	0.3752[a]	0.3750[a]	0.3017[a]	0.3023[a]	0.8951[a]	0.8939[a]
	[0.238]	[0.192]	[0.002]	[0.002]	[0.001]	[0.001]	[0.000]	[0.000]
Year & Industry Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	252	252	928	928	1180	1180	1180	1180
Adjusted R-squared	0.271	0.276	0.122	0.123	0.15	0.15	0.158	0.158

Model (3) in Table 2 includes all deals and controls for deals conducted by private equity acquirers through a binary indicator variable that equals one if the acquirer is a private equity firm. Deals conducted by private equity acquirers are much more likely to result in the target CEO being retained. The other estimates in Model (3) are consistent with those for Model (1) except that in Model (3) tender offers, founder CEO, number of segments, and prior stock performance are insignificant while non-CEO insider ownership and size are significant.

Overall, for acquisitions by private equity acquirers, the target CEO is more likely to be retained when she more likely possesses desirable attributes (e.g., CEO_FOUNDER, RETIRE, SEGMENTS, and TARLIQ) and the target has performed well based on operating cash flow and prior stock performance (ARET_12). These results are supportive of the valuable CEO hypothesis. With the possible exceptions of the variables denoting that the target management is part of the acquisition group or that the acquirer is utilizing a tender offer, the variables that are proxies for the conflicts of interest hypothesis are not significant for acquisitions involving a private equity acquirer.

5. Target CEO retention and target returns

The valuable CEO hypothesis predicts a positive relation between target CEO retention and the acquisition premium. In this section, we examine this relation using a variety of methods where we account for deal, target CEO, and target firm characteristics shown in the literature to account for potential conflicts of interest and explain takeover premiums.

5.1. OLS analysis of target returns

We begin with standard OLS regression specifications presented in Table 3. In models (1) through (6) the dependent variable is the three-day abnormal announcement return (CAR). In models (7) and (8), we re-estimate models (5) and (6), but replace the short-term return measure (CAR) with a long-run abnormal return measure (WBC) defined below. Each model in Table 3 includes acquisition announcement year and industry fixed effects, which are suppressed for brevity.

Models (1) and (2) use our sample of acquisitions by private equity acquirers. We expect the coefficient of the CEO retention indicator variable to attract a positive estimate consistent with the valuable CEO hypothesis. It is possible that the coefficient on the CEO retention indicator is biased downward because of unaccounted for attributes of a target CEO's conflicts of interest, making it harder for us to find support for the valuable CEO hypothesis. Thus, a significant positive estimate for CEO retention is only possible if the valuable CEO effect dominates any conflicts of interest effect influencing our CEO retention variable. In support of the valuable CEO hypothesis, we find a significant positive estimate for the coefficient on the CEO retention variable. The coefficient is 0.1059 and is significant at the 5% level, so all else equal an acquisition by a private equity acquirer with CEO retention produces an acquisition premium for target shareholders that is greater by 10.59% of the target firm's pre-acquisition market capitalization than if the target CEO had not been retained. In model (2) we re-estimate the first regression, but exclude RETIRE and FOUNDER_CEO and find that our estimate for the coefficient on CEO_RETENTION is somewhat higher at 11.19% and a slightly better fit. As in the existing literature, we find a negative significant coefficient for club deals. However, contrary to the conflicts of interest prediction target management participation has no significant impact on the return target shareholders receive. In fact, most of the other variables, such as TENDER, CEO_FOUNDER, and NON_CEO_INSIDE_OWN, associated with the importance of the CEO conflicts of interest are not significant in the regression. The CAR is larger for targets with higher CEO ownership, more operating segments, lower market value of equity, higher debt, higher operating cash flow, worse prior stock performance, and a more active corporate control market. The results for cash flow are surprising in light of the results in Gorbenko and Malenko (2014) that private valuations of financial bidders are decreasing in cash flow. They explain their result with the argument that firms with lower cash flow have poorer management. However, firms with low cash flow provide poorer collateral for an acquisition that requires borrowing, which would be particular relevant for our private equity acquisitions.

For comparison with the acquisitions by private equity acquirers, in Models (3) and (4) we estimate the Model (1) specification, excluding CLUB_DEAL and MGMT, for the sample of acquisitions by a public acquirer. In these regressions, the indicator variable for target CEO retention has a coefficient that is considerably smaller and insignificant. In contrast to deals involving a private equity acquirer, target CEO ownership, number of operating segments, debt, and corporate control activity have no impact on the returns to target shareholders while tender offers are associated with a larger CAR. As is the case with deals by private equity acquirers, target CARs are inversely related to the size of the target firm and prior stock performance. In further contrast with private equity acquirer transactions, operating cash flow and industry-adjusted Tobin's q have significantly negative coefficients for acquisitions by public firms.[8]

In Models (5) and (6), we use an interaction term to assess whether CEO retention has a significantly different relation with the premium for acquisitions made by a private equity acquirer versus those made by a public acquirer. The coefficient and significance of the indicator variable for deals by a private equity acquirer (PE_ACQUIRER) show that on average a private equity acquirer pays less than public acquirers, which is consistent with the findings in Bargeron et al. (2008). The interaction term between the indicator variables for CEO retention and private equity acquirer (CEO_RETENTION_PE_ACQUIRER) indicates that the

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[8] Our sample of acquisitions by a public acquirer is non-representative of the universe of public acquirer deals given that we limit the sample to cash only deals to provide for a better apples-to-apples comparison with our deals by a private equity acquirer. The omission of equity deals might explain the absence of a negative coefficient for CEO retention for our sample of public acquirer acquisitions. Qiu et al. (2014) finds evidence that the relation between CEO retention and takeover premiums is more likely to be negative for deals that use equity as a form of payment.

premium associated with retention is significantly larger for acquisitions involving a private equity acquirer than for acquisitions by public acquirers. The 7.38 percentage point difference in premiums is economically significant as it represents almost one fourth of the average 32.44% premium for acquisitions by public acquirers and one third of the average 21.51% premium for acquisitions involving a private equity acquirer. Taken together, at the margin, private equity acquirers, compared to public acquirers, pay significantly larger premiums when the target CEO is retained.[9]

So far we have used a short-term premium measure as our dependent variable. Such a measure is typically much less sensitive to benchmark specification (see, e.g., Brown and Warner, 1985; Kothari and Warner, 2007) than buy-and-hold return measures estimated over a long period of time. However, short-term measures may not reflect the full impact of CEO retention on target shareholder wealth if the market learns about retention before or after the offer announcement date recorded by SDC. To alleviate concerns about possible biases in the short-term measure, we define a premium measure over a longer event window. Specifically, we calculate the Fama-French size and book-to-market portfolio adjusted buy-and-hold return from 42 trading days prior to the announcement of the winning bid to the completion date of the acquisition (WBC). In Models (7) and (8), with the long-term premium measure WBC as the dependent variable, we continue to find that the premium difference for deals with target CEO retention is significantly larger by an economically large twelve percentage points for deals involving a private equity acquirer than for deals by public acquirers. Furthermore, the coefficient on CEO retention within the subsample of private equity acquirers (i.e., the sum of the coefficients on CEO Retention and CEO Retention interacted with the private equity acquirer dummy variable) is approximately 18% and based on F-tests for models (7) and (8) is significant at the 1% level (not tabulated).

From Table 2 we know that significant differences exist between deals where the CEO is retained and deals where the CEO is not retained. For instance, deals where the target CEO is more likely to be retained tend to have management participation in the acquisition, target CEOs that are less than retirement age, and target firms with larger fractions of non-CEO insider ownership, larger size, larger operating cash flows, and more active corporate control markets. Consequently, the relation between our explanatory variables and the acquisition premium could depend on whether the target CEO is retained. To allow for the relation between firm characteristics and the premium to differ based on whether the target CEO is retained we estimate the regression models of Table 3 and include interaction terms between the CEO retention indicator variable and each of the other independent variables (not tabulated).[10] The interactions have no impact on the inferences for target CEO retention by a private equity acquirer. For Model (1) the coefficient estimate is 8.52% for CEO_RETENTION, significant at the 5% level, and for Models (3) and (4) the joint estimate CEO_RETENTION + CEO_RETENTION_PE_ACQUIRER is 10.83% and 21.89%, respectively, and both estimates are significant at the 1% level. Allowing for variation in the relation between our explanatory variables and the acquisition premium does not diminish whatsoever the relevance of the valuable CEO hypothesis for deals with target CEO retention by a private equity acquirer.

While we will address potential endogeneity concerns in more detail in the next section, the results from Table 3 Models (5) and (6), as well as those from the unreported models with a full set of interactions, mitigate such concerns in the following way. If acquisitions by private equity acquirers are more susceptible to conflicts of interest than those by public acquirers, then, unless the potential endogeneity between CEO retention and target premiums systematically differs between acquisitions by private equity acquirers and by public acquirer, it is unlikely that the evidence supporting the valuable CEO hypothesis for deals conducted by a private equity firm is driven by endogeneity.

5.2. 2SLS-IV analysis of target returns

The results reported in Table 3 are based on standard OLS analysis and may therefore be susceptible to selection bias and endogeneity concerns due to possible unobservable variables or measurement errors. We address potential selection biases by estimating the inverse Mills ratio (IMR) from the probit model determining retention for the full sample (Model (3) of Table 2), following the methodology proposed by Heckman (1979). Specifically, in unreported analyses we replicate models (5) and (6) from Table 3 where we add the IMR as a control variable. Since the IMR is an estimated variable, we follow Green (2001) and use bias-adjusted standard errors. The estimated effects of CEO retention on acquisition premiums for deals by private equity acquirers and public acquirers are not dissimilar from those reported in Table 3 and the coefficient for the IMR is consistently insignificant, alleviating concerns of selection bias.

To address concerns regarding biases caused by potential endogeneity in our OLS models in Table 3, we conduct a Hausman test to check whether CEO_RETENTION is exogenous. We first obtain the residuals from the model predicting CEO_RETENTION (i.e., the reduced form model) and then add these to the main regressions explaining target returns. The null hypothesis is that the coefficient on the residuals is equal to zero, which would then suggest that CEO_RETENTION is exogenous. We perform this test for Model (1) and Model (2) of Table 3 (not tabulated) representing the private equity acquirer and public acquirer subsamples, respectively. The p-values for the Hausman test on the coefficients on the residuals for these models are, respectively, 0.403 for the private equity acquirer subsample and 0.558 for the public acquirer subsample. In summary, the results from the Hausman test further alleviate concerns regarding a bias in our estimates as caused by the endogenous nature of CEO_RETENTION.

Even though the Hausman test does not suggest endogeneity is an issue in our specifications, we re-estimate the models from Table 3 replacing the CEO retention indicator variable with an instrumented CEO retention indicator variable (CEO_RETENTION_IV). Specifically, in Table 4 we estimate endogenous treatment models, where we obtain the fitted value

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[9] All of our Table 3 results and inferences are robust to using post-completion information to determine target CEO retention.
[10] The continuous independent variables are mean centered.

Table 4

2SLS-IV analysis of target returns.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. Model (1) uses the sample of private equity acquirers, Model (2) uses the sample of public acquirers, and Models (3) and (4) use the sample of all acquirers. For Models (1) through (3) the dependent variable is CAR and for Model (4) the dependent variable is WBC. CEO_RETENTION_IV is the fitted value from the respective first-stage probit regression in Table 2. CEO_RETENTION_IV × PE_ACQUIRER is an interaction variable between CEO_RETENTION_IV and PE_ACQUIRER. All other variables are defined previous table headers. The indicator variable RETIRE is omitted from the second-stage models to identify the first-stage models. Regressions include year and Fama-French 48 target industry dummy variables. *p*-Values are in brackets and are based on heteroscedasticity-consistent standard errors. Coefficients denoted with [a], [b], or [c], are significant at the 1%, 5%, or 10% level.

Premium 2SLS-IV Second-Stage Regressions	Instrument = RETIRE			
	Private Equity Acquirers	Public Acquirers	All Acquirers	
	Model 1	Model 2	Model 3	Model 4
Dependent Variable	CAR	CAR	CAR	WBC
CEO_RETENTION_IV	0.1291[b]	0.0535	0.0544	0.0781
	[0.043]	[0.646]	[0.499]	[0.529]
CEO_RETENTION_IV × PE_ACQUIRER			0.0763[c]	0.1170[c]
			[0.076]	[0.070]
PE_ACQUIRER			−0.1327[a]	−0.2174[a]
			[0.000]	[0.000]
CLUB_DEAL	−0.0579[c]		−0.0433	0.0123
	[0.094]		[0.309]	[0.847]
MGMT	−0.0241		0.0104	−0.1038
	[0.559]		[0.835]	[0.166]
TENDER	0.0648[c]	0.0965[a]	0.0860[a]	0.1047[a]
	[0.098]	[0.000]	[0.000]	[0.000]
CEO_FOUNDER	0.0146	0.0109	0.0138	0.0312
	[0.694]	[0.683]	[0.547]	[0.364]
CEO_OWN	0.1673	−0.0451	−0.0266	−0.1378
	[0.178]	[0.636]	[0.735]	[0.243]
NON_CEO_INSIDE_OWN	−0.0051	−0.0463	−0.0538	−0.0780
	[0.922]	[0.490]	[0.255]	[0.273]
SEGMENTS	0.0466[a]	0.0165	0.0191[c]	0.0408[a]
	[0.005]	[0.174]	[0.053]	[0.006]
LOGMVECPI	−0.0309[b]	−0.0257[b]	−0.0281[a]	−0.0402[a]
	[0.012]	[0.017]	[0.001]	[0.002]
DEBT	0.3422[a]	0.0144	0.0564	0.1814[b]
	[0.000]	[0.811]	[0.256]	[0.015]
OCF	0.3378[a]	−0.1506[b]	−0.0627	−0.1446[c]
	[0.000]	[0.011]	[0.219]	[0.059]
IAQ	0.0019	−0.0289[b]	−0.0232[b]	−0.0136
	[0.920]	[0.014]	[0.025]	[0.377]
ARET_12	−0.1680[a]	−0.0739[a]	−0.0809[a]	−0.1076[a]
	[0.000]	[0.000]	[0.000]	[0.000]
STDEVAR	0.2321	0.3792	0.3909	0.2583
	[0.799]	[0.575]	[0.495]	[0.764]
TARLIQ	0.2491[b]	−0.1192	0.0064	−0.0407
	[0.046]	[0.448]	[0.954]	[0.808]
Constant	0.0292	0.3527	0.2818	0.8840[b]
	[0.912]	[0.260]	[0.334]	[0.043]
Year & Industry Indicators	YES	YES	YES	YES
Observations	252	928	1180	1180

from a first-stage probit model with the same specification as the respective model in Table 2 for the private equity acquirer, public acquirer, and all deals samples. The respective fitted value is the instrumented variable for target CEO retention in the second-stage regressions in Table 4, which is based on maximum-likelihood estimation.

We recognize that choosing an appropriate instrument in cross-sectional analysis is often difficult and subject to one's acceptance of the economic rationale for choosing an instrument. The choice for the instrument we use for CEO retention is motivated by the recent work by Jenter and Lewellen (2015). Specifically, they find that "takeover premiums and target announcement returns are similar for retirement-age and younger CEOs, implying that retirement age CEOs increase firm sales without sacrificing premiums (p. 2813)".[11] To that end we use our indicator variable for whether a CEO is at retirement age (RETIRE) as the instrument for CEO retention in our first-stage models and omit RETIRE in the second stage models for proper identification of the system. We note that while our focus is on the sample of private equity acquirers, our results in Table 2 show that RETIRE satisfies the relevance condition for each sub-sample. The partial correlations between RETIRE and target CEO retention are significantly

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[11] Similarly, they write "One might expect that, because of the lower personal costs, retirement-age CEOs would be willing to accept less valuable deals and this would experience lower average shareholder gains. However, empirically, we find that takeover premiums and target announcement returns are slightly (but insignificantly) higher for retirement-age CEOs than for younger CEOs" (p. 2815, Jenter and Lewellen, 2015).

different from zero at significance levels ranging from 1% (private equity acquirers and combined sample) to 5% (public acquirers). For the exclusion restriction to be satisfied, RETIRE should only affect premiums through its effect on target CEO retention and, thus, be uncorrelated with the error term of the second stage regression. While this is not directly testable because the error term is unobservable, the results in Jenter and Lewellen (2015) provide support for our assumption that RETIRE satisfies the exclusion restriction.[12]

In Model (1) of Table 4, we focus on deals with a private equity acquirer. We find that the instrumented CEO retention coefficient (CEO_RETENTION_IV) is positive significant at the 5% level and represents an almost 13 percentage point higher target premium. All other estimates are similar to those in Model (1) of Table 3, except that the coefficient on TENDER is now marginally significant. In Model (2) of Table 4 we estimate the public acquirer sample specification with the instrumented CEO retention. The coefficient is less than half the magnitude of its counterpart in Model (1) for private equity acquirers and statistically insignificant (p-value = 0.646). In Model (3) we focus on the full sample and specify the model to include treatment interaction terms following the suggestions in Brown and Mergoupis (2011). The difference in the coefficient on instrumented CEO retention between private equity and public acquirer deals, CEO_RETENTION_IV_PE_ACQUIRER, is positive and significant with a p-value of 0.076. Finally, in Model (4) we obtain similar results when we re-estimate the full sample specification using WBC instead of CAR.[13] Taken together, the regression analyses presented in Tables 3 and 4 are consistent with the predictions of the valuable CEO hypothesis: Private equity acquirers pay higher premiums for targets where the CEO is being retained by the acquirer compared to cases where the private equity acquirers does not retain the target CEO.

Finally, given that our main interest lies in understanding the role of CEO retention in private equity acquisitions, we also want to evaluate whether a less restrictive model specification where we use a second instrument, in addition to RETIRE, fits the data better than a more restrictive model with only RETIRE as the instrument for CEO retention. Model (1) in Table 2 shows that CEO_FOUNDER also satisfies the relevance condition for the sample of private equity acquirers and would likely satisfy the exclusion restriction given the ambiguous effect founder CEOs have on takeover premiums other than through CEO retention. To evaluate fit, we perform a likelihood ratio test (LR-test) for our first-stage probit model. The χ^2-statistic, with one degree of freedom is statistically significant, which suggests that including both instruments (less restrictive model) in the first-stage model fits the data significantly better than using either instrument alone (more restrictive models). Since the less restrictive specification (i.e., with both RETIRE and CEO_FOUNDER) is overidentified, we can use the Hansen-Sargan statistic to test whether CEO_FOUNDER and RETIRE are uncorrelated with the error term of the second-stage model, which allows us to partially assess the validity of the instruments.[14] The null hypothesis of the Hansen-Sargan test is that the instruments are valid and, therefore, the validity of the instruments, beyond that provided by economic intuition, is based on the inability to reject the null hypothesis. Statistical inference is based on a Chi-square distribution with one degree of freedom. The Hansen-Sargan χ^2-statistic is 0.5292 (p-value = 0.467), which suggests that we cannot reject the validity of CEO_FOUNDER and RETIRE as joint instruments (unreported). When we re-estimate Model (1) of Table 4 using our overidentified system, we continue to find that the instrumented CEO retention coefficient (CEO_RETENTION_IV) is associated with higher target premiums by approximately 13 percentage points (p-value = 0.028).

5.3. Matching estimator analysis of target returns by acquirer type

It has been well-documented that finding valid instruments, especially for economic variables resulting from agents' decisions, is often difficult and depends on economic interpretation and beliefs. To further assess the robustness of our results, we perform a matching methodology that does not rely on identifying instrumental variables and does not require any specific distributional assumptions. Specifically, we use the non-parametric Abadie and Imbens (2006) matching estimator, as implemented by Abadie et al. (2004).[15] The purpose of this method is to estimate the effect of a binary treatment (CEO retention) on the outcome variables (CAR and WBC), where each individual observation in the sample has an observed treatment assignment and one observable outcome variable depending on whether there is treatment or not. In observational studies with non-randomized treatment, the assumption is that the treatment assignment is independent of the potential outcomes conditional on a set of pre-treatment characteristics, called covariates. The idea is to isolate observations with target CEO retention and then, from the sample of non-treated observations, look for control observations that best "match" the treated ones in multiple dimensions (covariates). In lieu of using a standard propensity score approach, the Abadie-Imbens matching estimator minimizes a measure of distance (the Mahalanobis distance) between all the covariates for firms in the treated group and their matches. Specifically, we focus on the average treatment effect for the treated (ATT) estimator that is bias-corrected and we estimate using heteroskedastic-consistent standard errors with single matches. The estimator allows control firms to serve as matches more than once, which

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[12] We also test for instrument relevance based on, respectively, the Kleibergen-Paap underidentification and Kleibergen-Paap-Wald weak identification test statistics. Both test statistics (unreported) show that RETIRE is relevant and is not considered a weak instrument, which is consistent with the significant coefficients on RETIRE we report in Table 2.

[13] Our results are robust to defining the premium over a three day $(-1, +1)$ or 11 day $(-5, +5)$ window around the announcement day. We only report the three-day results, based on the variable CAR.

[14] This test is based on the residuals from the Two Stage Least Squares (2SLS) estimation of our main model explaining abnormal target returns. The residuals are regressed on all the regressors, including the two instruments, from the first-stage model. The test statistic from the Hansen-Sargan's test is the number of observations times the R^2 from this regression and has a χ^2 distribution with one degree of freedom (i.e., one over-identifying restriction). The null hypothesis is that none of the IV's is correlated with the residuals of the 2SLS model. For a more detailed explanation of this test we refer to Wooldridge (2002).

[15] For a recent example of the application of the estimator in finance, see Almeida et al. (2012).

compared to matching without replacement lowers the estimation bias (but can increase the variance). In our estimations, we select one matched control for each treated firm. The Abadie-Imbens matching estimator produces "exact" matches on categorical variables while the matches on continuous variables are based on joint closest matches. We then compare the premiums received by shareholders of the treated firms and control firms. The test statistic we use adjusts for the fact that continuous variables are not matched exactly.

We use covariates that could reasonably be expected to affect simultaneously the target CEO retention decision and the outcome variables CAR or WBC. Specifically, we use non-CEO insider ownership, market value of equity, debt, operating cash flow, industry-adjusted Tobin's q, prior twelve month stock return, standard deviation of the market model residual, and liquidity of the market for corporate control as non-categorical variables. In addition, we use the one-digit SIC code of the target, the year of the announcement, and the number of business segments as categorical variables.[16] Next, while we do not tabulate this, we verify whether our matching design, in fact, more closely resembles a test where the differences in covariates between treated versus control (i.e., matched) groups are smaller than those between the treated and untreated (i.e., unmatched) groups, thereby better isolating the difference in CAR and WBC based on the treatment. For example, for the case of acquisitions by private equity acquirers, we compare the difference in medians between these two comparisons. Of the eight continuous variables we use as covariates, only for two covariates (asset liquidity and non-CEO ownership) does the difference in medians between treated and control groups become larger than between treated and untreated groups.[17] In contrast, the significant differences in the median market value of equity and operating cash flows reported in Table 1 disappear with p-values of 0.445 and 0.126, respectively, after matching. Overall, the matching works well and substantially diminishes the differences between treated and control firms relative to those between treated and untreated firms.

The results of our matching estimator tests are shown in Table 5. For acquisitions by private equity firms, target shareholders receive a significantly larger CAR premium, as measured by the average treatment effect of the treated observations (ATT) equal to 6.11% (p-value = 0.048) when the CEO is retained. Similarly, when we estimate ATT using our long-term premium measure, WBC, we find an economically large difference in WBC based on the treatment (ATT = 11.25%, p-value = 0.021). As with our regression analysis, we find that the difference in premiums on the basis of CEO retention is insignificant for acquisitions by public firms when measured using CAR, and marginally positive, but approximately half in magnitude compared to the ATT estimator for private equity acquirers for the long-run premium measure WBC.

5.4. OLS analysis of target returns controlling for deal governance and CEO influence

Boone and Mulherin (2017) find that for acquisitions with a greater potential for agency conflicts between the target CEO and her shareholders, the frequency of special committees being formed prior to the acquisition is higher. A special committee is a sub-committee of the target firm's board of directors composed of independent, disinterested directors that are not part of management and are not participants in the buyout of the target (see Boone and Mulherin, 2017). In particular, they find a significantly higher occurrence of special committees being formed in the case of acquisitions with private acquirers than for acquisitions with public acquirers. We match our sample of acquisitions by private equity acquirers with the sample used in Boone and Mulherin (2017) and test whether the formation of special committees is more prevalent in cases where there is CEO retention.[18] For those observations in our sample where we are unable to match with the data of Boone and Mulherin (2017), we collect the data from the SEC filings following their methodology. We find that the prevalence of special committees is significantly greater when the target CEO is retained than when she is not retained in acquisitions with a private equity acquirer (66.7% versus 40.7%, p-value < 0.001).

For robustness, we re-estimate Model (1) in Table 3 for the sample of acquisitions by a private equity acquirer and add an indicator variable for the presence of a special committee (SPEC_COMM). In Model (1) of Table 6, the coefficient on CEO retention remains positive and significant, while the coefficient on SPEC_COMM is insignificant.[19] In Model (2), we estimate a specification where we interact SPEC_COMM with CEO retention, and find that the interaction term is insignificant, while CEO retention remains positive and significant regardless of whether there is a special committee or not (based on an F-test). In Models (3) and (4), we repeat Models (1) and (2), but replace the special committee indicator variable with an indicator variable for whether the CEO is part of the board of directors or not. In Models (5) and (6) we use, instead, an indicator variable for whether the CEO is the chairman of the board of directors. In all four regression specifications the coefficient on CEO retention is positive and significant and the interaction terms are insignificant. Moreover, in each case the coefficient on CEO retention is significant irrespective of the value of the indicator variable. In Model (7) we add controls for the use of a special committee, whether the CEO is on the board, and whether the CEO is the chairman of the board, and, again, find a significant and positive coefficient on CEO retention. Finally, in unreported analysis, we confirm that the coefficient on CEO retention is positive and significant for acquisitions regardless whether they took place prior or post Sarbanes-Oxley (i.e., years 2002 and before versus 2003 and after).

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[16] The only covariates that require exact matching is the announcement year indicator variable and the one-digit SIC code classification indicator variable. However, neither are truly exact matches as acquisitions can be announced during different times within a calendar year and within each one-digit SIC code industry grouping. Our results are similar when we use a closest-year matching instead of the exact-year matching.

[17] We also run the analysis where we drop asset liquidity as a covariate since asset liquidity is defined within each year-industry group and the specification also includes year and industry controls and obtain similar results.

[18] We are grateful to Audra Boone and Harold Mulherin for sharing their dataset with us.

[19] Boone and Mulherin also find no relation between the use of special committees and takeover premiums, which suggests that target firms optimally choose to form these committees in order to maximize shareholder wealth.

Table 5

Matching estimator analysis of target returns by CEO retention.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. The table reports the average treatment effect for the treated (ATT) using the Abadie and Imbens (2006) estimator procedure. The estimator is based on heteroscedasticity-robust standard errors. The matching is based on the following covariates: LOGMVECPI, DEBT, WINSOR_OCF, WINSOR_IAQ, STDEVAR, ARET_12, NON_CEO_INSIDE_OWN, SEGMENTS, announcement year, and one-digit SIC code industry classification. The point estimate of the ATT represents the average difference in returns (CAR in Panel A and WBC in Panel B) between the treated sample (CEO retention) and the matched sample. All variables are defined previous table headers. The standard error (S.E.), z-statistic, and p-value for the ATT are reported.

	ATT	S.E.	z-statistic	p-Value
Panel A: *CAR Matching estimators for acquisitions* with *versus* without *CEO retention*				
Private Equity Acquirers ($N = 252$):				
CAR	0.0611	0.0308	1.98	*0.048*
Public Acquirers ($N = 928$):				
CAR	0.0211	0.0217	0.97	*0.333*
Panel B: *WBC Matching estimators for acquisitions* with *versus* without *CEO retention*				
Private Equity Acquirers ($N = 252$):				
WBC	0.1125	0.0488	2.30	*0.021*
Public Acquirers ($N = 928$):				
WBC	0.0580	0.0320	1.81	*0.070*

5.5. Non-compete corollary of the valuable CEO hypothesis

We next test a corollary of the valuable CEO hypothesis: a CEO who is not retained may engage in activities that compete with her former firm, which would lead to a decrease in the value of the target firm. We explore the relation between the premium and the ability of the target CEO to compete with the post-completion firm if she is not retained and expect that the risk of such competition would make the target less valuable if the CEO is not retained. Hence, we would expect target shareholders to gain less if the CEO is not retained and can more easily compete with her former firm. If the CEO is retained, the absence of the competition threat would make the target more valuable, which would benefit the target shareholders, but at the same time a CEO who can more easily compete with her former firm has more bargaining power and hence might capture some of the benefit from the absence of the competition threat. Because of the existence of these two competing effects, there is no clear prediction for the relation between the premium and the ease with which the target CEO can compete with her former firm when the CEO is retained.

Following Fich et al. (2013), we use the index of enforceability of non-compete agreements developed by Garmaise (2011) as our proxy for the ease with which the target CEO can compete with her former firm. In unreported analyses, we estimate the regressions of Table 3 adding the demeaned value of the Garmaise index and an interaction of that demeaned value with the retention indicator variable. A higher value of the index means that a non-compete agreement is less easily enforceable. We find that, for private equity deals, the demeaned index has a significant negative value, so that the premium is less for a target where the CEO is not retained when the former CEO can more easily compete with her former firm. The coefficient on the interaction term is significantly positive, so that the difference in premium between private equity deals where the target CEO is retained and where she is not is larger for firms where non-compete agreements are harder to enforce. The premium paid for a target of an acquisition by a private equity acquirer where the CEO is retained is not significantly related to the ease with which the target CEO can compete with her former firm.

6. Private equity acquirers with CEO retention versus public acquirers without CEO retention

Our evidence so far shows that target shareholders receive a larger premium if their CEO is retained in an acquisition by a private equity acquirer. In this section, we first examine whether target shareholders of an acquisition by a private equity acquirer could have received a larger premium if the firm had been acquired by a public firm that did not retain the CEO. We then investigate whether there is evidence that competition is restricted in deals where the CEO is retained and whether there is evidence that the retained CEO took steps to artificially reduce the target's value before the acquisition through earnings manipulation.

6.1. Matching estimator analysis of target returns by acquirer type

Though we have shown that target shareholders of a firm acquired by a private equity acquirer receive a higher premium if the CEO is retained, the premium paid in acquisitions by a private equity acquirer is lower than the premium paid for comparable acquisitions by public acquirers (see e.g., Bargeron et al., 2008). It may be that a firm is acquired by a private equity firm instead of a public firm because the target management, potentially due to conflicts of interest, made it impossible for the firm to be acquired by a public acquirer.

To address this issue we use a matching estimator analysis to investigate whether there are similar firms acquired by public firms without target CEO retention to the firms acquired in private equity deals with CEO retention and whether the premium received by the shareholders of these similar firms is larger for acquisitions by public firms than for private equity deals. Based on the same set of covariates used previously, we find that in seven out of the eight continuous covariates there is a significant

Table 6

OLS analysis of target returns controlling for deal governance and CEO influence.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. All models use the sample of private equity acquirers and the dependent variable for each model is CAR. SPEC_COMM is an indicator variable for whether there is a special committee, defined as a sub-committee of the target firm's board of directors composed of independent, disinterested directors that are not part of management and are not participants in the buyout of the target (see Boone and Mulherin, 2017). T_CEO_DIRECTOR is an indicator variable for whether the CEO is part of the board of directors or not. T_CEO_COB is an indicator variable for whether the CEO is the chairman of the board of directors. SPEC_COMM × CEO_RETENTION, T_CEO_DIRECTOR × CEO_RETENTION, and T_CEO_COB × CEO_RETENTION are the interactions of CEO_RETENTION with SPEC_COMM, T_CEO_DIRECTOR, and T_CEO_COB, respectively. All other variables are defined previous table headers. Regressions include year and Fama-French 48 target industry dummy variables. p-Values are in brackets and are based on heteroscedasticity-consistent standard errors. Coefficients denoted with [a], [b], or [c], are significant at the 1%, 5%, or 10% level, respectively. CEO_RETENTION + Interaction term is the sum of the individual coefficients and the p-value is from the F-test that the sum is equal to zero.

Premium OLS Regressions	Private Equity Acquirers						
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Dependent Variable	CAR	CAR	CAR	CAR	CAR	CAR	CAR
CEO_RETENTION	0.1088[b]	0.1153[b]	0.1067[b]	0.1398[c]	0.1052[b]	0.1213[c]	0.1086[b]
	[0.022]	[0.046]	[0.019]	[0.075]	[0.019]	[0.066]	[0.024]
SPEC_COMM	−0.0239	−0.0151					−0.0253
	[0.571]	[0.803]					[0.554]
T_CEO_DIRECTOR			−0.0132	0.0250			−0.0057
			[0.685]	[0.685]			[0.897]
T_CEO_COB					−0.0126	0.0120	−0.0118
					[0.664]	[0.845]	[0.769]
SPEC_COMM × CEO_RETENTION		−0.0135					
		[0.851]					
T_CEO_DIRECTOR × CEO_RETENTION				−0.0548			
				[0.487]			
T_CEO_COB × CEO_RETENTION						−0.0376	
						[0.638]	
CLUB_DEAL	−0.0545	−0.0544	−0.0570[c]	−0.0599[c]	−0.0578[c]	−0.0599[c]	−0.0547
	[0.111]	[0.113]	[0.093]	[0.078]	[0.089]	[0.081]	[0.116]
MGMT	−0.0136	−0.0130	−0.0229	−0.0218	−0.0204	−0.0204	−0.0137
	[0.751]	[0.763]	[0.629]	[0.640]	[0.661]	[0.661]	[0.766]
TENDER	0.0544	0.0534	0.0578	0.0578	0.0590	0.0586	0.0546
	[0.317]	[0.327]	[0.317]	[0.317]	[0.308]	[0.308]	[0.316]
CEO_FOUNDER	0.0235	0.0240	0.0212	0.0243	0.0203	0.0220	0.0239
	[0.722]	[0.718]	[0.738]	[0.709]	[0.749]	[0.735]	[0.717]
RETIRE	−0.0419	−0.0435	−0.0396	−0.0419	−0.0377	−0.0369	−0.0402
	[0.398]	[0.381]	[0.424]	[0.403]	[0.447]	[0.462]	[0.419]
CEO_OWN	0.1719[c]	0.1739[c]	0.1806[c]	0.1647	0.1828[c]	0.1743	0.1839[c]
	[0.090]	[0.089]	[0.084]	[0.124]	[0.080]	[0.101]	[0.085]
NON_CEO_INSIDE_OWN	0.0027	0.0034	−0.0021	−0.0059	−0.0038	−0.0075	−0.0010
	[0.959]	[0.949]	[0.969]	[0.916]	[0.945]	[0.898]	[0.985]
SEGMENTS	0.0446[b]	0.0444[b]	0.0471[b]	0.0460[b]	0.0469[b]	0.0470[b]	0.0447[b]
	[0.019]	[0.019]	[0.022]	[0.022]	[0.023]	[0.023]	[0.018]
LOGMVECPI	−0.0318[c]	−0.0320[c]	−0.0305[c]	−0.0301[c]	−0.0309[c]	−0.0307[c]	−0.0318[c]
	[0.054]	[0.054]	[0.054]	[0.053]	[0.052]	[0.052]	[0.053]
DEBT	0.3340[a]	0.3341[a]	0.3399[a]	0.3369[a]	0.3394[a]	0.3402[a]	0.3345[a]
	[0.006]	[0.006]	[0.007]	[0.006]	[0.007]	[0.007]	[0.006]
WINSOR_OCF	0.3548[b]	0.3552[b]	0.3473[b]	0.3491[b]	0.3490[b]	0.3540[b]	0.3529[b]
	[0.016]	[0.016]	[0.016]	[0.016]	[0.015]	[0.016]	[0.017]
WINSOR_IAQ	−0.0017	−0.0017	0.0021	0.0027	0.0025	0.0039	0.0003
	[0.946]	[0.947]	[0.932]	[0.911]	[0.919]	[0.873]	[0.991]
ARET_12	−0.1684[a]	−0.1685[a]	−0.1656[a]	−0.1626[a]	−0.1649[a]	−0.1631[a]	−0.1692[a]
	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]
STDEVAR	0.1572	0.1527	0.2233	0.1803	0.2019	0.1489	0.1854
	[0.919]	[0.922]	[0.884]	[0.907]	[0.896]	[0.925]	[0.905]
TARLIQ	0.2548[b]	0.2560[b]	0.2547[b]	0.2541[b]	0.2552[b]	0.2548[b]	0.2577[b]
	[0.033]	[0.034]	[0.036]	[0.039]	[0.036]	[0.037]	[0.032]
Constant	0.4451[b]	0.4513[b]	−0.2986	0.4165[b]	0.4036[b]	0.4106[b]	0.4581[b]
	[0.024]	[0.025]	[0.225]	[0.033]	[0.041]	[0.035]	[0.021]
Year & Industry Indicators	YES	YES	YES	YES	YES	YES	YES
Observations	252	252	252	252	252	252	252
Adjusted R-squared	0.269	0.265	0.267	0.266	0.267	0.264	0.261
CEO_RETENTION + Interaction term		0.1018[c]		0.0850[c]		0.0837[c]	
F-test (p-value) for sum of coefficients		[0.098]		[0.045]		[0.097]	

difference in medians between deals by a private equity acquirer where the CEO is retained (treated) and those by a public acquirer where the CEO is not retained (untreated). To insure that we are indeed comparing similar firms based on observable characteristics, we use the same firm matching approach that we used in Table 5. With respect to the continuous variables, the

matching procedure does well in matching firms on size, debt, operating cash flow, industry-adjusted q, and volatility. It does not do well in matching asset liquidity, the past twelve month stock return (ARET_12), and non-CEO insider ownership.[20]

Panel A of Table 7, shows the result for the premium analysis. We find that the Abadie-Imbens matching estimator of the average effect of treatment (ATT), CEO retention, is -2.85% with a p-value of 0.360. In other words, the CAR measure is statistically indistinguishable between cases with and without CEO retention. This is consistent with the valuable CEO hypothesis and suggests that private equity acquirers pay larger premiums when they retain the target CEO. The results do not support the conflicts of interest hypothesis. Similarly, the average treatment effect is -1.84% with a p-value of 0.696 for the WBC premium measure.

We note that the comparisons across acquirer types in Panel A are more sensitive to the selected covariates than in the matching analysis within acquirer types. For example, the difference in CAR between the treated and control groups ranges from -3.32% (p-value = 0.360) if we match with firm characteristics but not on year and industry to -9.79% (p-value = 0.001) if we match *only* on year and industry, but not on firm characteristics (not reported). Similarly, the difference in WBC ranges from -6.41% (p-value = 0.175) to -14.99% (p-value = 0.094). However, since we know that premiums differ greatly by year and industry, as well as by firm characteristics, we believe that proper matching ought to include all these characteristics.[21]

In Panel B, we compare deals by private equity acquirers to those by public acquirers *without* conditioning on CEO retention. We find that both the CAR and WBC measures for acquisitions by a private equity acquirer are significantly lower than for acquisitions by public firms, which is consistent with the OLS regression results in Bargeron et al. (2008). In other words, the matching approach does not resolve the issue of why the premium is lower in acquisitions by a private equity firm. Instead, the results from the matching approach are not inconsistent with the valuable CEO hypothesis, but they do not support the conflicts of interest hypothesis.

6.2. Univariate analysis of competition characteristics

In this section, we investigate whether deals involving a private equity acquirer and where the target CEO is retained have more characteristics that restrict competition than deals involving public acquirers and where the CEO is not retained. If the premium paid by a private equity firm is "too low", we would expect that competition for the target would emerge. Alternatively, if it does not, we would expect that the target and the acquirer have taken steps to prevent competition from succeeding.

In Table 8, we show evidence across acquisition types on the frequency of competition and of deal attributes that make competition less likely. All of our deal characteristics are binary variables for which we report mean values. We first investigate the extent of competition. The variable INITBID takes the value 1 if the winning bid is the initial bid and is followed by an offer by another firm. If the acquirer pays too little, we would expect competition. Yet, if anything, we see more competition for acquisitions by a private equity firm where the CEO is not retained than we do where the CEO is retained. We note that while the difference is not statistically significant, it appears to be economically substantial. Another competition variable, COMPETE, takes the value 1 if the winning bid follows another bid. We find no evidence that the winning bid follows another bid more frequently for acquisitions by a private equity acquirer where the CEO is retained than for similar acquisitions by public acquirers. However, acquisitions by a private equity firm where the target CEO is retained are much less likely to have faced competition than acquisitions by a private equity firm where the target CEO is not retained. This result is the opposite from the one predicted by the conflicts of interest hypothesis. However, we cannot exclude that the lack of prior bids just indicates that potential acquirers, realizing a private equity firm might subsequently make a bid and retain the CEO, thought they had no chance at winning because of the influence of the CEO on the outcome.

We would also expect the acquirer to require certain deal terms which would make it difficult for competition to show up subsequent to the announcement of the bid if the premium is low due to the target CEO's potential conflicts of interest. A target termination fee would make it harder for the target to walk away from the deal for a better offer. However, an acquisition by a private equity firm where the target CEO is retained is not more likely to have a target termination fee than an acquisition by a private equity acquirer where the CEO is not retained. In fact, while the difference is insignificant, the sign is opposite of what we would expect with the conflicts of interest hypothesis. A bidder with a toehold might make an acquisition costly for competitors. However, there is no evidence that the acquirer is more likely to have a toehold in acquisitions by private equity firms than in acquisitions by public firms. None of these statistics suggest that private equity deals erect more barriers against potential competition depending on CEO retention.

6.3. Univariate analysis of changes in discretionary accruals

In this section, we explore the possibility that the target CEO who is retained in an acquisition by a private equity acquirer depressed the target firm's value ahead of the acquisition so that the firm could be acquired for less. In other words, the target firm could receive a larger premium, but target shareholders could still lose because the larger premium is for a firm whose

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[20] In case of asset liquidity, the difference in medians, while increasing after the matching, is no longer significant, with a p-value that increases from 0.057 before matching to 0.789 after matching. For the past twelve month stock return and non-CEO insider ownership, the p-values also increase by a factor ten, but the difference remains significant at conventional cutoff levels.

[21] In particular, in an unreported regression of abnormal returns (CAR and WBC) on year and industry variables, an F-test shows that both year and industry are jointly significant with p-values of 2.5% or lower.

Table 7

Matching estimator analysis of target returns by acquirer type.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. The table reports the average treatment effect for the treated (ATT) using the Abadie and Imbens (2006) estimator procedure. The estimator is based on heteroscedasticity-robust standard errors. The matching is based on the following covariates: LOGMVECPI, DEBT, WINSOR_OCF, WINSOR_IAQ, STDEVAR, ARET_12, NON_CEO_INSIDE_OWN, SEGMENTS, announcement year, and one-digit SIC code industry classification. The point estimate of the ATT represents the average difference in returns (CAR in Panel A and WBC in Panel B) between the treated sample (CEO retention) and the matched sample. All variables are defined previous table headers. The standard error (S.E.), z-statistic, and p-value for the ATT are reported.

	ATT	S.E.	z-Statistic	p-Value
Panel A: *Private equity acquirers with CEO retention* versus *public acquirers without CEO retention (N = 657)*				
CAR	−0.0285	0.0312	−0.92	0.360
WBC	−0.0184	0.0473	−0.39	0.696
Panel B: *Private equity acquirers* versus *public acquirers (N = 1180)*				
CAR	−0.0683	0.0236	−2.90	0.004
WBC	−0.1154	0.0394	−2.93	0.003

value is artificially depressed. Concern about this issue has a long history as evidenced by quotes in DeAngelo (1986) in a study of management buyouts. The approach used in DeAngelo (1986) is to investigate changes in accounting accruals before the acquisition. Cash flow items are relatively easy to measure, but a firm's income includes many items that are not associated with current cash flow and require estimates. Accruals correspond to the wedge between earnings and cash flow and can be affected by the choice of estimates. DeAngelo (1986) finds no evidence that accruals are used to understate earnings ahead of management buyouts. Subsequently, Perry and Williams (1994) find opposite results based on a larger and more recent sample where they use a regression approach to predict accruals.

Our approach is to compare changes in accruals, from year three before the acquisition to year one before the acquisition, between acquisitions by a private equity firm where the CEO is retained and acquisitions by public firms where the CEO is not retained. This comparison is the relevant comparison to the extent that having the CEO favor an acquisition by a private equity firm comes at the cost to shareholders of not having the firm acquired by a public firm. Conditional on CEO retention, we also compare accrual changes for acquisitions by a private equity firm where target management is part of the acquirer group and where it is not.

In our comparison, we use two approaches in estimating accruals. The first approach follows Bergstresser and Philippon (2006). They use a balance sheet measure of accruals. They remove nondiscretionary accruals from total accruals using a version of the Jones (1991) model of accruals. Panel A in Table 9 shows the change in discretionary accruals estimates using their approach from year t–3 to t–1. A decrease in discretionary accruals would be consistent with earnings being artificially depressed. Using means, we find that discretionary accruals do not fall significantly more for firms acquired by a private equity firm where the CEO is retained than for firms acquired by public firms where the CEO is not retained. The same result holds for median changes in discretionary accruals. The second approach is a cash flow measure of accruals based on Hribar and Collins (2002). With this measure, total accruals are earnings before extraordinary items and discontinued operations minus operating cash flows from continuing operations. As with the first approach, nondiscretionary accruals are removed using a version of the Jones (1991) model. With this second approach, we again find no significant difference between the two acquisition subsamples based on either the mean or median change in discretionary accruals.

Panel B shows the mean [median] changes and differences in discretionary accruals for the subsamples of deals by private equity acquirers with CEO retention where management is part of the acquirer group (MGMT = 1) and deals by public acquirers

Table 8

Univariate analysis of competition characteristics.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. INITBID is a binary indicator variable that equals one if the announcement of the offer is followed by an offer by another firm, while no bids took place during the 12 months before the announcement. COMPETE is a binary indicator variable that equals one if another deal for the same target is announced in SDC during the 12 months prior to the announcement date. TARTERM and TOEHOLD are binary indicator variables from SDC that equal one if the deal includes target termination fees or involves an acquirer that holds 0.5% or more of the target stock prior to the announcement, respectively. Mean values for deals by private equity acquirers that are significantly different from the corresponding mean value for deals by public acquirers denoted with [a], [b], or [c], are significant at the 1%, 5%, or 10% level, respectively. Within the acquirer groupings, differences in means between CEO retention and no retention denoted with [α], [β], or [γ], are significant at the 1%, 5%, or 10% level, respectively.

	Private Equity Acquirers			Public Acquirers		
	CEO Retention	No CEO Retention	Difference	CEO Retention	No CEO Retention	Difference
n	171	81		442	486	
Mean Values:						
INITBID	0.0234	0.0494	−0.0260	0.0136	0.0165	−0.0029
COMPETE	0.0351	0.1111	−0.0760[β]	0.0566	0.0535	0.0031
TARTERM	0.7076	0.7531	−0.0455	0.7647	0.7510	0.0137
TOEHOLD	0.0760	0.0617	0.0143	0.0498	0.0473	0.0025

Table 9

Univariate analysis of changes in discretionary accruals.

The sample includes all SDC completed cash-only acquisitions by a U.S. acquirer of a U.S. public target announced from 1994 through 2009 that result in 100% ownership by the acquirer. Panel A shows the mean [median] change in discretionary accruals for the subsamples of deals by a private equity acquirer with CEO retention and those by a public acquirer with no CEO retention. Changes in discretionary accruals are based on respectively balance sheet and cash flow statement items, measured from year *t*-3 to *t*-1 relative to the acquisition announcement. Discretionary accruals are measured as the difference between total accruals and nondiscretionary accruals following Bergstresser and Philippon (2006) and Jones (1991). Balance sheet total accruals are the one-year changes in current assets minus current liabilities, minus the change in cash holdings, plus the change in long-term debt in current liabilities, minus depreciation and amortization expenses, all normalized by the (lagged) book value of assets. The cash flow statement measure of accruals is based on Hribar and Collins (2002) and is earnings before extraordinary items and discontinued operations minus operating cash flows from continuing operations, normalized by the (lagged) book value of assets. Panel B shows the mean [median] change in discretionary accruals for the subsamples of deals by private equity acquirers with CEO retention where management is involved (MGMT = 1) and those by public acquirers with no CEO retention. Panel C shows the mean [median] change in discretionary accruals for the subsamples of deals by private equity acquirers with CEO retention without management involvement (MGMT = 0) and with management involvement (MGMT = 1). Each panel also reports the difference between deals by private equity acquirers with CEO retention and those by public acquirers with no CEO retention and the *p*-values from tests that the difference-in-means equals zero.

Panel A: *Changes in discretionary accruals for private equity acquirers with CEO retention* vs. *public acquirers without CEO retention*

Change In Discretionary Accruals:	Private Equity Acquirers With CEO Retention	Public Acquirers Without CEO Retention	Difference	*p*-Value
Balance Sheet Definition	0.0039	−0.0231	0.0269	*0.231*
	[−0.0121]	[0.0058]	[−0.0179]	*0.948*
Cash Flow Statement Definition	0.0142	0.0141	0.0001	*0.996*
	[0.0102]	[0.0021]	[0.0081]	*0.564*

Panel B: *Changes in discretionary accruals for private equity acquirers with CEO retention and management involvement* vs. *public acquirers without CEO retention*

Change In Discretionary Accruals:	Private Equity Acquirers With CEO Retention & MGMT = 1	Public Acquirers Without CEO Retention	Difference	*p*-Value
Balance Sheet Definition	−0.0407	−0.0231	0.0176	0.695
	[0.0115]	[0.0058]	[−0.0057]	0.858
Cash Flow Statement Definition	0.0115	0.0141	0.0026	0.942
	[0.0043]	[0.0021]	[−0.0022]	0.954

Panel C: *Changes in discretionary accruals for private equity acquirers with CEO retention based on management involvement*

Change In Discretionary Accruals:	MGMT = 1	MGMT = 0	Difference	*p*-Value
Balance Sheet Definition	−0.0407	0.0178	0.0585	*0.221*
	[0.0115]	[0.0150]	[0.0035]	*0.882*
Cash Flow Statement Definition	0.0115	0.0150	0.0035	*0.882*
	[0.0043]	[0.0110]	[0.0067]	*0.801*

with no CEO retention. Consistent with DeAngelo (1986), we find no evidence that accruals are used to understate earnings ahead of management buyouts in our sample of private equity deals.

Finally, in Panel C of Table 9, we compare the change in discretionary accruals between acquisitions by a private equity firm where management is part of the acquiring group and private equity deals where the CEO is retained but is not part of the acquiring group. Again, we find no significant differences in discretionary accruals between these two subsamples.

Our investigation of earnings manipulation does not support the conflicts of interest hypothesis. This investigation is subject to the caveat that we could fail to spot earnings manipulation because our model of discretionary accruals is inadequate. To gain further comfort in our results, we compare the change in Tobin's q over the same period as we compare changes in accruals for our subsamples of acquisitions. If, somehow, management in firms acquired by a private equity firm where the CEO is retained managed to systematically depress the value of such firms ahead of the acquisition, we would expect Tobin's q to fall more for such firms than for firms acquired by public firms where the CEO is not retained. In unreported results, we find that the mean Tobin's q falls significantly more ahead of the acquisition for firms acquired by public firms where the CEO is not retained than for firms acquired by private equity acquirers where the CEO is retained. There is no significant difference for the medians. It follows from this evidence that we can reject the hypothesis that manipulation of earnings ahead of an acquisition is more likely for private equity deals where the target CEO is retained.

7. Conclusion

In this paper, we address the question "What is the shareholder wealth impact of target CEO retention in private equity deals?" The academic literature as well as commentators and the courts have focused on the conflicts of interest between target shareholders and their CEO when the firm is subject to a takeover attempt. The empirical literature finds that shareholders do not benefit from CEO retention and may be hurt when the acquirer is a public acquirer. Even though commentators and the courts express much stronger concerns about conflicts of interest for acquisitions by private equity firms, there is no empirical evidence, to our knowledge, showing how target shareholder returns differ in such acquisitions when the CEO is retained by the acquirer.

We develop the hypothesis that CEO retention can increase the present value of post-acquisition cash flows for private equity acquirers because they have to find a CEO who will run the acquired firm and the CEO of the target may be able to perform that

task better than other potential candidates. We call this hypothesis the valuable CEO hypothesis. This hypothesis predicts that shareholders receive a higher premium when the CEO is retained in an acquisition involving a private equity firm conditioning on target firm characteristics. We find that the CEO is more likely to be retained in private equity deals and that shareholders receive a higher premium in these deals when the CEO is retained. Specifically, target shareholders in acquisitions involving a private equity acquirer receive an additional 10% to 18% of pre-acquisition firm value when their CEO is retained. These results are robust to a variety of model specifications and econometric estimation methods, addressing potential selection and endogeneity biases, and to the exploration of possible alternative explanations. Our evidence is supportive of the valuable CEO hypothesis and suggests that the target CEO's conflicts of interest in private equity deals do not prevent target shareholders from benefiting when their CEO is retained.

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