

# CEO Turnover in LBOs: The Role of Boards\*

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## Abstract

We examine the CEO turnover in LBOs backed by private equity funds. When a company is taken private, we find that the CEO turnover decreases and is less contingent on performance. We also find that a higher involvement of the LBO sponsors, who replace the outside directors on the board after transition to private, reduces the CEO turnover and its sensitivity to performance, but improves the operating performance. These findings suggest that more inside information and effective monitoring allow private equity funds to assess CEOs' performance over a longer horizon relative to their publicly-traded counterparts.

*JEL Classification.* G24, G30

*Keywords.* CEO Turnover, Private Equity, Leveraged Buyouts, Boards of Directors, Corporate Governance

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percentage of outsiders sitting on the board before the LBO. The literature on boards shows that the number of outsiders on the board increases for firms where the monitoring is more necessary (see, for example, Coles, Daniel and Naveen (2008) and Linck, Netter and Yang (2008)). Moreover, Boone, Casares Field, Karpoff and Raheja (2007) find that measures of the scope and complexity of the firm's operations are positively related to the proportion of independent outsiders on the board. Thus, these firms should be the most difficult to run. This complexity of firm business is arguably the same before and after the LBO and should not directly affect the *change* in the CEO turnover. Not surprisingly, we find that a more difficult LBO leads to a higher subsequent CEO turnover. However, interestingly, we observe that higher involvement by LBO sponsors (and consequently higher monitoring) implies a *lower* subsequent CEO turnover.

We next analyze the CEO turnover-performance sensitivity. We find that the turnover sensitivity also *decreases* when the LBO sponsor involvement increases. This decrease highlights an important difference in monitoring between outside directors of a public board and LBO sponsors. LBO sponsors, unlike outsiders, are involved in the firm's daily operations. Therefore, LBO sponsors can rely less on certain observed performance measures (hard information) and more on their inside information (soft information). In addition, unlike insiders, LBO sponsors do not have their careers tied to the CEO. Thus they can more easily act on their information. This finding is supportive of the inside information hypothesis for boards.

The above results are also consistent with the pay-for-luck literature (see, for example, Bertrand and Mullainathan (2001) and Jenter and Kanaan (2014)). The common theme in these studies is that the boards of public firms often make mistakes and fire CEOs for factors beyond the CEOs' control. In the same spirit, Bach and Metzger (2013) and Fisman, Khurana, Rhodes-Kropf and Yim (2014) find evidence consistent with the view that stricter corporate governance in public firms may lead to increase in bad CEO turnover decisions. In a recent study, Cornelli, Kominek and Ljungqvist (2012) exploit legal reforms in governance practices across countries and find that the boards of firms backed by private equity do not

punish CEOs for bad luck. Our paper reconciles these findings in the literature by showing that an active involvement of the board in an LBO with less agency problems and better aligned interests can actually decrease, rather than increase, CEO turnover by reducing the probability to fire the CEO for the wrong reason.

Furthermore, we look at the operating performance of LBOs. Although our sample has fewer observations because of the difficulty in obtaining this type of information, we do find some evidence that a larger private equity presence on the board (appropriately instrumented) leads to higher operating performance. This result suggests that the link between higher involvement by LBO sponsors and subsequent lower CEO turnover (and its sensitivity) is consistent with improved monitoring.

To summarize, this study offers three main contributions. First, the paper contributes to the literature on CEO turnover by showing that CEOs have longer term horizons and less performance sensitive turnover in LBOs. This result raises a broader question about CEO turnover practices of public firms. In this context, it also adds to the evidence of the pay-for-luck literature. Second, the paper contributes to the literature on boards, by highlighting the involvement of private equity sponsors and providing evidence in support of the inside information theory on boards. Finally, by providing new evidence of how boards of LBOs are structured, this study documents an important aspect of the corporate governance model of private equity and fills an important gap in the literatures on boards and private equity. Despite the considerable debate about private equity and its role in the economy, due to data limitations, there has been limited empirical evidence to date about private equity boards and their actions.

In a recent paper, Gao, Harford and Li (2014) compare CEO turnover of public and private firms. Consistent with our results, they find that CEO turnover is higher and more sensitive to performance in public firms. Our paper primarily focuses on and benefits from the unique features offered by LBOs undertaken by private equity firms, such as the active involvement of private equity sponsors as board members in an environment with less agency

problems and better aligned interests. In our setting, we aim to study the effect of the (likely superior) board monitoring on the CEO turnover, while Gao, Harford and Li (2014) focus on investor myopia. Importantly, our approach looks at the change in the CEO turnover when the company is taken private. This approach allows us to control better for other firms' characteristics. Both papers show consistent evidence that CEO turnover in public companies cannot be necessarily interpreted as positive.

The rest of the paper is structured as follows. The next section explains how we construct the data set and provides a general description of the data. Section 3 presents preliminary statistics on how the CEO turnover changes after the firm goes private. Section 4 studies what affects the involvement of the LBO sponsors in the firm. Section 5 studies the impact of the involvement of private equity on CEO turnover, and Section 6 looks at the sensitivity of CEO turnovers to performance. We look at operating performance in Section 7. Section 8 concludes.

## **2 Description of the Data**

We construct a new data set that follows the board composition of all public to private transactions in the United Kingdom between 1998 and 2003. We stop in year 2003 to be able to observe the subsequent CEO turnover and performance of the buyouts. To the best of our knowledge, this is the most comprehensive data set of its kind. For comparison purposes, we also collect data on the board composition of industry- and size-matched firms that remain public. Further, we collect financial information on the performance of the LBOs and the corresponding matching firms.

### **2.1 Identification of the LBOs**

We identify all public to private transactions in the United Kingdom between January 1998 and October 2003 by using the Capital IQ database. Capital IQ provides one of the most



comprehensive data sets on private equity deals by tracking the deals worldwide. We identify a total of 148 transactions. After dropping six cases with a lack of data and 54 cases with no private equity involvement, we are left with 88 deals in which at least one of the sponsors is a financial institution that has invested in the equity of the firm.<sup>9</sup> These cases are thus categorized as LBOs or private equity deals. Table 1 presents the frequency distribution of the deals over the years and the distribution of the firm size in our sample. There is no indication of clustering in LBOs for any of the years under study. The average (median) firm size in our sample is \$328M (\$105M).

We identify the exit status and the type of LBO deal. An exit takes place when the LBO sponsor sells its stake in the firm, or when the firm goes bankrupt.<sup>10</sup> 19 of the 88 deals are not exited as of December 2009. Among all of the exited deals, 20 are secondary buyouts, 11 are IPOs, 10 are bankruptcies, 27 are trade sales, and 1 is a sale to management.

## 2.2 Construction of Boards

We construct the boards of the LBOs using the Dash data set, which is published by the Bureau van Dijk Electronic Publishing (BvD). Dash is the most comprehensive database for boards available for UK private firms. The database comprises 2.6 million UK firms, 4.4 million directors, and 2 million shareholders. We track the board composition of the firms from two or three years before the announcement of the buyout until the exit of the private equity group or until December 2009, whichever is earlier.

Once the firm goes private in an LBO, the firm is usually reconfigured into a complex structure with several layers of firms in which each one owns another as its subsidiary. Many of these are empty shell firms with “nominal boards” created for tax and other purposes. Thus, we need to identify the relevant board (i.e., the board that monitors and advises the

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<sup>9</sup>For one of these 88 buyouts, we only find the board before the firm goes private, but not afterwards. Therefore, this firm is dropped from the analysis of changes in the boards when the companies are taken private.

<sup>10</sup>In some cases of IPOs, the private equity firms retain a stake in the firm. We consider these cases exits because, although the sponsor has not sold its entire equity stake, the firm is not a private firm anymore but has returned to being a public firm.

LBO firm) among the existing multiple ones. Moreover, this structure can change over the years of the LBO, and therefore the relevant board has to be identified separately each year. Note that the CEO is present in each board and stays unique. Therefore, the correct board cannot be identified by simply looking at the board with the CEO.

We identify the relevant board with the following procedure. Using the Dash, Fame and Amadeus datasets, we reconstruct the post-LBO ownership structure of the firms (i.e., we reconstruct all the layers of firms).<sup>11</sup> Then, we download the board compositions of firms in each layer. In most of the cases, we can easily rule out the nominal boards because they are clearly a subset of the relevant board. We also check whether a private equity general partner sits on the board to help identify the relevant board because general partners tend not to sit on the nominal boards.

We observe the board composition only once per year. The last board before the LBO is the board we observe right before the LBO announcement date. The first board after the LBO is the board we observe right after the completion of the LBO transaction. We conduct the analysis in this study by comparing the characteristics of the last board prior to the announcement to the characteristics of the board after the transaction. In a few cases, the board is still a “transitional” board immediately after the transaction. For example, not all of the new board members have been nominated or the new CEO has not yet been appointed. In those cases, we use the board subsequent to the first board after transaction. For robustness, we repeat the same analysis by only using the composition of the first board immediately after the transaction. We find that the results do not change, possibly because the problem of having a transitional board arises only for a small number of LBOs.

We look for the identity of all of the directors that sit on the boards each year by using a

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<sup>11</sup>The Amadeus database and the Fame database are published by Bureau van Dijk Electronic Publishing (BvD). Amadeus collects company accounts from 38 Western and Eastern European countries. It covers financial information (balance sheet and profit and loss account), industry activity codes, legal form, legal status and date of incorporation for almost 9 million firms, mainly collected from each country’s Company Registrar. A detailed description of the Amadeus database can be found in Klapper, Laeven and Rajan (2006). Fame is similar to Amadeus, but covers only UK companies. In recent years the two data sets are almost identical; but for the earlier years Fame is more complete.

series of data sets (Capital IQ, Fame, Amadeus, Perfect Information, Manifest and a general search in press releases).<sup>12</sup> We categorize the directors as follows: (1) insiders who are either the CEO, management, or other non-management insiders (including previous CEOs); (2) outsiders; and (3) LBO sponsors. Outside directors are those who neither work for the firm nor for any of the private equity groups backing the LBO and who have no other obvious relation with the firm. A director can be classified as an LBO sponsor only after the LBO. This category identifies whether one of the private equity funds that backs the LBO employs the director.

Figure 1 illustrates how the board size changes over time. After the firms go private, on average, LBOs lose 1 director out of 6.5 (i.e., the boards are 15% smaller). This is in line with a move towards better corporate governance (Yermack (1996)). The decrease in board size is also consistent with Kaplan and Gertner (1996) who look at boards of reverse LBOs (after they go public) and find the boards to be smaller than the other firms trading in the market, matched by size and industry. The reduction in the board size might also be due to the possibility that private firms need fewer directors.

Figure 2 presents the evolution of the board composition. When the firm goes private, LBO sponsors replace the outsiders. On average, LBO sponsors take 33% of the seats on the board after the LBO. The proportion of outsiders drops dramatically from more than 40% to less than 20%. In many of the cases, there is no outsider on the board after the LBO. Before the LBO, insiders make up 56% of the board and this percentage does not change much right after the LBO. But the proportion of insiders drops dramatically in later years as the LBO sponsors replace them. These are probably the problematic cases and the private equity firms' representatives need to be more directly involved. Interestingly, Cronqvist and Fahlenbrach (2013) find in their US sample that, following an LBO, the LBO sponsors acquire the majority of the board, which decreases in size. This contrasts with our

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<sup>12</sup>Perfect Information is a financial and capital markets database providing access to over 15 million global company filings including annual reports, mergers and acquisitions, equity transactional documents (including initial public offerings) and bond prospectuses. Manifest is a UK Proxy Advisor that provides data on boards for UK public companies.

finding that in the UK, on average, the majority of the board remains to the insiders, as can be seen in Figure 2.

Private equity companies in our sample have between 90% and 100% of the equity, and hence do not need majority of the board votes in order to exercise their control. Thus, the number of people on the private equity company’s board is not dictated by the need to have majority, but by the need for experience and skills in order to accomplish the goal to make the deal successful. Consistently, in the boards in our dataset, management occasionally has more votes than the LBO sponsors, no special efforts seems to be in place to avoid potential ties between these two groups. This point will be important later in the paper, when we analyze the presence of LBO sponsors on the board as a signal of their involvement with the firm: the private equity companies include board members for their contribution, rather than bureaucratic necessities, which would be less applicable in private firms anyway.

### **2.3 Matching with Public Firms**

For each LBO, we find a matching firm that remains public. This is particularly to address the concern that any difference in CEO turnover within a firm might be due to a change in the overall market, industry conditions or any other change in the overall economic environment. We take all of the UK public firms from Datastream and match the firms by industry and size in the year before the transition.<sup>13</sup> The number of public firms that exist in the United Kingdom is much smaller than in the United States: this makes it impossible to match firms using additional criteria besides size and industry. For the industry classification, we use the two-digit SIC code; and, for the size, we use the market capitalization of the firms. The matching algorithm selects the firm with the closest absolute size within the same industry. The algorithm makes sure that the absolute size deviation between the firm in our sample and the matching firm is not higher than 30%. For those firms that could not be matched with this algorithm (8 firms out of 88), we reiterate the matching algorithm by relaxing the

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<sup>13</sup>We also do the matching using the first year in which we observe the firm, two or three years before the transition, with no substantial difference.

size restriction.<sup>14</sup> After determining the matched sample, we collect the board information for the public firms from Boardex, Manifest, and Perfect Information databases.

## 2.4 Financial Performance Data

Using Fame, Amadeus, Perfect Information, and Compustat Global, we compute several financial measures for each LBO and the corresponding matching firm. In particular, we compute the leverage and different measures of operating performance before and after the firm goes private. While creating the performance data set, we encounter challenges similar to the ones experienced while creating the board data set: After going private, the firms have complex pyramidal structures of ownership that create difficulties in reaching the relevant financial performance figures. Moreover, as firms become private, the performance figures become less reliable. To identify reliable performance figures, for each individual firm, we cross-check the figures reported from Fame, Perfect Information, and Compustat Global. In a few cases, the data are available for a period less or greater than 12-month periods. In those cases, we extrapolate the figures either way to a 12-month period to make them comparable. We drop the firms from the sample when we cannot get reliable data. This exclusion means the number of observations for this section drops to either 57 or 67 (depending on the measure used for operating performance). After all these iterations, the performance measures that are available are the following: operating profit over sales, operating profit over total assets, and profit margin (where profit margin is defined as profit before tax over operating revenue).

## 3 Intervention of the Board: CEO Turnover

The theoretical prediction of whether more effective monitoring leads to more or less CEO turnover is not clear. On the one hand, a tighter control on the CEO with a less forgiving attitude to mistakes can lead to a higher CEO turnover. On the other hand, a more

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<sup>14</sup>We also try different picking rules for these 8 matching firms and the results are robust to these rules.

effective monitoring may lead to understand better the cause of poor performance thus can give the confidence not to fire the CEO. In addition, excessive intervention can actually be value-decreasing because the intervention can reduce the CEO's incentives to exert effort or can make the CEO focus on short-term performance (see, for example, Crémer (1995) and Burkart, Gromb and Panunzi (1997)). Private equity firms often claim that they are able to give their CEO a longer horizon to plan for a firm's growth, and thus they do not need to rely on short-term performance. This argument should lead to a decrease in CEO turnover and its sensitivity to performance following an LBO. Following the literature on CEO turnover, we study both the turnover rate and turnover's sensitivity to performance. In this section, we focus on turnover rate (defined as the number of times the CEO changed divided by the number of years over which this is computed) before and after the company goes private.<sup>15</sup>

As discussed in the Introduction, in this paper, we distinguish the CEO turnover after LBO in two phases: the CEO change during the transition from public to private, and the CEO turnover after the company has become private. Transition period is defined as the period between the announcement date of the LBO and the date of the record of the first board we use after the completion of the LBO (see Section 2.2). We argue that a CEO change during the transition is not a reflection of board monitoring, but of a control change in which the private equity firm, as the new control stakeholder, has a preference for a new CEO. The CEO turnover after the company has been taken private is instead the result of the monitoring of the new board in which the private equity investor takes part.

Panel A of Table 2 reports the frequency of CEO changes during the transition from public to private, and Panel B reports the summary statistics for the CEO turnover rate before and after the LBO (excluding the transition period). In 46 out of the 88 private equity deals (i.e., 52.3% of the deals), the CEO is changed during the transition. This finding is in

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<sup>15</sup>As discussed in Section 2.2, we collect data on boards starting from three years before the LBO, hence the CEO turnover before the LBO is measured over those three years, unless the company was public for two years only. After the LBO, we measure the CEO turnover until the exit or 2008. Thus the number of years analyzed varies across LBOs; however no investment is exited very fast, so there are no artificially short periods. To address this heterogeneity, we have also measured the CEO turnover only up to five years after the LBO, with no substantial difference in results.

line with Acharya, Kehoe and Reyner (2009) who report 39% CEO turnover rate within the first 100 days of LBOs, and with Gong and Wu (2011) who report 51% CEO turnover within two years of LBO announcements. The CEO change rate during the transition is much higher than the CEO turnover rate before and after the LBO (14.5% and 9.2% respectively). This is not very surprising, since CEO change during transition is due to a change in control, as opposed to board monitoring. An important point to note is that the lower CEO turnover rate after the LBO is not necessarily a result of a CEO change during transition. Keeping a CEO after the LBO is also a hiring decision made by the private equity (think of it as re-hiring, similar to hiring a new CEO), particularly with the new incentive contracts and management plans etc. In unreported univariate tests, we find that the CEO turnover does not decrease for the subsample of cases with CEO change during transition.

Any difference in turnover might be due to a change, for example, in the economic conditions. Thus we do not only compare the turnovers before and after an LBO, but also construct a set of matching firms that remain public and compute the CEO turnover over the same period of time in these firms. The average turnover rates before the LBO and for the matching firms are 14.5% and 16.5% respectively, and they are not statistically different from each other. Therefore, the matched companies have similar CEO turnover rates before the LBO. These turnover figures are in line with Kaplan and Minton (2012) who find an average CEO turnover of 15.8% from 1992 to 2007. The CEO turnover following an LBO (9.2%) is significantly smaller than the one before the deal (14.5%) and also is significantly smaller than the turnover in matching firms (14.4%).<sup>16</sup> Note that the CEO turnover for matching public firms after LBO is not significantly different than the one before the LBO. As a robustness test, we drop the cases in which a new CEO is brought in just before the deal is exited, and the results in Panel B of Table 2 are even stronger.

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<sup>16</sup>Dow (2013) theoretically argues that boards of public firms might be reluctant to fire the CEOs since this might send a negative signal about the board's ability to the market and worsen the terms of access to capital. We interpret the high number of CEO changes in the first phase of LBO engagement consistent with this theory. The model of Dow (2013) also implies that our results for the second phase are even stronger in supporting the short-termism and inside information views on public firms.

We do not observe the compensation contracts of the CEOs in our sample. However, it is well known that the CEOs have much larger incentives to perform in LBOs when compared to CEOs in public firms (see, for example, Cronqvist and Fahlenbrach (2013)). Given these steeper incentive schemes CEOs face, one could argue that CEOs would perform better and hence the decrease in the CEO turnover after LBO would be due to CEOs' exerting more effort. However, in Section 6, we show that the sensitivity of CEO turnover to performance decreases after LBO as well, even when we limit our sample to cases with negative performance. Thus, CEOs seem to be fired less also when they do not perform, and hence the improved incentive structure for CEOs in LBOs is unlikely to explain our findings.

Given the reputation of private equity for being more prone to firing nonperforming managers, we want to better understand what affects the CEO turnover rate. Is the turnover rate low because the private equity sponsors are not really monitoring? Or rather is it low because the LBO sponsors are carefully monitoring the firm's activities and thus can take a longer term approach and wait before firing the CEO?

In order to address these questions, one has to take into account the reverse causality problem: We want to know whether a monitoring board is more or less likely to change the CEO, but the board is also more likely to start monitoring if the situation is difficult and the CEO may get fired. Therefore, before attempting to answer this question, we take a step back and study what factors affect the involvement (and thus monitoring) of LBO sponsors in a given firm.

## **4 Board Composition: LBO Sponsors**

In this section, we study the composition of the board and the factors that affect it. In particular, we focus on the LBO sponsors involvement, measured as the percentage of seats on the board that LBO sponsors take. We take this measurement either one year after the LBO or as the average percentage of the LBO until exit.



## 4.1 Identification of Deals Requiring More Effort

The analysis in this section is to establish our conjecture that cases requiring more effort (and hence more monitoring) should have more involvement from the LBO sponsors on the board. The implicit assumption underlying this approach is that if a private equity sponsor is involved in a deal, he/she will also likely sit on the board. Thus, by observing the board members of an LBO, we can capture the LBO sponsors who are involved in the deal. This approach is consistent with the literature. For example, Lerner (1995) identifies the involvement of VC in their firms by looking at people sitting on the board. Cotter and Peck (2001), studying LBOs in the 1980s, find evidence that buyout specialists have greater board representation, suggesting that they actively monitor managers.

We identify the deals with a higher need for involvement in three main ways. First, we introduce a dummy variable that takes the value of one if there is a change in the CEO of the firm during transition from public to private. There are different reasons for why the CEO change during the transition might indicate the cases with greater need for oversight. To begin with, the CEO change can be interpreted as a situation in which the CEO performance before the firm goes private is unsatisfactory, and hence the current situation of the firm might be worse. Even if the CEO had a satisfactory performance but resigned during the transition to private, the private equity firm would need to be involved more to face difficulties without the support of the previous experienced manager. An alternative explanation might be that the deals with no CEO change in transition are those in which the private equity group has no intention of making major restructuring and plans to obtain returns mainly on the basis of financial engineering. Consistent with these interpretations, Guo, Hotchkiss and Song (2011) find that gains in operating performance are higher for deals where the CEO is replaced during buyout completion when studying LBOs in United States between 1990 and 2006.

Second, we construct a dummy that takes the value of one if a private equity firm exits the deal within five years after the firm went private. We add bankruptcy cases to the non-

exits, so that an exit is always a positive resolution (non-exits are meant to capture difficult deals).<sup>17</sup> Clearly, an exit is an ex post measure of success. However, private equity firms go through a very thorough due diligence process before acquiring a firm and have a good idea of what challenges lay ahead. Therefore, if the expectations of the private equity firms are on average correct, then one can assume that the LBO sponsors have, on average, already anticipated the non-exited deals to be the most challenging ones. The inability to exit in five years could, of course, be because of unexpected events, such as the financial crisis. However, because these events are random shocks, on average the non-exited deals should be the most difficult ones.

Third, we identify deals that require more involvement by looking at firms whose business is more difficult to monitor or advise and thus requires more effort. The literature on public firms stresses that the number of outsiders on the board increases for firms in which monitoring is more necessary (see, for example, Coles, Daniel and Naveen (2008) and Linck, Netter and Yang (2008)). These firms are likely to remain more difficult to monitor after the LBO as well. Therefore, we use the percentage of outsiders on the board before the LBO to capture the firms in which the business is more difficult to monitor. This difficulty to monitor could be because the type of business is more complex, or the benefits from control are easier to extract.<sup>18</sup> Boone, Casares Field, Karpoff and Raheja (2007) find that the measures of the scope and complexity of the firm's operations have a positive relation to the proportion of independent outsiders on the board.

We also distinguish the deals by introducing leverage. If the private equity firm behind the deal is not interested in restructuring the firm but only in financial engineering, then

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<sup>17</sup>An exit through a secondary buyout might not necessarily be a positive outcome and might also indicate that the restructuring of the firm has not been concluded, therefore we conduct the analysis by considering secondary buyouts both as exits or as non-exits, with no significant difference. Wang (2012) studies secondary buyouts in UK and argues that they can be seen as an alternative form of exit dictated by the capital market conditions.

<sup>18</sup>Note that this does not imply that the board is assumed to be optimal before the LBO. For example, the board could have been too large overall, but still had a larger proportion of outsiders due to the firm complexity. In other words, the board's not being optimal before LBO does not imply that all of its characteristics are irrelevant.

that firm is likely to take on a higher level of debt. The literature usually measures leverage as the total debt over the total firm value. However, because the firm value is affected by its potential restructuring, we measure it as the total debt over the total assets.

## 4.2 LBO Sponsors on the Board

After identifying the deals requiring more involvement, we analyze the determinants of the LBO sponsors in the board composition after the firm goes private (Table 3). In addition to the variables mentioned in the previous section, we control for firm size (measured as the total value of the firm implied by the LBO offer price for the shares). Further, we consider the number of private equity funds involved (without distinguishing between lead and no lead investors). Next, we introduce a dummy variable that takes the value of one if at least one of the private equity funds backing the firm has considerable experience. Experience is based on the number of deals recorded in Capital IQ in which the private equity firm was involved before this deal. We also want to distinguish between private equity funds that have a more hands-on approach and that typically interact a lot with the management and other private equity funds. We do this in two ways. First, we create a dummy variable that takes the value of one if the leading private equity fund is affiliated with a bank because traditionally these funds are less involved.<sup>19</sup> Second, we use a more discretionary approach by reading through various statements, websites, and description of each fund and classifying each fund as active or not. Active means that the fund typically follows the strategy of actively restructuring the firm. We also introduce a dummy for deals in the real-estate sector, because the private equity funds sponsoring real-estate LBOs usually are different from other private equity funds.

In Regression 1 of Table 3, the coefficient for the number of LBO sponsors is positive and very significant. This suggests that when there are multiple sponsors backing the deal, each private equity firm tries to have some representatives sitting on the board, and this

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<sup>19</sup>See Hellmann, Lindsey and Puri (2008) and Fang, Ivashina and Lerner (2013).

strategy results in a larger fraction of the board going to the LBO sponsors. The coefficient for the CEO change is positive and significant. This is consistent with the hypothesis that private equity firms tend to take more board seats when improving the business requires more of their oversight, either because the firm is in bad shape or because they do not have a good management team in place to rely on. The coefficient for exited deals is negative and significant. In other words, private equity sponsors are particularly involved in the deals that they ex ante expect to be the most problematic.

The proportion of outsiders sitting on the board before the LBO, which is a proxy for the difficulty in monitoring or advising the firm, has a positive and significant coefficient. One could argue that what matters is the comparison to similar firms, therefore we also introduce the percentage difference in the proportion of outsiders sitting on the board before the LBO between the public matching firms and the firms that undergo an LBO (Regressions 2 and 5). When we introduce this variable, its coefficient is negative and significant, while the coefficient for the fraction of outsiders before the LBO becomes much more positive and significant. In other words, firms that have more outsiders on the board before the LBO have a significantly higher fraction of LBO sponsors on their board, unless before the LBO such fraction was higher than that of similar firms, which would suggest their board was relatively inefficient before the LBO.

In summary, deals that are more difficult have a higher percentage of LBO sponsors on their board. This is thus a story of costs and benefits. Therefore, more experienced LBO sponsors are arguably good to have on the board. However, these individuals are very busy and costly, because they could instead be on another board. Thus, adding one more of them to the board is done only if the marginal benefit of having one more person is higher than the cost, which is likely to happen in the more difficult deals.

The coefficient of bank affiliated sponsors is negative but not significant in Regressions 1 to 3. Surprisingly, experienced sponsors do not seem to behave any differently from less experienced ones. As an alternative criterion, in Regressions 4 to 6 we introduce the dummy

for active sponsors. The coefficient for this dummy is positive and significant: the claims by certain private equity funds to be more hands-on seem to be confirmed in practice. The other results do not change. Further, the leverage has a negative coefficient with a marginal significance in Regression 3 but not in Regression 6: the deals with high leverage, which are most likely to be financial engineering deals, are the ones characterized by less involvement by LBO sponsors, but the link is not very strong.

Regressions 7 and 8 repeat Regressions 2 and 4 (respectively), but use as a dependent variable the average percentage LBO sponsors over the years following the LBO. In this way, we can correct for the possibility that the board following the LBO is still in a transition phase. The results do not vary and are a little stronger. Also, regressions 1-8 have R-squared figures between 25.0% and 30.7%, thus these specifications explain a considerable part of the variation in the (average) percentage of LBO sponsors.

## 5 Determinants of the Change in CEO Turnover

This section focuses on whether CEO turnover decreases when LBO sponsors are more involved and thus monitor more. LBO sponsors are more likely to be involved in the most difficult deals, which are also the ones most likely to have CEO turnover. Therefore, to establish a causality we need to run a 2SLS in which the first stage is the choice of the level of involvement by the LBO sponsors. More specifically, the first stage is given by either regressions 1, 3, 4 or 6 in Table 3, depending on the model specification. In the second stage, we then look at how involvement affects the CEO turnover.

The dependent variable in the second stage is the change in the CEO turnover rate from before to after the deal. We have explained earlier that, in line with the literature on corporate governance, the percentage of outsiders in the board *before the LBO* captures the intrinsic complexity of the firm's business. Such complexity, as a characteristic of the firm, can affect the CEO turnover (and even the performance, which will be studied later), but

this effect should be the same both before and after the firm goes private: therefore, the complexity of the firm’s business should not affect the *change* of the CEO turnover rate.<sup>20</sup> In other words, if the percentage of outsiders on the board before the transition affects the change in the CEO turnover, the effect should only be because it affects the LBO sponsors’ involvement (as documented in Table 3). The dummy variable that captures a change in the CEO at transition also captures complexity, but only the complexity of what happens after the transition, and therefore should directly affect the change rate of CEO turnover.

We therefore use the percentage of outsiders on the board before the LBO as an instrument. In Regressions 1 and 2 of Table 4, we check whether this percentage has a reduced-form effect on the dependent variable. The dependent variable is the change in the CEO turnover where the CEO turnover is defined as in Table 2. If we do not see a significant relation between the potential instrument and the dependent variable in the reduced form, then the variable is likely not a good choice for an instrument. Regressions 1 and 2 show that if we run OLS regressions there is a negative and statistically significant correlation between the percentage of outsiders before the LBO and the dependent variable.

Regressions 3 to 6 of Table 4 report the second stage of this 2SLS estimation.<sup>21</sup> The coefficient for the dummy capturing the change of CEO during the transition is positive and significant, but the coefficient for the percentage of LBO sponsors sitting on the board (instrumented) is negative and significant. Thus, when the firm is more difficult to turn around, the CEO turnover increases. However, the increased turnover is not a consequence of the increased involvement (and thus monitoring) by the private equity firm. In fact, these regressions show that when LBO sponsors are more involved their involvement translates into less intervention and longer horizons for the CEOs. In other words, a more involved private equity firm does not necessarily imply higher turnover.

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<sup>20</sup>We are thus assuming that the intrinsic business of the firm is not changing. Although LBOs often involve the sale of assets, given that we are observing turnover within five years immediately after the LBO, such changes are unlikely to be substantial. As mentioned later in the section, the results are also robust to focusing only on the first three years of the LBO.

<sup>21</sup>Because the R-squared figures are not meaningful in the context of the 2SLS (Wooldridge (2009)), we do not report them in Tables 4 and 6.

This result suggests that through monitoring, LBO sponsors are better able to obtain the necessary information, and thus they do not fire the CEO for the wrong reasons.<sup>22</sup> This is consistent with Cornelli, Kominek and Ljungqvist (2012) who show that boards with LBO sponsors do not fire managers for bad luck or honest mistakes, but build evidence over time about the managers' skills. In other words, more monitoring would imply a reduction in the "wrong" type of turnover, as captured by Jenter and Kanaan (2014) in public firms. In the same spirit, Bach and Metzger (2013) show that, following the approval of anti-takeover proposals (and hence stricter corporate governance), the likelihood of the departure of good CEOs increases. These departures are detrimental to the firm value since their announcements are accompanied with negative stock price reactions. Our result also has implications in general for the corporate governance literature when it uses CEO turnover as an indication of how active and independent the board is. The implication is that a very active and informed board knows, independently from the short-term performance, when the CEO is proceeding in the right direction, and thus can actually give more long-term confidence to the CEO in these cases.

Table 4 also shows that more experienced or active LBO sponsors do not seem to have a higher CEO turnover. We also introduce leverage because Grinstein (2006) finds that in LBOs, debt affects the likelihood of managerial replacement. However, we find that more levered deals do not have a different CEO turnover rate. Further, the number of LBO sponsors has a positive and significant coefficient, possibly because there are multiple sponsors only in the most difficult deals.

One concern is that the CEO turnover rate after the firm goes private could be driven by the possibility that the private equity sponsors use different CEOs for different stages of the turnaround: at the beginning they could use a specialist in turning around firms, and when the initial work is done they could use a more general CEO. In such a case, the turnover observed might not be the result of firing, but just the natural cycle of the restructuring

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<sup>22</sup>Edmans (2011) argues that a large equity investor will have an incentive to gather information about the true reason for the low short-term profits, before wrongly dismissing a skilled CEO.

process. To control for this, we rerun all of our tests in Table 4 by using only the first three years after the LBO. The results are essentially the same (unreported). Therefore, our results do not seem to be driven by possible cycles in the type of CEO.

## 6 CEO Turnover-Performance Sensitivity

Several papers on CEO turnover, such as Weisbach (1988), Jenter and Lewellen (2010), Kaplan and Minton (2012), and Jenter and Kanaan (2014), look not at the turnover rate per se, but at the turnover-performance sensitivity in order to judge whether a board is effective in monitoring. The argument is that an effective board should only replace a CEO when he is not performing. Thus, if turnover is sensitive to performance, then the board has observed poor performance and acted on it. Weisbach (1988) shows that turnover is more sensitive to performance when the number of outside directors increases, implying that independent directors make a board more active and effective. Recent studies also are in line with Weisbach (1988). For instance, Jenter and Lewellen (2010) show that boards with more independent directors have a higher turnover-performance sensitivity. Dahya, McConnell and Travlos (2002) and Guo and Masulis (2013) show how the turnover-performance sensitivity increases when firms increase the number of outside directors to comply with the Cadbury Committee recommendations in the United Kingdom and the Sarbanes-Oxley Act in the United States respectively.

On the other hand, Hermalin and Weisbach (2003) and Adams, Hermalin and Weisbach (2010) point out that outside directors could react to past performance simply because they do not have the opportunity to observe many other variables. Insiders, instead, are involved in the daily activities of a firm and have substantial additional information about the CEO's ability. Thus, in some cases, insiders might be correct in abstracting from past performance. For example, Harris and Raviv (2008) have a model in which insider-dominated boards can be better if the inside information they know is very important. Fisman, Khurana, Rhodes-



Kropf and Yim (2014) model the positive role of entrenchment in public firms in insulating managers from the pressure of uninformed shareholders and provide supporting empirical evidence. Our data set can help shed some light on this issue because LBO sponsors are different from both inside and outside directors. On the one hand, they have no special links to the CEO (like outside directors), and they have a large equity stake in the firm; so they should not hesitate to fire a nonperforming CEO. On the other hand, they are heavily involved in the firm's activities (like inside directors), and thus they have inside information beyond observations of the past performance.

Several papers on turnover-performance sensitivity focus on stock price performance, which we cannot observe because our firms become private after the LBO. We therefore focus on the approach of Weisbach (1988) and others that use the changes in earnings as a measure of performance, assuming they are an unbiased estimate of unexpected earnings.<sup>23</sup>

To study the turnover-performance sensitivity, we use the data on financial performance described in Section 2. Among the financial performance data that we construct, we focus on the profit margin because it is the closest measure to EBIT, which is used in Weisbach (1988). In Panel A of Table 5, we look at the CEO turnover sensitivity to performance. In line with the analysis in Weisbach (1988), we run a logit regression in which the dependent variable (CEO turnover) is a dummy that takes the value of one if the CEO changes in a given year, and the observations are firm-years for both LBOs and the corresponding matching public firms. The variable  $\Delta PM_{-1}$  reflects the change in profit margin for the previous year, that is, the last change in performance. We first report the results for the whole sample (Regressions 1-3), then only for the LBOs (Regression 4), and then we split the sample between the LBOs where the CEO does not change during the transition (Regressions 5 and 6) and the LBOs where the CEO changes during transition (Regressions 7 and 8).

In Regressions 1-3, we see that the CEO turnover is sensitive to the lagged performance:

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<sup>23</sup>Ittner, Larcker and Rajan (1997) study the weight of market-based performance measures versus accounting-based measures in CEO bonus contracts, while Engel, Hayes and Wang (2004) focus on CEO turnover decisions.

if performance improves, the CEO is less likely to be replaced. When we split the sample we see that, as expected, this is true only for the cases in which the CEO changes during the transition. To see whether LBOs are characterized by a lower sensitivity of the turnover to performance than in public firms, in Regressions 2, 5, and 7 we introduce a dummy that takes the value of one for LBOs and zero for the matched public firms. We do not find a significant effect in the whole sample; but in Regression 7, looking again at LBOs where the CEO changes during the transition, we can see that LBOs have a significantly higher CEO turnover. In Regression 7, we also observe that the coefficient for the sensitivity of turnover to performance (as captured by the interaction of the LBO dummy with the lagged change in profit margins) is positive and highly significant. This coefficient means that LBOs have a lower sensitivity of CEO turnover to performance: when the LBO dummy takes the value of one, the negative coefficient for  $\Delta PM_{-1}$  is reduced (in absolute value). A similar conclusion can be drawn by looking at Regression 4, where we run the equivalent of Regression 1, but for LBOs only, and we see that the coefficient for the change in profit margins is not significant. Thus, this result seems to point again in the same direction implied in Table 4: the monitoring of private equity leads not only to a reduction in the CEO turnover but also to a reduction in the sensitivity of the turnover to performance. Because we measure the change in performance using the recent (one year) changes in the profit margins, we capture the short-term performance. The lower turnover-performance sensitivity of LBOs thus implies that LBO sponsors rely less on short-term performance to decide whether to fire the CEO.

The underlying hypothesis in Weisbach (1988) is that any change in EBIT can be considered an unexpected change. However, if the objective of the LBO is to restructure the firm, some changes in the operating performance might be expected. For example, an increase in earnings of 20% could be seen as a disappointing performance, if the aim of the private equity sponsors is to double earnings before exiting. Because we do not observe the private equity sponsors' expectations, in Panel B of Table 5, we focus only on the cases in which

$\Delta PM_{-1}$  is negative (i.e., when profit margins worsen). Our argument is that a worsening of the profit margins is very likely to be seen as a disappointing performance by the LBO sponsors: a private equity firm, which is planning to exit the deal within five years, is unlikely to plan for profit margins to get worse. Therefore, in Panel B of Table 5, we present the same regressions as in Panel A, but only for the subset of cases where  $\Delta PM_{-1}$  is negative. We observe the same results.

Finally, in Regressions 3, 6, and 8 (of both Panel A and B), we introduce the percentage of the board seats taken by LBO sponsors. We see that when the CEO changes during the transition, the sensitivity of the turnover to performance is lower the higher the involvement of the LBO sponsors is. So, in line with the results in Table 4, we find that larger involvement by private equity implies not only a lower CEO turnover rate, but also a lower turnover-performance sensitivity. Thus, while a larger number of outsiders increases the turnover sensitivity, a larger number of LBO sponsors decreases it. The explanation is that the LBO sponsors, being involved in the monitoring, do not need to rely on measures like performance.

## 7 Operating Performance

In the previous sections, we discuss the involvement of the LBO sponsors as a positive aspect, that is, as a sign that they are actually putting effort into turning around the firm. As a consequence, we also interpret the lower turnover and its sensitivity to performance as good features. However, one might wonder whether this involvement actually translates into better performance. Therefore, in this section, we look at the change in the operating performance of these firms after they turn private.

The recent evidence on private equity transactions is mixed. Weir, Jones and Wright (2008) study UK buyouts between 1998 and 2004 and find some but not strong evidence that performance improves. However, the evidence is worse for the subset of public to private firms. Acharya, Gottschalg, Hahn and Kehoe (2012) analyze private equity transactions in

Western Europe between 1995 and 2005 and find improvements in operating performance. Finally, Guo, Hotchkiss and Song (2011) find limited operating performance improvements for LBOs between 1990 and 2006 in the United States.

In Table 6, we analyze the changes in three different measures of operating performance (operating profits over sales, operating profits over total assets, and profit margins) from immediately before the LBO to immediately before the exit.<sup>24</sup> This approach should therefore abstract from the temporary changes in performance during the restructuring time and look at what the LBO sponsors manage to achieve while they are in control. For each performance measure, we compute the absolute change and the change relative to the matching firms. Because there is an endogeneity problem in examining how the involvement of the LBO sponsors affects the financial performance, we instrument the LBO sponsors involvement as before, that is, using the percentage of outsiders sitting on the board before the LBO as an instrument. In Table 6, we present the second stage of the 2SLS (the first stage is given by Regressions 1 or 4, depending on the specification, of Table 3). We have run all of the regressions by also adding leverage as an explanatory variable, i.e., having Regression 3 or 6 of Table 3 as the first stage. The coefficient for leverage is not statistically significant and the results do not change.

Because we lose many observations when we use the operating performance data, the statistical significance of this table is limited. Despite this, the results are interesting. The involvement of the LBO sponsors (instrumented) is generally positive and statistically significant.<sup>25</sup> The positive impact of a larger presence of the LBO sponsors on the performance is consistent with the hypothesis that private equity involvement is beneficial and helps to turn the firm around. Together with the result in Section 5 that the larger presence of the

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<sup>24</sup>The average (median) length of the period between exit and transition is about 4.5 (4) years.

<sup>25</sup>One concern here is that the LBO sponsors, after taking the firm private, could have sold (or bought) a large part of the firm's assets, so that before and after we are not comparing the same firm anymore. Therefore, we repeat Table 6 by dropping the cases where the assets in the first two years change by more than 30% in absolute terms. We obtain similar results, and in some cases stronger, despite the reduction in the number of observations. Interestingly, in half of the cases the assets of the firm increase (but not necessarily by a substantial amount) when the firm goes private. This result is consistent with the results for France in Boucly, Sraer and Thesmar (2011).

LBO sponsors on the board reduces the CEO turnover, this finding suggests that when LBO sponsors give the CEO the time and the incentives to implement the restructuring plan, this has a positive impact on performance.

The evidence from the dummy for CEO change is somewhat mixed. When looking at operating profits over sales and assets the coefficient is positive and sometimes significant, but when looking at the profit margin the coefficient is negative but not significant. Overall, there is no strong evidence that the operating performance of the LBOs in which the CEO changes in transition is better. Given that the cases where CEO does not change during transition are arguably the easier deals (see Section 4.1), one can expect these deals to have better operating performance, especially if the LBO sponsors put effort in trying to restructure the firm. Instead, we find, if anything, mild evidence of the opposite. This suggests that the cases with no CEO change in transition may be the ones in which the intention of the LBO sponsors is to rely on financial engineering (rather than to restructure the company) as the main source of the value creation.

## 8 Conclusions

We construct a new and unique data set on LBOs in the United Kingdom to study CEO turnover under the effective monitoring of private equity. We find that when firms go private, the CEO turnover and its sensitivity to performance decrease. This is more apparent when LBO sponsors are more actively involved in the firm. We interpret this as evidence that by alleviating the myopia of boards, active monitoring reduces the chances of firing the CEO for the wrong reasons and allows CEOs to have a longer horizon within which to complete their restructuring plans. Our findings also support the inside information theory of boards. This theory suggests that board's higher reliance on the inside information for the decision to dismiss the CEO could lower the sensitivity of CEO turnovers to performance.

The literature on CEO turnover in public firms has interpreted a high CEO turnover as

a sign of an active and independent board. This view has further been strengthened by the fact that boards with more outside directors have a higher turnover-performance sensitivity. While a higher sensitivity is probably good for public firms on average, it might sometimes indicate myopia or overreaction to bad performance due to factors beyond the CEO's control. A superior corporate governance model should be able to avoid such mistakes. An interesting further inquiry might be to analyze whether outside directors are more effective for the firms where the performance is a good indicator of the talent and effort of the CEO.

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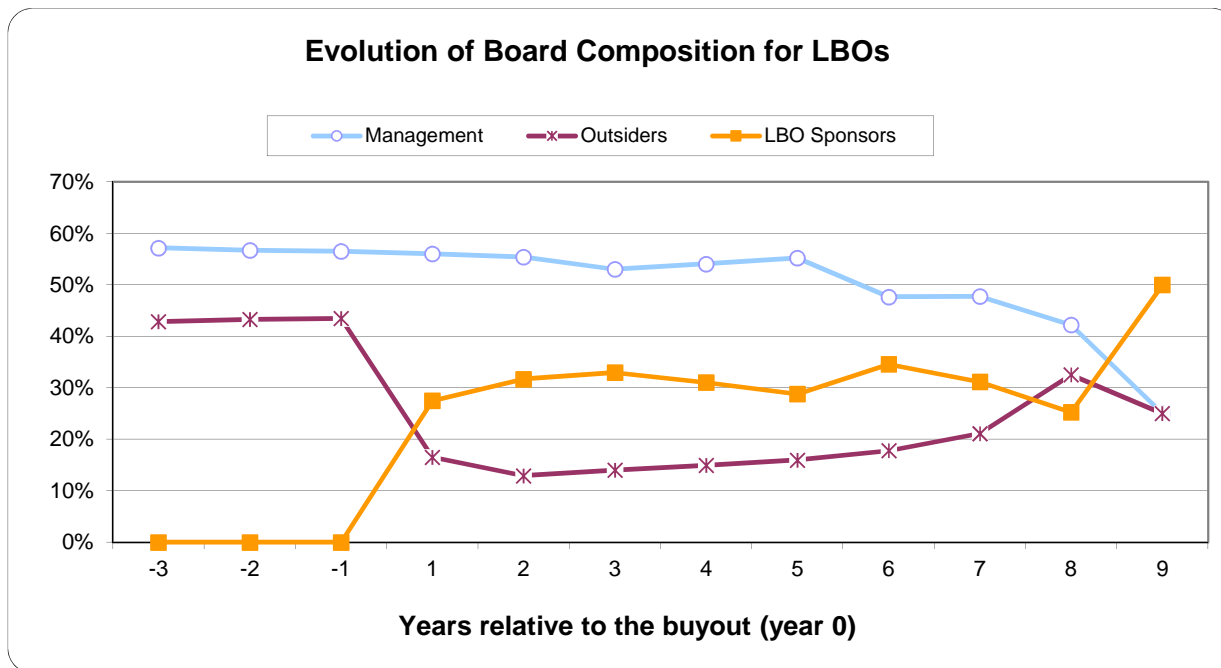
**Figure 1: Average Board Size over Time for LBOs**

This figure shows how the size of the board changes over time for LBOs. Date 0 is the year in which the buyout takes place. The figure shows, for example, that in year 5 after the buyout LBOs have on average a board of 5 people (the average is taken over all the LBOs that have not exited by year 5).



**Figure 2: Evolution of Board Composition for LBOs**

This figure shows the evolution of the board composition for LBOs. Year 0 is the year in which the LBO takes place. The figure shows the average percentage of three groups of directors with respect to the total number of directors: management (composed of CEO, management and other insiders), outside directors and LBO sponsors. The average in year, for example, 5 is taken over all the LBOs that have not been exited by year 5.



**Table 1: Transaction Size Descriptive Statistics (\$M)**

This table presents the frequency distribution of the deals over the years (Panel A) and the distribution of the firm size (Panel B) in our sample. The year of each transaction is determined according to the announcement date. Transaction size is computed as the enterprise value implied by the price paid to take the firm private.

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**Panel A. Year distribution of the sample**

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Announcement Year	Number of transactions
1998	13
1999	22
2000	17
2001	9
2002	10
2003	17
	<hr/>
	<i>Total</i> 88

**Panel B. Transaction size distribution**

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Bin	Number of transactions
15	8
75	27
300	32
1500	18
6000	3
	<hr/>
	<i>Total</i> 88

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**Table 2: Summary Statistics for the CEO Change and CEO Turnover Rates**

This table reports the frequency of CEO Change during the transition from public to private (Panel A) and the average CEO Turnover for LBOs and for the matching public firms (Panel B). The CEO Turnover is computed as the number of times a CEO is changed, divided by the number of years over which this is measured. The CEO Turnover has been computed separately for the years before and after a firm goes private. In CEO Turnover rate calculations, the year in which the transition from public to private occurs is not taken into account. One, two, or three daggers denote that the figures are significantly different between before and after at the 10, 5, 1% levels respectively. One, two, or three asterisks denote that the figures are significantly different between sample and matching companies at the 10, 5, 1% levels respectively.

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**Panel A. Frequency of CEO change during the LBO transition**

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	<u>CEO change</u>	<u>No CEO change</u>
LBOs	46	42

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**Panel B. CEO turnover rate before and after the LBO (excluding transition)**

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	<u>Before</u>	<u>After</u>
LBOs	14.5%	9.2% *
Matching Companies	16.5%	14.4% †
Obs.	86	83

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**Table 3: Multivariate Analysis on Board Composition**

This table reports the regression coefficients (and t-statistics in parentheses) for various dependent variables and model specifications. The dependent variables are the percentage of LBO sponsors sitting on the board (measured in the year following the LBO transaction), and the average percentage of LBO sponsors sitting on the board, over all years after the LBO transaction. Firm size is the log enterprise value (in billion \$) implied by the LBO, and the Number of LBO sponsors is the number of PE funds backing the LBO. Change in CEO at LBO is a dummy that takes the value of one if there has been a CEO change during the transition from public to private. Experiences (Active) sponsors and Bank affiliated sponsors are dummies that take the value of one if at least one of the PE firms backing the LBO is an experienced (active) firm and if the leading sponsor is a bank affiliated PE firm, respectively. Fraction of outsiders before the LBO measures the number of outsiders in the board before the LBO transaction. Real Estate is a dummy that takes the value of one if the company is in the real-estate sector. We consider secondary sales as exits. Deals not exited within five years are considered non-exits. Leverage is measured as the total debt over the total assets immediately after the LBO transaction. Difference in percentage outsiders is the percentage of outsiders in LBOs minus that of matched public firms. One, two, or three asterisks mean that the coefficients are significant at the 10%, 5%, and 1% levels respectively.

Dependent variable	%LBO Sponsors	%LBO Sponsors	%LBO Sponsors	%LBO Sponsors	%LBO Sponsors	%LBO Sponsors	Average% LBO Sponsors	Average% LBO Sponsors
	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7	Reg 8
Intercept	-0.00 (-0.00)	-0.18 (-0.85)	0.10 (0.53)	-0.10 (-0.82)	-0.28* (-1.72)	0.06 (0.43)	-0.08 (-0.40)	-0.12 (-1.02)
Firm Size	0.02 (1.22)	0.01 (0.73)	0.03 (1.59)	0.01 (0.86)	0.00 (0.32)	0.03 (1.56)	0.01 (0.65)	0.01 (0.44)
Change in CEO at LBO	0.11** (2.38)	0.11** (2.41)	0.13** (2.43)	0.12*** (2.62)	0.12*** (2.65)	0.12** (2.48)	0.12*** (2.83)	0.13*** (3.24)
Number of LBO sponsors	0.14*** (2.51)	0.14*** (2.62)	0.11* (1.90)	0.13** (2.42)	0.13*** (2.57)	0.09* (1.65)	0.12*** (2.55)	0.11** (2.39)
Experienced sponsor	0.04 (0.32)	0.03 (0.29)	0.10 (0.76)				0.01 (0.08)	
Bank affiliated sponsor	-0.04 (-0.68)	-0.05 (-0.79)	-0.00 (-0.02)				-0.08 (-1.50)	
Fraction of outsiders before the LBO	0.29* (1.92)	0.60*** (2.67)	0.36** (2.26)	0.29* (1.95)	0.59*** (2.75)	0.35** (2.27)	0.50** (2.42)	0.28** (2.03)
Active Sponsor				0.08* (1.87)	0.08* (1.89)	0.08* (1.79)		0.09** (2.21)
Real Estate	0.06 (0.70)	0.08 (0.90)	-0.05 (-0.68)	0.08 (0.95)	0.09 (1.17)	-0.03 (-0.47)	0.05 (0.53)	0.05 (0.66)
Exited Deal	-0.08* (-1.74)	-0.07 (-1.43)	-0.13** (-2.53)	-0.09* (-1.87)	-0.07 (-1.56)	-0.13*** (-2.64)	-0.06 (-1.36)	-0.07* (-1.73)
Difference in percentage outsiders (LBO vs. Public)		-0.32* (-1.84)			-0.32* (-1.92)		-0.22 (-1.30)	
Leverage			-0.17* (-1.70)			-0.14 (-1.54)		
R-squared	25.2%	28.2%	25.0%	27.9%	30.8%	27.6%	28.8%	30.7%
Obs.	87	87	74	87	87	74	87	87



**Table 4: Difference in Average CEO Turnover Before and After the LBO: Second Stage of the 2SLS Regression**

This table studies the variables that affect the change in the average CEO turnover from before to after the LBO. The dependent variable is the difference between the average CEO turnover rate after the transition from public to private and the average CEO turnover rate before the transition. The average CEO turnover rate is the number of CEO changes divided by the number of years over which it is measured. Regressions 1 and 2 present the reduced-form model relating the change in the average CEO turnover to the percentage of outsiders on the board before the LBO. Regressions 3 to 6 present the results of the instrumental variables analysis. Specifically, they report the regression coefficients (and t-statistics in parentheses) for the second stage of the 2SLS model specification. Percentage of LBO sponsors sitting on the board is instrumented through regression 1 (for Reg 3), 4 (for Reg 4), 3 (for Reg 5), or 6 (for Reg 6) in Table 3. Firm size is the log enterprise value (in billion \$) implied by the LBO, and the number of LBO sponsors is the number of PE funds backing the LBO. Change in CEO at LBO is a dummy that takes the value of one if there has been a CEO change during the transition from public to private. Experienced (Active) sponsors and Bank affiliated sponsors are dummies that take the value of one if at least one of the PE firms backing the LBO is an experienced (active) firm and if the leading sponsor is a bank affiliated PE firm, respectively. Fraction of outsiders before the LBO measures the number of outsiders in the board before the LBO transaction. Leverage is measured as the total debt over the total assets immediately after the LBO transaction. Real Estate is a dummy that takes the value of one if the company is in the real-estate sector. We consider secondary sales as exits. Deals not exited within five years are considered non-exits. One, two, or three asterisks mean that the coefficients are significant at the 10%, 5%, and 1% levels respectively. The t-statistics are in parentheses below the coefficients. Because R-squared figures are not meaningful in the context of the 2SLS (Wooldridge (2009)), we do not report them.

Dependent variable	$\Delta$ Average CEO turnover					
	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6
Intercept	-0.03 (-0.15)	0.04 (0.26)	-0.09 (-0.27)	-0.15 (-0.73)	0.11 (0.27)	0.02 (0.06)
Firm Size	-0.02 (-0.78)	-0.01 (-0.66)	0.01 (0.33)	0.00 (0.16)	0.04 (0.91)	0.03 (0.83)
Percentage of LBO sponsors (IV)			-1.63* (-1.63)	-1.63* (-1.64)	-1.56* (-1.73)	-1.56* (-1.73)
Change in CEO at LBO	0.15** (2.45)	0.15** (2.42)	0.33** (2.42)	0.33** (2.37)	0.31** (2.10)	0.31** (2.19)
Number of LBO sponsors	0.07 (1.40)	0.06 (1.40)	0.30* (1.91)	0.29* (1.92)	0.25** (2.02)	0.23** (2.02)
Experienced sponsor	0.02 (0.20)		0.10 (0.54)		0.08 (0.38)	
Bank affiliated sponsor	0.06 (0.77)		0.01 (0.05)		-0.01 (-0.06)	
Fraction of outsiders before the LBO	-0.51*** (-2.82)	-0.50*** (-2.83)				
Active Sponsor		-0.01 (-0.36)		0.10 (0.97)		0.10 (0.98)
Real Estate	-0.02 (-0.21)	-0.02 (-0.22)	0.07 (0.47)	0.09 (0.60)	-0.03 (-0.25)	-0.01 (-0.06)
Exited Deal	-0.04 (-0.73)	-0.05 (-0.80)	-0.14 (-1.61)	-0.16* (-1.71)	-0.20* (-1.80)	-0.21* (-1.83)
Leverage					-0.05 (-0.19)	-0.02 (-0.09)
Obs.	82	82	82	82	71	71

**Table 5: CEO Turnover-Performance Sensitivity**

This table studies the CEO turnover and performance sensitivity using a logit regression framework. The dependent variable is a dummy which takes the value of one if the CEO changes in a given year. We look only at the years after the transition from public to private for both the LBO sample and the matched public firms.  $\Delta PM-1$  is the change (lagged by one year) in the profit margin. Percentage of LBO sponsors is measured by dividing the total number of LBO sponsors on the board by the total board size. LBO dummy is equal to one for firms in the LBO sample and to zero for the matched public firms. Panel A reports the regressions using all observations (i.e., for cases with positive or negative changes in the profit margin), whereas Panel B reports the regressions using only the cases with negative changes in the profit margin. Regressions 1-3 use the whole sample, Regression 4 uses only LBOs, Regressions 5-6 use LBOs for which there has been no CEO change during transition (and corresponding matched public firms), and Regressions 7-8 use LBOs for which there has been a CEO change during the transition (and corresponding matched public firms). Errors are clustered at the firm level. One, two, or three asterisks mean that the coefficients are significant at the 10%, 5%, and 1% levels respectively. The t-statistics are in parantheses below the coefficients.

**Panel A: All cases**

Dependent variable	Whole sample			LBOs only	No CEO change in transition		CEO change in transition	
	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover
	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7	Reg 8
Intercept	-1.87*** (-10.52)	-2.01*** (-6.96)	-1.88*** (-7.93)	-1.77*** (-8.42)	-1.92*** (-5.31)	-1.97*** (-6.50)	-2.61*** (-4.94)	-1.83*** (-4.19)
$\Delta PM-1$	-0.02** (-2.04)	-0.04 (-1.58)	-0.04** (-2.01)	-0.01 (-1.34)	-0.01 (-0.31)	-0.01 (-0.41)	-0.21*** (-3.60)	-0.13** (-2.13)
LBO dummy		0.24 (0.67)			-0.12 (-0.28)		1.14* (1.82)	
$\Delta PM-1$ x LBO dummy		0.03 (0.99)			0.01 (0.38)		0.19*** (3.23)	
Percentage of LBO sponsors			0.03 (0.04)			-0.09 (-0.07)		0.02 (0.02)
$\Delta PM-1$ x Percentage of LBO sponsors			0.06* (1.87)			0.05 (0.80)		0.20** (2.12)
Pseudo R-squared	1.8%	2.5%	3.0%	1.5%	0.1%	0.3%	17.2%	15.1%
Log pseudo likelihood	-125.80	-124.92	-124.31	-64.10	-72.77	-72.66	-45.39	-46.52
Obs	320	320	320	155	196	196	124	124

Table 5: CEO Turnover-Performance Sensitivity (continued)

Panel B: Only the cases with negative changes in the profit margin

Dependent variable	Whole sample			LBOs only	No CEO change in transition		CEO change in transition	
	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover	CEO turnover
	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7	Reg 8
Intercept	-1.69*** (-5.95)	-1.69*** (-3.94)	-1.90*** (-4.64)	-1.76*** (-4.90)	-1.65*** (-2.87)	-1.93*** (-3.59)	-2.31*** (-3.09)	-2.51*** (-3.26)
$\Delta$ PM-1	-0.02* (-1.81)	-0.03 (-0.87)	-0.05* (1.68)	-0.02 (-1.60)	0.01 (0.32)	-0.02 (-0.67)	-0.19*** (-3.22)	-0.23*** (-3.79)
LBO dummy		-0.06 (-0.12)			-0.21 (-0.27)		1.01 (1.08)	
$\Delta$ PM-1 x LBO dummy		0.01 (0.28)			-0.02 (-0.32)		0.17*** (2.86)	
Percentage of LBO sponsors			0.88 (0.62)			1.94 (0.78)		1.64 (0.75)
$\Delta$ PM-1 x Percentage of LBO sponsors			0.11* (1.65)			0.32 (1.13)		0.38*** (2.63)
Pseudo R-squared	2.1%	2.3%	5.6%	3.3%	0.2%	2.8%	15.6%	28.4%
Log pseudo likelihood	-65.57	-65.46	-63.24	-29.87	-37.11	-36.13	-23.93	-20.29
Obs	139	139	139	64	90	90	49	49

**Table 6: Difference in Operating Performance Before and After the LBO: Second-stage of the 2SLS Regressior**

This table reports regression coefficients (and t-statistics in parentheses) for the second-stage of the 2SLS model specification. The dependent variables are the following performance measures that are calculated as the difference between the performance right before the exit and the performance right before the LBO transaction: Operating Profit/Sales (OP/S), Operating Profit/Total Assets (OP/TA), and Profit Margin (PM) in absolute and relative to the matched control company terms. Percentage of LBO sponsors sitting on the board is instrumented through regression 1 or 4 in Table 3. Firm size is the log enterprise value implied by the LBO and number of LBO sponsors is the number of PE funds backing the LBO. Change in CEO at LBO is a dummy that takes the value of one if there has been a CEO change during the transition from public to private. Experienced (Active) sponsors and Bank affiliated sponsors are dummies that take the value of one if at least one of the PE firms backing the LBO is an experienced (active) firm and if the leading sponsor is a bank affiliated PE firm, respectively. Real Estate is a dummy that takes the value of one if the company is in the real-estate sector. We consider secondary sales as exits. Deals not exited within five years are considered non-exits. One, two, or three asterisks mean that the coefficients are significant at the 10%, 5%, and 1% levels respectively. Because R-squared figures are not meaningful in the context of the 2SLS (Wooldridge (2009)), we do not report them.

Dependent variable	$\Delta$ OP/TA	$\Delta$ OP/TA	$\Delta$ OP/TA	$\Delta$ OP/TA	$\Delta$ OP/S	$\Delta$ OP/S	$\Delta$ OP/S	$\Delta$ OP/S	$\Delta$ PM	$\Delta$ PM	$\Delta$ PM	$\Delta$ PM
	Absolute	Absolute	Relative	Relative	Absolute	Absolute	Relative	Relative	Absolute	Absolute	Relative	Relative
	Reg 1	Reg 2	Reg 3	Reg 4	Reg 5	Reg 6	Reg 7	Reg 8	Reg 9	Reg 10	Reg 11	Reg 12
Intercept	-0.21* (1.75)	-0.17** (-2.03)	-0.42*** (-2.83)	-0.29*** (-2.78)	0.06 (0.42)	-0.08 (-0.80)	-0.06 (-0.34)	-0.19 (-1.48)	-0.23 (-1.08)	-0.15 (-0.95)	-0.04 (-0.18)	-0.03 (-0.23)
Firm Size	-0.02 (-1.03)	-0.01 (-0.96)	-0.04** (-2.10)	-0.04** (-2.09)	0.01 (0.30)	0.00 (0.13)	0.01 (0.35)	0.00 (0.10)	-0.00 (-0.11)	-0.00 (-0.13)	0.01 (0.50)	0.01 (0.49)
Change in CEO at LBO	-0.00 (-0.11)	-0.01 (-0.28)	0.06 (1.00)	0.04 (0.65)	0.09 (1.45)	0.11 (1.54)	0.10* (1.72)	0.12** (2.01)	-0.04 (-0.58)	-0.07 (-0.91)	-0.08 (-1.30)	-0.08 (-1.29)
Percentage of LBO sponsors (IV)	0.45** (1.96)	0.44** (1.93)	0.39 (1.33)	0.43 (1.43)	0.04 (0.13)	-0.08 (-0.25)	0.19 (0.53)	0.12 (0.33)	0.59** (1.93)	0.65** (2.05)	0.41* (1.69)	0.52* (1.90)
Number of LBO sponsors	-0.02 (-0.54)	-0.02 (-0.50)	0.08** (1.97)	0.07 (1.56)	-0.08 (-1.49)	-0.08 (-1.37)	0.01 (0.09)	-0.00 (-0.01)	0.02 (0.59)	0.04 (0.84)	0.07* (1.68)	0.09** (2.31)
Experienced sponsor	0.02 (0.24)		0.08 (0.94)		0.03 (0.38)		0.02 (0.22)		-0.00 (-0.04)		-0.11 (-0.69)	
Bank affiliated sponsor	-0.00 (-0.10)		0.05 (0.74)		-0.16* (-1.91)		-0.11 (-1.27)		0.04 (0.65)		0.03 (0.34)	
Active Sponsor		-0.02 (-0.57)		-0.02 (-0.31)		0.09** (1.93)		0.08 (1.62)		-0.07* (-1.68)		-0.11* (-1.64)
Real Estate	-0.02 (-0.30)	-0.01 (-0.22)	0.13* (1.88)	0.13** (1.97)	-0.20 (-1.51)	-0.18 (-1.36)	0.19** (1.99)	0.20*** (2.70)	-0.26** (-2.20)	-0.25** (-2.12)	-0.13 (-1.61)	-0.12 (-1.40)
Exited Deal	0.06 (1.39)	0.06 (1.60)	-0.00 (-0.04)	0.00 (0.02)	-0.08 (-1.32)	-0.08 (-1.14)	-0.15** (-2.30)	-0.15** (-2.35)	0.16** (2.43)	0.19*** (2.82)	0.10 (1.62)	0.15** (1.94)
Obs.	67	67	57	57	67	67	57	57	56	56	48	48