

CEO Turnover in LBOs: The Role of Boards*

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Abstract

In this paper, 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 effective monitoring and more inside information allow private equity funds to rely less on short-term performance, and to therefore give CEOs longer employment horizons.

JEL Classification. G24, G30

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1 Introduction

Replacement of the CEO is one of the most important decisions a board can make. Consequently, the literature has studied this decision extensively.¹ The overall evidence from the public firms suggests that the board's decision to intervene follows poor past performance and that the firm's performance improves after the change in the CEO. There is also convincing evidence that outside directors increase the sensitivity of the CEO turnover to performance. Given these results, the replacement of a CEO is interpreted as a sign of an active and effective board. Furthermore, outsiders, who are independent from the CEO, are considered to have more incentives to monitor.

However, there are possible alternative interpretations of the results mentioned above. First, there is increasing evidence that public firms are prone to short-termism since the management might act to appease the potentially negative reactions of shareholders to the detriment of long-term performance.² This view raises the question of whether the boards might sometimes overreact to poor performance, especially when the optimal choice might be to allow the CEOs longer employment horizons. Second, as discussed in Hermalin and Weisbach (2003) and Adams, Hermalin, and Weisbach (2010), it is possible that insiders have more information to rely on in order to make the decision to dismiss the CEO. Therefore, the higher sensitivity of CEO turnovers to performance in outsider-dominated boards could be because of the asymmetric information explanation rather than the monitoring explanation.

In this paper, we examine the (change in) CEO turnover that occurs when a private equity firm takes a public firm private in a leveraged buyout (LBO). In particular, we analyze the role of the board in a CEO turnover under the private equity corporate governance model. This setup allows us to test the alternative theories above. First, private equity concentrates ownership and control in the hands of a few shareholders who have strong incentives to maximize the value of the firm. Furthermore, private equity partners often have long experience in restructuring firms, and thus their monitoring and advice can be very effective. If private equity truly has a superior corporate governance model, then our analysis allows us to better

¹See, e.g., Weisbach (1988), Denis and Denis (1995), Huson, Malatesta and Parrino (2004) and Kaplan and Minton (2006).

²See, e.g., Bharath, Dittmar, and Sivadasan (2010) and Asker, Farre-Mensa, and Ljungqvist (2012).

observe whether this superior governance leads to higher or lower CEO turnover. Second, it is interesting to study the LBO sponsors on the board because they share favorable features with inside and outside directors in public firms.³ On the one hand, similar to outsiders, LBO sponsors have no links to the CEO (not to mention the fact that they own a large equity stake) and hence have stronger incentives to monitor. On the other hand, similar to insiders, LBO sponsors are involved with the activities of the firm and thus have inside knowledge about the firm's operation. Therefore, studying the behavior of LBO sponsors can help us distinguish between the monitoring and the inside information hypotheses.

We construct a new data set that follows the board composition of all public to private transactions in the United Kingdom between 1998 and 2003.⁴ To the best of our knowledge, this is the most comprehensive data set of its kind. Out of a total sample of 142 transactions, 88 are sponsored by at least one private equity fund. For comparison purposes, we also collect data on the board composition of industry- and size-matched firms that remain public.

We find that when a firm goes private, the CEO turnover rate decreases, and the rate is lower than for matched firms that remain public. Moreover, we find that the CEO turnover in LBOs is less sensitive to performance than the turnover in the matched public firms. These results are consistent with the claims of the private equity firms that they refrain from excessive intervention in order to allow managers to focus on the restructuring process rather than short-term results.⁵ Thus, effective monitoring might indeed imply less CEO turnover rather than more.

Not everybody agrees that private equity has superior corporate governance. Some argue that the success of LBOs is due to financial engineering.⁶ Because we want to investigate the relation between effective monitoring and CEO turnover, we identify the cases in which private equity monitors instead of relying on financial engineering. Therefore, we take a step back and identify the cases in which private equity backers are particularly involved in the restructuring of the firm (rather than simply increasing the leverage). As a measure of private

³In the remainder of the paper, we use the terms "private equity sponsors" and "LBO sponsors" interchangeably to refer to these representatives of private equity groups sitting on the boards of the companies taken private.

⁴We stop in year 2003 to be able to observe the subsequent CEO turnover and performance of the buyouts.

⁵See, e.g., Rogers, Holland, and Haas (2002).

⁶See Kaplan and Strömberg (2009) for the discussion of operational and governance engineering versus financial engineering.

equity involvement, we look at the percentage of board seats held by members of the private equity firm. This is because the partners sitting on the board usually are the ones in charge of the firm.

We find that after a LBO, the board size decreases and the outside directors are replaced by LBO sponsors. The presence of LBO sponsors on the board is larger when a greater need exists for their monitoring and expertise. To identify the most challenging cases that require more involvement, we use various proxies. The most important is a dummy that takes the value of one if the CEO changes during the LBO. A CEO change during the transition might indicate a significant challenge in restructuring the firm for the new incoming manager. Alternatively, the change might be a signal of the intention of the private equity firm to apply operational and governance engineering rather than financial engineering. In general, these should indicate the deals in which firms need a larger restructuring effort and therefore more monitoring. We find the percentage of seats taken by LBO sponsors is larger for these deals. This evidence is thus consistent with the view that more LBO sponsors sit on the board when they intend to monitor the CEO and help turn around the firm.

After identifying what affects the involvement of the LBO sponsors, we analyze whether larger involvement by the private equity firm increases or decreases CEO turnover. To avoid possible reverse causality issues, we conduct a 2SLS analysis of what affects a change in CEO turnover after the firm goes private. We use as an instrument the percentage of outsiders sitting on the board before the LBO.⁷ The literature on boards uses this measure as a proxy for the firm's complexity. Thus, these firms should be the most difficult to run. This complexity is arguably the same before and after the LBO and should not directly affect the *change* in the CEO turnover. We find that a more difficult LBO (captured by a CEO change during the transition) implies higher subsequent CEO turnover, but higher involvement by LBO sponsors (and consequently higher monitoring) implies *less* subsequent CEO turnover.

Similar in spirit to Weisbach (1988), we next analyze the CEO turnover-performance sensitivity and find that the turnover sensitivity 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. Outside directors are not involved with the

⁷See, e.g., Coles, Daniel, and Naveen (2007) and Linck, Netter, and Yang (2007).

daily activity of a firm; thus, for their decisions, outside directors need to rely on some objective measure such as past performance. LBO sponsors, on the other hand, are much more involved in the firm's operations. In addition, unlike insiders, LBO sponsors do not have their careers tied to the CEO. Therefore, LBO sponsors can rely less on observed performance and more on their inside information. This is supportive of the asymmetric information view of the board.

These results are also consistent with the findings in Jenter and Kanaan (2011) and in general with the pay-for-luck literature (see, e.g., Bertrand and Mullainathan (2001)). The common theme in these studies is that the boards of public firms often make mistakes and fire CEOs for the wrong reasons (in particular even if bad performance is due to factors beyond the CEO control). In a recent study, Cornelli, Kominek, and Ljungqvist (2012) look at private firms with private equity backing and find that the boards do not punish CEOs for bad luck. This paper reconciles these two findings by showing that when a firm becomes private through private equity backing, the CEO turnover is lower and is less sensitive to performance. In other words, by monitoring more closely, a private equity board is able to avoid turnover for the wrong reasons. Therefore, the results in this paper show that an active monitoring board can actually reduce, not increase, CEO turnover and its performance sensitivity.

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 evidence is consistent with the argument that the link between higher involvement by LBO sponsors and lower CEO turnover (sensitivity) is due to better, rather than worse, monitoring.

There are three main contributions of this study. 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 raises questions about the CEO turnover practices of public firms and 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, the paper documents an important aspect

of 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 economy, to date there has been limited empirical evidence, due to data limitations, about private equity boards and their actions.

A related paper in the private equity literature is by Cotter and Peck (2001), which finds evidence, by looking at LBOs in the 1980s, that buyout specialists have greater board representation, suggesting they actively monitor managers. Another related paper is by Acharya, Gottschalg, Hahn, and Kehoe (2012), which analyzes private equity transactions in Western Europe and finds evidence on the importance of private equity sponsors' involvement. Finally, Gong and Wu (2011) look at CEO turnover in LBOs, but their definition of turnover is very different from ours. They look at changes in CEO around the time in which the company is taken private, while we, as we argue explicitly later, abstract from these changes and focus on CEO turnover *after* the company is taken private. This is because we focus on what happens when the private equity sponsors are in control and thus can monitor. As already discussed above, we use changes of the CEO during the transition only as a proxy for deals where the private equity sponsors want to restructure the company (which is consistent with the evidence in their paper).

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 some 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

To construct our sample, we first assemble a comprehensive list of private equity transactions and then identify their boards (and hence their CEOs). We match the LBOs with similar firms

that stay public and identify the boards of these firms as well. 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 stop the sample period in 2003 so that we can observe the subsequent CEO turnover and performance of the buyouts. We identify a total of 148 transactions. After dropping six cases with a lack of data and 54 cases with no private equity involvement (e.g., MBOs), 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.⁸ 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.⁹ 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 firms, directors, and shareholders 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

⁸For 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.

⁹In 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.

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 later.

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 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).¹⁰ Then, we download the board compositions of each of these firms. We observe the composition only once per year. 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. In a few cases with uncertainty regarding the relevant board, we conduct the analysis with the alternative boards and find all the results to be robust.¹¹

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. For this reason, we conduct the analysis in this study by comparing the characteristics of the board prior to the announcement to the characteristics of the board more than one year after the announcement date.¹²

¹⁰The 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 only for UK companies. In recent years the two data sets are almost identical; but for the earlier years Fame is more complete.

¹¹In these uncertain cases, usually the two boards are not dramatically different, for example, one name is different among the compared boards. This is probably why a particular choice among the potentially relevant boards does not make much difference for our results.

¹²We repeat the same analysis by using the composition of the board immediately after the transaction and

We look for the identity of all of the directors that sit on the boards each year by using a series of data sets (Capital IQ, Fame, Amadeus, Perfect Information, Manifest and a general search in press releases) and 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.¹³ 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. We look at board changes from one year to the next one and observe any change in the CEO and more generally of any board member.

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 reduction in the board size might also be due to the possibility that private firms need less directors.

Figure 2 presents the evolution of the board composition. We observe that 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 a LBO. But, the proportion of insiders drops dramatically in later years as the LBO sponsors and the outsiders replace them. These are probably the problematic cases and the private equity firms representatives need to be more directly involved.

Overall, these changes are consistent with the hypothesis that private equity could be moving the LBOs towards a superior corporate governance model.

the results do not change, possibly because these problems arise only for a small number of LBOs.

¹³Perfect 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.

2.3 Matching with Public Firms

For each LBO, we find a matching firm that remains public. We take all of the UK public firms from Datastream and match the firms by industry and size in the year before the transition.¹⁴ The limited number of public firms that exist in the United Kingdom as compared to the United States restricts the possibility of matching firms with 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 size restriction.¹⁵ 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, we go over each individual firm and 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

¹⁴We also do the matching using the first year in which we observe the firm, usually two or three years before the transition, with no substantial difference.

¹⁵We also try different picking rules for these 8 matching firms and the results are robust to these rules.

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.

3 Intervention of the Board: CEO Turnover

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

We do not attempt to distinguish between forced and voluntary CEO turnover. As Hermalin and Weisbach (2003) point out, studies have taken different approaches to this issue but their results seem to not differ. This is probably because voluntary turnovers are likely to not be related to performance and to add noise. A second point is that when computing the turnover rate, we on purpose do not include any CEO change that takes place during the transition.¹⁶ The reasoning is that the changes during the transition happen not because of any intervention by the board in place at that time, but because of the private equity group taking over the company. We want to focus instead on how prone the new board is to intervention after being put in place after the LBO.

¹⁶For an analysis of the CEO turnover during the transition, see Gong and Wu (2011).

Table 2 reports the summary statistics for the CEO turnover rate. Because any change in turnover might be because of a change, for example, in the economic conditions, we do not simply compare the turnovers before and after an LBO. Instead, we construct a set of matching firms that remain public and compute the CEO turnover over the same interval of time in these firms. The average turnovers before the LBO and for the matching firms are 14% and 16% respectively. These figures are in line with Kaplan and Minton (2008) who find an average CEO turnover of 15.6% from 1992 to 2005. The turnover following an LBO is significantly smaller than before the deal and is significantly smaller than the turnover in matching firms, (while the turnover is not significantly different before the LBO).¹⁷

Given the reputation of private equity for having more discretion to fire nonperforming managers, we aim in this research 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 how much LBO sponsors are involved 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.

¹⁷As 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 Table 2 are even stronger.

4.1 Identification of Deals Requiring More Effort

Our conjecture is that cases that require more effort (and hence more monitoring) should have more involvement from the LBO sponsors on the board. To establish this relation, 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 before to after the LBO. In 46 out of the 88 private equity deals, the CEO is changed during the 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 unsatisfactory CEO performance exists before the firm goes private, 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.¹⁸

Second, we construct a dummy that takes the value of one if a private equity firm exits the deal within five years from 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).¹⁹ 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.²⁰

¹⁸Consistent 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.

¹⁹An 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 (2010) studies secondary buyouts in UK and argues that they can be seen as an alternative form of exit dictated by the capital market conditions.

²⁰Of course, the inability to exit in five years could 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

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, e.g., Coles, Daniel, and Naveen (2007) and Linck, Netter, and Yang (2007)). These firms are likely to remain more difficult to monitor after LBOs also. Therefore, we use the percentage of outsiders on the board before the LBOs 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.²¹ 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 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

difficult ones.

²¹Note 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.

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.²² 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 the fund typically follows the strategy of being involved. Further, we introduce a real-estate dummy for deals in this sector, because the private equity funds sponsoring real-estate LBOs usually are completely different from the private equity funds sponsoring the other LBOs.

In Regression 1, 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 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 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

²²See, Hellmann, Lindsey, and Puri (2008) and Fang, Ivashina, and Lerner (2010).

higher than similar firms (which would suggest they are relatively inefficient).

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.²³

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.

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. However, 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

²³In a similar spirit, Lerner (1995) focuses on venture capital firms and identifies periods when the need for oversight is greater (i.e., when the CEO is replaced) and finds venture capital firms are more involved.

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 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. Any characteristic of the firm that remains the same before and after the LBO should not affect the change of the CEO turnover rate. In particular, we have argued before that the percentage of outsiders in the board before the LBO captures the intrinsic complexity of the firm's business. Such complexity can affect the CEO turnover, but this effect should be the same both before and after the firm goes private.²⁴ Therefore, 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.²⁵

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.²⁶ The

²⁴We 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 in the first two to 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.

²⁵One could argue that the CEO turnover before the deal has to do with the quality of management: the better the CEO is, the lower the turnover. However, this is exactly in line with what we are trying to capture: a lower management quality before the LBO means there is more restructuring to do after the LBO and therefore more effort on the side of the LBO sponsors is required.

²⁶Because 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.

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 (or when the main objective of the private equity fund is restructuring, and not financial engineering), 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.

This result suggests that through monitoring, LBO sponsors are more able to assess the CEO's skill, and thus they do not fire him/her for the wrong reasons.²⁷ 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 (2011) in public firms. 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 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.

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

²⁷Edmans (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.

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 process. To control for this, we rerun all of our tests in Table 4 by using only the first year or 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 (2010), and Jenter and Kanaan (2011), 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 or she is not performing. Thus, if turnover is sensitive to performance, then the board has observed poor performance (captured by the stock price or operating performance) and acted on it. Weisbach (1988) shows that turnover is more sensitive to performance when the number of outside directors increases: this shows 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 (2012) 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.

On the other hand, Hermalin and Weisbach (2003) and Adams, Hermalin, and Weisbach (2010) point out that outside directors could react more 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 and thus might be right in some cases 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. 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.

Most of the 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 Weisbach's (1988) approach that uses the changes in earnings as a measure of performance, assuming they are an unbiased estimate of unexpected earnings.²⁸

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 there is a change in CEO in a given year, and the observations are firm-years for both LBOs and the corresponding matching public firms. The variable ΔPM_{-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, and then we split the sample between the LBOs where the CEO does not change during the transition and the LBOs where the CEO changes during transition. Each subsample includes the corresponding matched public firms.

In Regression 1, we see that the CEO turnover is sensitive to the lagged performance: 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 overall 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

²⁸An additional difficulty for us is that it is not clear what the expected earnings are. See the end of this Section for a discussion of this issue.

turnover. Most importantly, in Regression 8 we can see 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: when the LBO dummy takes the value of one, the negative coefficient for ΔPM_{-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 sensitivity of LBOs thus implies that LBO sponsors rely less on short-term performance to decide whether to fire the CEO.

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 ΔPM_{-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 ΔPM_{-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. 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).²⁹

²⁹We 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

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.³⁰ The positive impact of a larger presence of the LBO sponsors is consistent with the hypothesis that private equity involvement is beneficial and helps to turn the firm around. Because we show in Section 5 that the larger presence of the LBO sponsors on the board reduces, rather than increases, the CEO turnover, this result shows that when the LBO sponsors are more involved they are more likely to give the CEO a longer horizon. Thus, the CEO has the time and the incentives to implement the restructuring plan. Moreover, a larger private equity presence could imply more involvement in the advisory role, rather than more monitoring, thus the support through experience and advice to the CEO translates into better 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, no strong evidence exists that the operating performance of the LBOs in which the CEO changes in transition is better. However, there are two opposite effects playing a role. The first one is that the deals in which the CEO does not change during transition are easier to implement because you have a capable manager who knows the firm well, and less involvement by the LBO sponsor is required. This finding implies that these deals should have better operating performance. The second one is that the deals in which the CEO does not change during transition are the ones where the source of the value is expected to be mainly financial engineering. The LBO sponsor is less involved because restructuring is not a priority. In such a case, these deals should not have better operating performance. The fact that we do not find a significant effect could be due to these two opposite effects. But at the same time, if the deals in which the CEO does not change during transition are the easier ones to implement,

do not change.

³⁰One 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).

we should find they have a larger improvement in operating performance. Instead, we find, if anything, mild evidence of the opposite. This suggests that indeed the cases in which the CEO does not change are the ones in which the intention of the LBO sponsors is to rely on financial engineering (rather than to restructure the company).

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 asymmetric information theory of boards. This theory suggests that board's relying more 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 on average for public firms, it might also hide myopia sometimes or the overreaction to bad performance because of 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

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.

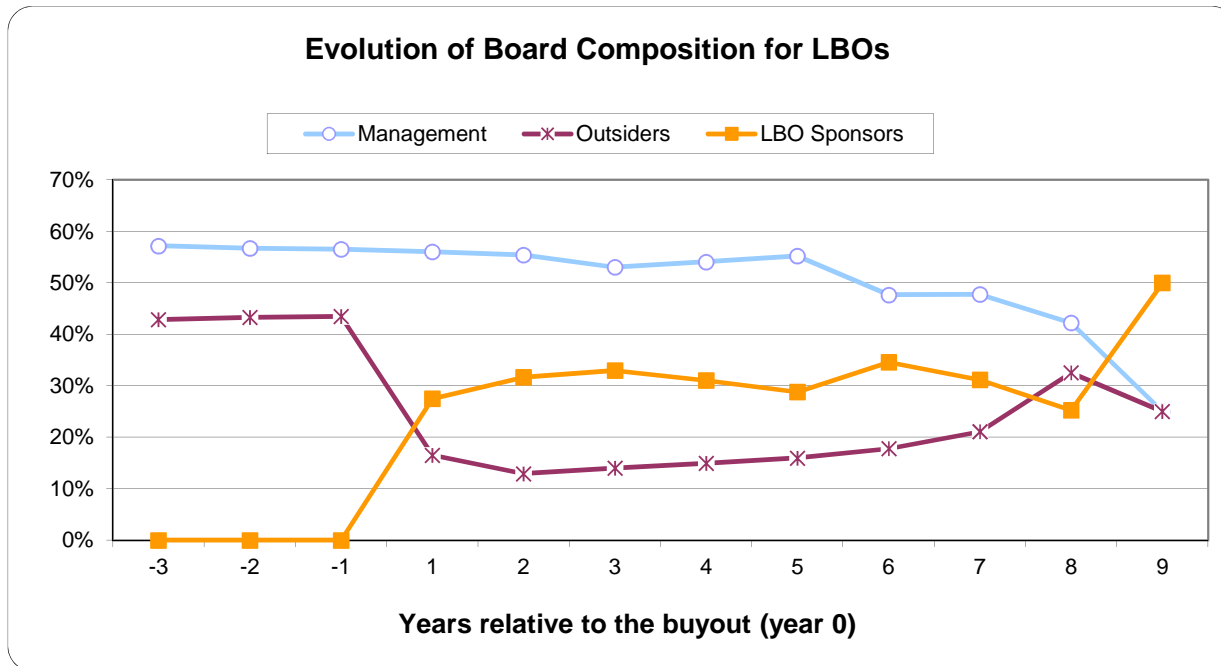


Table 1: Transaction Size Descriptive Statistics (\$M)

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.

Panel A. Year distribution of the sample

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

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

Table 2: The Summar Statistics for the CEO Turnover Rate

This table reports the average CEO Turnover for LBOs and for the matching public firms. 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 Turnover has been computed separately for the years before and after a firm goes public. 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.

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

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 second year following the LBO), and the average percentage of LBO sponsors sitting on the board, over all years after the LBO. 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. 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 transition. 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 Transition: 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 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 transition. 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. Leverage is measured as the total debt over the total assets immediately after the transition. 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	Δ 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 6-7 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.

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)
Δ 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)	
Δ 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)
Δ 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 Transition: Second-stage of the 2SLS Regressor

This table reports regression coefficients (and t-statistics in parentheses) for the second-stage of the 2SLS model specification. The dependent variables are performance measures: 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	Δ OP/TA Absolute	Δ OP/TA Absolute	Δ OP/TA Relative	Δ OP/TA Relative	Δ OP/S Absolute	Δ OP/S Absolute	Δ OP/S Relative	Δ OP/S Relative	Δ PM Absolute	Δ PM Absolute	Δ PM Relative	Δ PM 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