The Market for CEOs:

Evidence from Private Equity

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Abstract

Most research on the CEO labor market has studied public company CEOs while largely ignoring the market for CEOs in private equity funded companies. We fill this gap by studying the market for CEOs among larger U.S. companies (enterprise value greater than $1 billion) purchased by private equity firms in leveraged buyout transactions between 2010 and 2016. 71% of those companies hired new CEOs under private equity ownership. More than 75% of the new CEOs are external hires with 68% being complete outsiders. The most recent experience of 67% of the outside CEOs was at a public company with 32% at an S&P 500 company. Almost 50% of the external hires have some previous experience at an S&P 500 company. These results are strikingly different from studies that look at public companies, in particular, Cziraki and Jenter (2022) who find that 72% of new CEOs in S&P 500 companies are internal promotions. The median buyout in our sample earned 2.5 times on its equity investment. Using the performance of the buyouts and evidence on buyout cash and equity incentives, we estimate the total compensation of buyout CEOs and find that it is much higher than that of CEOs of similarly sized public companies and slightly lower than that of S&P 500 CEOs. Overall, our results suggest that the broader market for CEOs is active and that, at least for private equity funded portfolio companies, firm-specific human capital is relatively unimportant. The compensation results indicate that public company executives have viable outside options. Finally, our results suggest that one cannot necessarily generalize the results for and inferences from publicly-owned companies to all companies. We conclude by discussing possible reasons that the public company and private-equity portfolio company CEO results are so different.

Keywords: CEO turnover, CEO compensation, private equity, corporate governance.

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A wide range of research examines the market for CEOs and executive mobility in public companies while largely ignoring the market for CEOs in private equity funded companies. The research on public companies tends to find low levels of mobility for CEOs, particularly recently. Cziraki and Jenter (2022) study CEO changes at S&P 500 companies from 1993 and 2012 and find that internal promotions are much more common than external hires: 72% of new CEOs are internal promotions while only 20% are true outsiders (not former executives or board members). Different, but consistent, Graham, Kim, and Kim (2020) find that the mobility of public company CEOs increased from the mid-1980s until around 2000, when it faced a sharp decline. Larcker et al. (2022) look at turnover in the broader set of companies in the Russell 3000 from 2017 to 2021. They report that 33% of new CEOs are external hires.

In this paper, we study the market for CEOs among larger U.S. companies (enterprise value greater than $1 billion) purchased by private equity firms between 2010 and 2016. These are primarily leveraged buyout transactions. In what follows, we use private equity and buyout interchangeably.

There are at least four reasons that the market for CEOs in private equity funded companies (leveraged buyouts) is potentially large and important. First, the private equity industry has grown substantially in the last thirty years. In the five years from 2017 to 2021, Pitchbook estimates that over 30,000 private equity deals (buyouts and add-on acquisitions) were completed with a total value exceeding $4 trillion.[1] That represents a market capitalization of more than 10% of the S&P 500 and includes many more companies than are publicly traded.[2] Second, CEOs of private equity funded companies receive high powered incentives that typically

[1] Pitchbook 2021 Annual U.S. PE Breakdown.
[2] These figures do not include venture capital funded companies which represent another possibly important market for top executives.

include 2% to 10% of the equity upside.[3] Third, in a survey of 79 private equity firms representing almost one-half of private equity capital, Gompers et al. (2016) find that 58% of respondents typically replace senior management before or after their initial investment. Almost 43% of the respondents cite replacing the CEO or CFO as an important source of value creation. Finally, U.S. private equity funds appear to have performed well. According to Burgiss (as of September 2022), the average PE fund formed between 2010 and 2016 outperformed the S&P 500 by a cumulative 22% and an annualized 5%.[4]

And there are some prominent CEO examples. David Calhoun left one of the top executive positions at GE (vice-chairman) to run a much smaller, private equity funded Nielsen Holdings. After taking Nielsen public, he moved to a senior role at a private equity firm, The Blackstone Group, running portfolio operations. He subsequently became the CEO of Boeing after serving on Boeing's board.

We follow the private equity funded companies in our sample from the time of the purchase or buyout until the company is acquired by another company, returns to public ownership or goes bankrupt. Our results are markedly different from those for public companies. Over 70% of the companies in our sample hire new CEOs. More than 75% of the new CEOs are external hires with 68% being complete outsiders who do not have direct connections with the hiring companies either through board membership or former employment as an executive. This trend holds for the entire sample period (2010 to 2016) and all subperiods (2010 to 2012, 2013 to 2014, 2015 to 2016).

[3] See Kaplan and Stromberg (2009) and Gompers et al. (2016 and 2020).
[4] See also Harris et al. (2022) and Korteweg and Nagel (2022). Korteweg and Nagel (2022) estimate that buyout funds raised after 2000 have betas of less than one.

We also consider the composition of the group of outside hires. The outside CEOs are, in order, raided executives who were previously not in a CEO position – representing more than half of the CEOs – unattached managers and then raided CEOs. Unattached managers are executives who were not in an executive position immediately prior to becoming the new CEO. When we consider the highest title that the new CEOs held before assuming the CEO title, we find that the two most common are divisional CEO and CEO.

The most recent experience of 67% of the external hires was at a public company with 32% at an S&P 500 company. Almost 50% of the external hires have some previous experience at an S&P 500 company. Most of the external hires have previous experience in the same industry or a related industry of the hiring company.

We then estimate the compensation of the external CEOs using the performance of the buyouts and other evidence on buyout equity incentives and compensation. The average buyout in our sample earns 2.5 times its equity investment. Our estimates indicate that buyout CEOs earn appreciably more than CEOs of similarly sized public companies and only slightly less than CEOs of much larger S&P 500 companies. Although it is difficult to say with certainty, the performance results suggest that externally hired CEOs perform well.

Next, we address two possible explanations for our results. First, it is possible that the CEO job is riskier in private equity funded firms. Accordingly, we consider the annual turnover rate of the private equity funded firms in our sample. Including the first year, when turnover is higher, the turnover rate is 15.4% implying an average CEO tenure of 6.5 years. Excluding the first year, the turnover rate is 14.2% implying an average CEO tenure of 7.0 years. These are modestly higher than the 11.7% turnover rate (8.6 years) for public company CEOs in Jenter and Llewellyn (2021).

Second, previous work finds that public companies are more likely to hire external CEOs after poor performance. For example, Larcker, Tayan and Watts (2022) find that public companies hire a true outside CEO 46% of the time in the 29% of instances where performance is poor and the old CEO appears likely to have been pushed out. A greater reliance on external CEOs by private equity funded companies would be expected if those companies tend to have been poor performers.

We consider this explanation by looking at the 58 public-to-private transactions in our sample. We do not find that those companies are consistently poor performers. In the three years before the buyouts, their stock performance is roughly equal to that of the S&P 500 and their industries. Furthermore, their accounting performance is largely in line with their industries. In addition, we do not find any relation between pre-buyout performance and the likelihood of hiring in an external CEO.

We believe our results have three implications and leave one puzzle for the market for CEOs and top executives. First, the results that top executives move from public companies to private equity funded companies at competitive compensation levels suggest that the broader market for CEOs is active and that, at least for private equity funded portfolio companies, firm-specific human capital is relatively unimportant. This is broadly consistent with Murphy and Zabojnik (2004, 2007) and Frydman (2019) who argue that CEO skills are transferable across firms. It also is consistent with the results in Kaplan et al. (2012) that conditional on CEO ability, CEO success in private equity funded companies is not related to being an insider. And the results help explain why CEO pay remains robust in S&P 500 and other public companies – top executives do have access to the private equity CEO market at competitive levels of pay.

Our results are less consistent with the conclusions in Cziraki and Jenter (2022) that (1) their results are "hard to reconcile with models of the labor market in which abilities are easily observable, CEOs are chosen for general skills, and CEOs move freely across firms;" and (2) that there are "severe frictions in the reallocation of CEO talent across firms."

Second, the fact that the externally hired CEOs have previous experience in the same or related industries strongly suggests that industry-specific skills, rather than firm-specific skills are important.

Third, the results for and inferences from publicly-owned companies do not generalize to all companies. The outstanding question is whether this is true in other arenas.

The puzzle is why the results are so different for private equity funded companies and companies in the S&P 500. We consider possible explanations in our conclusion.

The paper proceeds as follows. Section I describes our sample. Section II presents the basic results on changes in CEO. In section III, we estimate the compensation earned by the CEOs of private equity funded companies as well as the relation between CEO changes and performance. Section IV considers two possible explanations for our results. In section V, we conclude and explore the implications of our results in more detail.

I. Sample and Data

We obtain our sample by using Pitchbook to identify buyouts of U.S. companies with an enterprise value over one billion dollars by private equity firms from 2010 to 2016. We exclude buyouts of real estate companies, infrastructure companies and companies headquartered outside the US. If one of the buyout companies is, in turn, acquired by another private equity firm, we continue to include the initial buyout as a private-equity owned company.

We then collect information using Pitchbook, CapitalIQ, Stepstone's SPI database and Google searches on the company and the buyout, including the name of the company, the private equity firm(s) involved in the deal, the buyout date, the deal size, and the year of the company's eventual exit from private equity ownership – acquisition, bankruptcy, IPO or reverse merger with a SPAC – if it has occurred.

In Table I, we identify 192 buyout transactions of more than $1 billion between 2010 and 2016. Panel A reports that the average (median) deal size is $2.6 ($1.7) billion – 95 of these deals exceed $2 billion in transaction value and 17 exceed $5 billion. In 2010, the average (median) public company had a market capitalization of $3.45 ($0.37) billion; in 2016, $5.81 ($0.68) billion. In 2010, the average (median) S&P 500 had a market capitalization of $21.2 ($9.6) billion; in 2016, $37.9 ($18.3) billion. Accordingly, the firms in the sample are larger than the median public company, but smaller than the average public company and median S&P 500 company. A closer public company analog for the sample firms is the S&P MidCap 400. From 2010 to 2016, the S&P MidCap 400 had a minimum market capitalization of $0.85 billion and a maximum of $5.9 billion.

Just over 30% of the sample transactions are take-private deals; 16% are divisions of other companies; only 4% are unaffiliated private companies. The most common seller type in these transactions is another private equity firm (48%). The panel also shows that almost 80% of the buyouts are sponsored by a single PE sponsor. The other 20.8% are buyouts with more than one sponsor.

Panel B reports deal outcomes as of the end of 2021. The analysis that follows looks at outcomes and CEO changes as of the end of 2021. At that time, only 18% of the companies had not exited in any way while 33% had been sold to strategic acquirers, 23% had been sold to

another PE firm in a secondary buyout and 21% had gone public in an IPO or SPAC. Fewer than 5% were in bankruptcy or had been liquidated. Just over 7% filed for bankruptcy at some point after the transaction. The panel also reports the initial outcome. Some firms went public before being sold. Some firms went bankrupt first and then were sold, went public or remain private.

We collect information on the CEOs of the companies before and after the buyout using Pitchbook, CapitalIQ, LinkedIn, and other written sources, such as press releases and executive biographies on company websites. We continue tracking the CEOs of the companies until there is a strategic sale, the company goes public or there is a bankruptcy. This is appropriate because a company is effectively private equity controlled while it is still private and after a secondary buyout. For most companies, it is likely appropriate post-IPO because the PE investors usually take some time to sell their equity ownership and to leave the board. This definition does not affect our overall results

For a "new CEO," defined as the first new permanent CEO after the deal, we record the CEO's start dates, age (when appointed to the position), most recent title(s) before becoming the new CEO, and most recent prior place of employment. If the exact start date for the new CEO is unavailable, we code the first of the month in which the CEO was hired. If the month is also unavailable, we code the year.

We distinguish between new CEOs who are internal promotions or external hires. Internally promoted CEOs were at the company for at least 12 months prior to assuming the position. This definition is consistent with that of Huson, Parrino, and Starks (2001) and Cziraki and Jenter (2022). For internal promotions, we record the new CEO's start date at the bought-out company as well as the CEO's previous company and title there. External hires consist of all other new CEOs.

To identify the relationship that external hires have with the hiring company, we categorize external hires as former executives, board members, outsiders, and / or those who have worked at the hiring firm for less than one year. Former executives worked as an executive at the hiring company at some point during their career, but not immediately prior to becoming the new CEO. Board members are current or former members of the hiring company's board, including those who were the chairman. Outsiders did not have a prior direct relationship with the company either through executive employment or board membership. A new CEO can fall into more than one of these categories. For example, a new CEO could have been a board member and at the firm for less than one year. The definitions for former executives, board members, and outsiders are consistent with those in Cziraki and Jenter (2022).

Within the group of external hires, we further categorize each new CEO as a raided CEO, raided other executive, unattached manager, employee of the private equity firm, employee of the target firm, or other. A raided CEO is a CEO of another company but moved to the bought-out company to assume the CEO title. A raided other executive also moved to the bought-out company to become the CEO, but held a different executive title at the CEO's previous firm. For a new CEO to be classified as a raided CEO or raided other executive, the CEO must have become the new CEO immediately or shortly after leaving the CEO's former firm, and there should be a written source or other similar proof that the move was due to the offer of the new CEO position. Unattached managers were not employed in an executive position immediately prior to assuming the new CEO position. For unattached managers, we also record the end date of their last employment in an executive role. An employee of the private equity firm worked at the private equity firm that bought out the company immediately prior to becoming the CEO, and

an employee of the target firm worked at the bought-out company for less than 12 months prior to becoming the CEO.

We also continue to follow each company and collect similar data on the second permanent CEO, if there is one. We characterize the second CEOs in the same way that we characterize the first ones.

II. CEO Changes Over Time

A. All Changes

For the 192 buyouts, we consider all CEO changes before the company's eventual exit through as sale or bankruptcy. Table II displays the CEO changes for companies bought out from 2010 to 2016, 2010 to 2012, 2013 to 2014, and 2015 to 2016 for both exit definitions. Of all 192 U.S. buyouts over one billion dollars from 2010 to 2016, 71% (or 136 companies) changed their CEO before sale or bankruptcy.

Not surprisingly, given the additional time elapsed, the CEO changes are more likely for the earlier deals. Almost 80% of the companies bought out between 2010 and 2012 changed their CEO compared to 67% of those bought out between 2013 and 2014, and 66% bought out between 2015 and 2016.

The mean and median age (when we can obtain it) of the new CEOs is 51 years old. This is two or three years younger than the mean and median ages of new S&P 500 CEOs in Cziraki and Jenter (2022).

Panel B reports that an additional 53 companies or 28% of the total, experience a second CEO change by 2021.

B. External Hires vs Internal Promotions

Table III presents the key results of the paper. Panel A shows that almost three-quarters of first new CEOs are external hires rather than internal promotions. Furthermore, almost 68% are complete outsiders. Fewer than 24% are internal promotions. Panel B shows a similar pattern for second new CEOs. 79.2% of the second new CEOs are external with 69.8% being complete outsiders. Fewer than 21% are internal promotions.

These are strikingly different percentages from those in Cziraki and Jenter (2022). In their sample, almost the exact opposite occurs. Cziraki and Jenter (2022) report that 72% of new CEO appointments at S&P 500 firms from 1993 to 2012 are internal promotions and only 28% of CEO changes were from external hires. An additional 8.4% of new CEOs are former executives or board members. If those are included, 80% of new CEOs are insiders while only 20% are complete outsiders. For S&P 500 firms below median size, 32% of hires are external and 22% are complete outsiders.

The internally promoted first new CEOs in our sample also have relatively short tenures at their firms, having been at their companies for a mean of 10.2 years and a median of 8.9 years. This is less than the mean and median tenures of 16.6 and 15.0 years, respectively, of the new CEOs in the Cziraki and Jenter (2022) sample.

These results suggest that for private-equity funded companies, there is an active labor market for CEOs and that firm-specific human capital is not very important. It also is not particularly consistent with severe frictions in the CEO market driven by asymmetric learning on the part of boards and private equity investors.

It is a puzzle why the results are so different for private equity funded companies and companies in the S&P 500. There are at least two possible explanations. First, it is possible that

they represent two different markets for executives and there is no overlap between them. Another possibility, given the high-powered incentives of private equity investors is that hiring outsiders, when appropriate, is more likely to be value-maximizing.

In support of the second possibility, our results are more consistent with those of Huson, Parrino, and Starks (2001). Huson, Parrino, and Starks look at CEO turnover at large public firms between 1971 and 1994. They find that companies are more likely to appoint CEOs from external sources as the percentage of outsider directors on the board and shares owned by directors and officers other than the CEO increase. In buyouts, private equity firms own a large stake of the target company and generally control the board of directors.

In what follows, we explore these issues in more detail.

C. Types of External Hires

With most of the new CEOs in our sample being external hires, we next examine the new CEOs' former roles and their relationships with their hiring companies. We further categorize outside hires as raided CEOs, raided other executives, unattached managers, and employees of the private equity firm. We also consider what types of companies these executives came from.

Table IV presents the former roles of external hires. Raided other executives make up the largest percentage – 45% of outsiders, 39% of external hires and 30% of all hires. Unattached managers are the second largest group of those outsiders, constituting 34% of outsiders, 30% of external hires and 23% of all hires. Raided CEOs (including the two affiliated with the PE firms) make up the third largest subgroup comprising 18% of outsiders, 16% of external hires and 13% of all hires.

While the percentages of external hires and pure outsiders are much higher in our sample, the distribution of former roles among outsiders is similar to that in Cziraki and Jenter (2022). In their sample, 55% of outsiders are raided other executives, 31% are unaffiliated and 14% are raided CEOs (versus 45%. 34% and 18%).

D. Most recent titles of new CEOs

In this section, we consider the titles the CEOs held immediately prior to their appointment. Because there are many different former titles among new CEOs, we categorize and rank them based on seniority. If new hires held multiple titles simultaneously, we record their highest title. The highest former title is CEO. Chairs and Executive Chairs are considered board members and are not included in the ranking of prior titles. Below the CEO are Presidents, who are ranked higher than or equal to the Chief Operating Officer. When a new hire previously held the President and another non-CEO C-level titles simultaneously, we note both titles. Below the President and non-CEO C-suite executives are the vice presidents and segment or division heads. We categorize all vice presidents, executive vice presidents, and senior vice presidents as one group, and we define segment heads as leaders, presidents and CEOs of a division or subsidiary of a larger company. If the executive was most recently only in an interim position, we note the interim position. This is the case for only one new hire who was most recently in the interim CEO position. We also do not count operating partner, senior advisor, or executive-in-residence roles at private equity firms as executive titles.

1. All Hires

Panel A of Table V presents the most recent prior titles for all new CEOs. Panel B presents the most recent prior titles for outsiders only. Among all the new CEOs who hired after the buyout, 42 have the previous title of CEOs or interim CEO, making up almost 31% of new CEOs and 41% of CEOs who are external hires. This is the largest subgroup of most recent titles among those hires. Roughly half, 20, are unattached at the time they are hired while 18 (or 42%) are raided CEOs. This result also suggests that there is an active market for CEOs.

Executives whose highest most recent title was head of a segment or division comprise the next largest subgroup with 41 hires representing 30% of all new CEOs and 36% of external CEOs hired. The third largest subgroup, 20 executives, 15% of the total, consists of those who held the title of President. The fourth largest subgroup, with 16 executives or 12% of the total, consist of those who held the title of chief operating officer or COO.

Not surprisingly, there also is a substantial difference in most recent titles for external hires compared to internal promotions. Of the internally promoted new CEOs, 22 (or 70%) held the title that included President, COO or both, suggesting that they already were the second most important executives at the company. The external hires, in contrast, were largely CEOs or division heads in almost 80% of the cases.

Table V also reports the most recent title of the raided hires, unattached and other hires prior to becoming the CEO of the bought-out company. Of the raided hires, the largest subgroup, 41% (24 hires), were most recently a segment head. Executives who were most recently CEO or interim CEO of another company are the second largest subgroup, comprising 29% of all raided hires. Executives who were most recently the vice president, executive vice president, or senior vice president are the third largest subgroup of all raided hires, comprising 17% of all raided hires.

Unattached hires are almost entirely former senior executives. The majority, 55%, most recently held the CEO or interim CEO titles. An additional 13% formerly held the title of president or COO. And 29% were most recently a segment head.

While there are some similarities between the make-up of the groups of raided hires and unattached managers in our sample, there are still significant differences. Executives who were most recently the CEO / interim CEO or a segment head make up the two largest subgroups for both raided and unattached hires. However, a much larger percentage of unattached hires than raided hires were most recently a CEO or interim CEO, and a much smaller percentage of unattached managers than raided hires were most recently a segment head. Moreover, only one unattached manager most recently held the senior vice president title while nine raided hires were most recently a vice president, executive vice president, or senior vice president.

Again, these results, particularly for the unattached executives, suggests that there is a very active market for top executives, particularly CEOs. This, in turn, suggests that general executive skills, not firm-specific skills, are more important.

2. Outsiders only

We also look at the most recent highest titles of just outsiders in Panel B of Table V. Similar to the sample of all hires, executives who were most recently a CEO / interim CEO, or segment head make up the largest percentage of outsiders. Those two groups each represent 37% of all outside hires. Executives who were most recently a vice president, executive vice president, or senior vice president make up 12% of outsiders. Outsiders who are also raided hires are more likely to be segment heads while outsiders who are unattached are more likely to have previously been CEOs.

Our results are similar in this regard to those in Cziraki and Jenter (2022). In their paper, too, raided CEOs are more likely to be segment heads while unattached CEOs are more likely to have been CEOs before. The major difference in our samples is that external and outside hires are much more common in private equity funded companies than in S&P 500 companies.

E. More Details on Previous Experience of External Hires

It appears from the previous analyses that there is an active market for CEOs and top executives in private equity-funded companies that is different from the market for S&P 500 and publicly-owned company CEOs. These results suggest that firm-specific skills are considered less important for CEOs by PE investors and their boards.

We look at this result more deeply by addressing two additional questions in this section. First, we consider how much overlap there is in the CEO markets for large companies and private equity-funded companies. In other words, do the CEOs hired by private equity-funded companies hire CEOs who have worked for large, publicly-owned companies. Second, while the PE investors are not hiring firm-specific skills, they may be hiring industry-specific skills. Accordingly, we consider the extent to which newly hired CEOs have previous experience in the industry of the company for which they are hired.

1. Ownership of former companies

In Panel A of Table VI, we report the ownership status of the most recent company that the external hires worked for. The panel shows that many of these externally hired CEOs have public company experience, often with S&P 500 companies. More than 67% of the external hires previously worked for a public company, 23% previously worked for private equity-funded

companies and 10% worked for privately-owned companies. Almost half of the external hires with recent public company experience, 32% of the external hires overall, previously worked for a company in the S&P 500. When we consider previous jobs in addition to the most recent, we find that almost 48% of the external hires worked for an S&P 500 company at some point in their careers.

Panel B presents similar statistics for the second CEOs who are externally hired. 45% of these worked for public companies in their most recent jobs. 38% of these have previous experience with an S&P 500 company. A greater percentage than the first CEOs, 33%, come from a private equity funded company.

Panels A and B indicate that it is common for private equity firms to source their CEOs from public companies and, in many cases, from S&P 500 companies. This has several implications. First, there is clearly an active labor market for CEOs across public and private equity funded companies. David Calhoun of General Electric and Nielsen, mentioned earlier, is not an exception. Executives do jump from large public companies to private equity funded companies. Second, the results suggest that firm-specific human capital may not be particularly important.

Again, the results leave us with the puzzle as to why the results for S&P 500 company CEOs are so different from those for private equity-funded company CEOs when many of the CEOs are taken from the same pool. We discuss this in more detail in the conclusion.

2. Industry Similarity of CEOs' Former Companies

In panel C of table VI, we consider the extent to which newly hired CEOs have previous experience in the industry of the company for which they are hired. We use the various

Pitchbook industry classifications to do so. If available, we collect the primary industries (up to two), the GECS sector, GECS industry group, the NAICS code and the SIC codes for each portfolio company. We do the same for the CEO's previous company. We consider the CEO to come from the same industry if there is a match on one of these dimensions.

Almost 79% of the external CEOs have experience in the same industry. Another 7% likely have experience in the same industry, but we did not find an exact match in Pitchbook. Alternatively, one could consider these executives as having experience in a related industry. Another 10% have experience in a related industry. For example, Kevin Peters became the CEO of FleetPride, a retailer of truck and trailer parts, after being the president of North America for Office Depot, an office supply retailer. Both businesses are in retail, but in different markets. Fewer than 5% of the external CEOs do not have experience in the same or related industries. Panel D reports patterns that are qualitatively similar for external second CEOs.

The industry results strongly suggest that while firm-specific skills are not crucial, industry-specific skills and experience are very important in hiring a CEO. They also suggest that private equity investors can evaluate these skills.

III. Estimated CEO Compensation

It is well-established that public company CEOs, particularly those in the S&P 500 are well-paid and that their pay has increased substantially since the early 1980s. That pay remains substantial today.[5] Kaplan (2013) argues that other well-educated groups have seen their pay grow substantially over the same period suggesting that the pay of public company CEOs is market driven. Cziraki and Jenter (2022), in contrast, note the lack of external CEO hires in S&P

[5] For example, see Kaplan (2013), Edman et al. (2017) and Frydman (2019).

500 companies and argue that "the rapid rise in CEO pay since the 1970s might be due to growing rents from firm-specific skills or asymmetric information, or due to CEOs capturing a larger share of these rents."

Because private equity investors are paid strongly for performance (through their carried interest or profit share of 20% on most funds), private equity investors have strong incentives not to provide rents to their CEOs. The pay of CEOs in private-equity funded companies, therefore, should be relatively rent free.

Our earlier results indicate that there is an active market for CEOs. The market-driven explanation for CEO compensation implies that CEO compensation in private-equity funded companies should be competitive with that in public companies. Higher pay for public company CEOs would be more consistent with the rent-sharing argument.

Accordingly, in this section, we estimate the compensation of private equity-funded CEOs using the performance of the buyouts in our sample as well as existing evidence on buyout compensation and incentives. We compare those estimates to the pay of S&P 500 and other public company CEOs.

1. Estimated Cash Compensation and Equity Incentives

Because they are private, most private equity funded companies do not provide information on CEO compensation. And, as a result, most studies of executive compensation look only at public company CEOs. An exception is Cronqvist and Fahlenbrach (2013) who study CEO compensation and incentives in 20 LBOs of large public companies from 2005 to 2007. They find the salary and bonus of the typical CEO increases by 25% when the company goes from public to private. The increases are greater for the eight new CEOs (versus existing

ones). They find that the fully diluted equity of CEOs increases by an average of 2.7 times from an average (median) of 2.74% (1.13%) to 4.05% (2.52%). For the new CEOs, the fully diluted equity of CEOs increases by an average of 2.4 times from an average (median) of 1.24% (0.62%) to 1.64% (1.44%). The average and median firm values, at $9.1 and $6.2 billion, are larger than those in our sample. As a result, the salary and bonus for these executives may be higher than those in our sample, while the equity incentives may be lower as a percentage of total equity.

In their 2012 survey of 79 PE general partners, Gompers et al. (2016) report that the PE investors give the CEO an average of 8% (median of 5%) of the fully diluted equity. Investors with above median assets under management (who likely do larger deals) report the CEO receives an average of 6% of the fully diluted equity. The results are similar, if not slightly higher in the Gompers et al. (2022) 2020 survey of more than 200 PE general partners. The PE investors report giving the CEO an average of 10.9% (median of 5%) of the fully diluted equity. Investors with above median assets under management (who likely do larger deals) report the CEO receives an average of 7% of the fully diluted equity. These percentages may represent those for smaller deals than the ones in our sample.

To get a better sense of cash and equity compensation for the sample CEOs, we looked at the buyouts in our sample that subsequently returned to public ownership in an IPO or SPAC. We obtained compensation and ownership data from the S-1 and first proxy statement filings for these companies. We were able to find such data for 41 of the 192 companies in our sample.

Panel A of Table VII reports that the average total cash compensation for all CEOs is $3.4 million while the median is $2.2 million. The average and median cash compensation is slightly lower for external CEOs at, respectively, $2.6 million and $2.0 million. It is possible that the averages overstate expected compensation because the companies were successful

enough to do an IPO. Accordingly, in our analysis, we use the medians and assume the CEOs earn total cash compensation of $2 million per year.

The $2 million in cash compensation we assume is slightly less than the $2.3 million reported by Cronqvist and Fahlenbrach (2013). It is similar to salary and bonus paid to the CEOs of (similar sized) S&P 400 companies over this period. From 2010 to 2020, the average cash compensation for those CEOs was $2.15 million. The average cash compensation for S&P 500 CEOs was $3.7 million. In private conversations, private equity investors indicated that the $2 million we assume is reasonable.

Panel A of Table VII also reports that CEOs had an average of 5.5% and a median of 2.9% of the fully diluted ownership of their companies. The corresponding percentages were 2.7% and 2.3% for external CEOs.

Based on the survey results and the results from the buyouts that returned to public ownership, we assume that an external CEO receives somewhere between 2% and 4% of the increase in the value of a company's fully diluted equity. This range is also consistent with our conversations with private equity investors. By assuming the CEOs receive the increase in value, we are effectively treating the compensation as option-based. In practice these percentages may vest (or depend on) firm performance and they may be delivered as restricted stock rather than as options.

S&P Global Market Intelligence's Leveraged Commentary & Data, Leveraged Buyout Review reports that the average equity for buyouts from 2010 to 2016 (as a percentage of deal value) was roughly 38%. Accordingly, we use that percentage times the deal size as the size of the equity investment.

2. Investment Performance

We measure performance primarily by the multiple of invested capital (MOIC) – the ratio of realized equity to invested equity. When available, we also report the annualized internal rate of return.

We obtain information on the performance of the investments in our sample using several sources. First, and most important, we use Stepstone Group's, SPI database. Stepstone advises institutional investors on investing in private equity funds. Stepstone also creates funds that invest directly in private equity funds. To provide their advice, Stepstone collects fund and deal level performance data on many private equity funds and their investments, particularly the larger ones that are in our sample. Most of our outcomes come from Stepstone. Second, we use IPO prospectuses that report both the IPO price and the average price at which private equity investors purchased their shares. Third, in a few cases, we can infer performance from the data in Pitchbook on sale transactions. Fourth, unless Stepstone reports otherwise, we assume private equity investors lost their entire equity investments in companies that went bankrupt.

Panel B of table VII reports that we can obtain a known MOIC for 169 of 193 transactions. When we obtain a known MOIC, the average (median) investment returned 2.65 (2.54) times the PE firm's investment. When we include estimated outcomes – that adds several bankruptcies – we can estimate the MOIC for all but four transactions. When we do so, we obtain an average (median) investment returned 2.54 (2.47) times the PE firm's investment.

This realized performance is remarkably similar to the performance PE investors say they target in Gompers et al. (2016 and 2020). In Gompers et al. (2016), the median investor reports targeting an MOIC of 2.50. Investors with above average AUM, likely the investors in our

sample, target an average MOIC of 2.54. In Gompers et al. (2020), the analogous MOIC's are 2.6.

This realized performance of an MOIC of roughly 2.50 gross of fees corresponds to an MOIC of roughly 2.0 net of fees assuming compensation of a 20% carried interest and a management fee of 1.5% or 2% (the management fees typically charged by larger private equity funds). As of September 2022, Burgiss' performance database reports that the average MOIC (net of fees) for buyout funds raised from 2010 to 2016 is 1.99.

Panel B also reports that the average (median) annualized IRR is 20.9% (24.0%) for the 163 deals for which we can obtain an IRR. These IRRs correspond to an average (median) investment duration of 4.43 (4.21) years.

3. Estimated Total Compensation

Panel C puts the cash compensation and incentive assumptions together with the performance results to estimate total equity compensation and annual total compensation under different fully diluted equity assumptions. We estimate total equity compensation assuming the average or median deal size with 38% equity and with fully diluted ownership percentage of 2%, 3% or 4% using the average estimated outcome MOIC. We calculate the equity compensation as the estimated increase in the value of equity, effectively treating the equity as options. To the extent that compensation is in restricted stock, this understates compensation.

For example, in a $2.5 billion transaction with 38% equity, equity is $950 million. If the investment returns 2.5 times, investors receive $2.375 billion. The profit for the equity is $1.425 billion. 3% of this profit is $42.75 million.

We estimate total annual compensation to equal the sum of cash compensation of $2 million and annual equity compensation equal to total equity compensation divided by average known outcome duration.

At the low end of our assumptions, 2% fully diluted equity for the CEO, we estimate the CEO earn average (median) total annual compensation of $9.4 ($6.8) million and average (median) total equity compensation of $31.9 ($20.3) million.

At the high end of our assumptions, 4% fully diluted equity for the CEO, we estimate the CEO earns average (median) annual compensation of $17.3 ($11.8) million and average (median) total equity compensation of $66.7 ($42.5) million.

Panel C also reports the average of the average and median annual total compensation of the CEOs in the S&P 500, S&P 400 (MidCap) and the S&P 600 (SmallCap) indices from 2010 to 2020. These are calculated using ExecuComp data. TDC1 is the value of ex ante or estimated pay that uses Black-Scholes type methods to estimate the value of option grants. TDC2 is the value of ex post or realized pay that values the realized value of stock options.

Our estimates of average pay for the CEOs of $9.4 to $17.3 million per year are appreciably greater than the averages S&P 400 MidCap CEOs and for S&P 600 SmallCap CEOs. At 2% equity, private equity CEOs earn an average of $9.4 million compared to $5.7 and $6.8 million for TDC1 and TDC2 for MidCap CEOs. At 3% and 4%, private equity CEOs earn $13.2 million and $17.3 million, respectively, more than twice the MidCap CEO pay. The differences are even greater relative to the S&P 600 SmallCap CEOs. The average estimates for the private equity CEOs are of similar order of magnitude to, but somewhat lower than the averages for S&P 500 CEOs.

These estimates indicate that top executives at public companies have an outside option with private equity funded companies that is at least as lucrative as their public company pay.

4. Performance and CEO Characteristics

We conclude this section by considering the relation of investment performance to CEO status. This is exploratory because CEO changes are unlikely to be exogenous. As time goes by, CEO changes are likely to be driven by poor performance creating a negative relation between performance and CEO changes.

Table VIII reports investment performance as a function of CEO changes. Deals with no CEO changes perform very well with an average (median) MOIC of 2.85 (2.80). This exceeds the performance of deals with CEO changes by 0.43 which is economically large although not statistically significant. The positive sign is not surprising given that it is likely endogenous – deals without a CEO change are likely to have done well. A need to change the CEO in the middle of an investment is likely to be related to unexpectedly poor performance. Nevertheless, even deals that bring in an external CEO more than two years after the initial investment make money with an average MOIC of 2.15 and a median MOIC of 2.30.

Given that they occur close to when the investment is made, CEO changes in the first year of a deal are less likely to be related to poor performance. In many cases, these changes are determined at the time the PE firm makes its investment. Table VIII indicates that deals with CEO changes in the first year are particularly successful. And the deals that bring in an external CEO in the first year are the most successful. These deals have an average (median) MOIC of 3.09 (2.72). The average is 0.65 greater than deals that do not bring in an external CEO initially.

And this difference is statistically significant at the10% level. This result is consistent with private equity investors being able to recognize and hire high quality external CEOs.

IV. Explanations

In this section, we address two possible explanations for our results.

1. Is the CEO job riskier in private equity funded firm?

It is possible that the CEO job is riskier in private equity funded firms. That could explain why the CEOs of the private equity funded companies appear to be paid much more than CEOs of similar sized public companies.

Accordingly, we consider the annual turnover rate of the private equity funded firms in our sample. Table IX reports annual turnover for the deals in our sample. Including the first year, when turnover is higher, the turnover rate is 15.4% implying an average CEO tenure of 6.5 years. Because turnover in the first year is likely planned, we think it is more appropriate to exclude the first year. When we do so the turnover rate is 14.2%, implying an average CEO tenure of 7.0 years. The 7.0-year tenure is only modestly lower than the 8.6-year tenure (11.7% turnover rate) for public company CEOs in Jenter and Llewellyn (2021). The less than 20% reduction in tenure may explain some, but not the majority of the 50% to 100% difference in compensation with CEOs of similarly sized public companies.

2. Are private equity funded firms poor performers?

Previous work finds that public companies are more likely to hire external CEOs after poor performance. For example, Larcker, Tayan and Watts (2022) find that public companies

hire a true outside CEO 46% of the time in the 29% of instances where performance is poor and the old CEO appears likely to have been pushed out. A greater reliance on external CEOs by private equity funded companies would be expected if those companies tend to have been poor performers.

We consider this explanation by looking at the 58 public-to-private transactions in our sample. Panel A of table X compares the stock performance of those 58 companies in the three years before the buyout to the performance of the S&P 500 and a value-weighted portfolio of firms in similar NAICS industries. The private equity firms outperform the S&P 500 over this period and even four months before the buyout is completed. The private equity firms perform at industry levels at the time the buyout is completed. This indicates that any industry underperformance beforehand – and there is a modest amount at four months before the buyout is completed – is made up in the premium paid to buy the company.

We also consider whether there is a relation between stock performance and hiring an external CEO in the first two years after the buyout. We look at market-adjusted and industry-adjusted performance and find no significant relation.

Panel B of table X compares the EBITDA margins, ROA (EBITDA / Assets) and revenue growth for the PE public targets and the average company in the same NAICS industries. Because the sample companies almost all have positive EBITDA margins and revenue growth, control observations are restricted to companies with non-negative values of EBITDA and revenue growth. Results are winsorized at the 5% level. In the three years before the buyouts, the PE companies exhibit accounting performance that is at least as good as the companies in the same industries.

V. Summary and Conclusion

In this paper, we study the market for CEOs among larger U.S. companies (enterprise value greater than $1 billion) purchased by private equity firms between 2010 and 2016. This differs from most research on the CEO labor market which studies public company CEOs. More than 70% of those companies hire new CEOs. Of these, more than 75% are external hires with 67% being complete outsiders. These results are strikingly different from studies that look at public companies, in particular, Cziraki and Jenter (2022), who find that 72% of new CEOs are internal promotions while 80% are internal promotions, former executives or board members.

The most recent experience of 70% of the outside CEOs was at a public company with 32% at an S&P 500 company. Almost 50% of the external hires have some previous experience at an S&P 500 company.

The median and average buyout in our sample earned roughly 2.5 times on its equity investment. This is interesting given that the public-to-private deals in our sample were not particularly poor performers before they were bought.

Using the performance of the buyouts and survey evidence on buyout equity incentives, we estimate the compensation buyout CEOs earn and find that the magnitude is much higher than that for similar sized public companies and comparable to or slightly lower than that of S&P 500 CEOs.

We believe these results have three implications and leave one puzzle for the market for CEOs and top executives.

The results that top executives move from public companies to private equity funded companies at competitive compensation levels suggest that the broader market for CEOs is quite active and that, at least for private equity funded companies, firm-specific human capital is

relatively unimportant. This is consistent with previous work like Murphy and Zabojnik (2004, 2007) and Frydman (2019) who argue that CEO skills are transferable across firms. And they are consistent with the results in Kaplan et al. (2012) that conditional on CEO ability, CEO success in private equity funded companies is not related to being an insider.

It is worth noting that we study the CEO market for private equity deals larger than $1 billion. This understates the extent of the market because it excludes venture capital investments, infrastructure fund investments, real estate investments and buyout investments in which the initial deal is less than $1 billion. It is common for private equity funded companies to start with a platform company and then grow larger through acquisitions. Kaplan (2015) provides an example.

Second, the fact that the externally hired CEOs have previous experience in the same or related industries strongly suggests that industry-specific skills, rather than firm-specific skills are important.

Third, the results for and inferences from publicly-owned companies do not generalize to all companies. The outstanding question is whether this is true in other arenas.

The puzzle is why the results are so different for private equity funded companies and companies in the S&P 500. S&P 500 companies tend not to hire outsiders as CEOs. Private equity investors do tend to hire outsiders as CEOs. And, those outsiders often come from public companies, often with S&P 500 experience. These results suggest that firm-specific skills are not so important nor is asymmetric information about executive skill. There are several, non-mutually exclusive explanations.

First, it is possible that the typical S&P 500 company has many talented executives to choose from. Indeed, Kaplan and Sorensen (2021) find that larger companies have more talented

executives. As a result, for larger companies there may be little to be gained in looking externally. And, there are likely some transaction costs to doing so in terms of hiring a search firm and using board members' time. Private equity funded companies, which are smaller, may be less likely to have the most talented executives in house. Accordingly, there is a greater benefit to hiring an outsider as long as the outsider understands the industry of the portfolio company.

Alternatively, given that private equity firms have strong incentives to maximize shareholder value[6], the fact that private equity investors routinely appoint outsider CEOs indicates that doing so is value maximizing for private equity funded companies. It may also indicate that large public companies do not maximize shareholder value in choosing their CEOs. That provides an opportunity for private equity investors to recruit better managers into their companies.

Cziraki and Jenter (2022) point out that this second explanation is consistent with their results. It also is consistent with Huson, Parrino, and Starks (2001) who look at CEO turnover at large public firms between 1971 and 1994. They find that companies are more likely to appoint CEOs from external sources as the percentage of outsider directors on the board and shares owned by directors and officers other than the CEO increase. In buyouts, private equity firms own a large stake of the target company and generally control the board of directors.

A third explanation is that, other things equal, there are costs to getting a CEO candidate to move to a new firm. Such costs include uprooting personal and family relationships, moving costs and costs due to greater uncertainty and risk aversion. Accordingly, there will be a tendency to hire internal candidates as long as they are strong enough. Private equity firms are

[6] See Kaplan and Stromberg (2009).

able to overcome these fixed costs by being willing and able to pay executives more. They can do so because CEOs of private equity funded companies have more degrees of freedom to operate or greater ability to influence the direction of their companies than CEOs of public companies. Accordingly, it matters more to private equity funded companies to have a more talented CEO.

Because we cannot distinguish among these explanations, it remains a fertile topic for future research.

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Table I
Deal Size, Sellers and Outcomes

Panel A:

	Total (2010-2016)			
	Average	Median	Number	Percentage
Deal Size $ millions	$2,597	$1,654	192	100.0%
Deal size >= $2000 mil			78	40.6%
Deal size >= $5000 mil			17	8.9%
Seller - Private	$1,815	$1,342	8	4.2%
Seller - Public	$3,809	$2,200	59	30.7%
Seller - PE Firm	$2,071	$1,500	93	48.4%
Seller - Division	$2,093	$1,600	31	16.1%
Single PE Sponsor	$2,522		152	79.2%
Multiple PE Sponsors	$2,880		40	20.8%

Panel B: Outcomes as of December 2021

	Current (as of December 2021)		Iniital Outcome	
	Number	Percentage	Number	Percentage
Sale	64	33.3%	51	26.6%
Secondary Buyout	45	23.4%	50	26.0%
IPO / SPAC	40	20.8%	43	22.4%
Bankruptcy	9	4.7%	14	7.3%
No exit	34	17.7%	34	17.7%
	192		192	

TABLE II

Panel A: First CEO changes for large deals from 2010 to 2016 through December 31, 2021.

	Yes	No	Total
CEO Change Before Sale or Bankruptcy	136	56	192
As % of all deals	70.8	29.2	100.0
Deals completed from 2010 to 2012	53	14	67
As %	79.1	20.9	100.0
Deals completed from 2013 to 2014	38	19	57
As %	66.7	33.3	100.0
Deals completed from 2015 to 2016	45	23	68
As %	66.2	33.8	100.0
CEO Change Before Sale, Bankruptcy, IPO or SPAC.	135	57	192
As % of all deals	70.3	29.7	100.0

	Mean	Median	Std.	Min.	Max.	N
Age of New CEO hires before Sale or Bankruptcy	51.03	51.00	5.70	38.00	69.00	128

Panel B: Second CEO changes for large deals from 2010 to 2016 through December 31, 2021.

	Yes	No	Total
CEO Change Before Sale or Bankruptcy	53	83	136
As % of all deals	27.6	43.2	70.8

Table III

Types of CEO hires before a firm's first M&A or Bankruptcy (not including interim CEOs) - 2010-2016

Panel A: First New CEO

	Internal promotion	External Hire	Total
Number of Observations	32	104	136
As % of all hires before first M&A or Bankruptcy	23.5	76.5	100.0

For External Hires:

	Former executive	Board member	Former executive and board member	Outsider	At firm for less than one year	At firm for less than one year and board member
Number of Obervations	1	6	1	92	3	1
As % of all hires before first M&A or Bankruptcy	0.7	4.4	0.7	67.6	2.2	0.7

Panel B:

Time at company before CEO promotion for internal hires (years) -

	Mean	Median	Std.	Min.	Max.	N
Time at company	10.21	8.92	7.89	1.08	30.00	31

Panel C: Second New CEO

	Internal promotion	External Hire	Total
Number of Observations	11	42	53
As % of all hires before first M&A or Bankruptcy	20.8	79.2	100.0

	Former executive	Board member	Former executive and board member	Outsider	At firm for less than one year	At firm for less than one year and board member
Number of Obervations	1	4	0	37	0	0
As % of all hires before first M&A or Bankruptcy	1.9	7.5	0.0	69.8	0.0	0.0

Internal promotions are employed or previously employed at the firm for at least one year prior to becoming CEO whereas external hires are not.
Former executives used to work at the firm in an executive role but did not at the time they were hired as CEO.
Board members are former or current directors of the firm.
Outsiders are neither former executives or board members.
Hires that are at the firm for less than one year were hired less than one year before they became CEO, but they were originally hired for another position.

Table IV

Source of external hires of first new CEOs before firm's first M&A or Bankruptcy - 2010-2016

All External Hires

	Raided CEO only	Raided other executive only	Unattached manager only	Employee of PE firm only	Employee of target firm only	Raided CEO and Employee of PE firm	Other	Total
Number of external hires	16	41	36	4	4	2	1	104
As a % of all hires	11.8	30.1	26.5	2.9	2.9	1.5	0.7	76.5
As a % of all external hires	15.4	39.4	34.6	3.8	3.8	1.9	1.0	100.0

Outsiders

	Raided CEO only	Raided other executive only	Unattached manager only	Employee of PE firm only	Employee of target firm only	Raided CEO and Employee of PE firm	Other	Total
Number of hires	15	41	31	3	0	2	0	92
As a % of all hires	11.03	30.15	22.79	2.21	0.00	1.47	0.00	67.65
As a % of all external hires	14.42	39.42	29.81	2.88	0.00	1.92	0.00	88.46
As a % of all outsiders	16.30	44.57	33.70	3.26	0.00	2.17	0.00	100.00

Board Members

	Raided CEO only	Raided other executive only	Unattached manager only	Employee of PE firm only	Employee of target firm only	Raided CEO and Employee of PE firm	Other	Total
Number of hires	1	0	4	1	1	0	1	8
As a % of all hires	0.74	0.00	2.94	0.74	0.74	0.00	0.74	5.88
As a % of all external hires	0.96	0.00	3.85	0.96	0.96	0.00	0.96	7.69

Hires at firm for less than one year

	Raided CEO only	Raided other executive only	Unattached manager only	Employee of PE firm only	Employee of target firm only	Raided CEO and Employee of PE firm	Other	Total
Number of hires	0	0	0	0	4	0	0	4
As a % of all hires	0.00	0.00	0.00	0.00	2.94	0.00	0.00	2.94
As a % of all external hires	0.00	0.00	0.00	0.00	3.85	0.00	0.00	3.85

Table V

Most recent (highest prior) title of first CEO hires before first M&A or Bankruptcy (2010-2016)

	All hires		Internal Promotions			External Hires			Raided				Unattached				Employee of target firm				Employee of PE firm			
Title	Number	% of all hires	Number	% of internal	% of title category	Number	% of external	% of title category	Number	% of raided	% of title category	% of title category (external)	Number	Percent of unattached	% of title category	% of title category (external)	Number	% of employee of target	% of title category	% of title category (external)	Number	Percent of employee of PE firm	% of title category	% of title category (external)
Segment Head	41	29.93	4	12.50	9.76	37	36.27	90.24	24	40.68	58.54	64.86	10	27.78	24.39	27.03	2	50.00	4.88	5.41	1	25.00	2.44	2.70
CEO/Interim CEO	42	30.88	0	0.00	0.00	42	41.18	100.00	18	30.51	42.86	42.86	20	55.56	47.62	47.62	2	50.00	4.76	4.76	1	25.00	2.38	2.38
Vice President/EVP/SVP	12	8.82	1	2.86	8.33	11	10.78	91.67	10	16.95	83.33	90.91	1	2.78	8.33	9.09	0	0.00	0.00	0.00	0	0.00	0.00	0.00
President (all)	20	14.71	16	45.71	80.00	4	3.92	20.00	1	1.69	5.00	25.00	3	8.33	15.00	75.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
President only	13	9.56	10	28.57	76.92	3	2.94	23.08	0	0.00	0.00	0.00	3	8.33	23.08	100.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
President & non-CEO C-level title	7	5.15	6	17.14	85.71	1	0.98	14.29	1	1.69	14.29	100.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
COO (all)	16	11.76	10	28.57	62.50	6	5.88	37.50	4	6.78	25.00	66.67	2	5.56	12.50	33.33	0	0.00	0.00	0.00	0	0.00	0.00	0.00
COO only	11	8.09	6	17.14	54.55	5	4.90	45.45	3	5.08	27.27	60.00	2	5.56	18.18	40.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
President & COO	5	3.68	4	11.43	80.00	1	0.98	20.00	1	1.69	20.00	100.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
CFO (all)	2	1.47	2	5.71	100.00	0	0.00	0.00	0	0.00	0.00	.	0	0.00	0.00	.	0	0.00	0.00	.	0	0.00	0.00	.
CFO only	2	1.47	2	5.71	100.00	0	0.00	0.00	0	0.00	0.00	.	0	0.00	0.00	.	0	0.00	0.00	.	0	0.00	0.00	.
President & CFO	1	0.74	1	2.86	100.00	0	0.00	0.00	0	0.00	0.00	.	0	0.00	0.00	.	0	0.00	0.00	.	0	0.00	0.00	.
Partner/Principal	3	2.21	0	0.00	0.00	3	2.94	100.00	2	3.39	66.67	66.67	0	0.00	0.00	0.00	0	0.00	0.00	0.00	1	25.00	33.33	33.33
Other C-level executive (all)	5	3.68	3	8.57	60.00	2	1.96	40.00	1	1.69	20.00	50.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00	1	25.00	20.00	50.00

Panel B: Outsiders Only

	All Outsiders		Raided			Unattached			Employee of PE firm		
Title	Number	% of all outsiders	Number	% of raided	% of title category	Number	% of unattached	% of title category	Number	% of empl. of PE firm	Percent of title category
Segment Head	34	36.96	24	41.38	70.59	9	29.03	26.47	1	25.00	2.94
CEO/Interim CEO	34	36.96	17	29.31	50.00	17	54.84	50.00	0	0.00	0.00
Vice President/EVP/SVP	11	11.96	10	17.24	90.91	1	3.23	9.09	0	0.00	0.00
President (all)	4	4.35	1	1.72	25.00	3	9.68	75.00	0	0.00	0.00
President only	3	3.26	0	0.00	0.00	3	9.68	100.00	0	0.00	0.00
President & non-CEO C-level title	1	1.09	1	1.72	100.00	0	0.00	0.00	0	0.00	0.00
COO (all)	5	5.43	4	6.90	80.00	1	3.23	20.00	0	0.00	0.00
COO only	4	4.35	3	5.17	75.00	1	3.23	25.00	0	0.00	0.00
President & COO	1	1.09	1	1.72	100.00	0	0.00	0.00	0	0.00	0.00
CFO (all)	0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
CFO only	0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
President & CFO	0	0.00	0	0.00	0.00	0	0.00	0.00	0	0.00	0.00
Partner/Principal	3	3.26	2	3.45	66.67	0	0.00	0.00	1	25.00	33.33
Other C-level executive (all)	2	2.17	1	1.72	50.00	0	0.00	0.00	1	25.00	50.00

Table VI

Ownership and Industry of External CEOs' Former Companies

Panel A: Prior Experience of External First CEOs in Public and S&P 500 Companies.

	Public Company	Private Equity Funded Company	Private Company	Public Company and S&P 500	Any Previous Experience in S&P 500 Company	Total
Number of hires	70	24	10	33	50	104
As a % of all external hires	67.3	23.1	9.6	31.7	48.1	100.0

Panel B: Prior Experience of External Second CEOs in Public and S&P 500 Companies.

	Public Company	Private Equity Funded Company	Private Company	Public Company and S&P 500	Any Previous Experience in S&P 500 Company	Total
Number of hires	19	14	9	10	16	42
As a % of all external hires	45.2	33.3	21.4	23.8	38.1	100.0

Panel C: Prior Industry Experience of External First CEOs in Related Companies.

	Prior Experience in Same Industry	Likely Prior Experience in Same Industry	Prior Experience in Related Industry	Prior Experience is Unrelated	Total
Number of hires	82	7	10	5	104
As a % of all external hires	78.8	6.7	9.6	4.8	100.0

Panel D: Prior Industry Experience of External Second CEOs in Related Companies.

	Prior Experience in Same Industry	Likely Prior Experience in Same Industry	Prior Experience in Related Industry	Prior Experience is Unrelated	Total
Number of hires	33	5	4	0	42
As a % of all external hires	78.6	11.9	9.5	0.0	100.0

Table VII

Compensation Estimates

Panel A: Compensation and Incentives of CEOs of Reverse LBOs

	Median	Average	Number
Total Cash Comp			
All CEOs	$2,219	$3,419	41
External CEOs	$1,966	$2,559	20
Ownership Percentage - Shares, Restricted Stock and Options			
All CEOs	2.9%	5.5%	40
External CEOs	2.3%	2.7%	20

Panel B: Performance

	Median	Average	Number
Deal Size (in $ millions)	$1,654	$2,597	192
Known Outcome MOIC	2.50	2.65	169
Estimated Outcome MOIC	2.47	2.54	188
Known Outcome IRR	24.0%	20.9%	163
Known Outcome Duration	4.21	4.43	153

Panel C: Estimated Compensation (in $ millions)

	Median	Average
Estimated Total CEO Equity Comp assuming 2% CEO Ownership	$20.29	$31.85
Estimated Total CEO Equity Comp assuming 3% CEO Ownership	$31.16	$48.92
Estimated Total CEO Equity Comp assuming 4% CEO Ownership	$42.51	$66.74
Estimated CEO Annual Total Comp assuming 2% CEO Ownership	$6.78	$9.38
Estimated CEO Annual Total Comp assuming 3% CEO Ownership	$9.23	$13.23
Estimated CEO Annual Total Comp assuming 4% CEO Ownership	$11.79	$17.25
Average Annual CEO Total Comp S&P 500 (TDC1)	$9.38	$11.10
Average Annual CEO Total Comp S&P 500 (TDC2)	$10.47	$17.17
Average Annual CEO Total Comp MidCap S&P 400 (TDC1)	$4.73	$5.65
Average Annual CEO Total Comp MidCap S&P 400 (TDC2)	$4.96	$6.76
Average Annual CEO Total Comp SmallCap S&P 600 (TDC1)	$2.58	$3.39
Average Annual CEO Total Comp SmallCap S&P 600 (TDC2)	$2.58	$3.65

Known outcome duration is calculated using the known outcome MOIC and IRR.
Known outcomes are obtained from Stepstone Group's SPI Database and from IPO prospectuses.
Estimated outcomes are calculated (1) assuming that bankruptcies yield MOICs of 0; (2) using Pitchbook data for company sales.
Estimated equity comp assumes average or median deal size with ownership percentage times 38% equity with average estimated outcome MOIC.
Estimated equity comp is grossed up by assumed management equity of 2.5 CEO ownership to gross up outcome MOIC.
Estimated annual comp assumes salary of $1 million, bonus of $1 million and equity comp equal to total equity comp divided by average known outcome duration.
TDC1 is expected compensation while TDC2 is realized compensation.
Average Annual CEO Total Comp for S&P 500, MidCap S&P400 and SmallCap S&P 600 are average of annual medians and averages from 2010 to 2020 for TDC1 and TDC2.

Table VIII

Performance and CEO Changes

	Average	Median	Number
Deal Size (in $ millions)	$2,597	$1,654	192
No CEO Change	$2,502	$1,725	56
CEO Change	$2,636	$1,640	136
Estimated Outcome MOIC	2.54	2.47	188
No CEO Change	2.85	2.80	54
No External CEO Change	2.76	2.80	87
No External CEO Change in first year	2.43	2.40	158
No External CEO Change in first two years	2.57	2.50	130
CEO Change	2.41	2.30	134
In first year.	2.99	2.74	39
In first two years.	2.51	2.42	72
After first two years.	2.30	2.15	62
External CEO Change	2.35	2.10	101
In first year.	3.09	2.72	30
In first two years.	2.46	2.30	58
After first two years.	2.16	2.30	43

Known outcomes are obtained from Stepstone Group's SPI Database and from IPO prospectuses.

Estimated outcomes are calculated (1) assuming that bankruptcies yield MOICs of 0; (2) using Pitchbook data for company sales.

Table IX

CEO Turnover

% of Deals with Turnover at Deal to end of calendar year 1.	22.4%
% of Deals with Turnover in Calendar Year 2.	18.8%
% of Deals with Turnover in Calendar Year 3.	12.0%
% of Deals with Turnover in Calendar Year 4.	17.5%
% of Deals with Turnover in Calendar Year 5.	13.4%
% of Deals with Turnover in Calendar Year 6.	14.8%
% of Deals with Turnover in Calendar Year 7.	10.8%
% of Deals with Turnover in Calendar Year 8.	13.2%
Annual turnover in inlcuding all Calendar Years.	15.4%
Annual turnover in Calendar Years 2 and afterward.	14.2%

Table X

Pre-buyout performance of Public to Privates.
Panel A calculates cumulative returns to private equity (PE) public targets for up to three years before delisting. The first row (line 0) calculates returns over 36 months until delisting. The number of months in the estimation window drops from 36 months (line 0) to 35 months (line 1) and so on until 32 months (line 4). The subsequent lines remove one month at a time, while keeping fixed the start of the return estimation window. Panel B compares EBITDA margins, ROA (EBITDA / Assets) and revenue growth for PE public targets and NAICS industries. Control observations are restricted to companies with non-negative values of EBITDA and revenue growth. Results are winsorized at the 5% level. T-tests compare the PE Public Targets and the relevant NAICS industries.

Panel A:

Excluded months before delisting	Cumulative returns					
	PE Public Targets	S&P 500	NAICS industries			
			1-digit	2-digit	3-digit	4-digit
0	48.2	24.5**	37.8	47.4	49.9	48.9
1	47.4	22.9**	35.8	45.5	47.8	47.2
2	43.2	21.5**	33.7	43.5	45.8	44.8
3	39.0	21.5*	34.3	44.3	46.4	44.9
4	26.5	21.0	33.8	43.7*	45.5*	44.0*

Panel B:

	PE Public	NAICS industries			
Averages over 3 years pre-LBO	Targets	1-digit	2-digit	3-digit	4-digit
EBITDA margin (%)	18.7	22.3**	17.1	15.8*	15.9*
ROA (%)	17.4	12.1***	14.6**	14.8**	14.8**
Revenue growth (%)	10.8	10.2	11.5	12	13.1