

# Hiring Lucky CEOs

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## **Abstract**

Existing works show that luck increases CEOs' pay at their current firm. In this work, we explore how luck affects: (1) CEOs' employment opportunities, and (2) the performance of firms that hire lucky CEOs. Our results indicate that luck increases the likelihood to get a CEO job at new companies. Conditional on moving, lucky CEOs obtain a higher pay (in absolute terms and compared to new industry peers) mostly due to higher incentive pay. Moreover, lucky CEOs tend to be hired by firms operating in less competitive industries. Despite the higher compensation they receive, we find that lucky CEOs lead to a substantial decline in the performance and growth of the hiring firm.

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## 1. Introduction

Going back to Bertrand and Schoar (2003), scholars have devoted considerable attention to the role of CEOs.<sup>1</sup> While there is now a consensus that CEOs are a key driver of firm performance (see, recently, Bennedsen et al. 2020), many works have also suggested that CEOs are often able to entrench themselves and enjoy perks at the expense of shareholders (Yermack 2006; Salas 2010). This controversy has spurred a debate on the extent to which top executives are paid for their contributions to shareholder value (Hall and Liebman 1998; Chang et al. 2010; Nguyen and Nielsen 2014).

A common approach to address this question consists in estimating the pay effect of *luck*, i.e. events that are exogenous to both the firm and the CEO. Contrary to the principal-agent prediction that shareholders filter out luck when designing pay packages to incentivize CEO effort, there is ample evidence that luck increases a CEO's pay. An early interpretation of this finding is that CEOs are able to distort the pay-setting process to their favor (Bertrand and Mullainathan 2001). Later works have argued that pay-for-luck may also occur because luck improves CEOs' labor market opportunities and thus makes retention more costly (Oyer 2004; Rajgopal et al. 2006; Bizjak et al. 2008).<sup>2</sup>

While extant works have been confined to using lucky events as determinant of CEOs' pay at their *current firm*, we study how luck shapes the labor market prospects of CEOs and the performance of the new firms they match with. Specifically, we contribute to the literature by investigating: (1) how luck drives CEOs' mobility across firms; (2) how luck shapes the level and composition of pay that CEOs receive when moving to a new firm; (3) the type of firms that lucky CEOs match with; (4) the corporate implications of hiring lucky CEOs. Theoretically, our work builds on the idea that pay-for-luck at their current firm increases CEOs' bargaining position in the labor market. In turn, lucky CEOs have high reservation value with regard to compensation and task assignments when

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<sup>1</sup> See Bertrand (2009) for a review.

<sup>2</sup> Another explanation is that pay-for-luck raises CEOs' incentives to forecast or react to luck (Albuquerque et al. 2022).

bargaining with potential employers. This creates a sorting mechanism whereby lucky CEOs leave their current firm when they can match with firms that can offer attractive pay packages and favorable industry conditions (e.g. less fierce competition).

We conduct the analysis on S&P 1500 US firms from 1992 to 2018. Common to the literature, we measure luck by using exogenous variations in firm value given by movements in oil prices and the business cycle. Arguably, these factors are beyond the control of CEOs and firms alike; yet, they allow CEOs to “shine” in the labor market as they boost the market value of their firms. We start by showing that luck increases the likelihood of CEO transition: CEOs whose firm value rises due to luck are significantly more likely to leave their firm.

Next, we explore how luck at the departing firm associates with the pay that a CEO will get at the new firm. Results indicate that luck makes CEOs able to obtain a significantly higher compensation at the new firm, even after controlling for a wide range of variables characterizing the CEO-firm match. Importantly, this larger pay occurs from non-cash compensation items (e.g. stocks awards and options) rather than salary and bonus. Finally, luck makes CEOs who move to a new firm earn significantly more than their new industry peers.<sup>3</sup>

Existing works suggest that lucky CEOs can increase their compensation by influencing the pay-setting process at their current firm (Bertrand and Mullainathan 2001; Garvey and Milbourn 2006). Our findings suggest that luck can also affect the bargaining process between CEOs and potential recruiters in the labor-market matching stage and the draw up of new contracts. Lucky CEOs, i.e. those with relatively high current compensation due to favorable exogenous shocks, can credibly signal a high reservation value on the labor market, and thus match with firms that can offer particularly attractive job assignments. We have already shown that they can get more generous pay packages. To probe into the job sorting of lucky CEOs, we explore the characteristics of hiring firms. Results show that lucky CEOs move more frequently towards firms operating in less competitive

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<sup>3</sup> As a result, the higher pay stemming from the hiring of lucky CEOs may trigger upward adjustments in the pay of other executives in the same industry. On the “contagion” of positive shocks to CEO compensation, see Bereskin and Cicero (2013) and Amman et al. (2016).

product markets, which typically provide more room for managerial entrenchment and slack (Giroud and Mueller 2010). Together with our finding on the higher pay, this evidence suggests that luck helps CEOs to attain more favorable bargaining arrangements at the job market stage (Oyer 2004), i.e. during the formation of new CEO-firm matches.

Our results so far have two opposite implications for shareholders. On the one hand, hiring lucky CEOs may be costly for the shareholders of the hiring firm (since those CEOs are overpaid relative to their contribution to firm performance). On the other hand, it may be desirable for a firm to attract a talented CEO whose luck may have made retention too costly at his/her previous firm. To parse these effects, we employ a difference-in-differences approach that estimates the effect of incoming CEOs' luck on the performance of the hiring firm. Our findings indicate that while CEO turnover per se has a positive effect on the hiring firm's performance (Huson et al. 2004), the level of incoming CEO's luck (at his/her previous company) *harms* the new firm's performance. High-luck CEOs maintain performance stable at their new firm but underperform when compared to low-luck CEOs. Importantly, the relative underperformance of high-luck CEOs is more pronounced at the higher end of the CEO pay distribution.<sup>4</sup>

While luck at a CEO's departing firm is exogenous to the prospects of the hiring firm, the formation of a new CEO-firm match may be driven by unobservable factors potentially correlated with future firm performance. To reinforce the causal interpretation of our results, which already control for constant firm heterogeneity, we show the absence of pre-turnover diverging trends in the performance of firms that hire low-luck and high-luck CEOs. Studying the mechanisms at play, we then show that the underperformance of firms that hire lucky CEOs is attributable to a decline in sales growth. That is, firms hiring lucky CEOs lose competitive edge in the product market. Moreover,

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<sup>4</sup> This evidence raises the question of why lucky CEOs would wish to obtain a higher pay through non-cash items (which are partly tied to firm performance). There are several possible explanations. First, luck may lead to CEOs' overconfidence due to attribution biases (Gao et al 2021), i.e. an overestimation of the degree to which one is responsible for his/her own success (Gervais and Odean 2001). Hence, lucky CEOs' performance expectation may exceed their true ability. Second, our results have shown that lucky CEOs match with firms in less competitive industries, which allow them to enjoy a given stream of profits while enjoying more slack as compared to CEOs in highly competitive industries.

luck appears to drive a consistency in management style across firms: for lucky CEOs, the level of corporate investment at the previous firm is positively associated with investment at the hiring firm. If raising investment at the new firm is efficient per se, we would expect all incoming CEOs to do so. Yet, we find that only high-luck CEOs (i.e. those that also underperform) experience an association between departing and hiring firm's investment; the relationship is insignificant for low-luck CEOs.

Our work contributes to multiple strands of research. To start, we expand a voluminous literature on the sources of heterogeneity in executive compensation. Works in this area have explored factors such as firms' size and their quest for talent (Gabaix and Landier 2008), the alignment between executives and capital providers (Ortiz-Molina 2007), the monitoring role of boards (Williamson 2008; Chhaochharia and Grinstein 2009), shareholders' voice (Gregory-Smith et al. 2014), and competitive pressures (Jung and Subramanian 2017; Karuna 2007). Other papers have focused on executives' personal attributes such as education (Falato et al. 2015), style (Graham et al. 2012), business connections (Engelberg et al. 2013), visibility (Malmendier and Tate 2009), reputation (Milbourn 2003) and power (Morse et al. 2011). Starting from Bertrand and Mullainathan (2001), several works have documented that lucky events unrelated to CEOs' effort can affect their compensation (Garvey and Milbourn 2006; Feriozzi 2011; Davis and Hausman 2020).<sup>5</sup> As argued, pay packages may respond to luck as a result of skimming, or as result of an optimal contracting through which shareholders seek to retain CEOs whose luck improves outside opportunities (Oyer 2004; Bizjak et al. 2008; Brookman and Thistle 2013). Importantly, this literature has focused exclusively on the relationship between luck and compensation at CEOs' current firm. Our contribution consists in showing that luck may also impact on the compensation and power that CEOs will secure during the course of their career. In so doing, our findings corroborate existing theories of optimal contracting (Oyer, 2004) suggesting that lucky CEOs hold and exploit ample outside options in the labor market.

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<sup>5</sup> There is some controversy about whether CEO compensation is only affected (upward) by positive luck, or also (downward) by negative luck. See Naveen et al. (2020) for a contribution on this topic, as well as Choi et al. (2019) for the time evolution of pay-for-luck.

By focusing on CEOs' labor market opportunities, we also expand the literature on the formation and stability of matches between firms and CEOs, and on the corporate implications of CEOs. The literature in this area has explored several features of the matching process, such as the geographic scope of the hiring pool (Yonker 2016), the role of managerial skills for performance-driven CEO turnover (Eisfeldt and Kuhnen 2013), the corporate origin of new CEOs (Allgood and Farrell 2003; Cziraki and Jenter 2020), and their pay and performance at the previous firm (Fee and Hadlock 2003, 2004). Our contribution to this literature is to: (1) test how luck affects the formation of new CEO-firm matches and the contractual arrangements between them, and (2) illustrate the real effects of hiring lucky CEOs. In so doing, we also contribute to the literature on how departing CEOs fare in the labor market (Chang et al. 2010; Fee et al. 2018) and, more generally, to the literature on executives' mobility and its relationship with performance and pay (Frydman 2019; Graham et al. 2019).

In Section 2, we present our data and summary statistics. In Section 3, we explore how luck shapes the transition of CEOs to new firms. In Section 4, we investigate how luck affects CEO pay at the new firm, whereas in Section 5 we show the corporate implications of hiring lucky CEOs. Section 6 concludes.

## **2. Data and summary statistics**

### *2.1. Sample*

We draw individual-level data from the Execucomp dataset, which provides information on the top executive team of S&P 1500 firms going back to 1992. We restrict the analysis to CEOs, who are the upper echelon of the firm and have been the primary focus of the literature on pay-for-luck (e.g. Bertrand and Mullainathan 2001; Campbell and Thompson 2015; Naveen et al. 2020). We use the Compustat dataset to gather financial information at the firm level. Our analysis spans from 1992 to 2018.

We identify CEO turnover by searching for executives that hold the CEO position in an Execucomp firm at time  $t$  and are no longer present in that firm at time  $t+1$ . This case is classified as a turnover event (occurring at time  $t$ ). Conversely, a case where an executive holds the CEO position at his/her company from one year to the next are labelled as non-turnover events.<sup>6</sup> In total, we record 4,210 turnovers and 27,280 non-turnover events. The first turnovers pertain to CEOs that left their firm in 1993, whereas the last ones to CEOs that left in 2017.<sup>7</sup>

For each of the 4,210 CEOs who departed from an Execucomp at time  $t$ , we conduct an extensive online search (using Factiva, LinkedIn, Wikipedia and other web sources) on their career in subsequent years. Appendix B presents a detailed description of the data collection process. Using this information, we can establish whether CEOs who departed from an Execucomp company have subsequently moved to any other US listed firm (contained in Compustat) either as CEO or non-CEO executive. Among the 4,210 departing CEOs mentioned above, 526 were found as CEO or non-CEO executive at another listed firm. Finally, we tracked CEO moves within Execucomp, i.e. CEOs who departed from an Execucomp firm and joined subsequently another Execucomp firm. This restriction is useful because for CEOs who moved within the Execucomp dataset we have comprehensive data on the pay packages at the hiring firm. Among the 526 departing CEOs described above, 380 departing CEOs subsequently re-appear at another Execucomp firm. Of these 380 CEOs, 119 landed a new CEO job, while 261 became non-CEO executives.

Table 1 summarizes the different types of CEO turnover. The main focus of our analysis is on the 119 CEOs (118 net of missing values in firm characteristics) in Panel E of Table 1, i.e. those CEOs who landed a CEO job at a new Execucomp firm, and from which we can retrieve data on their

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<sup>6</sup> We exclude executives who hold the CEO position at multiple firms simultaneously. These CEOs often take breaks from one of their companies, re-join in later years, and these dynamics complicate the identification of turnover events. Our results, however, are largely robust to leaving them in the sample.

<sup>7</sup> We take 2017 as the last turnover year because by construction we need data at both  $t$  and  $t+1$  to capture a CEO turnover (or lack thereof).

pay packages.<sup>8</sup> Because the Execucomp database covers large listed S&P 1500 firms, our sample is representative of CEOs at the largest and most influential companies.

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## 2.2. CEO and firm-level characteristics

For the CEOs in Panel E of Table 1, we compute four variables: (1) the logarithm of total pay; (2) the ratio of total pay to the mean compensation of other CEOs in the same 3-digit SIC industry and year; (3) the logarithm of cash compensation, i.e. the sum of salary and bonuses; and (4) the logarithm of incentive compensation, computed by subtracting salary and bonus from total pay. These will serve as dependent variables in our pay regressions.

To probe into the characteristics of CEOs' firms of origin and destination, we merge in yearly financial data from Compustat and construct the following variables: (1) the market to book ratio, computed as the ratio of the market value of equity scaled by the book value of equity (and winsorized between 0 and 10 to reduce concerns of outliers<sup>9</sup>), to proxy for a firm's market performance; (2) the logarithm of the number of employees to proxy for a firm's size; (3) operating profitability, measured by return on assets (ROA), i.e. the ratio of earnings before interest and taxes (EBIT) divided by the book value of total assets (trimmed at 1% in the left and right tails of the distribution).

To measure the industry's competitiveness, we follow Koch et al. (2021) and compute the average industry markup as revenues/(revenues - EBIT) for each year and 3-digit SIC code. The markup hence captures the ratio of revenues to costs, whose values tend to be higher in less competitive industries. Firms in industries protected from competition are typically subject to laxer

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<sup>8</sup> While there exist larger datasets also covering turnover events outside of Execucomp (e.g., Jenter and Kanaan 2015), we are bound to use Execucomp in order to have data on CEO compensation. Further, keep in mind that by definition we observe realized CEO moves within Execucomp, i.e. CEO transitions where a new match between a firm and a (lucky) CEO has been realized. By design, we do not observe cases where CEOs renegotiated their salary successfully with their current firm instead of accepting an outside offer.

<sup>9</sup> Winsorizing the top and bottom 1% does not change our results.



corporate governance and more severe problems of CEO entrenchment (Giroud and Mueller 2010), and thus can be attractive to CEOs who wish to enjoy a “quiet life” by eschewing competitive pressures. Appendix A contains a description of all variables.

Panel A of Table 2 compares the characteristics of departing and hiring firms. In Column (1) we compute the average for the last year of a CEO at his/her departing firm, whereas in Column (2) we compute the average for the first year of a CEO at his/her hiring firm. In Column (3), we provide a *t*-test comparison between the two columns. In terms of firm characteristics, we do not find any systematic difference between CEOs’ departing and hiring firms. CEO pay is, on average, higher at the hiring firms as compared to departing firms, although not statistically different. Panel B compares the average characteristics of the hiring firms one year prior (Column 1) and one year after (Column 2) the new CEO hire. Column (3) of this panel again presents the results of *t*-tests. Consistent with the evidence in Panel A, there are no major differences in the firm characteristics whereas some differences surfaces by looking at CEO pay: on average, firms which change the CEO tend to pay the new one more, mostly through incentive pay items; this difference is significant at the 5% level.

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### *2.3. Luck measurement*

Following existing works (e.g. Bertrand and Mullainathan 2001; Davis and Hausman 2020), we quantify luck as the variation in firm value that is beyond control of the CEO. Specifically, we devise a two-stage approach similar to Bertrand and Mullainathan (2001) and Jenter and Kanaan (2015). In the first stage, we estimate variations in firm value that are due to luck by regressing firm value on factors that are exogenous to CEO’s actions (or even to the whole industry), namely the yearly series of the oil price (West Texas Intermediate), GDP growth and employment rate from 1992 to 2018

(from the Bureau of Economic Analysis). In the second stage, we use the fitted values of this regression as a measure of changes in firm value that are caused by luck.<sup>10</sup>

To implement the first stage, we estimate the following regression using the entire Compustat sample:

$$\ln(V_{i,t}) = \beta_0 + \beta_1 Oil_t + \beta_2 \Delta GDP_t + \beta_3 Emp_t + \mathbf{X}'_{it} \beta_4 + \beta_5 \gamma_t + \delta + \epsilon_{i,t} \quad (1)$$

where  $V_{i,t}$  denotes the market value of firm  $i$  in year  $t$ ,  $Oil_t$  refers to the oil price in year  $t$ ,  $\Delta GDP_t$  measures the GDP growth from year  $t-1$  to  $t$ , and  $Emp_t$  is the US-wide employment rate in year  $t$ . The matrix  $\mathbf{X}'_{it}$  comprises controls at the firm level, i.e. ROA, 1-year lagged market value, firm size, as well as CEO age and tenure.<sup>11</sup>  $\gamma_t$  is a linear time trend, and  $\delta$  a vector of 3-digit SIC industry dummies, which account for time trends and constant heterogeneity across industries.<sup>12</sup> Standard errors are clustered at the 3-digit SIC level. We denote as “Luck” the fitted values of firm value in equation (1).<sup>13</sup> The average of this variable is equal to 7.5, whereas the standard deviation is 1.6. Since the dependent variable in equation (1) is measured in (logged) USD, a marginal change in the luck variable can be interpreted as luck-driven percentage growth in market value. This variable will constitute the main explanatory variable in the CEO turnover, pay, and performance regressions.

### 3. Luck and CEO transitions

We start by testing how luck affects CEO turnover by adopting a canonical turnover regression (e.g., Garvey and Milbourn 2006). Specifically, we estimate an OLS regression in which the dependent variable is equal to one for the instances of CEO departures from firm  $i$  at time  $t$  (i.e. those listed in

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<sup>10</sup> While other first-stage instruments exist, e.g., changes in the exchange rate, the oil price is useful because it is co-determined by economies outside of the US, it is highly volatile and difficult to predict (Choi et al. 2019; Davis and Hausman 2020).

<sup>11</sup> Our results remain virtually unchanged when not controlling for firm and CEO characteristics and leaving the matrix  $\mathbf{X}'_{it}$  out of the specification in equation (1).

<sup>12</sup> To carry out the estimation of equation (1) we delete SIC industries with less than 10 firm-year observations. The sample covers 242 different industries at the 3-digit SIC level. One 3-digit SIC code in our sample contains on average 858 firm-year observations.

<sup>13</sup> Despite our luck instruments are economy-wide, fitted values are defined, as the original market value items, at the firm-year level since our regression also includes firm characteristics.

Panel B of Table 1), and zero for the instances of no CEO departure (i.e. those in Panel A of Table 1):

$$\Pr(\text{Departing CEO}_{i,t}) = \beta_0 + \beta_1 \text{Luck}_{i,t} + \mathbf{X}'_{it} \beta_3 + \delta_t + \epsilon_{i,t} \quad (2)$$

$\text{Luck}_{i,t}$  captures variations in market value due to lucky events (as described in the previous section),  $\delta_t$  is a set of year dummies to account for common shocks, and the matrix  $\mathbf{X}'_{it}$  includes the set of controls at the CEO level (age and tenure) and at the firm level (firm size and profitability). Standard errors are clustered by 3-digit SIC level.<sup>14</sup>

Column (1) of Table 3 reports the results when investigating all CEO turnovers (see Panel B of Table 1). As can be seen, luck has no significant effect on general CEO turnover. Given that this analysis does not require CEOs to land a new job, the lack of significance in Column (1) of Table 3 is not surprising.<sup>15</sup> However, Column (2) of Table 3 shows the results using turnovers in which the CEOs landed a CEO job at a new company (i.e., those in Panel C of Table 1). As shown, the effect of luck on the likelihood of these turnovers is positive and significant: a standard deviation increase in luck (1.6) raises the likelihood of CEO departure by 0.29 percentage points (i.e. a 15% increase from the average likelihood of turnover). Column (3) shows the results when only considering CEO turnover where CEOs moved to a new S&P 1500 company as executives (i.e. those in Panel D of Table 1). As can be seen, the results remain robust and become even higher in magnitude. Moving to the control variables, we find that tenure has a negative effect on the probability that CEOs leave (and become CEO at another company); firm profitability has too a negative effect: higher firm performance reduces the probability of CEOs leaving (consistent with models of performance-induced CEO turnovers); finally, CEO age is negatively associated with the probability of CEO

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<sup>14</sup> Using a probit regression leaves our results virtually unchanged.

<sup>15</sup> The CEO departures in Table 3 occur for multiple reasons. A common classification of departure reasons, based on media articles surrounding CEOs' departures, include: retirements, voluntary, forced, and exogenous departures (due to death or illness). However, providing an unambiguous classification of departure reasons has proven problematic for about 50% of all departures in Eisfeldt and Kühnen (2013) and more than 27% of all departures in Gentry et al. (2021). As Jenter and Lewellen (2021) argue, another problem results from the fact that current classifications often assume that turnovers above a certain retirement ages are voluntary. Bearing these challenges in mind, we collected departure reasons from Gentry et al. (2021) who provide data that matches our sample period, and did not find significant evidence that luck influences the likelihood of forced or voluntary turnovers.

turnover to transition to a new firm. Finally, Column (4) of Table 3 shows the results when using CEO departures where the CEO moved and accepted another CEO role for an Execucomp firm (i.e. those in Panel E of Table 1). Again, the effect of luck on CEO departures is positive and significant, albeit the effect is estimated less precisely.

Collectively, these results provide suggestive evidence that luck triggers mobility making CEOs more likely to move to new companies. In the next section, we study the compensation arrangements that these CEOs will get at the new firm.

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#### **4. Luck and pay at the hiring firm**

Does luck improve the pay of CEOs who move to new firms? And what are the characteristics of firms that hire lucky CEOs? We hypothesize that hiring companies are not perfectly able to separate out luck from task performance in their candidate pool. Hiring companies observe potential candidates at companies with an upsurge in market valuation, which raises their attractiveness in the labor market (Oyer, 2004). Consequently, lucky CEOs who decide to leave their current firm (at which they can already leverage the luck shock to improve pay; see Bertrand and Mullainathan 2001) should enjoy greater bargaining power vis a vis new firms' shareholders, and thus gain benefits in the form of higher compensation and more attractive job assignments. We test these predictions in this section.

##### *4.1. CEO compensation at the new firm*

We start by providing a descriptive analysis of the association between a CEO's luck at the departing firm and his/her compensation at the new firm. Keep in mind that this analysis is conditional on those CEOs who have decided to leave their current firm. While moving to a new company, in general, is

likely to bring a pay premium, we study the specific role of luck on the level of pay that CEOs will get.

As Figure 1 shows, there is a positive relationship between the natural logarithm of a CEO's total compensation during the first year of his new appointment and his/her level of luck at the time of departure from the former company ( $p$ -value $<0.01$ ).

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INSERT FIGURE 1 HERE  
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We confirm this finding by using a OLS regression with the logarithm of a CEO's total compensation (at the first year of the new appointment) as dependent variable, and his/her level of luck at the time of departure from the former company as key explanatory variable. Here we can partial out the effect of hiring firms' characteristics on CEO pay. We also include year fixed effects to account for common shocks to all firms. Standard errors are clustered by 3-digit SIC code. Table 4 shows that luck at the previous company makes CEOs able to obtain a significantly higher total compensation at the new firms. This result holds controlling for year dummies (Column 1), as well as including hiring firms' control variables (Columns 2-4). Notice that, in addition to the control variables used in the turnover regressions, we also control for a dummy capturing whether a CEO has moved to a new company in the same industry of his/her prior company. In terms of economic magnitude, the results in column (4) suggest that a standard deviation increase in luck at the departing firm is associated with a 26% increase in compensation at the new firm.

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In Table 5, we conduct an extensive set of robustness checks to assess the validity of the pay result derived in Table 4. The baseline coefficient from Table 4, Column (4), is reported in Row (1) for comparison purposes. First, we use the same specification of our baseline estimate but use the

(logged) CEO pay scaled by the median pay of his/her new industry peers (computed by 3-digit SIC) as dependent variable. Our results in Row (2) confirm that luck at the departing firm increases new CEO compensation beyond the industry level ( $p$ -value = 0.04). In Row (3), we add controls for the corporate policies at the new firm to the set of controls contained in our baseline specification. In particular, we add the ratio of capital expenditures to total assets, the market-to-book ratio, and the ratio of dividends to total assets, which control for investment, market performance and payout policies. Again, we find a positive and statistically significant effect of luck at the departing firm on CEOs' pay at the new firm ( $p$ -value = 0.08). Next, we show that our result holds when adding a set of 3-digit SIC dummies to control for the industry origin of newly hired CEOs (Row 4), as well as controls at the level of their departing firm (i.e. ROA and firm size) in addition to those, at the level of the hiring firm, already included in the baseline specification (Row 5). While we have so far used as dependent variable CEOs' pay at the new firm in the first year of employment, in Row (6) we provide the robustness of our finding to using the average pay in first two years at the new company. Taking the logarithm of CEO pay reduces concerns of outliers. Yet, to tackle this concern more explicitly, we show the robustness to trimming at the 1% level the dependent variable (Row 7), and using a median regression (Row 8). Finally, to account for the fact that our key explanatory variable (i.e. luck) is an estimate from equation (1), in Row (9) we adjust the residuals by using the Murphy-Topel estimator as implemented in Hole (2006).

While our analyses focus on the CEO job, in untabulated regressions we test whether luck increases the pay of CEOs who take on *non-CEO* executive positions at new companies. For this test, we use the sample of 261 CEOs who became executive at another Execucomp company and for whom we can observe compensation at the new firm. When estimating the baseline specification of Table 3 on this sample, we find that luck has a positive and significant effect on the pay that these executives get at their new firm ( $p$ -value=0.07).<sup>16</sup>

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<sup>16</sup> In an untabulated test, we re-estimate our results by assigning incoming CEOs with random luck shocks (drawn from a normal distribution with mean and variance equal to the values in the observed luck distribution). Consistent with a causal interpretation, we find that random luck does not have any significant effect on CEO pay.

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#### *4.2. Composition of pay at the new firm*

The previous section has shown that hiring firms offer attractive positions to lucky CEOs. This finding is consistent with the argument in Oyer (2004) that CEOs' outside options increase in good times (i.e. when their firms exhibit an exogenous increase in market value) and they capitalize these benefits in the managerial labor market.

The ability of CEOs to exploit luck shocks in the labor market may depend on their relative bargaining power and overconfidence. Existing works (e.g., Gao et al. 2021) have shown that luck increases individual overconfidence, i.e. the perception of one's performance ability relative to the true level. If so, we may expect that CEOs hit by a luck shock are more prone to bargain a higher pay via variable items (whose value is, at least in part, a function of the CEOs' ability to increase firm value). At the same time, it may be easier for the hiring firm to justify a larger compensation via variable pay rather than outright bonus awards (Morse et al. 2011). Relatedly, Bebchuk et al. (2002) argue that rent-seeking executives may seek to increase pay through incentive items, rather than fixed salary, in an attempt to camouflage pay and so mitigate external scrutiny and criticism; Bebchuk et al. (2002, 2010) provide examples of how option compensation can be designed to reward even poorly performing managers.

To explore these issues, we decompose our compensation variable into cash and non-cash, long-term, incentive items. The cash component equals the sum of the salary and yearly bonus items in the Execucomp database, whereas the non-cash component is computed by subtracting salary and bonus from total compensation. Thus, non-cash pay includes long-term incentive components such as stock awards, options, pension contributions and long-term incentive plans. Table 6 shows the results obtained estimating the same regressions as for the total pay, but using as dependent variables the logarithm of cash or non-cash items, separately.

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INSERT TABLE 6 HERE  
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As shown in columns (1)-(2), cash compensation is not significantly associated with newly hired CEOs' luck. By contrast, newly hired CEOs' luck has a positive and significant effect on non-cash compensation, as shown in columns (3)-(4). The most comprehensive specification in Column (4) suggests that a standard deviation increase in luck is associated with a 46% increase in non-cash compensation at the new firm.

#### *4.3. Time-to-transition and hiring firms' characteristics*

To probe into the matching process of CEOs and hiring firms, we perform two different tests. As before, we use the sample of leaving CEOs that land a CEO job at another Execucomp firm. First, we study the time-period that elapses between CEOs' departure from their current firm and their CEO appointment at another firm. To conduct this test, we run an OLS regression using as dependent variable the time (in years) from departing their previous firm to starting as CEOs at the hiring firm. If luck makes CEOs attractive to the hiring firms, we expect that lucky CEOs move more swiftly to new firms and have a shorter time-spell between their jobs.<sup>17</sup>

Table 7, Column (1), shows that the luck coefficient is significant both statistically and in magnitude: a standard deviation increase in luck reduces the time to starting the new position by about 1.1 years. This results holds if we include the usual set of controls for the hiring firm, i.e. firm size, return on assets, and when controlling for CEO age (Column 2). In terms of magnitude, the estimate when using these controls indicates that a standard deviation increase in luck decreases the time to

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<sup>17</sup> CEOs who move to a new firm may be subject to non-compete clauses (Sanga 2018). Because these clauses delay the start of a new position, our estimates can be considered as a lower bound. The majority of CEOs in our sample start their new job within the first three years, however.



the new position by about 0.8 years. Taken together, these results suggest that luck at the previous firm makes CEOs better able to transition to hiring firms.<sup>18</sup>

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INSERT TABLE 7 HERE  
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Second, we study which firms hire lucky CEOs. Specifically, we test whether lucky CEOs are more likely to match with firms in less competitive industries. The idea here rests on the notion that the CEOs of companies operating in more concentrated industries are subject to a weaker disciplining force of competition, and can thus enjoy more personal rent in the form of a “quiet life” or weaker shareholders’ discipline (Giroud and Mueller 2010; Anton et al. 2020).

We use the average markup of the industry where the hiring firm operates as dependent variable. Results in Table 8 shows that luck makes CEOs leave toward companies with significantly *higher* industry markups, i.e. less competitive industries: a unit increase in luck is associated with an 0.04 increase in the markup in the CEO’s destination industry. In line with our arguments, the results suggest that lucky CEOs devise personal rent by shielding themselves from competitive pressures.

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INSERT TABLE 8 HERE  
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Collectively, the results of this section suggest that CEO-firm matching in the managerial labor market depends on the bargaining options between CEOs and firms. Lucky CEOs, by enjoying a potentially higher pay at their current firm (Bertrand and Mullainathan 2001), have high reservation values and seek attractive positions with more generous pay in industries subject to relatively little

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<sup>18</sup> Why would firms hire a (lucky) CEO in the first place? To provide a glimpse of these reasons, we looked at why the current CEO (i.e. the predecessor of the incoming lucky CEO) left the hiring firm. Using data from Gentry et al. (2021), we find that about 90% of these CEOs left involuntarily, retired, or stepped down due to “other reasons”. This suggests that hiring firms either were not content with the performance of their former CEO or had to hire a new one for exogenous reasons. By design, we argue that the new CEO-firm matches that we then observe have indeed been mutually beneficial at the time of the hire.

competition. As a result, lucky CEOs tend to match with firms which operate in high-markup industries and which can offer high compensation. These patterns describe a job sorting that reconciles the view that pay-for-luck stems from outside options (Oyer 2004) with the view that pay-for-luck comes from the bargaining ability of entrenched CEOs.

## 5. The corporate implications of hiring lucky CEOs

### 5.1. Operating profitability

Our evidence so far indicates that CEOs hit by luck shocks at their previous firm sort into companies that operate in less competitive product markets and receive more generous compensation packages. On the one hand, these results suggest that luck makes CEOs able to skim the hiring firms. On the other hand, it may be desirable for a firm to hire a talented CEO whose luck made retention too costly at his/her previous firm. In this section, we delve into the real effects of appointing lucky CEOs for the hiring firm.

To do so, we take advantage of the longitudinal structure of our data, which enables us to observe firms' performance and other financial characteristics before and after a CEO hire. For each of the 118 hiring firms used in the pay analysis, we have data on accounting returns for the years before and after the CEO hire, amounting to a total of around 792 observations. Using this data, we estimate the following regression:

$$Y_{it} = \beta_0 + \beta_1 Post_t + \beta_2 Post_t * Luck_i + \mathbf{X}'_{it} \beta_3 + v_i + \delta_t + \epsilon_{i,t} \quad (3)$$

where the dependent variable is the performance of firm  $i$  at time  $t$ .  $Post$  is a dummy variable equal to one for the years subsequent to a CEO hire, and zero for the years before, and  $Luck$  is a continuous treatment measuring the CEOs' extent of luck at the departing firm. The coefficient of the interaction between  $Post$  and  $Luck$  establishes whether luck has a different effect on firm profitability around a CEO's hire. Additionally, the regression includes the vector  $\mathbf{X}_{it}$  of firm- and CEO-level controls, firm fixed effects  $v_i$  to remove corporate heterogeneity, and industry-year  $\delta_t$  dummies to account for time-

specific industry trends (Gormley and Matsa 2013). Depending on the specification, standard errors are clustered by firm or 3-digit SIC industry.

The result of this regression are shown in Table 9. To measure firm performance, we start by using as dependent variable the ratio of earnings before interest and taxes (EBIT) to total assets. Alternatively, we use the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to total assets. These approaches are commonly used in the literature to identify the impact of CEOs' on the utilization of corporate assets (Giroud and Mueller 2010; Bennedsen et al. 2020). As shown in Columns (1)-(4), the coefficient of the Post dummy is positive and significant at the 1%-5% level. This finding is consistent with existing insights that accounting performance improves following a CEO turnover (Huson et al. 2004). However, the coefficient of the interaction between luck and the post-turnover dummy is negative and statistically significant at the 1%-5% level.

Next, we explore further measures of performance going beyond firms' operating profitability. First, we test whether firms that hire lucky CEOs lose ground in terms of market performance, as measured by the market-to-book ratio. The coefficients in Columns (5)-(6) show that firms that hire luckier CEOs experience a significant decline market-to-book. In Columns (7)-(8), we use firms' revenue growth as dependent variable. As shown, luckier CEOs drive a decline in sales growth around CEO turnover, indicating that hiring firms lose market shares relative to firms that hire less lucky CEOs. Note that, as for profitability, the direct effect of CEO turnover (i.e. the coefficient of the post dummy) on both market-to-book and sales growth is positive. So, in other words, CEO luck negates the general improvement in performance that firms would experience by changing the CEO. Remember that our specification contains firm fixed effects, which effectively control for the unobserved heterogeneity between firms that hire high-luck and low-luck CEOs.

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INSERT TABLE 9 HERE  
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In summary, incoming CEOs' luck appear to harm the subsequent performance of the hiring companies. While a CEO's luck at his/her departing firm is exogenous to the corporate outcomes of the hiring firm, the formation of matches between hiring firms and lucky (or unlucky) CEOs may be driven by unobservable factors. As said, equation (3) removes the level differences in performance attributable to unobserved heterogeneity constant across firms, e.g. firms hiring lucky CEOs having a low ability to screen potential candidates. However, there could be time-varying factors making a firm more likely to hire a lucky CEO and *also* underperform (regardless of the incoming CEO's luck). To alleviate this concern, we show that firms hiring low-luck and high-luck CEOs do not display diverging trends in profitability before the CEO arrival. In Figure 2 we plot the average profitability in each of the four years before and after the CEO change, separately for incoming CEOs above and below the median luck value. As shown, the performance of firms that hire high-luck or low-luck CEOs follows a parallel trend before the transition takes place. Moreover, the graph shows that starting from one year after transition, the performance of firms that hired low-luck CEOs gradually improves, whereas the performance of firms that hired high-luck CEOs experiences a moderate decline.

For further robustness tests and to validate the absence of diverging trends, we include two additional variables that control for complexity of a firm's operations (Morse et al. 2011): (1) the number of business segment (drawn from Compustat Segment), and (2) the ratio of employees to sales. Results in the left panel of Table 10 (Panel A) show that our results (derived only using ROA to preserve space) hold. Additionally, we estimate a regression in which we replace the post dummy with a set of dummies for each of the years before and after the CEO appointment (using  $t = -4$  as baseline group).<sup>19</sup> Results in the right panel of Table 10 (Panel B) indicate that the coefficient of these time interactions with luck are not statistically significant for all years up until the CEO appointment. At  $t = 1$ , the coefficient of the interaction term becomes economically larger and reaches 10%

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<sup>19</sup> The coefficients of each stand-alone time dummy are included in the model but unreported to save space.

significance, while for the subsequent years the coefficients are even larger and more precisely estimated. Although it is challenging to entirely rule out endogenous matching between CEOs and firms (e.g., because luckier CEOs may take on new CEO appointments in more challenging situations), the dynamics presented in Table 10 is coherent with a causal interpretation of lucky CEO harming firm performance.

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INSERT FIGURE 2 HERE

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INSERT TABLE 10 HERE

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Another qualification concerns the sample used for the analysis. Our results are derived by using a continuous luck treatment, i.e. we compare firm profitability before and after CEO appointments across firms that hire CEOs with different luck levels. Since we only employ CEOs that left their previous organization (and firms that subsequently hired them), an important question is about whether our result on the underperformance of lucky CEOs holds when comparing performance to a set of firms which do not change CEOs. To address this question, we estimate the average treatment effect for hiring firms as compared to a matched sample of firms that did not experience CEO turnover. Similar to Malmendier and Tate (2009), we estimate the average treatment effect on the treated (i.e., hiring) firms, both with and without bias adjustment (Abadie et al. 2001). We perform our estimation using the full sample of all firms in Panel A of Table 1 (with available controls) and apply a median split to the sub-sample of 118 firms with newly incoming CEOs, which separates between incoming CEOs with low or high luck. We then estimate the treatment effect of hiring a CEO with low luck compared to a matched sample of firms that did not replace their CEO. We use five neighboring matches (based on CEO age, tenure, firm size, year and industry) and find no significant treatment effect. However, when estimating the treatment effect for firms that hire

high-luck CEOs, the point estimate shows a significant decline in profitability of about 1.4% ( $p$ -value of 0.029 (0.032) with (without) bias adjustment). Figure 3 shows the average return on assets for the group of firms that hired high-luck and low-luck CEOs, respectively, along with average return on assets for the matched control samples.

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INSERT FIGURE 3 HERE  
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### 5.2. *Linking pay and performance results*

We provide evidence bridging the relationship between lucky CEOs' pay and their underperformance at the new firm. Specifically, we are interested in possible performance gaps between high-luck and low-luck incoming CEOs. As argued above, lucky CEOs may bargain for higher pay due to overconfidence (Gao et al. 2021) and/or as a result of rent-seeking (Bebchuk et al. 2002). In both cases, we expect that luckier CEOs receive more pay relative to their contribution to firm performance. To test this argument, we compare the profits generated by incoming CEOs across the distribution of pay at the new firm. Figure 4 plots the average CEO compensation needed for generating one percentage point of ROA at the new firm, separately for low-luck and high-luck CEOs (i.e. below or above the median luck) and for different quartiles of the pay distribution.<sup>20</sup> As shown, the difference in pay-for-performance between low-luck and high-luck CEOs is relatively small in the 1<sup>st</sup> to 3<sup>rd</sup> quartile of the pay distribution ( $n = 231$ ). Larger differences exist, however, for top-paid CEOs who lie in the 4<sup>th</sup> quartile of the pay distribution ( $n = 236$ ), where the average pay of lucky CEOs is about three times higher per percentage point of ROA generated at the new firm. Overall, Figure 4 illustrates that agency problems arise especially at the high-end of the pay distribution and reinforce the notion that, from a firm's perspective, hiring lucky CEOs with generous pay-packages is the costliest option to generate accounting returns.

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<sup>20</sup> In Figure 4, we measure profitability as EBITDA/total assets. CEO pay per unit of return is computed as  $\text{tdc1} / ((\text{EBITDA} * 100) / \text{total assets})$ . EBITDA only contains 19 negative values which are excluded to study pay for positive profit. Averages are computed using the first four years after a CEO appointment.

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INSERT FIGURE 4 HERE  
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### 5.3. Consistency of investment policies

The literature has long established that CEOs differ in their management style (Bertrand and Schoar 2003; Fee et al. 2013; Bandiera et al. 2020). Our last assessment is about whether luck affects the extent to which the corporate policies that a CEO implemented at his/her former company predict the policies that will be implemented at the hiring firm.<sup>21</sup> More specifically, we focus on investment policies - perhaps on the most common variables in the management style literature.

To this end, we estimate a regression in which the dependent variable is the ratio of capital expenditures to total assets; the key explanatory variables are the post-hire dummy, interacted with the capital expenditures of the incoming CEO at his/her departing firm. We perform these regressions for three different samples: first, we use the full sample of 118 hiring firms, second, we use the sample of incoming CEOs with above-median luck at their departing firm, and third, the sample of CEOs with below-median luck at their departing firm. As shown, the coefficient of the interaction  $Post \times Past\ firm's\ Capex$  is not significant when considering the full sample of 118 hiring firms. However, when we focus on high-luck hires we find that the past firms' capital expenditures are positively associated with capital expenditures at the hiring firm. It could, of course, be efficient to increase capital expenditures at the new firm. Yet, for low-luck hires we do not observe any consistency in investment policies. These findings suggest that luck may induce an attribution bias: high-luck CEOs, or the board that hires them, misattribute luck-driven performance to individual actions (investment, in our analysis), and this drives the consistency in actions across firms.<sup>22</sup>

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<sup>21</sup> We thank one reviewer for suggesting this analysis.

<sup>22</sup> For the sake of completeness, we also tested for the consistency of financing policies (i.e., debt and cash policies) but found no significant effects.

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INSERT TABLE 11 HERE  
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## 6. Conclusion

CEOs occupy the quintessential position of modern corporations and have a vast influence on the firms they lead. Empirical evidence confirms that CEOs matter a great deal for corporate policies and, more generally, firm performance (e.g., Bertrand and Schoar 2003, Bennedsen et al. 2020). Yet, we know that when CEOs are insulated from shareholder discipline, they may use their power to derive private benefits (Core et al. 1999), e.g. by devising pay structures that tilts incentives toward personal benefits rather than shareholder value (Morse et al. 2011). For instance, CEOs celebrated by the media have been shown to gain a larger compensation and, at the same time, underperform (Malmendier and Tate 2009). Within this research, several works have focused on the relationship between CEO pay and events that are outside of CEOs' control (i.e. luck). Simple principal-agent notions suggest that an optimal compensation aimed at incentivizing effort provision should *not* reward CEOs for luck (Holmstrom and Milgrom 1987). Yet, existing evidence suggests that pay-for-luck is pervasive, owing to the influence of CEOs on the pay-setting process (Bertrand and Mullainathan 2001) or to the fact that luck increases opportunities in the managerial labor market and thus induces shareholders to raise CEOs' pay to retain them (Oyer 2004; Rajgopal et al. 2006).

We have provided several novel findings to the literature on pay-for-luck. First, CEOs hit by a luck shock are more likely to become CEOs at a new company. Second, luck at the departing firms increases the total pay that CEOs will get when moving to new firms (primarily due to an increase in non-cash items); luck also makes CEOs earn more than their new industry peers. Third, luck makes CEOs more likely to match with companies that operate in concentrated industries – which are typically subject to poorer corporate governance. Fourth, appointing a lucky CEO leads to poorer firm performance and slower growth. Lastly, luck drives a consistency in corporate policies: the level



of investment at the departing firm is positively associated with the investment that the CEO will undertake at the hiring firm.

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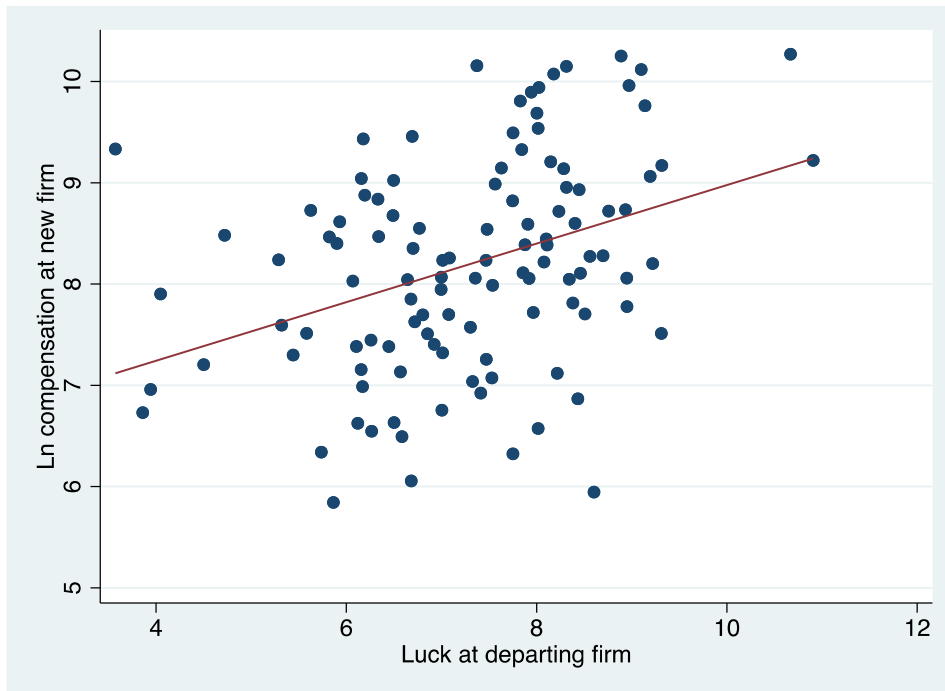
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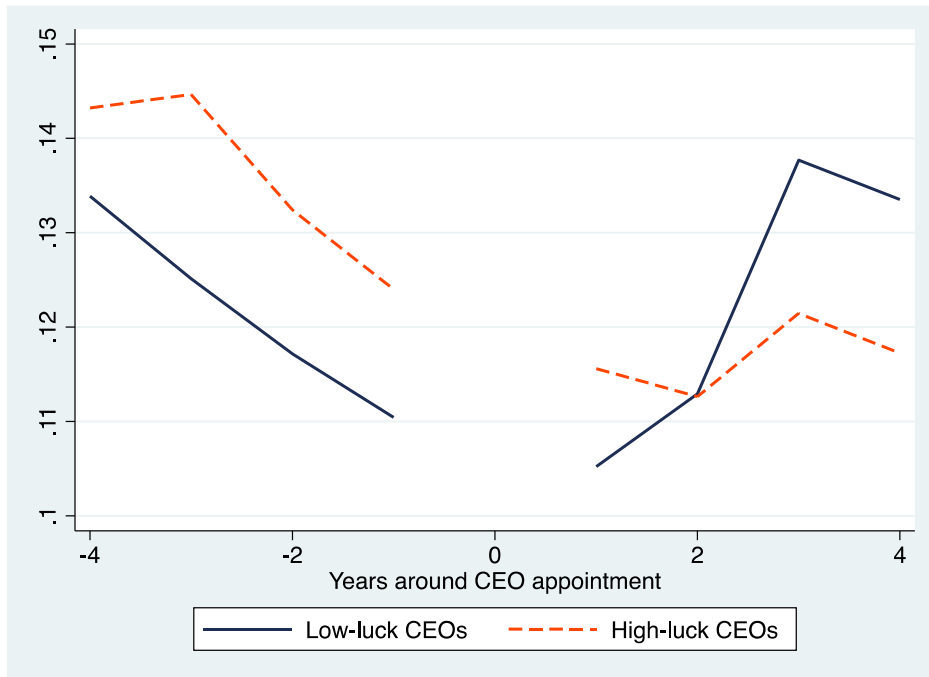
**Figure 1.** Relationship between former luck shocks and new CEO compensation

This figure illustrates the linear relationship between a CEO's luck at his/her departing firm and (the logarithm of) CEO compensation at the new firm.



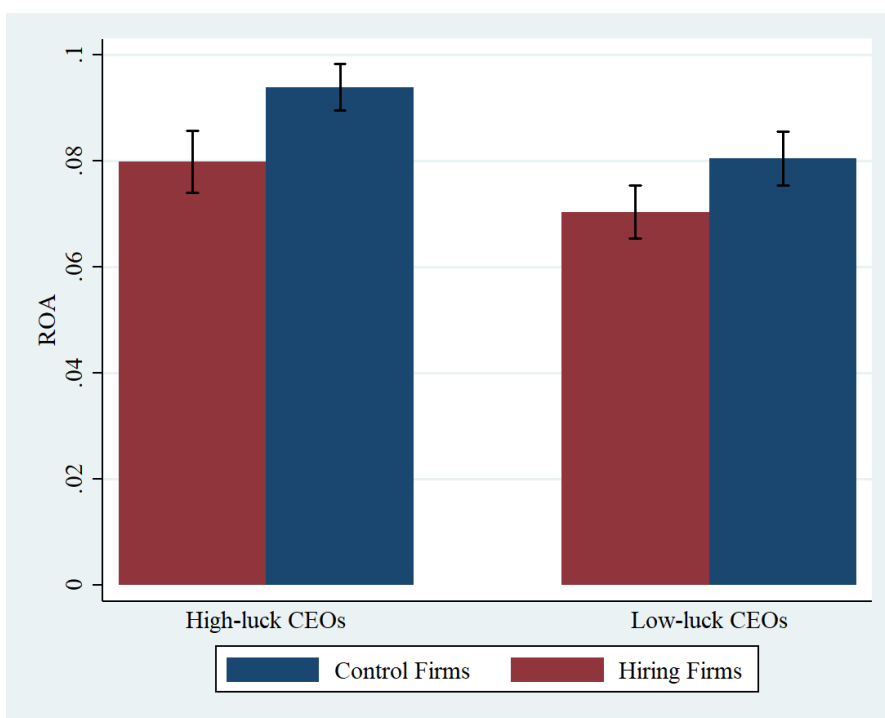
**Figure 2.** Performance change around CEO appointment

This figure illustrates the average profitability (ROA measured as EBIT/total assets) in each of the four years before and after a CEO appointment, separately for incoming low-luck and high-luck CEOs (i.e. above or below the median luck at their previous firm).



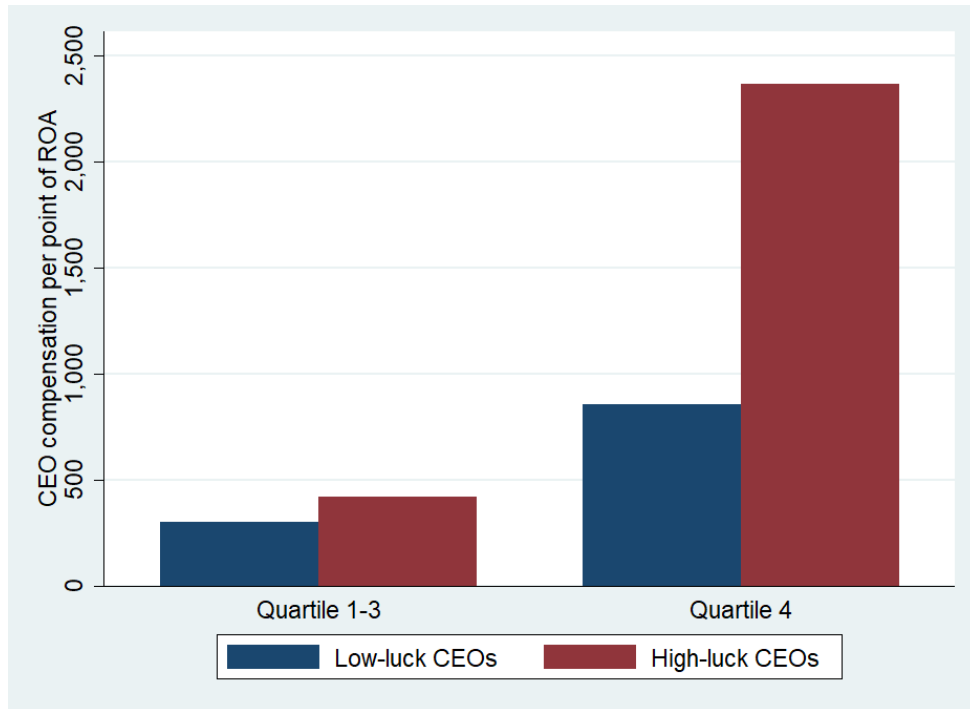
**Figure 3.** Performance of hiring firms relative to a matched sample

This figure illustrates return on assets generated by moving CEOs at their new firm. The left part shows average return on assets for firms who hire CEOs with above median luck (red) and return on assets of similar firms used as control group (blue). The bars represent standard errors. The right part shows average return on assets for firms who hire CEOs with below median luck (red) and return on assets of similar firms used as control group (blue). The bars represent standard errors.



**Figure 4.** Relationship between CEO luck, pay and performance at the new firm

This figure illustrates the relationship between CEO pay and firms' ROA generated by moving CEOs at their new firm. The bars plot averages of CEO compensation per percentage point of profitability generated at the new firm ( $\text{tdc1 over (EBITDA*100)/total assets *100}$ ). The averages are shown by quartiles of the pay distribution (Q1-3 and Q4) and are taken over the first four years after a CEO appointment. Low luck and high luck are relative to the median.





**Table 1. Sample**

Panel A reports all the cases in which no CEO transition occurred (i.e. CEOs of an Execucomp firm who remained as CEOs of that firm from one year to the next). Panel B reports all the cases of CEO departure (i.e. CEOs who left an Execucomp firm in a given year). In this and subsequent panels, the number of observations are reported both for the full sample and conditional on the availability of the control variables used in Table 3 (related to the year of CEO departure from his/her firm). Panel C reports all the cases of CEO transition (i.e. CEOs who left an Execucomp firm and reappeared subsequently, in any role, at another listed firm (as identified in Compustat). Panel D presents all the cases of CEO transition within Execucomp (i.e. CEOs who left an Execucomp firm and reappeared subsequently, in any role, at another Execucomp firm). Panel E reports all the cases of CEO-to-CEO transitions within Execucomp (i.e. CEOs who left an Execucomp firm and reappeared subsequently as CEO at another Execucomp firm). In panel E, cases with available controls are conditional the availability of Execucomp compensation data (total compensation).

	Obs.
<b>A. No CEO departure</b>	
All cases	27,280
<b>B. All CEO departures</b>	
All cases	4,210
Cases with available controls at departing firm	4,173
<b>C. CEO departures to another listed firm (any role)</b>	
All cases	526
Cases with available controls at departing firm	505
<b>D. CEO departures to another Execucomp firm (any role)</b>	
All	380
Cases with available controls at departing firm	380
<b>E. CEO departures to another Execucomp firm (CEO role)</b>	
All cases	119
Cases with available controls at departing firm	119
Cases with available controls at departing and hiring firm	118

**Table 2. Summary statistics**

This table presents the comparison of firm and CEO characteristics for the sample of departing CEOs who became CEO at another Execucomp firm (i.e. CEOs in Panel E of Table 1). Panel A, Column (1), shows the averages of 119 observations (111 for market to book) for the departing firm at the year of CEO departure; in Column (2) we show the averages of 119 observations (114 for market to book, 118 for compensation and non-cash compensation) for the hiring firm at the first year after a CEO hire. Panel B, Column (1), shows the averages of 119 observations (107 for market to book) for the hiring firm one year prior to hiring a new CEO; in Column (2) we show the averages of 119 observations (114 for market to book, 118 for compensation and non-cash compensation) for the hiring firm one year after hiring a new CEO. In Column (3) of both panels we present the t-test differences (with standard errors in parenthesis). \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Panel A. Differences between departing and hiring firm**

	Departing firm	Hiring firm	Difference (1)-(2)
	(1)	(2)	(3)
Market to book	1.46	1.34	0.12 (0.21)
Size	15.27	16.28	-1.01 (3.53)
ROA	0.072	0.059	0.013 (0.01)
Industry markup	1.14	1.29	-0.15 (0.16)
Compensation	5,332.10	7,279.77	-1,947.67 (1,348.25)
Cash compensation	1,171.77	1280.66	-108.89 (199.97)
Non-cash compensation	4,160.33	5,999.45	-1,839.12 (1,291.39)

**Panel B. Difference before and after CEO hires for the hiring firm**

	Pre-hire	Post-hire	Difference (1)-(2)
	(1)	(2)	(3)
Market to book	1.22	1.34	-0.12 (0.20)
Size	15.32	16.28	-0.94 (3.40)
ROA	0.065	0.059	0.005 (0.012)
Industry markup	1.21	1.29	0.09 (0.17)
Compensation	5,401.20	7,279.77	-1,878.57 (1022.32)
Cash compensation	1,378.61	1,280.66	97.95 (310.06)
Non-cash compensation	4,022.60	5,999.45	-1,976.86** (918.72)

**Table 3. CEO luck and turnover**

This table provides the results of CEO turnover regressions. The dependent variable in Column (1) is a dummy equal to one for all departing CEOs (i.e. those in Panel B of Table 1), and zero for staying CEOs (i.e. those in Panel A of Table 1). The dependent variable in Column (2) is a dummy equal to one for all departing CEOs that were later found in any position in another listed firm of the Compustat dataset (i.e. those in Panel C of Table 1), and zero for staying CEOs (i.e. those in Panel A of Table 1). The dependent variable in Column (3) is a dummy equal to one for all departing CEOs that were later found at another firm of the Execucomp dataset (i.e. those in Panel D of Table 1), and zero for staying CEOs (i.e. those in Panel A of Table 1). The dependent variable in Column (4) is a dummy equal to one for all departing CEOs that were later found as CEO at another firm of the Execucomp dataset (i.e. those in Panel E of Table 1), and zero for staying CEOs (i.e. those in Panel A of Table 1). Each explanatory variable, computed at the level of the departing firm, is described in detail in Appendix A. Standard errors clustered by industry are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable: Turnover				
	(1)	(2)	(3)	(4)
Luck	0.0028 (0.0025)	0.0018* (0.0010)	0.0021*** (0.0008)	0.0008* (0.0004)
Ln tenure	0.0083* (0.0042)	-0.0053*** (0.0013)	-0.0044*** (0.0012)	-0.0007 (0.0006)
Ln age	0.3516*** (0.0211)	-0.0260*** (0.0064)	-0.0174*** (0.0058)	-0.0041 (0.0028)
Firm size	0.0002 (0.0022)	0.0005 (0.0008)	-0.0005 (0.0006)	-0.0005 (0.0004)
ROA	-0.3260*** (0.0408)	-0.0707*** (0.0155)	-0.0583*** (0.0137)	-0.0164*** (0.0053)
Year dummies	Yes	Yes	Yes	Yes
Observations	31,453	27,785	27,660	27,399

**Table 4.** CEO luck and pay

This table provides the result of OLS regressions using the sample of departing CEOs subsequently hired as CEO at another Execucomp firm (i.e. those in Panel E of Table 1). The dependent variable is the logarithm of a CEO's total pay at the new firm in the first year. Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by industry are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable: Ln (CEO pay at new firm)				
	(1)	(2)	(3)	(4)
Luck	0.2280*** (0.0806)	0.2358*** (0.0759)	0.2596*** (0.0647)	0.1631** (0.0689)
Same industry		-0.2494 (0.2302)	-0.3629* (0.2102)	-0.2146 (0.2271)
Ln age			-3.6443*** (0.9514)	-3.4774*** (0.9975)
Firm size				0.1788*** (0.0671)
ROA				1.3693 (1.0484)
Year dummies	Yes	Yes	Yes	Yes
Observations	118	118	118	118

**Table 5.** CEO luck and pay: Robustness tests

This table provides the results of a number of robustness checks relative to the baseline regression of CEO pay in Column (4) of Table 4, which is reported in Row (1) for comparison purposes. In Row (2) we use as dependent variable the logarithm of CEO pay scaled by the industry median (computed at the 3-digit SIC level). In Row (3) we add to the baseline regression a set of additional controls for the corporate policies of the hiring firm, i.e. the ratio of capital expenditures to total assets, the market to book ratio, and the ratio of dividends to total assets. In Row (4) we add to the baseline regression a set of 3-digit SIC industry dummies. In Row (5) we further add (in addition to industry dummies) as controls the ROA and size (i.e. logarithm of employees) of the departing firm (computed at the year when the CEO left). In Row (6) we use as dependent variable the logarithm of the first two years of CEO pay at the new firm (rather than solely the first year, as done in the baseline specification). In Row (7) we use the specification of Row (6) after trimming 1% of the observations in the left and right tail of the pay distribution. In Row (8) we estimate the specification in Row (6) using a median regression. Row (9) computes uses the Murphy-Topel adjustment to the standard errors of the baseline regression. All regressions include the explanatory variables of Table 4, Column (4), computed at the level of the hiring firm and described in detail in Appendix A. Standard errors clustered by industry are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable: Ln (CEO pay at new firm)		
	Beta	s.e.
1. Baseline	0.1631**	(0.0689)
2. Pay relative to new industry peers	0.1511**	(0.0731)
3. Controls for corporate policies	0.1757*	(0.0882)
4. Industry dummies	0.2702*	(0.1576)
5. Industry dummies/departing-firm controls	0.4342**	(0.2165)
6. Average pay [t, t+1]	0.1942**	(0.0748)
7. Trimmed average pay	0.2202***	(0.0708)
8. Median regression	0.2200**	(0.0955)
9. Adjusted residuals	0.1630**	(0.0697)

**Table 6. CEO luck and pay items**

This table provides the result of OLS regressions using the sample of departing CEOs subsequently hired as CEO at another Execucomp firm. In Columns (1)-(2), the dependent variable is the logarithm of a CEO's cash compensation (namely salary and bonuses) at the new firm in the first year. In Columns (3)-(4), the dependent variable is a CEO's non-cash compensation (namely total compensation minus cash and bonuses) at the new firm in the first year. Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by industry are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable:	Ln (cash pay at new firm)		Ln (Incentive pay at new firm)	
	(1)	(2)	(3)	(4)
Luck	-0.1187 (0.1798)	-0.1460 (0.1463)	0.4087** (0.1548)	0.2849** (0.1387)
Same industry		-0.3652 (0.5118)		-0.2946 (0.5378)
Ln age		-4.9778* (2.5980)		-5.7218** (2.3894)
Firm size		0.1338 (0.1511)		0.3294* (0.1784)
ROA		0.6433 (0.9193)		5.0899 (3.2843)
Year dummies	Yes	Yes	Yes	Yes
Observations	118	118	118	118

**Table 7.** CEO luck and transition-time to new position

This table provides the result of OLS regressions using the sample of departing CEOs subsequently hired as CEO at another Execucomp firm. The dependent variable is the number of years in-between the departure date and the date of getting the new CEO position. Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by industry are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable: Time to new CEO job		
	(1)	(2)
Luck	-0.6891*** (0.2412)	-0.4819** (0.2131)
Same industry		-0.4547 (0.5629)
Ln age		12.6342*** (2.3981)
Firm size		-0.5104** (0.2001)
ROA		-0.0179 (2.2101)
Year dummies	Yes	Yes
Observations	118	118

**Table 8.** CEO luck and industry markup

This table provides the result of OLS regressions using the sample of departing CEOs subsequently hired as CEO at another Execucomp firm. The dependent variable is the industry markup of the industry where the hiring firm operates. Industry markup is computed as the industry average of firms' revenues/(revenues - EBIT) at the three-digit SIC level. Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by industry are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable: Industry markup		
	(1)	(2)
Luck	0.0113 (0.0093)	0.0231** (0.0109)
Same industry		0.0583* (0.0344)
Ln age		-0.0248** (0.0111)
Firm size		0.0353 (0.1124)
ROA		0.2318* (0.1318)
Year dummies	Yes	Yes
Observations	118	118



**Table 9.** Incoming CEOs' luck and firm performance

This table provides the result of OLS regressions estimated on the panel dataset of firms that hire a new CEO. Columns (1) and (2) use as dependent variable the ratio of EBIT to total assets. Columns (3) and (4) use as dependent variable the ratio of EBITDA to total assets. Columns (5) and (6) use as dependent variable the market to book ratio. Columns (7) and (8) use as dependent variable the annual revenue growth. The key explanatory variables in all columns are the Post dummy, equal to one for the years after a CEO hire, and zero for the years before; the Luck variable, measuring the extent of incoming CEOs' luck at their previous firm; and the interaction between the two. Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by industry or firm are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable:	ROA: Ebit/Assets		ROA: Ebitda/Assets		Market to book		Sales growth	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post	0.2568*** (0.0724)	0.2568*** (0.0764)	0.2131*** (0.0760)	0.2131** (0.0892)	4.0302*** (1.4741)	4.0302** (1.5988)	0.5769*** (0.2025)	0.5769*** (0.1877)
Post × Luck	-0.0329*** (0.0097)	-0.0329*** (0.0098)	-0.0283*** (0.0102)	-0.0283** (0.0125)	-0.4728*** (0.1784)	-0.4728** (0.1898)	-0.0627*** (0.0237)	-0.0627*** (0.0233)
Firm size	0.0007 (0.0113)	0.0007 (0.0087)	0.0115 (0.0094)	0.0115 (0.0071)	-0.3373 (0.2447)	-0.3373** (0.1490)	0.1568** (0.0691)	0.1568** (0.0776)
Ln tenure	0.0137 (0.0115)	0.0137 (0.0125)	0.0071 (0.0088)	0.0071 (0.0107)	0.2530 (0.1734)	0.2530*** (0.0858)	0.0289 (0.0403)	0.0289 (0.0486)
Ln age	-0.0825 (0.0706)	-0.0825 (0.0879)	-0.0576 (0.0543)	-0.0576 (0.0474)	-1.8830* (1.0747)	-1.8830** (0.7260)	0.0852 (0.3054)	0.0852 (0.3025)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year × Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered s.e.	Firm	Industry	Firm	Industry	Firm	Industry	Firm	Industry
Observations	792	792	782	782	756	756	662	662

**Table 10.** New CEOs' luck and performance dynamics: Alternative specifications

This table provides the result of OLS regressions estimated on the panel dataset of firms that hire a new CEO. All regressions in this table use as dependent variable the ratio of EBIT to total assets. In the left panel of the table (Panel A), we augment the baseline specification in Table 9, Column (1), with two additional control variables: the ratio of employees to sales, and the number of a firm's business segments. In the right panel of the table (Panel B), we alter the baseline specification in Table 9, Column (1), by replacing the Post dummy with a set of dummies corresponding to the years around the new CEO's hire, from four years earlier (used as baseline group) to four or more years later. Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by firm are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Panel A		Panel B	
Dependent variable:	ROA: Ebit/Assets	Dependent variable:	ROA: Ebit/Assets
	(1)		(1)
Post	0.2535*** (0.0735)	Post $t = -3 \times$ Luck	0.0018 (0.0084)
Post $\times$ Luck	-0.0339*** (0.0097)	Post $t = -2 \times$ Luck	0.0148 (0.0137)
Firm size	0.0096 (0.0130)	Post $t = -1 \times$ Luck	0.0039 (0.0132)
Ln tenure	0.0084 (0.0112)	Post $t = 0 \times$ Luck	-0.0074 (0.0141)
Ln age	-0.0682 (0.0658)	Post $t = 1 \times$ Luck	-0.0332* (0.0174)
Employees to sales	-8.0915 (6.0850)	Post $t = 2 \times$ Luck	-0.0332** (0.0167)
Business segments	-0.0031 (0.0046)	Post $t = 3 \times$ Luck	-0.0406** (0.0182)
Firm fixed effects	Yes	Post $t = 4+ \times$ Luck	-0.0309 (0.0194)
Year $\times$ Industry dummies	Yes	Firm size	-0.0029 (0.0121)
Observations	735	Ln tenure	0.0035 (0.0115)
		Ln age	-0.0415 (0.0758)
		Firm fixed effects	Yes
		Year $\times$ Industry dummies	Yes
		Observations	792

**Table 11.** CEO luck and consistency of investment policies

This table provides the result of OLS regressions estimated on the panel dataset of firms that hire a new CEO. The dependent variable is the ratio of capital expenditures to total assets. The main explanatory variables are the Post dummy, equal to one for the years after a CEO hire, and zero for the years before; the ratio of capital expenditures to assets in the departing firm the last year prior to the CEO departure; and the interaction between the two. The regression is estimated using the full sample in Column (1), and on the subsamples of high-luck and low-luck CEOs (i.e. above and below the median value) in Columns (2) and (3). Each explanatory variable, computed at the level of the hiring firm, is described in detail in Appendix A. Standard errors clustered by firm are reported in parentheses. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Dependent variable: Capital expenditures			
	All CEOs	High-luck CEOs	Low-luck CEOs
	(1)	(2)	(3)
Post	-0.0002 (0.0091)	0.0047 (0.0115)	0.0072 (0.0088)
Post × Past firm's capex	0.0645 (0.1100)	0.1891** (0.0844)	-0.1131 (0.1104)
Firm size	-0.0010 (0.0052)	0.0161 (0.0127)	0.0001 (0.0085)
Ln tenure	0.0033 (0.0037)	0.0054 (0.0037)	0.0015 (0.0034)
Ln age	-0.0469** (0.0214)	-0.0426 (0.0279)	-0.0102 (0.0147)
Firm fixed effects	Yes	Yes	Yes
Year × Industry dummies	Yes	Yes	Yes
Observations	764	392	372

## Appendix A. Variable description

Variable	Definition
Turnover	Dummy equal to one for CEO turnover events, and zero otherwise. The variable is computed using the instances of CEO departure (or stay) illustrated in Table 1
Luck	Fitted values from regressing the market value on lucky events. See Section 2.3 for a full description of the methodology
Ln tenure	Logarithm of CEO tenure computed as the number of years since a CEO has joined a company
Ln age	Logarithm of CEO age as reported in Execucomp, missing years are interpolated using years where the age of a CEO is reported
Ln pay at the new firm	Logarithm of CEO total compensation in thousands of USD ( <i>tdc1</i> )
Ln cash pay at the new firm	Logarithm of salary plus bonus in thousands of USD (+1 USD)
Ln incentive pay a the new firm	Logarithm of total pay minus salary and bonus in thousands of USD (+1 USD)
Time to new CEO job	Time (in years) from departing their previous firm to starting as CEOs at the hiring firm.
Firm size	Logarithm of a firm's employees as reported in Compustat
Market to book	Market value of equity scaled by the book value of equity. Values winsorized between 0 and 10
Operating profitability	Return on assets, computed either as EBIT/total assets or EBITDA/total assets as specified in the relevant tables. The ratios are trimmed at the 1% of observations in the left and right tail of the distribution
Employees to sales	Number of employees relative to sales
Business segments	Number of business segments a firm is active in (from Compustat Segment)
Capex	Capital expenditures to total assets. Values outside the range [0, 1] are excluded

Same industry	Dummy equal to one if the new (3-digit SIC) industry of the firm where a CEO goes is the same of the industry of his/her departing firm
Post	Dummy equal to one for the years after a CEO hire, and zero for the years before
Sales growth	$(Sales_t - Sales_{t-1}) / Sales_{t-1}$
Industry markup	Average yearly industry markup calculated as the average firm markup at the 3-digit industry level, defined as $Sales / (Sales - EBIT)$

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## Appendix B. Data collection on CEOs

This Appendix illustrates the data collection process that led to the different samples shown in Table 1. We start by screening the Execucomp database for CEO turnovers. We search for cases where a firm changes its CEO between two points in time. Applying this approach to the Execucomp data for the years 1992 to 2018, we identify 4,904 CEO departures. We match these 4,904 cases with Compustat and are left with 4,210 CEO departures (recall that we dropped industries with too few firm-year observations in our luck regression as well as CEOs with multiple affiliations in a given year, so that not all CEO departures in Execucomp are matched in this step). The 4,210 CEO turnovers (see Panel B of Table 1) represent about 86% of all CEO turnovers in Execucomp between 1992 and 2017. Note that although our data includes the year 2018, the last year for CEO turnover is 2017, because we require one year ahead for the classification, i.e. we need to observe whether a CEO has stayed (or not) at his/her firm in year  $t+1$ . For each of these 4,210 turnovers, we record the name of the CEO, the year of the turnover, and the company name from which the CEO departed. Using these information, we then manually search for information on whether a departing CEO was later hired again and re-appeared at another firm. To keep this search feasible, we limit our search to new positions at listed firms covered in the Compustat universe. Specifically, we earmark each of the 4,210 CEO turnovers by whether or not the departing CEO was later hired by a Compustat firm (either as executive or as CEO). To identify these cases, we screen various web sources, e.g. company websites, Wikipedia, Factiva, LinkedIn. In total, we find 526 CEOs (~11% of all turnovers) who landed a new job at a Compustat firm, either as executive or CEO (see Panel C of Table 1). Of these 526 CEOs, 380 (~72%) found a position at a new Compustat firm that is covered in the Execucomp database, either as executive or CEO (see Panel D of Table 1). Of these 380 CEOs, 119 CEOs (~31%) accepted a new CEO position at a firm in the Execucomp data (see Panel E of Table 1).