

ABSTRACT

Title of dissertation: SELECTION OF STAR CEOS AND ITS
IMPLICATIONS ON FIRM PERFORMANCE AND
CEO COMPENSATION

Minwen Li, Doctor of Philosophy, 2010

Dissertation directed by: Professor Vojislav Maksimovic, Dean's Chair Professor
of Finance, Department of Finance

My dissertation examines a board's decision to hire a star CEO and the implication of such decision on the new CEO compensation and firm performance. I develop a new methodology to identify a star CEO by analyzing the texts contained in 18,240 Wall Street Journal news articles. Unlike previous measures, my new measure accounts for the time series variations of executives' visibility as well as how favorably these executives are portrayed in the business press. In order to study the role of board composition on CEO selection, executive compensation and firm performance, I introduce board industry tenure, a new measure of board composition, to capture the average years of industry-related experience acquired by independent directors.

In my first essay, I investigate a board's decision to hire a star CEO and analyze the consequences of this decision for firm performance. I show that boards with short industry tenure or busy boards are more likely to select a star CEO. Firms that hire star CEOs subsequently perform worse than firms that hire non-star CEOs. However, after I use the propensity score matching method to control for pre-hiring board composition and other determinants of star CEO selection, firms that hire star CEOs perform equally well as firms that hire non-star CEOs.

My second essay compares the compensation design of a star versus a non-star CEO. I find that a star CEO is awarded 1.87 million dollars more in annual total compensation, and 2.19 million dollars more in annual option compensation, after I control for firm size, board characteristics, B/M ratio, leverage, EBIT/Assets, stock return, firm risk, industry and year effects, and other related variables. In addition, star CEOs receive higher compensation in firms where directors have short industry tenure, where directors hold multiple board seats simultaneously, where board size is large, and where board is composed of less independent directors. The above results hold true after I use a control-group approach, based on CEO matching to alleviate CEO selection issue. I also show that the equity portfolio of star CEOs exhibit higher sensitivities to change in stock price than non-star CEOs.

SELECTION OF STAR CEOS AND ITS IMPLICATIONS ON FIRM
PERFORMANCE AND CEO COMPENSATION

By

MINWEN LI

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Advisory Committee:
Professor Vojislav Maksimovic, Chair
Professor Albert "Pete" Kyle
Professor Mark Loewenstein
Professor Nagpurnanand Prabhala
Professor Ginger Zhe Jin

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Essay 1: Selection of Star CEOs and Firm Performance

ABSTRACT

This paper examines a board's decision to hire a star CEO and analyzes the consequences of this decision for firm performance. We propose a new methodology to identify star CEOs by analyzing the texts contained in 18,240 Wall Street Journal news articles. Unlike previous measures, our new metric accounts for the time series variations of executives' visibility as well as how favorably these executives are portrayed in the business press. The proposed measure indicates that boards with short industry tenure or busy boards are more likely to select a star CEO. Consistent with previous evidence, firms that hire star CEOs perform subsequently worse than firms that hire non-star CEOs. However, in contrast to previous work, we show that this underperformance is attributable to boards with short industry tenure or busy boards, rather than the ineffectiveness of star CEOs. Furthermore, our event studies of stock market reactions to hiring news imply that investors prefer star CEOs selected by boards with long industry tenure. Our work contributes to the literature by offering insights into how board composition affects firm performance.

JEL Classification: D8; G3

Key words: Star CEO; Board composition; Board Industry Tenure; Operating Performance

1 Introduction

Selecting a new CEO is among the most important decisions made by the board of directors. CEO hiring decisions directly affect future firm performance, thus having major implications for the value of corporation. This paper examines both the impact of board composition on CEO hiring decisions and the operating performance under the new CEO. We particularly focus on one special dimension of boards' hiring decisions: Does the board of directors prefer someone already known and favored by the business press and shareholders, or someone unknown? In this paper, we define the former candidate as a star CEO and investigate star versus non-star based hiring decisions. In particular, we examine the factors that influence the board of directors to hire a star versus non-star CEO. We then assess the implications of such decisions for future firm performance. Finally, we use short-term event studies to analyze investor responses to the news of hiring star CEOs.

We propose a new methodology to measure the star status of CEO hires from Wall Street Journal (WSJ) news texts. This methodology incorporates both WSJ news counts (how often a CEO is mentioned) and tone analysis of these news articles. Ultimately, we define a star CEO hire as one who meets two criteria: he (she) was cited by at least four WSJ news articles over the five years prior to

succession and these articles did not overall present a negative tone regarding the executive.

Employing this new measure to define star CEOs, we scrutinize the role of board composition on boards' CEO hiring decisions. We introduce board industry tenure, a new variable regarding board composition, to capture the average years of industry-related experience acquired by independent directors. We discover that boards with short industry tenure or busy boards have a higher tendency to select a star versus non-star CEO. These variables, board industry tenure and busy board, are both statistically and economically significant after controlling for firm size, previous firm performance, industry, year, and CEO characteristics. We conjecture that boards with short industry tenure or composed of busy directors are less able to evaluate CEO candidates' expertise. Thus, boards with these characteristics are prone to make non-optimal CEO hiring decisions.

We find firms that hire star CEOs subsequently perform worse than firms that hire non-star CEOs, consistent with Malmendier and Tate (2009) and Ang and Nagel (2008). We derive this result by conducting a difference-in-difference analysis on firm operating performance following CEO turnovers. The underperformance of star CEO firms is robust to controls for industry, year, firm size and firm fixed effects. During the four-year period (-2, +2 year) surrounding the hiring event, the change in the EBITDA/Assets ratio is on average 1.96% less for a firm managed by a star CEO versus a non-star CEO. Using different time

windows such as (-2, +1 year) and (-2, +3 year) around the hiring event leads to similar results.

We further investigate the source of the underperformance, paying special attention to the possibility that this underperformance is caused by the selection of star CEOs. In particular, it may be the non-optimal CEO hiring decisions of boards, rather than the inability of star CEOs, that drives the underperformance. Indeed, our paper illustrates that underperformance diminishes after we match the sample of star versus non-star CEOs based on pre-hiring board composition and other determinants of star CEO selection.

Finally, we perform short-term event studies to analyze stock price reactions to the news of hiring star CEOs. Employing the traditional market model approach, we find firms that hire star CEOs experience a two-day abnormal return of 1.14% following the hiring announcement. By contrast, the hiring announcement of a non-star CEO produces no significant two-day abnormal return. The difference in stock market responses to the news of hiring star versus non-star CEOs is 1.14% during the first two days, and 2.36% during the first month. More interestingly, within the group of star CEOs, investors respond more favorably to those selected by boards with long industry tenure. There exists a 0.89% difference in the two-day abnormal return between boards with long industry tenure and boards with short industry tenure. Overall, our evidence on stock market responses shows that, first, our star CEO measure indeed captures

star CEOs' appeal to the investors, and, second, that investors prefer star CEOs selected by boards with more industry experience.

Our results offer insights into the effectiveness of boards in making CEO hiring decisions, particularly those composed of directors who lack industry experience or who are busy. Star CEOs appeal to the business press and shareholders, even though they may lack the management skills required to maximize shareholder wealth. Evaluating their long-term management potential against their immediate appeal requires a board that has both the *knowledge* and the correct *incentive*. We conjecture that a board with less industry experience favors a star CEO because the board lacks the *knowledge* to evaluate the management skills of candidates. We also conjecture that a board filled with busy directors prefers a star CEO because the board lacks the appropriate *incentives* to carry out the costly evaluation process. Overall, the main results in our paper confirm the above conjectures.

A major challenge in researching star CEO selection is to create an empirical measure that not only captures an executive's appeal to the business press and shareholders, but also offers significant cross-sectional and time series variations. Previously, Malmendier and Tate (2009) evaluate the performance change of star CEOs. In their paper, a CEO gains star status after winning a prestigious award from major business magazines. However, their star CEO metric cannot be used to measure the star status of a CEO hire who was not previously a CEO.

Moreover, their measure cannot fully account for the time series variation of a CEO hire's visibility and how favorably he (she) is portrayed in the business press. Unlike Malmendier and Tate (2009), we extract and evaluate rich text information regarding the star quality of CEO hires contained in 18,240 WSJ articles. Compared with the previous measure, the resulting panel of star CEOs in our sample is large and has significant variations, adding to the power of our empirical tests on boards' hiring decisions.

Our paper provides three major contributions to current research on star CEOs and on corporate governance in general. To start with, this is the first paper to study boards' hiring decisions of star CEOs. By doing so, we provide a new angle to examine boards' agency problems that have not been studied in the domain of corporate governance and board composition. Previously, researchers find that firm value is influenced by board size (Yermack (1996)), independence of board members (Dahya et al. (2002), Chhaochharia and Grinstein (2009), and others), and number of board seats held by directors (Core et al. (1999) and Fich and Shivdasani (2006)). Furthermore, Malmendier and Tate (2008) and Fernandes and Fich (2010) find that financial expertise of directors significantly affects firm external funding, firm investment-cash flow sensitivities and bank failure. Our research shows that industry experiences of board members play an important role in CEO hiring decisions. In particular, boards with short industry tenure

negatively affect firm performance by selecting star CEOs who do not possess the necessary management skills.

Second, we add to the understanding of the performance of star CEOs by showing that star CEO underperformance is attributable to the non-optimal CEO hiring decisions made by boards with short industry tenure or busy boards. In their paper “Superstar CEOs,” Malmendier and Tate (2009) examine the time series change in firm performance after a CEO gains star status by winning a prestigious business awards. Malmendier and Tate find that the frequency of obtaining star status is independent of the governance measure of G-Index (Gompers, Ishii and Metrick (2003)). In addition, the award-winning CEOs subsequently underperform relative to a matched sample of non-winning CEOs. Unlike Malmendier and Tate (2009), we look into the cross-sectional difference in firm performance managed by a star versus non-star CEO. Our research show that a variety of board composition measures including board industry tenure, busy board, board size, and board independence have a direct influence on the probability of selecting a star versus non-star CEO.

Ang and Nagel (2008) provide evidence on the underperformance of outsider CEOs with superior past performance or from large firms. Their work is related to our performance evaluation of star CEOs because star CEOs are more likely to come from larger firms or firms with better past performance. Unlike Ang and Nagel (2008), we consider the effect of board composition on CEO selections.

Thus, by isolating the real effects of star status on firm performance from the effects of board composition, our work is less likely to be biased by the board selection issues.

Our third contribution relates to the development of content analysis methodologies for measuring the star quality of CEO hires. Empirical finance research is typically based on quantitative information such as stock price or accounting ratios. In contrast, content analysis allows researchers to use information from business texts such as news stories, IPO prospectuses, and earning releases. Recent innovations on text analysis have spurred promising research papers in asset pricing, as shown by Antweiler and Frank (2004), Das and Chen (2006), Tetlock (2007), Tetlock, Saar-Tsechansky and Macskassy (2008), Li (2006) and Boukus and Rosenberg (2006). Similar innovations have been applied to corporate finance by Hanley and Hoberg (2009), Hoberg and Philips (2008), and Loughran and Macdonald (2008) etc. Compared with previous research that measures the tone or sentiment of news articles, this paper evaluates how favorably human subjects such as company executives are portrayed in news articles. This methodology is especially useful for financial research that explores the role of executive characteristics or media influence.

This paper continues as follows. Section 2 describes our main databases, the matching method between these datasets, and the key variables. In Section 3, we discuss our methodology to identify star CEOs as well as the distribution of star

status and star CEO turnovers. In Section 4, we compare firm, board, and personal characteristics between star and non-star CEO turnovers. Section 5 analyzes the factors that affect star CEO selection. In Section 6, we compare firm operating performance after star versus non-star CEO appointments. Section 7 examines investor responses to news of hiring star CEOs. Section 8 concludes.

2 Data Sources

To carry out the study on star CEOs, we match data sources from four databases: Compustat, BoardEx, Factiva and CRSP. The ExecuComp database of Compustat provides information on CEO turnovers such as succession dates, new CEOs' ages, tenures, and other personal characteristics. Employment records and other characteristics of company board members are obtained from BoardEx. We analyze WSJ news articles from Factiva to identify star CEOs. Finally, firm stock return and accounting data come from CRSP and Compustat.

Table 1 presents definitions and data sources of all the variables used in this paper. Below we start with a brief overview on the four databases and then explain our matching methodologies among them.

ExecuComp provides annual snapshots of employment, personal, and compensation information on the top five executives of S&P 1500 companies since early 1990s. Compared with ExecuComp, BoardEx includes information on

both public and private firms, and especially offers comprehensive coverage of company board members. It has employment and personal information on over 10,000 company boards and 180,000 directors and top executives. Factiva offers full text access to about 8,000 business sources including national and international newspapers, magazines, news wire services, web sites, and industry (trade) sources since early 1980s. Compustat and CRSP are two commonly used databases on financial reports and stock market information of U.S. public companies.

We begin by identifying CEO turnovers in the ExecuComp database. We identify a CEO turnover during the first year of an executive's tenure as a CEO of a specific firm. We then categorize this turnover into either an outside or an inside turnover according to the following criterion. An insider CEO is one who had already been working for the firm twelve months before the date of succession; on the other hand, an outsider CEO is one who joined the firm less than twelve months before the date of succession.

We match ExecuComp and BoardEx to link each CEO turnover with the board members who selected the incoming CEO. The two databases have two different identification systems for firms, so we used two common data items (firm name and firm ticker) to ensure that the data from a firm in ExecuComp is correctly linked to the same firm in BoardEx.

Finally, we match the information on CEO turnovers from ExecuComp with firm accounting and stock return data from Compustat and CRSP. The link of GVKEY to PERMNO is used to match data items in the CRSP/COMPUSTAT merged database. Our matching methodologies give us a sample of 3,488 CEO turnovers during the period of 1990 to 2008. These turnovers involve 1,940 distinct firms and 3,338 distinct new CEOs. Nine hundred and sixty (960) of the firms have more than one CEO turnover during the sample period.

3 Identifying Star CEOs

3.1 Methodology

In this section, we develop methodologies based on content analysis to extract and evaluate information regarding executives' visibility as well as how favorably they are portrayed in WSJ news articles. By definition, star CEOs are those known and favored by the business media. Thus, extracting the opinions of the business press about CEO hires is a key step for our research.

3.1.1 Previous Measure of Star CEOs

In determining which executives are star CEOs, we consider the methodology of Malmendier and Tate (2009). Malmendier and Tate (2009) attempt to assess

the change in firm performance after an incumbent CEO becomes a star. They define a star CEO as one who receives prestigious awards from major business magazines. In particular, star CEOs in their sample won awards such as “Best CEO,” “Best Entrepreneur,” “CEO of the Year,” and “Person of the Year” from Business week, Financial World, and ten other business magazines.

There are several issues with the star CEO measure in Malmendier and Tate (2009).

First, this measure cannot be used to evaluate the star status of a CEO hire who was not previously a CEO. Rather than focusing on the star status of incumbent *CEOs*, our paper examines the star status of *executives* before they are hired as CEOs. Therefore, we need to create a new measure that applies to executives instead of just incumbent CEOs.

Second, business magazines limit their coverage of awards on CEOs. This results in a small sample (just 264 star CEOs), and, further, cannot fully account for the time-series variation of CEOs’ visibility as well as how favorably they are considered by the business press. Both the small sample size and lack of variation decrease the power of empirical tests in their paper.

Finally, the evaluation criteria of business awards differ greatly among magazines. In addition, both the number of awards selected by each magazine and the number of magazines covering awards change substantially over the sample

period. In summary, the approach of assigning equal weights to different awards at different times in their paper brings problems into the star CEO measure.

3.1.2 Development of the New Star CEO Measure

We propose a new methodology that overcomes the above issues. This new methodology allows us to explore richer and more consistent data regarding executives' star quality. This dataset includes 18,240 WSJ news articles from 1985 to 2008. We use WSJ news articles to represent the opinions of business press because WSJ is the largest-circulation newspaper in U.S. with around three million readers. It is also one of the most recognized business media among investors.

We develop our new econometric methodology based on content analysis. In general, content analysis allows finance researchers to retrieve and analyze information from business texts such as news stories, IPO prospectuses, and earning releases. A handful of recent research papers employ content analysis to assess the tone or sentiment of text documents for a variety of research objectives. For example, Tetlock (2007) and Davis, and Piger and Sedor (2006) analyzes whether the sentiments of WSJ news articles and earnings releases predict stock market performance and firm earnings. Hanley and Hoberg (2009) explore whether the tone of IPO prospectuses influences IPO underpricing.

Unlike the analyses described above, our research uses content analysis to assess how favorably human subjects are portrayed in news articles. Our task is particularly challenging for the following reasons.

Non-unique names. People's names are not unique, therefore it may be difficult to locate the news articles associated with a specific executive. As an example, Michael Jordan, the CEO of CBS during the 1990s, has the same name as the famous basketball player, whose many endorsements of Pepsi, Coke and Nike led to frequent mentions in the marketing section of WSJ. To overcome this issue, we impose this strict criterion: An article is counted as the media exposure of an executive, only if it includes both the name of the executive and the name of a former employer. A firm is an employer if the executive works for the firm as a regular employee, an executive, or a director of the company board.

Varying name formats. WSJ uses different name formats to refer to the same executive or firm. For example, between 11/2/1987 and 11/2/1992, General Motors executive John Smith was cited 11 times as "John Smith", and 78 times as "John F. Smith". Firm names may vary similarly in WSJ news articles. We address this challenge by first summarizing and then accounting for the majority of various name formats adopted by WSJ.

Difficulties in determining how favorably executives are portrayed in articles. Even after identifying news articles associated with each executive, it is complex to determine the opinions expressed. Tetlock (2007), Davis, Piger and

Sedor (2006), and Hanley and Hoberg (2009) count negative words within WSJ news articles or IPO prospectus to assess the sentiments of these texts.

We adjust this approach along two dimensions so we could determine the opinions expressed on executives. First, we create a method to determine whether an executive is the main subject of a WSJ news article. If so, we apply tone analysis. A significant portion of an executive's media exposure comes from WSJ articles in which the executive is mentioned only once or twice. For example, in articles on a competitor's products, remarks from an executive are quoted to support the major story line. Counting negative words in these articles will lead to a biased evaluation because negative words in these articles are probably not related to the executives. In our study, we find that an executive is generally the main subject if the name appears at least three times in a WSJ news article. Thus, we draw tone inferences on an executive only from news articles that cite the name at least three times.

We also develop a new list of negative words for tone analysis regarding executives. Tetlock (2007), Davis, Piger and Sedor (2006), and Hanley and Hoberg (2009) use the negative words list of General Inquirer categories from the Harvard psychosocial dictionary¹. However, this negative word list includes words that do not have a negative connotation when evaluating executives. For example, the Harvard psychosocial dictionary classifies "board", "deal", and

¹ <http://www.wjh.harvard.edu/inquirer/homecat.htm>.

“execute” as negative words. On the other hand, the Harvard negative list ignores negative words heavily used in WSJ stories such as “underperforming” “manipulate” and “write-off”. Our final negative list is composed of 950 words, compared to 2,006 words in the Harvard psychosocial dictionary. Table 2 presents the top 20 most frequently used negative words in our sample of WSJ news articles. This table compares the most frequently used negative words from the Harvard words list, versus those from the new negative word list.

3.1.3 Procedures for Identifying Star CEOs

According to our new methodology, a star CEO hire is one who both attracts extensive media exposure and who is, overall, not considered negative by the media. Our methodology is composed of three steps.

Our first step is to count the total number of WSJ news articles associated with each executive during the five-year time period (-5 year, +0 day) prior to CEO succession. An article is counted as media exposure of an executive if it includes the name of the executive and one of his (her) past employers.

Next, we perform tone analysis on a subset of the above news articles, analyzing only those that mention the executive by name at least three times and also mention one of the executive’s past employers. We measure the tone of each article by calculating the negative ratio, i.e. the number of negative words divided

by the total number of words in the article. We then derive the overall tone for an executive by calculating the weighted-average of the negative ratios of all his (her) news articles. Executives with larger weighted-average negative ratios are then excluded so that the remaining sample includes only executives who are not negatively portrayed by WSJ.

Our final step is to sort the WSJ article hits by each executive for the remaining sample. We class an executive as either a star or non-star CEO hire by selecting a cutoff percentage of the distribution of WSJ article hits. Star CEO hires are the ones who have the most number of articles relative to the remaining sample.

Our initial sample consists of 3,338 new CEOs who were appointed during 3,488 turnover events. These new CEOs were mentioned in 18,240 WSJ news articles during the five years before they were appointed.

Within this initial sample of 18,240 WSJ articles, 6,250 of them mention 1,814 executives at least three times and include at least one mention of these executives' past employer. These articles are subjected to tone analysis. After tone analysis, we exclude 174 executives from the sample because, on average, they incur more than 27 negative words in a 1,000-word WSJ news article. Our final sample is composed of 3,314 CEO turnovers. After sorting the WSJ article hits of these turnovers, we adopt a 30% cutoff point. Those who are in the top

30% in terms of WSJ article hits are star CEOs. The remainder hires are non-star CEOs. Our final sample contains 976 Star CEOs and 2,338 non-star CEOs.

3.2 Distribution of CEO Star Status and Star CEO Turnovers

In this section, we describe the distribution of the star status of our sample, as well as the frequencies of star CEO turnovers by year and industry.

Figure 1 illustrate a highly skewed distribution of the star status of our turnover sample. The star status of an executive is measured by his (her) number of WSJ article hits during the five years prior to the succession date. A relatively small number of executives attracted the majority of coverage. In our sample of 3,314 CEO turnovers, the majority of the CEOs had been quoted in no more than two articles, whereas the top 30% of them were cited by 15 articles on average. This highly concentrated media exposure of executives is consistent with the superstar phenomenon defined by Rosen (1981).

After examining the continuous distribution of CEO star status, we split our turnover sample into two groups: star versus non-star CEO turnovers. We define star CEOs as those who rank in the top 30% within the distribution of sample star status; this is equivalently to being mentioned in at least four WSJ articles prior to succession. We report the frequencies of star CEO appointments by year and industry in Table 4 and Table 5, respectively.

According to Table 4 and Table 5, the overall CEO turnover frequency is 12.52% during the sample period 1990 to 2008. That is, 12 out of every 100 firms hire a new CEO each year. The 12.52 % turnover frequency in our sample is close to the 11.2% frequency level documented by Huson et al. (2001), which uses Forbes magazine's annual compensation survey data from 1971 to 1994. In addition, Murphy (1999) reports an overall CEO turnover frequency of 11.85% using Forbes magazine's annual compensation survey data from 1971 to 1992 and ExecuComp database from 1993 to 1995.

Interestingly, the percentage of star CEO turnovers has significantly decreased since 2002. This time window (2002-2008) coincides with the period since the Sarbanes-Oxley Act, which set enhanced standards on corporate board, was enacted. In contrast to the obvious downward trend of star CEOs, the percentage of CEO turnovers is not clustered in any sub-period. As shown in Panel B and C of Table 4, the frequency of star CEO turnovers averages 33.47% from 1992 to 2001, and substantially decreases to 21.78% since 2002. Our test of the difference between the sample proportions rejects the hypothesis that the frequencies of star CEO turnovers between the two sub-periods are equal at the one percent level.

Table 5 reveals that star CEO turnovers are concentrated in certain industries. For example, the transportation equipment sector (SIC 37), which involves a 3.17% of total sample CEO turnovers, has a star CEO turnover rate of 47.17%. Communications (SIC 48), Security and Commodity Brokers, Dealers, Exchanges

and Services (SIC 62), and Food and Kindred Products (SIC 20) also have a greater proportion of star CEO turnovers than other industries.

4 Comparison of Firm, Board, and CEO Characteristics between Star CEOs and Non-star CEOs

We compare the summary statistics between star and non-star CEO turnovers in Table 6. We focus on three panels of variables related to our research objectives: firm characteristics, board characteristics, and CEO characteristics. To avoid the influence of outliers, all data other than log sales and log assets are winsorized at the first and 99th percentile based on all observations. We implement two-sample t-tests and Brown-Mood tests to examine whether the population means and medians are significantly different for the two types of CEO successions.

4.1 Firm Characteristics

According to Table 6, larger firms are much more likely to hire star CEOs. Within our turnover sample, the median firm has \$1.10 billion in annual sales and \$1.31 billion in assets. In contrast, firms experiencing a star turnover have median sales of \$ 3.78 billion and assets of \$4.32 billion. Both the t test and

nonparametric median test rejects the hypothesis that non-star hiring firms are the same in size as star-hiring firms at the 1% significance level.

We obtain mixed evidence regarding the difference in firm operating and stock market performance before CEO hiring events. On the one hand, firm operating performance, as measured respectively by EBITDA/Assets, EBIT/Assets and Net Income /Assets, is, on average, 1.10%, 1.24% and 1.02% higher before a star turnover than before a non-star CEO turnover. On the other hand, after adjusting for industry median value, the above operating performance measures show no significant difference. Furthermore, there is no significant difference in both unadjusted and industry-adjusted stock market performance during the six months before the two types of CEO successions.

4.2 Board Characteristics

Our paper aims to address boards' hiring decisions of CEOs. Thus, we start with an overview of the characteristics of board members that participate in CEO hiring events in our sample. Panel B of Table 6 reveals that an average board has six independent directors and three executive directors. On average, an independent board member holds two additional board seats at other firms simultaneously. Until the date of new CEO succession, a typical independent

director has accumulated eleven years of industry related experience during his (her) documented employment history.

We use four variables to describe board composition: board size, board independence, busy board and board industry tenure. Board size refers to the total number of board directors, including both independent and executive directors. Board independence is the number of independent board members divided by the total number of directors on the board. In this paper, we define busy board as the number of total board seats that an average independent board member holds simultaneously. We include the above three variables on board composition because previous literature shows that board size, board independence, and busy board have various implications on corporate governance as well as firm value.

This paper introduces a new variable on board composition, board industry tenure. The new variable measures the average industry-related experience accumulated by independent directors. In particular, we review the employment history for every independent director (considering employment as a regular employee, an executive or a director), deriving total years of experience in the same industry as the CEO hiring firm. We use the two-digit SIC code to classify industry. For conglomerate firms and firms with multiple business sectors, we

include the two-digit SIC codes of all business sectors documented in the Compustat Segment data².

Panel B shows that compared with boards that hire non-star CEOs, boards that choose star CEOs are significantly larger and busier, have fewer independent directors, and have less industry-related experience. On average, a board that hires a star CEO consists of ten directors and seven independent board members, whereas a board that hires a non-star CEO consists of nine directors and seven independent board members. In addition, a board that hires a star CEO is, on average, both busier and has less industry experience than a board that hires a non-star CEO. Specifically, *every* independent director on a board that hires a star CEO typically has 1.03 additional board seats and has 1.95 years less industry related experience. The above differences in board compositions are all significant at the 1% confidence level between the two types of CEO successions.

4.3 CEO Characteristics

Finally, we report descriptive statistics on new CEOs' age, whether they are insider or outsider CEOs, and their years with the firm before succession. According to the results in panel C, star CEOs are about one year older than non-star CEOs. Star CEOs are also more likely to be outsiders. On the other hand, star

² The main results in this paper remain unchanged if we only include the two-digit SIC code of a firm's main business sector.

CEOs who are insiders typically have longer firm tenure than non-star insider CEOs.

5 Accessing the Factors Influencing Boards' Selections of Star CEOs

5.1 Multivariate Logistic Regression

In this section, we employ seven logistic regression models to examine various factors that may influence a board's decision to hire a star versus non-star CEO. In particular, we investigate the role of board composition in star CEO selection after controlling for firm and CEO characteristics.

The coefficient estimates of the eight logistic models in Table 7 confirm that board composition plays a significant role in star CEO successions, even after incorporating the effects of year, industry, firm size, previous firm performance and CEO characteristics. A larger board is more likely to hire a star CEO, even when allowing for the firm size effect, that is, that large firms tend to hire star CEOs. Furthermore, there exists a significant negative relationship between board independence and star CEO hires after controlling for board size, firm size and other factors.

In addition to board size and independence, the number of multiple board seats held by independent directors influences the selections of star CEOs. According to Table 7, the positive relationship between busy board and star CEO selections is robust at the 1% significance level to all controls we use. What's more important, our new board composition variable, board industry tenure, is negatively related to the probability of choosing a star CEO at the 1% significance level in each of the eight model specifications.

The significant positive coefficient of log sales in all seven models confirms that large firms are more likely to select star CEOs. Firms also prefer hiring a star CEO from outside the firm. The relationship between CEO age and the chance of being hired as a star CEO is generally negative but not significant.

According to model 4 and model 5, firms tend to hire star CEOs when their previous industry-adjusted accounting performance is worse. However, there is no significant relationship between firms' pre-hiring stock market performance and the probability of hiring a star CEO. Unlike previous summary statistics analysis, we derive the above negative relationship between industry-adjusted accounting performance and star CEO successions after controlling for the influence of firm size on CEO selections.

We include year and industry dummies in most of our logit models to account for the time trend and industry concentration of star CEOs suggested in Section 3.

None of the industry dummies has additional power in explaining star CEO succession after we control for firm size, board composition and other factors.

There is a strong negative relationship between star CEO turnovers and the year dummies of 2002 to 2008. The above relationship is present after controlling for firm, board and CEO characteristics. In model 6, we introduce a new dummy variable named “AfterSoxAct” to account for the influence of the Sarbanes-Oxley Act. Our regression result shows that the influence of board industry tenure, busy board, and board independence variables on CEO selection is similar before and after passage of the Sarbanes-Oxley Act.

In sum, our multivariate logistic regressions show that the following factors play a significant role in star CEO selections: (1) all four descriptive variables on board compositions (board size, board independence, busy board, and board industry tenure), (2) firm size, (3) previous firm accounting performance, and (4) whether the turnover happens after 2002.

For future analysis, we adopt model 7 as our base model for explaining the probability of selecting a star CEO. In the following section, we examine the economic significance of the factors in affecting boards’ CEO hiring decisions.

5.2 Economic Significance of Factors

In order to understand the economic significance of the main independent variables in the logistic regression, we calculate the change in predicted probabilities of selecting a star CEO if we vary the mean of each factor from its mean minus 1/2 standard deviation to its mean plus 1/2 standard deviation, without changing other factors. Besides change in predicated probabilities, Table 8 also reports logit regression estimates from our base model, mean, and standard deviation of main factors.

Firm size and whether the incoming CEO comes from outside the firm have a large economic impact on the probability of hiring a star CEO. According to Table 8, the chances of a star CEO succession increase substantially by 15.71% if the log sales of the hiring firm increase one standard deviation..

The economic significance of our board composition variables and firm previous accounting performance is similar in scale. In particular, for every one standard deviation increase in firm prior EBITDA/Asset ratio, board industry tenure, and board independence, the predicated probability of hiring a star CEO decreases by, respectively, 3.10%, 5.28% and 4.01%. In addition, if the number of multiple seats held by directors increases by one standard deviation, the chance of selecting a star CEO increases by 5.80%.

5.3 Robustness Checks

Our results on determinants of boards' hiring decisions of star CEOs are robust to the use of alternative proxies for star CEOs as well as for board industry tenure. For one, instead of the zero/one dummy variable, we adopt the continuous WSJ news hits to proxy for star CEOs, and conduct an OLS regression of this new measure on the same set of factors. The coefficient estimates of our main variables on board composition, firm size, previous firm accounting performance, and outside CEO remain significant.

Second, we adopt the top 20% cutoff, rather than the 30% cutoff, within the distribution of WSJ articles hits to decide the group of star CEOs. Logit regressions of this new star CEO measure lead to similar results as those shown in Table 7, which use the 30% cutoff. Adopting a 10% cutoff to decide the group of star CEOs does not change our main results either.

Finally, our logistic regression results are robust when using an alternative measure of board industry tenure. Our current measure of board industry tenure incorporates industry related experience of a board member as a regular employee, an executive or a director. For robustness, we adopt a measure of board industry tenure that only takes into account the industry experience of a board member as a regular employee or an executive. Logistic regression results show that the alternative measure of board industry tenure is also negatively related to star CEO selection.

6 Comparison of Firm Operating Performance after Star versus Non-star CEO Successions

6.1 Methodology

Who are able to deliver better operating performance after they are hired: star CEOs or non-star CEOs? Understanding the operating performance of star CEOs not only helps directors make wise CEO hiring decisions, but also assists investors in their portfolio choices. Interestingly, both previous studies on CEO performance (Malmendier and Tate (2009) and Ang and Nagel (2008)) imply that star CEOs underperform. Malmendier and Tate (2009) find that CEOs who achieve “superstar” status via prestigious nationwide awards from the business press subsequently underperform, in terms of both stock market performance and operating performance. Moreover, Ang and Nagel (2008) claim that outsider CEOs with superior past performance record or from large companies have worse operating performance than matched insider CEOs.

The key challenge in CEO performance analysis is potential endogeneity problems arising from CEO selection biases. In other words, factors such as firm size, industry and board composition determine ex ante whether a star CEO is hired. These factors can also affect ex post firm performance. Thus, if we simply compare the performance of star CEOs against all non-star CEOs, the result we

obtain may be driven either by the difference in management abilities between star versus non-star CEOs, or by the difference in the selection factors between the two groups. Our major task therefore is to filter out the effects of selection factors by comparing star CEOs only with similar non-star CEOs in terms of ex ante factors.

In this paper, we apply the propensity score matching method to alleviate CEO selection biases in our performance evaluation. In essence, after establishing the factors determining boards' hiring decisions in Section 5, we match every star CEO with a non-star CEO who has the most similar distribution of selection factors. We then compare the operating performance difference between the star CEOs and the matched non-star CEOs.

Previous studies, including Malmendier and Tate (2009) and Ang and Nagel (2008), are not aware of the impact of board composition on the selection of star CEOs. Therefore, they do not control for the difference in board composition when they derive their performance evaluation. As a result, the underperformance of star CEOs in their sample may be attributable to the hiring decisions of "weak" boards, rather than the inability of star CEOs. By contrast, our study isolates the real effects of star status on firm performance from the effects of board composition, resulting in a less biased evaluation of star CEOs.

We use the accounting measure of EBITDA/Assets to proxy for firm operating performance. In order to control for the influence of unobserved factors

on firm operating performance, we adopt a difference-in-difference approach. By comparing the differences in the change of firm performance around CEO turnovers between the star and the non-star groups, the difference-in-difference model allows us to control for the time trend common to the two groups as well as for the permanent difference between the performances of two groups that are not due to CEO succession effects.

We evaluate the operating performance of star CEOs in the following three steps. In Section 6.2, we start with a simple difference-in-difference analysis comparable to prior studies. All non-star CEOs, regardless of their board composition, are used as a benchmark for evaluating the performance of star CEOs. Next, we derive a less biased performance evaluation by combining the difference-in-difference analysis with the propensity score matching method. The propensity score matching is based on our logistic regression in Section 5. Following the propensity score matching methodology, we only compare star CEOs with non-star CEOs who have the most similar distributions of selection factors. Finally, we classify our sample of star CEOs into two sub-groups: star CEOs hired by boards with short industry tenure and by busy boards. We then specifically evaluate the operating performance of star CEOs hired by these two types of boards.

6.2 Difference-in-Difference Analysis

Figure 2 presents the average EBITDA/ Assets ratio for star and non-star CEOs during the period of (-2 year, +2 year) surrounding turnover events. It shows that, consistent with previous findings (Parrino (1997)), firm performance decreases before a CEO turnover and recovers after the CEO succession. In general, firms that hire star CEOs have larger EBITDA/Assets than firms that hire non-stars. However, the difference in accounting performance between the two groups significantly decreases after CEO turnovers. With the appointment of non-star CEOs, firms' average EBITDA/Assets ratio recovers from 11.48 % one year before the hiring to 11.49% two years after the hiring. In contrast, for firms that hire star CEOs, the average accounting performance keeps decreasing from 13.12% to 12.21 % during the same time period.

To assess more directly the role of CEO star status in improving firm operating performance, we estimate the following multivariate regression model after controlling for potential variables that influence firm operating performance:

$$Y = \alpha + \beta Star + \gamma Star*After + \lambda After + \varphi X + \varepsilon \quad (1)$$

The dependent variable Y is firm operating performance, measured by EBITDA/Assets. Star is a dummy variable that equals one if the new CEO is a star CEO. After is a dummy variable that equals one if the observation relates to a year after CEO succession. The interaction term between Star and After examines

whether firms managed by star CEOs have better subsequent operating performance than firms managed by non-star CEOs. X is a set of the following control variables: firm size, industry, year, and firm fixed effects. Previous studies, such as Parrino (1996), Malmendier and Tate (2009), and Ang and Nagel (2008), also include these variables to evaluate firm operating performance.

We carry out two difference-in-difference regressions to compare the performance of star versus non-star CEOs and report the results in Table 9. Specifically, we examine two alternative event windows relative to the year of CEO turnover: (-2, +2 year) and (-2, +3 year). In each of the regressions, we use the following control variables: firm size, industry, year, and firm fixed effects. Previous studies, such as Parrino (1996), Malmendier and Tate (2009), and Ang and Nagel (2008), also include these variables to evaluate firm operating performance.

The negative coefficients of the interaction dummy “Star CEO * After” in all specifications confirm the patterns in Figure 2: star CEOs indeed underperform. The improvement in EBITDA/Assets over the five-year period (-2 to +2 year) surrounding the hiring event is 1.96% lower for star CEOs, after we control for industry, year, firm size, previous firm performance and firm fixed effects. Using different time windows³ around the hiring events leads to similar results.

³ Results are similar by using (-2 to +1 year), (-3 to +1 year), (-3 to +2 year), (-3 to +3 year), (-1 to +1 year), (-1 to +2 year), and (-1 to +3 year) around the hiring events.

6.3 Propensity Score Matching Analysis

Following Rosenbaum and Rubin (1983), we adopt the propensity score matching methodology to alleviate CEO selection biases in the previous difference-in-difference analyses. We compare the performance within two groups: firms that hired a star CEO, and firms that, even though they have a similar predicted probability of hiring a star CEO, hired a non-star CEO instead. Our final matched sample is composed of 976 distinct star CEO turnovers and 476 distinct non-star turnovers because we apply the one-to-one propensity score matching with replacements.

Table 10 shows the results of testing the difference in sample mean of board characteristics for star versus matched non-star CEOs. In contrast with previous summary statistics results, the differences in board composition are no more significant between the propensity score matched samples even at the 15% level. For the full sample of 2,338 non-star CEO turnovers, the boards, on average, have nine directors and seven independent board members. An independent board member holds 2.95 board seats simultaneously and has 8.65 years of industry-related experience. By contrast, for our propensity score matched sample of 976 non-star CEO turnovers, an average board has ten directors and seven independent board members. An independent board member holds 3.75 board seats simultaneously and has 7.65 years of industry tenure. The similarity of board

composition between the matched samples helps us isolate the effect of star CEO management abilities from the effect of boards' hiring decisions.

We then use the matched samples to implement difference -in-difference analysis. Table 9 presents the propensity score matching results in Columns 3 and 4, in parallel to previous difference-in-difference results without matching. We find that after accounting for boards' selection issues, star CEOs do *not* underperform. The size of the coefficient estimate for "Star CEO* After" dummy drops substantially, from 1.96 % to 0.09%. Moreover, our test result cannot reject the null hypothesis that the coefficient estimate is equal to zero at the 73% significant level.

6.4 Robustness Checks: Control Group Approach

In this section, we employ an alternative approach of difference-in-difference analysis than equation (1) to investigate the role of star CEO in firm performance. More specifically, we employ the control group approach suggested by Barber and Lyon (1996) to redo the analysis in Section 6.2 and Section 6.3.

In essence of Barber and Lyon (1996), we conduct the control group approach as follows. Each star CEO is matched to a group of non-star CEOs who satisfy three criteria. First, the previous operating performance (EBITDA/ASSETS) of the non-star CEO firms is within +10% of star CEO firm. Second, the size (Book

value of assets) of the non-star CEO firm is within +30% of the size of star CEO firm. Last, the star and non-star CEO firms have the same first two-digit SIC code. I then compare the mean/median change in operating performance related to a star versus control group matched non-star CEO. Mean and median tests are used to test whether there is significant difference between the changes in operating performance for the two groups of CEOs.

As show in the Panel A of Table 11, during the time window of (-2, +2) year, the median EBITDA/Assets drops from 12.83% to 11.57% for firms managed by star CEOs, while the median EBITDA/Assets increases from 13.54% to 14.39% for firms managed by control group matched non-star CEOs. The difference in change of operating performance between the two types of CEOs is 1.45% at the 5% significance level.

We then examine whether the difference in operate ring performance persist after we use propensity score matching to control for the effects of board composition. Panel B of Table 11 shows that after accounting for the effects of board characteristics, the difference in EBITDA/Assets between star and non-star CEOs becomes non-significant. The P-value associated with the median test is 0.75. In sum, our main findings hold true when we use control group approach to conduct difference-in-difference analysis.

7 Investor Responses to News of Hiring Star CEOs

This section uses the standard market model approach of short-term event studies to analyze investor responses to the news of hiring a star CEO. We are particularly interested in answering two research questions. First, how do investors respond to the news of hiring a star CEO? Second, do investors react differently to star CEOs hired by different board types? We investigate the above two questions in each of the following two sections.

7.1 Investor Responses to News of Hiring Star CEOs

Following the market model approach, we use one-year stock market return data before hiring events to estimate market model coefficients for each firm that experienced a star CEO turnover. Our estimation window is (-250, -20 day⁴) relative to the CEO succession dates. We then average the daily abnormal returns across all event firms, and obtain cumulative abnormal returns by adding together the mean abnormal returns across event windows. We calculate the abnormal returns associated with the news of hiring non-star CEOs similarly.

Figure 3 graphs the announcement return patterns of star versus non-star CEOs during the event window of (-5, 20 day). We also examine two different

⁴ In our event study, days refer to trading days. There are about 20 trading days in one month, and 250 trading days in one year.

event windows, (0, 1 day) and (2, 20 day) in panel A of Table 12. We present cumulative abnormal returns during each of the two event windows and test the difference in announcement returns between the two groups. P-value is calculated by using standard errors from sample event firms.

Our event studies show significant differences in the way investors react to the news of a star versus non-star CEO appointment. Firms that hire a star CEO experience significant positive short-term abnormal returns: 1.02% during the first two days and 1.56% during the first one month, both at the 1% significance level. In contrast, no significant positive abnormal returns are associated with firms hiring non-star CEOs, either during the first two days or during the first month after the announcement date. In fact, an average firm that hires a non-star CEO has negative accumulated abnormal returns of 0.11% during the first two days and 0.79% during the first month. Our test results in Table 12 confirm that cumulative abnormal returns are 1.14% higher during the first two days after the announcement of appointing a star versus non-star CEO. This difference expands to 2.36% if we examine the first month after the hiring events. Overall, our study illustrates that investors have a strongly positive response to the appointment of a star CEO. This positive market response indicates that our new measure of star CEOs indeed capture their appeal to the shareholders.

7.2 Comparison of Investor Responses to News of Hiring Star CEOs by Board Types

In Section 6, we show that the “underperformance” of star CEOs is mostly attributable to those hired by boards with short industry tenure or busy boards. A natural next question is: Do investors react differently when the board hiring the star CEO has short industry tenure or is composed of busy directors?

Figure 4 and Panel B of Table 12 compares the short-term abnormal returns associated with star CEOs hired by boards with long industry tenure versus short industry tenure during a variety of event windows. Both Figure 4 and Table 12 show that the positive market reaction to the news of hiring a star CEO is fully concentrated in those selected by boards with long industry tenure. The difference in cumulative abnormal returns between star CEOs selected by the two board types is 0.89% within the first two days and 3.11% within the first month after the CEO turnover event. Thus, consistent with our results of performance evaluation, investors prefer star CEOs hired by boards with long industry tenure over those with short industry tenure.

We also investigate the differences in investor responses regarding star CEOs hired by busy versus non-busy boards. As shown in Figure 5 and Panel C of Table 12, this board characteristic has no statistically significant impact on investor responses to star CEO appointments. During the first two days after the

appointments of star CEOs, both types of firms experience significant positive abnormal returns: firms with busy boards experience two-day abnormal returns of 1.27%; firms with non-busy boards experience two-day abnormal returns of 0.67%. From the second day until the first month after the announcement (during the event window of (2, 20day)), the stock market reactions to the two types of firms are different: firms with busy boards experience an abnormal return of -0.28%; firms with non-busy boards experience an abnormal return of 1.54%. The differences in both two-day and one-month abnormal return between the two types of firms are not significant.

8 Conclusions

Our paper investigates the impact of board composition on a board's decision to hire a star CEO and the effect of such decision on firm operating performance. We analyze the text information contained in 18,240 WSJ news articles to evaluate a CEO hire's visibility as well as how favorably he (she) is portrayed in the business press.

Using a star CEO measure that we develop, we obtain three major findings. First, board composition plays a significant role in a board's decision to hire a star CEO. In particular, boards with short industry tenure or busy boards are more likely to hire a star CEO, even after controlling for firm size, industry, year,

previous firm performance and CEO and other board characteristics. The above result is robust to alternative proxies for star CEOs and for board industry tenure.

Second, incorporating the effects of board composition on boards' hiring decisions helps us overturn the previous understanding of star CEO performance. We show that the previously discovered "underperformance" of star CEOs is not driven by the inabilities of star CEOs, as suggested by previous research. Rather, it is attributable to the hiring decisions of boards with short industry tenure or busy boards. In particular, when we adopt an evaluation method that accounts for the board selection issue, we show that star CEOs, overall, perform as well as non-star CEOs. However, star CEOs selected by boards with short industry tenure or busy boards are less capable than non-star CEOs.

Finally, consistent with our performance evaluation, investors favor star CEOs selected by boards with long industry tenure than those selected by boards with short industry tenure. The difference in abnormal returns associated with the two types of boards is 0.89% during the first two days and 3.11% during the first month following the hiring event.

Our paper has important implications for current discussions on board composition. Over the last decade, shareholders, policy makers, and finance researchers have debated what type of board structure best serves shareholders. Finance researchers (Dahya et al. (2002) and Chharochharia and Grinstein (2009)) have shown that board independence plays a significant role in improving

corporate governance and increasing firm value. The NYSE Governance Rule Proposal approved by the Securities and Exchange Commission in December 2003, incorporates this perspective and requires the boards of listed firms to have a majority of independent directors. However, some scholars (Holmstrom and Kaplan (2003)) and practitioners are concerned that this rule will not benefit small firms. Other researches (Yermack (1996), Core et al. (1999), and Fich and Shivdasani (2006)) argue that firm value is influenced by the number of board seats held by directors, in addition to the board size. Even though evidence on this issue is mixed, many corporations now restrict the total number of board seats a director can hold.

We contribute to the above debates by exploring the role of industry tenure of directors in board effectiveness. Overall, our research suggests that directors with long industry tenure help a board to make the right choice for a CEO. By contrast, boards without such tenure can damage firm performance by hiring CEOs who do not possess the necessary management skills.

9 Figures and Tables

Figure 1 Histogram of WSJ Article Hits

The figure shows the histogram of Wall Street Journal (WSJ) article hits related to 3,314 CEO turnovers in our sample. WSJ article hits associated with each CEO turnover is defined as the number of the WSJ articles that cite the name of both the new CEO and one of his prior employers during the five-year period before his appointment date. The horizontal axis is the number of WSJ article hits. The vertical axis shows frequency on the left and cumulative percentage on the right. The column bars represent frequency, and the line with markers shows cumulative percentage from 0% to 100%.

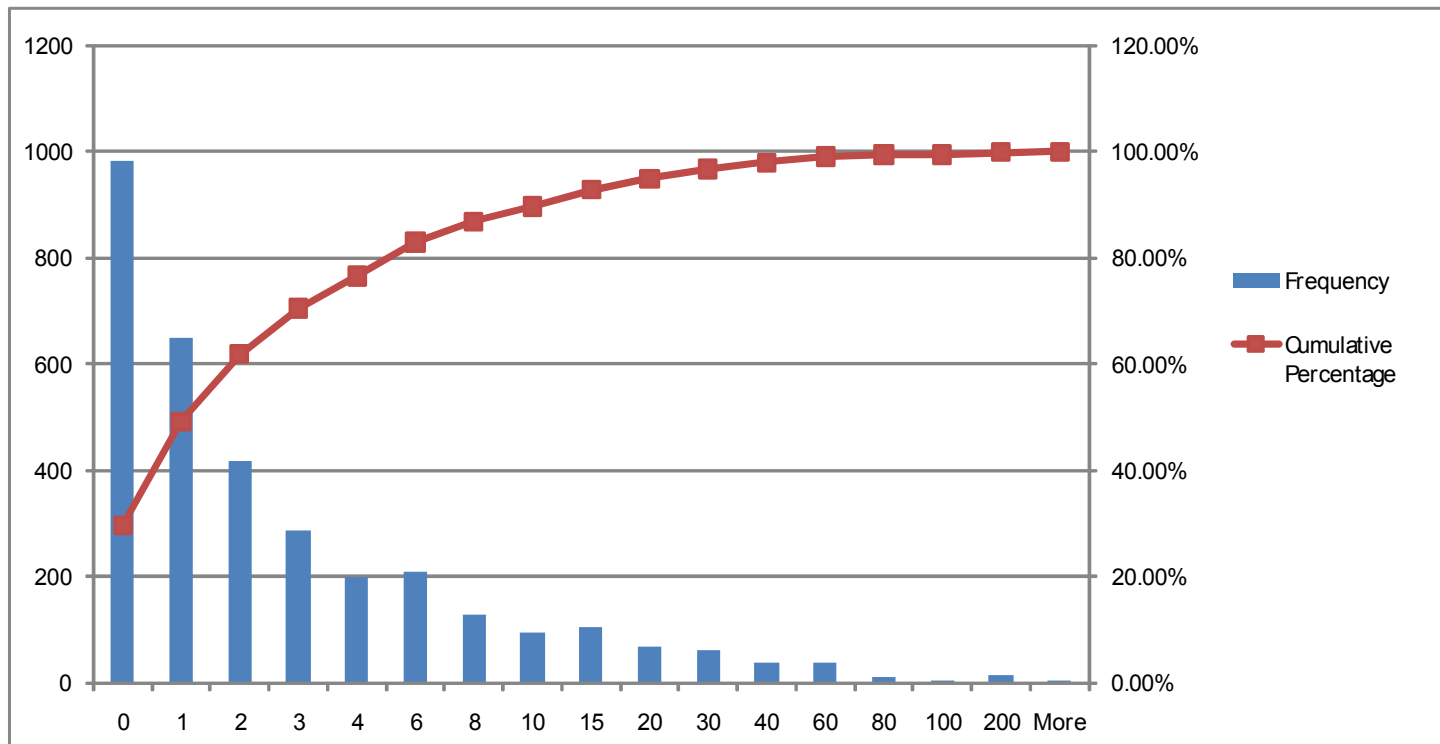


Figure 2 Comparison of Operating Performance between Star and Non-star CEOs

The figure compares average EBITDA/Assets of firms that hired star CEOs with average EBITDA/Assets of firms that hired non-star CEOs. The figure examines a five-year time window: from two years before to two years after the year of CEO turnover. The year of CEO turnover is excluded from the analysis. EBITDA/Asset is earnings before interest, taxes, depreciation and amortization divided by total assets. The horizontal axis represents the year, as relative to the year of CEO turnover. For example, “year 0” refers to the year of CEO turnover, and “year 1” refers to the year immediately after the year of CEO turnover. The vertical axis is EBITDA/Assets. Bars with two different colors represent two groups of firms: the group of firms that hired star CEOs (color blue) versus the group of firms that hired non-star CEOs (color red). A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample.

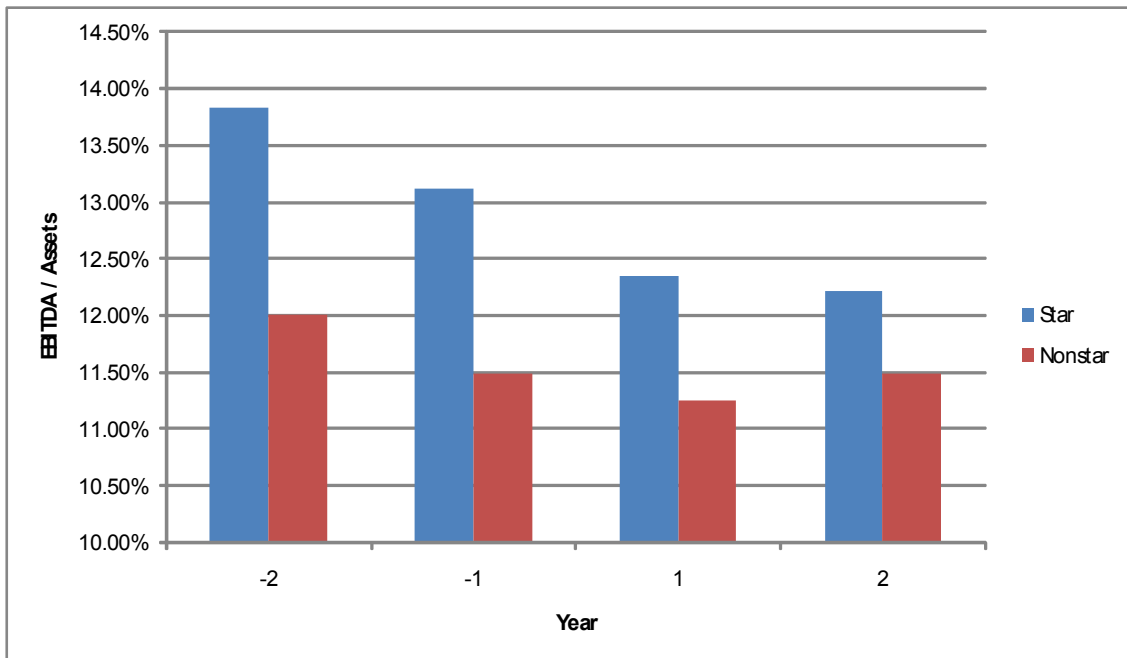


Figure 3 Investor Responses to News of Hiring Star versus Non-star CEOs

The figure plots cumulative market-model abnormal return for news of hiring star versus non-star CEOs. The event window runs from five trading days before to twenty trading days after the date of hiring announcement. The horizontal axis is the trading date, as relative to the date of announcement. The vertical axis is the cumulative market-model abnormal return. Cumulative market-model abnormal return is calculated by using an estimation window of (-250 trading day, -20 trading day) relative to the announcement date. The smooth blue line represents cumulative abnormal returns for news of hiring star CEOs, whereas the dotted red line refers to cumulative abnormal returns for news of hiring non-star CEOs. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample.

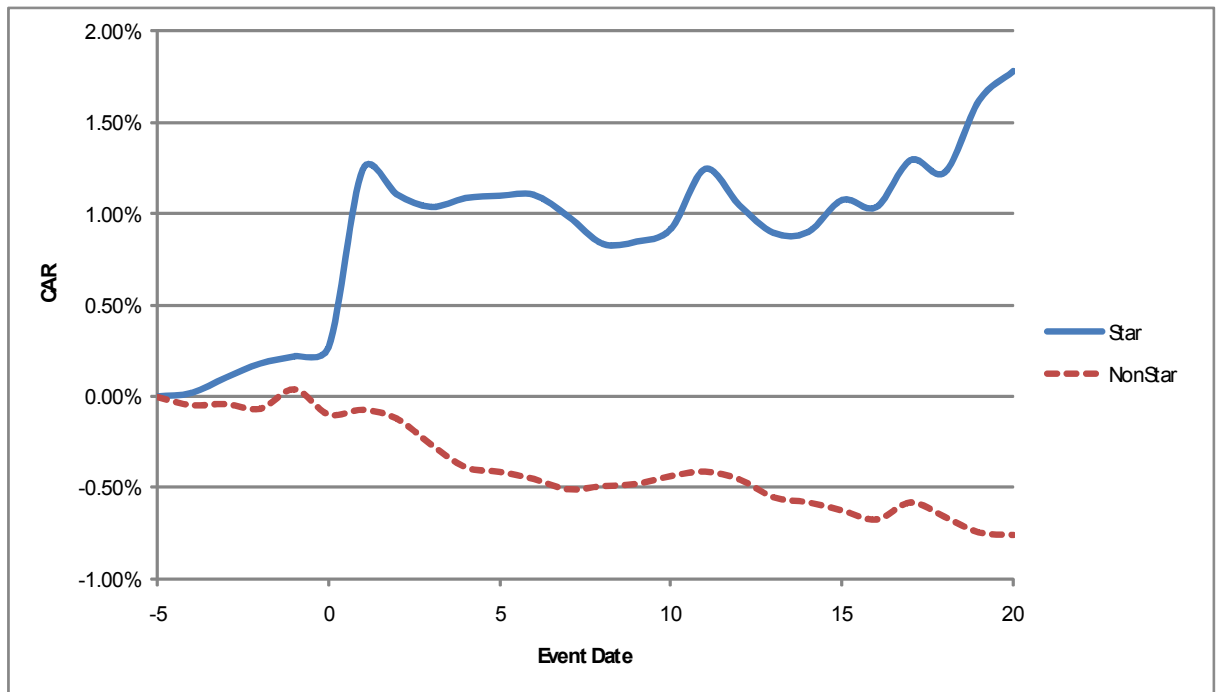


Figure 4 Investors' Response to News of Hiring Star CEOs by Board Industry Tenure

The figure compares cumulative market-model abnormal return for news of hiring star CEOs by boards with long industry tenure versus by boards with short industry tenure. The event window runs from five trading days before to twenty trading days after the date of hiring announcement. The horizontal axis is the trading date, as relative to the date of announcement. The vertical axis is the cumulative market-model abnormal return. Cumulative market-model abnormal return is calculated by using an estimation window of (-250 trading day, -20 trading day) relative to the announcement date. The smooth blue line represents cumulative abnormal returns for news of hiring star CEOs by boards with long industry tenure, whereas the dotted red line refers to cumulative abnormal returns for news of hiring star CEOs by boards with short industry tenure. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Boards with long industry tenure are those whose independent directors on average have at least seven years of industry-related experience.

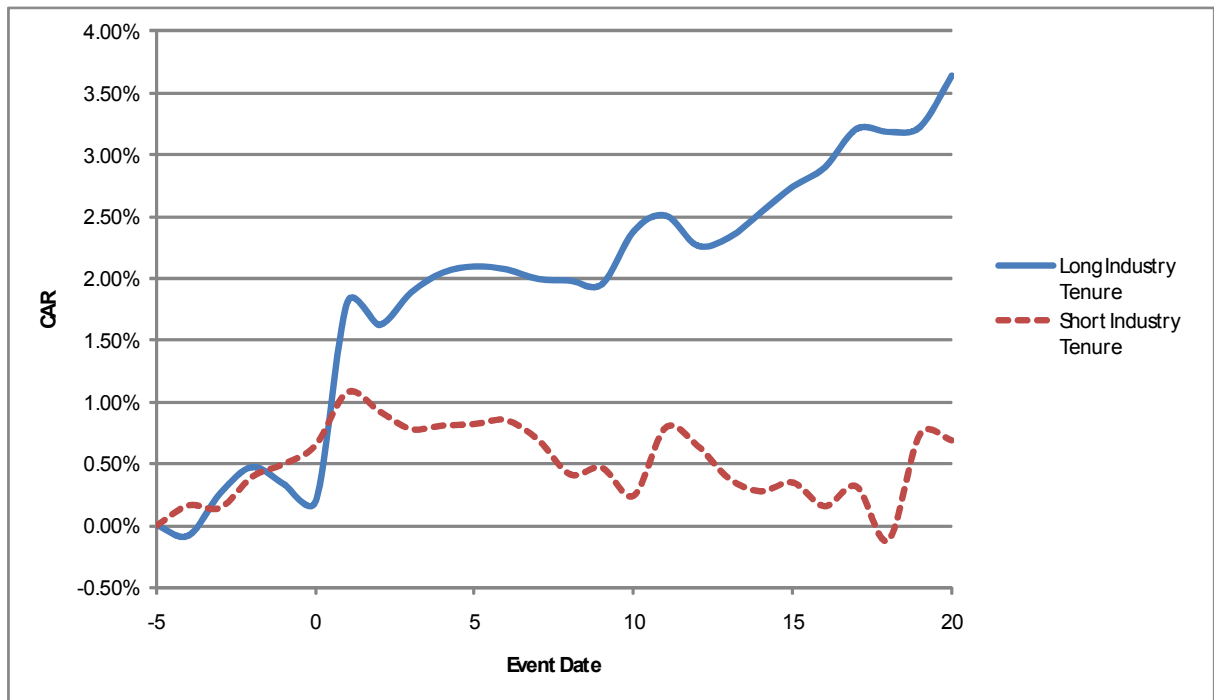


Figure 5 Investors' Response to News of Hiring Star CEOs by Busy Board

The figure compares cumulative market-model abnormal return for news of hiring star CEOs by busy versus non-busy boards. The event window runs from five trading days before to twenty trading days after the date of hiring announcement. The horizontal axis is the trading date, as relative to the date of announcement. The vertical axis is the cumulative market-model abnormal return. Cumulative market-model abnormal return is calculated by using an estimation window of (-250 trading day, -20 trading day) relative to the announcement date. The smooth blue line represents cumulative abnormal returns for news of hiring star CEOs by non-busy boards, whereas the dotted red line refers to cumulative abnormal returns for news of hiring star CEOs by busy boards. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy boards are those whose independent directors on average hold more than four board seats simultaneously.

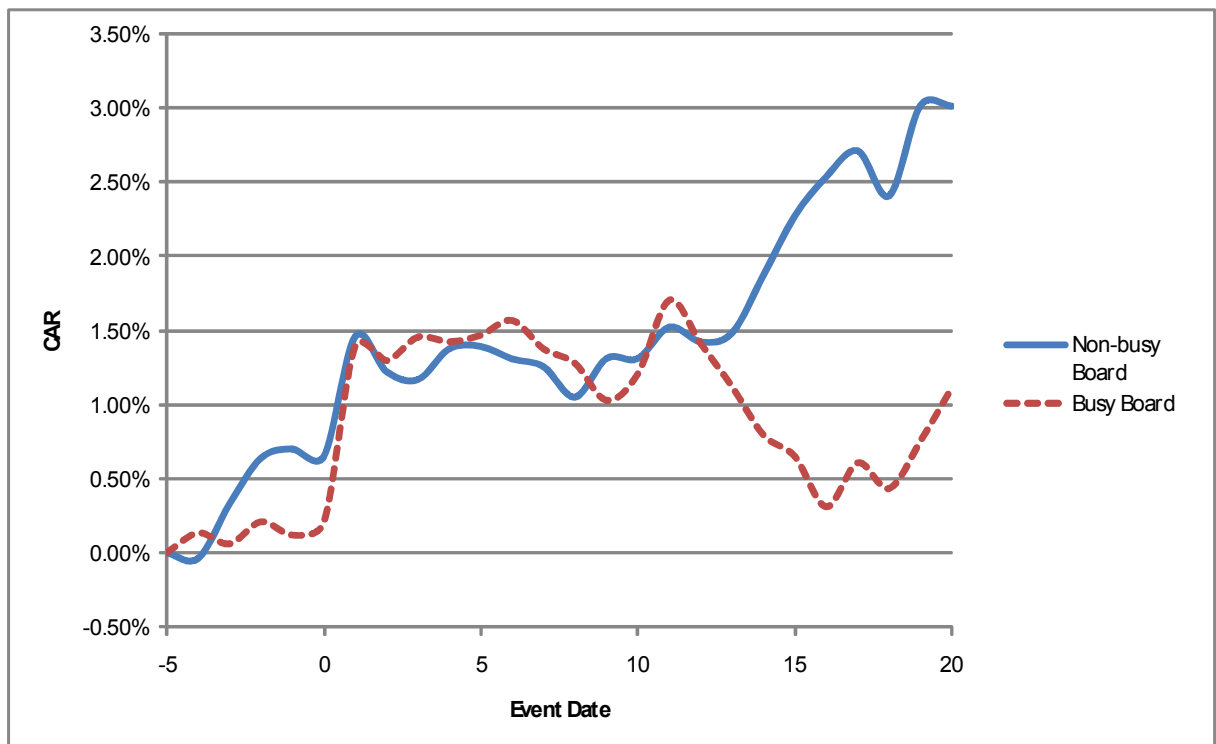


Table 1 Variable Definition

Data Item	Definition	Sources
Assets	Total Assets	COMPUSTAT, Fundamentals Annual, AT
Sales	Net sales	COMPUSTAT, Fundamentals Annual, SALE
EBIT / Assets	(Operating Income After Depreciation) / (Total Assets)	COMPUSTAT, Fundamentals Annual, OIADP / AT
EBITDA / Assets	(Operating Income Before Depreciation) / (Total Assets)	COMPUSTAT, Fundamentals Annual, OIBDP / AT
Net Income / Assets	(Net Income) / (Total Assets)	COMPUSTAT, Fundamentals Annual, NI / AT
Industry-adjusted EBIT / Assets (or EBITDA / Assets)	The difference between a firm's EBIT / Assets (or EBITDA / Assets) and the median value of all firms with the same two-digit SIC code	COMPUSTAT, Fundamentals Annual
Age	Age of the CEO at the time of succession	COMPUSTAT, ExecuComp
Outside CEO	Dummy variable: it equals 1 if the incoming CEO is an outside CEO. An incoming CEO is defined as an outside CEO if he joined the hiring firm less than twelve months before the date of succession.	COMPUSTAT, ExecuComp
Years with the firm when appointed CEO	Time difference between the date of CEO succession and the date when the CEO joined the firm	COMPUSTAT, ExecuComp, BecameCeo – JoinDate (or RejoinDate)
Six-month Stock Return	Six-month holding period stock return until the date of CEO succession	CRSP, Monthly Stock
Industry-adjusted Six-month Stock Return	The difference between a firm's six-month stock return and the equal-weighted six month stock return of all CRSP firms with the same two-digit SIC code.	CRSP, Monthly Stock
Firm Size or Log Sales	Firm size, measured by Log(Sales)	COMPUSTAT, Fundamentals Annual, Log(SALE)
After	Dummy variable: it equals one for years after CEO turnover and zero for years before CEO turnover.	
After SOX Act	Dummy variable: it equals 1 for years before the passage of Sarabanes-Oxley Act (July 2002), and zero for years after the passage of Sarabanes-Oxley Act.	

Year Effect	A group of dummy variables, each of which represents a year between 1990 and 2008	
Star CEO * After	An interaction dummy variable of “Star CEO” and “After”. It equals 1 only if the firm hired a star CEO and the observation refers to a year after the CEO turnover.	
Industry Effect	A group of dummy variables, each of which represents an industry by two-digit SIC code	COMPUSTAT, Fundamentals Annual, SIC
Board Size	Total number of directors	BoardEx
Board Industry Tenure	Average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company.	BoardEx
Busy Board	Average number of board seats simultaneously held by independent directors.	BoardEx
Board Independence Ratio	(The number of independent directors) / (The total number of directors)	BoardEx
CAR	Cumulated market-model abnormal stock return within a holding period	CRSP, Daily Stock
Star CEO	Dummy variable: it equals one if the new CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles.	Factiva

Table 2 Most Frequently Used Negative Words for Tone Analysis

This table presents the top 20 most frequently used negative words in our sample of 18,240 WSJ articles related to 3,488 CEOs. Frequency rank is the rank by the frequency of negative words. Negative words come from two word lists: Harvard negative word list from the General Inquirer of the Psychology Department of Harvard University, and the new negative word list created in this paper. The Harvard negative word list includes 2,006 negative words, whereas the new negative word list consists of 950 words.

Frequency Rank	Harvard Negative Word List	New Negative Word List
1	execute	decline
2	board	cut
3	deal	loss
4	service	problem
5	make	concern
6	close	rival
7	vice	challenge
8	cost	criticize
9	decline	fall
10	run	struggle
11	help	lost
12	cut	competition
13	retire	competitor
14	need	drop
15	charge	low
16	loss	battle
17	outside	difficult
18	problem	trouble
19	resign	fail
20	turn	hard

Table 3 Distribution of WSJ Article Hits

The table shows the distribution of the WSJ article hits of 3,314 CEO turnovers. WSJ article hits associated with each CEO turnover is defined as the number of WSJ articles that cite the name of both the new CEO and one of his prior employers during the five-year period before the appointment date.

WSJ Hits	Frequency	Cumulative Percentage
0	982	29.63%
1	650	49.25%
2	419	61.89%
3	287	70.55%
4	200	76.58%
6	211	82.95%
8	130	86.87%
10	94	89.71%
15	106	92.91%
20	69	94.99%
30	61	96.83%
40	38	97.98%
60	38	99.12%
80	11	99.46%
100	2	99.52%
200	13	99.91%
More	3	100.00%

Table 4 Star CEO Turnovers by Year

The table is based on 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. Number of Firms is the number of distinct firms within a particular year. Percent of CEO turnover is computed as the number of CEO turnovers divided by the number of firms in each year. Percent of star CEO turnovers is computed as the number of star CEO turnovers divided by the number of CEO turnovers in each year. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Panel A contains numbers calculated by year. Panel B compares results between two sub-periods: before and after the passage of Sarbanes-Oxley Act in 2002.

Year	Number of Firms	Number of CEO Turnovers	Percent of CEO Turnovers	Number of Star CEO Turnovers	Percent of Star CEO Turnovers
	1	2	3 = 2 / 1	4	5 = 4 / 2
Panel A: Number of Observations by Year					
1990	-	78	-	39	50.00%
1991	-	96	-	32	33.33%
1992	445	97	21.80%	37	38.14%
1993	1,162	132	11.36%	49	37.12%
1994	1,551	168	10.83%	54	32.14%
1995	1,600	189	11.81%	71	37.57%
1996	1,651	170	10.30%	60	35.29%
1997	1,675	189	11.28%	68	35.98%
1998	1,732	204	11.78%	72	35.29%
1999	1,812	249	13.74%	77	30.92%
2000	1,792	270	15.07%	80	29.63%
2001	1,673	223	13.33%	65	29.15%
2002	1,675	180	10.75%	43	23.89%
2003	1,743	209	11.99%	42	20.10%
2004	1,753	194	11.07%	42	21.65%
2005	1,753	241	13.75%	55	22.82%
2006	1,819	218	11.98%	47	21.56%
2007	1,782	173	9.71%	33	19.08%
2008	851	34	4.00%	10	29.41%
Sum	26,469	3,314	12.52%	976	29.45%
Panel B: Number of Observations by Two Sub-periods					
1992-2001	15,093	1,891	12.53%	633	33.47%
2002-2008	11,376	1,249	10.98%	272	21.78%
P-values for tests that the proportions of Star CEO turnovers are equal in the two sub-periods			0.19	0.00	

Table 5 Star CEO Turnovers by Industry

The table is based on 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. Number of Firm-Years is obtained by adding the number of distinct firms over the entire sample period. Percent of CEO turnover is computed as the number of CEO turnovers divided by the number of Firm-Years in each industry represented by two-digit SIC code. Percent of star CEO turnovers is computed as the number of star CEO turnovers divided by the total number of CEO turnovers in each industry. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample.

SIC Code	Industry Description	Number of Firm-Years	Number of CEO Turnovers	Percent of CEO Turnovers	Number of Star CEO Turnovers	Percent of Star CEO Turnovers
		1	2	3 = 2 / 1	4	5 = 4 / 2
1	Agricultural Production - Crops	68	8	11.76%	3	37.50%
7	Agricultural Service	14	4	28.57%	2	50.00%
10	Metal mining	167	18	10.78%	3	16.67%
12	Coal Mining	29	2	6.90%	0	0.00%
13	Oil and gas extraction	784	86	10.97%	16	18.60%
14	Mining and Quarrying Of Nonmetallic Minerals, Except Fuels	57	6	10.53%	0	0.00%
15	Building Construction - General Contractors and Operative Builders	169	11	6.51%	1	9.09%
16	Heavy Construction Other Than Building Construction Contractors	100	16	16.00%	6	37.50%
17	Construction - Special Trade Contractors	24	2	8.33%	0	0.00%
20	Food and Kindred Products	677	87	12.85%	46	52.87%
21	Tobacco Products	46	6	13.04%	2	33.33%
22	Textile Mill Products	177	14	7.91%	2	14.29%
23	Apparel and Other Finished Products Made From Fabrics and Similar Materials	244	23	9.43%	10	43.48%
24	Lumber and Wood Products, Except Furniture	175	18	10.29%	3	16.67%
25	Furniture and Fixtures	171	21	12.28%	4	19.05%
26	Paper and Allied Products	437	56	12.81%	15	26.79%
27	Printing, Publishing, and Allied Industries	485	59	12.16%	25	42.37%
28	Chemical and allied products	1,891	235	12.43%	70	29.79%
29	Petroleum Refining and Related Industries	253	33	13.04%	15	45.45%
30	Rubber and miscellaneous plastic products	231	28	12.12%	13	46.43%
31	Leather and Leather Products	91	10	10.99%	2	20.00%

32	Stone, Clay, Glass, and Concrete Products	133	14	10.53%	3	21.43%
33	Primary metal industries	529	74	13.99%	22	29.73%
34	Fabricated Metal Products, Except Machinery and Transportation Equipment	377	55	14.59%	9	16.36%
35	Industrial machinery and equipment	1,551	242	15.60%	71	29.34%
36	Electronic and other electrical equipment	1,854	245	13.21%	55	22.45%
37	Transportation Equipment	770	106	13.77%	50	47.17%
38	Measuring, Analysing, Controlling Instruments and Related Products	1,239	169	13.64%	32	18.93%
39	Miscellaneous Manufacturing Industries	210	34	16.19%	11	32.35%
40	Railroad Transportation	104	12	11.54%	9	75.00%
41	Local and Suburban Transit and Interurban Highway Passenger Transportation	23	4	17.39%	0	0.00%
42	Motor Freight Transportation and Warehousing	190	15	7.89%	3	20.00%
44	Water Transportation	94	8	8.51%	1	12.50%
45	Air Transportation	226	33	14.60%	16	48.48%
47	Transportation Services	93	6	6.45%	1	16.67%
48	Communications	615	74	12.03%	45	60.81%
49	Electric, gas, and sanitary services	1,730	234	13.53%	62	26.50%
50	Wholesale Trade - Durable Goods	527	66	12.52%	12	18.18%
51	Wholesale Trade - Non-durable Goods	275	44	16.00%	9	20.45%
52	Building Materials, Hardware, Garden Supply, and Mobile Home Dealers	94	12	12.77%	5	41.67%
53	General Merchandise Stores	328	30	9.15%	10	33.33%
54	Food Stores	170	17	10.00%	7	41.18%
55	Automotive Dealers and Gasoline Service Stations	125	16	12.80%	2	12.50%
56	Apparel and Accessory Stores	420	63	15.00%	15	23.81%
57	Home Furniture, Furnishings and Equipment Stores	169	28	16.57%	10	35.71%
58	Eating and Drinking Places	498	49	9.84%	14	28.57%
59	Miscellaneous Retail	455	59	12.97%	21	35.59%
60	Depository Institutions	1,532	154	10.05%	47	30.52%
61	Nondepository Credit Institutions	219	22	10.05%	9	40.91%
62	Security and Commodity Brokers, Dealers, Exchanges and Services	385	44	11.43%	22	50.00%
63	Insurance Carriers	1,030	89	8.64%	28	31.46%
64	Insurance Agents, Brokers and Service	137	14	10.22%	3	21.43%
65	Real Estate	9	2	22.22%	1	50.00%

67	Holding and Other Investment Offices	382	11	2.88%	5	45.45%
70	Hotels, Rooming Houses, Camps and Other Lodging Places	62	7	11.29%	5	71.43%
72	Personal Services	123	26	21.14%	3	11.54%
73	Business Services	2,190	338	15.43%	81	23.96%
75	Automotive Repair, Services and Parking	59	8	13.56%	4	50.00%
78	Motion Pictures	74	2	2.70%	2	100.00%
79	Amusement and Recreation Services	189	26	13.76%	8	30.77%
80	Health Services	451	57	12.64%	10	17.54%
82	Educational Services	82	12	14.63%	1	8.33%
83	Social Services	14	2	14.29%	0	0.00%
87	Engineering, Accounting, Research, Management, and Related Services	313	41	13.10%	11	26.83%
99	Non-classifiable Establishments	129	7	5.43%	3	42.86%
Sum		26,469	3,314	12.52%	976	29.45%

Table 6 Firm, Board and CEO Characteristics by Type of CEO Turnover

The table is based on CEO turnovers from ExecuComp dataset between 1990 and 2008. CEO successions are classified into two groups: star CEO turnover and non-star CEO turnover. A star CEO turnover is one whose new CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. All the descriptive statistics are based on winsorized data except Log Sales and Log Assets. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. Accounting variables are measured in the fiscal year prior to succession. Industry-adjusted accounting numbers are obtained by subtracting the median value of firms with the same two-digit SIC code. Stock performance variables refer to the six months stock return prior to succession. Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Busy Board is the number of total board seats that an average independent board member holds simultaneously. Board Industry Tenure is the average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Years with the Firm When Appointed CEO refers to the time difference between the date of CEO succession and the date when the CEO joined the firm. P-values of two-tailed t tests and Brown –Mood tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	All			Star CEOs			Non-Star CEOs			Difference		P Value	
	Num Obs	Mean	Median	Num Obs	Mean	Median	Num Obs	Mean	Median	Mean	Median	Mean	Median
Panel A: Firm Characteristics													
1. Firm Size													
Assets (million dollar)	3,314	7,519	1,305	976	16,817	4,317	2,338	3,637	816	13,179 ^a	3,501 ^a	0.00	0.00
Log Assets	3,314	7.26	7.17	976	8.40	8.37	2,338	6.78	6.70	1.62 ^a	1.67 ^a	0.00	0.00
Sales (million dollar)	3,314	4,120	1,101	976	8,645	3,778	2,338	2,231	729	6,414 ^a	3,048 ^a	0.00	0.00
Log Sales	3,314	7.02	7.00	976	8.13	8.24	2,338	6.56	6.59	1.57 ^a	1.64 ^a	0.00	0.00
2. Accounting Performance													
EBITDA / Assets	3,314	11.07%	11.61%	976	11.85%	11.47%	2,338	10.75%	11.66%	1.10% ^b	-0.19%	0.02	0.54
EBIT / Assets	3,314	6.54%	7.44%	976	7.42%	7.23%	2,338	6.18%	7.53%	1.24% ^a	-0.29%	0.01	0.52
Net Income / Assets	3,314	-0.01%	3.13%	976	0.71%	2.77%	2,338	-0.31%	3.29%	1.02% ^c	-0.52%	0.10	0.12
Industry-Adjusted EBITDA / Assets	3,314	3.93%	2.38%	976	4.04%	2.08%	2,338	3.88%	2.53%	0.16%	-0.44%	0.73	0.25
Industry-Adjusted EBIT / Assets	3,314	3.44%	2.10%	976	3.65%	1.74%	2,338	3.35%	2.27%	0.30%	-0.52%	0.54	0.24
3. Stock Performance													
Six-Month Return	3,314	1.96%	-0.96%	976	-0.45%	-0.51%	2,338	2.96%	-1.27%	-3.41%	0.76%	0.13	0.96
Industry-Adjusted Six Month Return	3,314	-2.53%	-2.76%	976	-2.80%	-2.38%	2,338	-2.41%	-3.01%	-0.39%	0.63%	0.73	0.57
Panel B: Board Characteristics													
Board Size	3,314	8.99	9	976	10.12	10	2,338	8.52	8	1.60 ^a	2.00 ^a	0.00	0.00
Board Independence	3,314	0.74	0.75	976	0.68	0.69	2,338	0.77	0.76	0.09 ^a	0.07 ^a	0.00	0.00
Busy Board	3,314	3.21	3	976	3.93	4.05	2,338	2.90	2.93	1.03 ^a	1.12 ^a	0.00	0.00
Board Industry Tenure	3,314	11.01	9.87	976	9.64	8.49	2,338	11.59	10.20	-1.95 ^a	-1.71 ^a	0.00	0.00
Panel C: Incoming CEO Characteristics													
Age	3,314	52.06	52	976	52.68	53	2,338	51.80	52	0.87 ^a	1.00 ^a	0.00	0.00
Years with the Firm When Appointed CEO	1,643	2.94	8	514	8.99	3.34	1,129	7.75	2.28	1.05 ^a	1.24 ^a	0.00	0.00
Outsider CEO	3,314	0.26	0	976	0.32	0	2,338	0.23	0	0.09 ^a	0.00 ^a	0.00	0.00

Table 7 Determinants of Star CEO Succession

Coefficient estimates for logistic models are estimated using data of 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. The dependent variable star CEO is a dummy variable that equals one if the incoming CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Unadjusted and industry-adjusted EBITDA/Assets are the unadjusted and industry adjusted ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Unadjusted and industry-adjusted Six Month Stock Return refers to the unadjusted and industry-adjusted six-month holding period stock return prior to CEO succession. Log sales is the log of net sales in the fiscal year prior to succession. Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Busy Board is the number of total board seats that an average independent board member holds simultaneously. Board Industry Tenure is the average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company. Age refers to the age of the incoming CEO at the time of succession. After SOX Act is a dummy variable that equals 1 during year 2002 to 2008 and zero during year 1990 to 2001. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Model No.	Dependent Variable: Star CEO						
	1	2	3	4	5	6	7
Intercept	-7.4005 ^a	-7.5149 ^a	-7.1759 ^a	-6.9323 ^a	-5.4484 ^a	-6.3375 ^a	-7.2092 ^a
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Board Industry Tenure	-0.0267 ^b	-0.0314 ^a	-0.0359 ^a	-0.0355 ^a	-0.0412 ^a	-0.0403 ^a	-0.0358 ^a
	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Busy Board		0.1530 ^a	0.1558 ^a	0.1382 ^a	0.1817 ^a	0.1596 ^a	0.1367 ^a
		0.00	0.00	0.00	0.00	0.00	0.00
Board Size			0.0279 ^b	0.0348 ^b	0.0317 ^b	-0.0072	0.0353 ^b
			0.05	0.02	0.01	0.58	0.02
Board Independence			-0.4511	-0.5504 ^c	-0.7904 ^a	-0.8284 ^a	-0.5524 ^c
			0.13	0.07	0.01	0.01	0.07
Firm Size (Log Sales)	0.8561 ^a	0.8202 ^a	0.7897 ^a	0.8208 ^a	0.6901 ^a	0.8113 ^a	0.8163 ^a
	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Un-adjusted EBITDA / Assets				-2.0376 ^a		-1.5265 ^a	-2.0179 ^a
				0.00		0.00	0.00
Adjusted EBITDA / Assets					-1.0057 ^b		
					0.01		
Un-adjusted Six Month Stock Return				0.0076			
				0.96			
Adjusted Six Month Stock Return					0.0227		
					0.89		
Incoming CEO Age				-0.0062	-0.0067		
				0.36	0.30		
After SOX Act						-0.9273 ^a	
						0.00	
Industry Effect	X	X	X	X		X	X
Year Effect	X	X	X	X	X		X
Num of Obs.	3,314	3,314	3,314	3,314	3,314	3,314	3,314
Log-likelihood	-1,509	-1,500	-1,497	-1,488	-1,577	-1,520	-1,488
Pseudo R-Squared	0.2459	0.2502	0.2518	0.2564	0.2149	0.2404	0.2562

Table 8 Economic Significance: Changes in Predicted Probability of Star CEO Turnovers

This table illustrates the economic significance of the determinants of star CEO succession using the coefficients estimates of logit model 7 in table 7. Logit Regression Coefficient is the coefficient estimate of logit model 7 in table 7. Change in predicted probability refers to the change in the predicted probability if we vary the mean of one variable from its mean minus ½ to its mean plus ½ standard deviation, while keeping the level of other factors in the logit regression unchanged. Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Busy Board is the number of total board seats that an average independent board member holds simultaneously. Board Industry Tenure is the average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company. Firm size is the log of net sales. P-values of two-tailed t tests for testing differences in population means are reported after the difference in mean. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Logit Regression Coefficient	Mean	Standard Deviation	Change In Predicted Probability
Board Industry Tenure	-0.04	8.29	5.93	-5.28%
Busy Board	0.14	3.21	1.36	5.80%
Board Size	0.04	8.99	4.65	3.58%
Board Independence	-0.55	0.76	0.16	-4.01%
Firm Size	0.82	7.26	1.22	15.71%
EBITDA / Assets	-2.02	6.54%	12.47%	-3.10%

Table 9 Difference-in-Difference Analysis of the Performance of Star versus Non-star CEOs

This table assesses the operating performance of star versus non-star CEOs. Column 1 and 2 presents the results of a simple difference-in-difference analysis. The results in column 3 and 4 are obtained by combining difference-in-difference analysis with propensity score matching. Propensity score matching is obtained by applying one-to-one matching method with replacement according to logit model 7 in table 7. We obtain the data on CEO turnovers from ExecuComp dataset between 1990 and 2008. We examine two event windows: (-2 year, +2 year) and (-2 year, +3 year). In both cases the year of CEO turnover is excluded. The dependent variable is EBITDA / Assets. Star CEO is a dummy variable that equals one if the new CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are totally 976 star CEOs and 2,338 non-star CEOs in our sample. After is a dummy variable that equals one for years after CEO turnover and zero for years before CEO turnover. Star CEO * After is an interaction dummy variable of Star CEO and After: it equals 1 only if the firm hired a star CEO and the EBITDA / Assets refers to a year after the CEO turnover, and zero otherwise. Firm size is log of net sales. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Firm Fixed Effect is a group of dummy variables, each of which represents a firm with a unique GVKEY. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. P-value for the goodness of fit test is presented in the row of Goodness of Fit. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Model No. Event Window	Without Matching		After Propensity Score Matching	
	1 [-2 To +2]	2 [-2 To +3]	3 [-2 To +2]	4 [-2 To +3]
Intercept	-0.0952 ^a	0.0291 ^b	0.0575 ^b	0.0965 ^a
Star CEO	0.0041	0.0040	-0.0006	-0.0026
After	0.0084 ^a	0.0087 ^a	-0.0021	-0.0031
Star CEO * After	-0.0196 ^b	-0.0153 ^b	-0.0009	0.0006
Firm Size	0.0232 ^a	0.0177 ^a	0.0053 ^c	0.0010
Firm Fixed Effect	X	X	X	X
Year Effect	X	X	X	X
Industry Effects	X	X	X	X
Number of Obs.	12,561	15,087	5,676	5,676
Goodness of Fit	0.00	0.00	0.00	0.00
R-Squared	0.1124	0.1055	0.1217	0.1101

**Table 10 Comparison of the Mean of Board Characteristics
by Matched Star versus Non-star CEOs**

This table tests the mean difference of board characteristics between our star CEO sample and propensity score matched non-star CEO sample. We obtain the data on CEO turnovers from ExecuComp dataset between 1990 and 2008. Star CEO succession is one whose incoming CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs in our sample. Matched Non-star CEO sample is obtained by applying one-to-one propensity score matching method with replacement according to logit model 8 in table 7. There are 976 non-star turnovers and among them 490 distinct non-star turnovers in our final sample of propensity score matched non-star CEOs. Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Busy Board is the number of total board seats that an average independent board member holds simultaneously. Board Industry Tenure is the average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company. Difference is calculated by subtracting the mean of Matched NO-star CEOs from the mean of Star CEOs. P-values of two-tailed t tests for testing differences in population means are reported after the difference in mean. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Determinants of Star CEO Succession	Star CEOs	Matched Non-star CEOs	Difference	P-Value
Board Industry Tenure	7.43	7.65	-0.22	0.46
Busy Board	3.93	3.75	0.12	0.25
Board Size	10.12	9.63	0.49	0.24
Board Independence	0.70	0.71	-0.01	0.19
Num of Obs.	976	976	-	-

**Table 11 Difference-in-Difference Analysis of the Performance of
Star versus Non-star CEOs Using Control-group Approach**

This table employs the control group approach of Barber and Lyon (1996) to assess the operating performance of star versus non-star CEO. Panel A compares the change in operating performance between star CEOs and control-group matched non-star CEOs. Control group matching is based on previous performance, firm size, and industry. Panel B compares the change in operating performance between star CEOs and propensity score matched non-star CEOs. Propensity score matching is obtained by applying one-to-one matching method with replacement according to logit model 7 in table 7. We obtain the data on CEO turnovers from ExecuComp dataset between 1990 and 2008. We examine the event windows of (-2 year, +2 year), and the year of CEO turnover is excluded. In both panels, the table reports the difference in operating performance (EBITDA/Assets) before (two-year-average) and after (two-year average) successions, and differences in these measures around CEO turnovers. Star CEO is a dummy variable that equals one if the new CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are totally 976 star CEOs and 2,338 non-star CEOs in our sample. P-values associated with two sample t-test and median test are reported after the differences in operating performance between star and non-star CEOs. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Panel A: EBITDA/Assets, Control Group (-2 to +2 Year)					
		Star CEO	Matched Nonstar CEO	Difference	P-Value
Before					
	Mean	13.66%	14.00%	-0.34%	0.39
	Median	12.83%	13.54%	-0.72%	0.17
	Obs.	976	976		
After					
	Mean	12.20%	14.07%	-1.87% ^b	0.02
	Median	11.57%	14.39%	-2.82% ^a	0.01
	Obs.	976	976		
Difference					
	Mean	-1.46%	0.07%	-1.53% ^c	0.06
	Median	-0.66%	0.79%	-1.45% ^b	0.03
	Obs.	976	976		
Panel B: EBITDA/Assets, Propensity Score Match (-2 to +2 Year)					
		Star CEO	Matched Nonstar CEO	Difference	P-Value
Before					
	Mean	13.66%	13.85%	-0.19%	0.52
	Median	12.83%	13.32%	-0.49%	0.15
	Obs.	976	976		
After					
	Mean	12.20%	12.49%	-0.29%	0.20
	Median	11.57%	12.18%	-0.61%	0.13
	Obs.	976	976		
Difference					
	Mean	-1.46%	-1.36%	-0.10%	0.64
	Median	-0.66%	-0.54%	-0.12%	0.75
	Obs.	976	976		

Table 12 Comparison of Investor Responses to News of Hiring CEOs

The table calculates cumulative market-model abnormal returns for news of hiring CEOs. Cumulative market-model abnormal return is computed by using an estimation window of (-250 trading day, -20 trading day) relative to the announcement date. Two event windows are examined: (0 - 1 trading day) and (2 - 20 trading day). Panel A compares the cumulative abnormal returns for news of hiring star versus non-star CEOs. Panel B compares the cumulative abnormal returns for news of hiring star CEOs by boards with long industry tenure versus boards with short industry tenure. Panel B compares the cumulative abnormal returns for news of hiring star CEOs by boards with long industry tenure versus with short industry tenure. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Boards with long industry tenure are those whose independent directors on average have at least 9.87 years of industry-related experience. Busy boards are those whose independent directors on average hold more than four board seats simultaneously.

	Panel A: All CEO Hires			
	Star	Non-star	Diff	P-Value
Event Window 0 ~ 1 day	1.02% ^a	-0.11%	1.14% ^a	0.00
	0.00	0.31		
Event Window 2 ~ 20 day	0.54% ^a	-0.68% ^a	1.22% ^c	0.06
	0.02	0.00		
Number of Observations	950	2,308		
	Panel B: Star CEO Hires			
	Boards With Long Industry Tenure	Boards With Short Industry Tenure	Diff	P-Value
Event Window 0 ~ 1 day	1.48% ^a	0.58%	0.89% ^b	0.04
	0.00	0.24		
Event Window 2 ~ 20 day	1.83%	-0.39%	2.22% ^c	0.06
	0.16	0.11		
Number of Observations	475	475		
	Panel C: Star CEO Hires			
	Non-busy Board	Busy Board	Diff	P-Value
Event Window 0 ~ 1 day	0.76% ^c	1.27% ^b	-0.51%	0.46
	0.09	0.02		
Event Window 2 ~ 20 day	1.54%	-0.28%	1.81%	0.12
	0.11	0.16		
Number of Observations	475	475		

10 References

- Adams, Remeo B., Almeida, Heitor, Ferreira Daniel, 2005, "Understanding the relationship between Founder-CEOs and Firm Performance", Working paper. Stockholm School of Economics
- Agrawal, A., Knoeber, C.R., 1996, "Firm Performance and mechanisms to control agency problems between managers and shareholders", *Journal of Financial and Quantitative Analysis* 31, 377-397
- Ang, James S. and Nagel, Gregory L., 2008, "What Prior Experience Leads to a Successful CEO?", SSRN Working Paper
- Antweiler, Werner and Frank, Murray Z., 2004, "Is All That Talk Just Noise? The Information Content of Internet Stock Message Boards", *Journal of Finance* 59(3), 1259-1294
- Barber, B.M., Lyon, J.D., 1996, "Detecting abnormal operating performance: the empirical power and specification of test statistics", *Journal of Financial Economics* 41, 359-399
- Barber, B.M., Lyon, J.D., 1997, "Detecting long term abnormal stock return: the empirical power and specification of test statistics", *Journal of Financial Economics* 43, 341-372

- Bennedsen, Morten, Nielsen Kasper, Francisco Perez-Gonzalez and Daniel Wolfenzon, 2005, "Inside the family firm: the role of families in succession decisions and performance", Working Paper
- Bertrand, Marianne, Duflo, Esther and Mullainathan, Sendhil, 2004, "How much should we trust difference-in-difference estimates? ", *Quarterly Journal of Economics* 119(1), 249-75
- Borokhovich, K.A., Parrino, R., Tranpani, R., 1996, "Outsider directors and CEO selection", *Journal of Financial and Quantitative Analysis* 31, 337-355
- Boukus, Ellyn, and Joshua Rosenberg, 2006, "The information content of fomic minutes", Yale University working paper
- Chhaochharia, Vidhi and Grinstein, Yaniv, 2007, "Corporate Governance and Firm Value: the Impact of the 2002 Governance Rules", Johnson School Research Paper Series No. 23-06; AFA 2006 Boston Meetings Paper
- Core, John, Robert Holthausen, and David Larcker, 1999, "Corporate governance, chief executive officer compensation, and firm performance", *Journal of Financial Economics* 51, 371–406
- Dahya, J., McConnell, J., Travlos, N., 2002, "The Cadbury Committee, corporate performance, and top management turnover", *Journal of Finance* 57, 461–483.

- Dalton, D.R., Kesner, I.F., 1985, "Organizational performance as an antecedent of inside/outside chief executive succession: an empirical assessment", *Academy of Management Journal* 28, 749-762
- Das, Sanjiv R. and Chen, Mike Y, 2007, "Yahoo! for Amazon: Sentiment Extraction from Small Talk on the Web", *Management Science* Vol. 53, No. 9, pp. 1375-1388
- Davis, Angela K., Piger, Jeremy M. and Sedor, Lisa M., 2006, "Beyond the numbers: an analysis of optimistic and pessimistic language in earnings press releases", *Federal Reserve Bank of St. Louis Working Paper*
- Denis, David J. and Denis, D.K., 1995, "Performance changes following top management dismissals", *Journal of Finance* 50, 1029-57
- Denis, David J. and Denis, D.K., Sarin, A., 1997, "Ownership structure and top executive turnover", *Journal of Financial Economics*, Vol. 45, pp. 193-221
- Fama, Eugene F., 1998, "Market Efficiency, Long-term returns, and behavioral finance", *Journal of Financial Economics* 49, 283-306
- Fama, Eugene F., and French, Kenneth R., 1992, "The cross-section of expected stock returns", *Journal of Finance* 46, 427-65
- Fama, Eugene F., and French, Kenneth R., 1993, "Common risk factors in the returns on stocks and bonds", *Journal of Financial Economics* 33, 3-56
- Nuno Fernandes, Eliezer M. Fich, 2010, "Does Financial Experience Help Banks during Credit Crises?", *Working Paper*

- Fee, C.E., Hadlock, C.J., 2003, "Management Turnover across the corporate hierarchy, Working paper, Michigan State University
- Fich, Eliezer M. and Shivdasani Anil, 2006, "Are Busy Boards Effective Monitors", *Journal of Finance* Vol. 61, No. 2, pp.689-724
- Goldman, E., S. Hazarika, and A. Shivdasani, 2003, "What determines CEO Turnover? ", Working paper, University of North Carolina-Chapel Hill
- Gompers, Paul; Joy Ishii and Andrew Metrick, 2003, "Corporate Governance and Equity Prices", *Quarterly Journal of Economics* 118(1), pp. 107-155
- Hanley, Kathleen Weiss and Hoberg, Gerard, 2009, "The Information Content of IPO Prospectuses", *Review of Financial Studies*, Forthcoming
- Hanley, Kathleen Weiss and Hoberg, Gerard, 2008, "Strategic Disclosure and the Pricing of Initial Public Offerings", University of Maryland working paper
- Hoberg, Gerard, and Gordon Phillips, 2008, "Product Market Synergies and Competition in Mergers and Acquisitions", University of Maryland working paper
- Huson, Mark R., Paul Malatesta and Robert Parrino, 2004, "Managerial succession and firm performance", *Journal of Financial Economics* 74, 237-75
- Lee, Sam, 2006, "CEO Reputation: Who Benefits – the Firm or the CEO?", 2006, Doctoral Dissertation, University of Southern California
- Li, Feng, 2006, "Do stock market investors understand the risk sentiment of corporate annual reports?", University of Michigan Working Paper.

- Loughran, Tim, and Bill McDonald, 2008, "Plain English", Notre Dame University working paper
- Malmendier, Ulrike M. and Tate, G., 2008. "Financial Expertise of Directors", *Journal of Financial Economics* 88, 323-354
- Malmendier, Ulrike M. and Tate, G., 2009, "Superstar CEOs", *Quarterly Journal of Economics* 124(4), pp.1593ff
- Milkkelson, W.H., Partch, M.M., 1997, "The decline of takeovers and disciplinary management turnover", *Journal of Financial Economics* 44,205-228
- Mitchell, M.L., Stafford, E., 2000. "Managerial decisions and long-run stock price performance", *Journal of Business* 73, 287-320
- Morck, R., Sheifer, A., Vishny, R.W., 1988, "Management ownership and market valuation: an empirical analysis, *Journal of Financial Economics* 20,293-316
- Morck, R., Shelfer, A., Vishny, R.W., 1989, "Alternative mechanisms for corporate control", *American Economic Review* 79,842-852
- Murphy, Kelvin, 1999, "Executive Compensation", University of South California
- Parrino, Robert, 1997, "CEO turnover and outside succession: a cross-sectional analysis", *Journal of Financial Economics* 46, 165-197

- Parrino, Robert, Sias, Richard W., Starks, Laura T., 2003, "Voting with their feet: institutional ownership changes around forced CEO Turnover", *Journal of Financial Economics* 68, 3-46
- Rosen, Sherwin, 1981, "The Economics of Superstars", *American Economic Review* 71(5), pp. 845-858.
- Rosenbaum, Paul and Donald Rubin, 1983, "The Central Role of the Propensity Score in Observational Studies for Causal Effects", *Biometrika* 70, pp. 41-55.
- Tetlock, Paul C., 2007, "Giving content to investor sentiment: the role of eedia in the stock market", *Journal of Finance* Vol. LXII, NO. 3, 1139-1168
- Tetlock, Paul C, Sarr-tsechansky, Maytal, and Macskassy, Sofus, 2008,"More than words: quantifying language to measure firms' fundamentals", *Journal of Finance* Vol. LXIII, No.3, 1437-1467
- Weisbach, M.S., 1988, "Outside directors and CEO turnover", *Journal of Financial Economics* 20, 431-460
- Yermack, D., 1996, "Higher market valuation of companies with a small board of directors", *Journal of Financial Economics* 40, 185-211

Essay 2: Board Characteristics and Star CEO Compensation

ABSTRACT

This paper compares the compensation design of a star versus a non-star CEO. We find that a star CEO is awarded 1.87 million dollars more in annual total compensation, and 2.19 million dollars more in option compensation than a non-star CEO, after we use multivariate regressions to control for firm size, board characteristics, B/M ratio, leverage, EBITDA/Assets, stock return, firm risk, whether the CEO is an outsider, and industry and year effects. In addition, star CEOs receive higher compensation in firms where directors have short industry tenure, where directors hold multiple board seats simultaneously, where board size is large, and where board is composed of less independent directors. The above results hold true after we use a control-group approach, based on CEO matching to alleviate CEO selection issue. We also show that the equity portfolio of star CEOs exhibit higher sensitivities to change in stock price than non-star CEOs.

JEL Classification: D8; G3; J3

Key words: Board Characteristics; CEO compensation; Star CEO

1 Introduction

This paper studies the implication of a star CEO turnover on the compensation design of the new CEO. In particular, we address three research questions: (1) Do star CEOs receive higher compensation than their peers, (2) Do board characteristics affect the compensation level of star CEOs, (3) Does the equity portfolio of star CEOs provide higher incentives than their peers? Empirical evidence on these research questions provides insight into the role of CEO star status and board characteristics in the practice of executive compensation.

We examine 3,314 CEO successions in S&P 1500 companies from ExecuComp during the time period of 1990 to 2008. We measure the star status of CEO hires from more than 18,000 Wall Street Journal (WSJ) news texts. After conducting both WSJ news counts (how often a CEO is mentioned) and tone analysis of these news articles, we define a star CEO as one who meets two criteria: he (she) was cited by at least four WSJ news articles over the five years prior to succession and these articles did not overall present a negative tone regarding the executive. Our methodology results in a collection of 976 star CEOs and 2,338 non-star CEOs during the sample period.

We find significant difference in the CEO's annual total compensation between a star and a non-star CEO, especially in the compensation component of option grants. A star CEO is awarded 1.87 million dollars more in total

compensation, and 2.19 million dollars more in annual option compensation than a non-star CEO. We derive the above results after we use a multivariate regression to control for firm size, board characteristics, B/M ratio, leverage, EBITDA/Assets, stock return, firm risk, whether the CEO is an outsider, and industry and year effects. The differences in total compensation and option compensation between a star and non-star CEO are both significant at the 5% level.

We then investigate the role of board characteristics in influencing the practice of star CEO compensation. We find that the above effects of star CEO compensation are significantly stronger in firms where directors have short industry tenure, where directors hold multiple board seats from other firms simultaneously, where board size is large, and where the board is composed of less independent directors. Compared with non-star CEOs, there exists a 1.41 million dollar higher increase in annual total compensation between star CEOs hired by two different types of boards, i.e. boards with more than 9.87 years of average industry experience versus boards with less than 9.87 years of average industry experience. Furthermore, there is a 1.12 million dollar higher increase in annual total compensation between star CEOs hired by boards whose average independent director holds less than three board seats, versus star CEOs hired by other boards. For every increase in the number of board of directors, the increase in total compensation awarded to a star CEO is 0.14 million dollars higher than

awarded to a non-star CEO. For every 10% increase in the board independence ratio, the decrease in total compensation awarded to a star CEO is 0.10 million higher than awarded to a non-star CEO.

A natural question then to ask is whether star CEOs are paid more than nonstar CEOs because star CEOs are more likely to be selected in firms or from executives with certain characteristics. Therefore, it may be these firm and personal characteristics, rather than CEO star status, that lead to higher level of CEO compensation. To alleviate the above selection issue, we use a control-group approach based on CEO matching. We match star CEOs with non-star CEOs by firm size, industry, EBITDA/Assets, and whether the new CEO comes from outside the firm.

We find that the effects of CEO star status and board characteristics on annual compensation are robust to the use of control-group approach. The difference in annual total compensation amounts to 2.32 million dollars between star and matched non-star CEOs, after we use both multivariate regressions and CEO matching to control for the compensation effects of various firm and personal characteristics.

Finally, we examine the equity incentives of star CEOs. We document that the equity portfolio of star CEOs exhibit stronger sensitivities to stock price than non-star CEOs. After controlling for firm size, stock return, firm risk, EBITDA/Assets, Leverage, B/M, Outsider CEO, CEO age, and year and industry

effects, the change in equity portfolio for a 1% change in firm stock is 76,667 dollars more for a star CEO versus a non-star CEO.

This paper provides new evidence on the relation between board characteristics and CEO compensation. There is a rapidly growing literature studying the role of board characteristics in CEO compensation. This literature in general leads to mixed results. For example, Chhaochharia and Grinstein (2009) find a significant decrease in CEO compensation for firms that did not have a majority of independent directors before the passage of Sarbanes-Oxley Act. In addition, Faleye (2007) shows that firms with classified boards provide significantly lower compensation incentives for their CEOs. On the other hand, Guner, Malmendier, and Tate (2008) find little evidence that financial expertise of directors affect compensation policy. Fahlenbrach, Low and Stulz (2010) find that directors who are CEOs from other firms do not affect the appointing firm's CEO compensation. Our paper provides evidence that firms where directors have short industry tenure or hold multiple board seats, where board size is large, or where the board is composed of less independent directors award star CEOs significantly more annual total compensation.

Our research adds to the literature relating managerial power to corporate decisions and outcomes. Malmendier and Tate (2009) find that star CEOs who win prestigious business awards subsequently perform worse, and have a higher tendency to engage in earnings management. Adams, Almeida, and Ferreira

(2005) provide results where powerful CEOs are associated with more variable stock returns. Bebchuck, Cremers and Peyer (2007) identify CEOs who captures the largest fraction of total compensation by the top five highest paid executives. They find that these CEOs are associated with lower firm value and have greater tendency to be rewarded for luck after industry-wise shock.

The rest of the paper is organized as follows. Section 2 describes our data sources and main regression variables. In Section 3, we investigate the compensation level of star CEOs, and the role of board characteristics in explaining star CEO compensation. Section 4 analyzes the incentives of star CEOs' equity portfolio. Section 5 concludes.

2 Data and Variable Measurement

This section summarizes the data and explains how we measure star CEO, board characteristics and executive compensation variables. Table 13 presents definitions and data sources of all the variables used in this paper.

2.1 Data Sources

We study the compensation of newly hired CEOs in S&P 1500 companies from 1990 to 2008. We identify a newly hired CEO during the first year of an

executive's tenure as a CEO of a specific firm from the ExecuComp database. Our final sample consists of 3,314 newly hired CEOs during the sample period. These new CEOs come from 1,940 distinct firms. Nine hundred and sixty (960) of the firms have more than one new CEO during the sample period.

Our data source for executive compensation is the ExecuComp database. The ExecuComp database provides information on CEO age, annual flow compensation and stock and option holdings. We collect information on board characteristics from the BoardEx database. We match ExecuComp and BoardEx to link new CEO with the board members who selected him (her). The two databases have two different identification systems for firms, so we used two common data items (firm name and firm ticker) to ensure that the data from a firm in ExecuComp is correctly linked to the same firm in BoardEx.

We analyze WSJ news articles from Factiva to identify star CEOs. Factiva offers full text access to news and articles from about 8,000 business sources including national and international newspapers, magazines, news wire services, web sites, and industry (trade) sources since early 1980s. Finally, we match the information on newly hired CEOs from ExecuComp with firm accounting and stock return data from Compustat and CRSP.

2.2 Measurement of Star CEO

Compared with non-star CEOs, star CEOs are those who are known and favored by the business press. In this paper, we define a star CEO hire as one who meets two criteria: he (she) was cited by at least four WSJ news articles over the five years prior to succession *and* these articles did not overall present a negative tone regarding the executive. We use WSJ news articles to represent the opinions of business press because WSJ is the largest-circulation newspaper in U.S. with around three million readers. It is also one of the most recognized business media among investors. We require a star CEO to be cited by at least four WSJ articles because 30% of all new CEOs in our sample have at least four article citations prior to succession. The main results of this paper hold if we use a 10% or 20% cutoff of WSJ article citations to define a star CEO.

In order to identify the WSJ news articles associated with a new CEO as well as deciding the tone of these articles, we employ the content analysis methodology by Li (2010). Below we describe our approach in a brief manner.

First, we count the total number of WSJ news articles associated with each executive during the five-year time period (-5 year, +0 day) prior to CEO succession. An article is counted as media exposure of an executive if it includes the name of the executive and one of his (her) past employers.

Next, we perform tone analysis on a subset of the above news articles, analyzing only those that mention the executive by name at least three times and also mention one of the executive's past employers. We measure the tone of each

article by calculating the negative ratio, i.e. the number of negative words divided by the total number of words in the article. We then derive the overall tone for an executive by calculating the weighted-average of the negative ratios of all his (her) news articles. Executives with larger weighted-average negative ratios are then excluded so that the remaining sample includes only executives who are not negatively portrayed by WSJ.

Finally, we sort the WSJ article hits by each executive for the remaining sample. We class an executive as a star CEO if he (her) has at least four WSJ article hits. Our final sample of 3,314 new CEOs consists of 976 Star CEOs and 2,338 non-star CEOs. These new CEOs were mentioned in 18,240 WSJ news articles during the five years before they were appointed. Figure 6 illustrates the distribution of WSJ new articles of our star CEO sample. According to Figure 6, a relatively small number of executives attracted the majority of coverage. In our sample of 3,314 CEO turnovers, the majority of the CEOs had been quoted in no more than two articles, whereas the top 30% of them were cited by 15 articles on average.

Among the sample of 3,314 CEOs, eight hundred and forty six (846) of them were hired from outside the firm while two thousand six hundred and forty eight (2648) of them came from inside the firm. This study defines an insider CEO as one who had already been working for the firm twelve months before the date of succession. On the other hand, an outsider CEO is one who joined the firm less

than twelve months before the date of succession. In our sample, star CEOs are more likely to come from outside the firm than non-star CEOs. Three hundred and ten (310) of the 976 star CEOs are outside CEOs, while five hundred and thirty six (536) of the 2,338 non-star CEOs are outsiders.

2.3 Measurement of Board Characteristics

We investigate four measures of board characteristics: board size, board independence, busy board and board industry tenure. Board size is defined as the total number of board directors, including both independent and executive directors. Board independence refers to the number of independent board members divided by the total number of directors on the board. A busy board is one whose directors tend to hold many boards seats from different firms simultaneously. In this paper, we define busy board as the total number of board seats held by an average independent board member at the same time. We include the above three variables on board composition because previous literature shows that board size, board independence, and busy boards have various implications on corporate governance as well as firm value.

We introduce a new variable on board composition, board industry tenure. The new variable measures the average industry-related experience accumulated by independent directors. In particular, we extract the employment history for

every independent director from the BoardEx dataset, considering employment as a regular employee, an executive or a director. We then sum up the total years of experience in the same industry for every independent director at the CEO hiring firm. We use the two-digit SIC code to classify industry. For conglomerate firms and firms with multiple business sectors, we include the two-digit SIC codes of all business sectors documented in the Compustat Segment data⁵.

Panel A of Table 14 presents the summary statistics of our board characteristics variables. On average, an independent director had 11 years of industry-related experience and more than three board seats simultaneously right before CEO succession. An average board is composed of around nine directors, with 74% of them being independent.

Table 15 examines the Pearson correlation among board characteristic variables (board industry (dummy), busy board (dummy), board size, and board independence). We define board industry (dummy) as one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Similarly, we define busy board (dummy) as one if the average number of total board seats held simultaneously by independent directors is above the sample median (three).

As shown in Table 15, board industry tenure is not significantly correlated with most other variables except it has a significant negative correlation of

⁵ The main results in this paper remain unchanged if we only include the two-digit SIC code of a firm's main business sector.

21.64% with board size. Busy board is not significantly correlated with board industry tenure, but it has a significant correlation of 13.14% with board size, and is weakly significantly correlated with board independence at 4.48%. Board independence is not significantly correlated with either board industry tenure or board size. In summary, Table 15 shows that large boards tend to have directors with more board seats and less industry-related experience. However, overall, the moderate correlation among the board characteristics variables indicates our board characteristic variables are picking up different facets of board composition.

2.4 Measurement of CEO Compensation Level

This paper studies total compensation as well as different components of total compensation of a new CEO. We measure total compensation as the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (data item TCD1 in ExecuComp). Total compensation is the most common measure of CEO total pay in the literature. We also study the components of CEO total compensation separately. We derive cash compensation as the sum of salary and bonus. Stock compensation is the value of restricted stock grants to the new CEO (data item RSTKGRNT in ExecuComp). Option compensation is the value of option grants

based on the Black-Schole Formula (data item OPTION_AWARDS_BLK_VALUE in ExecuComp). We then derive equity-based compensation as the sum of stock and option compensation. All compensation variables are transformed to 2002 dollars using consumer price index (CPI) for urban consumers, and are winsorized at the 1% and 99% percentile.

Panel B of Table 14 summarizes the compensation level for new CEOs in our sample, Total compensation awarded to new CEOs has a mean value of 4.53 million dollars and median value of 2.16 million dollars, with a standard deviation of 6.71 million. A majority of new CEO compensation comes from equity-based compensation. Option compensation of a new CEO has a mean value of 2.47 million, and a median value of 0.72 million. . More than half of the new CEOs don't receive any stock compensation, but on average new CEOs receive 0.74 million dollars in stock compensation. Finally, the distribution of CEO bonus, stock compensation and option compensation is highly right-skewed. The bonus of a new CEO ranges from 0 dollars (the lower quartile) to 0.53 million dollars (the upper quartile), while stock compensation ranges from zero dollars (the lower quartile) to 0.37 million dollars (the upper quartile). The option compensation ranges from 0.076 million dollars (the lower quartile) to 2.46 million dollars (the upper quartile).

2.5 Measurement of CEO Portfolio Equity Incentives

In order to capture CEO incentives from holding stocks and options, we analyze the following variables: shares and value of stock holdings, shares and value of option holdings, dollar stock incentives, dollar option incentives, and dollar equity incentives. The shares and value of stock holdings measure the number of shares and value of stocks owned by the new CEO. The shares of option holdings are the number of unvested and vested option shares owned by the CEO. The value of option holdings is the estimated aggregate value of in-the-money options owned by the CEO, calculated based on the difference between the exercise price of the options and the close price of the company's stock. Following Core and Guay (1999, 2002), we calculate CEO dollar equity incentives to assess the sensitivity of CEO equity portfolio to change in stock price. CEO dollar equity incentives are defined as the dollar change in his (her) stock and option portfolio for a 1% change in stock price. We compute CEO dollar equity incentives from his (her) stock and option holdings separately: Dollar stock incentives are obtained by multiplying the number of shares of restricted stock by 1% of the stock price; and dollar option incentives are obtained by multiplying the option delta by the number of options and 1% of the stock price. We then sum up dollar stock and option incentives to derive dollar equity incentives.

We use the following procedure based on the “One-year Approach” by Core and Guay (1999, 2002) to calculate option delta from information in the ExecuComp database. Delta for options is defined as the partial derivative of option value to stock price ($e^{-dT} \Phi(Z)$, $Z = \ln(S/X) + T(r - d + 0.5\sigma^2) / \sigma T^{1/2}$), using the Black-Scholes model adjusted for dividends payouts (Black and Scholes (1973), and Merton (1973)). Stock price, S , is measured at the first fiscal year-end under the new CEO (data item PRCCF in ExecuComp). Volatility, σ , is the stock return volatility calculated over the previous sixty month (data item BS_VOLATILITY in ExecuComp). The risk free rate, r , is the rate on seven year treasury notes at the end of the fiscal year (data item Risk_Free_Rate in ExecuComp). The dividend yield, d , is the company’s average dividend yield over the past three years (data item BS_YIELD in ExecuComp).

We make the following assumptions about time to maturity (T) and exercise price (X) of previously granted options in the essence of Core and Guay (1999, 2002) because ExecuComp does not offer details on these options. We assume unvested options have the time to maturity of one year less than that of new grants, while vested options have the time to maturity of four year less than that of new grants. We estimate the exercise price as the stock price at fiscal year end minus the profit per option. Profit per option is calculated separately for unvested and vested options. For unvested options, profit per option is the realizable value of unvested option (data item OPT_UNEX_UNEXER_EST_VAL in

ExecuComp) divided by the number of unvested options (data item OPT_UNEX_UNEXER_NUM in ExecuComp). Profit per option for vested options is calculated similarly. We calculate option delta separately for new grants, unvested options, and vested options. We then sum up dollar option incentives from new grants, unvested options, and vested options to drive the dollar option incentives.

In Table 14 Panel 3, we present summary statistics for CEO portfolio incentive variables. An average CEO in our sample holds a stock portfolio worth of 10.4 million and an option portfolio with a realizable value of 4.6 million at the first fiscal year end of his (her) term. CEO option portfolio on average increases 0.1 million for every 1% change in firm stock price, while his (her) stock portfolio increases 0.13 million for a 1% change in stock price. Taking into consideration both stock and option portfolio, the wealth of an average CEO in our sample increase 0.25 million dollars when there is a 1% increase in firm stock price. Our estimates of CEO dollar equity incentives are consistent with prior findings. Jiang, Petroni, and Wang (2010) analyze the annual compensation data on CEOs from S&P 1,500 firms during the time period of 1993 to 2006. They document a similar mean value of 0.23 million for CEO dollar equity incentives.

3 Board Characteristics and Level of Star CEO Compensation

In this section, we investigate CEO compensation level at the first fiscal year end of their term. We pay special attention to the differences in total compensation as well as compensation components between star and non-star CEOs. Additionally, we examine the role of board characteristics in explaining new CEO compensation.

3.1 Univariate Analysis of Star Versus Non-star CEO Compensation

We compare the mean and median differences in CEO compensation variables between star and non-star CEOs in Table 16. To avoid the influence of outliers, all compensation variables are winsorized at the first and 99th percentile based on all observations. We implement two-sample t-tests and median tests to examine whether the population means and medians are significantly different for different types of CEOs.

Table 16 shows that the median total compensation of a newly hired star CEO is 2.48 million dollars more than a newly hired non-star CEO. Specifically, the median star CEO receive 0.36 million dollars more in cash compensation and 1.58

million dollars more in equity-based compensation. Among all compensation components, the dollar difference in option compensation between star and non-stars are of the largest scale. A median newly hired star CEO is awarded option compensation worth of 1.69 million, while a median non-star CEO is awarded option compensation worth of 0.53 million. All of the above differences in compensation components between star and non-star CEOs are significant at the 1% level.

A natural question then to ask is whether the above compensation differences are driven by the fact that star CEOs are more likely to be selected from outside the firm and outsider CEOs in general are paid higher than insider CEOs (Li (2010)). We thus test the above hypothesis by comparing the differences in compensation between star and non-stars, *conditional* on being an outsider or insider CEO. In particular, we compare the compensation level between outside star CEOs and outside non-star CEOs in Table 17, and between inside star CEOs and inside non-star CEOs in Table 18.

In summary, the results in Table 17 and Table 18 show that star CEOs are awarded significantly more cash and equity based compensation than non-star CEOs, both within the insider CEO category and within the outsider CEO category. A median outside star CEO receive 3.80 million more total compensation than a median outside non-star CEO, while a median inside star CEO receives 2.18 million more total compensation than a median inside non-star

CEO. Overall, outsiders CEOs are awarded less cash compensation and almost double stock and option compensation than insider CEOs. Within the group of outside or inside CEOs, the differences in cash and equity-based compensation between star and non-stars are all significant at the 1% level. A median outside star CEO receives 1.62 million more option compensation than a median outside non-star CEO, while a median inside star CEO receives 0.82 million more option compensation than a median inside non-star CEO.

3.2 Univariate Analysis of Star CEO Compensation by Board Characteristics

The previous section reveals that star CEOs are awarded a significantly higher level of compensation than non-star CEOs. In this section, we investigate whether the high compensation level of star CEOs are concentrated in firms with certain board characteristics. In particular, we examine the relation between board industry tenure, busy board, board size and board independence and the level of star CEO compensation. To achieve this goal, we focus on the sub-sample of 958 star CEOs and summarize star CEO compensation variables by board characteristics.

The results, presented in Table 19, show a significant difference in CEO compensation among star CEOs hired by different types of company boards.

Firms whose directors on average have more than 9.8 years of industry experience award the star CEO a median total compensation of 4.87 million dollars, while other firms award the star CEO a median compensation of 2.71 million dollars. The difference in median CEO total compensation is 1.16 million between the two board types. Furthermore, the difference in median star CEO total compensation is 1.27 million between firms whose average director has more than three board seats and other firms.

Table 19 also shows that difference in equity-based compensation accounts for a significant portion of the difference in star CEO compensation between different board types. Firms whose directors on average have more than 9.8 years of industry experience award the star CEO 1.04 million dollars more in median equity-based compensation. Firms whose directors on average have more than three board seats award the star CEO 1.13 million more in median equity-based compensation.

Figure 7 presents the median star CEO compensation from firms with different ranges of board industry tenure. It illustrates a monotonic inverse relationship between star CEO total compensation and board industry tenure. For firms within the lowest quartile group of board industry tenure, i.e. firms whose average independent director has 0.4 years to 6.34 years of industry experience, the median star CEO total compensation is 4.9 million dollars. For firms within the second and third quartile group of board industry tenure, i.e. firms whose

average independent director has 6.34 to 9.87 and 9.87 to 14.10 years of industry experience, the median star CEO total compensation is 4.6 million and 3.9 million dollars respectively. Finally, for firms whose average independent director has more than 14.10 years of industry experience, star CEOs receive 3.4 million dollars of median total compensation.

3.3 Multivariate Regressions Of New CEO Compensation

Characteristics other than CEO star status and board composition could potentially affect CEO compensation. To assess more directly the statistical and economical significance of the role of star status and board characteristics in new CEO compensation, we estimate the following multivariate regression model after controlling for potential firm, board and CEO characteristics:

$$C = \alpha + \beta Star + \gamma Star * BoardChar + \lambda BoardChar + \varphi X + \varepsilon \quad (2)$$

The dependent variable C is CEO compensation level variables in millions at the first fiscal year end under the new CEO. We examine total compensation, cash compensation, stock compensation, option compensation and equity-based compensation separately in each regression. Star is a dummy variable that equals one if the new CEO is a star CEO. BoardChar is a set of board characteristics variables that include board industry tenure, busy board, board size and board independence. We include interaction terms between Star and BoardChar to

examine whether board characteristics play a more significant role within the subgroup of star CEOs. Following the previous literature (e.g. Bebchuck and Grinstein(2005), Core, Holthausen, and Larcker(1999), Chhaochharia and Grinstein (2009), Fahlenbrach (2008), Faulkender and Yang (2010), Hwang and Kim (2009)), X is a set of control variables on firm size, stock return, firm risk, EBITDA/Assets, Leverage, B/M, Outsider CEO, CEO age, and year and industry effects.

We present the regression results of CEO total compensation and compensation components in Table 20 and Table 21 respectively. The regression results in Table 20 confirm our findings from univariate analysis. As shown by the coefficient estimate of star CEO in column 3, star CEOs receive 1.87 million dollars more in terms of total compensation than non-star CEOs, after controlling for firm, board and CEO characteristics. The above coefficient is significant at the 5% level.

The signs of the coefficient estimates in Column 1 of Table 20 confirm that firms whose boards have short industry tenure, busy directors, large size, or less independent directors are associated with higher level of CEO total compensation. We then add interaction terms between star CEOs and board characteristics into the regression and report the results in Column 3. Interestingly, the effects of board industry tenure, busy directors, board size and board independence on CEO compensation are concentrated within the sub-sample of star CEOs. Compared

with the difference between non-stars hired by busy versus non-busy boards, the difference in total compensation between star CEOs hired by busy versus non-busy boards is 1.12 million dollars higher. More specifically, everything else being equal, a non-star CEO hired by a non-busy board receive no additional compensation; while a non-star CEO hired by a busy board, a star CEO hired by a non-busy board, and a star CEO hired by a busy board receives 0.36, 1.87, and 3.35 million additional compensation respectively.

The difference in total compensation between star CEOs hired by boards with short versus long industry tenure is 1.41 million higher than the difference between non-star CEOs hired by boards with short versus long industry tenure. For every additional director sitting on the company boards, the increase in total compensation awarded to star CEOs is 0.14 million dollar higher than awarded to non-star CEOs. For every 10% increase in the board independence ratio, the decrease in total compensation awarded to star CEOs is 0.10 million higher than awarded to non-star CEOs.

The coefficients estimates of control variables show that larger firms award more CEO compensation. Firms with better operating performance, lower leverage ratio, or lower book to market ratio award higher level of compensation. In addition, CEOs from outside the firm or with lower age are awarded higher level of total compensation. The coefficient estimates of the above control

variables are all significant at the 1% level except the coefficient estimate of the operating performance variable (EBITDA/Assets).

We also estimate equation (2) using different compensation components as independent variables. Table 21 reveals that the majority of the high compensation of star CEOs comes in the format of option grants. After controlling for board, firm and CEO characteristics, a star CEO receives 2.19 million more in terms of option compensation than a non-star CEO. In contrast, the difference in cash and stock compensation between star and non-stars are not significant at the 10% level.

3.4 Control-Group Analysis Based on CEO Matching

In the previous section, our multivariate regression approach shows that star CEOs are paid more than non-star CEOs after controlling for firm, board and CEO characteristics. This multivariate regression approach could suffer from CEO selection bias if star CEOs are more likely to be selected from firms or executives with certain characteristics. In particular, it may be these firm and personal characteristics, rather than the star status of new CEOs, that drive the excessive pay of star CEOs.

In this section, we employ the control-group approach based on CEO matching to account for potential selection issue. We match star CEOs with non-

star CEOs by firm size, industry, operating performance and whether the CEO is an outsider. According to Li (2010) and Malmendier and Tate (2009), these firm and personal characteristics play a significant role in explaining the selection of star CEOs.

In the essence of Barber and Lyon (1996), we perform our matching method as follows. Each star CEO is matched to a group of non-star CEOs who satisfy four criteria. First, the star and non-star CEO firms have the same first two-digit SIC code. Second, the size (Log (sales)) of the non-star CEO firm is within $\pm 30\%$ of the size of star CEO firm. Third, the previous operating performance (EBITDA/ASSETS) of the non-star CEO firms is within $\pm 10\%$ of star CEO firm. Finally, if the star CEO comes from outside/inside the firm, then the matched non-star CEOs must also come from outside/inside the firm. Controlling for industry, size, operating performance and outsider CEO, we can isolate the components of star CEO excess compensation due to these characteristics.

We use the matched CEO sample to calculate the mean and median differences in CEO compensation between star and matched non-star CEOs in Table 22. We then carry out multivariate regression analysis of CEO compensation based on the matched CEO sample in Table 23 and Table 24. As shown by the main results in Table 22, Table 23, and Table 24, our previous findings on the effects of star CEOs and board characteristics are robust to the use of control-group approach. A median star CEO receives 1.97 million dollars

more in total compensation than matched non-star CEOs. The difference in total compensation amounts to 2.32 million dollars between star and matched non-star CEOs after we use multivariate regressions to control for the compensation effects of various firm and personal characteristics.

3.5 Further Tests and Robustness Checks

3.5.1 Regressions of Log Total Compensation

For robustness check, we run regressions of log total compensation, rather than total compensation, on board characteristics and star CEO succession to take into account the skewed distribution of total compensation. Table 25 displays the regression results of log total compensation based on the entire sample of star versus non-star CEOs; Table 26 displays the regression results of log total compensation based on star versus control-group matched non-star CEOs. According to Table 25 and Table 26, the coefficient estimates of log total compensation regressions are similar to those of total compensation regressions presented in Table 20 and Table 23. In particular, Table 26 shows that the effects of star CEO dummy as well as the interaction dummies between star CEO and board characteristics are statistically significant at the 5% level, after we use control group approach to account for potential selection bias.

3.5.2 Regressions of Total Compensation within the Sub-sample of Star CEOs

In Table 27, we investigate the role of board characteristics in CEO total compensation within the sub-sample of star CEOs. It shows that our previous finding on the effects of board characteristics holds true within the subsample of star CEOs. According to Table 27, the coefficient estimates of busy board, board industry tenure, board size, and board independence are respectively 1329.21, –1003.47, 108.47, and –908.61. In addition, these coefficient estimates are statistically significant at the 5%, 10%, 5%, and 5% level respectively.

4 Equity Incentives of Star CEO Portfolio

We have shown that star CEOs receive a significantly higher level of total compensation, especially in the form of equity-based compensation. We now proceed to address the following research question: does the equity portfolio of star CEOs provide higher equity incentives than non-star CEOs?

4.1 Univariate Analysis of Star versus Nonstar CEO Equity Incentives

In Table 28, we present the results on comparison of the mean and median differences in CEO equity incentive variables between star and non-star CEOs. As we suspect insider CEOs hold substantially different equity portfolios than outside CEOs, we also summarize the difference in equity incentives between star and non-star CEOs, within the sub-sample of outsider or insider CEOs. The results related to the sub-sample of outsider and insider CEOs are presented respectively in Table 29 and Table 30.

The results in Table 28 to Table 30 shows that star CEOs, on average, hold significantly more shares of stocks and options. Their stock and option portfolio have higher realizable value, and are more sensitive to changes in firm stock price. The above results are significant at 1% level, and hold true both for the entire sample and for the sub-sample of inside or outside CEOs.

Compared with insider CEOs, outsider CEOs hold significantly less shares of stocks. On the other hand, there is no significant difference in the number of option shares held by outside versus inside CEOs. The realizable value and incentives of the option portfolio of outsiders are significantly less than those of inside CEOs. However, despite the differences in equity incentives between insider and outside CEOs, star CEOs within either insider or outsider group have higher equity incentives than non-star CEOs. The equity portfolio of a median outside star CEO increases 0.11 million for a 1% change in stock price, while the equity portfolio of a median outside non-star CEO increases 0.44 million. Within

the group of insider CEOs, the equity portfolio of a median star CEO increases 0.18 million for a 1% change in stock price, while the equity portfolio of a median non-star CEO increases 0.73 million dollars.

4.2 Multivariate Regressions Of CEO Equity Incentives

We now examine whether star CEOs are awarded higher equity incentives after controlling for relevant factors in multivariate regressions. We use CEO dollar equity incentives as the dependent variable, and star CEO dummy as the main independent variable. Following previous literature (Yermack (1995), Core and Guay (1999) and etc), we incorporate control variables on firm size, stock return, firm risk, EBITDA/Assets, Leverage, B/M, Outsider CEO, CEO age, and year and industry effects.

We run the multivariate regressions for the entire sample and for the sub-sample of insider and outsider CEOs. The regression results in Table 31 show that the dollar equity incentives of star CEOs are significant higher than non-star CEOs, both for the entire sample and for the sub-sample of insider and outsider CEOs. Over the entire sample, when there is a 1% change in stock price, the change in a star CEO's equity portfolio is 76,667 dollars more than that of a non-star CEO. Within the sample of outsider CEOs, the change in a star CEO's equity portfolio is 79,028 dollars more than a non-star CEO. Finally, within the sample

of insider CEOs, the change in equity portfolio is 61,702 dollars more for a star versus non-star CEO.

5 Conclusions

In this paper, we investigate the compensation level and equity incentives of newly hired star CEOs. We have three main findings. First, we find significant difference in annual total compensation between a star and a non-star CEO, especially in the form of option compensation. Second, the higher compensation level of star CEOs are concentrated in firms where directors have short industry tenure, where directors hold multiple board seats from other firms simultaneously, where board size is large, and where the board is composed of less independent directors. The above result is robust to the use of control-group approach based on CEO matching, and to controls for firm size, B/M ratio, leverage, EBITDA/Assets, stock return, firm risk, whether the CEO is an outsider, and industry and year effects. Last, we find that the equity portfolio of star CEOs exhibits stronger sensitivities to stock price than non-star CEOs.

6 Figures and Tables

Figure 6 Histogram of WSJ Article Hits

The figure shows the histogram of Wall Street Journal (WSJ) article hits related to 3,314 CEO turnovers in our sample. WSJ article hits associated with each CEO turnover is defined as the number of the WSJ articles that cite the name of both the new CEO and one of his prior employers during the five-year period before his appointment date. The horizontal axis is the number of WSJ article hits. The vertical axis shows frequency on the left and cumulative percentage on the right. The column bars represent frequency, and the line with markers shows cumulative percentage from 0% to 100%.

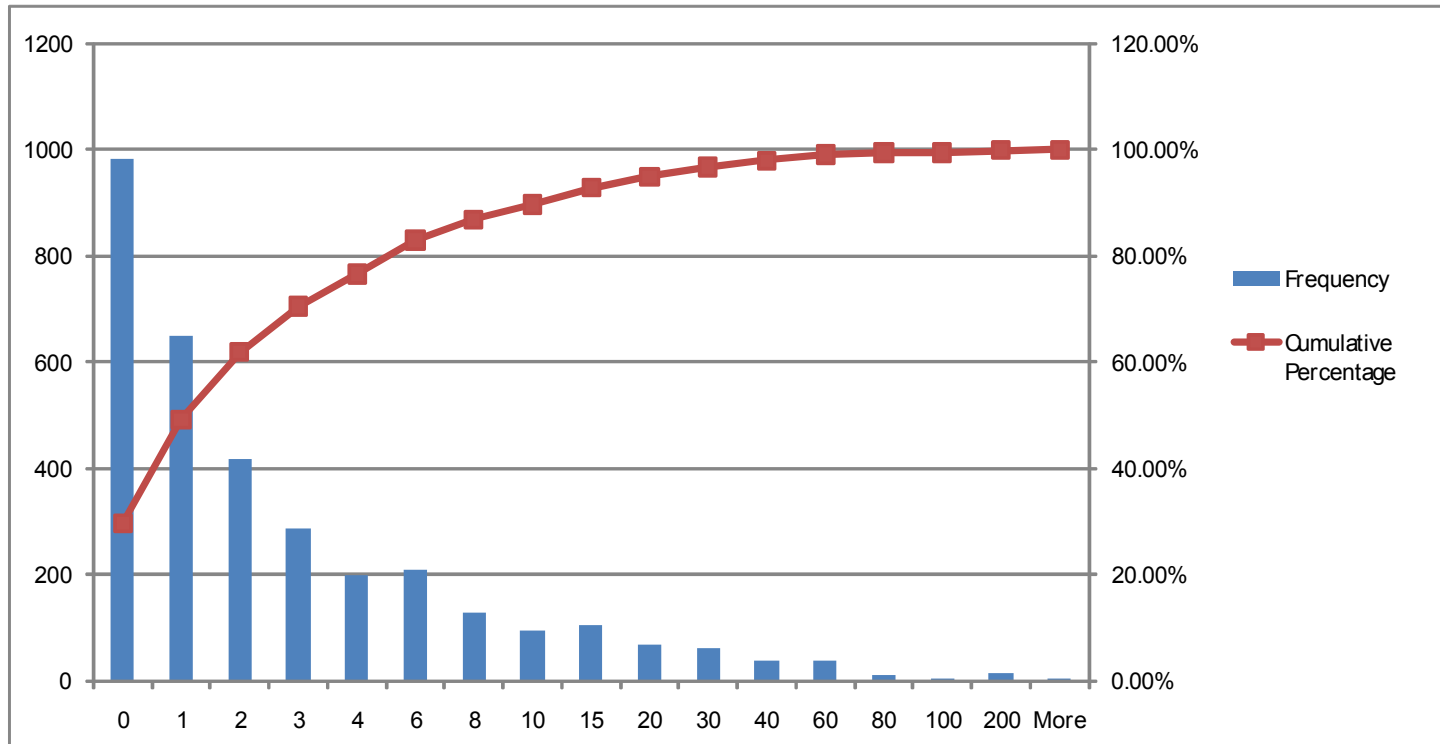


Figure 7 Board Industry Tenure and Star CEO Compensation

The figure presents the relation between board industry tenure and the total compensation of star CEOs. The data is based on 976 star CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). The horizontal axis is Board Industry Tenure categorized into four quartile groups. The vertical axis shows the median total compensation of star CEOs associated with each Board industry tenure quartile groups.

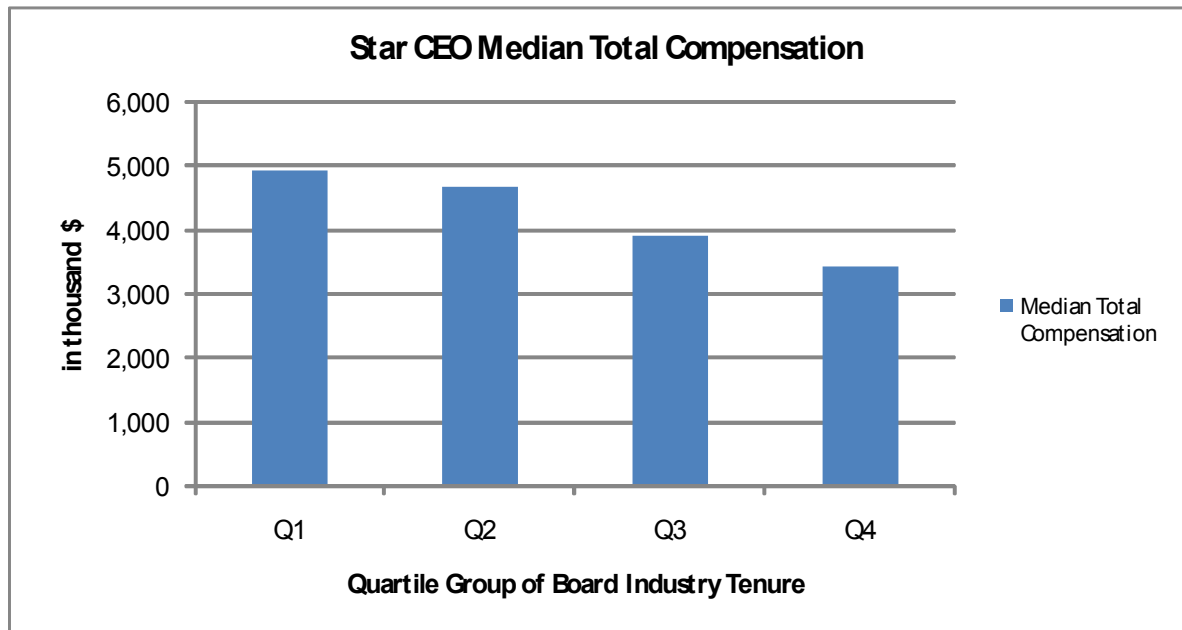


Table 13 Variable Definition

Data Item	Definition	Sources
Age	Age of the CEO at the time of succession	COMPUSTAT, ExecuComp, AGE
Assets	Total Assets	COMPUSTAT, Fundamentals Annual, AT
Busy Board	Average number of board seats simultaneously held by independent directors prior to CEO succession..	BoardEx
Busy Board (Dummy)	Dummy Variable::it equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (3) prior to CEO succession..	BoardEx
Busy Boards	Company boards whose average independent director holds more than the sample median (3) board seats simultaneously prior to CEO succession..	BoardEx
Non-busy Boards	Company boards whose average independent director holds less than the sample median (3) board seats simultaneously prior to CEO succession..	BoardEx
Board Industry Tenure	Average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company prior to CEO succession..	BoardEx
Board Industry Tenure (Dummy)	Dummy Variabe:it equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years).	BoardEx
Boards with Long Industry Tenure	Company boards whose average independent director has more than above the sample median (9.87) years of industry-related experience prior to CEO succession.	BoardEx
Boards with Short Industry Tenure	Company boards whose average independent director has less than above the sample median (9.87) years of industry-related experience prior to CEO succession..	BoardEx
Board Independence	(The number of independent directors) / (The total number of directors)	BoardEx
Board Size	Total number of directors	BoardEx
Bonus	The dollar value of a bonus earned by the CEO.	COMPUSTAT, ExecuComp, BONUS

Book to Market Ratio	The ratio of book value of equity divided by market value of equity	COMPUSTAT and CRSP, SEQ/(PRC *SHROUT)
Cash Compensation	The sum of bonus and salary earned by the CEO.	COMPUSTAT, ExecuComp, (BONUS + SALARY)
Dollar Option Incentives	Dollar change in CEO's option portfolio for a 1% change in stock price	COMPUSTAT, ExecuComp, refer to Section 2.5 for estimation procedure
Dollar Stock Incentives	Dollar change in CEO's stock portfolio for a 1% change in stock price	COMPUSTAT, ExecuComp, RSTKGRNT*PRCCF*0.01
Dollar Equity Incentives	Dollar change in CEO's stock and option portfolio for a 1% change in stock price. It equals the sum of dollar option incentives and dollar stock incentives	COMPUSTAT, ExecuComp
EBITDA / Assets	(Operating Income Before Depreciation) / (Total Assets)	COMPUSTAT, Fundamentals Annual, OIBDP / AT
Equity-based Compensation	The sum of the value of restricted stocks and options granted to the CEO.	COMPUSTAT, ExecuComp, (RSTKGRNT+OPTION_AWARDS_BLK_VALUE)
Firm Risk	Standard deviation of stock return calculated over 60 months prior to CEO succession.	COMPUSTAT, ExecuComp, BS_Volatility
Firm Size or Log Sales	Firm size, measured by Log(Sales)	COMPUSTAT, Fundamentals Annual, Log(SALE)
Industry Effect	A group of dummy variables, each of which represents an industry by two-digit SIC code	COMPUSTAT, Fundamentals Annual, SIC
Leverage Ratio	Total liabilities divided by total assets	COMPUSTAT, Fundamentals Annual, LT/AT
Outside CEO	Dummy variable: it equals 1 if the incoming CEO is an outside CEO. An incoming CEO is defined as an outside CEO if he joined the hiring firm less than twelve months before the date of succession.	COMPUSTAT, ExecuComp
Option Compensation	The aggregate value of stock options granted to the CEO as valued using Black-Scholes methodology.	COMPUSTAT, ExecuComp, OPTION_AWARDS_BLK_VALUE
Option Holdings	The estimated aggregate value of in-the-money options owned by the CEO, calculated based on the difference between the exercise price of the options and the close price of the company's stock.	COMPUSTAT, ExecuComp, OPT_UNEX_EXER_EST_VAL + OPT_UNEX_UNEXER_EST_VAL
Salary	The dollar value of salary earned by the CEO.	COMPUSTAT, ExecuComp, SALARY

Sales	Net sales	COMPUSTAT, Fundamentals Annual, SALE
Six-month Stock Return	Six-month holding period stock return until the date of CEO succession	CRSP, Monthly Stock
Star CEO	Dummy variable: it equals one if the new CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also was not overall considered negative by those articles.	Factiva
Stock Compensation	The value of restricted stocks granted to the CEO.	COMPUSTAT, ExecuComp, RSTKGRNT
Stock Holdings	The value of stocks owned by the CEO.	COMPUSTAT, ExecuComp, SHOWN_EXCEL_OPTS*PRCCF
Total Compensation	Total compensation earned by the CEO. It consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay.	COMPUSTAT, ExecuComp, TCD1
Year Effect	A group of dummy variables, each of which represents a year between 1990 and 2008	

Table 14 Summary Statistics of Board Characteristics and New CEO Compensation

The table presents summary statistics for the board characteristics and CEO compensation variables in this paper. The sample is based on 3,314 CEO successions from S&P1500 companies between 1990 and 2008. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. CEO compensation variables are calculated based on thousands of 2002 dollars using the consumer price index (CPI) for urban consumers. The following summary statistics are reported for each variable: number of observations, sample mean, sample standard deviation, the first quartile (25 percentile), sample median and the third quartile (75 percentile). Panel A, B and C present summary statistics for variables on board characteristics immediately before CEO succession, and on CEO compensation level and incentives during the first year of his (her) term. Board Size refers to the total number of board directors. Board Industry Tenure is the average years of experiences independent directors acquired from firms of the same industry as the CEO turnover company. Busy Board is the number of total board seats that an average independent board member holds simultaneously. Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. Stock Holdings measure the value of stock portfolio owned by the CEO (SHOWN_EXCEL_OPTS*PRCCF in Execucomp). Option holdings are the estimated aggregate value of in-the-money options owned by the CEO, calculated based on the difference between the exercise price of the options and the close price of the company's stock. (OPT_UNEX_EXER_EST_VAL + OPT_UNEX_UNEXER_EST_VAL in Execucomp). Dollar Option Incentives and Dollar Stock Incentives measure the dollar change in CEO's option and stock portfolio for a 1% change in stock price respectively. Dollar Equity Incentives are the sum of Dollar Option Incentives and Dollar Stock Incentives.

Panel A: Board Characteristics						
	Obs.	Mean	Std. Dev.	Q1	Median	Q3
Board Industry Tenure	3,314	11.01	6.65	6.34	9.87	14.10
Busy Board	3,314	3.21	1.31	2.25	3.00	3.86
Board Size	3,314	8.99	4.42	6.00	9.00	12.00
Board Independence	3,314	0.74	0.16	0.67	0.75	0.85
Panel B: New CEO Compensation						
Unit: Thousand Dollars	Obs.	Mean	Std. Dev.	Q1	Median	Q3
Total Compensation	3,258	4,532.15	6,712.93	986.47	2,156.91	4,837.57
Salary	3,258	464.35	265.92	282.37	425.00	617.49
Bonus	3,258	459.81	766.01	0.00	211.26	531.79
Cash Compensation	3,258	929.50	934.96	400.00	664.08	1,094.66
Stock Compensation	3,258	741.49	2,008.11	0.00	0.00	373.50
Option Compensation	3,258	2,473.33	4,973.13	76.82	719.83	2,462.22
Equity-based Compensation	3,258	3,238.51	5,921.54	233.41	1,120.21	3,250.52
Panel C: New CEO Compensation Incentives						
Unit: Thousand	Obs.	Mean	Std. Dev.	Q1	Median	Q3
Stock Holding Shares	3,156	412.01	1,376.20	15.00	66.53	211.96
Option Holding Shares	3,156	611.12	990.11	118.98	300.00	655.46
Stock Holdings	3,156	10,393.44	33,871.97	277.31	1,565.05	5,550.85
Option Holdings	3,156	4,644.72	10,304.46	9.47	807.80	4,008.83
Dollar Stock Incentives	3,156	103.93	338.72	2.77	15.65	55.51
Dollar Option Incentives	3,156	129.52	228.50	14.66	46.71	133.64
Dollar Equity Incentives	3,156	254.28	545.85	29.68	84.59	222.81

Table 15 Correlations among Board Characteristics Variables

The table presents the correlations among the four board characteristics variables in this paper: board industry tenure, busy board, and board size and board independence. The sample is composed of 29,793 directors who sit on the board during 3,314 CEO successions from S&P1500 companies between 1990 and 2008. Board Industry Tenure (Dummy) equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years), and zero otherwise. Busy Board (Dummy) equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (3), and zero otherwise. Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. P-value for the test that the two variables are independent is reported below the correlation. a, b, and c denote significance for the test at the 1, 5 and 10 percent level, respectively.

	Board Long Industry Tenure	Busy Board	Board Size	Board Independence
Board Long Industry Tenure	1.0000 0.00			
Busy Board	-0.0188 0.28	1.0000 0.00		
Board Size	-0.2164 ^a 0.00	0.1314 ^a 0.00	1.0000 0.00	
Board Independence	-0.0048 0.78	0.0448 ^a 0.01	0.0041 0.82	1.0000 0.00

Table 16 Comparison of CEO Compensation Level between Star and Non-star CEOs

The table compares the mean and median differences in CEO compensation level at the first fiscal year end of their term between star and non-star CEOs. The sample is based on 3,314 CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. CEO compensation variables are calculated based on thousands of 2002 dollars using the consumer price index (CPI) for urban consumers. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Total Compensation				
Mean	8,073.00	3,057.30	5,015.70 ^a	0.00
Median	4,185.08	1,701.41	2,483.67 ^a	0.00
Obs.	958	2,300		
Cash Compensation				
Mean	1,344.46	756.66	587.80 ^a	0.00
Median	956.41	589.44	366.97 ^a	0.00
Obs.	958	2,300		
Stock Compensation				
Mean	1,410.45	462.85	947.59 ^a	0.00
Median	0.00	0.00	0.00 ^a	0.00
Obs.	958	2,300		
Option Compensation				
Mean	4,567.85	1,600.92	2,966.94 ^a	0.00
Median	1,691.02	530.69	1,160.34 ^a	0.00
Obs.	958	2,300		
Equity-based Compensation				
Mean	6,049.41	2,067.71	3,981.70 ^a	0.00
Median	2,420.74	840.13	1,580.61 ^a	0.00
Obs.	958	2,300		

Table 17 Comparison of CEO Compensation Level between Outside Star and Non-star CEOs

The table compares the mean and median differences in CEO compensation level at the first fiscal year end of their term between outside star and outside non-star CEOs. The sample is based on 833 outside CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. An outsider CEO is one who joined the firm as an employee less than twelve months before the date of succession. There are 303 outside star CEOs and 530 outside non-star CEOs in our sample. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. CEO compensation variables are calculated based on thousands of 2002 dollars using the consumer price index (CPI) for urban consumers. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Total Compensation				
Mean	10,592.45	3,999.78	6,592.67 ^a	0.00
Median	6,052.17	2,248.91	3,803.27 ^a	0.00
Obs.	303	530		
Cash Compensation				
Mean	1,232.67	648.63	584.04 ^a	0.00
Median	725.75	490.11	235.64 ^a	0.00
Obs.	303	530		
Stock Compensation				
Mean	2,368.03	643.97	1,724.06 ^a	0.00
Median	165.00	0.00	165.00 ^a	0.00
Obs.	303	530		
Option Compensation				
Mean	6,282.61	2,535.31	3,747.30 ^a	0.00
Median	2,718.65	1,096.69	1,621.96 ^a	0.00
Obs.	303	530		
Equity-based Compensation				
Mean	8,689.75	3,162.33	5,527.42 ^a	0.00
Median	4,297.75	1,536.56	2,761.19 ^a	0.00
Obs.	303	530		

Table 18 Comparison of CEO Compensation Level between Inside Star and Non-star CEOs

The table compares the mean and median differences in CEO compensation level at the first fiscal year end of their term between inside star and outside non-star CEOs. The sample is based on 2,452 inside CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. An insider CEO is one who joined the firm as an employee more than twelve months before the date of succession. There are 655 inside star CEOs and 1,770 inside non-star CEOs in our sample. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. CEO compensation variables are calculated based on thousands of 2002 dollars using the consumer price index (CPI) for urban consumers. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Total Compensation				
Mean	6,907.51	2,775.09	4,132.43 ^a	0.00
Median	3,740.82	1,557.57	2,183.24 ^a	0.00
Obs.	655	1,770		
Cash Compensation				
Mean	1,396.17	789.01	607.16 ^a	0.00
Median	987.40	607.55	379.85 ^a	0.00
Obs.	655	1,770		
Stock Compensation				
Mean	967.47	408.62	558.85 ^a	0.00
Median	0.00	0.00	0.00 ^a	0.00
Obs.	655	1,770		
Option Compensation				
Mean	3,774.61	1,321.13	2,453.49 ^a	0.00
Median	1,245.70	421.97	823.73 ^a	0.00
Obs.	655	1,770		
Equity-based Compensation				
Mean	4,828.00	1,739.95	3,088.06 ^a	0.00
Median	1,832.76	668.19	1,164.57 ^a	0.00
Obs.	655	1,770		

Table 19 Comparison of Star CEO Compensation Level by Board Types

The table compares the mean and median differences in star CEO compensation level at the first fiscal year end of their term by board types. The sample is based on 976 star CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. CEO compensation variables are calculated based on thousands of 2002 dollars using the consumer price index (CPI) for urban consumers. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. Boards with Long/Short Industry Tenure refer to boards whose average independent director has more/less than 9.87 years of industry-related experience prior to CEO succession. Busy/Non-busy Boards refer to boards whose average independent director has more/less than three board seats simultaneously prior to CEO succession. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Panel A: Board Industry Tenure				
	Boards with Long Industry Tenure	Boards with Short Industry Tenure	Difference	P-Value
Total Compensation				
Mean	7,031.86	9,149.51	-2,117.65 ^a	0.00
Median	3,709.18	4,870.87	-1,161.69 ^a	0.00
Obs.	479	479		
Cash Compensation				
Mean	1,310.51	1,379.56	-69.04	0.40
Median	892.65	995.29	-102.64	0.10
Obs.	479	479		
Stock Compensation				
Mean	1,020.13	1,814.02	-793.90 ^a	0.00
Median	0.00	0.00	0.00 ^a	0.00
Obs.	479	479		
Option Compensation				
Mean	4,020.02	5,134.29	-1,114.27 ^b	0.02
Median	1,392.77	2,010.07	-617.31 ^a	0.00
Obs.	479	479		
Equity-based Compensation				
Mean	5,157.75	6,971.36	-1,813.62 ^a	0.00
Median	2,020.24	3,059.63	-1,039.39 ^a	0.00
Obs.	479	479		
Panel B: Busy Board				
	Busy Boards	Non-busy Boards	Difference	P-Value
Total Compensation				
Mean	9,186.76	6,310.79	2,875.97 ^a	0.00
Median	4,638.81	3,372.98	1,265.83 ^a	0.00
Obs.	479	479		
Cash Compensation				
Mean	1,504.92	1,090.57	414.35 ^a	0.00
Median	1,025.00	818.39	206.62 ^a	0.00
Obs.	479	479		
Stock Compensation				
Mean	1,630.85	1,061.73	569.12 ^a	0.00
Median	0.00	0.00	0.00 ^a	0.00
Obs.	479	479		
Option Compensation				
Mean	5,193.34	3,578.20	1,615.14 ^a	0.00
Median	2,046.34	1,146.60	899.74 ^a	0.00
Obs.	479	479		
Equity-based Compensation				
Mean	6,898.93	4,705.29	2,193.64 ^a	0.00
Median	2,812.12	1,680.21	1,131.91 ^a	0.00
Obs.	479	479		

Table 20 Board Characteristics and CEO Total Compensation

Coefficient estimates for multivariate regression models are estimated using data of 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. The dependent variable, Total Compensation (in millions), is the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Star CEO is a dummy variable that equals one if the newly hired CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable: Model No.	Total Compensation (In Thousands)		
	1	2	3
Star CEO		2,314.79 ^a	1,866.09 ^b
		0.00	0.03
Star CEO * Busy Board			1,115.62 ^b
			0.02
Star CEO * Long Industry Tenure			-1,406.42 ^a
			0.00
Star CEO * Board Size			144.05 ^a
			0.01
Star CEO * Board Independence			-1,007.61 ^c
			0.09
Busy Board	816.98 ^a	705.22 ^a	360.14
	0.00	0.00	0.17
Long Industry Tenure	-276.19	-313.68	88.93
	0.21	0.15	0.73
Board Size	96.64 ^a	77.59 ^b	20.82
	0.00	0.02	0.59
Board Independence	-219.01	-458.70	539.85
	0.75	0.50	0.49
Firm Size (Log Sales)	2,027.70 ^a	1,720.28 ^a	1,690.24 ^a
	0.00	0.00	0.00
EBITDA / Assets	-2,240.87 ^b	-1,606.88	-1,488.75
	0.03	0.12	0.15
Leverage Ratio	-4,182.18 ^a	-4,061.18 ^a	-3,968.58 ^a
	0.00	0.00	0.00
Book to Market Ratio	-2,032.62 ^a	-1,959.26 ^a	-1,929.91 ^a
	0.00	0.00	0.00
Stock Return	-91.53	-9.36	-27.60
	0.67	0.97	0.90
Firm Risk	6,371.24 ^a	6,000.04 ^a	5,859.50 ^a
	0.00	0.00	0.00
Outside CEO	2,780.34 ^a	2,471.98 ^a	2,456.63 ^a
	0.00	0.00	0.00
Age	-61.57 ^a	-60.25 ^a	-59.51 ^a
	0.00	0.00	0.00
Industry Effect	X	X	X
Year Effect	X	X	X
Num of Obs.	2,936	2,936	2,936
Goodness of Fit (P-Value)	0.00	0.00	0.00
R-Squared	0.3136	0.3314	0.3375

Table 21 Board Characteristics and CEO Compensation Components

Coefficient estimates for multivariate regression models are estimated using data of 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. Total Compensation (in millions) is the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. Star CEO is a dummy variable that equals one if the newly hired CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable:	Total Compensation	Cash Compensation	Equity-based Compensation	Stock Compensation	Option Compensation
Model No.	1	2	3	4	5
Star CEO	1,866.09 ^b	92.74	1,815.27 ^c	-270.33	2,193.79 ^b
	0.03	0.58	0.09	0.49	0.02
Star CEO * Busy Board	1,115.62 ^b	48.19	891.12 ^b	107.97	726.01 ^c
	0.02	0.45	0.04	0.47	0.05
Star CEO * Long Industry Tenure	-1,406.42 ^a	-29.12	-1,215.37 ^a	-633.30 ^a	-672.67 ^c
	0.00	0.64	0.00	0.00	0.07
Star CEO * Board Size	144.05 ^a	31.36 ^a	92.44 ^c	37.59 ^b	48.68
	0.01	0.00	0.05	0.02	0.24
Star CEO * Board Independence	-1,007.61 ^c	-351.71 ^c	-737.95	782.21 ^c	-1,502.92
	0.09	0.08	0.58	0.09	0.19
Busy Board	360.14	67.02 ^c	326.80	62.42	264.65
	0.17	0.06	0.17	0.45	0.20
Long Industry Tenure	88.93	44.60	16.84	21.44	-7.93
	0.73	0.21	0.94	0.79	0.97
Board Size	20.82	6.62	12.68	3.41	8.64
	0.59	0.20	0.72	0.78	0.78
Board Independence	539.85	12.64	543.20	-46.34	602.26
	0.49	0.91	0.44	0.85	0.33
Firm Size (Log Sales)	1,690.24 ^a	238.63 ^a	1,321.66 ^a	290.27 ^a	1,023.42 ^a
	0.00	0.00	0.00	0.00	0.00
EBITDA / Assets	-1,488.75	-185.37	-927.74	-365.86	-457.28
	0.15	0.19	0.33	0.27	0.58
Leverage Ratio	-3,968.58 ^a	-25.30	-3,879.35 ^a	-133.28	-3,756.50 ^a
	0.00	0.75	0.00	0.46	0.00
Book to Market Ratio	-1,929.91 ^a	-40.73	-1,897.12 ^a	-137.39 ^c	-1,756.26 ^a
	0.00	0.21	0.00	0.07	0.00
Stock Return	-27.60	154.95 ^a	-130.11	101.48	-226.36
	0.90	0.00	0.51	0.14	0.18
Firm Risk	5,859.50 ^a	12.65	5,749.13 ^a	330.96	5,431.67 ^a
	0.00	0.89	0.00	0.12	0.00
Outside CEO	2,456.63 ^a	-21.26	2,427.37 ^a	722.24 ^a	1,712.88 ^a
	0.00	0.53	0.00	0.00	0.00
Age	-59.51 ^a	-5.93 ^a	-54.78 ^a	-11.96 ^b	-43.92 ^a
	0.00	0.00	0.00	0.01	0.00
Industry Effect	X	X	X	X	X
Year Effect	X	X	X	X	X
Num of Obs.	2,936	2,936	2,936	2,936	2,936
Goodness of Fit (P-Value)	0.00	0.00	0.00	0.00	0.00
R-Squared	0.34	0.37	0.32	0.18	0.27

Table 22 Comparison of CEO Compensation Level between Star and Matched Non-star CEOs

The table compares the mean and median differences in CEO compensation level at the first fiscal year end of their term between star and matched non-star CEOs. The sample is based on 593 star CEO successions and matched 1,036 non-star CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. Each star CEO is matched to a group of non-star CEOs who satisfy four criteria. First, the star and non-star CEO firms have the same first two-digit SIC code. Second, the size (Log (sales)) of the non-star CEO firm is within +30% of the size of star CEO firm. Third, the previous operating performance (EBITDA/ASSETS) of the non-star CEO firms is within +10% of star CEO firm. Finally, if the star CEO comes from outside/inside the firm, then the matched non-star CEOs must also come from outside/inside the firm. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. CEO compensation variables are calculated based on thousands of 2002 dollars using the consumer price index (CPI) for urban consumers. Total Compensation consists of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp). Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Total Compensation				
Mean	7,071.56	3,263.31	3,808.26 ^a	0.00
Median	3,900.41	1,933.31	1,967.10 ^a	0.00
Obs.	593	1,036		
Cash Compensation				
Mean	1,292.05	848.85	443.20 ^a	0.00
Median	973.12	687.62	285.50 ^a	0.00
Obs.	593	1,036		
Stock Compensation				
Mean	1,131.54	537.03	594.51 ^a	0.00
Median	0.00	0.00	0.00 ^b	0.01
Obs.	593	1,036		
Option Compensation				
Mean	3,970.91	1,600.56	2,370.35 ^a	0.00
Median	1,502.82	519.13	983.69 ^a	0.00
Obs.	593	1,036		
Equity-based Compensation				
Mean	5,165.26	2,147.30	3,017.96 ^a	0.00
Median	2,111.59	896.28	1,215.31 ^a	0.00
Obs.	593	1,036		

Table 23 Board Characteristics and CEO Total Compensation Using Matched Sample

Coefficient estimates for multivariate regression models are estimated using data of 593 star CEO successions and matched 1,036 non-star CEO successions from ExecuComp dataset between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. Each star CEO is matched to a group of non-star CEOs who satisfy four criteria. First, the star and non-star CEO firms have the same first two-digit SIC code. Second, the size (Log (sales)) of the non-star CEO firm is within +30% of the size of star CEO firm. Third, the previous operating performance (EBITDA/ASSETS) of the non-star CEO firms is within +10% of star CEO firm. Finally, if the star CEO comes from outside/inside the firm, then the matched non-star CEOs must also come from outside/inside the firm. The dependent variable, Total Compensation (in millions), is the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Star CEO is a dummy variable that equals one if the new CEO is a star CEO. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable: Model No.	Total Compensation (In Thousands)		
	1	2	3
Star CEO		1,931.27 ^a	2,321.68 ^b
		0.00	0.04
Star CEO * Busy Board			944.16 ^b
			0.03
Star CEO * Long Industry Tenure			-931.64 ^b
			0.02
Star CEO * Board Size			62.23 ^c
			0.06
Star CEO * Board Independence			-1,410.07 ^b
			0.04
Busy Board	989.12 ^a	838.52 ^a	507.55
	0.00	0.01	0.18
Long Industry Tenure	55.48	26.67	364.44
	0.86	0.93	0.34
Board Size	16.73	-6.14	-32.25
	0.71	0.89	0.53
Board Independence	212.05	427.23	887.35
	0.83	0.66	0.45
Firm Size (Log Sales)	2,097.31 ^a	1,830.41 ^a	1,803.33 ^a
	0.00	0.00	0.00
EBITDA / Assets	-4,902.68 ^b	-3,721.27	-3,968.16
	0.05	0.13	0.11
Leverage Ratio	-5,607.38 ^a	-5,470.54 ^a	-5,431.30 ^a
	0.00	0.00	0.00
Book to Market Ratio	-2,990.23 ^a	-2,900.04 ^a	-2,933.57 ^a
	0.00	0.00	0.00
Stock Return	75.64	137.65	113.08
	0.83	0.70	0.75
Firm Risk	6,348.49 ^a	5,915.99 ^a	5,823.58 ^a
	0.00	0.00	0.00
Outside CEO	2,602.46 ^a	2,347.93 ^a	2,304.34 ^a
	0.00	0.00	0.00
Age	-62.98 ^a	-59.70 ^a	-58.98 ^a
	0.00	0.01	0.01
Industry Effect	X	X	X
Year Effect	X	X	X
Num of Obs.	1,473	1,473	1,473
Goodness of Fit (P-Value)	0.00	0.00	0.00
R-Squared	0.3336	0.3493	0.3527

Table 24 Board Characteristics and CEO Compensation Components Using Matched Sample

Coefficient estimates for multivariate regression models are estimated using data of 593 star CEO successions and matched 1,036 non-star CEO successions from ExecuComp dataset between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. Each star CEO is matched to a group of non-star CEOs who satisfy four criteria. First, the star and non-star CEO firms have the same first two-digit SIC code. Second, the size (Log (sales)) of the non-star CEO firm is within +30% of the size of star CEO firm. Third, the previous operating performance (EBITDA/ASSETS) of the non-star CEO firms is within +10% of star CEO firm. Finally, if the star CEO comes from outside/inside the firm, then the matched non-star CEOs must also come from outside/inside the firm. Total Compensation (in millions) is the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. Star CEO is a dummy variable that equals one if the newly hired CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable:	Total Compensation	Cash Compensation	Equity-based Compensation	Stock Compensation	Option Compensation
Model No.	1	2	3	4	5
Star CEO	2,321.68 ^b	48.97	2,359.83	94.30	2,336.38 ^c
	0.04	0.81	0.10	0.85	0.06
Star CEO * Busy Board	944.16 ^b	15.50	760.91	222.97	470.05
	0.03	0.85	0.18	0.27	0.34
Star CEO * Long Industry Tenure	-931.64 ^b	38.49	-926.87 ^c	-308.69	-634.37
	0.02	0.62	0.09	0.11	0.18
Star CEO * Board Size	62.23 ^c	35.04 ^a	34.92	20.62	14.90
	0.06	0.00	0.57	0.34	0.78
Star CEO * Board Independence	-1,410.07 ^b	-461.65 ^c	-1,278.01	-0.31	-1,304.59
	0.04	0.06	0.46	1.00	0.39
Busy Board	507.55	113.59 ^b	447.40	-21.94	458.92
	0.18	0.02	0.20	0.86	0.13
Long Industry Tenure	364.44	0.26	319.76	-74.61	383.80
	0.34	1.00	0.36	0.54	0.20
Board Size	-32.25	-1.50	-30.91	-2.34	-30.10
	0.53	0.82	0.51	0.89	0.46
Board Independence	887.35	-33.58	941.97	-2.74	995.31
	0.45	0.83	0.38	0.99	0.28
Firm Size (Log Sales)	1,803.33 ^a	308.65 ^a	1,345.04 ^a	277.54 ^a	1,068.86 ^a
	0.00	0.00	0.00	0.00	0.00
EBITDA / Assets	-3,968.16	-140.71	-2,938.54	-580.79	-1,959.44
	0.11	0.66	0.19	0.46	0.32
Leverage Ratio	-5,431.30 ^a	1.47	-5,278.80 ^a	126.51	-5,411.08 ^a
	0.00	0.99	0.00	0.66	0.00
Book to Market Ratio	-2,933.57 ^a	-99.85 ^c	-2,696.62 ^a	-229.78 ^c	-2,440.54 ^a
	0.00	0.07	0.00	0.09	0.00
Stock Return	113.08	215.99 ^a	-42.87	88.73	-93.43
	0.75	0.00	0.89	0.44	0.74
Firm Risk	5,823.58 ^a	-54.79	5,964.52 ^a	371.04	5,692.80 ^a
	0.00	0.68	0.00	0.26	0.00
Outside CEO	2,304.34 ^a	-94.02 ^c	2,381.98 ^a	629.15 ^a	1,719.13 ^a
	0.00	0.08	0.00	0.00	0.00
Age	-58.98 ^a	-1.60	-60.42 ^a	-9.05	-48.70 ^a
	0.01	0.57	0.00	0.19	0.00
Industry Effect	X	X	X	X	X
Year Effect	X	X	X	X	X
Num of Obs.	1,473	1,473	1,473	1,473	1,473
Goodness of Fit (P-Value)	0.00	0.00	0.00	0.00	0.00
R-Squared	0.3527	0.44	0.32	0.15	0.32

Table 25 Board Characteristics and CEO Log Total Compensation

Coefficient estimates for multivariate regression models are estimated using data of 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. The dependent variable, Log Total Compensation (in millions), is the logarithm of the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Star CEO is a dummy variable that equals one if the newly hired CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable: Model No.	Log Total Compensation		
	1	2	3
Star CEO		0.314 ^a	0.398 ^c
		0.00	0.05
Star CEO * Busy Board			0.141 ^c
			0.06
Star CEO * Long Industry Tenure			-0.098 ^b
			0.03
Star CEO * Board Size			0.024 ^a
			0.01
Star CEO * Board Independence			-0.126 ^b
			0.03
Busy Board	0.095 ^b	0.080 ^b	0.093 ^b
	0.01	0.03	0.04
Long Industry Tenure	-0.034	-0.039	-0.015
	0.36	0.29	0.73
Board Size	0.025 ^a	0.022 ^a	0.024 ^a
	0.00	0.00	0.00
Board Independence	-0.017	-0.050	0.046
	0.88	0.66	0.72
Firm Size (Log Sales)	0.406 ^a	0.364 ^a	0.364 ^a
	0.00	0.00	0.00
EBITDA / Assets	0.053	0.065	0.060
	0.90	0.71	0.73
Leverage Ratio	-0.540 ^a	-0.524 ^a	-0.526 ^a
	0.00	0.00	0.00
Book to Market Ratio	-0.414 ^a	-0.404 ^a	-0.405 ^a
	0.00	0.00	0.00
Stock Return	0.091 ^b	0.102 ^a	0.103 ^a
	0.01	0.00	0.00
Firm Risk	0.977 ^a	0.927 ^a	0.927 ^a
	0.00	0.00	0.00
Outside CEO	0.562 ^a	0.520 ^a	0.518 ^a
	0.00	0.00	0.00
Age	-0.020 ^a	-0.019 ^a	-0.019 ^a
	0.00	0.00	0.00
Industry Effect	X	X	X
Year Effect	X	X	X
Num of Obs.	2,936	2,936	2,936
Goodness of Fit (P-Value)	0.00	0.00	0.00
R-Squared	0.4068	0.4358	0.4361

Table 26 Board Characteristics and CEO Log Total Compensation Using Matched Sample

Coefficient estimates for multivariate regression models are estimated using data of 593 star CEO successions and matched 1,036 non-star CEO successions from ExecuComp dataset between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. Each star CEO is matched to a group of non-star CEOs who satisfy four criteria. First, the star and non-star CEO firms have the same first two-digit SIC code. Second, the size (Log (sales)) of the non-star CEO firm is within +30% of the size of star CEO firm. Third, the previous operating performance (EBITDA/ASSETS) of the non-star CEO firms is within +10% of star CEO firm. Finally, if the star CEO comes from outside/inside the firm, then the matched non-star CEOs must also come from outside/inside the firm. The dependent variable, Log Total Compensation (in millions), is the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Star CEO is a dummy variable that equals one if the new CEO is a star CEO. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable: Model No.	Log Total Compensation		
	1	2	3
Star CEO			0.379 ^b
			0.03
Star CEO * Busy Board			0.086 ^b
			0.02
Star CEO * Long Industry Tenure			-0.142 ^b
			0.03
Star CEO * Board Size			0.021 ^b
			0.04
Star CEO * Board Independence			-0.076 ^b
			0.04
Busy Board	0.140 ^a	0.118 ^b	0.149 ^b
	0.01	0.02	0.01
Long Industry Tenure	-0.007	-0.003	0.014
	0.88	0.95	0.81
Board Size	0.014 ^b	0.010	0.012
	0.05	0.14	0.14
Board Independence	-0.077	-0.046	-0.052
	0.61	0.76	0.78
Firm Size (Log Sales)	0.437 ^a	0.397 ^a	0.399 ^a
	0.00	0.00	0.00
EBITDA / Assets	-0.521	-0.347	-0.328
	0.18	0.37	0.40
Leverage Ratio	-0.593 ^a	-0.573 ^a	-0.576 ^a
	0.00	0.00	0.00
Book to Market Ratio	-0.526 ^a	-0.512 ^a	-0.510 ^a
	0.00	0.00	0.00
Stock Return	0.117 ^b	0.126 ^b	0.128 ^b
	0.04	0.02	0.02
Firm Risk	1.100 ^a	1.036 ^a	1.036 ^a
	0.00	0.00	0.00
Outside CEO	0.513 ^a	0.476 ^a	0.477 ^a
	0.00	0.00	0.00
Age	-0.018 ^a	-0.017 ^a	-0.017 ^a
	0.00	0.00	0.00
Industry Effect	X	X	X
Year Effect	X	X	X
Num of Obs.	1,473	1,473	1,473
Goodness of Fit (P-Value)	0.00	0.00	0.00
R-Squared	0.4645	0.4754	0.4758

Table 27 Board Characteristics and Star CEO Compensation Components

Coefficient estimates for multivariate regression models are estimated using data of 976 star CEO turnovers from ExecuComp dataset between 1990 and 2008. Total Compensation (in millions) is the sum of salary, bonus, long term incentive plan payouts, the value of restricted stock grants, the value of option grants, and any other annual pay (TCD1 in Execucomp) at the first fiscal year end under a new CEO. Cash Compensation is the sum of Bonus and Salary. Stock Compensation is the value of the value of stock grants (RSTKGRNT in Execucomp). Option Compensation is the value of options calculated based on Black-Schole model (OPTION_AWARDS_BLK_VALUE in Execucomp). Equity-based Compensation is the sum of Stock Compensation and Option Compensation. Star CEO is a dummy variable that equals one if the newly hired CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable:	Total Compensation	Cash Compensation	Equity-based Compensation	Stock Compensation	Option Compensation
Model No.	1	2	3	4	5
Busy Board	1,329.32 ^b 0.04	50.01 0.54	1,147.14 ^b 0.05	218.89 0.30	837.85 ^c 0.09
Long Industry Tenure	-1,003.47 ^c 0.09	0.08 1.00	-871.36 0.11	-657.34 ^a 0.00	-302.84 0.51
Board Size	98.47 ^b 0.02	11.57 ^c 0.06	91.74 ^c 0.08	35.25 ^b 0.05	41.63 0.28
Board Independence	-908.61 ^b 0.04	-393.48 0.12	-428.09 0.31	-0.44 0.40	-390.33 0.30
Firm Size (Log Sales)	2,749.91 ^a 0.00	343.79 ^a 0.00	2,179.15 ^a 0.00	460.30 ^a 0.00	1,708.26 ^a 0.00
EBITDA / Assets	-936.45 0.78	-6.36 0.99	-196.25 0.95	379.35 0.73	-86.22 0.97
Leverage Ratio	-9,772.28 ^a 0.00	-66.70 0.75	-9,534.70 ^a 0.00	-353.70 0.51	-9,170.16 ^a 0.00
Book to Market Ratio	-2,741.61 ^a 0.00	28.73 0.73	-2,815.01 ^a 0.00	-172.82 0.42	-2,630.89 ^a 0.00
Stock Return	429.38 0.54	275.19 ^a 0.00	361.11 0.57	77.13 0.74	414.57 0.45
Firm Risk	12,583.26 ^a 0.00	120.66 0.64	12,208.71 ^a 0.00	866.99 0.19	11,333.42 ^a 0.00
Outside CEO	3,723.49 ^a 0.00	92.70 0.25	3,838.66 ^a 0.00	1,376.64 ^a 0.00	2,436.47 ^a 0.00
Incoming CEO Age	-39.09 0.36	-1.20 0.83	-44.55 0.25	-12.73 0.37	-32.65 0.32
Industry Effect	X	X	X	X	X
Year Effect	X	X	X	X	X
Num of Obs.	893	893	893	893	893
Goodness of Fit (P-Value)	0.00	0.00	0.00	0.00	0.00
R-Squared	0.39	0.40	0.36	0.24	0.36

Table 28 Comparison of Equity Incentives between Star and Non-star CEOs

The table compares the mean and median differences in equity incentive at the first fiscal year end of their term between star and non-star CEOs. The sample is based on 3,314 CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Stock holdings and Stock holding Shares measure the value and the number of stocks owned by the CEO respectively. Option holding Shares are the number of unvested and vested option shares owned by the CEO. Option Holdings are the estimated aggregate value of in-the-money options owned by the CEO, calculated based on the difference between the exercise price of the options and the close price of the company's stock. Dollar Stock/Option Incentives are the dollar change in CEO stock/Option portfolio for a 1% change in stock price. Dollar Equity Incentives are the sum of Dollar Stock Incentives and Dollar Option Incentives. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Stock Holding Shares				
Mean	545.71	356.66	189.05 ^a	0.00
Median	93.17	58.59	34.59 ^a	0.00
Obs.	924	2,232		
Option Holding Shares				
Mean	946.86	458.63	488.23 ^a	0.00
Median	450.00	250.00	200.00 ^a	0.00
Obs.	924	2,232		
Stock Holdings				
Mean	14,947.41	8,508.19	6,439.22 ^a	0.00
Median	2,801.24	1,245.61	1,555.63 ^a	0.00
Obs.	924	2,232		
Option Holdings				
Mean	6,984.68	3,665.13	3,319.55 ^a	0.00
Median	1,539.00	622.36	916.65 ^a	0.00
Obs.	924	2,232		
Dollar Stock Incentives				
Mean	149.47	85.08	64.39 ^a	0.00
Median	28.01	12.46	15.56 ^a	0.00
Obs.	924	2,232		
Dollar Option Incentives				
Mean	214.74	93.84	120.91 ^a	0.00
Median	90.18	36.48	53.70 ^a	0.00
Obs.	924	2,232		
Dollar Equity Incentives				
Mean	413.49	188.37	225.11 ^a	0.00
Median	147.23	64.88	82.35 ^a	0.00
Obs.	924	2,232		

Table 29 Comparison of Equity Incentives between Outside Star and Non-star CEOs

The table compares the mean and median differences in equity incentives at the first fiscal year end of their term between outside star and outside non-star CEOs. The sample is based on 833 outside CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. An outsider CEO is one who joined the firm as an employee less than twelve months before the date of succession. There are 303 outside star CEOs and 530 outside non-star CEOs in our sample. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. Stock holdings and Stock holding Shares measure the value and the number of stocks owned by the CEO respectively. Option holding Shares are the number of unvested and vested option shares owned by the CEO. Option Holdings are the estimated aggregate value of in-the-money options owned by the CEO, calculated based on the difference between the exercise price of the options and the close price of the company's stock. Dollar Stock/Option Incentives are the dollar change in CEO stock/Option portfolio for a 1% change in stock price. Dollar Equity Incentives are the sum of Dollar Stock Incentives and Dollar Option Incentives. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Stock Holding Shares				
Mean	360.36	191.13	169.23 ^a	0.00
Median	71.18	30.00	41.18 ^a	0.00
Obs.	295	515		
Option Holding Shares				
Mean	960.78	509.45	451.33 ^a	0.00
Median	500.00	300.00	200.00 ^a	0.00
Obs.	295	515		
Stock Holdings				
Mean	8,485.33	3,166.64	5,318.69 ^a	0.00
Median	1,515.44	478.05	1,037.39 ^a	0.00
Obs.	295	515		
Option Holdings				
Mean	4,247.34	2,304.84	1,942.50 ^a	0.00
Median	467.50	223.00	244.50 ^a	0.00
Obs.	295	515		
Dollar Stock Incentives				
Mean	84.85	31.67	53.19 ^a	0.00
Median	15.15	4.78	10.37 ^a	0.00
Obs.	295	515		
Dollar Option Incentives				
Mean	163.84	73.19	90.65 ^a	0.00
Median	73.12	32.60	40.52 ^a	0.00
Obs.	295	515		
Dollar Equity Incentives				
Mean	266.45	106.00	160.45 ^a	0.00
Median	105.77	44.29	61.48 ^a	0.00
Obs.	295	515		

Table 30 Comparison of Equity Incentives between Inside Star and Non-star CEOs

The table compares the mean and median differences in CEO compensation level at the first fiscal year end of their term between inside star and outside non-star CEOs. The sample is based on 2,452 inside CEO successions from S&P1500 companies between 1990 and 2008. A star CEO is one who was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. An insider CEO is one who joined the firm as an employee more than twelve months before the date of succession. There are 655 inside star CEOs and 1,770 inside non-star CEOs in our sample. All the descriptive statistics are based on winsorized data. All observations are winsorized at the first and 99th percentiles, based on all firm-year observations. Stock holdings and Stock holding Shares measure the value and the number of stocks owned by the CEO respectively. Option holding Shares are the number of unvested and vested option shares owned by the CEO. Option Holdings are the estimated aggregate value of in-the-money options owned by the CEO, calculated based on the difference between the exercise price of the options and the close price of the company's stock. Dollar Stock/Option Incentives are the dollar change in CEO stock/Option portfolio for a 1% change in stock price. Dollar Equity Incentives are the sum of Dollar Stock Incentives and Dollar Option Incentives. P-values of two-tailed t tests and median tests for testing differences in population means and medians are reported after the difference in mean and median values. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

	Star CEO	Nonstar CEO	Difference	P-Value
Stock Holding Shares				
Mean	632.64	406.31	226.33 ^a	0.00
Median	101.82	66.74	35.08 ^a	0.00
Obs.	629	1,717		
Option Holding Shares				
Mean	941.31	446.32	494.99 ^a	0.00
Median	423.16	245.70	177.46 ^a	0.00
Obs.	629	1,717		
Stock Holdings				
Mean	17,978.11	10,110.34	7,867.77 ^a	0.00
Median	3,475.83	1,593.54	1,882.30 ^a	0.00
Obs.	629	1,717		
Option Holdings				
Mean	8,254.70	4,070.79	4,183.91 ^a	0.00
Median	1,932.56	832.65	1,099.91 ^a	0.00
Obs.	629	1,717		
Dollar Stock Incentives				
Mean	179.78	101.10	78.68 ^a	0.00
Median	34.76	15.94	18.82 ^a	0.00
Obs.	629	1,717		
Dollar Option Incentives				
Mean	238.36	100.00	138.37 ^a	0.00
Median	101.40	37.71	63.68 ^a	0.00
Obs.	629	1,717		
Dollar Equity Incentives				
Mean	482.45	213.08	269.37 ^a	0.00
Median	181.71	73.12	108.59 ^a	0.00
Obs.	629	1,717		

Table 31 Multivariate Regressions of CEO Equity Incentives

Coefficient estimates for multivariate regression models are estimated using data of 3,314 CEO turnovers from ExecuComp dataset between 1990 and 2008. Star CEO is a dummy variable that equals one if the newly hired CEO was not only cited by at least four WSJ news articles over the five years prior to succession, but also not overall considered negative by those articles. There are 976 star CEOs and 2,338 non-star CEOs in our sample. Busy Board (Dummy) is a dummy Variable that equals one if the average number of total board seats held simultaneously by independent directors is above the sample median (three). Board Industry Tenure (Dummy) is a dummy variable that equals one if the average years of industry-related experiences of independent directors are above the sample median (9.87 years). Board Size refers to the total number of board directors. Board Independence is measured by the number of independent board members divided by total number of directors. Firm size (Log sales) is the log of net sales in the fiscal year prior to succession. EBITDA/Assets are the ratio of EBITDA/Assets of the fiscal year prior to CEO succession. Stock Return refers to the one-year holding period stock return prior to CEO succession. Leverage Ratio is calculated as total liabilities divided by total assets. Firm Risk is the standard deviation of stock return over 60 months prior to CEO succession. Book to Market Ratio is the ratio of book value of equity divided by the market value of equity. Age refers to the age of the incoming CEO at the time of succession. Outsider CEO is a dummy variable that equals 1 if the incoming CEO joined the firm less than twelve months before the date of succession. Year Effect is a group of dummy variables, each of which represents a year between 1990 and 2008. Industry Effect is a group of dummy variables, each of which represents an industry by two-digit SIC code. P-values for two-tailed tests that the coefficient estimates equal zero are listed under the coefficient estimates. a, b, and c denote significance at the 1, 5 and 10 percent level, respectively.

Dependent Variable:	Dollar Equity Incentives: All CEO	Dollar Equity Incentives: Outsider CEO	Dollar Equity Incentives: Insider CEO
Model No.	1	2	3
Star CEO	76.67 ^c	79.03 ^c	61.70 ^c
	0.07	0.09	0.08
Star CEO * Busy Board	33.76	-35.24	102.78 ^c
	0.44	0.57	0.07
Star CEO * Long Industry Tenure	43.18	-96.27 ^c	76.95
	0.31	0.08	0.17
Star CEO * Board Size	13.44 ^a	9.68	14.03 ^b
	0.01	0.19	0.02
Star CEO * Board Independence	-144.37 ^c	-148.35	-136.56
	0.09	0.46	0.43
Busy Board	7.11	28.19	-8.79
	0.77	0.44	0.77
Long Industry Tenure	-14.77	53.72	-35.55
	0.54	0.14	0.23
Board Size	-1.04	13.00 ^b	-3.61
	0.77	0.04	0.40
Board Independence	-49.85	111.68	-75.86
	0.49	0.35	0.39
Firm Size (Log Sales)	69.99 ^a	13.49	85.71 ^a
	0.00	0.31	0.00
EBITDA / Assets	45.72	-69.72	132.38
	0.64	0.56	0.32
Leverage Ratio	-304.56 ^a	-290.14 ^a	-305.40 ^a
	0.00	0.00	0.00
Book to Market Ratio	-95.29 ^a	-61.68 ^c	-100.01 ^a
	0.00	0.05	0.00
Stock Return	47.01 ^b	60.77 ^b	44.16 ^c
	0.02	0.03	0.08
Firm Risk	108.09 ^c	191.64 ^b	57.78
	0.09	0.03	0.47
Outside CEO	-92.51 ^a		
	0.00		
Industry Effect	X	X	X
Year Effect	X	X	X
Num of Obs.	2,833	723	2,110.00
Goodness of Fit (P-Value)	0.00	0.00	0.00
R-Squared	0.19	0.24	0.21

7 References

- Adams, Renee, Heitor Almeida and Daniel Ferreira, 2005, “Powerful CEOs and Their Impact on Corporate Performance”, *Review of Financial Studies* 18, 1403-1432.
- Barber, B.M., Lyon, J.D, 1996, “ Detecting abnormal operating performance: the empirical power and specification of test statistics”, *Journal of Financial Economics* 41, 359-399
- Barber, B.M., Lyon, J.D., 1997, “Detecting long term abnormal stock return: the empirical power and specification of test statistics”, *Journal of Financial Economics* 43, 341-372
- Bebchuck, Cremers and Peyer, 2007, “CEO Centrality”, Working Paper
- Bebchuk, Lucian A. and Grinstein, Yaniv, 2005, “The Growth of Executive Pay”,
Oxford Review of Economic Policy, Vol. 21, pp. 283-303; Harvard Law and Economics Discussion Paper No. 510.
- Bergstresser, D., Philippon, T.,2006, CEO Incentives and Earnings Management”, *Journal of Financial Economics* 80, 511-529
- Black, F., Scholes, M., 1973, “ The pricing of options and corporate liabilities”, *Journal of Political Economy* 81, 637-654
- Natasha Burns, Simi Kedia., 2006, “The impact of performance-based compensation on misreporting”, *Journal of Financial Economics* 79 (1), 35-67
- Vidhi Chhaochharia, Yaniv Grinstein, 2009, “CEO Compensation and Board Structure”, *Journal of Finance* 64 (1), 231-261
- John Core, Wayne Guay, 1999, “The use of equity grants to manage optimal equity incentive levels”, *Journal of Accounting and Economics* 28 (2), 151-184

- John Core, Wayne Guay, 2002, “Estimating the Value of Employee Stock Option Portfolios and Their Sensitivities to Price and Volatility”, *Journal of Accounting Research* 40 (3), 613-630
- John E. Core, Wayne Guay, David F. Larcker, 2008, “The power of the pen and executive compensation”, *Journal of Financial Economics* 88 (1), 1-25
- Core, I., Holthausen, R., Larcker, D., 1991, “ Corporate Governance, Chief Executive Officer Compensation, and Firm Performance, *Journal of Financial Economics* 51, 371-406
- Marcia Millon Cornett, Alan J. Marcus, Hassan Tehranian, 2008, “Corporate governance and pay-for-performance: The impact of earnings management”, *Journal of Financial Economics* 87 (2), 357-373
- Jap Efendi, Anup Srivastava, Edward P. Swanson, 2008, “Why do corporate managers misstate financial statements? The role of option compensation and other factors”, *Journal of Financial Economics* 85 (3), 667-708
- Rüdiger Fahlenbrach, 2008, “Shareholder Rights, Boards, and CEO Compensation”, *Review of Finance* 13, 81-113
- Rüdiger Fahlenbrach, Angie Low, René M. Stulz, 2010, “Why do firms appoint CEOs as outside directors?”, *Journal of Financial Economics* 97 (1), 12-32
- Olubunmi Faleye, 2007, “Classified boards, firm value, and managerial entrenchment”, *Journal of Financial Economics* 83 (2), 501-529
- Michael Faulkender, Jun Yang, 2007, “Inside the black box: The role and composition of compensation peer groups”, *Journal of Financial Economics* 96(2), 257-270

- Nuno Fernandes, Eliezer M. Fich, 2010, "Does Financial Experience Help Banks during Credit Crises?", Working Paper
- A. Burak Güner, Ulrike Malmendier, Geoffrey Tate, 2008, "Financial expertise of directors", *Journal of Financial Economics* 88(2), 323-354
- Hall, B., Liebman, J., 1998, "Are CEOs really paid like bureaucrats?" *Quarterly Journal of Economics* 113, 653-691
- Michael C. Jensen, Kevin J. Murphy, 2008, "Performance Pay and Top-Management Incentives", *Journal of Political Economy* 98(2), 225-264
- John (Xuefeng) Jiang, Kathy R. Petroni, Isabel Yanyan Wang, 2010, "CFOs and CEOs: Who have the most influence on earnings management?", *Journal of Financial Economics* 96(3), 513-526
- Malmendier, Ulrike M. and Tate, G., 2008. "Financial Expertise of Directors", *Journal of Financial Economics* 88, 323-354
- Malmendier, Ulrike M. and Tate, G., 2009, "Superstar CEOs", *Quarterly Journal of Economics* 124(4), pp.1593ff
- Merton, R., 1973, "Theory of Rational Option Pricing", *Bell Journal of Economics and Management Science* 4, 141-183
- Minwen Li, 2010, "Selection of Star CEOs and Firm Performance", Working Paper, University of Maryland
- Angie Low, 2009, "Managerial risk-taking behavior and equity-based compensation", *Journal of Financial Economics* 92(3), 470-490
- David Yermack, 2006, "Flights of fancy: Corporate jets, CEO perquisites, and inferior shareholder returns", *Journal of Financial Economics* 80(1), 211-242

Yermack, D., 1995, "Do corporations award CEO stock options effectively?", *Journal of Financial Economics* 39, 237-269

Yermack, D., 1996, "Higher market valuation of companies with a small board of directors", *Journal of Financial Economics* 40, 185-211