TWO ESSAYS IN CORPORATE FINANCE

A Dissertation

by

JESSICA MARIE RUTHERFORD

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

December 2010

Major Subject: Finance

Two Essays in Corporate Finance

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ABSTRACT

Two Essays in Corporate Finance. (December 2010)

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CEO succession decisions are an important part of boards of directors' responsibilities to shareholders. I study two aspects of these decisions. First, I examine whether or not forced CEO departure decisions are based on information that the board of directors has, but external investors do not. I find that the proxy for private information in the forced CEO departure decision is positively related to abnormal returns at the forced CEO departure announcement. This is consistent with the hypotheses that prior to the departure announcement, investors underestimate the probability of forced CEO departure, and that private information revealed in forced CEO departure announcements has positive implications for firm value.

A second question related to boards of directors' CEO succession decisions concerns their decisions to participate in the external market for CEO talent. I find evidence suggesting that board decisions to participate in the external market for CEO talent are influenced by the costs and benefits of doing so. Specifically, cross sectional analyses of a proxy for industry homogeneity shows that this variable is positively related to external labor market participation, more standardized search processes, and a

higher likelihood that a newly appointed CEO will survive three years or more. These findings are generally consistent with prediction that when industries are more homogenous, external search costs are lower, and higher quality matches may be obtained. I also test hypotheses related to benefits of matching to individuals with industry specific skills versus general management skills. I find that for several alternative proxies for industry specific skill demand, there is a negative relation between demand for industry specific skills and the decision to hire externally outside the industry. This can be interpreted as support for hypotheses that cross sectional variation in benefits associated with industry specific skills leads to fewer CEO appointments outside the industry, while benefits of general management skills are associated with a higher likelihood of inter-industry CEO appointment.

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1. INTRODUCTION

Board decisions related to CEO successions may significantly impact shareholder wealth. This dissertation presents empirical analysis of two aspects of boards of directors' CEO succession decisions. First, I present analysis of the value effects of private information that is revealed in forced chief executive officer (CEO) departure announcements. A board that acts to maximize firm value should replace the CEO if the net benefit of doing so is positive after taking into account costs associated with severance pay, search costs, increased pay to the successor CEO, and possible disruption to business operations. If the market has unbiased expectations of both the net benefits of CEO replacement and the probability that the CEO will be replaced, then the announcement of a forced CEO departure is not expected to convey new information to external investors.

It is possible, however, that outside investors have less information about key facts than the firm's board has. First, even if relative performance measures clearly indicate that an individual firm is underperforming its peer firms; outsiders may face uncertainty about whether a different CEO could have done better managing that particular firm. Outsiders may therefore underestimate the net benefit of replacing the CEO and thus, underestimate the likelihood that a value-maximizing board would implement the replacement. Second, outsiders may be uncertain about whether

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This dissertation follows the style of the Journal of Financial Economics.

a firm's board of directors is willing to terminate a non-value-maximizing CEO. The two sources of uncertainty are not mutually exclusive. When a board decides to terminate a CEO, the uncertainty about these key facts is resolved.

Much of the existing literature related to CEO and other senior executive departure announcements focuses on mean returns. When expectations regarding forced CEO departures are unbiased, mean returns are not expected to be significantly different from zero. If information revealed in executive departure announcements results in mean returns that are significantly different from zero, then the location of the mean provides evidence that value relevant information has been released in the executive turnover announcement. The evidence provided by these studies is not conclusive. Weisbach (1988), Bonnier and Bruner (1989) and Denis and Denis (1995) find positive mean returns; Warner, Watts, and Wruck (1988) find that mean returns are not significantly different from zero; and more recently, Jenter and Kanaan (2008) find negative mean returns for a sample of CEO departure announcements.

I take an alternative approach, based on the argument that a significant cross-sectional relation between private information in CEO departure decisions and announcement period abnormal returns may exist, even if mean returns are not significantly different from zero. I use a novel proxy for private information in corporate decisions suggested by Prabhala (1997) and Li and Prabhala (2005) to examine the cross-sectional relation between private information used by the board in the CEO departure decision, and abnormal returns at the departure announcement.

I hypothesize that private information revealed in forced CEO departure announcements will be positively related to abnormal returns if the market underestimates the probability that the CEO will be replaced. I hand collect a data set of 1,129 CEO departure events during fiscal years 1997-2005. Using information from news announcements and proxy statements, I identify CEO departure and appointment announcement dates for each succession. I also identify the circumstances of the incumbent CEO's departure. Because the focus of the study is the information revealed in CEO departure announcements, CEO departures are classified based upon varying degrees of departure announcement information content. CEO departures are categorized as planned, unplanned voluntary, and forced. Planned successions are usually retirements, and are expected to convey very little new information. Unplanned voluntary CEO departures may convey some private information if some forced departures are incorrectly classified as voluntary due to firm discretion in announcing forced departures as "retirements." Forced departures are more likely to reveal private information about the net benefits of CEO replacement and internal governance strength.

I first estimate selection models. The selection models include characteristics of the CEO, firm size, operating and stock price performance, industry homogeneity, industry and stock market performance, and board structure variables as factors that may affect alternative CEO departure decisions. Two separate proxies for private information in the CEO departure decision are estimated. The first is based on the choice of forced CEO turnover rather than a no turnover reference category, after dropping voluntary CEO departures from the sample. I also model the choice of involuntary CEO

departures versus voluntary CEO departures, conditional on a CEO departure occurring. This allows estimation of a proxy for private information revealed in the choice of involuntary rather than voluntary CEO departures that is ignored when comparing involuntary departures to the no turnover reference category.

The empirical results indicate that CEO departure abnormal returns are positively related to private information revealed in the choice of forced CEO departures rather than the no turnover alternative, and the choice of a forced CEO departure rather than the involuntary departure alternative. The proxy for private information in the departure decision is not significantly related to departure announcement returns for voluntary departures.

CEO departures are often announced simultaneously with the replacement of the successor CEO. I partition the sample based on replacement CEO appointment announcements that are made on the same day as the incumbent CEO's departure announcement, and those that are announced on separate days. The positive relation between forced CEO departure announcement abnormal returns and the proxy for private information remains consistently statistically significant in the subsample of forced CEO departures with separate announcement dates. In the subsample of CEO departure announcements that are made on the same day as the replacement CEO's appointment announcement, the relation between the announcement return and the proxy for private information is still positive, but significance levels are less consistent. When the successor CEO's appointment announcement is made on the same day as the departure announcement, there is lower cross-sectional variation in abnormal

announcement returns. The lower cross-sectional variation of cumulative abnormal returns in the same day departure and appointment announcement subsample may be one reason why the relation between the proxy for private information and the abnormal announcement returns is statistically weaker in this subsample.

The positive cross-sectional relation between the proxy for private information and forced CEO departure abnormal returns provides evidence that the market underestimates forced departure probabilities prior to CEO departure announcements. The analyses do not distinguish between two possible reasons why the forced departure probabilities are underestimated. One possible reason is that external market participants underestimate the net benefit of replacing the CEO. The second is that investors have unbiased expectations regarding the net benefits of replacing the CEO, but underestimate the effectiveness of internal governance mechanisms needed to actually fire the current CEO and hire the more qualified replacement. These two explanations are not mutually exclusive within the sample, or within individual firms.

A second important aspect of boards of directors' CEO succession decisions includes decisions to participate in the external market for CEO talent rather than developing and promoting internal candidates. Heterogeneity of high level firm executives' experience and skill sets may significantly influence corporate decisions and firm value.[1]

[1] A number of recent papers investigate heterogeneity of CEOs in terms of rationality (Malmendier and Tate (2005, 2008), Goel and Thakor (2008)), ability (Baranchuk, MacDonald, and Yang (2008), Gabaix and Landier (2008)), and the match of the executives' skills or personality traits to particular firms (Parrino (1997), Allgood and Farrell (2003), Bertrand and Schoar (2003), Graham Harvey and Puri (2008), Nagel and Hardin (2008)).

Thus, understanding the processes and mechanisms by which heterogeneous individuals are matched to particular firms should be important. This analysis focuses on the decision by firms to participate in the external market for CEO talent versus promoting an internal candidate. Internal and external candidates differ in terms of the processes by which they are matched to the CEO position; and also in the complex match characteristics that obtain when the executive is appointed. Because the decision to search in the external market for CEO talent precedes the external search for the new CEO, usually signals the elimination of internal candidates, and results in a very different search process, understanding the decision to participate in the external market for CEO talent is a prerequisite for analysis of the complex match outcomes that obtain when a new CEO is appointed.

The empirical analysis related to firms' decisions to participate in the external market for CEO talent is based upon a framework integrating existing theories about costs and benefits of transacting in the external market for CEO talent that extends Coase's (1937) theory of the firm. While Coase's original theory assumes that resources exchanged in the external market are perfect substitutes for those that can be produced internally, in the case of human resources, this is not the case. Internal and external executives may differ significantly in terms of industry specific versus general management experience and expertise. Internal and external candidates may also have varying levels of expertise related to improving firm performance and making strategic choices in the face of changing external conditions.

CEO heterogeneity on these, and possibly other dimensions may increase the perceived benefits of searching in the external market for the best possible match. Firms may demand relatively high levels of particular skill sets or skill set combinations, and considering a wider set of possible candidates should increase the likelihood that the firm will find the best possible match, especially for skills such as general management skills or performance improvement experience that may be more easily transferred between firms. Thus, heterogeneity of individual skills and expertise may increase firm's incentives to participate in the external market for CEO talent. Expected benefits of considering external candidates may be large in terms of their effect upon firm value; therefore proxies for firms' demand for particular skills sets are expected to have a significant effect on the likelihood of external labor market participation.

At the same time, heterogeneity of individual candidates in the external market makes the search process more complex and therefore more costly. When the perceived benefits of hiring externally are low, ceteris paribus, search costs should be more likely to bind. Consequently, I predict that the proxy for external search costs will matter more in the subsample of firms with relatively low perceived benefits of participating in the external market for CEO talent.

A substantial body of evidence already exists related to potential benefits of external successions related to performance improvement, and several recent working papers analyze CEO firm matches in the context of changing external conditions. In this empirical analysis I focus on the importance of external hiring costs and benefits related to demand for industry specific versus general management skills in external CEO

succession decisions. Because general management skills are difficult to measure directly in terms of individual firms' demand or individual CEOs' supply, empirical work focuses on proxies for industry specific skill demand, which is expected to be inversely related to general management expertise demand.

Analysis of CEO replacement decisions is based on a dataset that includes 578 planned successions, 473 unplanned retirements, 57 CEOs who are hired away by other firms, 30 CEO departures related to health problems or death, and 449 forced departures[2]. The full sample includes 1,587 CEO succession events, 1,133 of which are internal. The remaining 454 are external successions.

Empirical results are broadly consistent with our hypotheses related to the costs and benefits of participation in the external market for CEO talent. A proxy for external hiring costs based upon industry homogeneity suggested by Parrino (1997) does influence the likelihood of an external hire, conditional upon controls for external hiring benefits. While the proxy for industry homogeneity is unrelated to external hiring decisions in the full turnover sample, firms operating in more homogenous industries are more likely to participate in the external market for CEO talent when implementing routine planned successions. The higher level of industry homogeneity may make it easier for firms to match to individuals who have expertise that is relevant to the hiring firm's production technology and product markets when hiring externally, but within the industry.

[2] Based on Parrino's(1997) method of identifying involuntary CEO departures.

I provide additional analysis of how a higher level of industry homogeneity makes external CEO searches less costly by focusing on external search mechanisms. I create an indicator of firm's self-reported hiring of an executive search firm to aid in the CEO search process, and find that firms in more homogenous industries are more likely to hire search professionals to aid in the external search. This is consistent with the expectation that when firms seek to match to external candidates based on industry specific skills and expertise, the dimensions on which the firm seeks to match are more easily observed by outside consultants when the firm operates in a more homogenous industry. Under these circumstances, the board can outsource some search responsibilities to professionals who specialize in the executive search process.

Third, when firms do participate in the external market for CEO talent, those operating in more homogenous industries are more likely to have the newly hired CEO survive for three years or more. This provides support for the prediction that firms operating in industries that have more similar production technology and product markets are able to make higher quality external matches, which result in fewer repeat turnovers early in the new CEO's tenure.

With regards to external hiring benefits derived from variation in industry specific versus general management expertise, I hypothesize that firm focus, a proxy for firms' demand for industry specific skills, will be negatively related to the likelihood of hiring outside the industry. Consistent with this, the firm focus measure is negatively related to the choice of an external inter-industry succession rather than an internal

succession, and also negatively related to the choice of hiring outside the industry rather than inside the industry, conditional upon an external succession being chosen.

Additionally, I hypothesize that poor performance in terms of basic operating performance differs from poor stock price performance in that problems with operating performance require focus on firm's basic operations in product markets and production technology; while problems with stock price performance may require modifications to firm strategy that are not directly related to the firm's core operations. Therefore, industry adjusted operating performance is expected to be negatively related to external hiring within the industry, and unrelated to external hiring outside the industry. Holding stock price performance constant, industry adjusted operating return on assets is negatively related to the likelihood that the firm will hire externally within the industry rather than promoting from within. It is unrelated to the likelihood of hiring externally outside the industry. Moreover, conditional on an external succession being chosen, the likelihood of an inter-industry succession being chosen over an intra-industry succession is positively related to industry adjusted operating performance. These results suggest that poor operating performance is a problem that requires industry specific experience on the part of the incoming CEO.

Finally, I present supplementary evidence related to firms' demand for industry specific versus general management skills and inter-industry hiring decisions by collecting information on newly hired CEOs' skills and expertise as reported by the hiring firm. This analysis is based upon the subsample of firm years in which external CEO appointments occur. Firms appointing new CEOs from outside the industry are

more likely to use keywords related to general management skills; while firms appointing new CEOs within the industry are more likely to use keywords related to technology, operations, and industry experience when describing the new CEO's qualifications for the new job. These results also provide support for the hypothesis that firms appointing new CEOs from within the industry are more likely to be matching on industry specific skill sets, while firms appointing new CEOs from outside the industry are more likely to match on general management skills.

The remainder of this dissertation is organized as follows: Sections 2 through 6 present the motivation, empirical evidence, and discussion related to the analysis of private information used by the board in CEO replacement decisions. Sections 7 through 10 present the background, empirical evidence, and discussion of results related to the costs and benefits of participating in the external market for CEO talent. Section 11 concludes.

2. BACKGROUND, HYPOTHESES, AND EMPIRICAL APPROACH TO THE ANALYSIS OF PRIVATE INFORMATION IN CEO REPLACEMENT DECISIONS

2.1 Motivation and hypotheses

When the board possesses private information about a CEO's performance and possible benefits of replacing the CEO that external investors do not have, CEO departure announcements may have a significant effect upon stock price. This effect is expected to be positive if boards force out CEOs only when the net benefits of doing so are positive. CEO turnovers involve costs associated with severance pay to the departing CEO, search costs, and possibly also disruption to business operations during the succession, and higher total compensation may be required to attract a replacement CEO. Boards that act to maximize firm value should initiate involuntary CEO departures when they expect that the higher value generated by the replacement CEO exceeds what would have been generated by the incumbent, after taking into account turnover costs.

Assessing whether or not another individual could generate higher firm value at any given firm may be difficult, given that possible replacement CEO's performance can only be evaluated in other positions at the same firm, or in other firms entirely. Relative performance evaluation may provide evidence that a firm as a whole is underperforming benchmark firms; but some judgment is still needed to determine whether or not the firm's performance would have been different had another CEO been in place. Because

boards have opportunities to acquire highly specific information about a CEO's decisions, activities, and the rationale behind the decisions and actions taken, they may possess private information regarding the extent to which poor firm performance is directly attributable to the current CEO. If external analysts and investors face information asymmetry problems with regards to the benefits of replacing the CEO, they may underestimate both the benefit of replacing the CEO, and the probability that he will be replaced. Under these conditions, the announcement that the board has chosen to replace the CEO will convey new information with positive value implications to the market.

It is possible, however, that investors might underestimate the probability of CEO replacement even if public information clearly indicates that poor relative performance is directly attributable to the CEO, and that possible replacements could do better. If investors believe that the net benefits of CEO replacement are positive, but doubt the board's ability or willingness to replace the CEO, then the announcement of a forced CEO departure may still convey new information to the market[3]. Prior to the departure announcement, positive information about the net benefits of CEO replacement would not be incorporated into stock price, because of doubt that such a replacement was likely to occur. This is an alternative reason why external investors might be positively surprised by forced CEO departures.

Value relevant private information released in forced CEO departures may have a significant cross-sectional relation to abnormal announcement returns even if mean

[3] Hermalin and Weisbach (1998) also discuss this type of information asymmetry.

returns are not significantly different from zero.[4] I therefore formulate hypotheses focusing on the cross sectional relation between stock price reactions to CEO departure announcements and private information in the CEO departure decision, conditional on publicly available information prior to the turnover event. The empirical approach and the construction of the proxy for private information are described in Section 2.2.

1) *External investors do not have full access to information that the board has in making CEO departure decisions. They therefore underestimate the probability of forced CEO departures occurring because:*
   a) *Net benefits of CEO replacement are underestimated and/or*
   b) *Internal governance strength is underestimated*

   A proxy for private information in the forced CEO departure decision is positively related to abnormal returns at the announcement
2) *Information regarding net benefits of CEO replacement is public information and the true probabilities of forced CEO departures are publicly known. The proxy for private information is not significantly related to abnormal returns at the departure announcement*

Past event studies of executive turnover announcements often include executives other than CEOs, and time periods of the turnover samples studied range from the late 1960s to the early 2000s.

[4] Warner Watts and Wruck (1988) employ tests for differences in variance between subsamples of an executive turnover announcement abnormal returns sample. This tests for whether a stock price effect exists, without requiring that a positive or negative effect dominates at the mean.

Earlier studies of CEO turnover are often based upon 500 large firms included in the Forbes magazine surveys, while more recent studies are more likely to focus on the S&P 1500. The way in which forced and voluntary departures are defined varies, and most studies do not control for departure announcements that are made on the same day as the successor CEO's appointment announcement, and those that are made on separate dates. This makes direct comparison of results difficult. With this caveat in mind, I present a brief overview of prior executive departure event studies.

Several studies find that executive departure announcement returns are either positive, or not significantly different from zero. Warner, Watts, and Wruck (1988) examine top management changes including CEOs, chairmen, and presidents. Planned retirements excluded from the sample. He finds that mean returns are not significantly different from zero. Bonnier and Bruner (1989), and Denis and Denis (1995) examine top management changes in financially distressed firms, and forced departure circumstances, respectively. Both find that the departure announcements have positive abnormal returns. Likewise, Weisbach (1988) finds that CARs are marginally positive for a sample of 269 CEO resignations. The positive mean result is largely driven by the subsample of firms with outsider dominated boards. Evidence of positive mean stock price reactions for a sample of CEO departures that are likely to be firm-initiated is consistent with the hypothesis that positive private information is revealed when the CEO resigns.

More recently, Jenter and Kanaan (2008) examine a recent sample of forced CEO departures, and find that stock price reactions to CEO dismissals are negative. This

suggests that at the mean, the market receives new and unfavorable information regarding firm value at the forced departure announcement. Chang, Dasgupta, and Hilary (2008) examine CEO departures, and find that the stock price reaction to the departure announcement is negatively related to the firm's past performance, and to the future career progress of the executive. These results are generally consistent with the hypothesis that when managers with good performance leave unexpectedly, the departure announcement is a negative surprise. This is an alternative reason why stock price reactions to CEO departures may be negative; and it is therefore important to distinguish between forced departures and other unexpected CEO departures that may have negative value implications for entirely different reasons.

In summary, the empirical evidence focusing on mean announcement returns is mixed. Earlier studies that focus on CEO and other top executive departures that are described as forced, or are more likely to be forced, generally find mean abnormal returns are positive; however Warner Watts, and Wruck (1988) find that mean returns are not significantly different from zero; and Jenter and Kanaan's more recent study finds negative mean abnormal returns.

2.*2 Empirical approach*

The existing literature does control for firms' self selection into the turnover sample by making a distinction between forced and voluntary turnovers; however, private information in the self selection decision has not been examined in the cross-section. Because the focus of this study is revisions to investor's expectations, I examine CEO succession event announcement returns in the context of Prabhala's (1997)

selection model. This model assumes that firm decisions may be partially anticipated by the market prior to the announcement event based upon publicly available information. To the extent that value-relevant decisions are not fully expected ex ante, corporate decision announcements reveal new information to the market. Li and Prabhala (2007) extend the discussion of the self selection decision in event studies, arguing that the use of a Heckman two step procedure that includes a non-selection hazard in the outcome equation can be interpreted as a test for private information.

When the announcement of a forced CEO departure is made, it may reveal several things. The first piece of information is the board's assessment that the value contribution of the incumbent is lower than that of the expected replacement, net of turnover costs. Additionally, it is possible that the forced departure announcement reveals private information about internal governance strength; in particular, the board's ability or willingness to act on information and force out a low-value CEO. The combined effect of these two possible private information components is expected to be positively related to abnormal returns.

Creating the proxy for private information in the CEO departure decision involves first estimating predicted probabilities of CEO departures based upon characteristics of the incumbent CEO, firm, and industry. The predicted probabilities are then used to estimate the inverse Mills' ratio, or non-selection hazard. This is an inverse, non-linear transform of the predicted probability of CEO departure. For the subsample of firms self-selecting into a given event, in this case forced CEO replacement, the non-selection hazard is equivalent to the model residual, and is defined as the probability

distribution function evaluated at the predicted probability, divided by the cumulative distribution function evaluated at the predicted probability. As the predicted probabilities approach 1, the non-selection hazard approaches zero.

In the second step, the non-selection hazard enters the cross-sectional abnormal return regression as a covariate. The test of the relation between the departure announcement abnormal return and private information in the departure decision is the test for significance of the non-selection hazard in the outcome equation. There are two alternative selection models used to estimate the proxy for private information. The first estimates the probability of forced CEO departure assuming that the alternative outcome is "no turnover." CEO turnover events that are not classified as forced are dropped from the sample. This approach ignores information revealed to the market by the firm's choice of a forced departure rather than a voluntary departure. Therefore, I also estimate a selection equation that produces a non-selection hazard based on selection of forced departure rather than voluntary CEO departure, conditional on a turnover occurring.

Neither of these two approaches controls for the full range of choice outcomes that firms face. In order to assess possible differences in predictions based upon models with binary choice outcomes, and predictions based upon models that allow for multiple choice outcomes, I compare results of multinomial selection models to binomial models before presenting second stage regression results. The multinomial regression includes planned departures, unplanned voluntary departures, and forced CEO departures; these are compared to the no turnover reference category.

Examination of determinants of alternative CEO turnover choices is important because the proxy for private information is based upon the extent to which a particular CEO departure choice is not predicted or explained based upon publicly available information, and binomial models do not incorporate information about alternative CEO departure types that the firm did not choose. Results of the multinomial model are also helpful in understanding differences between the voluntary and involuntary successions that are used in the models of selection into the forced turnover sample conditional on a CEO turnover event occurring. More detailed discussion of planned, unplanned voluntary, and forced CEO departures are presented in section 4 below.

I also partition the forced CEO replacement sample based on the timing of CEO departure and appointment announcements. In the existing literature, none of the studies focusing on CEO departure announcement abnormal returns controls for departure announcements in which the successor is announced on the same day as the departure of the incumbent, and those that are announced separately from the appointment of the successor.[5] This may influence results because a forced CEO departure announcement implies that the firm has committed to replacing the CEO, but does not always reveal the replacement CEO simultaneously. In cases where release of information about the replacement CEO is delayed, greater uncertainty may remain with regards to the net benefits of replacement and private information revealed in the announcement may be of higher importance.

[5] Reinganum (1985) focuses on executive appointment announcements and does control for same day announcements.

3. DATA AND VARIABLE CONSTRUCTION FOR THE ANALYSIS OF PRIVATE INFORMATION IN CEO REPLACEMENT DECISIONS

To generate the sample, I identify CEO turnover events in the fiscal years 1997-2005 in Standard & Poor's ExecuComp database. Information on CEO departure circumstances is obtained from a search of Lexis-Nexis news announcements related to the turnover, and proxy statements. Based on the news announcements and proxy statement data, I identify announcement dates for the announcement of the incumbent CEO's departure, and the announcement of the successor CEO's appointment.

I identify firms that have a succession plan in place prior to the departure announcement, departures caused by death or poor health, departures in which the outgoing CEO was hired away, and forced departures. CEO successions are classified as planned if news announcements indicate that the succession is planned, or if the successor is announced at least 6 months before the announcement of the incumbent CEO's departure. CEO departures are classified as forced if they are described as forced in news announcements. CEO departures that are not described as forced may be classified as such based upon Parrino's (1997) method of identifying firm-initiated CEO departures: (1) the departure was not announced at least 6 months in advance, (2), the departing CEO does not leave for reasons related to health, death, or to accept another position elsewhere, and (3) the departing CEO is under the age of 60 and therefore less likely to be retiring. CEO successions that are not classified as planned or forced are included in the unplanned voluntary category. CEOs who are described as interim

appointments are excluded from the sample. CEO turnovers that occur because of poor health or death, because of mergers, or having the incumbent CEO hired away by another firm are also excluded from the sample.

Accounting data are obtained from the Compustat Annual data base. Stock price data are from the Center for Research in Security Prices (CRSP). I obtain governance data from RiskMetrics. After merging the turnover data with data from Execucomp, Compustat, RiskMetrics and CRSP, and eliminating observations with missing data, a sample of 1,129 CEO succession events remains. The final sample consists of 449 planned successions, 324 unplanned voluntary successions, and 356 forced CEO departures.

Variables included in the analysis are those that existing literature has shown relevant to CEO departure decisions, and can generally be categorized as measuring CEO, firm, industry, and market characteristics. All variables that are expressed as dollar values are inflation adjusted to constant 2005 dollars. Industry averages and medians with the exception of the industry homogeneity proxy are based upon the full Compustat universe of firms, and are matched to the sample firms by 3 digit SIC code and year. Discussion of the significance of these variables in CEO departure equations is presented in Section 4.

Using data from Execucomp, news announcements, and proxy statements, I determine the age and tenure of the incumbent CEO. CEO age tends to be positively related to the likelihood that a CEO will retire from the CEO position, and is therefore a strong predictor of voluntary CEO departures. CEO tenure may capture entrenchment of

the CEO; but may also be positively correlated with the CEO's experience or expertise that is valuable to the firm. Total assets are a measure of firm size. Firm size is not a common covariate in CEO departure analyses. This is included based on empirical evidence that firm size affects the marginal product of CEO effort (Rajan and Wulf, 2006), or ability (Baker and Hall, 2004). Larger firms may perceive relatively high net benefits of CEO replacement associated with marginal increases in CEO effort, ability, or match quality.

Three year change in operating returns on assets (OROA) is included as a measure of operating efficiency, it is defined as the difference between sales less operating expenses, divided by total assets in the year prior to the CEO departure, and the same measure three years prior to the CEO departure. The operating performance measure is winsorized at the 1st and 99th percentiles, and is industry adjusted by subtracting three digit SIC code medians. I control for stock price performance in the six months prior to the CEO departure announcement with market model buy and hold abnormal returns (BHARs). In order to avoid an overlap of the announcement period cumulative abnormal return (CAR) estimation period with the stock price performance measure, we use an estimation period that ends in the seventh month prior to the CEO departure announcement for both the six month BHAR and the announcement period CAR for the CEO turnover firm years. For non-CEO turnover firm years, the buy and hold abnormal returns (BHARs) are calculated for months June-November of the prior fiscal year. Buy and hold abnormal returns are also winsorized at the 1^{st} and 99^{th} percentiles.

I replicate Parrino's (1997) proxy for industry homogeneity in order to control for the precision of signals received from relative performance measures[6]. The proxy for industry homogeneity is based upon CRSP data. In this case industry classifications are based upon 2 digit SIC codes, and the homogeneity proxy is matched to the sample based on 2 digit SIC code and year. The industry homogeneity proxy captures the proportion of variation in monthly stock prices that is explained by two digit industry stock price variation. Industries that are more homogeneous are those whose individual firm stock prices tend to move together with the industry average stock price. This is assumed to be the result of more homogeneous production technology and product market characteristics within industry groupings. In more homogenous industries, exogenous shocks are expected to have a more homogenous effect upon stock price performance of firms within the industry. This results in more precise evaluations of relative performance. While this proxy is based upon stock prices, the industry homogeneity it is intended to capture should in theory affect the relative precision of information derived from accounting performance measures as well as stock price performance.

Following Eisfeldt and Kuhnen (2010) I include industry average return on assets (ROA) as a determinant of CEO departures motivated by the demand for different skill sets during changing industry conditions.

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[6] I follow Parrino's (1997) methodology in constructing this measure. In particular, I calculate the homogeneity proxy only for industries that have at least 35 firms in the two digit SIC group. For industries that have more than 50 firms, a random selection of 50 firms is chosen to calculate the homogeneity proxy. This ensures that variation in this variable is not significantly affected by the number of firms in the industry.

Eisfeldt and Kuhnen (2010) provide evidence that industry profitability (ROA) is negatively related to both forced and voluntary CEO departures. They theorize that changing industry conditions affect the value generated by the incumbent CEO. The required CEO skill set changes in industry downturns, leading to increased forced CEO departures as firms seek to match to individuals who have the skills required to navigate changing industry conditions. Value weighted buy and hold market returns are included to control for broader economic conditions. These are based on the CRSP universe, and are estimated over the six months preceding the CEO departure announcement. The analyses also include controls for firms operating in regulated industries. Regulated industries include financial firms whose primary SIC codes are between 6000 and 6999, and utilities with primary SIC codes between 4900 and 4999.

I include four board related variables. These are all based on RiskMetric's board and governance data, and are measured in the fiscal year prior to the CEO departure announcement. The first is the percentage of independent directors on the board. This is intended to control for the board's bargaining position with the CEO.[7] Second is the average age of board members; this is included as a control for board members' career concerns. Older board members may be less concerned with their reputations as they have less time left to acquire additional board seats, and fewer years to retain existing board memberships. An indicator that the board is classified is used as a measure of

[7] See papers suggesting that independent boards provide stronger internal governance: Choi, Park, and Yoo (2007), Anderson, Mansi, and Reeb (2004), Ryan and Wiggins (2004), Klein, (2002), Cotter, Shivdasani, and Zenner (1997), Agrawal and Knoeber (1996), Beasley (1996), Weisbach (1988).

entrenchment that may stem from protection against the market for corporate control. [8]

Board size is included as an additional measure of board effectiveness.[9]

[8] Some recent papers indicate that board classification entrenches management: Bebchuk, Cohen, and Ferrell (2008), Guo, Kruse, and Nohel (2008), Faleye(2007), and Bebchuk, Coates and Subramnian (2002).

[9] See Yermack (1996), and Eisenberg, Sundgren, and Wells (1998) for empirical evidence related to board size and board effectiveness.

4. DETERMINANTS OF CEO REPLACEMENTS

Tables of empirical results related to the analysis of private information in forced CEO replacement decisions are presented in Appendix A These tables are identified as Tables A-1 through A-11, and are referenced in the discussion below by these designations.

4.1 CEO departure types

Summary statistics of alternative CEO departure outcomes and CEO, firm, board, and industry characteristics are presented in Table A-1.

4.1.1. Planned successions

Planned successions account for 39.77% of the CEO turnover sample. Most planned successions can be described as planned retirements. Many firms begin planning the succession years in advance of the CEO's expected retirement. Evidence from news announcements indicates that planned successions may be announced as early as three years prior to a CEO's actual departure. It is more common for succession plans to be publicly announced in the year prior to the turnover.

Generally, at the time the succession plan is announced, the CEO elect is given increased responsibilities. CEO elects are often given complete responsibility for overseeing the firm’s day to day operations at the time the succession plan is announced, as well as increased exposure to the media and analysts covering the firm. Because this transition period is observable by the market, information regarding the CEO-elect’s expected value contributions will slowly be incorporated into stock prices during the

transition period. Consequently, it is likely that relatively little private information is revealed when planned CEO departures are announced.

4.1.2. Unplanned voluntary successions

Unplanned voluntary successions include all CEO departures that cannot be classified as either planned succession or forced departures using publicly available data. Unplanned voluntary departures make up 28.70% of the CEO turnover sample. It is possible that some CEO departures that are actually forced are not correctly categorized as such. These may be included in the unplanned voluntary category. Untabulated tests for differences of means and medians show that operating and stock price performance measures are lower in the unplanned voluntary sample than they are in the planned succession subsample. It is therefore likely that some of the departures that are classified as unplanned voluntary may have been initiated by boards in response to poor performance. However, the mean age for CEOs departing in unplanned voluntary successions (62.12 years) is very similar to that of CEOs departing in planned successions (62.10 years); and it is therefore probable that a significant portion of these departures truly are retirements without succession plans. These departures may have been anticipated by the market based on the incumbent CEO's advancing age.

4.1.3 Forced CEO departures

Approximately 32% of the CEO succession sample is made up of forced CEO departures. The mean age for CEOs who are forced out is 54.49 years. Because the forced departures are announced suddenly, and usually involve CEOs who are under normal retirement age, these are more likely to reveal new information to external

investors. Additionally, both operating and stock price performance measures are lowest in the forced CEO departure subsample. Forced CEO departure announcements are therefore more likely to be associated with revisions to investor's expectations of forced CEO departure probabilities, net benefits of CEO replacement, and the firm's internal governance effectiveness.

4.2 Multinomial and binomial analysis of CEO succession decisions

This section presents multivariate analysis of CEO departure determinants for the planned, unplanned and involuntary succession samples. As I discuss earlier, an understanding of publicly available information that is significantly related to CEO departure outcomes is important when the non-selection hazard is interpreted as a proxy for private information. Furthermore, when implementing the Heckman procedure to analyze information effects in forced CEO departure announcement abnormal returns, there are a number of possible model specifications. The Heckman procedure allows for a binomial selection model, but in reality there are more than two CEO departure/retention alternatives. In order to compare forced CEO departures to one single alternative choice, voluntary CEO departures may be dropped from the sample, included in the "no turnover" sample, or defined as the alternative outcome after deleting firm years in which no turnover occurred. Therefore, I present alternative specifications of CEO departure outcomes, in order to assess the validity of different empirical approaches and the robustness of our results.

4.2.1 Multinomial analysis of planned, unplanned voluntary, and forced CEO successions

Table A-2 presents estimated coefficients of a multinomial logit regression of alternative succession decisions versus a "no turnover" reference category. Standard errors are robust, and are adjusted for clusters in 3 digit SIC codes. The age of the incumbent CEO is significantly positively related to the likelihood that the firm will choose a planned succession or unplanned voluntary succession rather than retaining the CEO for an additional year. This is consistent with the assertion that the majority of the voluntary successions are retirements. CEO age is unrelated to the likelihood of forced succession being chosen over the no turnover alternative.

CEO tenure is unrelated to the planned succession outcome, and negatively related to the choice of an unplanned voluntary or forced turnover occurring rather than the no turnover alternative. These results related to age and tenure are generally consistent with existing evidence. The negative relation between forced CEO departure and CEO tenure may be explained by CEO entrenchment, as longer-tenured CEOs become more powerful and difficult to oust. [10] It may also be explained by the fact that CEOs who are poor matches to the firm are identified and dismissed earlier in their tenure. [11]

[10] See Hermalin and Weisbach (1998) for theoretical analysis of this.
[11] Allgood and Farrell (2003) provide related empirical evidence.

The natural log of total assets is significantly positively related to the choice of a planned succession; and is not related to the likelihood of unplanned voluntary or forced CEO departures being chosen over the no turnover reference category. The positive relation between firm size and the likelihood of choosing a planned succession rather than the no turnover alternative may caused in part by the fact that larger firms tend to appoint older and more experience individuals to the CEO position. The insignificant relation between firm size and forced CEO departures does not provide evidence consistent with the prediction that larger firms have higher incentives to replace underperforming CEOs due to higher marginal product of CEO effort, ability, or match quality.

Industry adjusted three year change in operating ROA and six month market model BHARs are unrelated to the choice of planned CEO departures and unplanned voluntary CEO departures. The likelihood of forced CEO departure is negatively related to both the industry adjusted operating ROA and lagged six month BHARs. This is consistent with prior evidence suggesting that CEOs are more likely to be fired following poor performance.

Following Parrino (1997) I include a proxy for industry homogeneity to control for the relative precisions of relative performance evaluation. The proxy for industry homogeneity is not significantly related to the likelihood of any CEO departure type being chosen over the no turnover alternative outcome. This is not consistent with Parrino's (1997) earlier findings based on a sample of turnovers in Forbes 500 firms. Our time period is much later than Parrino's, and our CEO turnover sample is based on

firms in the S&P 1500. It is possible that over time, alternative factors affecting forced CEO departures have become more important.

Following Eisfeldt and Kuhnen (2010), I include industry average ROA to control for industry conditions. I do not find a significant relation between industry average ROA and the likelihood of planned, unplanned voluntary or forced CEO departures. There is, however, find a significant negative relation between six month market buy and hold returns and any CEO departure type being chosen over the no turnover alternative. This result is generally consistent with the existing literature and may be due to firm's need to match to different CEO skill sets during market downturns, or the unwillingness of incumbent CEOs to remain in office during tough times. Being in a regulated industry is negatively related to the likelihood that the firm will choose an unplanned voluntary departure or forced CEO departure rather than the no turnover alternative. Industry regulation is unrelated to the choice of planned CEO departures.

The percentage of independent directors is positively related to the likelihood of planned CEO departures, and is not significantly unrelated to unplanned voluntary and forced CEO departures. This dataset extends beyond the introduction of new legislation related to board independence; and may therefore have reduced variation in board independence in the later part of our sample period. It is also possible that over time more independent boards have enacted stronger guidelines for planning CEO successions; this may also contribute to the lack of significance of board independence in the choice of forced CEO departures rather than the no turnover alternative. Because

there are no earlier studies focusing on board independence and succession planning, this result cannot be directly compared with existing evidence.

Board age is negatively related to the likelihood of any type of CEO departure occurring. This may be due to the fact that older boards have fewer reputation and career concerns; and therefore do not concern themselves with CEO departures in general. It is also possible that older boards are more experienced, do a better job of appointing, advising, and monitoring; and as a result implement fewer CEO turnovers of any kind.

Board size is positively related to the likelihood of planned successions occurring, but not the likelihood of unplanned voluntary or forced CEO departures. This result is generally not consistent with earlier evidence showing that smaller boards are more effective monitors than larger boards. Board size may capture some aspect of the complexity of the firm's operations that is not explained by the proxy for firm size. [12] This operational complexity may require the appointment of older, more experienced CEOs who are closer to retirement age, and subsequently result in more frequent planned successions. Firms with classified boards are more likely to implement planned CEO successions, rather than retaining the incumbent CEO for an additional year. This result is not consistent with evidence from earlier time periods, suggesting that board classification may protect inferior managers from being forced out (Dezso, 2007; Faleye 2007).

[12] See Coles Daniel and Naveen (2008) for evidence that larger and more diversified firms benefit from having larger boards.

In summary, I find that forced CEO departures are more likely to occur earlier in a CEO's tenure, when operating and stock price performance are poor, in unregulated industries, and when market returns are lower. These results are generally consistent with existing empirical evidence. I also find that the likelihood of forced CEO departures is not significantly related to a proxy for industry homogeneity, board independence, size, and classifications status, but it is negatively related to the average age of board members. These results are somewhat different from existing empirical evidence.

4.2.2 Binomial logit analysis of planned, unplanned voluntary, and forced CEO successions

Table A-3 presents results of binomial logit regressions for planned, unplanned voluntary and forced CEO successions compared to the no turnover reference category. In each case, alternative CEO departure types are dropped. In presenting these results, I am primarily interested in differences between the binomial model estimates, and multinomial regression estimate that are discussed in section 4.2.1 above. Robust standard errors are adjusted for clusters in two digit SIC codes. Results for forced CEO departures based on a binomial logit are very close to those produced by the multinomial logit. Variables that are significant in the multinomial model are also significant in the binomial logit regressions, and the signs and magnitudes of the estimated coefficients are very similar.

4.2.3 Binomial probit analysis of planned, unplanned voluntary, and forced CEO successions

This section presents a comparison of binomial probit regression results to those of the binomial logit regressions. Binomial probit results are presented in Table A-4. In the forced CEO departure regression, the estimated coefficients for six month market model BHARs and the six month market buy and hold return in the probit model are less than half as large in magnitude as the logit estimates for these variables. Probit estimates for coefficients of CEO tenure, operating performance, and board age are also smaller in magnitude than those of the logit models.

In brief, when I compare the binomial probit regression results to binomial logit models, there are some differences in the magnitude of estimated coefficients. The estimated coefficients are very similar in terms of magnitude when we compare the multinomial logit to binomial logit. In general, I conclude that ignoring information included in voluntary CEO departures does not appear to significantly affect the relation between forced CEO departure likelihoods and CEO characteristics, firm size, performance, industry average profitability, and board characteristics. Significant differences between the first stage probit of the Heckman models and the multinomial estimates is largely driven by differences between the probit and logit specification, and not by differences between multinomial and binomial specifications.

4.2.4 Logit and probit regressions of involuntary versus voluntary succession outcomes

Table A-5 presents results of logit and probit regressions estimating the likelihood of a forced succession occurring rather than a voluntary succession,

conditional on a turnover occurring. The results indicate that relatively few variables are significantly related to the choice of forced departure in this specification. For both models, the age and tenure of the incumbent CEO are negatively related to the likelihood of choosing a forced departure rather than voluntary departure. Firm operating and stock price performance, and market returns are also negatively related to the likelihood of choosing a forced CEO departure. Probit estimates of coefficients for all these variables are smaller in magnitude than the logit estimates. Interestingly, though relatively few variables are related to the choice of forced departure when compared to the voluntary departure alternative, the pseudo r-squares in the forced vs. voluntary specifications are slightly over 0.30, compared to 0.06-0.10 for CEO departure specifications that include a no turnover reference category. Based on the covariates included in the regressions, it is easier to predict what kind of CEO departure occurs, than it is to predict whether a CEO departure will occur or not.

5. THE RELATION BETWEEN THE PROXY FOR PRIVATE INFORMATION AND CUMULATIVE ABNORMAL RETURNS AT THE CEO DEPARTURE ANNOUNCEMENT

This section presents summary statistics of cumulative abnormal returns around CEO departure announcements, as well as abnormal return regression results from the second stage of Heckman selection models that is used to estimate the proxy for private information used by the board in forced CEO departure decisions.

5.1 Cumulative abnormal return summary statistics

Table A-6 presents mean and median CARs for planned, unplanned voluntary, and forced CEO departure announcements. In order to test differences from zero at the mean, the CARs are standardized; however the means and medians show in the table are not standardized. Abnormal returns presented in Table A-6 are based on a value weighted market model, and are estimated over a two day window (0, 1). The estimation period for the CARs ends in the seventh month prior to the departure announcement. This ensures that the estimation period does not overlap with the firm six month buy and hold abnormal return performance measure that is included in the regressions.

As I discuss in Section 2, in planned successions the identity of the successor and the beginning of the transition period are known prior to the announcement of the incumbent CEO's departure. Consequently, the incumbent CEO's departure announcement is not likely to be a surprise, or to convey economically significant

private information to the market. Consistent with this, I find that mean CARs for the planned succession subsample are not significantly different from zero.

A significant portion of the unplanned voluntary CEO successions are also likely to be retirements, so it is also not surprising that the abnormal returns in the voluntary departure subsamples are not significantly different from zero at the mean. For unplanned voluntary successions, I consider subsamples of 258 CEO departure announcements that are made on the same day as the successor CEO's appointment announcement separately from the 66 unplanned voluntary CEO departure announcements that occur without an accompanying replacement CEO appointment announcement. In these cases, the successor's appointment announcement is separated from the departure announcement by at least two calendar days. While abnormal returns do not differ significantly from zero in either of these subsamples, the mean abnormal return is nominally negative in the same day announcement sample, and nominally positive in the sample of 66 unplanned voluntary departures with sequential announcements. This difference is not statistically significant. These two subsamples do differ in terms of their variance. The subsample with separate announcement dates has significantly higher standard deviation of cumulative abnormal returns than the same day announcement sample does.

Mean abnormal returns for the sample of 356 forced CEO departure announcements are negative, but are not significantly different from zero at conventional significance levels. Two different partitions of the forced departure sample are presented. The first partition separates the forced departures into those with same day

announcements of the CEO departure and appointment, and those with sequential announcements. Mean abnormal returns do not differ significantly from zero in the subsample of 187 forced CEO departures with same day replacement. Mean CARS are significantly negative in the sample of 169 forced CEO departures with separate announcements of the replacement CEO. The negative mean CAR for forced CEO departures with separate replacement announcements suggests that investors may be skeptical about net replacement benefits until the replacement CEO is actually announced.

Furthermore, the sample of forced departures with same day successor appointment has significantly lower abnormal return variance than the sample in which departure announcement is made separately from the appointment announcement. Thus, in both the unplanned voluntary and forced CEO departure samples with separate replacement CEO announcements, there is greater variation in the stock price reaction to the announcement.

The second partition of the forced departure sample is based on the proxy for private information. I partition the sample into those with high private information content (above median inverse Mill's ratio), and those with low (below median inverse Mill's ratio) private information content. The inverse Mills ratio is based on selection of a forced turnover rather than the no turnover reference category. Mean abnormal returns are negative but not significantly different from zero at conventional significance levels in the high information content subsample. Mean abnormal returns are significantly negative in the low information content subsample. The significant difference in the

mean return between the high and low private information content subsamples suggests that the private information revealed in forced CEO departure announcements has a significantly positive effect on stock price reactions.

Variance of the abnormal returns for departure announcements with high private information content is significantly higher than abnormal return variance in the low private information content sample. The differences in the mean and variance of CEO departure announcement abnormal returns for different subsamples of the forced CEO departures cut on high and low private information are similar to the difference in variance that we find when cutting the sample on separate announcement dates. Untabulated results show that in the subsample of 178 low private information forced CEO departures; there are approximately 52% that have separate announcement dates. Therefore, it does not seem that the negative mean CAR and higher variance in the low private information sample are primarily driven by a large percentage of CEO departures with separate announcement dates within this subsample.

Table A-7 presents univariate correlations (Panel A) and univariate regressions (Panel B) of cumulative abnormal returns on the proxy for private information. The proxy for private information used in these univariate analyses is based on selection of forced CEO turnover versus a no turnover alternative. For these statistics, I include three alternative abnormal return windows: (0, 0), (0, 1), and (-1, 1). For forced CEO departures, the univariate correlation between the CAR and the proxy for private information is significantly positive for all three window specifications, and ranges from 0.100 to 0.121, with p-values ranging from 0.023 to 0.059. This compares to univariate

correlations between planned and unplanned voluntary CEO departures announcement CARs and the proxy for private information that are negative but not significantly different from zero at conventional levels.

I also estimate univariate OLS regressions with an intercept for the subsample of forced CEO departures. These are presented in Panel B of Table A7. In the univariate regressions of the alternative abnormal returns on the proxy for private information, the estimated coefficients are smaller than the univariate correlations, ranging from 0.021 to 0.046. These are statistically significant, with p-values ranging from 0.044 to 0.062. The adjusted r-squares from these OLS models range from 0.006 to 0.009. The estimates based on a (0, 1) abnormal return window are the largest in magnitude and have the highest statistical significance levels. In subsequent sections, the second stage of Heckman results are all based upon the (0, 1) CAR window.

I also include a correlation matrix for all variables of interest including control variables in Table A-8. The correlations show that the proxy for private information is in some cases significantly correlated with other covariates included in the second stage CAR regressions. The proxy for private information is most highly correlated with the firm buy and hold abnormal stock return in the six months prior to the CEO's departure, with a correlation coefficient of 0.559.

5.2 Multivariate analysis of the relation between the proxy for private information and CEO departure announcement abnormal returns

This section presents results of second stage regressions of cumulative abnormal returns, controlling for the private information revealed by the firm's selection into the

CEO succession sample. The primary variable of interest in these regressions is the non-selection hazard; the economic interpretation of this is based on Prabhala (1997), and Li and Prabhala's (2006) discussion of the non-selection hazard as a proxy for private information in corporate decisions. By construction, the non-selection hazard is a non-linear inverse function of the predicted probability of CEO succession; it measures the extent to which the CEO succession decision is not predicted based upon publicly available data that we include in the selection equation. The Heckman regressions are estimated using maximum likelihood; the results do not change significantly if two step estimation is used. Robust standard errors are clustered by three digit SIC code.

Using the Heckman two stage selection model, I first estimate the private information proxy based on selection into the turnover sample versus the no turnover alternative. An additional model estimates the effects of private information revealed in involuntary CEO departure announcements, conditional on a CEO succession event occurring. Alternative specifications control for same day announcement of CEO departure and the successor's appointment, and CEO departure announcements that are made without immediate replacement.

5.2.1 Private information in the full sample of CEO departures

The first three columns of Table A-9 present results of CAR regressions that include the inverse Mill's ratio based upon selection into the CEO succession sample versus the no turnover alternative. In these models, only one turnover type is retained. Turnover firm years are compared to the firm years with no turnovers, while alternative CEO succession events are dropped from the sample. The fourth column of Table A-9

presents second stage Heckman results for the specification comparing forced CEO departures to the voluntary departure alternative.

CAR regression results for voluntary CEO successions are presented along with forced CEO departures, in order to compare information effects of forced CEO departures to these that are planned, or unplanned but voluntary. As expected, the estimated relation between the non-selection hazard and abnormal returns is not statistically significant in the regressions for the planned and unplanned voluntary departure subsamples.

In the forced CEO departure sample, the relation between the proxy for private information and the CAR is significantly positive. When the selection model is based on the no turnover alternative, I find that the estimated coefficient on the proxy for private information is 0.078, with a p-value of 0.000. This is similar to the estimated coefficient that obtained in the univariate OLS regression, and indicates that the positive relation between the CAR and the proxy for private information is not significantly affected by multicollinearity with covariates that are significant in the selection equation. A very similar result holds if I include voluntary CEO departures together with no turnover firm years in the reference category, and proxy for private information in the choice of a forced turnover rather than "voluntary or no turnover." These results are not tabulated.

In these specifications, measures of firm operating and stock price performance are significantly negatively related to the forced departure announcement CAR. This is also consistent with the prediction that external market participants underestimate forced CEO departure probabilities conditional on observed relative performance measures.

Outsiders can observe the performance measures but still underestimate forced CEO departure probabilities, either because they underestimate the ability of a replacement CEO to do better, or because they underestimate the firm's governance strength. At the forced CEO departure announcement, external market participants update expectations of firm value in response to the information that the CEO is actually being replaced. This leads to a higher CAR for firms that had lower performance measures prior to the forced departure announcement.

When I estimate the proxy for private information based on selection of a forced CEO departure rather than a voluntary departure reference category, the estimated coefficient on the inverse Mills ratio in the CAR regression is 0.078, with a p-value of 0.000. In this specification, the market model BHAR in the 6 months prior to the CEO departure remains negatively related to the CAR, but the estimated coefficient for operating ROA is not significantly different from zero. The estimated coefficient for the age of the incumbent CEO is also significantly negatively related to the CAR when selection is based on a forced rather than voluntary CEO departure. When older CEOs depart it is more likely that their departures will be described as "retirements;" thus the announcement of a forced departure for older CEOs is apt to be more of a surprise. The fact that this estimated coefficient is negative may be because external investors believe that older CEOs will only be forced out if their contributions to firm value are very bad; therefore the firing of an older CEO may provide a signal that things are even worse at the firm than had been indicated by relative performance measures.

The results of these CAR regressions are generally consistent with the hypothesis that the private information revealed in forced CEO departure announcements is good news related to better than expected internal governance strength or net benefits of replacing the CEO. It is interesting that this result remains after controlling for variables related to board independence, size, age, and classified structure, and that none of the board variables is significant in the CAR regressions. It is possible that variables related to board structure and composition are less informative signals of governance strength now than they were in the past. Since recent regulations have imposed more conformity on observable board characteristics, these may be less informative to outside investors. Under these circumstances, the actions taken by the board may provide an additional signal of the boards' ability and willingness to forcibly replace the CEO.

5.2.2 Alternative model specifications

Because the validity of the proxy for private information depends entirely upon the specification of the selection equation, I estimate alternative models for the selection equation and CAR regression in order to assess the robustness of the results. These are not tabulated. Inclusion of additional or alternative firm and industry level variables in some cases results in higher multicollinearity between the covariates in the outcome equation, or reduces the sample size significantly. Therefore, I focus on the robustness of the univariate relation between the proxy for private information and the CAR in these robustness checks.

One alternative model substitutes a measure of industry adjusted operating performance in the year prior to the CEO departure for the stock price performance

measure. In other specifications, I include lagged measures of firm focus, three year asset growth rates, or capital expenditures scaled by sales in order to control for non-performance related firm characteristics that might influence CEO departures in some way. These non-performance related variables are in some cases significantly related to the selection decision, but do not significantly affect the positive relation between the inverse Mills ratio and the CAR.

One additional firm characteristic that I attempt to find a proxy for is the importance of human capital in the firm's production technology. Firms that use a production technology that relies more heavily upon human capital may differ from firms employing more physical capital in that 1) managers and all employees may have higher bargaining power relative those who monitor them, and 2) their actual activities and performance may be more opaque to both the board and external market participants.[13] Several alternative measures of the importance of human resources in the production technology are included: I scale labor and related expenses (Compustat variable XLR) by cost of goods sold (COGS), total assets (AT), or operating expenses (XOPR). In some specifications the proxy for the importance of human resources in the production technology is negatively related to the likelihood of a forced CEO departure occurring; however, the positive univariate relation between the proxy for private information and the CEO departure announcement CAR remains statistically significant.

[13] One example of a group of firms that relies more heavily upon human capital in the production technology includes those operating in the financial services industry.

I also estimate regressions that include additional industry level variables related to asset growth, merger activity, and industry concentration. Two alternative measures of industry merger activity are used. The first is based upon the percent of firms in the 3 digit SIC industry group that delist due to mergers in the three years prior to the current year or year of the CEO's departure, using CRSP delisting codes to identify merger related delistings. The second is based upon the percentage of firms reporting that sales have been affected by merger accounting (as indicated in a footnote to sales) in the three years prior to the current year or year of the CEO's departure.[14]

The measure of industry concentration is based upon U.S. Census Bureau data industry concentration ratios[15]. Because the Census Bureau data includes Herfindahl Index concentration ratios based on all firms in the industry for manufacturing industries, but does not present the same ratio for firms operating in service, financial, retail, utility, and other industry groups, I estimate an aggregate measure of industry concentration based on the percentage of sales accounted for by the 4, 8, 20 and 50 largest firms in the industry. These sales percentages are included for all industry groups in the U.S. Census data with the exception of firms operating in mining industries. The inclusion of any of these industry level variables in the regression equations does not significantly affect the positive univariate relation between the proxy for private information and the CAR.

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[14] This measure of industry merger activity is based upon a proxy for industry acquisition activity suggested by Ashbaugh-Skaife, Collins, and Kinney (2007).

[15] See Ali, Klasa, and Yeung (2008) for analysis of the benefits of industry competition based upon U.S. Census Bureau data rather than Compustat data.

I also run models in which industry classifications for performance adjustments, industry means and medians, and clustering of standard errors are based upon two digit SIC industry classification. This change also does not impact the relation between the proxy for private information and the CEO departure announcement CAR.

5.2.3 Private information and announcement timing

This section presents results of Heckman second stage regressions with sample partitions based upon CEO departure announcement timing. We consider two subsamples: forced CEO turnovers that are announced on the same day that the appointment of the successor is announced (same day announcement), and forced CEO departures that are announced without naming the successor on the same day (separate announcement).

Table A-10 presents univariate analysis of the relation between the CEO departure abnormal returns and the proxy for private information for 169 forced departures with separate announcement dates, and 187 forced departures with same day announcements. Panel A presents univariate correlations between the CEO departure announcement CARs and the proxy for private information in forced CEO departures with estimates based on selection versus the no turnover alternative, and selection versus the voluntary departure alternative. In both cases, the univariate correlation between the CAR and the proxy for private information is consistently significant and positive in the sample of forced departures with separate announcement dates, but not in the sample of forced departures with same day announcements. In the same day announcement

subsample, the univariate relation between the CAR and the proxy for private information remains positive, but significance levels are lower.

Panel B of Table A-10 presents results of univariate OLS regressions of alternative window abnormal returns on the proxy for private information after eliminating observations with same day announcements. When the proxy for private information is based on forced departure rather than the no turnover alternative, the estimated coefficients on the private information proxy across the (0, 0), (0, 1), and (-1, 1) CAR windows range from 0.037 to 0.070; and the associated p-values range from 0.027 to 0.067.

Panel B of Table A-10 also presents results of univariate OLS regressions of alternative window abnormal returns on the proxy for private information based on selection of forced CEO departure rather than voluntary CEO departure. Again, 187 CEO departures in which the successor CEO is announced on the same day that the incumbent CEO's departure is announced are dropped from the analysis. The estimated coefficient of the proxy for private information in these specifications ranges from 0.036 to 0.055; with p-values ranging from 0.009 to 0.026.

Table A-11 presents the second stage results for Heckman regressions estimated after partitioning the sample based on same day and separate announcement of the successor CEO. The first two columns of Table A-11 present results for forced CEO departures with separate and same day announcements based on selecting into one of these two groups versus the no turnover alternative. The departure announcement CARs are positively related to the proxy for private information for both the subsample with

sequential announcements, and also for the subsample with same day announcements. When selection is based on the no turnover reference category, results based on the sample of CEO departure announcements with separate announcement of the successor show that the estimated coefficient of the inverse Mills Ratio is 0.096 with a p-value of 0.000. For the subsample of forced departures with same day announcement, the estimated coefficient of the proxy for private information in the choice of a forced CEO departure rather than the no turnover alternative is 0.047, with a p-value of 0.057.

I also split the sample based on same day and separate announcement of the successor CEO's appointment and estimate the proxy for private information based on selection of forced CEO departure rather than voluntary departure. In this case, the estimated relation between the proxy for private information and the departure announcement abnormal return also remains significantly positive for both the subsample with separate announcement dates; and the sample of forced departures with same day announcements. In the separate day announcement subsample where the proxy for private information is based on selection of a forced rather than voluntary CEO departure, the estimated coefficient on the inverse Mill's ratio is 0.120 with a p-value of 0.000; while in the same day subsample the coefficient is 0.081 with a p-value of 0.000.

Overall, results presented in Tables A-10 and A-11 suggest that the positive relation between the proxy for private information and the CEO departure announcement CAR is stronger when the successor CEO is not announced on the same day. In the univariate analyses, the positive relation between the proxy for private information and

the CAR is weaker for forced CEO departures with same day announcement of the successor CEO, though a significant positive result still obtains in the multivariate regressions regardless of when the successor is announced. Same day release of information related to both the departure of the incumbent and the appointment of the replacement CEO is associated with lower variation in stock returns at the announcement, resulting in decreased significance for some specifications of the relation between the CAR and the proxy for private information in the forced CEO departure decision.

6. SUMMARY OF RESULTS RELATED TO PRIVATE INFORMATION USED BY BOARDS OF DIRECTORS IN FORCED CEO DEPARTURE DECISIONS

I present empirical analysis of the nature of private information used by boards in forced CEO departure decisions that is revealed when forced CEO departures are announced. Following Prabhala (1997), I estimate cross sectional abnormal return regressions that include a proxy for private information estimated using predicted probabilities from a first stage selection equation. The non-selection hazard is used as a proxy for private information in the selection decision in abnormal return regressions, as suggested by Li and Prabhala (2006).

I estimate two different proxies for private information in the forced departure decision. The first is based upon the selection of a forced CEO departure rather than no turnover, and the second is based upon the selection of a forced departure rather than a voluntary departure. In both cases, the positive relation between the proxy for private information and the abnormal announcement return is significantly positive in both univariate and multivariate tests.

The relation between the forced CEO departure announcement abnormal return and the proxy for private information is significantly positive, and is robust to a number of different model specifications. Alternative regression specifications control for the timing of the successor CEO's appointment announcement. The positive relation between the private information revealed in the forced CEO departure announcement and the announcement abnormal return is stronger in CEO departure announcements that

are not accompanied by CEO replacement announcements. When the involuntary CEO departure sample is partitioned based upon whether or not the replacement CEO was announced on the same day as the incumbent CEO's departure, the positive relation between abnormal returns and the private information proxy remains consistently positive. In the subsample with same day announcement of the incumbent CEO's departure and the appointment of the successor, the positive relation between the abnormal return and the proxy for private information has lower statistical significance. These results suggest that the positive relation between departure returns and private information released in CEO departure announcements is stronger when news regarding the replacement CEO is not announced at the same time.

The empirical results provide evidence that external market participants do not have access to all the information used by the board in making forced CEO replacement decisions. The evidence is also consistent with the hypothesis that the market underestimates the probability that underperforming CEOs will be forced out. Although increased expectations of forced departures may alleviate some of the downward pressure on stock prices as bad news about CEO performance is revealed and expected net benefits of CEO replacement rise, the information asymmetry between external investors and the board results in outsiders' underestimating the likelihood of forced CEO departures.

7. COSTS AND BENEFITS OF PARTICIPATING IN THE EXTERNAL MARKET FOR CEO TALENT

There is at present a limited body of academic literature related to executive labor markets that is relevant to corporate finance study of CEOs and other high level executives. This stands in contrast to the significantly larger literature that deals with the activities, compensation, and governance of executives after they have achieved the CEO position. Knowledge of how heterogeneous individuals are sorted into the CEO position at particular firms is relevant to the analysis of how these individuals are compensated[16], monitored, and disciplined, and also to the analysis of how CEO heterogeneity affects corporate decisions and firm value. Much of the existing work in corporate finance that is motivated by agency theory assumes that executives are homogenous with respect to ability, experience, and personality traits; and that it is variation in governance mechanisms that drives cross sectional variation in the CEO's activities and subsequent value outcomes. More recently, the assumption of CEO homogeneity has been relaxed. Interpreting the relation between executive heterogeneity and corporate governance or corporate decisions may be significantly influenced by knowledge regarding the decisions, processes, and mechanisms that match individuals with heterogeneous experience, abilities, and personality traits to particular firms.

[16] A number of recent studies investigate issues related to competition for executive talent in external labor markets and executive compensation; these include Himmelberg and Hubbard (2000), Murphy and Zabojnik (2004, 2007), Hubbard (2005), Cremers and Grinstein (2008), and Gabaix and Landier (2008).

Firms have two broad alternatives when it comes to choosing a new CEO: promoting an internal candidate, or hiring an outsider. Internal and external CEO hires differ significantly in terms of the way they are matched to the hiring firm. I present a framework that modifies Coase's (1937) theory of the firm in order to integrate existing hypotheses related to the costs and benefits of transacting in the external market for CEO talent, rather than developing and promoting internal talent. Because theories related to the costs and benefits of external hiring are both motivated by heterogeneity of the human resources being contracted, this approach provides a rationale for identifying subsamples of the data in which particular matching objectives matter more or less.

7.1 External hiring costs

The market for high level executive talent is not without frictions. Matching heterogeneous individuals to heterogeneous firms in a situation of imperfect information involves significant search costs.[17] The potential for bad matches increases the uncertainty related to contracting externally for both the firm and CEO candidate; and the possibility of severe negative wealth and reputation effects for both the executive and the firm suggests that conducting a less thorough search will not reduce external hiring costs on average. Parrino (1997) finds evidence suggesting that search costs do affect firm decisions related to CEO successions in a sample of CEO turnover events occurring

[17] A large body of the economics literature deals with job search and matches, and search frictions in labor markets. An incomplete list includes Jovanovic, (1979), Howitt and McAfee, (1987), Howitt, (1988), Andolfatto, (1996), Moen, (1997), Coles and Smith, (1998), Barlevy (2002), Matouschek and Ramezzana (2007), and Krusell, Mukoyama, and Sahin (2010). For the most part this literature is not relevant to the study of the labor market for high level executives because the basic assumptions are directed towards the study of aggregate unemployment, the minimum wage, and other topics more relevant to welfare economics than to CEO succession decisions.

between 1969 and 1989. Specifically, he finds evidence consistent with the prediction that when industries are more homogenous, firms are more likely to hire externally within the industry rather than promoting insiders. This supports the hypothesis that the skill sets and experience of executives within relatively homogenous industries are also more similar, leading to lower search costs for firms that transact in the external intra-industry market for CEO talent. Intuitively, the higher homogeneity of human resources in more homogenous industries results from more similarity of the production technology and product markets of firms within the industry.

In a more recent sample period, I do not find a statistically significant relation between the industry homogeneity proxy and the likelihood of an external intra-industry succession being chosen over an internal succession for the full turnover sample. It is possible that increased activity in the external market for high level executive talent has led to a decrease in external hiring costs as more market infrastructure has been developed. It is also possible that increases in the perceived benefits of hiring externally now outweigh the costs of doing so for a significant proportion of the sample firms.

7.2 Benefits of participating in the external market for CEO talent

While Coase's (1937) discussion focuses on the relative costs of external market transactions; much of the existing literature hypothesizes and finds evidence that firms choose external successions when the benefits of doing so are high. Murphy and Zimmerman (1993), Kang and Shivdasani (1995), Parrino (1997), Denis and Denis (1995), and Huson, Parrino and Starks (2001), Murphy and Zabojnik, (2004, 2007), Frydman (2007), and Eisfeldt and Kuhnen (2010) all find evidence that when the

potential for performance improvements is higher (firm performance measures are lower), firms are more likely to hire externally rather than promoting inside candidates. Both Murphy and Zabojnik (2004, 2007), and Eisfeldt and Kuhnen (2010)) refer to a "make or buy" decision that is driven by external hiring benefits. The make versus buy choice is very much in the spirit of Coase's theory of the firm; however none of the existing studies discusses the relation between costs and benefits of external CEO labor market participation.

The reason that potential benefits of participating in the external labor market exist is because internal candidates may not have the same skills and experience that some external candidates have. Coase's emphasis on transaction costs assumes that resources and services exchanged in the external market are perfect substitutes for those that can be developed internally, and vice versa. In the case of highly heterogeneous human resources, this is often not the case. External candidates do not have firm specific knowledge and experience, and may not have industry specific knowledge. Internal candidates who hold more focused positions may not have the general management skills that some external candidates possess. Internal candidates also may not have highly specific skills or experience needed to improve the firm's performance or to design and implement strategic changes in response to changing external conditions. Thus, individual heterogeneity provides incentives for firms to participate in the external market for CEO talent in spite of the high search costs, because in doing so they may find an individual who is a better match to the firm's current needs than internal candidates are.

It seems likely however, that the magnitude of the effects of CEO heterogeneity on external hiring costs and benefits are not equal. External hiring costs are not expected to bind when external hiring benefits are high; their effect should be limited to the subset of firms that do not have large expected benefits of hiring externally. Therefore it is expected that benefits of participating in the external market for CEO talent will dominate in the cross section, while the effects of costs of external CEO labor market searches will be significant in the subsample where expected benefits are relatively low.

7.2.1 Benefits of external labor market participation related to potential performance improvement

A large number of studies find that poor firm performance is a significant determinant of CEO departures.[18] This result suggests that boards of directors believe that replacement CEOs will improve firms' performance when the incumbent can or will not. Murphy and Zimmerman (1993), Kang and Shivdasani (1995), Parrino (1997), (Denis and Denis (1995), and Huson, Parrino and Starks (2001) find a significant negative relation between firm performance and replacement of the CEO with an outsider. This result indicates that when the potential to improve firm performance is greater, firms are more likely to choose external candidates. Outsiders have not contributed to the recent performance problems, and may have experience and skills

[18] Brickley (2003) presents a discussion of the literature related to CEO departures and firm performance. Both earlier studies and more recent analyses that include Goyal and Park (2002), Farrell and Whidbee (2003), Huson, Malatesta and Parrino (2004), Kaplan and Minton (2006), and Jenter and Kanaan (2006) find that firm operating and stock price performance are negatively related to the likelihood of disciplinary CEO turnovers. But, firm performance explains only a small portion of the variation in forced CEO departure decision logit models.

related to reducing costs or restructuring of assets and financial structure that insiders do not have. Under these circumstances, matching to an executive who has skills that are specific to the firm's current production technology and product markets may be of lesser importance.

7.2.2 Benefits of external labor market participation related to higher levels of general management skills

Several recent papers (Murphy and Zabojnik (2004, 2007), Frydman (2007), Cremers and Grinstein (2008), Eisfeldt and Kuhnen (2010)) suggest that an increase in firms' demand for general management skills rather than firm or industry specific skills is a significant factor in the increase in external CEO succession over time. Murphy and Zabojnik (2007) provide a detailed discussion of the reasons why demand for general management skills may have increased over time. They suggest that in recent years CEOs have become less focused on internal operations, and more focused on external constituencies such as shareholders, institutions, and analysts. Consequently, communications skills have become more important. Furthermore, Murphy and Zabojnik suggest that scientific inquiry in areas related to management, economics, accounting, and finance have resulted in a large body of knowledge that affects management decisions, but is not specific to any one organization. Finally, advances in information management may make some portions of firm specific knowledge more easily available to externally appointed executives. This may reduce the amount of time needed for a newly appointed outsider to access and analyze firm or industry specific information prior to making decisions. Murphy and Zabojnik (2007) find that increases

in CEO pay coincide with increases in a proxy for general management skills, the percentage of CEOs holding MBA degrees.

7.2.3 Benefits related to external labor market matching based on changing industry conditions

Eisfeldt and Kuhnen (2010) present a theory that incorporates multiple dimensions of CEO heterogeneity and multiple industries in a model matching firms and individuals with outside options. They show theoretically that shocks to firm skill set demands result in productivity decline, managerial turnover, and a higher likelihood of external inter-industry hires. The predicted increase in hiring outside of the industry is because industry insiders will tend to have skill sets similar to the incumbent. After a shock to the industry the firm demands a different skill set. Consistent with their theoretical predictions, Eisfeldt and Kuhnen find that while controlling for the firm's relative performance in both stock returns and returns on assets, industry average return on assets and industry stock returns are negatively related to both forced and voluntary CEO departures. Their empirical results also show that replacement CEOs are more likely to come from outside the firm and outside the industry when the industry has lower ROA.

Cremers and Grinstein (2008) also suggest that firms' demand for CEO skills that are related to external industry conditions may influence the decision to participate in the external market for CEO talent. They control for industry median capital expenditures/sales, and research and development/sales in CEO succession regressions, and find that the scaled research and development (R&D) measure is negatively related

to the likelihood that the firm replaces the CEO with someone from outside the firm's industry. This suggests that managing firms during times of high investment in R&D at the industry level requires industry specific expertise.

7.3 Hypotheses related to costs and benefits of participating in the external market for CEO talent

In this section we present hypotheses focusing on the importance of external hiring costs, and external hiring benefits derived from matching to external executives with varying proportions of industry specific to general management skills. Descriptions of the empirical measures of external hiring costs and benefits are presented in Section 8.3 below.

1) Firms that face lower search costs related to higher homogeneity of human resources in external executive labor are more likely to participate in the external market for CEO talent. This relation is expected to be stronger in the subsample of firms where the benefits of external labor market participation are low. This implies a positive relation between the measure of homogeneity and the likelihood of external appointments within the industry, conditional upon an interaction with low expected benefit to external labor market participation.

2) Firms that face lower search costs related to higher homogeneity of human resources in external executive labor markets are able to make higher quality external matches, on average, when compared to firms that contract in more heterogeneous external executive labor pools. Based on this, I predict a positive relation between the proxy for

industry homogeneity and the likelihood that the newly appointed CEO will survive for at least three years.

3. Firms that demand more industry specific skills relative to general management skills will be more likely to promote from within or hire externally within the industry, rather than appointing new CEOs from outside the industry. Proxies for firm's demand for industry specific skills are predicted to be negatively related to the selection of an external inter-industry appointment.

8. DATA AND VARIABLE CONSTRUCTION FOR THE ANALYSIS OF COSTS AND BENEFITS OF PARTICIPATING IN THE EXTERNAL MARKET FOR CEO TALENT

8.1 Data

To generate the sample, I identify CEO turnover events in the fiscal years 1997-2007 in Standard & Poor's ExecuComp database. Accounting information is from the Compustat Annual data set, and data on firm segments are obtained from the Compustat Segments database. Stock return data are from CRSP, and data on boards of directors are from the RiskMetrics database. I obtain information on turnover circumstances and newly hired CEO characteristics by a search of Lexis-Nexis news announcements related to the turnover, and the hiring firms' proxy statements.

New CEO appointments are classified as internal successions if the new CEO has been employed at the firm for more than one calendar year prior to the CEO appointment announcement. Executives who have been employed by the firm for less than one calendar year prior to the CEO appointment announcement are classified as external hires.

CEO appointments that are described as interim arrangements are excluded from the sample, as are financial firms and utilities. CEO turnover events that occur because of mergers are also excluded. After merging the turnover sample with data from Execucomp, Compustat, RiskMetrics and CRSP, and eliminating observations with missing data, a sample of 1587 CEO succession events at 1,083 firms remains. The final

sample consists of 1,133 new CEOs who were promoted internally; the remaining 454 are outside hires. I classify external hires as intra-industry if they are hired within the same two digit SIC code. One hundred and thirty of the externally hired CEOs move from another firm within the hiring firm's industry, the remaining 324 are inter-industry hires.

8.2 Turnover type and external successions

Panel A of Table B-1 presents summary statistics of variables related to types of CEO departure for internal and external successions, intra-industry and inter-industry external hires. Panel B presents summary statistics on the most recent employment type of newly appointed external CEOs.

8.2.1 Planned and unplanned retirements

CEO successions are classified as planned if news announcements state that the succession is part of a planned succession. Anecdotal evidence from search professionals suggests that in earlier time periods when outside hires were less common, succession planning was largely the responsibility of the CEO (Carey and Ogden (2000), Wakerle, (2001)). The CEO would select his successor and prepare him for the position; input and assistance from the board of directors was limited. Recently, the board of directors has become more involved in the succession planning process for inside successions. The board is heavily involved when the firm decides to search for a new CEO externally. [19]

[19] Typically, news announcements of external executive hiring events include commentary by the chairman of the board, and often refer to a search committee of the board. Search committees usually include members of the compensation committee; and in some cases the compensation committee is the

In the event that an insider without prior CEO experience is promoted, it is helpful for the CEO elect to have time to transition from a more focused role within the firm to the CEO position. Many firms begin planning the succession years in advance of the CEO's expected retirement. Evidence from news announcements suggests that planned successions may be announced as early as three years prior to a CEO's actual departure; but it is more common for succession plans to be publicly announced in the year prior to the turnover. Generally, at the time the succession plan is announced, the CEO elect is given increased responsibilities. CEO elects are often given complete responsibility for overseeing the firm's operations prior to being given the CEO title.

In the past, most planned successions involved promotions of internal candidates; however in recent years firms have become more likely to implement external successions that are planned successions. When outsiders are brought in with the intention of promoting to CEO it is common for them to begin as chief operating officer (COO) or vice president. This provides time for the outside CEO elect to acquire some firm specific, and possibly industry specific knowledge before being promoted to CEO. Approximately 36% of the CEO turnover sample consists of planned CEO successions. Nearly 13% of the planned successions are external appointments; of these, approximately 67% involve inter-industry hires. CEO departures are classified as retirements without succession plans if the departing CEO is 65 years or older in the

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search committee. The fact that compensation committee members are independent directors who have experience evaluating CEOs' performance and compensation relative to peers probably influences this outcome.

turnover year, and no information is found in news announcements suggesting that the CEO was forced out, hired away, died, had health problems, or had a succession plan in place. For executives who depart prior to age 65 and not for any of the reasons listed above, I search news announcements to determine the cause of the CEO's departure. The vast majority of these unclassified departures are described as retirements;[20] therefore all unclassified CEO departures are re-categorized as unplanned retirements. The highest percentage of inter-industry hires, 74%, occurs in the unplanned retirement sample.

8.2.2 Exogenous CEO departures

Turnovers that may be considered exogenous to the board's succession decisions include events in which the departing CEO is hired away by another firm, dies, or steps down due to health issues.[21] In this sample 1.9% of all turnovers involve CEO departures due to poor health or death. Because the CEO departures related to health problems and mortality are a very small portion of the sample, and should be exogenous, these are excluded from subsequent analyses. CEO hiring away events comprises 3.6% of the sample. Approximately 32% of the CEOs who are hired away are followed by external appointments.

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[20] Less than ten percent of the unclassified departures report in news announcements that the CEO's reason for leaving is to pursue other business or entrepreneurial opportunities, contribute to non-profit endeavors, or engage in active recreational pursuits such as sailing around the world.

[21] Eisfeldt and Kuhnen (2010) classify normal retirements as exogenous; the logical justification for this is based on the fact that the departing CEO's age is not within the firm's control. Our classification is more restrictive in that we assume the retirement timing decision is endogenous. Strictly speaking, only health problems or deaths that arise from purely random causes are truly exogenous events. Having the CEO hired away may be partially caused by the firm's failure to adequately compensate the CEO for outside opportunity costs. But, this outcome is significantly affected by the decision of another firm to make the CEO an offer; and this can be reasonably assumed to be beyond the current employer's control.

8.2.3 Forced departures

I categorize CEO departures as forced departures based upon Parrino's (1997) method of indentifying involuntary CEO departures. CEO departures are classified as forced if they are described as forced in news announcements, or if all of the following conditions are met: (1) the departure was not announced at least 6 months in advance, (2), the departing CEO does not leave for reasons related to health, death, or to accept another position elsewhere, and (3) the departing CEO is under the age of 60 and therefore less likely to be retiring. Approximately 28% of the CEO departures are forced departures. Forty-one percent of the forced CEO departures are followed by external CEO successions. The inter-industry hiring rate for forced CEO departures is approximately 71%.

8.2.4 Prior employment of externally appointed CEOs

I obtain data on non-public firms from the databases in Hoover's Company Records, Lexis Nexis Corporate Affiliations, or Reference USA. In our sample, approximately 75% of all the external appointments involve new CEOs who were most recently employed by another publicly traded, U.S. or Canada listed firm. The remaining new CEOs come from private firms or partnerships (21%), or foreign firms that do not trade on North American exchanges (4%). The percentages of foreign firm and private firm hires are both slightly higher in the inter-industry sample than they are in the intra-industry hire sample. The small percentage of CEOs being hired directly from foreign firms may simply be the result of language barriers, or the unwillingness of

high level foreign executives to move themselves and their families to North America. It may also have to do with difficulty matching between different corporate cultures.

European firms operate in a context that includes a higher level of socialization of healthcare, childcare, and job security, and demands attention to multiple stakeholders. Firms based in North America focus mainly on shareholders; and interact with other stakeholders as the law requires. These differences could affect both communication skills and risk management, as the stakeholder framework entails attention to both idiosyncratic risk and systemic risk, while the shareholder oriented U.S. system requires focus on systemic risk.

Major Asian companies also have many qualified executives. Here there are also likely to be significant differences in corporate culture as well. Many major Asian companies still retain a strong family owned orientation, and in Japan, Korea, and China there is often long history of involvement with the government as well. Asian firms may also have a significantly different relation to debt holders, such as in the Japanese keiretsu (typically not family controlled) which have an "affiliated bank" that gives the companies in the keiretsu relatively easy access to debt. These differences in corporate culture may also contribute to the relatively low percentage of CEOs being hired directly from foreign firms.

8.3 Measures of costs and benefits of external labor market participation

This section presents summary statistics of proxies for costs and benefits of participating in the external market for CEO talent. Means and medians are presented in Table B-2.

8.3.1External hiring costs

I replicate Parrino's (1997) proxy for industry homogeneity in order to examine the importance of external hiring costs in CEO succession decisions during our sample period. The industry homogeneity proxy captures the proportion of variation in monthly stock prices that is explained by two digit industry stock price variation[22]. Industries that are more homogenous are those in which individual firm stock prices tend to move together with the industry average stock price. This is assumed to be the result of differences in the homogeneity of production technology and product markets across industry groupings. In the turnover sample the mean (median) homogeneity measure is 12.56 (12.61). These are statistically lower, but similar in magnitude to the mean (median) industry homogeneity measures in the larger Execucomp sample of non-turnover firm years: 13.27 (13.29). The mean and median of the homogeneity proxy for both the CEO succession sample and non-turnover firm years are both lower than Parrino's sample mean (median) industry homogeneity proxy, which was 0.2974 (0.2823). It is possible that average industry homogeneity measures have decreased in recent years; however this turnover sample is based upon the S&P 1500 while Parrino's data was based upon 500 firms included in the Forbes Annual Compensation surveys

[22] I follow Parrino's (1997) methodology in constructing this measure. In particular, I calculate the homogeneity proxy only for industries that have at least 35 firms in the two digit SIC group. For industries that have more than 50 firms, a random selection of 50 firms is chosen to calculate the homogeneity proxy. This ensures that variation in the homogeneity proxy is not significantly affected by the number of firms in the industry.

between 1971 and 1989. Therefore the two samples differ by construction as well as by time period.[23]

8.3.2 Measures of firm demand for industry specific versus general management skills

The segment sales Herfindahl index concentration measure is included as a proxy for firms' demand for industry specific skills rather than general management skills. Firms whose operations are more concentrated in one industry are expected to be more likely to emphasize skills and experience related to the firm's production technology and product markets. Less focused firms are expected to put a higher weight on general management skills related to the ability of the CEO to manage a diversified portfolio of real assets, and to communicate effectively with both internal and external stakeholders. The mean (median) segment sales concentration measure in the CEO succession sample is 18.78 (13.48); this is considerably lower than the mean (median) segment sales concentration measure in the firm years in which no CEO turnovers occurred: 20.28 (15.01). This suggests that without conditioning on other information, more focused firms are less likely to implement CEO successions.

A second variable related to firms' demand for industry specific skills rather than general management skills that is included in the main analyses is the firm's industry adjusted operating return on assets. This variable is measured in the year prior to the CEO departure, and is calculated as sales revenues less operating expenses, divided by total assets. It is industry adjusted by subtracting the two digit SIC industry median.

[23] Including only S&P 500 firms in the analysis makes our sample firms more similar to the Forbes 500. In this case the mean industry homogeneity proxy for the full sample is 13.90.

This performance measure is lower in the turnover sample than it is in the sample of non-turnover CEO-firm years, suggesting that poor operating performance is a significant factor in CEO succession decisions.

8.3.3 Control variables

Market model buy and hold abnormal returns are included to control for firm stock price performance in CEO departure and succession regressions. The market model abnormal returns are measured in the 12 months prior to the departing CEOs departure announcement (over months -12 to -1), or in the prior fiscal year for non-turnover firm years. Following Eisfeldt and Kuhnen (2010) I include industry average ROA in the year prior to the new hire event in our analyses. This is intended to control for industry conditions that may prompt firms to match to different executive skill sets. In order to control for broader economic factors that might affect CEO succession decisions in a similar manner, I also include lagged 12 month buy and hold market returns. These are measured in the fiscal year prior to the CEO succession event.

A measure of firm size is included in the analyses. Firm size may affect CEO departure and appointment decisions because the marginal effect of CEO ability, suitability, and effort may vary with firm size. Baker and Hall (2004), Gabaix and Landier (2008) present related theory and empirical evidence. This may increase the benefits of considering the widest range of candidates in order to find the best possible match. Alternatively, firm size may capture some portion of the firm's internal supply of CEO candidates.

Board independence and size are included as controls for internal governance mechanisms that may affect CEO firings and external succession decisions (See Weisbach (1988), Borokhovich, Parrino and Trapani (1996), Hermalin and Weisbach (1998), Laux (2008), for related theory and empirics). I also create a measure of board "busyness," this is the average number of other corporate boards on which the firm's board members serve. Board members who serve on multiple other corporate boards may be too busy to engage in highly time consuming searches in the external market for CEO talent[24]. Alternatively, board members who hold a larger number of other board memberships may have more experience in CEO successions and CEO searches. The expected relation between the board busyness measure and the likelihood of external successions is therefore not clear. An indicator that the board has a classified structure is also included in order to control for variation in the extent to which board memberships are protected from external pressure. All board variables are based upon RiskMetrics data. CEO age and tenure are important determinants of retirement decisions, and may also capture some variation in individual experience or judgment, or entrenchment. These are obtained from Execucomp data.

A correlation matrix is presented in Table B-3. These are shown in order to allow comparison of univariate relations with those obtained in the multivariate analysis. Univariate correlations for the variables specific to the turnover sample (CEO departure and succession types) include only 1499 observations in which turnovers occurred.

[24] See Fich and Shivdasani (2006) for related evidence showing that the sensitivity of CEO turnover to performance is weaker when the majority of board members hold three or more directorships.

Correlations for other variables are based on the sample of all CEO turnover and non-turnover firms years (N=14,690). Univariate correlations are generally similar to those presented in the multivariate regressions, although significance levels do vary.

9. MULTIVARIATE ANALYSIS OF CEO SUCCESSION DECISIONS AND THE COSTS AND BENEFITS OF PARTICIPATING IN THE EXTERNAL MARKET FOR CEO TALENT

This section presents multivariate analysis of the effects of the proxies for external hiring costs and external hiring benefits related to demand for specific versus more general skill sets on CEO succession decisions.

9.1 External hiring costs

The analysis of the effect of external hiring costs on external labor market participation is based upon Parrino's (1997) proxy for industry homogeneity. I first examine the importance of this variable in the choice of an internal versus external succession (presented in Table B-5) and internal versus external succession choices in subsamples based on planned, unplanned retirement, and forced CEO departures (presented in Tables B-6 and B-7). Evidence of a significant relation between the proxy for industry homogeneity and the choice of hiring an executive search firm to aid the search, and the probability that the newly hired CEO survives for more than three years; is presented in Table B-9.

For all logistic and multinomial logit models, I show both odds ratios and standardized estimates. The odds ratio interpretation is the change in the likelihood of the named outcome occurring rather than the specified alternative outcome, in response to a one unit change in the listed regressor. The interpretation of the standardized odds is the change in the likelihood of the named outcome being chosen over the specified

alternative, for a one standard deviation change in the listed regressor. The standardized estimates are presented because interpretation of the relative importance of individual covariates is difficult when these each have different units of measurement.

Because the hypotheses related to the effect of industry homogeneity on external succession practices involve interaction effects with the reasons for the departing CEO's reason for leaving, I first briefly discuss results of a multinomial logit regression of alternative CEO departure types versus the no turnover reference category presented in Table B-4. Here the primary focus is the extent to which the CEO departure is motivated by poor performance at the firm (measured by industry adjusted OROA or 12 month market model BHAR in the year prior to the CEO departure), poor industry performance (measured as industry average ROA in the prior fiscal year), or broader economic declines (measured by CRSP value weighted market buy and hold returns in the prior fiscal year). I focus on these variables because potential benefits associated with improving performance or adapting to changing external conditions are expected to increase as firm or broader industry and market conditions decline.

The likelihood of planned CEO departure has a marginally positive relation to industry adjusted operating performance; and is not significantly related to firm stock price performance, industry average ROA, or the value weighted market buy and hold return. This suggests that planned CEO successions are more likely to be implemented when the firm has lower need to improve performance, and that they are unrelated to the need to adapt to changing industry and market conditions. The likelihood of an unplanned retirement occurring is negatively related to the firm's buy and hold abnormal

return, and unrelated to industry and market performance measures. Forced CEO departures are negatively related to own firm operating and stock price performance measures, industry average ROA, and market buy and hold returns.

In brief, these results suggest that planned successions are implemented when there is relatively little potential for performance improvement or other adaptive changes. External hiring costs are therefore more likely to bind within the planned succession subsample. Forced CEO departures are implemented when the benefits of improving own firm performance are high, and when the need to adapt to declining industry and market conditions is also relatively high. Unplanned retirements are associated with potential improvements to stock price performance, but are unrelated to operating performance or industry and market conditions. Because the potential benefits of external labor market participation related to performance improvement and or the need for adaptive changes are likely to be higher in the forced and unplanned voluntary subsamples, it is not expected that external hiring costs will be a significant determinant of the external hiring decision in these two subsamples.

9.1.1 External hiring costs and the choice of an external versus internal succession

Table B-5 presents relative risk ratios for three logistic regression specifications based on the full CEO turnover sample that remains after dropping CEO departures motivated by hiring away events, health or death. The first column presents results of a logistic regression estimating the likelihood of an external succession being chosen over the internal succession reference category. Columns 2 and 3 present results from a multinomial logit model of external intra-industry and external inter-industry succession

choices, compared to the internal succession reference category. The last column presents result of a logit regression modeling the likelihood that external inter-industry successions are chosen over the external intra-industry reference category in the subsample of 427 external successions. These regressions control for CEO tenure, and an indicator that the succession was planned, in order to account for variation in the amount of time since the executive was hired that the board of directors had to develop a back-up strategy, or may have been considering possible replacements. Results related to industry homogeneity do not differ significantly if I omit these variables.

The industry homogeneity proxy is not significantly related to any of the external succession choices modeled for the full sample of turnover firms. Eisfeldt and Kuhnen (2010) also examine the importance of this variable in a sample of recent CEO succession decisions and find that it is not significant in their analyses. However, the hypothesis related to the proxy for external hiring costs is that its importance is conditional on both (1) a distinction between intra-industry and inter-industry hiring, and (2) a relatively low level of expected benefits to hiring outside. Results in Tables B-6 and B-7 present analyses of subsamples in which expected benefits of external hiring should matter more or less.

Table B-6 presents results for three different multinomial logit specifications. Robust standard errors are clustered by two digit SIC code. Each column presents results for the choice of an external succession rather than internal succession in the respective CEO departure subsample: planned, unplanned retirement or forced CEO

departure. Each model also includes internal and external successions for the other two CEO departure categories; these results are suppressed to conserve space.

The industry homogeneity proxy is positively related to the likelihood of a planned external succession being chosen over a planned internal succession. The odds ratio and standardized odds indicate that a one unit (standard deviation) increase in the industry homogeneity proxy is associated with an increase in the likelihood of external planned successions by a factor of 1.047 (1.220). Industry homogeneity is not significantly related to the likelihood of external succession in the unplanned retirement or forced CEO departure subsamples. Evidence that industry homogeneity matters in external hiring choices for planned successions, but is not related to unplanned external successions, is consistent with the hypothesis that lower external hiring costs matter for more "routine" successions where fewer changes are anticipated and the expected benefits of performance improvement or other changes are lower.

Table B-7 presents results from multinomial logit regressions of the choice of external intra-industry succession or external inter-industry succession rather than the internal succession reference category within each CEO departure type subsample. In each regression model, both internal and external succession choices for the other two CEO departure types are included as separate choice outcomes; these are not tabulated. Robust standard errors are clustered by two digit SIC code.

Results in the first column of Table B-7 show that the positive relation between the proxy for industry homogeneity and external succession in the planned departure subsample is driven by external intra-industry replacement decisions. The magnitude of

the estimate indicates that a one percent (standard deviation) increase in the industry homogeneity proxy increases the likelihood that the firm will hire outside within the industry by a factor of approximately 1.07 (1.184), with a p-value of 0.010. This result is consistent with the prediction that external hiring costs matter more when firms have relatively low potential benefits of hiring outside related to performance improvements or the need to adapt to changing external conditions. The likelihood of a planned CEO departure occurring is not significantly related to poor firm performance or changes in industry or market conditions; therefore these firms are more likely to be seeking matches with executives who have skill sets and expertise related to the firm's current operations. Under these conditions, the costs of hiring outside play a more important role in the choice of promoting an internal candidate rather than matching in the external intra-industry market for CEO talent.

9.1.2 External hiring costs and external search mechanisms

In the discussion above, I present results consistent with the prediction that external hiring costs are important in external CEO succession decisions when the relative benefits of participating in the external market for CEO talent are relatively low. In this section I seek additional evidence that industry homogeneity affects external search processes in some meaningful way.

News announcements and proxy statements are searched for information used to create an indicator of firms' self-reported hiring of an executive search firm to aid in the external succession process. Table B-8 presents summary statistics of this variable for the sample of 412 external successions for which I found some commentary on the CEO

search process. Panel A presents the percentage of firms reporting involvement of a professional search firm within the CEO departure type subsamples. Difference of median tests indicate that firms are neither more nor less likely to hire a search firm after any CEO departure type, or when hiring inside or outside of the two-digit SIC industry.

Panel B present summary statistics of the covariates related to external hiring costs and benefits in the sample of firms that report hiring a search firm (N=85), and those that do not (N=327). Difference of median tests show that the subsample of firms that report hiring a search firm includes firms that operate in more homogenous industries, are larger, have larger boards, and have board members who hold more board memberships on other corporate boards.

The first column of Table B-9 presents results of a logistic regression of the choice of hiring or not hiring an executive search firm to aid in the external CEO search process. The industry homogeneity proxy is significantly positively related to the choice of hiring a search firm rather than delegating the search process to a committee of the board. This is consistent with the possibility that when the board seeks to match on dimensions related to past experience with industry specific production technology and product markets; the search process can more easily be outsourced to search professionals when the firm operates in a more homogenous industry. When firms seek to hire executives on a more complex set of skill requirements, the board must be more involved in the search process and evaluation of alternative match combinations presented by a more heterogeneous candidate pool.

The multivariate analysis also shows that operating performance is negatively related to the likelihood that the board hires a professional search firm. This variable was not significant in univariate difference of means tests; so its importance in this decision seems to depend upon the other covariates in the regression. This result provides evidence that holding all else equal, when firms seek to match to executives with experience that is related to improving basic operating efficiency, the ability of an outside search firm to select CEO candidates with pertinent experience, and to select good matches is relatively high. This may be because industry experience and performance relative industry benchmarks are more easily observable to outside search professionals.

Firm size is also significantly positively related to the likelihood that the board chooses to hire an external search firm. Our results presented in Tables B-5, B-6, and B-7 show that larger firms are less likely to hire outside of the industry. In light of this, we again interpret this result as being consistent with the prediction that boards are more likely to hire executive search professionals when seeking to match on observable dimensions related to expertise and experience that are relevant to the hiring firm's production technology and product markets.

Taken together, these results related to firms' hiring of search firms are consistent with the possibility that when firms seek to match on more observable dimensions related to industry specific expertise that is more similar among all firms within the industry, the search can be outsourced to consultants who conduct a relatively standardized search. This is more efficient than delegating the task to board members

who as a group have less executive search experience than the professional search firms do.

9.1.3 External search costs and the survival of newly appointed CEOs

In this section I discuss results related to the effect of the proxy for industry homogeneity on the likelihood that newly appointed CEOs in the external succession subsample will survive the first three years. Results of a logistic regression of three year survival indicator on the proxy for industry homogeneity are presented in the second column of Table B-9. The regression also includes controls for firm focus, operating and stock price performance prior to the CEO turnover, firm size, industry and market performance measures prior to the CEO turnover, board independence, size, classified status, and average number of other boards, the age of the new CEO in the year hired, and an indicator that a search firm assisted the external search.

The industry homogeneity proxy is significantly positively related to the likelihood that the newly appointed CEO survives the first three years. The relative risk ratio is 1.053 with a p-value of 0.060; and the standardized estimate is 1.274. This result is consistent with the prediction that firms operating in more homogenous industries are able to make higher quality matches when participating in the external market for CEO talent, and therefore experience fewer repeat turnovers early in the new CEO's tenure. Estimated coefficients of control variables indicate that three year survival likelihoods are negatively related to firm focus and the age of the newly appointed CEO in his first year; and positively related to firm stock price performance in the year prior to the CEO turnover event.

9.2 External hiring benefits related to specific versus general managerial skills

Results relevant to the analysis of the importance of specific versus general management skills are presented in CEO departure regressions (Table B-4), external CEO appointment decisions (Tables B-5, B-6, and B-7), and boards' descriptions of externally appointed CEO's relevant expertise and experience (Table B-10). Our primary variables of interest in the CEO departure analysis are the measure of firm focus. In external versus internal succession choices the variables of interest include both the Herfindahl index measure of firm focus, and industry adjusted operating performance. Primary variables of interest in the analysis of newly appointed CEO's expertise or skills as described by individuals at the hiring firm are based upon keywords in statements made by board members of the hiring firm in the appointment announcement.

9.2.1 Industry specific skills in CEO departure decisions

Examining CEO departures allows indirect examination of the firm focus proxy for firms' demand for industry specific skills rather than general management skills. If CEOs of more focused firms are less likely to be hired away by other firms, this is consistent with the expectation that executives employed by these firms have relatively few general management skills that are easily transferable to other firms. Assuming that these executives who are not hired away are well suited to the firms at which they are employed, this result would provide support for the assertion that firm focus is an appropriate proxy for the hiring firm's demand for industry specific and firm specific skills, rather than general management skills.

Table B-4 presents results of a multinomial regression of alternative CEO departure types versus the no turnover reference category. Thirty unplanned successions that are related to health issues or death of the departing CEO are excluded from this stage of the analysis. This leaves a sample of 1,557 succession events. Regression coefficients presented in Table B-4 have been converted to relative risk ratios. Robust standard errors are clustered by two digit SIC code.

Firm focus is negatively related to the likelihood that the CEO will be hired away rather than remaining in office for an additional year. A one percent (one standard deviation) increase in the firm focus measure is associated with a decrease in the likelihood that an incumbent CEO will be hired away by a factor of 0.968 (0.630). This estimate has a p-value of 0.049. The lower likelihood that the CEO of a more focused firm will be hired away by another firm is consistent with the argument that CEOs of more focused firms tend to have relatively low general management skills compared to industry specific skills. Compared to larger and more complex firms, CEOs of focused firms manage a simpler portfolio of real assets. Communicating with various stakeholders about corporate decisions and performance outcomes of more focused firms is apt to be less complex as well. The executives of less diversified firms are therefore more likely to have skill sets that are demanded by a relatively small set of other firms within the industry, resulting in a lower probability of being hired away from the CEO position at the current employer. Untabulated regressions using an entropy measure of firm diversification produce qualitatively similar results.

Control variables in the CEO departure regressions generally have similar effects to those found in the existing literature, with two exceptions. The first is that the estimated negative coefficients on the measures of industry ROA and aggregate stock market returns have lower significance than other studies find. The second relates to board variables. The board independence measure is not significantly related to the likelihood of any CEO departure outcome. It may be the case that in the relatively recent sample period, there is lower variation in board independence due to regulatory requirements. Board size, classified board status, and the average number of other board memberships held by the board are all positively related to the likelihood that firms implement planned successions rather than choosing the no turnover alternative.

This is an interesting result that has not been presented in prior empirical work. A number of papers find evidence consistent with hypotheses that classified boards, larger boards, and "busy" boards whose members sit on many other boards have lower governance strength. The empirical results in this analysis suggest that one reason why boards with these characteristics may be less likely to force out the CEO is because they are more likely to replace the CEO in a planned retirement succession. I also find that CEOs at firms with larger boards are more likely to be hired away by other firms.

The estimated relative risk ratios for CEO age are generally consistent with prior studies. Both tenure and tenure squared are included in the regressions in order to allow for a non-linear relation between this variable and CEO departure outcomes. If the squared term is dropped, the CEO tenure variable is not significant or is less significant.

With the squared term, CEO tenure is significantly related to planned CEO departures, CEO hiring away events, and both forced and possibly forced departures.

9.2.2 Industry specific skills in CEO appointment decisions

Results in columns 2 and 3 of Table B-5 show that the firm focus proxy, the segment sales Herfindahl index, is negatively related to the likelihood of choosing an external intra-industry succession over the internal succession reference category. The magnitude of the effect on external inter-industry successions is moderate, with an odds ratio of 0.988 (p-value=0.093), and a standardized odds ratio of 0.857. It is unrelated to the choice of an external intra-industry succession rather than an internal succession. Firm focus is also negatively related to the choice of an inter-industry succession instead of an intra-industry succession (Column 4), conditional on an external succession being chosen. The estimated effect indicates that a one percent (one standard deviation) increase in the segment sales focus measure is associated with a reduction in the likelihood of external inter-industry succession being chosen over a within industry succession by a factor of 0.979 (0.720), with a p-value of 0.067. These findings provide some evidence that relative levels of demand for specific skills related to the industry rather than general management skills do significantly affect external hiring decisions.

Industry adjusted OROA is not significantly related to the likelihood that the firm will choose an external succession over an internal succession; but it does affect decisions related to hiring inside or outside of the hiring firm's industry. Estimates in column 2 of Table B-5 show that the estimated relative risk ratio of OROA for the choice of an external intra-industry succession being chosen rather than an internal

succession is 0.983, with a p-value of 0.000. Industry adjusted OROA is not significantly related to the choice of hiring outside the industry rather than promoting from within the firm. Additionally, a one unit (one standard deviation) increase in industry adjusted OROA is associated with an increase in the likelihood of an inter-industry succession being chosen rather than an intra-industry succession by a factor of 1.021 (1.384). This estimate is statistically significant at the one percent confidence level. I interpret these results as consistent with the prediction that poor operating performance is viewed by boards as a problem that requires some industry experience related to the firm's production technology and product markets.

This contrasts with poor stock price performance, which is negatively related to the choice of either an intra-industry or inter-industry succession being chosen rather than an internal appointment. Poor stock price performance is influenced both by expectations of future cash flows, as well as news of problems with contemporary cash flows. It may be affected by the actions taken by industry rivals, lawsuits, bad news about R&D results such as problems in clinical trials for pharmaceutical companies, or other issues that affect firm value though mechanisms other than basic operating efficiency. Consequently, declines in buy and hold abnormal stock returns can be affected by many factors that are independent of the firm's basic production technology and input and output product markets. These results suggest that low operating efficiency is significantly related the likelihood that the firm will match externally to executives with industry experience; while poor stock price performance may require broader managerial skill sets.

Results related to the natural log of total assets indicate that large firms are less likely to hire outside, and less likely to hire outside the industry; these findings are consistent with the expectation that large firms have larger internal talent pools, and may also place more emphasis on matching to executives with experience that is relevant to the hiring firm's production technology and product markets.

The estimated coefficients for industry and stock market performance presented in Table B-5 are generally consistent with existing empirical work in terms of sign. The significance levels on these two variables are somewhat lower than those found in other recent empirical work. And, results related to board structure variables also differ somewhat from those reported in earlier studies that focus on the role of boards in CEO succession decisions. Board independence and size are both positively related to the likelihood of both external successions and external inter-industry successions being chosen over internal successions. The positive relation between external hires and board independence is generally consistent with the corporate governance literature that suggests that more independent boards are more likely to maximize firm value by considering external replacements who are more capable or motivated than internal candidates are. But, the positive relation between board independence and the inter-industry succession choice is not predicted by the agency theory perspective. It may be the case that firms with a higher demand for general management expertise are more likely to have larger, more independent boards, and are also more likely to hire outside of the industry.[25] If the firm focus variable is only a weak (inverse) proxy for firms'

[25] Murphy and Zabojnik (2007) make a similar argument.

demand for general management skills, there may be an omitted variable that drives the positive relation between board size and independence, and external hiring decisions.

Tables B-6 and B-7 present results of external and external inter-industry and intra-industry succession choice for subsamples based upon the reasons for the prior CEO's departure. Results in Table B-6 suggest that the negative relation between firm focus and external CEO successions being chosen over internal successions is strongest within the forced CEO departure subsample. In the full cross section of CEO departures, firm focus is not significantly related to the choice of internal versus external CEO succession being chosen (see Column 1 of Table B-5). Results in Table B-7 show a negative relation between firm focus and external inter-industry CEO succession in the unplanned retirement and forced departure subsamples. Generally speaking, this result supports the hypothesis that more focused firms have a higher need to match to executives with skill sets that are relevant to their production technology and product markets, and are therefore less likely to hire outside of the industry.

Table B-6 presents results showing that poor operating performance is negatively related to the choice of an external succession for both planned CEO retirements and unplanned retirements. When modeling the choice of intra-industry succession separately from inter-industry successions in the departure type subsamples, (related results are shown in Table B-7) industry adjusted OROA is negatively related to the likelihood that an external intra-industry succession will be chosen rather than an internal succession; this result holds for all three CEO departure subsamples. The standardized odds ratios across the three regression specifications range from 0.673 to

0.886. I interpret this result as providing support for the hypothesis that improvements to poor operating performance require industry specific skills on the part of the new CEO.

With respect to stock price performance, for both unplanned retirements and involuntary departures, the negative relation between any external hiring outcome and market model buy and hold abnormal returns remains statistically significant and large in magnitude. Within the unplanned retirement and forced CEO departure outcomes the estimated relative risk ratios range from 0.347 to 0.414, and the associated p-values range from 0.000 to 0.003. As before, I interpret the different results on operating performance and stock price performance as evidence that operating performance problems tend to require some industry expertise, while declines in stock price prompt firms to match to individuals who have broader expertise related to improving the firm's long term prospects. Improving long term cash flows may require activities that are not closely related to the current production technology and product markets of the hiring firm.

Empirical results related to industry and stock market performance presented in Tables B-6 and B-7 generally have the same sign as those reported in other studies; however significance levels are lower. This may be the result of a different time period and different covariates included in the regressions. Results from the subsample analysis in Tables B-6 and B-7 indicate that the negative relation between firm size and external inter-industry hiring is strongest in the planned succession subsample. In the unplanned retirement and involuntary subsamples, the estimated effect of firm size on external

hiring is also negative, but the estimated odds ratios are smaller in magnitude and significance levels are lower.

In contrast, the positive relation between external and external inter-industry hiring decisions, and board independence and board size appear to be primarily driven by variation across all three CEO departure subsamples. The fact that this result is specific to inter-industry hires but not intra-industry hires is puzzling. The existing literature related to board structure and CEO turnovers does not generate clear predictions as to why a board of directors that is more independent would prefer to match to executives outside the hiring firm's industry. Again, these results related to board independent and size may be affected by some omitted variable that affects both board structure and external CEO succession decisions.

9.2.3 Industry specific skills versus general management skills as reported in CEO hiring announcements

In this section I discuss results related to firms' descriptions of new CEO's experience and skills sets that are reported in CEO hiring announcements. This data is collected for the external succession subsample. The relevant data are presented in Table B-10. I create indicator variables based on keyword use in news announcements. These are grouped together based on similarity to concepts related to general management, industry technology or operations, performance improvement, and a miscellaneous category.

The general management related keywords include: general management, global experience, strategy, leadership, marketing/branding, and services or customer relations.

Difference of medians tests indicate that firms hiring outside of the industry are more likely to use the keywords related to global experience, strategy, leadership, and service or customer relations than firms hiring externally within the industry are. Implicitly, I assume that the descriptions of executive's expertise are 1) truthful, and 2) positively correlated with the skill mix that the firm initially set out to hire. Conditional on these assumptions, these results provide support for the hypothesis that firms tend to hire outside of the industry when demand for general management skills is higher.

The industry specific experience keywords include: technical knowledge, experience in operations, and industry reputation. Results of difference of median tests show that the firms hiring within the industry are more likely to use any of these keywords than firms hiring outside the industry are. This finding is consistent with the hypothesis that firms seeking to match to executives with industry specific skill sets related to production technology, operations, or long experience in other roles within the industry are more likely to hire executives currently working within the industry when making appointments outside the firm.

Keywords related to performance improvement include experience with restructuring or turning around firm performance, or reducing costs and improving profitability. These variables do not differ significantly between the sample of firms hiring externally within the industry, and those that hire outside the industry. In the analysis of demand for industry specific skills versus general management skills presented in section 9.2.2, I find evidence the problems with operating performance are associated with a higher likelihood of hiring outside within the industry, while stock

price performance measures motivate external CEO successions both within and outside of the industry. Keywords used by hiring firms' boards do not make specific distinctions between these two performance metrics and the match to new executive's skills sets; therefore these results based on skill descriptions are not interpreted in the same way.

And, finally, I include a miscellaneous category that encompasses managing growth, R&D or product innovation, finance/accounting expertise, legal knowledge, or experience in acquisitions and mergers. Firms hiring within the industry are neither more nor less likely to emphasize the new CEO's experience in R&D/innovation, finance/accounting, or legal expertise. Firms hiring outside of the industry are more likely to mention the new CEO's ability to manage growth, and less likely to mention expertise in acquisitions or mergers. This suggests that growing a firm's operations involves skills that are more easily transported across industries, while acquiring and merging is more likely to involve industry specific skills on the part of the CEO. Broadly speaking, the lack of significance for differences of medians for most of the miscellaneous keywords indicates that demand for specific skills such as finance/accounting or legal expertise are not a significant determinant of firms' decisions to hire outside of the industry.

10. SUMMARY OF RESULTS RELATED TO THE EMPIRICAL ANALYSIS OF COSTS AND BENEFITS OF PARTICPATING IN THE EXTERNAL MARKET FOR CEO TALENT

In summary, I present empirical results related to costs and benefits of participating in the external market for CEO talent after first providing a discussion of existing empirical work in the context of Coase's (1937) theory of the firm. Coase's original theory assumes that resources exchanged in the external market are perfect substitutes for those that can be produced internally; however, in the case of human resources, this is not true. Internal and external executives may differ significantly in their prior experience with industry specific and general management responsibilities. They may also have different experience related to improving firm performance or choosing between alternative strategies in the face of changing external conditions.

CEO heterogeneity on these dimensions, and possibly other areas related to personality or risk preferences may increase the perceived benefits of searching in the external market for the best possible match. Heterogeneity of individuals in the external market also makes the search process more complex. Because the market for high level executive talent is involves matching under imperfect information, search costs are also expected to be positively related to heterogeneity of the human resources being contracted. When the perceived benefits of hiring externally are high, search costs may matter less. In cases where the expected benefit of hiring externally is low, search costs are more likely to bind. Therefore, the proxy for external search costs is expected to

matter more in the subsample of firms with relatively low perceived benefits of participating in the external market for CEO talent.

The empirical results are broadly consistent with this prediction. A proxy for external hiring costs based upon industry homogeneity does influence the likelihood of an external hire in a subsample of the turnover data that includes firms with relatively low potential to improve performance. In this case, the higher level of industry homogeneity should make it easier for firms to match to individuals who have expertise that is relevant to the hiring firm's production technology and product markets when hiring externally, but within the industry.

In order to further understand how industry homogeneity makes external CEO searches less costly, I also present analysis external search mechanisms. I create an indicator of firm's self-reported hiring of an executive search firm to aid in the CEO search process. Firms in more homogenous industries are more likely to hire search professionals to aid in the search. This result indicates that when the hiring firm's production technology and product markets are more similar to other firms in the industry, the dimensions on which the firm seeks to match are more easily observed by outside consultants. Firms can more easily delegate portions of the search process to external professionals who conduct a more standardized search under these conditions.

The empirical analysis also provides evidence that when firms do participate in the external market for CEO talent; those operating in more homogenous industries have higher survival likelihoods in the early years of the new CEO's tenure. This result is consistent with the hypothesis that firms operating in more homogenous industries are

able to make higher quality matches to external individuals who have experience with production technology and product markets that are similar to those of the hiring firm. These higher quality matches are less likely to break up in the first three years of the new CEO's tenure.

I also examine firms' demand for industry specific skills rather than general management skills. I hypothesize that proxies for firm's demand for industry specific skills will be negatively related to the choice of hiring outside the industry. Consistent with this, a proxy for industry specific skill demand, firm focus, is negatively related to the choice of an external inter-industry succession rather than an internal succession. It is also negatively related to the choice of hiring outside the industry rather than inside the industry, conditional upon an external succession being chosen.

A second measure of firms' demand for industry specific skill sets is based upon industry adjusted operating performance. I predict that poor performance in basic operating efficiency differs from poor stock price performance in that problems with operating performance require focus on firm's basic operations in product markets and production technology. Problems with stock price performance are more likely to require modifications to firm strategy that are not directly related to the firm's core operations in production and product markets. After controlling for stock price performance, industry adjusted operating return on assets is negatively related to the likelihood that the firm will make an external intra-industry appointment rather than promoting from within. It is unrelated to the likelihood of hiring externally outside the industry. Furthermore, the likelihood of an inter-industry succession being chosen over

an intra-industry succession is positively related to industry adjusted operating performance, within the external hire subsample. This result also suggests that poor operating performance is a problem that requires industry specific experience on the part of the incoming CEO.

Supplementary evidence related to firms' demand for industry specific versus general management skills and inter-industry hiring decisions is obtained by collecting information on newly hired CEOs' skills and expertise reported by the hiring firm in the hiring announcement. I collect this data for the full sample of external CEO successions. Our results show that firms appointing new CEOs from outside the industry are more likely to use keywords related to general management skills in their descriptions of the new CEO's past experience and accomplishments. Firms appointing new CEOs from inside the industry are more likely to use keywords related to technology, operations, and industry experience when describing the new CEO's qualifications.

11. CONCLUSION

In conclusion, I study two aspects of boards of directors' CEO succession decisions. First, I examine whether or not forced CEO departure decisions are based on information that the board of directors has, but external investors do not. I present several different selection equations used to create alternative proxies for private information. The first is based on the board's selection of a forced CEO turnover rather than allowing the incumbent CEO to remain in office for an additional year. The second is based on the board's selection of a forced CEO replacement rather than a voluntary CEO succession event, conditional on a CEO succession occurring. In both cases, the proxy for private information is positively related to abnormal returns at the forced CEO departure announcement.

The positive relation between several alternative estimates of the proxy for private information and the abnormal announcement returns is consistent with the hypotheses that prior to the departure announcement, investors underestimate the probability of forced CEO departure, and that private information revealed in forced CEO departure announcements has positive implications for firm value. External investor may underestimate the likelihood of a forced CEO departure occurring either because they underestimate the net benefits of replacing the CEO, or because they underestimate the board's true internal governance strength.

In order to analyze differences between CEO replacement announcements where the departure of the incumbent and appointment of the successor are made at the same

time, and those in which the incumbent CEO's departure is announced separately from the replacement CEO's appointment, I split the forced CEO departure sample based on same day or separate replacement announcements. In the subsample with same day announcement, the positive relation between the proxy for private information and the abnormal announcement returns has lower statistical significance when compared to results for the separate announcement day subsample. This result suggests that the value effect of private information revealed in forced CEO departure announcements is stronger when the successor CEO is not announced simultaneously. It may be the case that when a higher degree of uncertainty remains about the net benefits of replacement, the value of the signal provided by the board's decision to force out the CEO is higher.

A second aspect of boards of directors' CEO succession decisions that I examine empirically concerns their decisions to participate in the external market for CEO talent. I find evidence suggesting that board decisions to participate in the external market for CEO talent are influenced by the costs and benefits of doing so. Value maximizing boards should participate in the external market for CEO talent when the expected benefits of doing so exceed the costs. Both costs and benefits of participating in the external market may be positively related to the heterogeneity of the human resources being contracted. This is because higher heterogeneity increases the complexity of external search; but it also increases the likelihood that a firm can match to an individual who has extremely high levels of some skill or area of expertise that the board of directors believes will enable the CEO to increase firm value.

Cross sectional analyses of a proxy for industry homogeneity shows that this variable is positively related to external labor market participation, more standardized search processes, and a higher likelihood that a newly appointed CEO will survive three years or more. These findings are generally consistent with prediction that when industries are more homogenous, external search costs are lower, and higher quality matches may be obtained.

I also test hypotheses related to benefits of matching to individuals with industry specific skills versus general management skills. Firms may demand higher levels of general management skills rather than skills that are specific to the industry or firm production technology and product markets because value contributions by the CEO may require a broader strategic skill set. Activities that are more focused on operations may be more optimally delegated to lower level managers. I find that for several alternative proxies for industry specific skill demand, there is a negative relation between demand for industry specific skills and the decision to hire externally outside the industry. This can be interpreted as support for hypotheses that cross sectional variation in benefits associated with industry specific skills leads to fewer CEO appointments outside the industry, while benefits of general management skills are associated with a higher likelihood of inter-industry CEO appointment.

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APPENDIX A

TABLES OF EMPIRICAL RESULTS

USED IN THE ANALYSIS OF

PRIVATE INFORMATION IN CEO REPLACEMENT DECISIONS

Table A-1

This table presents summary statistics of CEO departure circumstances. CEO departure reasons are classified based on data obtained from a search of Lexis-Nexis news announcements and proxy statements. Planned successions are those that are described as planned in news announcements, or those in which the successor is announced at least 6 months before the announcement that the incumbent CEO is leaving. Forced departures are classified as forced if they are publicly described as forced, or meet the following conditions (1) occur before the departing CEO reaches age 60 (2) are not announced at least six months in advance, and (3) are not motivated by health, death, or hiring away events. The industry homogeneity proxy is calculated following the method of Parrino (1997). Industry adjusted OROA is calculated as sales less operating expenses, divided by total assets. Six month market model buy and hold returns are based on the value weighted CRSP index. Industry average ROA is the simple average based on the three digit SIC industry. Market buy and hold returns are calculated using the value weighted CRSP index. Board independence is measured as the percentage of independent directors on the firm's board; average number of other boards is the simple average of other corporate board memberships held by the firms directors. Board size is the total number of board members. Unplanned voluntary departures are those that are not classified as either planned or forced. CEO departures that occur due to death, poor health, or hiring away events are excluded from the analysis.

	Planned Successions	Unplanned Voluntary Successions	Forced Successions	No Turnover firm years
	(N=449)	(N=324)	(N=356)	(N=11,460)
Percent of full CEO turnover sample	39.77%	28.70%	31.53%	
Age of incumbent CEO	62.10	62.12	54.49	56.14
Incumbent CEO tenure (years)	11.34	11.54	6.17	9.10
Total assets in year prior to turnover ($ Millions)	10,444.82	7,532.30	7,303.87	7,664.56
3 year change in Ind. Adjusted OROA	0.42	-1.03	-3.96	0.12
Market model BHAR 6 months prior to turnover (%)	-2.56	-7.40	-12.48	-1.14
Industry Homogeneity in year prior to turnover (%)	13.54	13.44	13.21	13.07
Ind. Average ROA in year prior to turnover	-6.07	-6.58	-8.80	-6.47
Regulated Industry (%)	5.79	4.62	4.21	4.97
Six month market BHR in year prior to turnover (%)	7.19	11.61	5.98	12.85
Independent Directors (%)	65.64	62.16	63.24	64.02
Average age of board members	59.85	59.55	58.42	58.98
Board size	10.37	9.46	9.13	9.42
Classified board (%)	69.15	66.97	71.15	70.47

Table A-2

The table presents results estimated with a multinomial logit regression, run on the sample of 12,589 Execucomp firm years (1997-2005, inclusive) without missing data. The reference category is "no turnover." Robust standard errors are adjusted for clusters in three digit SIC codes. P-values are presented in parentheses. The model includes a constant; these are not reported to conserve space.

	Planned Successions	Unplanned Successions Voluntary	Forced Successions
Age of incumbent CEO	0.121 ***	0.119 ***	0.003
	(0.000)	(0.000)	(0.788)
Incumbent CEO tenure	-0.013	-0.020 ***	-0.075 ***
	(0.155)	(0.001)	(0.000)
Natural log of total assets in year prior to CEO turnover	0.101 ***	-0.034	0.071
	(0.006)	(0.432)	(0.116)
3 year change in Ind. Adjusted OROA	0.006	-0.010	-0.029 ***
	(0.291)	(0.145)	(0.000)
Market model BHAR 6 months prior to turnover	0.062	-0.167	-0.899 ***
	(0.727)	(0.162)	(0.004)
Industry Homogeneity in year prior to turnover	0.010	0.020	-0.016
	(0.516)	(0.262)	(0.376)
Ind. Average ROA in year prior to turnover	-0.004	-0.003	-0.002
	(0.456)	(0.597)	(0.739)
Regulated Industry	-0.002	-0.025 **	-0.101 **
	(0.203)	(0.046)	(0.025)
Six month market BHR in year prior to turnover	-0.519 ***	-0.434	-0.944 ***
	(0.000)	(0.182)	(0.000)
Percent Independent Directors	0.983 ***	-0.042	-0.567
	(0.008)	(0.942)	(0.178)
Average age of board members	-0.027 *	-0.035 ***	-0.059 ***
	(0.073)	(0.043)	(0.004)
Board size	0.076 ***	0.000	-0.011
	(0.000)	(0.296)	(0.746)
Indicator of Classified board	0.073 *	-0.103	0.265
	(0.530)	(0.455)	(0.136)
Pseudo R-square	0.0765		

Table A-3

The table presents results of binomial logit regressions. The reference category is "no turnover." In each model, firm years with alternative CEO departure types are excluded. Robust standard errors are adjusted for clusters in three digit SIC codes. P-values are presented in parentheses. The models include constants; these are not reported to conserve space.

	Planned Successions	Unplanned Successions Voluntary	Forced Successions
	(N=11,909)	(N=11,784)	(N=11,816)
Age of incumbent CEO	0.119 ***	1.004 ***	0.004
	(0.000)	(0.000)	(0.702)
Incumbent CEO tenure	-0.013 *	-0.020	-0.0736 ***
	(0.068)	(0.010)	(0.000)
Natural log of total assets in yr. prior to CEO turnover event	0.100	-0.034	0.07139
	(0.006)	(0.435)	(0.112)
3 year change in Ind. Adjusted Operating OROA	0.006	-0.011	-0.029 ***
	(0.299)	(0.118)	(0.000)
Market model BHAR 6 months prior to turnover	0.061	-0.161 **	-0.911 ***
	(0.741)	(0.196)	(0.004)
Industry Homogeneity in year prior to turnover	0.009 **	0.020	-0.015
	(0.557)	(0.257)	(0.395)
Ind. Average ROA in year prior to turnover	-0.003	-0.004	-0.002
	(0.535)	(0.571)	(0.733)
Regulated Industry	-0.002	-0.045	-0.079 **
	(0.245)	(0.198)	(0.026)
Six month market BHR in year prior to turnover	-0.370 ***	-0.444	-0.936 ***
	(0.001)	(0.162)	(0.000)
Percent Independent Directors	1.006 ***	-0.005	-0.574
	(0.008)	(0.990)	(0.170)
Average age of board members	-0.026 ***	-0.035 **	-0.059 ***
	(0.078)	(0.047)	(0.004)
Board size	0.077 ***	-0.002	-0.012
	(0.000)	(0.942)	(0.722)
Indicator of Classified board	0.071	-0.102	0.269
	(0.541)	(0.469)	(0.129)
Pseudo R-square	0.0958	0.0702	0.0625
Wald Chi-square	275.66	204.47	195.6
Prob > Chi-square	0.000	0.000	0.000

Table A-4

The table presents results of probit regressions. The reference category is "no turnover." In each model, firm years with alternative CEO departure types are excluded. Standard errors are adjusted for clusters in three digit SIC codes. P-values are presented in parentheses. The models include constants; these are not reported to conserve space.

	Planned Successions	Unplanned Successions Voluntary	Forced Successions
	(N=11,909)	(N=11,784)	(N=11,816)
Age of incumbent CEO	0.051 ***	0.052 ***	0.000
	(0.000)	(0.000)	(0.958)
Incumbent CEO tenure	-0.004	-0.008 **	-0.0300 ***
	(0.226)	(0.022)	(0.000)
Natural log of total assets in year prior to CEO turnover	0.038 **	-0.013	0.027
	(0.022)	(0.488)	(0.195)
3 year change in Ind. Adjusted Operating OROA	0.000	-0.005	-0.014 ***
	(0.865)	(0.107)	(0.000)
Market model BHAR 6 months prior to turnover	-0.004	-0.059	-0.330 **
	(0.617)	(0.105)	(0.034)
Industry Homogeneity in year prior to turnover	0.004 **	0.009	-0.004
	(0.584)	(0.213)	(0.612)
Ind. Average ROA in year prior to turnover	-0.002	-0.002	-0.001
	(0.343)	(0.379)	(0.692)
Regulated Industry	-0.001	-0.009 ***	-0.108 *
	(0.996)	(0.351)	(0.051)
Six month market return in year prior to turnover	-0.824 ***	-0.144	-0.344 ***
	(0.000)	(0.187)	(0.000)
Percent Independent Directors	0.290 *	-0.082	-0.021
	(0.072)	(0.654)	(0.236)
Average age of board members	-0.017 ***	-0.016 **	-0.027 ***
	(0.018)	(0.031)	(0.003)
Board size	0.033 ***	-0.001	-0.004
	(0.001)	(0.115)	(0.802)
Indicator of Classified board	0.030	-0.044	0.116
	(0.166)	(0.261)	(0.140)
Pseudo R-square	0.1025	0.0723	0.0602
Wald Chi-square	275.08	213.56	183.28
Prob > Chi-square	0.000	0.000	0.000

Table A-5

This table presents results of binomial logit and probit regressions modeling selection into the forced departure sample. The reference category of voluntary departure includes 449 planned successions and 324 unplanned voluntary departures. Firm years in which no turnover occured are excluded from the analysis. Robust standard errors are adjusted for clusters in three digit SIC codes. P-values are presented in parentheses. The modelS includes constants; these are not reported to conserve space.

	Logit regression	Probit
	Forced vs All voluntary (N=1,129)	Forced vs All voluntary (N=1,129)
Age of incumbent CEO	-0.215 ***	-0.117 ***
	(0.000)	(0.000)
Incumbent CEO tenure	-0.089 ***	-0.049 ***
	(0.000)	(0.000)
Natural log of total assets in year prior to CEO turnover event	0.032	0.021
	(0.562)	(0.524)
3 year change in Ind. Adjusted Operating OROA	-0.027 ***	-0.016 ***
	(0.001)	(0.000)
Market model BHAR 6 months prior to turnover	-0.977 ***	-0.559 ***
	(0.000)	(0.000)
Industry Homogeneity in year prior to turnover	-0.017	-0.010
	(0.296)	(0.269)
Ind. Average ROA in year prior to turnover	0.007	0.004
	(0.159)	(0.178)
Regulated Industry	-0.179	-0.112
	(0.683)	(0.635)
Six month buy and hold market return prior to turnover	-0.882 **	-0.403 **
	(0.041)	(0.046)
Percent Independent Directors	-0.162	-0.106
	(0.790)	(0.758)
Average age of board members	-0.002	0.002
	(0.952)	(0.897)
Board size	-0.028	-0.021
	(0.518)	(0.411)
Indicator of Classified board	0.147	0.066
	(0.459)	(0.568)
Pseudo R-square	0.3092	0.3056
Wald Chi-square	172.19	210.49
Prob > Chi-square	0.000	0.000

Table A-6

This table presents summary statistics of CEO departure announcement abnormal returns for subsamples of the full succession sample (N=1,129). Cumulative abnormal returns (CARs) are estimated based on a value weighted market model, over a two day window (0, 1). The model uses a 256 day estimation period ending in the seventh month prior to the departure announcement. The mean and median CARS presented are not standardized, and are expressed as percents. P-values presented are based on t-tests using standardized returns. When cutting the sample based on high/low Inverse Mills Ratios, the IMR is estimated based on selection of an involuntary CEO departure rather than the no turnover reference category.

	Planned Successions		Unplanned Successions Voluntary		Forced Successions		
	(N=449)		(N=324)		(N=356)		
	Mean CAR	-0.16%	Mean CAR	0.14%	Mean CAR	-1.14%	
	Median CAR	0.21%	Median CAR	0.19%	Median CAR	-0.62%	
	P-value	0.504	P-value	0.646	P-value	0.123	
	Percent < 0	47.66%	Percent < 0	47.53%	Percent < 0	55.34%	
	Standard deviation	5.29%	Standard deviation	5.33%	Standard deviation	8.72%	
			(N=258)		(N=187)		
Successor CEO is announced same day as the departure of the incumbent			Mean CAR	0.19%	Mean CAR	-0.85%	
			Median CAR	0.18%	Median CAR	-0.29%	
			P-value	0.552	P-value	0.157	
			Percent < 0	46.12%	Percent < 0	51.28%	
			Standard deviation	5.06%	Standard deviation	7.77%	
Successor CEO is announced after the departure announcement has been made			(N=66)		(N=169)		
			Mean CAR	-0.06%	Mean CAR	-1.43%	***
			Median CAR	-0.16%	Median CAR	-1.06%	
			P-value	0.933	P-value	0.002	
			Percent < 0	53.03%	Percent < 0	60.53%	
			Standard deviation	6.34%	Standard deviation	9.13%	
	Test for Equality of Variance		P-value	0.015	P-value	0.087	
High (above median) Inverse Mills Ratio					(N=178)		
					Mean CAR	-0.87%	
					Median CAR	-0.17%	
					P-value	0.148	
					Percent < 0	52.51%	
					Standard deviation	6.59%	
Low (below median) Inverse Mills Ratio					(N=178)		
					Mean CAR	-1.41%	***
					Median CAR	-1.08%	
					P-value	0.007	
					Percent < 0	58.19%	
					Standard deviation	8.80%	
			Test for Equality of Variance		P-value	0.000	

Table A-7

This table presents univariate analysis of the relation between the Inverse Mills Ratio (IMR) and the abnormal announcement return using alternative event windows. Panel A presents univariate correlations for planned, unplanned voluntary, and involuntary departures; and Panel B presents results obtained by regressing the CARs on the inverse Mills Ratios in an OLS model that includes an intercept. Inverse Mills Ratios are estimated based on selection of an involuntary departure rather than the no turnover reference category.

Panel A	Correlation between IMR and alternative event window returns		
CAR Window	(0, 0)	(0, 1)	(-1, 1)
Planned departures	-0.056	-0.059	-0.025
(N=449)	(0.217)	(0.186)	(0.577)
Unplanned voluntary departures	-0.053	-0.048	-0.062
(N=324)	(0.184)	(0.227)	(0.207)
Forced departures	0.116 **	0.121 **	0.100 *
(N=356)	(0.028)	(0.023)	(0.059)

Panel B	Univariate Regression of alternative event window abnormal returns on the IMR			
	CAR Window	(0, 0)	(0, 1)	(-1, 1)
Forced Departures	Inverse mills Ratio	0.021 **	0.046 **	0.027 *
(N=356)	P-value	(0.049)	(0.044)	(0.062)
	Intercept	-0.058 **	-0.028	-0.049 *
	P-value	(0.041)	(0.105)	(0.099)
	Adj. R-square	0.007	0.009	0.006

*** Significant at the 1% level.

** Significant at the 5% level.

* Significant at the 10% level.

Table A-8

This table presents univariate correlations for all variables of interest . The inverse Mill's ratio presented here is based upon selection of a forced CEO departure versus the no turnover reference category, and is estimated using maximum likelihood in a Heckman regression in which the cumulative abnormal return in the outcome equation is based upon a (0,1) window. The CAR estimation period ends in the seventh month prior to the event date. The correlations with the cumulative abormal return and inverse Mill's ratio include 356 observations in which the CEO is forced out. All other correlations include the sample of forced CEO departures and non-turnover firm years (N=11,816).

	Inverse Mill's Ratio	Age of incumbent CEO	Incumbent CEO Tenure	Log of Total assets	Three year Change Ind. Ad. OROA	Firm MM BHAR	Industry homogeneity proxy	Ind. Average ROA	Regulated Industry	Six month Market BHR	Percent independent Directors	Average Board Age	Board Size	Classified Board
Cumulative abnormal return (0, 1)	0.121 **	0.008	0.080 *	0.108 **	-0.068	0.054	-0.035	0.135 ***	0.071	0.044	0.021	0.124 ***	0.123 ***	0.021
	0.023	0.871	0.099	0.026	0.159	0.194	0.471	0.005	0.143	0.369	0.626	0.004	0.005	0.635
Inverse Mill's Ratio		0.084	0.425 ***	0.077	0.535 ***	0.559 ***	-0.038	0.209 ***	0.026	0.335 ***	0.204 ***	0.099 *	0.221 ***	-0.141 ***
		0.112	0.000	0.149	0.000	0.000	0.47	0.000	0.625	0.000	0.000	0.061	0.000	0.008
Age of incumbent CEO			0.443 ***	0.121 ***	-0.025 ***	-0.022 **	-0.036 ***	0.127 ***	-0.001	0.027 ***	-0.032 ***	0.331 ***	0.100 ***	0.046 ***
			0.000	0.000	0.004	0.019	0.000	0.000	0.921	0.001	0.000	0.000	0.000	0.000
Incumbent CEO tenure				-0.060 ***	-0.004	-0.005	-0.009	0.005	-0.08 ***	0.04 ***	-0.178 ***	0.073 ***	-0.068 ***	-0.036 ***
				0.000	0.704	0.597	0.321	0.599	0.000	0.000	0.000	0.000	0.000	0.000
Natural log of total assets					-0.019 **	0.054 ***	0.183 ***	0.224 ***	0.125 ***	0.027 ***	0.141 ***	0.100 ***	0.526 ***	0.099 ***
					0.027	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
three year change in Ind. Adj. OROA						0.157 ***	0.015 *	-0.012	0.000	0.005	0.009	0.000	0.029 ***	0.048 ***
						0.000	0.077	0.178	0.985	0.555	0.290	0.997	0.001	0.000
Firm MM BHAR 6 months prior to turnover	0.022 **	0.037 ***	0.004	-0.043 ***	0.02 **	0.012	0.005	0.017 *						
	0.016	0.000	0.594	0.000	0.031	0.175	0.546	0.058						
Industry homogeneity proxy		-0.126 ***	0.211 ***	-0.070 ***	0.047 ***	-0.007	0.151 ***	0.020 **						
		0.000	0.000	0.000	0.000	0.432	0.000	0.020						
Ind. Average ROA			0.147 ***	0.182 ***	0.038 ***	0.111 ***	0.199 ***	0.037 ***						
			0.000	0.000	0.000	0.000	0.000	0.000						
Regulated industry				-0.001	0.118 ***	0.044 ***	0.097 ***	0.001						
				0.900	0.000	0.000	0.000	0.952						
Six month market BHR					-0.033 ***	0.01	0.025 ***	0.026 ***						
					0.000	0.235	0.004	0.003						
Percent independent directors						0.128 ***	0.098 ***	0.081 ***						
						0.000	0.000	0.000						
Average Board age							0.177 ***	0.063 ***						
							0.000	0.000						
Board size								0.143 ***						
								0.000						

Table A-9

The table presents second stage results of Heckman regressions. In the first three columns, the first stage of each model includes only one succession type versus the "no turnover" reference category; alternative succession types are dropped. In the fourth column, the first stage equation models selection of forced versus voluntary departure; firm years with no CEO turnover are dropped. The dependent variable in all columns is the cumulative abnormal return are based on a two day window (0, 1). Robust standard errors are adjusted for clusters in three digit SIC codes. P-values are presented in parentheses.

	Selected outcome vs. no turnover alternative			Forced vs voluntary departure alternative
	Planned Successions	Unplanned Voluntary Successions	Forced Departures	Forced Departures
	(N=449)	(N=324)	(N=356)	(N=356)
Inverse Mills Ratio	0.007	-0.049	0.071 **	0.078 ***
	(0.671)	(0.598)	(0.000)	(0.000)
Age of incumbent CEO	0.000	-0.002	-0.001	-0.001 **
	(0.358)	(0.159)	(0.140)	(0.040)
Incumbent CEO tenure	0.000	0.000	-0.001	-0.002
	(0.274)	(0.311)	(0.564)	(0.757)
Natural log of total assets in year prior to CEO turnover	-0.002	0.001	0.001	0.003
	(0.432)	(0.689)	(0.596)	(0.375)
3 year change in Ind. Adjusted Operating OROA	0.000	0.000	-0.001 ***	-0.002
	(0.791)	(0.215)	(0.006)	(0.603)
Market model BHAR 6 months prior to turnover	0.013	0.017 **	-0.028 **	-0.006 ***
	(0.176)	(0.025)	(0.019)	(0.009)
Industry Homogeneity in year prior to turnover	0.000	0.000	0.000	-0.001
	(0.452)	(0.680)	(0.990)	(0.233)
Ind. Average ROA in year prior to turnover	0.000	0.000	0.004	0.000
	(0.606)	(0.652)	(0.157)	(0.264)
Regulated Industry	0.017	0.012	0.019	0.002
	(0.274)	(0.237)	(0.227)	(0.244)
Six month market BHR prior to turnover	-0.005	0.001	-0.016	-0.019
	(0.709)	(0.444)	(0.568)	(0.404)
Percent Independent Directors	0.002	-0.012	-0.032	-0.011
	(0.918)	(0.644)	(0.233)	(0.462)
Average age of board members	0.000	0.001	0.001	0.000
	(0.470)	(0.273)	(0.527)	(0.692)
Board size	0.002	0.002	0.002	0.003
	(0.137)	(0.8301)	(0.363)	(0.125)
Indicator of Classified board	-0.003	0.006	0.009	0.007
	(0.532)	(0.327)	(0.453)	(0.489)
Constant	-0.11	0.183	-0.081 **	0.023
	(0.171)	(0.177)	(0.035)	(0.178)
Wald Chi-square	6.91	36.67	63.62	62.71
Probability > Chi-square	0.098	0.008	0.000	0.000
Wald (test of independent Equations) Chi-square	0.41	0.38	4.69	27.69
Probability > Chi-square	0.522	0.536	0.000	0.000

Table A-10

This table presents univariate analysis of the relation between the Inverse Mills Ratio and the abnormal announcement return measured using alternative event windows. Panel A presents univariate correlations; and Panel B presents results obtained by regressing the abnormal return (CAR) on the Inverse Mills Ratio (IMR) in a model that includes an intercept.

Panel A	Correlation between IMRs and alternative event window returns		
CAR Window	(0, 0)	(0, 1)	(-1, 1)
Forced vs. No turnover alternative outcome			
Forced departures	0.037 **	0.070 ***	0.058 *
with separate annc.	(0.029)	(0.027)	(0.067)
of successor CEO			
(N=169)			
Forced departures	0.079	0.071 *	0.031
with same day annc.	(0.105)	(0.086)	(0.197)
of successor CEO			
(N=187)			
Forced vs. Voluntary turnover alternative outcome			
Forced departures	0.187 **	0.188 **	0.106 *
with separate annc.	(0.021)	(0.020)	(0.092)
of successor CEO			
(N=169)			
Forced departures	0.086	0.106	0.076
with same day annc.	(0.184)	(0.123)	(0.248)
of successor CEO			
(N=187)			

Panel B		Univariate Regression of abnormal returns on IMR		
	CAR Window	(0, 0)	(0, 1)	(-1, 1)
Forced vs. No turnover alternative outcome				
Forced departures	Inverse mills Ratio	0.059 **	0.044 **	0.039 **
with separate annc.	P-value	(0.037)	(0.038)	(0.013)
of successor CEO	Intercept	-0.002	-0.009 **	-0.008 *
(N=169)	P-value	(0.154)	(0.025)	(0.086)
	Adj. R-square	0.008	0.009	0.008
Forced vs. Voluntary turnover alternative outcome				
Forced departures	Inverse mills Ratio	0.036 **	0.063 ***	0.055 **
with separate annc.	P-value	(0.023)	(0.009)	(0.026)
of successor CEO	Intercept	-0.009 ***	-0.017 **	-0.015 ***
(N=169)	P-value	(0.001)	(0.000)	(0.002)
	Adj. R-square	0.010	0.0136	0.009

Table A-11

This table presents second stage results of Heckman regressions. The dependent variable in the outcome equation is the cumulative abnormal return are based on a two day window (0, 1). Robust standard errors are adjusted for clusters in three digit SIC codes. P-values are presented in parentheses.

	Forced vs. no turnover Alternative outcome		Forced vs voluntary Alternative outcome	
	Forced departures with separate annc. dates	Forced departures with same day annc. dates	Forced departures with separate annc. dates	Forced departures with same day annc. dates
	(N=169)	(N=187)	(N=169)	(N=187)
Inverse Mills Ratio	0.096 ***	0.047 **	0.120 **	0.081 *
	(0.000)	(0.057)	(0.000)	(0.000)
Age of incumbent CEO	0.002	-0.002 ***	-0.008 ***	-0.001 ***
	(0.325)	(0.003)	(0.003)	(0.000)
Incumbent CEO tenure	-0.007 ***	0.000	-0.007 ***	-0.004
	(0.006)	(0.988)	(0.002)	(0.764)
Natural log of total assets in yr. prior to CEO turnover	0.012 *	-0.001	0.008	0.006
	(0.061)	(0.568)	(0.107)	(0.884)
3 year change in Ind. Adjusted Operating OROA	-0.002	-0.006 *	-0.001	-0.001 **
	(0.112)	(0.078)	(0.190)	(0.012)
Market model BHAR 6 months prior to turnover	-0.019 ***	-0.029 *	-0.044 **	-0.005
	(0.009)	(0.095)	(0.029)	(0.150)
Industry Homogeneity in year prior to turnover	0.005 *	0.000	0.003	0.000
	(0.096)	(0.839)	(0.296)	(0.753)
Ind. Average ROA in year prior to turnover	-0.001	0.001 *	0.001	0.001
	(0.834)	(0.067)	(0.247)	(0.045)
Regulated Industry	-0.002	0.001	0.006	0.004
	(0.190)	(0.294)	(0.813)	(0.308)
Six month market BHR prior to turnover	-0.015	-0.036	-0.006	-0.014
	(0.794)	(0.326)	(0.190)	(0.697)
Percent Independent Directors	-0.008	-0.023	-0.047	-0.017
	(0.227)	(0.531)	(0.495)	(0.608)
Average age of board members	0.007 **	-0.001	0.009 **	0.000
	(0.039)	(0.542)	(0.023)	(0.848)
Board size	0.004	0.002	0.005	0.002
	(0.388)	(0.571)	(0.311)	(0.549)
Indicator of Classified board	0.025	0.010	0.017	0.006
	(0.237)	(0.560)	(0.391)	(0.692)
Constant	-0.135 ***	-0.061	-0.032	-0.072 ***
	(0.000)	(0.530)	(0.149)	(0.004)
Wald Chi-square	74.69	22.82	77.79	46.93
Probability > Chi-square	0.000	0.063	0.000	0.000
Wald (test of independent equations) P.> Chi-square	0.000	0.018	0.000	0.059

APPENDIX B

TABLES OF EMPIRICAL RESULTS

USED IN THE ANALYSIS OF

BOARDS OF DIRECTORS' DECISIONS

TO PARTICIPATE IN THE EXTERNAL MARKET FOR CEO TALENT

Table B-1

This Table presents data on CEO departure types and the most recent employment situation of newly hired outside CEOs. Data on CEO departure types are obtained for a search of Lexis Nexis news announcements. Plannned successions include those that are described as planned in news announcements, or those that are announced at least six months in advance of the incumbent CEO's departure. Forced CEO departures include those are described as forced in news announcements, or meet the following three criteria: 1) The departure was not announced at least six months in advance, 2), the departing CEO is under the age of 60, and 3) the CEO does not leave in order to take another job elsewhere, or because of health issues or death. Unplanned retirments include all CEO departures that are not included in any of the other five departure types. Data on the new CEOs' prior employment is from Compustat, Hoover's Company Records, Lexis Nexis Corporate Affiliations, or ReferenceUSA.

Panel A: CEO departure types

	Full Sample		Internal Successions	External Successions		Intra-industry Successions	Inter-industry Successions	
	N	%	N	N	%	N	N	%
Planned Succession	578	36.4%	505	73	12.7%	24	49	66.8%
Unplanned Retirement	473	29.8%	304	169	35.7%	44	125	74.1%
CEO is hired away	57	3.6%	39	18	31.5%	5	13	72.3%
CEO death or health problems	30	1.9%	21	9	30.0%	3	6	66.7%
Forced Departure	449	28.3%	264	185	41.3%	77	131	70.6%
	1,587		1,133	454	28.6%	130	324	71.4%

Panel B: Prior employment type of externally hired CEOs: Public, Private, or Foreign

	External Successions		Intra-industry Successions	Inter-industry Successions	
	N	%	N	N	%
Publicly traded firm (U.S. or Canada based listing)	341	75.1%	104	237	73.1%
Private firm or partnership	94	20.7%	22	72	22.2%
Foreign firm	19	4.2%	4	15	4.6%

Table B-2

This table presents mean and medians for variables of interest and control variables. P-values for tests of differences between the medians of the two samples are presented to the right. The industry homogeneity proxy is calculated following the method of Parrino (1997). The segment sales Herfindahl index is based on Compustat Segment date, and includes segment sales percentages at the four digit SIC industry level. Industry adjusted OROA is calculated as sales less operating expenses, divided by total assets. Twelve month market model buy and hold returns are based on the value weighted CRSP index. Industry average ROA is the simple average for two digit SIC industry classifications. Board independence is measured as the percentage of independent directors on the firm's board; average number of other boards is the simple average of other corporate board . Average board age is the simple average of directors' age in years.

	CEO Succession Firm years (N=1,557)		No CEO turnover firm years (N=13,190)		
	Mean	Median	Mean	Median	P-value
Industry Homogeneity proxy (%)	12.56	12.61	13.27	13.29 ***	0.000
Segment sales Herfindahl Index (%)	18.78	13.48	20.28	15.01 **	0.025
Lagged Industry adjusted OROA	4.06	2.21	5.26	3.15 ***	0.002
Lagged 12 month Market Model BHAR	-19.73	-20.54	-0.08	-0.11 ***	0.000
Industry Average ROA	-6.17	-1.76	-5.92	-1.72	0.759
Lagged 12 month Market BHR %	6.25	7.32	8.20	13.00 ***	0.000
Total Assets (Millions of $)	10,732.70	8,073.31	8,716.91	7,618.99 ***	0.000
Board size	9.58	8	9.22	7 ***	0.000
Independent directors (%)	65.28	60.21	63.96	57.14 ***	0.004
Classified board	61.31	1.00	58.62	0 ***	0.000
Average number of other Boards	0.92	0.40	0.82	0.20 ***	0.000
CEO Age	58.95	60	59.27	58.68 ***	0.000
CEO Tenure (years)	8.87	6.68	8.58	7 **	0.031

Table B-3

This table presents Correlations for all variables of interest included in the analysis. The correlations between variables specific to the turnover sample include only 1499 observations; correlations between other variables are based upon the full sample of turnover and non-turnover firm years (N=14,690). P-values are presented beneath each correlation coefficent.

	Firm Focus Proxy	Ind. Adj. OROA	Firm MM BHAR	Ind. Average ROA	Market BHR Year Prior	CEO Age	CEO Tenure	Total Assets (Logged)	Board Independence	Board Size	Classified Board	Num. Other Boards	Planned Succession	Unplanned Retirement	Forced Succession	Outside Succession	Out of Ind. Succession
Industry Homogeneity proxy	0.015 ***	0.019 **	0.006	-0.065	0.002	-0.039 ***	-0.039 ***	-0.005	0.000	-0.001	-0.008	0.002	-0.028	0.021	0.022	0.022	-0.033 ***
	0.000	0.014	0.489	0.000	0.808	0.000	0.000	0.486	0.977	0.931	0.320	0.725	0.236	0.382	0.933	0.368	0.000
Firm Focus Proxy		-0.09 ***	-0.033 ***	0.119 ***	0.129 ***	-0.011	0.015 *	-0.022 ***	-0.12	-0.047 ***	-0.036 ***	-0.197 ***	-0.03	0.023	0.004	-0.009	-0.023 ***
		0.000	0.000	0.000	0.00	0.165	0.051	0.005	0.000	0.000	0.000	0.000	0.163	0.349	0.868	0.706	0.003
Industry adjusted OROA			0.067 ***	-0.221 ***	-0.035 ***	0.021 ***	0.032 ***	0.095 ***	0.064 ***	0.053 ***	0.053 ***	0.021 ***	0.098 ***	0.007	-0.124 ***	-0.129 ***	-0.018 ***
			0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.000	0.000	0.008	0.000	0.755	0.000	0.000	0.000
Firm MM BHAR year prior				0.033	-0.118 ***	0.049 ***	-0.009	0.014 *	-0.01	0.010	0.007	0.012	0.153 ***	-0.02 *	-0.139 ***	-0.193 ***	-0.066 ***
				0.000	0.000	0.000	0.227	0.079	0.144	0.208	0.407	0.163	0.000	0.063	0.000	0.000	0.000
Industry average ROA					0.076 ***	0.047 ***	0.035 ***	0.181 ***	0.032 ***	0.099 ***	0.030 ***	-0.003	0.021	0.023	-0.063 ***	-0.054 **	-0.003
					0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.660	0.194	0.344	0.009	0.025	0.683
Market BHR year prior						-0.004	0.000	-0.057 ***	0.074 ***	0.090 ***	0.062 ***	-0.105 ***	0.018	-0.01	0.032	-0.003	-0.009
						0.601	0.968	0.000	0.000	0.000	0.000	0.000	0.485	0.768	0.202	0.885	0.250
CEO age							0.137 ***	0.040 ***	0.029 ***	0.052 ***	0.005	0.020 ***	0.265 ***	0.116 ***	-0.432 ***	-0.147 ***	-0.122 ***
							0.000	0.000	0.000	0.000	0.501	0.010	0.000	0.000	0.000	0.000	0.000
CEO tenure	-0.037 ***	-0.041 ***	-0.003	-0.01	-0.106 ***	0.140 ***	0.037	-0.197 ***	-0.126 ***	-0.03 ***							
	0.000	0.000	0.661	0.141	0.000	0.000	0.136	0.000	0.000	0.000							
Total Assets (logged)		0.238 ***	0.364 ***	0.124 ***	0.311 ***	0.118 ***	-0.06 ***	-0.074 ***	-0.129 ***	-0.015 *							
		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.059							
Board Independence			0.316 ***	0.249 ***	0.179 ***	0.079 ***	0.032	-0.046	0.09 *	0.019 **							
			0.000	0.000	0.000	0.000	0.182	0.158	0.082	0.011							
Board Size				0.238 ***	0.239 ***	0.102 ***	-0.040 *	-0.071 ***	-0.078 ***	0.007							
				0.000	0.000	0.000	0.098	0.003	0.001	0.387							
Classified board					0.316 ***	0.057 **	-0.05 *	-0.011	-0.025	0.012							
					0.000	0.019	0.061	0.637	0.309	0.134							
Number of other board memberships						0.091 ***	-0.06 **	-0.028	-0.012	0.024 ***							
						0.000	0.023	0.245	0.631	0.002							
Planned Succession									-0.275 ***	-0.225 ***							
									0.000	0.000							
Unplanned Retirement									0.118 ***	0.096 ***							
									0.000	0.000							
Forced Succession									0.171 ***	0.136 ***							
									0.036	0.001							

Table B-4

This table presents results of a multinomial logit regression modeling alternative CEO departure outcomes versus the no turnover reference category. The regression includes 14,747 observations; the number of observations within each header CEO departure type are listed beneath the column headers in parentheses. Robust standard errors are clustered by 2 digit SIC code. Estimated coefficients have been converted to odds ratios. These are presented to the left; the right column for each regression model shows standardized effects for the odds ratios. The standardized effects are interpreted as the factor change in the odds ratio for a one standard deviation change in each covariate. Descriptions of CEO departure type classification methods are presented in Table B-1. All other variable definitions are described in

	Planned Succession (578)		Unplanned Retirement (473)		CEO is Hired Away (57)		Forced Departure (449)	
	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate
Industry Homogeneity proxy (%)	1.01	1.009	0.809	0.687	0.968	0.944	0.839	0.733
	(0.931)		(0.112)		(0.681)		(0.209)	
Segment Sales Herfindahl Index (%)	0.999	0.935	1.000	1.544	0.997	0.630 **	1.000	1.03
	(0.318)		(0.569)		(0.049)		(0.457)	
Lagged Industry adjusted OROA	1.015	1.195 *	0.985	0.836	1.030	1.426 ***	0.991	0.89 **
	(0.024)		(0.025)		(0.000)		(0.021)	
Lagged 12 month MM BHAR	0.987	0.992	0.879	0.925	0.981	0.989	0.588	0.727 ***
	(0.889)		(0.652)		(0.801)		(0.000)	
Industry Average ROA	0.99	0.916 *	1.005	1.063	1.008	1.102	0.986	0.857 **
	(0.064)		(0.590)		(0.115)		(0.050)	
Lagged 12 month Market BHR	1.003	1.061	0.997	0.951	0.999	0.991	0.979	0.996 *
	(0.398)		(0.808)		(0.917)		(0.059)	
Natural log of Total Assets	1.165	1.248 **	1.120	1.179	1.067	1.098	1.135	1.201 ***
	(0.013)		(0.478)		(0.243)		(0.001)	
Independent directors (%)	0.753	0.911	1.187	1.058	1.088	1.028	0.933	0.977
	(0.540)		(0.818)		(0.850)		(0.817)	
Board size	1.033	1.169 **	1.021	1.105	1.083	1.466 *	1.046	1.241
	(0.037)		(0.322)		(0.087)		(0.036)	
Classified board Indicator	1.266	1.120 ***	1.018	1.009	1.593	1.250	1.075	1.035
	(0.006)		(0.880)		(0.184)		(0.682)	
Average number of other boards	1.277	1.167 ***	0.999	0.999	0.979	0.987	1.071	1.044
	(0.002)		(0.989)		(0.942)		(0.541)	
CEO Age	1.442	2.590 ***	1.361	2.229 **	0.654	0.332 ***	0.661	0.341 ***
	(0.000)		(0.003)		(0.000)		(0.000)	
CEO Tenure (years)	1.087	1.885 ***	0.992	0.941	0.859	0.315 ***	0.925	0.553 ***
	(0.000)		(0.626)		(0.002)		(0.001)	
CEO Tenure Squared	0.998	1.000 ***	1.000	2.225	1.003	1.306 **	1.001	1.306 ***
	(0.000)		(0.657)		(0.029)		(0.003)	
Psuedo R-square	0.197							

Table B-5
This table presents logit and multinomial logistic regression results for alternative models of external CEO succession decisions within the full CEO succession sample. The number of observations included in each regression and the number of observations within the listed subsamples are listed beneath each column header. Robust standard errors are adjusted for 60 clusters in two digit SIC codes. Estimated coefficients have been converted to odds ratios. These are presented to the left; the right column for each regression model shows standardized estimates for the odds ratios. The standardized effects are interpreted as the factor change in the odds ratio for a one standard deviation change in each covariate.

	1			2			3			4		
	Logistic Regression			Multinomial logit						Logistic Regression		
	External Succession vs. Internal succession reference category			External Intra-industry Succession vs. Internal succession reference category			External Inter-industry Succession vs. Internal succession reference category			External inter-industry Succession vs. External intra-industry reference category		
	Full sample: 1499 External: 454			Full sample: 1499 Ext. Intra-industry: 130			Ext. Inter-industry: 324			Full sample: 427 Ext. Inter-industry: 324		
	Odds Ratio	Standardized Estimate		Odds Ratio	Standardized Estimate		Odds Ratio	Standardized Estimate		Odds Ratio	Standardized Estimate	
Industry Homogeneity proxy	1.005	1.021		1.001	1.004		1.007	1.032		1.017	1.076	
	(0.730)			(0.730)			(0.644)			(0.678)		
Segment Sales Herfindahl Index	0.999	0.953		0.999	0.745		0.988	0.857	*	0.979	0.720	*
	(0.362)			(0.175)			(0.093)			(0.067)		
Lagged Industry adjusted OROA	0.992	0.897		0.983	0.808	**	0.998	0.787		1.021	1.384	***
	(0.119)			(0.000)			(0.747)			(0.000)		
Lagged 12 month Market Model BHAR	0.561	0.716	***	0.532	0.695	***	0.568	0.722	***	1.081	1.037	
	(0.000)			(0.000)			(0.000)			(0.727)		
Industry Average ROA	0.996	0.956	*	0.985	0.842	*	0.988	0.866	*	1.018	1.215	
	(0.092)			(0.085)			(0.097)			(0.144)		
Lagged 12 month Market BHR	0.998	0.716		0.993	0.867		0.993	0.853		1.010	1.205	
	(0.637)			(0.147)			(0.121)			(0.170)		
Natural log of Total Assets	0.866	0.805	***	0.946	0.920		0.854	0.788	***	0.950	0.928	
	(0.010)			(0.567)			(0.006)			(0.765)		
Independent directors	1.893	1.225	**	1.644	1.171		1.975	1.241	**	1.276	1.084	
	(0.048)			(0.398)			(0.044)			(0.102)		
Board size	0.941	0.749	***	0.952	0.793		0.935	0.726	***	0.993	0.911	
	(0.005)			(0.121)			(0.009)			(0.894)		
Classified board Indicator	0.948	0.975		1.137	1.064		0.874	0.936		0.783	0.898	
	(0.736)			(0.593)			(0.465)			(0.442)		
Average number of other boards	1.150	1.100		1.023	1.016		1.121	1.139		1.346	1.216	**
	(0.190)			(0.913)			(0.175)			(0.045)		
Incumbent Tenure	0.963	0.723	**	0.881	0.340	*	0.935	0.567	***	0.882	0.409	***
	(0.032)			(0.056)			(0.000)			(0.000)		
Tenure squared	1.003	1.126	**	1.004	3.503	**	1.001	1.433	**	1.004	2.667	***
	(0.452)			(0.005)			(0.017)			(0.005)		
Planned Succession	0.277	0.535	***	0.757	0.873		0.254	0.513	***	0.737	0.888	
	(0.000)			(0.381)			(0.000)			(0.363)		
Psuedo R-square	0.115			0.104						0.086		

Table B-6

Multinomial logit regressions of CEO succession choices compared to the internal succession reference category. Each model includes 1499 observations, alternative succession types are modeled as separate choice outcomes but these are not presented in order to conserve space. The number of observations in each outcome category are listed immediately beneath each column header. CEO successions in which the departing CEO is hired away are deleted from the sample. The forced succession category includes both possibly forced and forced CEO departures. Robust standard errors are adjusted for 60 clusters in two digit SIC codes. Odds ratios are presented to the left in the results for each model; and standardized risk ratios are presented to the right. The interpretation of the standardized estimates is the factor change in the odds ratio for a one standard deviation change in the regressor.

	Planned external Succession vs. planned internal reference category		Unplanned retirement external Succession vs. Internal Unplanned voluntary reference category		Forced external Succession vs. involuntary internal reference category	
	Internal: 505		Internal: 304		Internal: 264	
	External: 73		External: 169		External: 185	
	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate
Industry Homogeneity proxy	1.047	1.220 **	0.973	0.888	1.035	
	(0.032)		(0.262)		(0.254)	
Segment Sales Herfindahl Index	0.999	0.968	1.000	0.925	0.999	0.775
	(0.679)		(0.370)		(0.224)	
Lagged Industry adjusted OROA	0.979	0.747 **	0.995	0.828 **	0.971	0.665 ***
	(0.031)		(0.044)		(0.000)	
Lagged 12 month Market Model BHAR	0.699	0.813	0.479	0.653 ***	0.575	0.727 ***
	(0.177)		(0.000)		(0.001)	
Industry Average ROA	0.986	0.849 **	0.992	0.916	0.990	0.892
	(0.013)		(0.169)		(0.185)	
Lagged 12 month Market BHR	1.007	1.139	0.997	0.936	0.997	0.954
	(0.327)		(0.604)		(0.298)	
Natural log of Total Assets	0.804	0.802 ***	0.846	0.773 ***	0.885	0.805
	(0.064)		(0.002)		(0.166)	
Independent directors	1.190	1.191	3.359	1.469 ***	1.687	1.181 **
	(0.861)		(0.005)		(0.336)	
Board size	1.005	1.031	0.899	0.627 **	0.949	0.782 **
	(0.903)		(0.008)		(0.279)	
Classified board	0.662	0.819	0.838	0.918	1.027	1.013
	(0.178)		(0.386)		(0.916)	
Average number of other boards	0.930	0.952	1.290	1.190	1.165	1.108
	(0.717)		(0.201)		(0.364)	
CEO age	1.041	1.378 ***	1.041	1.375 ***	0.852	0.277 ***
	(0.001)		(0.002)		(0.000)	
CEO tenure	0.979	0.972	0.928	0.533 ***	0.924	0.512 ***
	(0.129)		(0.004)		(0.004)	
Tenure squared	0.998	0.528	1.001	1.524 **	1.000	0.985
	(0.112)		(0.029)		(0.970)	
Psuedo R-square	0.081		0.065		0.060	

Table B-7

Multinomial logit regressions of CEO succession choices compared to an internal succession reference category. Each model includes 1499 CEO turnovers. Robust standard errors are adjusted for 60 clusters in two digit SIC codes. Numbers in parentheses directly beneath each column header show the number of observations in the respective succession outcome. Odds ratios are presented to the left in the results, and standardized risk ratios are presented to the right. The interpretation of the standardized estimates is the factor change in the odds ratio for a one standard deviation change in the regressor.

	Planned internal succession reference category				Unplanned retirement internal succession reference category				Forced internal succession reference category			
	Planned external Intra-industry Succession		Planned external Inter-industry Succession		Unplanned external Intra-industry Succession		Unplanned external Inter-industry Succession		Involuntary external Intra-industry Succession		Involuntary externa Inter-industry Succession	
	(24)		(49)		(44)		(125)		(77)		(131)	
	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate	Odds Ratio	Standardizec Estimate	Odds Ratio	Standardizec Estimate
Industry Homogeneity proxy	1.071	1.184 ***	1.049	1.235	1.002	1.011	0.974	0.945	0.967	0.863	0.983	0.929
	(0.003)		(0.539)		(0.965)		(0.291)		(0.497)		(0.663)	
Segment Sales Herfindahl Index	1.001	1.453	0.998	0.682	1.000	1.332	0.985	0.891 ***	1.001	1.215	0.998	0.665 *
	(0.161)		(0.770)		(0.150)		(0.004)		(0.553)		(0.070)	
Lagged Industry adjusted OROA	0.964	0.886 **	0.992	0.882	0.972	0.673 ***	0.986	0.827	0.987	0.843 **	0.963	0.795
	(0.037)		(0.541)		(0.004)		(0.174)		(0.025)		(0.120)	
Firm Lagged 12 month MM BHAR	0.573	0.739	0.999	0.955	0.757	0.852	0.347	0.543 ***	0.553	0.711 ***	0.414	0.601 ***
	(0.143)		(0.388)		(0.384)		(0.000)		(0.003)		(0.000)	
Industry Average ROA	0.991	0.868 **	0.986	0.850	0.969	0.0697 **	0.979	0.786 **	0.986	0.854	0.981	0.805 *
	(0.037)		(0.132)		(0.049)		(0.024)		(0.226)		(0.270)	
Lagged 12 month Market BHR	0.984	0.646 *	0.997	0.954	0.999	0.979	0.999	0.998	0.988	0.795 **	0.989	0.813
	(0.051)		(0.753)		(0.865)		(0.869)		(0.044)		(0.263)	
Natural log of Total Assets	1.158	1.612	0.708	0.594 **	0.989	0.983	0.822	0.743 **	0.952	0.929	0.846	0.777 *
	(0.320)		(0.014)		(0.955)		(0.019)		(0.670)		(0.086)	
Independent directors	5.606	1.728	6.749	1.832 *	2.342	1.310	5.551	1.723 ***	0.757	0.915	2.081	1.262 *
	(0.170)		(0.055)		(0.285)		(0.010)		(0.775)		(0.077)	
Board size	0.861	0.590	0.898	0.599 *	0.936	0.728	0.875	0.531 *	1.127	1.467	1.091	1.518 *
	(0.133)		(0.100)		(0.393)		(0.066)		(0.149)		(0.063)	
Classified board	1.266	1.121	0.999	0.999	1.64	1.271	1.306	1.138	1.244	1.112	1.230	1.106
	(0.694)		(0.989)		(0.287)		(0.523)		(0.573)		(0.535)	
Average number of other boards	0.831	0.882	1.259	1.169	0.703	0.788	0.792	0.854	0.976	0.984	1.082	1.055
	(0.660)		(0.409)		(0.193)		(0.347)		(0.912)		(0.676)	
CEO age	1.018	1.151	1.055	1.532 ***	0.989	0.919	0.963	0.740 *	1.019	1.165 *	0.863	0.308 ***
	(0.777)		(0.002)		(0.691)		(0.082)		(0.396)		(0.000)	
CEO tenure	1.154	3.395 **	1.194	4.551 **	1.109	2.423 *	0.984	0.875	1.042	1.421	0.971	0.779
	(0.047)		(0.024)		(0.079)		(0.790)		(0.531)		(0.447)	
CEO tenure squared	0.995	0.230	0.995	0.167 **	0.996	0.369	0.999	0.835	1.002	1.847	0.999	0.968
	(0.329)		(0.016)		(0.198)		(0.815)		(0.630)		(0.227)	
Psuedo R-square	0.084				0.089				0.103			

Table B-8

This table presents means and difference of medians test results for firms that report hiring an executive search firm to aid in the search for the replacement CEO, and those that do not. Data on firms' self-reported use of an executive search firm is based upon a search of news announcements and proxy statements. The analysis includes 412 external successions.

Panel A

	Search Firm Hired (N=85)	Search firm Not Hired (N=327)	P-value
Planned succession	17.78	16.01	0.731
Unplanned retirement	45.55	40.73	0.997
Forced	36.67	43.26	0.543
Inter-industry hire	67.77	71.98	0.961

Panel B

	Search Firm Hired (N=85)	Search firm Not Hired (N=327)		P-value
CEO Age	58.00	58.00		0.859
Industry Homogeneity proxy (%)	12.91	12.36	**	0.036
Segment Sales Herfindahl Index (%)	13.32	13.98		0.626
Lagged Industry adjusted OROA	2.61	0.47		0.165
Lagged 12 month Market Model BHAR	-15.53	-36.71		0.465
Total Assets	2,572.20	1,046.31	***	0.000
Lagged 12 month Market BHR	7.53	7.32		0.212
Industry Average ROA	-1.32	-3.75		0.015
Independent directors (%)	61.05	60.09		0.279
Board size	9.00	7.00	***	0.003
Classified board	61.00	56.12		0.518
Average number of other boards	0.43	0.33	**	0.015

Table B-9

This table presents logistic regression analysis of the choice of hiring an executive search firm to aid in the search for the replacement CEO, and the likelihood that the newly hired CEO survives the first three years. Data on firms' self-reported use of an executive search firm is based upon a search of news announcements and proxy statements. The regressions includes 412 external successions without missing data. Robust standard errors are clustered by two digit SIC code. Odds ratios are presented to the left in the results, and standardized risk ratios are presented to the right. The interpretation of the standardized estimates is the factor change in the odds ratio for a one standard deviation change in the regressor.

	Dependent variable: Search firm hired (N=412)		Dependent variable New CEO survives 3 years or more (N=412)	
	Search firm=1: 85		Survives 281	
	Odds Ratio	Standardized Estimate	Odds Ratio	Standardized Estimate
Industry Homogeneity proxy	1.065	1.339 *	1.053	1.274 **
	(0.054)		(0.050)	
Segment Sales Herfindahl Index	0.999	0.967	0.998	0.775 *
	(0.871)		(0.053)	
Lagged Industry adjusted OROA	0.987	0.821 **	1.006	1.125
	(0.016)		(0.234)	
Lagged 12 month Market Model BHAR	1.044	1.054	1.003	1.139 *
	(0.871)		(0.100)	
Natural log of Total Assets	1.468	1.739 ***	1.094	1.128
	(0.001)		(0.346)	
Industry Average ROA	1.014	1.163	1.005	1.072
	(0.312)		(0.584)	
Lagged 12 month Market BHR	0.997	0.951	1.006	1.105
	(0.719)		(0.380)	
Independent directors	1.151	1.042	0.905	0.951
	(0.834)		(0.852)	
Board size	0.987	0.940	1.006	1.050
	(0.722)		(0.913)	
Classified board	1.032	1.091	0.885	0.931
	(0.928)		(0.712)	
Average number of other boards	1.071	1.090	1.220	1.140
	(0.747)		(0.262)	
Age of new CEO in year hired			0.941	0.663 ***
			(0.001)	
Search firm assisted search			1.504	1.149
			(0.180)	
Psuedo R-square	0.085		0.084	

Table B-10

This table presents results for difference of medians tests. P-values are presented in the far right column. Data on newly hired CEO's skills or experience are collected from news announcements at the time of the CEO's appointment. The analysis includes 538 external CEO-firm matches for which news reports with some commentary by the board of the hiring firm could be found, in the years 1997-2008.

	Intra-industry CEO-firm match (N=169)	Inter-industry CEO-firm match (N=369)	
General Management skills	72.58	73.45	0.827
Global experience	27.42	34.68 *	0.096
Strategy	0.2957	42.52 **	0.022
Leadership	27.96	35.62 *	0.051
Marketing/Branding	39.78	45.5	0.129
Service/Customer Relations	5.85	9.89 *	0.076
Technical	52.15	45.26 *	0.059
Operations	93.02	88.36 **	0.048
Industry reputation	12.37	6.65 ***	0.006
Restructuring	27.19	20.85	0.359
Cost reduction/profitability	36.02	37.05	0.808
Growth	47.84	56.87 **	0.039
R&D/Innovation	17.2	14.48	0.392
Finance/Accounting	19.89	19.00	0.798
Legal	7.52	7.81	0.901
Acquisitions/mergers	23.12	15.43 **	0.023

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