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Essays On Corporate Governance

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ESSAYS ON CORPORATE GOVERNANCE

by

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ABSTRACT

This dissertation is composed by two essays that explore corporate governance issues in S&P firms.

The first essay examines changes in corporate governance after a firm gets added to the S&P 500 index? Using firms added from 1994 to 2007, this paper examines how governance mechanisms change for these firms. Specifically, I look at both the overall governance and details on how each mechanism changes. I find that governance improves after being added to the index. Controlling for firm size, leverage, prior firm performance, and growth opportunities, the market reacts positively to governance improvements as a whole. In addition, changes in governance are positively associated with changes in operating performance.

In the second essay, the departure of a CEO often raises questions about who will replace him/her. This study examines the homogeneity/heterogeneity nature of the internal labor market using a novel measure, a heterogeneity index, which captures the concentration of executive compensation levels. I find that a more homogeneous internal labor market is associated with (1) a greater likelihood of an internal replacement, (2) a higher probability of a CEO turnover, and (3) a bigger tournament prize. In addition, the negative performance-turnover relationship is strengthened by a more homogeneous internal labor market. The heterogeneity index seems to proxy for internal labor market competition.

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CHAPTER 1 INTRODUCTION

Recent corporate scandals (e.g. Enron, Worldcom, Global Crossing, etc.) have sparked renewed interest from researchers and investors alike. In the first part of my dissertation, I examine how governance mechanisms change for firms being added to the S&P 500 index. I find that governance improves after being added to the index. Using a novel measure of governance improvements, I find that the market reacts positively to governance improvements. Also, changes in governance are positively associated with changes in operating performance.

In the second part, I examine issues related to CEO successions with another novel measure, competition index. Using the competition index to capture the concentration of executive compensation levels, I find that a more competitive internal labor market is associated with (1) a greater likelihood of an internal replacement, (2) a higher probability of a CEO turnover, and (3) a bigger tournament prize. In addition, the negative performance-turnover relationship is strengthened by a more competitive internal labor market.

CHAPTER 2
GOVERNANCE CHANGES FOR FIRMS ADDED TO THE S&P 500

2.1 Introduction

Companies to be included in the Standard and Poor's 500 (S&P 500) index are selected by the Index Committee and a team of analysts and economists at Standard and Poor's. The potential companies have to distinguish themselves in order to gain membership. Membership in the S&P 500 index provides a certain level of prestige to its members. However, little is known about what happens after a firm is added.

One stream of research focuses on interim performance and reports that the market reacts favorably to firms following index inclusion (Harris and Gurel, 1986; Shleifer, 1986; Beneish and Whaley, 2002). Another stream of research centers on long-term performance. They provide evidence of superior permanent performance post-addition (Lynch and Mendenhall, 1997; Kaul et al., 2000; Blume and Edelen, 2001). While prestige and "certification" can be used to explain the transitory price effect (Jain, 1987; Kappou et al., 2008), the justification for the permanent price effect is quite mixed. Gompers et al. (2003) provide evidence on the governance-performance relationship. In this study, I conjecture that changes in governance mechanisms following index inclusion may help explain the persistence in firm operating performance.

The importance of governance has gained renewed interest in recent literature, especially with the outburst of corporate scandals (e.g. Enron, Global Crossing, Worldcom) and the passing of the Sarbanes-Oxley Act of 2002 (Coates, 2007; Switzer, 2007; Chang and Sun, 2009). Recent research highlights the importance of corporate governance. In their 1997 paper, Shleifer and

Vishny stated that, "the subject of corporate governance is of enormous practical importance." In a more recent paper, Gillan (2006) re-emphasizes the importance of corporate governance. Klapper and Love (2004) find that governance matters, especially in countries with weak legal environments. Fisman et al. (2005) show that governance plays an important role in the performance-dismissal relationship.

For firms added to an index, governance structures change significantly. Research has shown that institutional investors increase their holdings in firms that are being added to the index (Pruitt and Wei, 1989; Lynch and Mendenhall, 1997; Shankar and Miller, 2006). A similar trend is found for analyst coverage as well (Liang et al., 2008; Yu, 2008). These changes will likely impact current or future performance (Gompers et al., 2003; Klapper and Love, 2004; Bhagat and Bolton, 2008).

In this study, I extend this literature by taking a more comprehensive look at how governance changes following additions. Specifically, I examine eight monitoring mechanisms both individually and in aggregate. The aggregate approach is designed to capture the notion that monitoring mechanisms may be substitutes or complements (Rediker and Seth, 1995; Florackis, 2005). Thus, considering governance as a whole gives a more comprehensive picture of how governance changes. Mechanisms examined in this study include the Governance Index (G-Index), Entrenchment Index (E-Index), institutional ownership, management ownership, blockholders' ownership, duality, board size, and proportion of outsiders on a board. I also create an Improvement Index, a collection of improvements in governance mechanisms, to gauge the overall changes in governance.

I find governance mechanisms improve after firms are added to the S&P 500 index. All governance mechanisms (except management ownership and blockholders' ownership) exhibit an improvement post-addition. To see how the market reacts in response to changes in governance mechanisms, cumulative abnormal returns (CARs) are regressed on the various governance mechanisms. The results suggest that changes in institutional ownership have a significant impact. In addition, I find a positive and significant coefficient for the Improvement Index, suggesting that the market views governance improvements as good news. Finally, I find that governance improvements are positively related with operating performance improvements.

This study contributes to the literature in several ways. First, prior research on governance focuses on subsets of mechanisms. This paper acknowledges the fact that firms have the ability to choose among different governance mechanisms and examines a collection of governance mechanisms. Using a novel measure, I offer a different perspective for examining governance issues. Second, this paper provides an alternative explanation to the long-term performance persistence. Third, I show that being added to the S&P 500 affects a firm's overall governance structure. Specifically, monitoring is increased, which may be consistent with the increased public scrutiny of firms in the index.

The remainder of the paper is organized as follows. The next section discusses the literature review and the hypotheses. The data and sample construction are then discussed, followed by a discussion of the results. The last section provides some concluding remarks.

2.2 Literature Review and Hypotheses Development

The S&P 500 index is considered a bellwether for the American economy and widely regarded as the best single gauge of the U.S. equities market (Standard and Poor's, 2009). In order to be included in this index, potential firms have to first meet seven eligibility criteria[1]: (1) domicile, (2) market capitalization of $3.5 billion or more, (3) public float of at least 50%, (4) four consecutive quarters of positive as-reported earnings, (5) contribute to sector balance maintenance, (6) adequate liquidity and reasonable price, and (7) company type. Then, firms have to be selected for inclusion by the Standard and Poor's (S&P) Index Committee, a team of economists from S&P and index analysts. Hence, firms in the index as well as firms to be included enjoy some level of prestige. Being selected for inclusion also conveys positive information about the prospects and longevity of that firm and thus provides "certification" to potential investors (Jain, 1987; Dhillon and Johnson, 1991; Kappou et al., 2008).

Numerous studies have found positive announcement returns for firms to be included to an index (Harris and Gurel, 1986; Shleifer, 1986; Dhillon and Johnson, 1991; Graham and Pirie, 1994; Beneish and Whaley, 2002; Chen et al., 2004)[2]. In addition, prior studies have demonstrated that firms exhibit superior long-term performance following index inclusion (Lynch and Mendenhall, 1997; Kaul et al., 2000; Blume and Edelen, 2001; Madhavan, 2003; Chen et al., 2004; Platikanova, 2008). However, the explanation for this persistence is mixed. Chen et al. (2004) argue that the permanent price effect is due to an increase in investor awareness while Platikanova (2008) asserts that it is due to an improvement in earnings quality.

[1] For details on the eligibility criteria, see the Standard and Poor's website (http:// standardandpoors.com).
[2] Not all announcements for additions convey positive information. Firms may be added to the index due to corporate restructuring such as mergers, acquisitions, etc.

I propose that governance structures of firms added to the index will improve, which may lead to long-term performance persistence.

In terms of performance, several studies document permanent price increases following index inclusion (Kaul et al., 2000; Wurgler and Zhuravskaya, 2002; Brooks et al., 2004). Brooks et al. (2004) examine the long-run performance of stocks added to the S&P 500 index. Using different time intervals up to 180 trading days after inclusion, they find stock price increases and the prices do not reverse. They conclude that stock performance improves for firms after index inclusion. Using a simple model of demand curves for stocks, Wurgler and Zhuravskaya (2002) argue that since individual stocks do not have perfect substitutes, risk-averse arbitrageurs have to bear additional risk and thus will take trade less aggressively. They show that mean cumulative abnormal returns for added stocks do not reverse within 20 trading days and their findings support the notion that demand curves for stocks slope downwards. Using realized earnings per share (EPS), Denis et al. (2003) show that firms added to the S&P 500 index outperform peer firms and argue that index inclusion is not an information-free event.

The performance improvement phenomenon is not only limited to the United States. Kaul et al. (2000) examine firms in the Toronto Stock Exchange (TSE) 300 index to test whether demand curves for stocks slope downwards. They argue that unlike using the S&P 500, the TSE 300 redefining event is information free and allow them to segregate the price pressure effects. They show that stock prices did not reverse even as trading volume returned to normal and find support for downward sloping demand curves for stocks.

Studies have shown that firms encounter noticeable governance changes after being added to an index. Pruitt and Wei (1989) examine actual changes in institutional holdings and

find that additions to the S&P 500 index are associated with increases in institutional holdings. Hegde and McDermott (2003) also find that institutional investors increased their holdings following S&P 500 index addition. In another S&P 500 study, Chen et al. (2004) report that both the number of institutions and institutional holdings increase after firms are added to the index. An increase in institutional holdings has also been observed in firms added to the Russell 2000 index (Biktimirov et al., 2004) and S&P 600 index (Shankar and Miller, 2006).

In addition, firms added were found to draw more analyst attention. Analysts typically begin or increase their coverage of included firms in order to generate trading in these stocks, thereby creating awareness (Irvine, 2003). Consistent with this view, Liang et al. (2008) find that analysts are more likely to continue or initiate coverage of a firm that has joined the S&P 500 index.

Previous research has focused on performance and/or some aspect of governance, either on institutional investors, analyst coverage, or board characteristics. Examining executive compensation issues, Hartzell and Starks (2003) argue that institutional investors serve a monitoring role. Schellenger et al. (1989) find a positive relationship between outside directors' representation on a board and corporate performance. In an examination of seasoned equity offerings, D'Mello et al. (2005) provide support for the monitoring hypothesis by demonstrating a positive relation between post-issue changes in institutional ownership and long-term performance. Bhojraj and Sengupta (2003) provide evidence showing greater institutional ownership is associated with higher bond ratings and lower bond yields. While some studies find support, others conclude otherwise. Using corporate takeovers as a backdrop, Duggal and Millar (1999) do not find evidence that institutional investors enhance efficiency in the market

for corporate control. Vance (1978) finds a positive relation between inside directors and firm performance. In Kesner's (1987) paper examining Fortune 500 firms, he also shows a positive relation between the proportion of inside directors and returns to investor. Furthermore, some papers[3] find no relationship at all. Their mixed findings are not surprising, given the fact that their analyses examine governance mechanisms in an isolated context. This paper adopts a universal approach by examining an array of governance mechanisms and examines how the various governance mechanisms of S&P 500 companies have changed following their addition to the index. Specifically, I examine eight different governance mechanisms, namely: institutional investors, G-Index, E-Index, duality, board size, board independence, management ownership, and blockholders' ownership.

For institutional ownership, a change is expected following a firm's inclusion to an index, as suggested by earlier research (Pruitt and Wei, 1989; Hegde and McDermott, 2003; Chen et al., 2004; Shankar and Miller, 2006). In this paper, an improvement in institutional ownership is defined as an increase in institutional ownership, based on support from previous studies (Healy et al., 1999; Ajinkya et al., 2003).

Board characteristics are another aspect of governance that I examine. Agency theory suggests that it may not be in the firm's best interest to have the CEO holding the Chairman of the board position (Fama and Jensen, 1983; Rechner and Dalton, 1991; Jensen, 1993; Pi and Timme, 1993; Chang and Sun, 2009). The rationale behind is that the CEO may become too powerful for the board to overcome since he/she is also heading the board. Since duality is a binary variable, an improvement in duality is defined as a reduction in duality.

[3]See (Chaganti, Mahajan, and Sharma, 1985; Kesner, Victor, and Lamont, 1986; Zahra and Stanton, 1988; Daily and Dalton, 1992).

As for board size, larger boards are less effective, as evidenced by Lipton and Lorsch (1992) and Jensen (1993). Furthermore, Yermack (1996) and Eisenberg et al. (1998) provide evidence that smaller boards are associated with higher firm value. For this reason, board size is expected to decrease. However, when large institutions increase their holdings in a firm, they may want to secure a board seat, thereby increasing the board size. I follow Lipton and Lorsch (1992) and Jensen (1993), and define an improvement in board size as a reduction in board size.

Prior studies provide evidence on the favorable impact of outside directors to influence firm decisions aimed at maximizing shareholder wealth. Beasley (1996) documents a negative relationship between outside directors and likelihood of financial fraud. Fama and Jensen (1983) indicate that outside directors, by providing expertise and monitoring services, add value to firms. Examining the fraction of the board made up of non-officers, Bhojraj and Sengupta (2003) report that firms with effective governance mechanisms are rewarded with superior bond ratings and lower yields. Rosenstein and Wyatt (1990) provide evidence on the potential benefit of having an outsider on a board by showing that the appointment of an outside director is accompanied by significantly positively excess returns. Thus, an improvement in the proportion of outside directors is defined as an increase in the proportion of outside directors on a board.

Some studies have focused on the monitoring function of blockholders. Park and Song (1995) compare the year-end performance between block firms and non-block firms and find that block firms outperform non-block firms. They attribute the performance difference to possible monitoring by the blockholders. Shome and Singh (1995) examine the relationship between firm value and blockholdings and find that the market reaction to announcement of block formations

is positive. Hence, an improvement in blockholders' ownership is defined as an increase in blockholders' ownership.

While some focused on blockholders, others focused on management. In their seminal paper, Jensen and Meckling (1976) lay the foundation for future work on agency issues. Using a theoretical model, they show that a manager who owns 100 percent of the residual claims on a firm will make decisions which maximize his utility and agency costs will be generated when the owner-manager sells off a portion of his/her residual claims. Building on Jensen and Meckling's (1976) work, Ang et al. (2000) find that agency costs vary inversely with the manager's ownership share, providing support to the theoretical predictions of Jensen and Meckling (1976). Similar to blockholders' ownership, an improvement in management ownership is defined as an increase in management ownership.

In addition to examining individual mechanisms, some studies suggest that mechanisms may be interrelated. Using young IPO firms, Berry et al. (2006) provide evidence that governance mechanisms may work positively to reduce the agency costs that arises from the decrease of managerial ownership. In a U.K. study, Florackis (2005) demonstrate that managerial ownership and managerial compensation work as substitute mechanisms in mitigating agency issues. Examining multiple control mechanisms, Rediker and Seth (1995) also provide evidence supporting the substitution hypothesis. In another U.K. study, Nikoskelainen and Wright (2007) find that a balance of interrelated governance mechanisms is critical for value increase in buyouts. Using a large sample of firms, Agrawal and Knoeber (1996) provide empirical evidence of interdependence among various governance mechanisms. Hence, I combine the mechanisms to examine the aggregate effect.

2.3 Data and Methodology

Firms to be added to the S&P 500 index are identified from the Standard and Poor's website. To ensure accuracy, firms are then verified through the *Wall Street Journal*, *New York Times*, *Los Angeles Times*, *Washington Post*, ProQuest, and *PR Newswire*. The sample period begins in 1994, which is the starting date for company filings at the Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database of the U.S. Securities and Exchange Commission (SEC), and ends in 2007. This process yields an initial sample of 427 firms.

Additional restrictions are imposed which reduce the sample size. Not all index additions convey valuable information for the current study. Firms that are added to the index due to mergers and acquisitions (M&A), corporate restructuring and/or name changes were excluded from the sample, reducing the sample size to 393. In addition, in order to calculate the excess returns for each firm, closing price information must be available from 2 days prior to and 2 days after the announcement date. Also, to be able to estimate the change in institutional ownership, information on institutional ownership must be available for 2 quarters prior and 2 quarters after the announcement date. Firms with missing information are excluded. The final sample includes 347 firms (See Table 2-1).

Cumulative Abnormal Returns (CARs) are used to measure the market reaction. Stock price information is obtained from the Center for Research in Security Prices (CRSP). A firm's cumulative return (CRTN) is calculated as the sum of the firm's holding period return over the 2-day period. In this study, three indices are used to proxy for the market, namely the S&P 500 index, the CRSP Value-Weighted index, and the CRSP Equal-Weighted index. Market cumulative return (CMKTRTN) is calculated as the sum of the market's holding period return

over the same 2-day period. For robustness, I calculate CARs using two event windows, (0,2) and (-1,1). The CARs over a 2-day window are calculated as the difference between the firm's cumulative return and the market's cumulative return over a 2-day window, as shown below:

$$CAR_i = CRTN_{it} - CMKTRTN_t \quad (1)$$

Studies have shown that firms being added to an index exhibit positive announcement period abnormal returns (Graham and Pirie, 1994; Beneish and Whaley, 2002). As shown in Table 2-2, the sample CAR over the (0,2) window averages about 4.3%, with p-values less than 0.01. The CRSP Equal-Weighted Index and CRSP Value-Weighted Index are also used as market indices to make sure the results are not driven by the choice of the market indices. The abnormal return results relative to the CRSP Equal-Weighted and Value-Weighted indices are qualitatively similar to those of the S&P 500.

Institutional ownership (I.O.) is defined as the ratio of total shares owned by all institutions to the total shares outstanding (T.S.O.). Quarterly institutional holdings data and total shares outstanding are obtained from the CDA/Spectrum Institutional Investors' (13-F) database and Standard and Poor's Compustat (COMPUSTAT) database, respectively. The change in institutional ownership (ΔI.O.) in response to addition to the S&P 500 index is calculated as the difference between institutional ownership in the quarter before and the quarter after the announcement quarter:

$$\Delta I.O. = \frac{TotalSharesOwnedByInstitutions_{q+1}}{T.S.O._{q+1}} - \frac{TotalSharesOwnedByInstitutions_{q-1}}{T.S.O._{q-1}} \quad (2)$$

Since institutional ownership data are only available quarterly, the institutional ownership before and after each quarter are used to allow more time for changes to materialize. For example, the

announcement that Maxim Integrated Products was to be included in the S&P 500 index was made on May 2, 2000. In this case, the post-institutional ownership information and pre-institutional ownership information are obtained from the quarter ending September 30, 2000 and March 31, 2000, respectively. For completeness, I also calculate change in institutional ownership using two quarters before and two quarters after the announcement quarter. The results are qualitatively similar.

Another aspect of governance I examine is board characteristics. Specifically, I look at board size, proportion of outside directors on a board, and duality. Board size is the number of directors on a corporate board. To calculate the change in board size, I obtain the board size in the year before the inclusion and the board size in the year after the inclusion and take the difference. The proportion of outside directors on a board is the fraction of outside/independent directors as a percentage of the board size. Directors are classified as independent/outsiders if they are not employees of the firm, do not have substantial business relations with the firm, are not related to employees, or are not former employees. For the change in the proportion of outside directors on a board, I obtain the proportion of outside directors on a board from prior the inclusion and post-inclusion and subtract the prior from the post. Duality is defined as a firm having the same person holding the Chief Executive Officer (CEO) and Chairman of the Board (Chair) positions. Duality takes the value 1 if the same person holds the CEO/Chair posts, and zero otherwise. To see the change in duality, I examine the duality situation pre- and post-addition and take the difference between them. Data on board-related information were hand-collected from proxy statements, available in EDGAR.

Management ownership is defined as the total shareholdings of all senior management and directors and is obtained from the proxy statements. To calculate the change in management ownership, I take the difference between the pre- and post-inclusion management ownership. Blockholders are individuals or institutions which hold a substantial stake in a corporation. A blockholder is defined as an individual or institution holding at least 5% of the firm's total outstanding shares and blockholder ownership is defined as the ratio of sum of all shares owned by all blockholders to the total shares outstanding. Information on blockholders' holdings is obtained from proxy statements. To measure the change in blockholders' ownership, I subtract the pre-addition blockholders' ownership from the post-addition blockholders' ownership.

The G-Index, adopted from Gompers et al. (2003), tracks 24 unique provisions covered by the Investor Responsibility Research Center (IRRC), covering areas such as charter, bylaws, takeover laws, state laws, etc. The E-Index, adopted from Bebchuk et al. (2004), is based on 6 of the 24 provisions tracked by the G-Index and attempts to capture the extent to which shareholders can impose their will on management. Both indexes are derived using a similar method: one point is added for every provision that restricts shareholder rights, i.e., a lower score implies stronger shareholder rights. To see the change in G-Index and E-Index after the firm's inclusion to the S&P 500 Index, I take the difference between the G-Index/E-Index values pre- and post-addition to the index. For example, S&P announced on May 25, 2000, that Agilent Technologies will be added to the S&P 500 index. In this case, I would take the G-Index in 1998 (pre-addition) and 2002 (post-addition) to calculate the difference. Note that information on the

G-Index and E-Index are not available every year. Data on the G-Index and the E-Index are obtained from Andrew Metrick's[4] and Lucian Bebchuk's[5] websites, respectively.

To measure the overall governance effect, I construct an Improvement Index (IIndex). For each governance mechanism, I compare the pre- and post-addition values and determine whether it has improved or not. I then identify the governance mechanisms which improved after the inclusion and add 1 for each improvement to the IIndex. Hence, the IIndex is simply the sum of all improved mechanisms, ranging from zero to eight. An improvement is defined as (1) a decrease in the G-Index, (2) a decrease in the E-Index, (3) a decrease in duality, (4) a decrease in the board size, (5) an increase in the proportion of outside directors on a board, (6) an increase in institutional ownership, (7) an increase in management ownership, and (8) an increase in blockholders' ownership.

The control variables used are firm size, prior performance, growth opportunities, and debt level. It is been widely accepted that smaller firms outperformed larger firms, commonly referred to as the "Small Firm Effect" (Banz, 1981; Keim, 1983; Fama and French, 1992; Perez-Quiros and Timmermann, 2000). Total assets are commonly used as a proxy for firm size[6] and I use the natural logarithm of total assets in the analysis. I control for prior performance using industry-adjusted Return on Assets (ROA) for the prior year. Firms which perform well tend to have better governance characteristics. As noted by Gompers et al. (2003), there is a positive relationship between firm performance and governance. Firms are classified into industries based on their 2-digit Standard Industrial Classification (SIC) codes. Industry-adjusted ROA is

[4] http://www.som.yale.edu/faculty/am859/data.html
[5] http://www.law.harvard.edu/faculty/bebchuk/data.shtml
[6] See Agrawal and Knoeber (1996), Eisenberg et al. (1998), Bhojraj and Sengupta (2003), Campello (2006), etc.

the firm's ROA in excess of the median firm's ROA in that same 2-digit SIC industry. ROA is calculated as net income divided by total assets. Tobin's Q is used to control for growth opportunities. A firm's growth opportunities are likely to impact its board composition, as evidenced by Smith and Watts (1992) and Lehn et al. (2003). Tobin's Q is calculated using Chung and Pruitt's (1994) methodology. Their approximate q is defined as: $Tobin's\_Q = \frac{(MVE + PS + DEBT)}{TA}$, where MVE is the product of a firm's share price and the number of common shares outstanding; PS is the liquidating value of the firm's outstanding preferred stock; $DEBT$ is the value of the firm's short-term liabilities net of its short-term assets, plus the firm's long-term debt; TA is the total assets of the firm. Finally, I control for leverage. Financial leverage provides information on how much long-term debt a firm has. The level of debt a firm has should have an impact on the firm's future cash flows and the market's expectation should account for that (Campello, 2006; George and Hwang, 2010). Leverage is the ratio of long-term debt to total assets. Variables used to obtain and calculate the control variables are obtained from COMPUSTAT.

Table 2-3 shows the summary statistics for the sample. A typical corporate board of firms added to the S&P 500 consists of about 9 members (median), of which around two-thirds are independent directors. On average, blockholders hold about one-fifth of total shares outstanding while insiders own approximately 6.3% of total outstanding shares. The mean (median) G-Index and E-Index for the sample is 8.89 (9.00) and 2.48 (3.00), respectively. More than 70% of the sample firms have one person serving both the CEO and Chair posts. Institutional investors own approximately two-thirds of total shares outstanding. The average number of governance "improvements", as shown in the IIndex, is around 3, with a maximum of

7. Sales for the sample average about $1.26 billion, with maximum reaching $13.6 billion. Market capitalization for the average firm in the sample is $9.64 billion. This result is not surprising, considering that the S&P 500 focuses on the large-cap segment of the U.S. equities market. On average, a firm has about 16.8% of long-term debt. Industry-adjusted ROA and Tobin's Q average at around 1.5% and 2.679, respectively. A typical firm in the sample is outperforming its industry peers.

2.4 Results and Discussions

To see whether there is an improvement in governance mechanisms after being added to the S&P 500 index, I compare each mechanism before and after the addition using paired t-tests. The results are summarized in Table 2-4. The sample shows evidence of an improvement in the G-index, E-Index, and Duality, as denoted by a decrease in the variables. However, only Duality is statistically significant (p-value = 0.063). Institutional presence increased over the event, averaging 4.2%, and is statistically significant (p-value = 0.000). This result reaffirms the findings by Pruitt and Wei (1989) and Biktimirov et al. (2004). The sample exhibits a decrease in board size, interpreted as an improvement. However, the decrease is not statistically significant. The proportion of outside directors shows sign of improvement, with an average increase of about 1.1%, and is statistically significant (p-value = 0.067). Management ownership and blockholders' ownership both increased after being added to the index, but the increases are not statistically significant. The results from the paired t-tests are not conclusive; only 3 of the 8 governance mechanisms show improvement following inclusion to the S&P 500 index.

To further investigate whether the governance mechanisms have improved, I examine each mechanism in greater detail. The G-Index, E-Index, and board-related mechanisms for quite a number of firms in the sample exhibit no change. For example, 282 out of 347 firms show no change in duality; there are 240 and 205 firms with no change in the E-Index and the G-Index, respectively. I performed a one-sample test of proportions on each mechanism. For each mechanism, I compare the firms which improved to those which deteriorated, excluding the firms with no improvement/deterioration. Table 2-5 summarizes the results. With the exception of management ownership and blockholders' ownership, all other mechanisms show evidence of statistically significant improvements. Approximately 66% of the firms exhibit improvements in institutional ownership (p-value = 0.000). Similar pattern can be found on the indexes as well, with 62% and 63.6% of the firms showing improvements in G-Index and E-Index, respectively. Improvements on both indexes are significant. Improvement in duality can be found in 61.5% of the firms. Firms in the sample also exhibit improvements in board size and the proportion of outside directors. Both reported statistically significant improvements at the 5% and 10% significance levels, respectively. In addition, t-test and the Wilcoxon signed-rank test are conducted on the IIndex. The results from both tests are summarized in Table 2-6. Panel A shows that the average IIndex is approximately 3, meaning that on average, each firm exhibits 3 governance improvements. The results from both tests conclude that the (1) mean and (2) median of the IIndex are statistically (at 1% levels) and significantly different from zero. The overall results from Table 2-5 suggest that improvements in governance after index inclusion are quite widespread.

To see whether the market reacts to changes in governance mechanisms, the following equation was estimated:

$$CAR_i = \alpha + \beta_1 \Delta IO_i + \beta_2 \Delta GI_i + \beta_3 \Delta EI_i + \beta_4 \Delta NDIR_i + \beta_5 \Delta \%OUT_i + \beta_6 \Delta Duality_i + \beta_7 \Delta MOWN_i + \beta_8 \Delta BOWN_i + \psi * CONTROLS + \varepsilon_i \quad (3)$$

where *ΔIO* is the change of institutional ownership, *ΔGI* is the change in the G-Index, *ΔEI* is the change in the E-Index, *ΔNDIR* is board size, *Δ%OUT* is the percentage of the board members who are outsiders, *ΔMOWN* is management ownership, *ΔBOWN* is the combined holdings of all blockholders. The control variables include proxies for firm size, prior profitability, growth opportunities, and leverage.

The regression results are presented in Table 2-7. Only the change in institutional ownership is statistically significant. The positive coefficient for institutional ownership suggests that the market reacts positively to an increase in the change in institutional ownership. All the other governance variables are not statistically significant. To see if governance mechanisms work in cohesion (rather than in isolation), the following equation was estimated:

$$CAR_i = \alpha + \beta_1 IIndex_i + \psi * CONTROLS + \varepsilon_i \quad (4)$$

where *IIndex* is the improvement index. I utilize the same control variables. The results are summarized in Table 2-8. As expected, the market reacts positively to governance improvements. A one unit increase in the IIndex is associated with a 0.61% increase in CARs. To make sure this result is not driven by institutional ownership, I modify the IIndex to exclude improvements in institutional ownership and re-run the regression. As shown in model (2), the coefficient for IIndex is still positive and statistically significant (p-value = 0.043).

The results from Table 2-8 suggest that improvements in governance are viewed as good news by the market. To see whether operating performance improvement is associated with governance mechanisms improvements, I estimate the following equation:

$$\Delta ROA_i = \alpha + \beta_1 \Delta IO_i + \beta_2 \Delta GI_i + \beta_3 \Delta EI_i + \beta_4 \Delta NDIR_i + \beta_5 \Delta \%OUT_i + \beta_6 \Delta Duality_i + \beta_7 \Delta MOWN_i + \beta_8 \Delta BOWN_i + \psi * CONTROLS + \varepsilon_i \quad (5)$$

where ΔROA is the difference between ROA of two years. For example, ROA1-3 is the ROA difference between Years (t+1) and (t+3). All other variables are as defined earlier. The results are summarized in Table 2-9. In three of the four specifications, the change in duality is negative and statistically significant. As expected, the separation of the CEO/Chair position is associated with performance improvement. In specification (2), a decrease in the board size is significantly associated with an improvement in operating performance, consistent with Jensen (1993) and Yermack (1996). The coefficient for management ownership is positive and also statistically significant.

As discussed earlier, there could be some inter-dependencies among governance mechanisms. To see whether they work together to impact operating performance, I estimate the following equation:

$$\Delta ROA_i = \alpha + \beta_1 IIndex_i + \psi * CONTROLS + \varepsilon_i \quad (6)$$

The regression results are presented in Table 2-10. In all four specifications, the coefficient for the IIndex is positive and statistically significant. An improvement in governance is associated with an improvement in operating performance. This result suggests that governance mechanisms could be working in cohesion rather than in isolation, which could

reconcile some of the inconclusive results from previous studies[7]. Governance mechanisms should not be looked upon separately, but rather as a combined effort.

In summary, I have shown that firm governance improves after being included into the S&P 500 index. The market reacts positively to governance improvements. Also, improvement in firm performance is positively related with governance improvements.

2.5 Robustness of Results

To make sure the results were not driven by a particular choice of variables, I conduct additional tests on the CARs, the market indices, the proxy for firm size, and the constituents of the IIndex.

For the CARs, besides the (0,2) window, I also calculate the CARs for the (-1,1) window. The results are qualitatively similar to the (0,2) window. In addition, two other market indices (CRSP value-weighted index and CRSP equal-weighted index) are used to calculate the CARs.

In this paper, the proxy used to control for firm size is total assets. Others have used either sales (Kaul et al., 2000) or market capitalization (Hartzell and Starks, 2003; Madhavan, 2003; Yu, 2008).

Two components of the IIndex, the G-index and E-index, are highly correlated (correlation coefficient > 0.60), and are potentially capturing the same thing. To make sure the results are not biased due to this relation, I perform additional analyses by (1) excluding E-Index and (2) by excluding G-index in the IIndex computation. All results are qualitatively similar regardless of variables/proxies used and are summarized in Table 2-11.

[7] See Boyd (1995), Baliga et al. (1996), Bhagat and Black (1999), Duggal and Millar (1999), Vafeas (2000), Park and Shin (2004), Jennings (2005), Fich and Shivdasani (2006), Rose (2007), etc.

2.6 Summary and Conclusions

I examine what happens to the governance structures of firms added to the S&P 500 index. With a sample of 347 firms, I compare the pre- and post-addition governance mechanisms. I find that firm governance in general improves after being added to the index. In particular, duality, the proportion of outside directors, and institutional ownership show improvements. Further examination of the mechanisms reveals that many mechanisms do not change over the sample period. Using a one-sample proportions test, I find that all mechanisms (except management ownership and blockholders' ownership) exhibit statistically significant improvements. This is reinforced by the fact that a typical firm exhibits 3 (median) governance improvements post-addition.

To see whether the market reacts to an improvement in governance, I conduct additional analyses. My results show that the market reacts positively to an increase in institutional ownership. Using governance improvements in aggregate, the relationship between the market reaction and IIndex is positive and significant. Hence, I conclude that the market reacts positively to governance improvements.

I also test the relationship between governance improvements and operating firm performance. I find that improvements in governance are positively related to operating performance improvement.

In summary, the results support the notion that for firms added to the S&P 500 index, governance shows improvement and that this improvement leads to better operating performance. Also, the impact of governance should be analyzed collectively.

2.7 References

Agrawal, A. and C. Knoeber (1996), "Firm Performance and Mechanisms to Control Agency Problems between Managers and Shareholders," *Journal of Financial and Quantitative Analysis*, 31:377-397.

Ajinkya, B., S. Bhojraj, and P. Sengupta (2003), "The Governance Role of Institutional Investors and Outside Directors on the Properties of Management Earnings Forecasts," *University of Maryland Working Paper*, College Park, MD.

Ang, J.S., R.A. Cole, and J.W. Lin (2000), "Agency Costs and Ownership Structure," *Journal of Finance*, 55:81-106.

Baliga, B.R., N.C. Moyer, R.S. Rao (1996), "CEO Duality and Firm Performance: What's the Fuss?" *Strategic Management Journal*, 17:41-53.

Banz, R.W. (1981), "The Relationship between Return and Market Value of Common Stock," *Journal of Financial Economics*, 9:3-18.

Beasley, M.S. (1996), "An Empirical Analysis of the Relation between the Board of Director Composition and Financial Statement Fraud," *The Accounting Review*, 71:443-465.

Bebchuk, L., A. Cohen, and A. Ferrell (2004), "What matters in corporate governance?" *Harvard Law School Working Paper*, Cambridge, MA.

Beneish, M.D. and R.E. Whaley (2002), "S&P 500 Index Replacements," *Journal of Portfolio Management*, 29:51-60.

Berry, T.K., L.P. Fields, and M.S. Wilkins (2006), "The Interaction among Multiple Governance Mechanisms in Young Newly Public Firms," *Journal of Corporate Finance*, 12:449-466.

Bhagat, S. and B. Black (1999), "The Uncertain Relationship between Board Composition and Firm Performance," *Business Lawyer*, 54:921-963.

Bhagat, S. and B. Bolton (2008), "Corporate Governance and Firm Performance," *Journal of Corporate Finance*, 14:257-273.

Bhojraj, S., and P. Sengupta (2003), "Effect of Corporate Governance on Bond Ratings and Yields: The Role of Institutional Investors and Outside Directors," *Journal of Business*, 76: 455-475.

Biktimirov, E.N., A.R. Cowan, and B.D. Jordan (2004), "Do Demand Curves for Small Stocks Slope Down?" *Journal of Financial Research*, 27:161-178.

Blume, M. and R. Edelen (2001), "On S&P 500 Index Replication Strategies," *University of Pennsylvania Working Paper*, Philadelphia, PA.

Boyd, B.K. (1995), "CEO Duality and Firm Performance: A Contingency Model," *Strategic Management Journal*, 16:301-312.

Brooks, C., K. Kappou, and C. Ward (2004), "Gambling on the S&P 500's Gold Seal: New Evidence on the Index Effects," *ISMA Centre Discussion Paper*, University of Reading.

Campello, M. (2006), "Debt Financing: Does it Boost or Hurt Firm Performance in Product Markets?" *Journal of Financial Economics*, 82:135-172.

Chaganti, R.S., V. Mahajan, and S. Sharma (1985), "Corporate Board Size, Composition and Corporate Failures in Retailing Industry," *Journal of Management Studies*, 22:400-417.

Chang, J.C. and H.L. Sun (2009), "Crossed-Listed Foreign Firms' Earnings Informativeness, Earnings Management and Disclosures of Corporate Governance Information under SOX," *International Journal of Accounting*, 44:1-32.

Chen, H., G. Noronha, and V. Singh (2004), "The Price Response to S&P 500 Index Additions and Deletions: Evidence of Asymmetry and a New Explanation," *Journal of Finance*, 59:1901-1930.

Chung, K. and S. Pruitt (1994), "A Simple Approximation of Tobin's Q," *Financial Management*, 23:70-74.

Coates, J.C. IV. (2007), "The Goals and Promise of the Sarbanes-Oxley Act," *Journal of Economic Perspectives*, 21:91-116.

Daily, C.M. and D.R. Dalton (1992), "The Relationship between Governance Structure and Corporate Performance in Entrepreneurial Firms," *Journal of Business Venturing*, 7:375-386.

Denis, D.K., J.J. McConnell, A.V. Ovtchinnikov, and Y. Yu (2003), "S&P 500 Index Additions and Earnings Expectations," *Journal of Finance*, 58:1821-1840.

Dhillon, U. and H. Johnson (1991), "Changes in the Standard and Poor's 500 List," *Journal of Business*, 64:75-86.

D'Mello, R., F. Schlingemann, and V. Subramaniam (2005), "Are There Monitoring Benefits to Institutional Ownership? Evidence from Seasoned Equity Offerings," *Tulane University Working Paper*, New Orleans, LA.

Duggal, R. and J.A. Millar (1999), "Institutional Ownership and Firm Performance: The Case of Bidder Returns," *Journal of Corporate Finance*, 5:103-117.

Eisenberg, T., S. Sundgren, and M. Wells (1998), "Larger Board Size and Decreasing Firm Value in Small Firms," *Journal of Financial Economics*, 48:35-54.

Fama, E.F. and K.R. French (1992), "The Cross-Section of Expected Stock Returns," *Journal of Finance*, 47:427-465.

Fama, E.F. and M.C. Jensen (1983), "Separation of Ownership and Control," *Journal of Law and Economics*, 26:301-325.

Fich, E.M. and A. Shivdasani (2006), "Are Busy Boards Effective Monitors?" *Journal of Finance*, 61:689-724.

Fisman, R.J., R. Khurana, and M. Rhodes-Kropf (2005), "Governance and CEO Turnover: Do Something or Do the Right Thing?" *Columbia University Working Paper*, New York, NY.

Florackis, C. (2005), "Internal Corporate Governance Mechanisms and Corporate Performance: Evidence for UK Firms," *Applied Financial Economics Letters*, 1:211-216.

George, T.J. and C. Hwang (2010), "A Resolution of the Distress Risk and Leverage Puzzles in the Cross Section of Stock Returns," *Journal of Financial Economics*, 96: 56-79.

Gillan, S.L. (2006), "Recent Developments in Corporate Governance: An Overview," *Journal of Corporate Finance*, 12:381-402.

Gompers, P., J. Ishii, and A. Metrick (2003), "Corporate Governance and Equity Prices," *Quarterly Journal of Economics*, 118:107-155.

Graham, S. and W. Pirie (1994), "Index Fund Rebalancing and Market Efficiency," *Journal of Economics and Finance*, 18:219-229.

Harris, L. and E. Gurel (1986), "Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressure," *Journal of Finance*, 41:815-829.

Hartzell, J.C. and L.T. Starks (2003), "Institutional Investors and Executive Compensation," *Journal of Finance*, 58:2351-2374.

Healy, P., A. Hutton, and K. Palepu (1999), "Stock Performance and Intermediation Changes Surrounding Sustained Increases in Disclosure," *Contemporary Accounting Research*, 16:485-520.

Hegde, S. and J.B. McDermott (2003), "The Liquidity Effects of Revisions to the S&P 500 Index: An Empirical Analysis," *Journal of Financial Markets*, 6:413-459.

Irvine, P. (2003), "The Incremental Impact of Analyst Initiation of Coverage," *Journal of Corporate Finance,* 9:431-451.

Jain, P.C. (1987), "The Effect on Stock Price of Inclusion in or Exclusion from the S&P 500," *Financial Analysts Journal*, 43:58-65.

Jennings, W. (2005), "Further Evidence on Institutional Ownership and Corporate Value," *Advances in Financial Economics*, 11:167-207.

Jensen, M. (1993), "The Modern Industrial Revolution, Exit and the Failure of Internal Control Systems," *Journal of Finance*, 48:831-880.

Jensen, M.C. and W.H. Meckling (1976), "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3:305-360.

Kappou, K., C. Brooks, and C.W.R. Ward (2008), "A Re-examination of the Index Effect: Gambling on Additions to and Deletions from the S&P 500's 'Gold Seal'," *Research in International Business and Finance*, 22:325-350.

Kaul, A., V. Mehrotra, and R. Morck, (2000), "Demand Curves for Stocks Do Slope Down: New Evidence from an Index Weights Adjustment," *Journal of Finance*, 55:893-912.

Keim, D.B. (1983), "Size-related Anomalies and Stock Return Seasonality: Further Empirical Evidence," *Journal of Financial Economics*, 12:13-32.

Kesner, I.F. (1987), "Directors' Stock Ownership and Organizational Performance: An Investigation of Fortune 500 Companies," *Journal of Management*, 13:499-508.

Kesner, I.F., B. Victor, and B. Lamont (1986), "Board Composition and the Commission of Illegal Acts: An Investigation of Fortune 500 Companies," *Academy of Management Journal*, 29:789-799.

Klapper, L. and I. Love (2004), "Investor Protection and Performance in Emerging Markets," *Journal of Corporate Finance*, 10:703-728.

Lehn, K., S. Patro, and M. Zhao (2003), "Determinants of Size and Structure of Corporate Boards: 1935-2000," *University of Pittsburgh Working Paper*, Pittsburgh, PA.

Liang, L., E.J. Riedl, and R. Venkataraman (2008), "The Determinants of Analyst-Firm Pairings," *Journal of Accounting and Public Policy*, 27:277-294.

Lipton, M. and J. Lorsch (1992), "A Modest Proposal for Improved Corporate Governance," *Business Lawyer*, 48:59-77.

Lynch, A. and R.R. Mendenhall (1997), "New Evidence on Stock Price Effects Associated with Changes in the S&P 500 Index," *Journal of Business*, 70:351-383.

Madhavan, A. (2003), "The Russell Reconstitution Effect," *Financial Analysts Journal*, 59:51-64.

Nikoskelainen, E. and M. Wright (2007), "The Impact of Corporate Governance Mechanisms on Value Increase in Leveraged Buyouts," *Journal of Corporate Finance*, 13:511-537.

Park, S. and M.H. Song (1995), "Employee Stock Ownership Plans, Firm Performance, and Monitoring by Outside Blockholders," *Financial Management*, 24:52-65.

Park, Y.W. and H. Shin (2004), "Board Composition and Earnings Management in Canada," *Journal of Corporate Finance*, 10:431-457.

Perez-Quiros, G. and A. Timmermann (2000), "Firm Size and Cyclical Variations in Stock Returns," *Journal of Finance*, 55:1229-1262.

Pi, L. and S.G. Timme (1993), "Corporate Control and Bank Efficiency," *Journal of Banking & Finance*, 17:515-530.

Platikanova, P. (2008), "Long-Term Price Effect of S&P 500 Addition and Earnings Quality," *Financial Analysts Journal*, 64:62-76.

Pruitt, S.W. and K.C.J. Wei (1989), "Institutional Ownership and Changes in the S&P 500," *Journal of Finance*, 44:509-513.

Rechner, P.L. and D.R. Dalton (1991), "CEO Duality and Organizational Performance: A Longitudinal Analysis," *Strategic Management Journal*, 12:155-160.

Rediker, K. and A. Seth (1995), "Board of Directors and Substitution Effects of Alternative Governance Mechanisms," *Strategic Management Journal*, 16:85-99.

Rose, C. (2007), "Can Institutional Investors Fix the Corporate Governance Problem? Some Danish Evidence," *Journal of Management and Governance*, 11:405-428.

Rosenstein, S. and J.G. Wyatt (1990), "Outside Directors, Board Independence, and Shareholder Wealth," *Journal of Financial Economics*, 26:175-191.

Schellenger, M.H., D. Wood, and A. Tashakori (1989), "Board of Directors Composition, Shareholder Wealth, and Dividend Policy," *Journal of Management*, 15:457-467.

Shankar, S.G. and J.M. Miller (2006), "Market Reaction to Changes in the S&P SmallCap 600 Index," *Financial Review*, 41:339-360.

Shleifer, A. (1996), "Do Demand Curves for Stocks Slope Down?" *Journal of Finance*, 41:579-590.

Shleifer, A. and R.W. Vishny (1997), "A Survey of Corporate Governance," *Journal of Finance*, 52:737-783.

Shome, D.K. and S. Singh (1995), "Firm Value and External Blockholdings," *Financial Management*, 24:3-14.

Smith, C. and R. Watts (1992), "The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies," *Journal of Financial Economics*, 32:263-292.

Standard and Poor's, "S&P 500 Index Fact Sheet," http://www.standardandpoors.com/indices/sp-500/en/us/?indexId=spusa-500-usduf--p-us-l--, accessed July 5, 2009.

Switzer, L.N. (2007), "Corporate Governance, Sarbanes-Oxley, and Small-Cap Firm Performance," Quarterly *Review of Economics and Finance*, 47:651-666.

Vafeas, N. (2000), "Board Structure and the Informativeness of Earnings," *Journal of Accounting and Public Policy*, 19:139-160.

Vance, S.C. (1978), "Corporate Governance: Assessing Corporate Performance by Boardroom Attributes," *Journal of Business Research*, 6:203-220.

Wurgler, J. and K. Zhuravskaya (2002), "Does Arbitrage Flatten Demand Curves for Stocks?" *Journal of Business*, 75:583-608.

Yermack, D. (1996), "Higher Market Valuation of Companies with a Small Board of Directors," *Journal of Financial Economics*, 40:185-212.

Yu, F.F. (2008), "Analyst Coverage and Earnings Management," *Journal of Financial Economics*, 88:245-271.

Zahra, S.A. and W.W. Stanton (1988), "The Implications of Board of Directors Composition for Corporate Strategy and Performance," *International Journal of Management*, 5:229-236.

Table 2-1 Final Sample Selection

Firms are initially identified and verified through Standard and Poor's, *Wall Street Journal*, ProQuest, and *PR Newswire*, yielding 427 firms. 34 more firms are excluded due to mergers and acquisitions, corporate restructuring, and/or name changes. Some institutional ownership data were missing from the 13-Fs. As such, 25 more firms were excluded. An additional 11 firms were excluded due to missing data from CRSP. Another 5 firms were excluded due to missing data from COMPUSTAT. Board information not available from IRRC was obtained from proxy statements. 5 firms could not be verified and were dropped. The remaining 347 firms were used as the sample for this study.

	Number of Firms
Initial Sample	427
Mergers and Acquisitions, Corporate Restructuring, and/or Name Changes	34
Institutional Ownership (13-F)	25
Center for Research in Security Prices (CRSP)	11
COMPUSTAT	5
Proxy Statements	5
Final Sample	347

Table 2-2 Cumulative Returns

The cumulative return is calculated as the sum of the daily return within the event windows, (0,2) and (-1,1). The abnormal or excess return is simply the difference between the cumulative return of the sample and the cumulative return of the S&P 500. The sample size used in this study is 347 firms. P-values are reported in parenthesis.

	Event Window (0,2)	Event Window (-1,1)
Sample	0.043	0.045
S&P500	-0.001	0.000
Difference	0.044	0.045
	(0.000)	(0.000)

Table 2-3 Summary Statistics

This table shows the descriptive statistics for the variables used in this study. Institutional ownership is the total institutional holdings as a percentage of total shares outstanding. Blockholder ownership is the combined holdings of all blockholders. Management ownership is the combined holdings of all senior management. Board size is the total number of directors on a corporate board. Percentage outsiders is the proportion of outside directors as a percentage of board size. A director is classified as independent/outsiders if they are not employees of the firm, do not have substantial business relations with the firms, are not related to employees, or are not former employees. Industry-adjusted ROA is the difference between the firm's ROA and the ROA of the median firm in the same industry. Tobin's Q is calculated using Chung and Pruitt (1994)'s methodology, as the sum of the market value of equity, preferred equity, short-term liabilities net of short-term assets, and long term debt over total assets. Leverage is the ratio of long term debt over total assets. Sales is net sales revenue. Market capitalization is the market value of equity. The sample size used in this study is 347 firms.

Variables	Mean	Median	St. Deviation	Minimum	Maximum
G-Index	8.890	9	2.604	3	15
E-Index	2.484	3	1.417	0	6
Duality	0.706	1	0.456	0	1
Institutional Ownership	0.655	0.683	0.213	0.022	0.987
Blockholders' Ownership	0.196	0.140	0.192	0	0.940
Management Ownership	0.063	0	0.086	0	0.543
Board Size	10.02	9	3.50	4	26
Percentage Outsiders	0.674	0.714	0.188	0.091	0.958
Improvement Index	3.012	3	0.075	0	7
Industry-Adjusted ROA	0.015	0.011	0.035	-0.219	0.346
Tobin's Q	2.679	1.782	2.556	0.075	14.913
Leverage	0.168	0.125	0.164	0.000	0.833
Sales ($ millions)	1,260.0	679.0	1,700.0	13,600.0	35.3
Market Capitalization ($ millions)	9,640.0	6,780.0	11,600.0	116,000.0	143.0
# Observations	347	347	347	347	347

Table 2-4 Changes in Governance Variables before and after Being Added to the S&P 500 Index

For every firm, each governance variable is collected pre- and post-being added to the S&P 500 index. Then, the pre- and post- variables are paired up and their means are compared. Sample size for this analysis is 347. *** and * denotes statistical significance at the 1% and 10% levels, respectively.

	Before Being Added	After Being Added	Diff.	t-stat	p-value
Management Ownership	0.063	0.070	0.006	1.527	0.128
Blockholders' Ownership	0.196	0.201	0.005	0.444	0.657
Duality	0.706	0.663	-0.043*	-1.867	0.063
Board Size	10.023	9.931	-0.092	-0.886	0.376
Percent Outsiders	0.663	0.674	0.011*	1.841	0.067
G-Index	8.890	8.830	-0.061	-1.106	0.270
E-Index	2.484	2.427	-0.058	-1.637	0.103
Institutional Ownership	0.655	0.697	0.042***	7.448	0.000

Table 2-5 Proportions Test

For every firm, each governance variable is identified whether it has improved or deteriorated. I code 1 for an improvement and 0 for deterioration. I exclude variables with no improvement/deterioration. Then, a proportions test is conducted on each governance variable. Sample size ranges from 65 to 347. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% levels, respectively.

	# Observations	Mean	Z-statistic	p-value
Improvement in Institutional Ownership	347	0.660***	5.9588	0.000
Improvement in Management Ownership	347	0.542	1.5568	0.120
Improvement in Blockholders' Ownership	323	0.536	1.2798	0.201
Improvement in Duality	65	0.615*	1.8605	0.063
Improvement in G-Index	142	0.620***	2.8532	0.004
Improvement in E-Index	107	0.636***	2.8035	0.005
Improvement in Board Size	178	0.573*	1.9488	0.051
Improvement in Percent Outsiders	234	0.573**	2.2226	0.026

Table 2-6 Additional Tests on the Improvement Index (IIndex)

The improvement index (IIndex) is a collection of governance mechanism improvements over the event. The t-test tests whether the mean is significantly different from zero; the Wilcoxon Signed-Rank test tests whether the median is significantly different from zero. Sample size for this analysis is 347. P-values are reported in parenthesis. *** denotes statistical significance at the 1% level.

Panel A: t-test

Variable	# Obs.	Mean	Standard Error	P-value
Improvement Index	347	3.012***	0.0753	0.000

Panel B: Wilcoxon Signed-Rank test

Variable	# Obs.	Z-Statistic	P-value
Improvement Index	347	16.221***	0.000

Table 2-7 CAR Regression on Governance Changes

The dependent variable is the Cumulative Abnormal Returns (CARs) associated with the announcement of addition into the S&P 500 Index. The dependent variable is regressed on the different governance variables and the control variables. Sample size for this analysis is 347. P-values are reported in parenthesis. *** denotes statistical significance at the 1% level.

	CARs
Constant	0.0891
	0.22
Chg in Institutional Ownership	0.0833***
	0.004
Chg in Board Size	0.0002
	0.876
Chg in Percent Outsiders	0.0192
	0.441
Chg in G-Index	-0.0042
	0.168
Chg in E-Index	0.0003
	0.942
Chg in Management Ownership	0.0099
	0.792
Chg in Blockholders' Ownership	0.0191
	0.164
Chg in Duality	0.0094
	0.156
Growth Opportunities	0.0000
	0.989
Firm Size	-0.002
	0.507
Prior Performance	0.013
	0.882
Leverage	-0.0127
	0.486
R-Square	0.0522
# Observations	347

Table 2-8 CAR Regression on Governance Improvement

The dependent variable is the Cumulative Abnormal Returns (CARs) associated with the announcement of addition into the S&P 500 Index. Sample size for this analysis is 347. P-values are reported in parenthesis. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	**(2)**
Constant	0.2047***	0.2186***
	0.008	0.005
Improvement Index	0.0067***	-
(w/Institutional Ownership)	0.002	
Improvement Index	-	0.0045*
(w/o Institutional Ownership)		0.075
Growth Opportunities	-0.0016	-0.0018
	0.341	0.281
Firm Size	-0.0077**	-0.0078**
	0.019	0.018
Prior Performance	-0.0748	0.0793
	0.422	0.399
Leverage	-0.0238	-0.0253
	0.22	0.196
R-Square	0.0493	0.031
# Observations	347	347

Table 2-9 Performance Regression on Governance Changes

The dependent variable is the change in ROA and is regressed on the different governance variables and the control variables. P-values are reported in parenthesis. ***, **, and * denotes statistical significance at the 1%, 5%, and 10% levels.

	ROA (Year1-2)	**ROA (Year1-3)**	**ROA (Year1-4)**	**ROA (Year1-5)**
Constant	-0.1046	-0.0508	0.0246	-0.112
	0.452	0.746	0.878	0.480
Chg in Institutional Ownership	-0.0217	0.0339	-0.0481	-0.0768
	0.760	0.681	0.571	0.376
Chg in Board Size	-0.0003	**-0.0073***	-0.0016	0.0022
	0.930	**0.094**	0.718	0.624
Chg in Percent Outsiders	0.0653	0.0752	**0.1407***	0.0949
	0.272	0.284	**0.062**	0.198
Chg in G-Index	-0.0117	-0.0132	-0.0093	-0.0133
	0.111	0.117	0.299	0.131
Chg in E-Index	-0.0178	-0.0096	-0.0089	-0.0186
	0.146	0.510	0.567	0.238
Chg in Management Ownership	0.1433	**0.2025****	0.1467	-0.0307
	0.104	**0.050**	0.181	0.776
Chg in Blockholders' Ownership	0.0253	0.0313	0.0048	0.0187
	0.455	0.423	0.909	0.674
Chg in Duality	**-0.0288***	**-0.0536*****	-0.0294	**-0.0385***
	0.091	**0.007**	0.157	**0.057**
Growth Opportunities	-0.0009	-0.001	-0.00002	0.0005
	0.538	0.528	0.990	0.746
Firm Size	0.0038	0.0015	-0.0026	0.0022
	0.532	0.825	0.715	0.753
Prior Performance	-0.0691	-0.0129	0.0143	0.0571
	0.733	0.956	0.956	0.824
Leverage	-0.0227	-0.0747	-0.0172	0.0102
	0.622	0.170	0.759	0.854
R-Square	0.0622	0.0942	0.0471	0.0663
# Observations	294	257	237	215

Table 2-10 Performance Regression on Governance Improvements

The dependent variable is the change in ROA and is regressed on the different governance variables and the control variables. P-values are reported in parenthesis. *** denotes statistical significance at the 1% level.

	ROA (Year1-2)	**ROA (Year1-3)**	**ROA (Year1-4)**	**ROA (Year1-5)**
Constant	-0.1191 0.478	-0.0549 0.773	-0.0822 0.672	-0.0832 0.684
Improvement Index	**0.0256***** **0.000**	**0.0349***** **0.000**	**0.0294***** **0.000**	**0.0230***** **0.000**
Growth Opportunities	-0.0016 0.65	-0.0020 0.627	0.0025 0.544	-0.0016 0.723
Firm Size	0.0011 0.878	-0.0028 0.726	-0.0021 0.794	-0.0021 0.807
Prior Performance	-0.0213 0.914	0.0459 0.839	0.0225 0.927	0.1174 0.635
Leverage	-0.0068 0.881	-0.0476 0.367	0.0115 0.831	0.0338 0.537
R-Square	0.0951	0.1378	0.103	0.0697
# Observations	294	257	237	215

Table 2-11 Robustness of Results

Panel A: Market Indices and Event Windows

Two other market indices are used in the study to make sure that the results obtained are not driven by the choice of the market. In addition to the (0,2) window to calculate CAR, the (-1,1) window is also used to calculate CAR. Results are qualitatively similar regardless of market index used or event window used.

	Event Window (0,2)	Event Window (-1,1)
Sample	0.043	0.045
CRSP EW	0.001	0.002
Difference	0.042	0.043
	(0.000)	(0.000)
Sample	0.043	0.045
CRSP VW	-0.001	0.000
Difference	0.043	0.044
	(0.000)	(0.000)

Panel B: Firm Size (1)

Total assets are used as a proxy for firm size. Total sales have also been used to control for firm size. Results obtained are qualitatively similar regardless of the proxy for firm size used.

	CARs
Constant	0.1976***
	0.002
Chg in Institutional Ownership	0.088***
	0.002
Chg in Board Size	0.0003
	0.81
Chg in Percent Outsiders	0.0195
	0.427
Chg in G-Index	-0.0047
	0.121
Chg in E-Index	0.0006
	0.896
Chg in Management Ownership	0.0089
	0.81
Chg in Blockholders' Ownership	0.194
	0.154
Chg in Duality	0.009
	0.173
Growth Opportunities	-0.0006
	0.644
Firm Size	-0.0075**
	0.014
Prior Performance	0.0281
	0.741
Leverage	-0.016
	0.377
R-Square	0.0679
# Observations	347

Panel B: Firm Size (2)

Total assets are used as a proxy for firm size. Total sales have also been used to control for firm size. Results obtained are qualitatively similar regardless of the proxy for firm size used.

	CAR (1)	**CAR (2)**
Constant	0.1674***	0.1711***
	0.009	0.008
Improvement Index (w/Institutional Ownership)	0.0063***	-
	0.002	
Improvement Index (w/o Institutional Ownership)	-	0.0049**
		0.035
Growth Opportunities	-0.00006	-0.0002
	0.965	0.905
Firm Size	-0.0068**	-0.0066**
	0.025	0.031
Prior Performance	0.0311	0.0286
	0.715	0.739
Leverage	-0.0171	-0.0186
	0.343	0.308
R-Square	0.0457	0.0306
# Observations	347	347

Panel C: G-Index versus E-Index (1)

The G-Index, developed by Gompers et al. (2003), captures 24 provisions that restrict shareholder rights. Bebchuk et al. (2004) argue that 6 specific provisions[8] contribute to the explanatory power of the G-Index. Results obtained are qualitatively similar regardless of whether the E-Index was excluded or the G-Index was excluded.

	CAR (1)	**CAR (2)**
Constant	0.2033***	0.2025***
	0.009	0.009
Improvement Index (w/o E-Index)	0.0066***	-
	0.006	
Improvement Index (w/o G-Index)	-	0.008***
		0.001
Growth Opportunities	-0.0017	-0.0015
	0.308	0.359
Firm Size	-0.0075**	-0.0077**
	0.022	0.019
Prior Performance	-0.0722	-0.0763
	0.44	0.411
Leverage	-0.0235	-0.022
	0.227	0.254
R-Square	0.0438	0.0535
# Observations	347	347

*** and ** denotes statistical significance at the 1% and 5% levels, respectively.

[8] The provisions are poison pills, golden parachutes, staggered boards, limits to shareholder by-law amendments, supermajority requirements for mergers, and supermajority requirements for charter amendments.

Panel C: G-Index versus E-Index (2)

The analysis is performed using the IIndex (excluding the G-Index).
Results obtained are qualitatively similar.

	ROA (Year1-2)	**ROA (Year1-3)**	**ROA (Year1-4)**	**ROA (Year1-5)**
Constant	-0.1091	-0.0569	-0.0806	-0.0799
	0.523	0.769	0.682	0.699
Improvement Index	**0.0231*** **	**0.0346*** **	**0.0276*** **	**0.0211*** **
(w/o G-Index)	**0.000**	**0.000**	**0.000**	**0.002**
Growth Opportunities	-0.0019	-0.0021	0.0023	-0.0017
	0.612	0.621	0.579	0.706
Firm Size	0.0012	-0.0024	-0.0018	-0.0018
	0.863	0.77	0.833	0.837
Prior Performance	-0.0375	0.0400	0.0398	0.1231
	0.851	0.861	0.873	0.623
Leverage	-0.0024	-0.0359	0.0231	0.0387
	0.958	0.503	0.673	0.485
R-Square	0.0669	0.1141	0.0766	0.0496
# Observations	294	257	237	215

*** denotes statistical significance at the 1% level.

Panel C: G-Index versus E-Index (3)

The analysis is performed using the IIndex (excluding the E-Index).
Results obtained are qualitatively similar.

	ROA (Year1-2)	**ROA (Year1-3)**	**ROA (Year1-4)**	**ROA (Year1-5)**
Constant	-0.1429	-0.076	-0.1089	-0.0996
	0.397	0.692	0.576	0.628
Improvement Index	**0.0279*** **	**0.0365*** **	**0.0311*** **	**0.0234*** **
(w/o E-Index)	**0.000**	**0.000**	**0.000**	**0.000**
Growth Opportunities	-0.0018	-0.0025	0.0022	-0.0019
	0.61	0.547	0.598	0.674
Firm Size	0.0021	-0.0017	-0.0009	-0.0012
	0.769	0.829	0.909	0.888
Prior Performance	-0.006	0.0562	0.0581	0.1372
	0.976	0.805	0.813	0.581
Leverage	-0.0051	-0.0494	0.0113	0.0306
	0.91	0.351	0.835	0.577
R-Square	0.0931	0.1297	0.0988	0.0631
# Observations	294	257	237	215

*** denotes statistical significance at the 1% level.

CHAPTER 3
INTERNAL LABOR MARKET HOMOGENEITY AND CEO SUCCESSION ISSUES

3.1 Introduction

Chief Executive Officers (CEO) turnover draws a great deal of attention in organizational research (Finkelstein et al., 2009). One stream of research focuses on executive succession, in particular, the rationale behind internal versus external successions (Parrino, 1997; Farrell and Whidbee, 2003; Helfat and Bailey, 2005; Martins and Lima, 2006; Xuan, 2009). While a firm can promote an internal candidate or hire someone from outside, succession decisions are always difficult. For example, in the case of General Electric (GE), the retirement of its CEO and Chairman, John Welch, sparked quite a debate. The GE board of directors was evaluating who should take over Mr. Welch's position. The top three candidates were all on GE's payroll; however none of them seemed to be the clear favorite. Ultimately, the board picked Jeffrey Immelt, head of GE's medical imaging division. When contemplating, the board had to manage the expectations and disappointment of other GE executives. The other two finalists, James McNerney and Robert Nardelli, eventually left GE. This case shows that corporate successions have to be managed properly. Otherwise, it may cause chaos and resentment.

Prior studies have noticed differences between internal and external CEO successions (Datta and Guthrie, 1994, Chan, 1996; Agrawal et al., 2006). Chan (1996) reports that among the 84 CEOs of the Fortune 100 firms who were promoted to the position since 1984, only 11 were recruited from outside the organization. Agrawal et al. (2006) also document that more than 80% of CEO successions in large U.S. firms involve the promotion of an insider. These

studies suggest that most companies give preference to the internal candidate in a CEO succession decision.

There are alternative viewpoints behind the favoritism towards internal candidates. Human capital theories suggest internal candidates usually possess firm-specific knowledge and relationships. Their ability can be observed with less noise; and less recruitment and training costs are needed when promoting from inside (Chan, 1996). However, in many cases, candidates' experience and ability are not easily measurable or comparable. In fact, Agrawal et al. (2006) rule out the possibility that experienced candidates are more favored in CEO successions.

An alternative explanation for why firms prefer internal over external candidates is based on tournament theory. Initially used in labor economics and widely applied in sports economics, tournament theory was introduced into the corporate context by Lazear and Rosen (1981). Tournament theory is distinct from other incentive devices (e.g., human capital) in that it focuses on relative performance and pay among the executives rather than those of individual executives (Nalebuff and Stiglitz, 1983; Bull et al., 1987; Eriksson, 1999). In corporate tournaments, competition is viewed as an incentive device with which agents compete for the fixed prizes according to their relative performance (Harbring and Irlenbusch, 2003). The increased competition induces the executives to work hard in order to achieve the prize of becoming the CEO. The larger the prize, the greater the incentive for the executives to work harder in order to achieve success (to become CEO). To boost productive competition in the internal job market, firms give preference to internal CEO candidates and handicap external ones (Chan, 1996; Agrawal et al, 2006).

Using the compensation of executives, I develop the Heterogeneity Index (HI), in order to examine its relationship with CEO succession issues. The HI measures the compensation concentration within each firm. Specifically, I test whether compensation diversity among top executives affects (1) the likelihood of an internal replacement, (2) the likelihood of a turnover, and (3) the compensation change after ascending to the CEO post.

Using firms in the S&P 1500 index from 1996 to 2006, I find a negative and significant relationship between compensation concentration and the likelihood of an internal replacement. Homogeneity in compensation among executives may induce them to work harder to win the tournament (i.e., CEO post) and an internal candidate will be more likely to succeed the outgoing CEO. Consistent with prior studies (Parrino, 1997; Huson et al., 2001; Goyal and Park, 2002; Fee and Hadlock, 2004; Maury, 2006; Florou and Pope, 2008; Chang and Wong, 2009; Chakraborty et al., 2009; Chi and Wang, 2009), I find that poor prior performance is associated with a greater likelihood of a turnover. In addition, I show that this performance-turnover relationship is strengthened by the homogeneous nature in compensation among executives. Specifically, the more comparable executives' compensation is, the more likely that poor performance leads to a turnover. For internal replacements, I find that the compensation increase is significantly greater for firms with a homogeneous top management team (TMT). The prize of winning the tournament is positively related to the homogeneous nature of compensation among executives.

This study contributes to the literature in a couple of ways. First, I develop a novel measure of compensation concentration. Using executives' compensation information, the

nature of the concentration within the TMT can be estimated. Examining the implications of such concentration on CEO succession decisions is an important and interesting contribution.

Second, this study provides a more observable way to anticipate CEO successions, using the HI I develop. Prior research focuses on CEO successions by examining organizational structure and industry homogeneity (Agrawal et al., 2006) or studying firms' succession plans (Naveen, 2006). Both studies center their attention to only certain characteristics, e.g., comparability (Agrawal et al., 2006) or relay succession (Naveen, 2006). Examining TMT's compensation provides explicit information about the homogeneity of the executives, and thus, offers an interesting approach to study CEO successions.

The rest of the paper is organized as follows. The following section reviews the related literature and develops the hypotheses. The data and sample are described next, followed by a discussion of the results. The next section discusses the robustness of the results. The last section summarizes and provides some concluding remarks.

3.2 Literature Review and Hypotheses Development

Research on Chief Executive Officers (CEOs) has been overwhelming[9]. Issues covered include but are not limited to turnovers, governance, performance, and compensation. When a CEO leaves the company, speculation about the reason for departure and speculation about the potential successors arise. One of the main reasons for CEO departure is poor firm performance (Parrino, 1997; Maury, 2006; Florou and Pope, 2008; Chang and Wong, 2009). As for successors, the company can either engage someone from outside or promote someone from

[9] A simple search on Google Scholar with keywords like "CEO" and "Chief Executive Officer" yields 470,000 and 409,000 results, respectively.

within. Even though research has shown that large firms prefer insiders over outsiders (Chan, 1996; Agrawal et al., 2006), succession decisions are still very difficult. Two articles (Lublin, 2004; Orwall and Lublin, 2004) published in the *Wall Street Journal* illustrate this point. On the one hand, companies announce retirements early to reduce uncertainty. On the other hand, investors wonder whether a "lame duck" CEO will benefit shareholders. In addition, company boards have to consider the merits of each potential candidate (both internal and external) and manage the expectations of other executives. If not managed properly, the situation could turn for the worse, causing disorder and unpleasantness.

Prior research has examined insider versus outsider CEO succession decisions from various perspectives, among which tournament theory has received a lot of recent attention. Tournament theory has primarily been used in labor economics and applied in sports economics. Built on this theory, Lazear and Rosen (1981) posit a distinct compensation scheme based on rank in an organization and relative performance. While the conventional compensation schemes like human capital models[10] and agency models[11] suggest pay based on input (ability, experience, and efforts) or output (direct performance) of individuals, the rank-based compensation scheme focuses on one's performance relative to others.. Lazear and Rosen (1981) believe that tournament theory induces the same efficient allocation of resources as the other schemes.

Studies have examined the economic efficiency of the rank-based scheme (Green and Stokey, 1983; Nalebuff and Stiglitz, 1983; Rosen, 1986). They conclude that individuals' ability, experience and individual performance are not always easy to measure; the rank-based

[10] Compensation is based on education, experience, etc. (Becker, 1964).
[11] Compensation is contingent on some conditions like good performance (Eisenhardt, 1989; Sappington, 1991).

compensation scheme provides a better incentive device for executives to work harder in order to achieve prizes.

Empirical evidence also supports the rank-based compensation scheme. Using a sample of Danish executives, Eriksson (1999) finds that there is a stable convex relation between pay and job levels and that there is a positive relation between the number of "important" managers and the wage spread. Bognanno (2001) shows similar results that pay rises strongly with hierarchical level. In an experimental setting, Bull et al. (1987) observe large variance of effort level in all rank-order tournaments. The mean effort level of disadvantaged subjects is above their equilibrium level. Their results are also supportive of tournament theory.

Recently, tournament theory has been extended to corporate tournaments among senior executives (Henderson and Fredrickson, 2001; Conyon et al., 2001; Heyman, 2005; Harbring and Irlenbusch, 2008; Kale et al., 2009; Kale et al., 2010; Shen et al., 2010). While some studies fail to find support for tournament theory (Harbring and Irlenbusch, 2008; Shen et al., 2010), most studies do find some support (Henderson and Fredrickson, 2001; Conyon et al., 2001; Heyman, 2005; Kale et al., 2009). Tournaments to win the CEO prize induce senior executives to work hard. The competition among senior executives arises from their desire for power and career advancement (Shen and Cannella, 2002).

Prior studies have used different factors to explain turnovers and successions. Parrino (1997) shows that the likelihood of forced turnover increases with industry homogeneity. He argues that it is easier (and less costly) for firms to recruit someone from another firm within the same industry since that executive possesses much of the human capital needed.

Agrawal et al. (2006) use comparability among insiders and comparability between insiders and outsiders to explain outsider handicapping choices in firms. They propose that insiders are more comparable in firms with a product or line of business organizational structure, and these firms are more likely to choose inside candidates to succeed the CEO position. In another study, Naveen (2006) argues that larger and diversified firms, being more complex in nature, are more likely to use relay succession. Also, firms that do relay succession planning are more likely to select an internal candidate as its CEO. Her definition of having succession plans is having an heir apparent. However, the definition of having a succession plan is debatable and/or unclear as firms do not always announce their heir apparent publicly. Both studies focus on internal successions, but only identify certain characteristics (having more comparability between candidates; having an heir apparent).

While some studies have examined the pay gap [12] (Carpenter and Sanders, 2002; Carpenter and Sanders, 2004) as a measure of CEO power (Finkelstein, 1992; Hayward and Hambrick, 1997; Rajgopal and Srinivasan, 2006; Shen et al., 2010), others use the pay gap as a proxy for tournament incentive (Heyman, 2005; Gnyawali et al., 2008; Kale et al., 2009). However, the pay gap only takes the compensations of two (at most three) executives into account and thus does not capture the overall competitive nature at the firm.

Tournament theory focuses on relative pay among peers, which implies the importance of the internal labor market within each firm. Building on this theory, I measure concentration with characteristics of the internal labor market using a modified Herfindahl-Hirschman Index (HHI).

[12] Pay gap is calculated as the difference in compensation between the CEO and the average TMT. Some studies have defined pay gap differently, either as the difference in compensation between the CEO and the median TMT (Kale et al., 2009; Kale et al., 2010), or as the difference in compensation between the CEO and the next highest paid executive (Mobbs and Raheja, 2010).

The HHI (Hirschman, 1945) is a measure of market concentration. It is defined as the sum of the squares of market shares of the top firms within an industry. A higher HHI generally indicates more market power, hence less competition. Based on this modified HHI-based index, I develop the Heterogeneity Index (HI) using different compensation measures to estimate how diverse the executives are. A high HI indicates that the compensation among the executives is more differentiated (heterogeneous), implying that one or more of the executives' compensation dominates the others. If executives are paid according to their ability/skill level, that executive(s)' capabilities may be above the others and/or may be delegated more significant responsibilities than the other executives. A low HI indicates that the compensation among executives is more comparable (homogeneous), which may induce productive competition among them and encourages them to work harder to "win" the prize – the CEO post.

If internal labor markets are more homogeneous, the firm should be more likely to select an inside candidate to replace the departing CEO. For a tournament to benefit the firm through harder work by executives, firms must provide a high probability that an internal candidate will be selected (Chan 1996). On the one hand, if an executive's compensation overshadows the others, it may dampen the other executives' drive knowing that the goal (becoming the CEO) is too far-reached. On the other hand, when compensation levels are more comparable, they may feel that they have a better shot of becoming the CEO if they work hard. Following tournament predictions, the following hypothesis is proposed:

Hypothesis 1: The more homogeneous the internal labor markets, the greater the likelihood of an internal replacement.

For tournaments to be successful, aspiring executives need to perceive a greater likelihood of achieving the prize. Thus, boards must be willing to replace an underperforming CEO (Lehn and Makhija, 1997; Dahya et al., 2002; Lausten, 2002; Brunello et al., 2003; Parrino et al., 2003; Hillier et al., 2005; Kato and Long, 2006; Conyon and He, 2008; Finkelstein et al., 2009). Using alternative measures of performance (economic value added and market value added) and stock return, Lehn and Makhija (1997) find a significant inverse relation between performance and the likelihood of CEO turnover. Focusing on large publicly-traded firms during the 1982-93 period, Parrino et al. (2003) show that firms experienced poor performance prior to a forced CEO turnover. The negative turnover-performance relationship persists not only in the United States. Dahya et al. (2002) demonstrate a significant negative correlation between CEO turnover and corporate performance in U.K. firms. Using Chinese listed firms, Kato and Long (2006) show that management turnover and firm performance are inversely related. In another Chinese study, Conyon and He (2008) report a similar relation between CEO turnover and measures of firm performance. Also, as Parrino (1997) highlights, succession costs may be reduced if a viable internal candidate is available, which should be facilitated by greater competition. Hence, I propose the next hypothesis:

Hypothesis 2: CEO turnover will be more sensitive to firm performance when internal labor markets are more homogeneous.

Larger prizes should result in more effort. Drago and Garvey (1998) examine the relationship between efforts and promotion incentives and find that when promotion incentives are strong, individual efforts are increased. Homogeneity among executives should induce greater efforts. Hence, new internal CEOs emerging from homogeneous internal labor market

environments will receive larger increases in compensation relative to those emerging from heterogeneous environments. O'Reilly et al. (1988) and Main, O'Reilly, and Wade (1993) note that tournament theory implies the prize should increase with the number of contestants or the competition for the position. Kale et al. (2009) provide empirical support for this view. The authors find a positive relation between the number of vice presidents (VPs) and the pay gap (i.e., a proxy for the tournament prize). Eriksson (1999) also provide support for the tournament view by showing a positive relationship between the number of participants and the prize of the tournament in Danish firms. In a U.K. study, Conyon et al. (2001) report that the pay gap is positively related to the number of participants in the tournament. Rather than using pay gap as an estimate for the size of the tournament prize (Conyon et al., 2001; Kale et al., 2009; Kale et al., 2010), I compare the compensation of those CEOs promoted internally with his compensation from before his promotion to obtain the actual increase in compensation. Hence, I propose my third and last hypothesis:

Hypothesis 3: The prize of the new CEO will be higher if internal labor markets are more homogeneous.

3.3 Data and Methodology

CEO successions are identified using the ExecuComp database from 1996 to 2006. ExecuComp contains compensation and executive data for firms in the S&P 500, S&P Midcap 400, and S&P Smallcap 600. A CEO is defined as a person who is identified as a Chief Executive Officer of the firm in ExecuComp, and all other executives are classified as TMT. Internal versus external replacements are identified by tracking the career paths of the new CEOs. Executives with the firm less than one year are classified as outsiders. Insider appointments are

verified through ExecuComp, proxy statements, and news articles. Of the 1,663 turnovers identified, only 21% of the replacements are recruited externally. The proportion of internal promotion (79%) is slightly lower than the fraction (82%) reported by Agrawal et al. (2006).

In this study, three measures of compensation are used: (1) total compensation, (2) current compensation, and (3) equity-based compensation. Total compensation (TDC) is calculated as the sum of salary, bonus, other annual compensation, total value of restricted stock granted, total value of stock options granted, long-term incentive payouts, and all other compensation. Current compensation (SAL) is calculated as the sum of salary and bonus whereas equity-based compensation (EBC) is calculated as the sum of total value of restricted stock granted and total value of stock options granted.

To measure internal labor market concentration, I compute the Heterogeneity Index (HI), which is based on the HHI, using the three measures of compensation, as follows:

$$HeterogeneityIndex_i = \sum_{j=1}^{N} \left(\frac{C_j}{\sum_{j=1}^{N} C_j} \right)^2$$

where N is the number of top executives (excluding the CEO) at firm i and C_j is executive j's (1) TDC, (2) SAL, or (3) EBC.

The control variables used are board characteristics, pay gap, firm size, prior performance, and leverage. CEO firing/hiring decisions are ultimately made by the corporate board. Hence, I control for board-related characteristics. Board characteristics used in this study include board size, board independence, and duality. Board size is the number of directors on a corporate board. Board independence is the proportion of outside directors on a board. Directors are

classified as independent/outsiders if they are not employees of the firm, do not have substantial business relations with the firm, are not related to employees, or are not former employees. Duality is a binary variable that takes the value 1 if the CEO is also the chairman of the board, and 0 otherwise. Board-related variables are hand-collected from proxy statements.

The pay gap, defined as the pay disparity between the CEO and average TMT, has been used in quite a few studies. Some studies show that large pay disparity among senior executives has a harmful effect on the firm itself[13] (Pfeffer and Langton, 1993; Bloom and Michel, 2002; Carpenter and Sanders, 2004; Siegel and Hambrick, 2005; Fredrickson et al., 2010) while others[14] present evidence showing otherwise (Henderson and Fredrickson, 2001; Heyman, 2005; Gnyawali et al., 2008; Kale et al., 2009, Kale et al., 2010). Hence, I control for pay gap in my analysis. Data on executives' compensation is obtained from ExecuComp.

I control for firm size because managers in larger firms are less likely to be replaced (Volpin, 2002; Firth et al., 2006; Chang and Wong, 2009; Wang, 2010). I use the natural logarithm of total assets as a measure of firm size. Prior firm performance is an important determinant of CEO turnover (Huson et al., 2001; Chakraborty et al., 2009; Chang and Wong, 2009). Hence, I control for prior performance using industry-adjusted Return on Assets (ROA) for the prior year. Firms are classified into industries based on their 2-digit Standard Industrial Classification (SIC) codes. Industry-adjusted ROA is the firm's ROA in excess of the median firm's ROA in that same 2-digit SIC industry. ROA is calculated as net income divided by total assets. Creditors play a role in disciplining managers (Jensen, 1986; Chang and Wong, 2009). Thus, I control for capital structure. Leverage is the ratio of long-term debt to total assets.

[13] Behavioral perspective based on relative deprivation theory and/or social comparison theory.
[14] Economic perspective based on tournament theory.

Variables used to obtain and calculate firm size, prior firm performance, and leverage are obtained from COMPUSTAT.

Table 3-1 presents the summary statistics for the sample. The average HIs range from 0.2156 (current) to 0.3575 (equity-based), depending on the compensation measure utilized. Using compensation as an indication of individual ability, the more homogeneous the internal labor market, the more comparable their ability. The HIs indicate that the internal labor market is quite homogeneous. Looking at the pay disparity, the average pay gap is between $835,000 and $3.367 million, slightly above the pay gaps reported by Kale et al. (2010). As shown by Kale et al. (2010), pay gaps have increased over the years. The discrepancy in pay gap can possibly be explained by the difference in sample periods between the two studies[15].

The average CEO makes $5.3 million in total compensation; his average current compensation and average equity-based compensation is about $1.465 million and almost $3 million, respectively. A typical corporate board has 9 (median) members, of which about 65% are independent. In 67% of the firms, the CEO also holds the Chairman of the board position. Boyd (1995) and Tuggle et al. (2010) report CEO/Chair duality in 46% and 66% of their samples, respectively. The proportion reported here is higher than what Boyd (1995) found. The difference could be due to the sample period: Boyd's sample covers the 1980s whereas my sample extends over from the late 1990s to the mid 2000s. The average firm outperforms its peers, with an industry-adjusted ROA of about 4%. On average, a firm has about 19% of long-term debt in its capital structure.

[15] The sample period covered by Kale et al. (2010) is from 1993 to 2004 whereas this paper covers the 1996-2006 period.

3.4 Results and Discussions

To test the first hypothesis on homogeneity and replacement type, I employ a logistic regression model to predict the likelihood of an internal (versus external) candidate being chosen as the new CEO. First, I separate the sample into two groups: firm-years which experienced a CEO turnover and firm-years which did not experience a CEO turnover. From the "experienced a CEO turnover" group, I further divide the subsample into two subgroups: internal replacement and external replacement. To empirically test the first hypothesis, the following equation was estimated:

$$Internal_i = \alpha + \beta_1 HI_i + \psi * CONTROLS + \varepsilon_i \quad (1)$$

where the dependent variable is a dummy variable that takes the value 1 if the new CEO is promoted from within the company, and zero otherwise; *HI* is the heterogeneity index, control variables include pay gap, duality, board independence, board size, firm size, prior performance, and leverage.

In addition to using the level of HI, I also include a dummy variable, *SIMILAR*, to capture the similarity of compensation within the internal labor market. The econometric equation is as follows:

$$Internal_i = \alpha + \beta_1 SIMILAR_i + \psi * CONTROLS + \varepsilon_i \quad (2)$$

where *SIMILAR* is a dummy variable that takes the value 1 if the HI is below the median HI, and zero otherwise; all other variables are as previously defined.

Both equations are administered thrice each, based on the three measures of compensation. The results are presented in Table 3-2. As expected, the coefficients for HI are all negative; however the coefficient for one specification is insignificant. A lower HI is

associated with a higher probability of an internal replacement. As mentioned earlier, a lower HI implies homogeneity. Hence, the more homogeneous the internal labor market, the greater the likelihood of an internal replacement. The results from using *SIMILAR* also produce similar inference. The coefficients for *SIMILAR* are positive and significant ($p<0.05$), suggesting that a more homogeneous internal labor market is associated with a greater likelihood of an internal replacement. The results support Hypothesis 1 – the more homogeneous the internal labor market, the higher the probability of an internal replacement.

A few of the control variables yield significant results. First, the coefficients for pay gap are negative and significant ($p<0.01$), suggesting that a lower pay gap is associated with a higher probability of an internal replacement. Second, the negative and significant coefficient for board independence indicates that the more independent the corporate board, the lower the likelihood of an internal replacement. Third, the relation between duality and the probability of an internal replacement is negative. Prior to the current replacement, if the CEO shares the Chairman position, the lower the probability of an internal candidate succeeding the CEO post. Next, the coefficient for board size is positive and significant. A larger board is associated with a higher probability of an internal replacement. Finally, the positive relation between prior performance and the likelihood of an internal replacement indicates that if the firm is doing well prior to the CEO change, the new CEO is more likely to be promoted from within.

I employ the use of a random effects logistic regression model to test the second hypothesis. All firm-year observations (including those which experienced a turnover and those

which did not experience a turnover) are used in this analysis. To test this hypothesis, I use the following equation[16]:

$$Turnover_i = \alpha + \beta_1 SIMILAR_i + \beta_2 (R_{i,t} - R_{m,t}) + \beta_3 (R_{i,t-1} - R_{m,t-1}) + \beta_4 [SIMILAR * (R_{i,t-1} - R_{m,t-1})] + \phi * CONTROLS + \varepsilon_i \quad (3)$$

where the dependent variable is a dummy variable that equals 1 if the CEO is serving in his last full fiscal year and zero otherwise. The independent variables include *SIMILAR*, the contemporaneous and lagged difference between the return on firm *i* in year *t* and the market[17] return in the same period. The control variables are as previously defined.

The regression results from Equation (3) are summarized in Table 3-3. The coefficients for *SIMILAR* are positive and significant, indicating that the more homogeneous the internal labor market, the higher the probability of a turnover. As expected, the coefficients for the lagged excess returns are negative and significant. This result is in line with what others have predicted (Dahya et al., 2002; Lausten, 2002).

To see whether the second hypothesis is supported, the coefficient of interest is the interaction term. In two of the three specifications, the negative and significant coefficients for the interaction term (Excess $Return_{t-1}$**SIMILAR*) confirm that the homogeneity nature of the internal labor market strengthens the performance-turnover relationship. In firms with homogeneous internal labor markets, the performance-turnover relationship is stronger in that the negative effect is larger. Thus, Hypothesis 2 is supported.

[16] In addition to *SIMILAR*, the dependent variable is also regressed on HI and other control variables. Main results do not change.

[17] The Standard and Poor's 500 (S&P 500) Index is used as the market index. Additional tests are conducted using other market indices. See "Robustness Test" section for more information.

For the control variables, only two of them (pay gap and duality) are statistically significant for all specifications. The positive coefficient for pay gap indicates that the larger the pay gap between the CEO and the VPs, the greater the likelihood of turnover. As for duality, the coefficient is negative, suggesting that if the CEO/Chairman position is held by one person, the lower the probability of turnover. This result is consistent with the notion that a CEO holding the Chairman position is more powerful and entrenched and hence less likely to be fired/replaced (Cannella and Lubatkin, 1993; Finkelstein et al., 2009; Tuggle et al., 2010).

The coefficient for board independence is positive and significant ($p<0.05$) for two specifications. This result seems to suggest that the independent directors are performing a monitoring role, consistent with Fama and Jensen (1983) and Bhojraj and Sengupta (2003). The relationship between firm size and the likelihood of turnover is positive and significant ($p<0.1$ and $p<0.01$) for two specifications, suggesting that holding all else constant, larger firms are more likely to experience top management turnover.

To test the third hypothesis, I use only the CEOs promoted from within the company for two reasons. First, tracing prior compensation for external candidates is difficult because they could have come from non-public companies, non-US companies, etc. Second, it is more straightforward to compare their compensation if they are at the same company. As mentioned earlier, this procedure yields 1,315 observations. Panel A of Table 3-4 presents the summary statistics. Median total compensation increases approximately $473,000 while median equity-based compensation increases only about $49,000.

Using the internally promoted CEO subsample, I compare the compensation change from before they were promoted. The results are presented in Panel B of Table 3-4. The paired t-test

analyses show that there is a significant difference in compensation changes between the two groups. In all compensation measures, the compensation change for the "homogeneous" group is greater than the compensation change for the "heterogeneous" group. The differences in compensation changes between "homo- and hetero-" for SAL and TDC are about $217,000 and $1.311 million, respectively. Thus, Hypothesis 3 is supported.

In summary, I have shown that the more homogeneous the internal labor market, (1) the higher the probability of an internal replacement, (2) the more sensitive CEO turnover will be to firm performance, and (3) the higher the prize of the new CEO. These results seem to suggest that HI may be a useful proxy for competition among executives.

3.5 Robustness of Results

The reported HI is based on compensation concentration among top executives, excluding the CEO. Alternatively, I also include the CEO in the calculation of HI. The predicted signs and significance are generally similar to the HI reported[18].

The results reported earlier are based on returns in excess of the S&P 500 index. To make sure the results were not driven by the choice of the market index, I conduct additional tests on the market indices. Two other market indices (CRSP value-weighted index and CRSP equal-weighted index) are used to calculate the excess returns to test Hypothesis 2. Results are presented in Table 3-5. In addition to using the logistic regression model to test Hypotheses 1 & 2, I repeat all analyses using the probit regression model. Table 3-6 presents the results. All results are qualitatively similar regardless of market index or regression model used.

[18] Results not reported.

3.6 Summary and Conclusions

Research on chief executive officers has been extensive. One aspect of particular interest is CEO turnover/replacements. Because the CEO is the head of the corporation who makes decisions which affect the company's short-term as well as long-term strategies, investors and researchers alike have an interest on the outcome of this event.

In this paper, I develop a Heterogeneity Index, which measures the compensation concentration of the internal labor market for the executives. I propose three hypotheses and the results provide support for all of them. I find that the probability of an internal replacement is higher in a more homogeneous internal labor market. In addition, the increase in compensation is positively related to the homogeneous nature of the internal labor market.

I also find a positive relation between the homogeneous nature of the internal labor market and the likelihood of a CEO turnover. The negative relation between prior performance and probability of a turnover is also found. In addition, this negative performance-turnover relationship is magnified by a more homogeneous internal labor market.

The results from this study suggest that homogeneity among TMT provides an alternative perspective to examining CEO-related issues. The heterogeneity index I develop can possibly be used as a proxy for the competition among top management. Overall, my results provide some support for tournament theory.

3.7 References

Agrawal, A., C.R. Knoeber, and T. Tsoulouhas (2006), "Are Outsiders Handicapped in CEO Successions?" *Journal of Corporate Finance*, 12:619-644.

Becker, G.S. (1964), "Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education," *Columbia University Press*, New York, NY.

Bhojraj, S., and P. Sengupta (2003), "Effect of Corporate Governance on Bond Ratings and Yields: The Role of Institutional Investors and Outside Directors," *Journal of Business*, 76: 455-475.

Bloom, M. and J.G. Michel (2002), "The Relationship among Organizational Context, Pay Dispersion, and Managerial Turnover," *Academy of Management Journal*, 45:33-42.

Bognanno, M. (2001), "Corporate Tournaments," *Journal of Labor Economics*, 19-290-315.

Boyd, B.K. (1995), "CEO Duality and Firm Performance: A Contingency Model," *Strategic Management Journal*, 16:301-312.

Brunello, G., C. Graziano, and B.M. Parigi (2003), "CEO Turnover in Insider-Dominated Boards: The Italian Case," *Journal of Banking & Finance*, 27:1027-1051.

Bull, C., A. Schotter, and K. Weigelt (1987), "Tournament and Piece Rates: An Experimental Study," *Journal of Political Economy*, 95:1-33.

Cannella, A.A. Jr. and M. Lubatkin (1993), "Succession as a Sociopolitical Process: Internal Impediments to Outsider Selection," *Academy of Management Journal*, 36:763-793.

Carpenter, M.A. and W.G. Sanders (2002), "Top Management Team Compensation: The Missing Link between CEO Pay and Firm Performance," *Strategic Management Journal*, 23:367-375.

Carpenter, M.A. and W.G. Sanders (2004), "The Effects of Top Management Team Pay and Firm Internationalization on MNC Performance," *Journal of Management*, 30:509-528.

Chakraborty, A., S. Sheikh, and N. Subramanian (2009), "The Relationship between Incentive Compensation and Performance Related CEO Turnover," *Journal of Economics and Business*, 61:295-311.

Chan, W. (1996), "External Recruitment versus Internal Promotion," *Journal of Labor Economics*, 14:555-570.

Chang, E.C. and S.M.L. Wong (2009), "Governance with Multiple Objectives: Evidence from Top Executive Turnover in China," *Journal of Corporate Finance*, 15:230-244.

Chi, W. and Y. Wang (2009), "Ownership, Performance and Executive Turnover in China," *Journal of Asian Economics*, 20:465-478.

Conyon, M. and L. He (2008), "CEO Turnover and Firm Performance in China's Listed Firms," *Compensation Research Initiative*, Cornell University ILR School, CRI 2009-012.

Conyon, M., S. Peck, and G. Sadler (2001), "Corporate Tournaments and Executive Compensation: Evidence from the U.K.," *Strategic Management Journal*, 22:805-815.

Dahya, J., J.J. McConnell, and N.G. Travlos (2002), "The Cadbury Committee, Corporate Performance, and Top Management Turnover," *Journal of Finance*, 57:461-483.

Datta, D.K. and J.P. Guthrie (1994), "Executive Succession: Organizational Antecedents of CEO Characteristics," *Strategic Management Journal*, 15:569-577.

Drago, R. and G.T. Garvey (1998), "Incentives for Helping on the Job: Theory and Evidence," *Journal of Labor Economics*, 16:1-25.

Eisenhardt, K.M. (1989), "Agency Theory: An Assessment and Review," *Academy of Management Review*, 14:57-74.

Eriksson, T. (1999), "Executive Compensation and Tournament Theory: Empirical Tests on Danish Data," *Journal of Labor Economics*, 17:262-280.

Fama, E.F. and M.C. Jensen (1983), "Separation of Ownership and Control," *Journal of Law and Economics*, 26:301-325.

Farrell, K.A. and D.A. Whidbee (2003), "Impact of Firm Performance Expectations on CEO Turnover and Replacement Decisions," *Journal of Accounting and Economics*, 36:165-196.

Fee, C.E. and C.J. Hadlock (2004), "Management Turnover across the Corporate Hierarchy," *Journal of Accounting and Economics*, 37:3-38.

Finkelstein, S. (1992), "Power in Top Management Teams: Dimensions, Measurement and Validation," *Academy of Management Journal*, 3:505-538.

Finkelstein, S., D.C. Hambrick, and A.A. Cannella (2009), "Strategic Leadership: Theory and Research on Executives, Top Management Teams, and Boards," *Oxford University Press*, New York, NY.

Firth, M., P. Fung, and O. Rui (2006), "Firm Performance, Governance Structure, and Top Management Turnover in a Transitional Economy," *Journal of Management Studies*, 43:1289-1330.

Florou, A. and P. Pope (2008), "Are Boards and Institutional Investors Active Monitors? Evidence from CEO Dismissal," *Managerial Auditing Journal*, 23:862-872.

Fredrickson, J.W., A. Davis-Blake, and W.G. Sanders (forthcoming), "Sharing the Wealth: Social Comparisons and Pay Dispersion in the CEO's Top Team," *Strategic Management Journal*.

Gnyawali, D.R., E.H. Offstein, and R.S. Lau, (2008), "The Impact of the CEO Pay Gap on Firm Competitive Behavior," *Group & Organization Management*, 33:453-484.

Goyal, V. and C. Park (2002), "Board Leadership Structure and CEO Turnover," *Journal of Corporate Finance*, 8:49-66.

Green, J.R. and N. Stokey (1983), "A Comparison of Tournaments and Contracts," *Journal of Political Economy*, 91:349-364.

Harbring, C. and B. Irlenbusch (2003), "An Experimental Study on Tournament Design," *Labour Economics*, 10:443-464.

Harbring, C. and B. Irlenbusch (2008), "How Many Winners are Good to Have? On Tournaments with Sabotage," *Journal of Economic Behavior and Organization*, 65:682-702.

Hayward, M.L.A. and D.C. Hambrick (1997), "Explaining the Premiums Paid for Large Acquisitions: Evidence of CEO Hubris," *Administrative Science Quarterly*, 42:103-127.

Helfat, C.E. and E.E. Bailey (2005), "External Succession and Disruptive Change: Heirs-Apparent, Forced Turnover and Firm Performance," *Strategic Organization*, 3: 47-83.

Henderson, A.D. and J.W. Fredrickson (2001), "Top Management Team Coordination Needs and the CEO Pay Gap: A Competitive Test of Economic and Behavioral Views," *Academy of Management Journal*, 44:96-117.

Heyman, F. (2005), "Pay Inequality and Firm Performance: Evidence from Matched Employer-Employee Data," *Applied Economics*, 37:1313-1327.

Hillier, D., S.C. Linn, and P. McColgan (2005), "Equity Issuance, CEO Turnover and Corporate Governance," *European Financial Management*," 11:515-538.

Hirschman, A.O. (1945), "National Power and the Structure of Foreign Trade," *University of California Press*, Berkeley, CA.

Huson, M.R., R. Parrino, and L.T. Starks (2001), "Internal Monitoring Mechanisms and CEO Turnover: A Long-term Perspective," *Journal of Finance*, 56:2265-2297.

Jensen, M. (1986), "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers," *American Economic Review*, 76:323-339.

Kale, J.R., E. Reis, and A. Venkateswaran (2009), "Rank-Order Tournament and Incentive Alignment: The Effect on Firm Performance," *Journal of Finance*, 64:1479-1512.

Kale, J.R., E. Reis, and A. Venkateswaran (2010), "Promotion Incentives and Corporate Performance: Is There a Bright Side to "Overpaying" the CEO?" *Journal of Applied Corporate Finance*, 22:119-128.

Kato, T. and C. Long (2006), "CEO Turnover, Firm Performance, and Enterprise Reform in China: Evidence from Micro Data," *Journal of Comparative Economics*, 34:796-817.

Lausten, M. (2002), "CEO Turnover, Firm Performance and Corporate Governance: Empirical Evidence from Danish Firms," *International Journal of Industrial Organization*, 20:391-414.

Lazear, E.P. and S. Rosen (1981), "Rank-Order Tournaments as Optimum Labor Contracts," *Journal of Political Economy*, 89:841-864.

Lehn, K. and A.K. Makhija (1997), "EVA, Accounting Profits, and CEO Turnover: An Empirical Examination, 1985-1994," *Journal of Applied Corporate Finance*, 10:90-97.

Lublin, J.S. (2004), "Drawn-Out Succession Races Pose Perils," *Wall Street Journal*, September 13, 2004, B1.

Main, B.G., C.A. O'Reilly, and J. Wade (1993), "Top Executive Pay: Tournament or Teamwork," *Journal of Labor Economics*, 11:606-628.

Martins, P. and F. Lima (2006), "External Recruitments and Firm Performance," *Applied Economics Letters*, 13:911-915.

Maury, B. (2006), "Corporate Performance, Corporate Governance and Top Executive Turnover in Finland," *European Financial Management*, 12:221-248.

Mobbs, S. and C.G. Raheja (2010), "Internal Managerial Promotions: Insider Incentives and Firm Valuation," *Wake Forest University Working Paper*, Winston Salem, NC.

Nalebuff, B.J. and J.E. Stiglitz (1983), "Prizes and Incentives: Towards a General Theory of Compensation and Competition," *Bell Journal of Economics*, 14:21-43.

Naveen, L. (2006), "Organizational Complexity and Succession Planning," *Journal of Financial and Quantitative Analysis*, 41:661-683.

O'Reilly, C.A., B.G. Main, and G.S. Crystal (1988), "CEO Compensation as Tournament and Social Comparison: A Tale of Two Theories," *Administrative Science Quarterly*, 33:257-274.

Orwall, B. and J.S. Lublin (2004), "Lame Duck in Charge; Restless Investors, Executives Await Disney in CEO Search; Let the Maneuvering Begin," *Wall Street Journal*, September 13, 2004, B1.

Parrino, R. (1997), "CEO Turnover and Outside Succession: A Cross-Sectional Analysis," *Journal of Financial Economics*, 46:165-197.

Parrino, R., R.W. Sias, and L.T. Starks (2003), "Voting with Their Feet: Institutional Ownership Changes Around Forced CEO Turnover," *Journal of Financial Economics*, 68:2-46.

Pfeffer, J. and N. Langton (1993), "The Effect of Wage Dispersion on Satisfaction, Productivity, and Working Collaboratively: Evidence from College and University Faculty," *Administrative Science Quarterly*, 38:382-407.

Rajgopal, S. and S. Srinivasan (2006), "Pay Dispersion in the Executive Suite," *University of Washington Working Paper*, Seattle, WA.

Sappington, D.E.M. (1991), "Incentives in Principal-Agent Relationship," *Journal of Economic Perspectives*, 5:45-66.

Shen, W. and A.A. Cannella (2002), "Power Dynamics Within Top Management and Their Impacts on CEO Dismissal Followed by Inside Succession," *Academy of Management Journal*, 45:1195-1206.

Shen, W., R.J. Gentry, and H.L. Tosi Jr. (2010), "The Impact of Pay on CEO Turnover: A Test of Two Perspectives," *Journal of Business Research*, 63:729-734.

Siegel, P.A. and D.C. Hambrick (2005), "Pay Disparities within Top Management Groups: Evidence of Harmful Effects on Performance of High-Technology Firms," *Organization Science*, 16:259-274.

Tuggle, C.S., D.G. Sirmon, C. Reutzel, and L. Bierman (forthcoming), "Commanding Board of Director Attention: Investigating How Organizational Performance and CEO Duality Affect Board Members' Attention to Monitoring," *Strategic Management Journal*.

Volpin, P. (2002), "Governance with Poor Investor Protection: Evidence from Top Executive Turnover in Italy," *Journal of Financial Economics*, 64:61−90.

Xuan, Y. (2009), "Empire-Building or Bridge-Building? Evidence from New CEOs' Internal Capital Allocation Decisions," *Review of Financial Studies*, 22:4919-4948.

Wang, J. (2010), "A Comparison of Shareholder Identity and Governance Mechanisms in the Monitoring of CEOs of Listed Companies in China," *China Economic Review*, 21:24-37.

Table 3-1 Summary Statistics

This table shows the descriptive statistics for the variables used in this study. Internal Succession is a binary variable that takes the value 1 if the new CEO is promoted from within the same company, and zero otherwise. Board size is the total number of directors on a corporate board. Board independence is the proportion of outside directors as a percentage of board size. Duality is a binary variable that takes the value 1 if the CEO also holds the Chairman post, and zero otherwise. Leverage is the ratio of long term debt over total assets. Prior performance is the industry-adjusted ROA of the company for the previous year. Market value of equity is the market capitalization of the company (stock price X number of shares outstanding). Total sample size is 14,843 firm-years. The difference in sample size is due to missing data or information not available.

Variables	Mean	Median	St. Dev.	# Obs.
Heterogeneity Index:				
Current Compensation	0.2156	0.2087	0.0621	14,839
Equity-Based Compensation	0.3575	0.3009	0.1763	12,580
Total Compensation	0.2708	0.2517	0.0854	14,815
CEO Compensation: ($ thousands)				
Current Compensation	1,465.33	1,000.00	1,764.17	14,843
Equity-Based Compensation	2,996.72	838.10	11,517.96	14,843
Total Compensation	5,296.29	2,604.78	12,448.39	14,759
Pay Gap:($ thousands)				
Current Compensation	835.44	532.86	1,328.45	14,843
Equity-Based Compensation	2,020.86	454.69	9,929.40	14,843
Total Compensation	3,367.19	1,445.39	10,514.34	14,843
Internal Succession	0.7907	1.0000	0.4069	1,663
Board Size	9.57	9.00	2.93	14,843
Board Independence	0.6500	0.6700	0.1750	14,843
Duality	0.6650	1.0000	0.4780	14,843
Market Value of Equity ($ millions)	8.31	1.68	26.41	12,257
Total Assets ($ millions)	13.69	1.76	65.63	14,760
Leverage	0.1901	0.1689	0.1645	14,728
Prior Performance	0.0405	0.0444	0.1253	14,760

Table 3-2 Logistic Regression – Internal versus External Replacement

The dependent variables take the value 1 if the new CEO is promoted from within the same company, and zero otherwise. Each dependent variable is regressed using a logit model on the (1) Heterogeneity Index or (2) a dummy variable, SIMILAR, and the various control variables. P-values are reported in parenthesis.

	SAL	SAL	EBC	EBC	TDC	TDC
Constant	0.5372	0.387	1.9205***	0.4852	1.4349***	0.5374
	0.226	0.317	0.005	0.457	0.001	0.174
Heterogeneity Index	-0.3552	---	-3.5986***	---	-2.5621***	---
	0.748		0.000		0.000	
SIMILAR	---	0.151	---	0.5241**	---	0.3419**
		0.247		0.022		0.014
Pay Gap	-0.2409***	-0.2345***	0.0774	-0.0707	-0.2158***	-0.2741***
	0.000	0.000	0.482	0.469	0.001	0.000
Duality	-0.3898***	-0.3968***	-0.2512	-0.2879	-0.3538***	-0.3663***
	0.003	0.002	0.218	0.154	0.007	0.005
Percentage Outsiders	-0.7236*	-0.7213*	-0.2691	-0.0145	-0.8455**	-0.7251*
	0.077	0.078	0.681	0.982	0.039	0.074
Board Size	0.1418***	0.1406***	0.1508***	0.1588***	0.1243***	0.1265***
	0.000	0.000	0.003	0.002	0.000	0.000
Firm Size	0.0795	0.0809	-0.0458	-0.0478	0.083	0.0869*
	0.113	0.106	0.55	0.53	0.101	0.084
Prior Performance	0.8734**	0.873**	2.088***	2.1164***	1.0164***	0.9873***
	0.011	0.011	0.005	0.004	0.004	0.005
Leverage	0.3785	0.3811	-0.0676	-0.0359	0.3609	0.3372
	0.337	0.334	0.914	0.953	0.363	0.393
R-Square	0.0552	0.0559	0.0682	0.0552	0.0727	0.0677
# Observations	1,663	1,663	831	831	1,663	1,663

Note: ***, **, & * denotes statistical significance at the 1%, 5%, & 10% levels, respectively.

Table 3-3 Logistic Regression – CEO Turnover versus No CEO Turnover

The dependent variables take the value 1 if the CEO is serving in his last full fiscal year, and zero otherwise. Each dependent variable is regressed using a logit model on (1) a dummy variable, SIMILAR, (2) the interaction term (excess return$_{t-1}$*SIMILAR), and the various control variables. P-values are reported in parenthesis.

	SAL	SAL	EBC	EBC	TDC	TDC
Constant	-2.5162***	-2.5224***	-2.9795***	-2.9778***	-2.4959***	-2.4972***
	0.000	0.000	0.000	0.000	0.000	0.000
SIMILAR	0.7185***	0.7267***	0.229***	0.2136**	0.337***	0.3377***
	0.000	0.000	0.009	0.015	0.000	0.000
Excess Return (time t-1) * SIMILAR	---	-0.2296*	---	-0.4164**	---	-0.05
		0.065		0.016		0.688
Excess Return (time t)	0.0085	0.008	-0.0505	-0.0488	-0.0173	-0.0176
	0.843	0.854	0.481	0.499	0.722	0.718
Excess Return (time t-1)	-0.3459***	-0.2057***	-0.2586***	-0.5126***	-0.4009***	-0.3761***
	0.000	0.031	0.002	0.000	0.000	0.000
Pay Gap	0.1553***	0.155***	0.3228***	0.3232***	0.3246***	0.3241***
	0.000	0.000	0.000	0.000	0.000	0.000
Duality	-1.3119***	-1.3122***	-1.4367***	-1.4387***	-1.3049***	-1.3047***
	0.000	0.000	0.000	0.000	0.000	0.000
Percentage Outsiders	0.4054***	0.3994**	0.1581	0.1706	0.3726**	0.373**
	0.010	0.011	0.496	0.463	0.017	0.017
Board Size	0.0089	0.0093	0.009	0.0094	0.0201*	0.0201*
	0.424	0.405	0.552	0.538	0.068	0.068
Firm Size	0.0362*	0.0361*	0.0778***	0.0768***	0.0173	0.0174
	0.071	0.072	0.005	0.006	0.386	0.382
Leverage	0.1556	0.1531	0.2318	0.2383	0.1551	0.1547
	0.332	0.340	0.314	0.300	0.328	0.329
Log-likelihood	-4,881.36	-4,879.69	-2,552.94	-2,549.98	-4,959.08	-4,959.00
Chi-square	843.65 (0.00)	846.99 (0.00)	407.65 (0.00)	413.57 (0.00)	771.10 (0.00)	771.26 (0.00)
# Observations	14,569	14,569	8,853	8,853	14,596	14,596

Note: ***, **, & * denotes statistical significance at the 1%, 5%, & 10% levels, respectively.

Table 3-4 Compensation Changes after Promotion to CEO

Panel A: Descriptive Statistics

Compensation changes are calculated as the difference in compensation between after becoming CEO and prior to becoming CEO.

Variables	Mean	Median	St. Dev.	# Obs.
Compensation Change Following Internal Succession: ($ thousands)				
Current Compensation	356.14	208.21	1,142.79	1,315
Equity-Based Compensation	8.95	48.55	11,385.97	1,315
Total Compensation	768.90	473.32	11,729.30	1,315

Panel B: Paired t-test

To compare compensation changes between two groups: "Homogeneous" and "Heterogeneous".

	# Obs.	SAL	# Obs.	EBC	# Obs.	TDC
Homogeneous	657	464.59	573	337.50	657	1,424.85
Heterogeneous	658	247.86	742	-244.77	658	113.95
Difference		216.73***		582.27		1310.9**
	t-stat.	**3.45**		0.92		**2.03**
	p-value	**0.000**		0.358		**0.043**

Note: *** & ** denotes statistical significance at the 1% & 5% levels, respectively.

Table 3-5 Robustness Test – Market Indices

Panel A: Descriptive Statistics

Variables	Mean	Median	St. Dev.	# Obs.
Excess Returns (at year t)				
S&P 500	0.0617	0.0181	0.6328	14,843
CRSP Value-weighted	0.0548	0.0122	0.6335	14,843
CRSP Equal-weighted	0.0569	0.0116	0.6337	14,843
Excess Returns (at year t-1)				
S&P 500	0.0814	0.0272	0.6379	14,843
CRSP Value-weighted	0.0743	0.0219	0.6387	14,843
CRSP Equal-weighted	0.0775	0.0221	0.6391	14,843

Panel B: Two Sample t-test

	Mean	St. Dev.		Mean	St. Dev.
Excess Returns (at year t)					
S&P 500	0.0617	0.6328	S&P 500	0.0617	0.6328
CRSP Value-weighted	0.0548	0.6335	CRSP Equal-weighted	0.0569	0.6337
Difference	0.0069		Difference	0.0048	
p-value	0.347		p-value	0.509	
t-statistics	0.9404		t-statistics	0.6607	
Excess Returns (at year t-1)					
S&P 500	0.0814	0.6379	S&P 500	0.0814	0.6379
CRSP Value-weighted	0.0743	0.6387	CRSP Equal-weighted	0.0775	0.6391
Difference	0.0071		Difference	0.0039	
p-value	0.339		p-value	0.600	
t-statistics	0.9567		t-statistics	0.5309	

Panel C: Correlation

	Correlation
Excess Returns (at year t)	
SP 500 ~ CRSP Value-weighted	0.9999
SP 500 ~ CRSP Equal-weighted	0.9992
Excess Returns (at year t-1)	
SP 500 ~ CRSP Value-weighted	0.9999
SP 500 ~ CRSP Equal-weighted	0.9991

Table 3-6 Robustness Test – Probit Regression

Panel A: Internal/External Replacement

	SAL	SAL	EBC	EBC	TDC	TDC
Constant	0.3784	0.2842	0.704***	0.219	0.8304***	0.1838
	0.125	0.187	0.004	0.305	0.000	0.396
Heterogeneity Index	-0.2305	---	-0.9425***	---	-1.6805***	---
	0.720		0.000		0.000	
SIMILAR	---	0.088	---	0.2879***	---	0.2599***
		0.229		0.000		0.000
Pay Gap	-0.1331***	-0.1301***	-0.1166***	-0.1226***	-0.1092***	-0.1226***
	0.000	0.000	0.001	0.000	0.002	0.000
Duality	-0.2167***	-0.2202***	-0.183**	-0.2033***	-0.2013***	-0.2089***
	0.003	0.003	0.021	0.006	0.006	0.004
Percentage Outsiders	-0.3845*	-0.3837*	-0.3722	-0.3398	-0.4308*	-0.3596
	0.092	0.093	0.138	0.138	0.061	0.116
Board Size	0.0748***	0.0742***	0.0772***	0.0747***	0.0699***	0.0722***
	0.000	0.000	0.000	0.000	0.000	0.000
Firm Size	0.0454	0.0465*	0.0369	0.0331	0.0473*	0.0483*
	0.103	0.095	0.229	0.239	0.092	0.085
Prior Performance	0.5396***	0.5386***	0.5708***	0.5539***	0.5816***	0.5688***
	0.007	0.007	0.005	0.005	0.004	0.005
Leverage	0.2371	0.2369	0.2773	0.2727	0.2088	0.2167
	0.283	0.283	0.249	0.218	0.347	0.328
R-Square	0.055	0.0558	0.0795	0.0643	0.0697	0.0626
# Observations	1,663	1,663	831	831	1,663	1,663

Note: ***, **, & * denotes statistical significance at the 1%, 5%, & 10% levels, respectively.

Panel B: Turnover/No Turnover

	SAL	SAL	EBC	EBC	TDC	TDC
Constant	-1.4092***	-1.3398***	-1.64***	-1.6349***	-1.3784***	-1.3797***
	0.000	0.000	0.000	0.000	0.000	0.000
SIMILAR	0.3818***	0.371***	0.1222***	0.1106**	0.166***	0.1672***
	0.000	0.000	0.007	0.015	0.000	0.000
Excess Return (time t-1) * SIMILAR	---	-0.1322**	---	-0.2096**	---	-0.0343
		0.032		0.013		0.579
Excess Return (time t)	0.0058	0.0052	-0.0289	-0.0289	-0.0058	-0.0059
	0.798	0.823	0.441	0.443	0.819	0.814
Excess Return (time t-1)	-0.1671***	-0.084	-0.1191***	-0.2481***	-0.1935***	-0.1769***
	0.000	0.122	0.003	0.000	0.000	0.000
Pay Gap	0.0745***	-0.0071	0.1637***	0.1636***	0.1486***	0.1483***
	0.000	0.770	0.000	0.000	0.000	0.000
Duality	-0.6954***	-0.6916***	-0.7318***	-0.7343***	-0.6886***	-0.6885***
	0.000	0.000	0.000	0.000	0.000	0.000
Percentage Outsiders	0.2032**	0.2179***	0.0732	0.0796	0.183**	0.1832**
	0.016	0.009	0.544	0.509	0.028	0.028
Board Size	0.0047	0.005	0.0045	0.0048	0.0101*	0.0101*
	0.431	0.399	0.571	0.549	0.088	0.089
Firm Size	0.0178*	0.0183*	0.0372***	0.0366**	0.0098	0.0099
	0.093	0.084	0.010	0.011	0.353	0.347
Leverage	0.0975	0.1098	0.1286	0.1301	0.0968	0.0967
	0.255	0.199	0.283	0.278	0.254	0.255
R-Square	0.079	0.0776	0.0727	0.0738	0.0704	0.0704
# Observations	14,569	14,569	8,853	8,853	14,596	14,596

Note: ***, **, & * denotes statistical significance at the 1%, 5%, & 10% levels, respectively.

CHAPTER 4 CONCLUSION

With a sample of 347 S&P 500 firms, I find that firm governance in general improves after being added to the index. Using a one-sample proportions test, I find that all mechanisms (except management ownership and blockholders' ownership) exhibit statistically significant improvements. I also find that the market reacts positively to governance improvements. In addition, improvements in governance are positively related to operating performance improvement.

Using a novel measure of the competitiveness within the internal labor market, I find that the probability of an internal replacement is higher in a more competitive internal labor market. In addition, the increase in compensation is positively related to the competitiveness of the internal labor market. Both results provide some support for tournament theory. The negative relation between prior performance and probability of a turnover is also found. In addition, this negative performance-turnover relationship is magnified by a more competitive internal labor market.