IMPACT OF CORPORATE GOVERNANCE, EXCESS CEO COMPENSATION, AND CEO STOCK OPTION GRANTS ON FIRM PERFORMANCE DURING RECESSIONARY PERIODS

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by
Robert P. Antenucci
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Dissertation written by

Robert P. Antenucci

B.S., Case Western Reserve University, 1982

M.B.A., University of Chicago, 1988

Ph.D., Kent State University, 2013

Approved by

____________________________________ Chair, Doctoral Dissertation Committee

____________________________________ Member, Doctoral Dissertation Committee

____________________________________ Member, Doctoral Dissertation Committee

Accepted by

____________________________________ Doctoral Director, Graduate School of Management

____________________________________ Dean, Graduate School of Management
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IMPACT OF CORPORATE GOVERNANCE, EXCESS CEO COMPENSATION, AND CEO STOCK OPTION GRANTS ON FIRM PERFORMANCE DURING RECESSIONARY PERIODS

There is much debate over the efficacy of corporate governance in mitigating agency costs and improving the correlation between firm performance and Chief Executive Officer (CEO) pay. Research on this topic ranges from theories which maintain that CEO compensation in the U.S. is commensurate with CEO ability, and is therefore justified, to theories which maintain that CEOs are little more than overpaid rent extractors.

I investigate the above dichotomy in the executive compensation literature by examining the impact of corporate governance on excess CEO compensation and firm performance during recessions. Business cycle contractions are challenging times for firms, and arguably a period when stronger corporate governance and CEO ability is significant to the success of the firm. I posit that better governed firms with lower levels of excess compensation outperform their peers in subsequent challenging recessionary periods.

Stock option grants, a frequently used component of CEO pay packages, are thought to better align CEO and shareholder interests. However, with recent financial scandals there is much concern over this form of equity compensation. I examine the use of employee stock option grants in CEO compensation packages and whether such stock option compensation improves the relationship between CEO compensation and firm performance.

My research achieves several aims: it extends the literature on the impact of corporate governance on firm performance by using a recessionary period metric, it examines the effectiveness of corporate governance in mitigating agency costs, it examines excess CEO compensation and this excess compensation connection with CEO ability or CEO rent extraction during recessionary periods, and it examines the impact of stock option grants in CEO pay packages on firm performance during recessionary periods. I find support for a decrease in abnormal return associated with trading on stronger corporate governance and support for rent extraction in the CEO compensation process during the 2001 recession.
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1. Introduction

1.1 Overview

It is cost prohibitive for the atomistic shareholder to monitor directly the performance of a firm’s management. The separation of ownership and management, and the resulting potential conflict of interest, can lead to a disconnect among CEO actions, firm performance, and executive compensation. If management of a firm is unwilling to pursue activities that maximize the economic well-being of the firm’s shareholders, and if non-compensatory corporate governance measures are ineffective, then the CEO compensation process and its ability to align properly management and shareholder goals gains even greater importance. Stock option compensation may not better align these disparate interests and may actually further exacerbate the agency problem by incentivizing managerial misconduct.

While corporate governance mechanisms\(^1\) are imperfect and some unethical abuses by CEOs exist, there is a strand of research that maintains domestic corporate governance is relatively well functioning (Kaplan (2008) and Brookman and Thistle (2009)). In further support of this assertion, Bertrand and Mullainathan (2001) find that firms with stronger governance pay their CEOs less for positive firm performance that is not attributable to the CEOs’ performance. Gompers et al (2003) quantify corporate governance utilizing the Investor Responsibility Research Center (IRRC) data to develop a Governance Index (GIM) that measures the strength of a firm’s corporate governance structure. The authors find that firms with stronger corporate governance (lower GIM) have higher firm value, higher profits, higher sales growth, lower

\(^{1}\) See Table 1 and Table 2 for a complete list of the Investor Responsibility Research Center (IRRC) classifications of corporate governance measures.
capital expenditures, and make fewer corporate acquisitions. Cremers and Nair (2005) create a more parsimonious governance index, the Alternative Takeover Protection Index (ATI), and they find increased market value in firms with weaker ATI portfolios (stronger governance). Bebchuk et al (2009) expand on Gompers et al (2003) and Cremers and Nair (2005) research, creating an Entrenchment Index (EIndex) comprised of six governance measures from the IRRC. They find that higher EIndex (weaker corporate governance) negatively correlates with firm value, as measured by Tobin’s Q.

Executive compensation is thought to be another means to align shareholder and managerial interests. However, advocates of the excess executive compensation sector maintain that CEOs are overpaid based on the relative performance of their firms, compensation comparisons with other employees of the firm, and various other metrics. In support of the “overpaid” camp, Bertrand and Mullainathan (2001) maintain that increases in firm performance are not the direct result of the CEO’s actions. They find that the CEO’s compensation does not differentiate between luck (factors outside the CEO’s control) and CEO performance or effort (factors within the CEO’s control). Bebchuk and Grinstein (2005) also argue for a breakdown in the connection between CEO pay and firm performance for the 1993 thru 2003 timeframe, as they find a substantial increase in executive compensation beyond what could be explained by increases in firm size or firm profitability. Similarly, in his research on the supply and demand for CEOs, Nagel (2010) finds a greater than 600% increase in CEO pay since 1980. Frydman & Jenter (2010) survey CEO literature and find a 310% increase in average CEO pay from 1992 through its peak in 2001 (however only a 213% increase in median pay over the same period). During this period, they also find that large capitalization firm CEOs experienced greater pay increases, as well as finding an increasing gap between top executive and CEO compensation.
Again these increases are not associated with corresponding increases in firm size or firm profitability.

A frequently used tool in executive pay packages thought to better align CEO and shareholder interests is executive stock option grants. These stock option grants are financial instruments which give the holder the right to purchase a specified number of shares of the firm’s stock at a specified price (the exercise price) at some point in the future. Hall and Murphy (2003) find that from 1992 through 2000, CEO compensation increased threefold while during the same time period CEO stock options increased at a ninefold rate. Coles et al (2006), Montagne and Weinberg (2013) among others point to the use of equity compensation and employee stock option grants in executive pay packages as an attempt to better align shareholder and managerial interest thus reducing agency costs. Radke (2005) argues that employee stock option grants help firms acquire and retain managerial talent without direct cash outflows. While executive stock option grants are a substantial component of many CEO pay packages, there is much concern over whether this form of compensation better aligns CEO and shareholder interests, and their use is controversial. Past financial scandals have been linked to excessive emphasis on stock prices exacerbated by option grants, and some research maintains that these financial scandals are a result of widespread managerial malfeasance (Cassidy (2002), Madrick (2003) and Radke (2005)). More recently, stock option research has pointed to potential managerial malfeasance and the prolific use of option backdating, where firms “look back” and select earlier favorable dates with lower stock prices for option awards (Bizjak et al (2009)). I examine the use of stock option grants in the CEO compensation process and whether they mitigate the principal owner agency problem.
In addition to recent efforts to quantify the pertinent characteristics and effectiveness of corporate governance, pay-for-performance, and equity compensation, researchers have evaluated managerial decisions and firm performance during recessionary periods. Recessionary periods are challenging times for firms, and arguably a period when stronger corporate governance and CEO talent matters most to the success of the firm. Bebchuk and Grinstein (2005) offer the view that, in general, recessionary periods require greater effort by management, as funding is more difficult to obtain and shareholders are more disillusioned. The National Bureau of Economic Research (NBER) monitors U.S. economic activity by tracking business cycles and disseminating information on the most recent recessions and their duration, as well as other economic data. They define a recession as “the period between a peak and a trough,” and characterized as a “significant decline in economic activity spreads across the economy and can last from a few months to more than a year.”² Amanatullah et al (2010) use recessions as a timeframe to evaluate managerial decisions and firm performance. Amanatullah et al (2010) find gender differences in managerial decisions and firm performance during recessionary periods.³ Song and Tsai (2012) use the recent 2007 – 2009 recession to examine CEO ability focusing on firms whose CEOs receive higher pay. The authors find a positive connection between higher CEO pay and firm performance during this most recent recession. It is during these recessionary periods that corporate governance should impact firm performance, and CEOs should best differentiate themselves from one another.

The purpose of my research is to add to the literature on the connection between corporate governance, CEO compensation, and CEO stock option compensation on firm

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performance by examining this relationship during the two most recent recessions (2001 and 2007 -2009). My approach examines “fair-weather” versus “foul-weather” skippers, along the lines of the quotation “a rising tide lifts all boats.” The Washington Post (1988) comments that “The theory used to be that all Americans had a stake in prosperity. The comforting notion was that the rising tide would lift all boats. Now, however, both the theory and some of the boats have holes in them.”

Do some CEOs and their managerial actions cause their “boats” to have holes in them? Building on the research of Ferrary (2009) and Amanatullah (2010), Song and Tsai (2012), I utilize recessionary periods as an assessment period and evaluate firm performance during these periods based on three different parameters: corporate governance, excess CEO compensation, and CEO stock option compensation. In this manner, I attempt to further the analysis of the relationship among corporate governance, CEO compensation, and firm performance.

1.2 Hypotheses

Gompers et al (2003), Cremers and Nair (2005), and Bebchuk et al (2009), among others, examine the correlation between stronger corporate governance and stronger firm performance. Recessions are challenging times for firms, and therefore stronger corporate governance leading into a recession will arguably be associated with relatively stronger firm performance during the subsequent recession. I extend the work of Bebchuk et al (2009) and utilize their corporate governance Entrenchment Index measure (EIndex) to investigate the connection between a firm’s corporate governance and a firm’s performance from 1995 – 2009 as well as during the recessions. I utilize the two most recent recessionary periods, March 2001 through November 2009.

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2001 and December 2007 through June 2009,\textsuperscript{6} for my analysis. I posit that firms with stronger corporate governance are better positioned to weather difficult times associated with economic downturns, and I test the following hypothesis:

**H1.1:** During recessionary periods, firms with stronger corporate governance realize stronger firm performance.

I calculate the daily abnormal returns\textsuperscript{7} during the recession, and a finding of positive abnormal returns from a trading strategy that takes a long position in firms (buys firms) with high corporate governance and shorts firms (sells firms) with low corporate governance during this period would lend support to hypothesis H1.1 of the importance of corporate governance during recessionary periods.

To provide additional support for using the recessionary period metric, I examine the impact of corporate governance on firm performance extending the timeframe of my analysis into the first year of recovery after both recessions. I posit that stronger corporate governance is more important during recessions, and the connection between stronger corporate governance and firm performance likely diminishes in the subsequent economic recovery period. I test the following hypothesis:

**H1.2:** The impact of stronger corporate governance on firm performance diminishes in the economic recovery period.

I calculate the daily abnormal returns extending the length of the timeframe of my analysis by one year after the end of each recession (one year into the economic recovery period). Finding a decrease in positive abnormal returns during the recovery period would lend support to

\textsuperscript{6} Data on executive compensation is not available for prior recessions, e.g. 7/90 through 3/91.

\textsuperscript{7} I follow Gompers et al (2003) and Bebchuk et al (2009) and calculate abnormal returns using the Carhart (1997) four-factor model. This is discussed in detail in the Methodology section on Corporate Governance on Firm Performance during Recessions.
hypothesis H1.2 of the importance of corporate governance during recessionary periods over economic recovery periods.

Next, I shift my focus from the connection between corporate governance and firm performance to the connection between CEO compensation and firm performance. I build on the previous hypothesis by analyzing unexplained or excess CEO compensation and its impact on firm performance during recessions. As I discuss later in the Literature Review section, there is mixed evidence over the ability of stronger corporate governance to improve the connection between firm performance and CEO pay. This breakdown in CEO compensation, corporate governance, and firm performance may be particularly telling in firms during recessionary periods. I extend research in this area\(^8\) by calculating excess CEO compensation in the year prior to both recessions and then examine firm performance in the subsequent recessionary period. To calculate excess CEO compensation, I use methodology of Bebchuk and Grinstein (2005), controlling for commonly used determinants of CEO compensation, and I posit that the unexplained portion of the compensation regression is an estimate of excess CEO compensation. I then examine whether this excess compensation is associated with stronger firm performance during recessionary periods, which would support the CEO ability hypothesis, or whether it is associated with weaker firm performance, which would support CEO rent extraction hypothesis. I test the following hypothesis:

**H2.1:** During recessionary periods, firms whose CEOs have less excess compensation will outperform firms whose CEOs have greater excess compensation.

Hypothesis 2.1 builds on the Hypothesis 1.1 by providing insight into whether the CEOs’ compensation mitigates agency costs and reduces CEO rent extraction, thus improving the relationship between CEO pay and firm performance. I calculate the daily abnormal returns

\(^8\) Ferrary (2009), Amanatullah et al (2010), and Song and Tsai (2012)
during the recession. Finding positive abnormal returns from a trading strategy that shorts firms with high excess CEO compensation and takes a long position in firms (buys firms) with low excess CEO compensation would lend support to CEO rent extraction, support of hypothesis H2.1. Negative abnormal returns would lend support to the CEO ability hypothesis.

Similar to the previous hypotheses, I examine the relevance of the recessionary period by extending the timeframe of my analysis one year into the economic recovery period. I posit that the impact of excess CEO compensation likely diminishes in the economic recovery period. I test the following hypothesis:

**H2.2**: The impact of excess CEO compensation on firm performance diminishes in the economic recovery period.

I calculate the abnormal returns extending the timeframe of my analysis one year into the post-recessionary period, and finding a decrease in positive abnormal returns over this extended time period would lend support to hypothesis H2.2 that the importance of excess compensation in the economic recovery periods diminishes.

Next, I add the Bebchuk et al (2009) EIndex corporate governance measure to the compensation regressions to examine whether the addition of this corporate governance measure improves the relationship between excess compensation and firm performance during recessionary periods. Adding this corporate governance measure lends insight into the importance of the relationship among corporate governance, CEO pay, and firm performance (as measured by abnormal returns) during the subsequent recession. I test the following hypothesis:

**H2.3**: During recessionary periods, firms whose CEOs have less excess compensation, after adjusting for the firm’s level of corporate governance, will outperform firms whose CEOs have greater excess compensation.

Hypothesis 2.3 builds on the Hypothesis 2.1 by providing insight into whether firms with stronger corporate governance are better able to mitigate agency costs (a stronger connection
between greater excess CEO compensation and stronger firm performance). Again, positive abnormal returns from a trading strategy that takes a long position in low excess compensation and a short position in high excess compensation would lend support to CEO rent extraction theories, while negative abnormal returns would support the effectiveness of corporate governance on CEO compensation as well as the CEO ability hypothesis.

I again extend my analysis into the economic recovery period to assess the relevance of the recessionary period metric. I posit that the impact of excess CEO compensation likely diminishes in the economic recovery period. I test the following hypothesis:

**H2.4**: The impact of excess CEO compensation on firm performance, after adjusting for the firm’s level of corporate governance, diminishes in the economic recovery period.

I calculate the abnormal returns in this extended timeframe, and finding a decrease in positive abnormal returns over this extended time period would lend support to hypothesis H2.4 of the diminished importance of corporate governance and excess compensation during economic recovery periods.

In addition to the impact of corporate governance on firm performance and the impact of corporate governance on the relationship between CEO pay and firm performance, I posit that the equity portion of a CEO’s pay package could impact firm performance during recessionary periods. I examine stock option grants received by the CEO and the connection between high percentage of stock option compensation and low percentage stock option compensation on firm performance during recessionary periods. Since option value increases with volatility, CEOs with a higher percentage of compensation from option grants have a greater incentive to increase the volatility or risk of the firm. This increased risk and the concomitant incentives for managerial malfeasance associated with stock option grants are likely more detrimental to firm
performance during recessionary periods and less of a factor in the economic recovery periods. I test the following hypothesis:

**H3.1:** During recessionary periods, firms whose CEOs have a smaller percentage of stock option compensation will outperform firms whose CEOs who have greater percentage of stock option compensation.

Hypothesis 3.1 builds on the Hypothesis 2.1 by providing insight into whether the makeup of the CEO’s compensation package is able to mitigate agency costs and reduce CEO rent extraction, thus improving the relationship between CEO pay and firm performance. I calculate the abnormal returns during the recession, and a finding of positive abnormal returns from a trading strategy that shorts firms with a high percentage of stock option compensation and takes a long position in firms with a low percentage of stock option compensation would lend support to ineffectiveness of stock option compensation in the CEO pay package to mitigate agency costs, support of hypothesis H3.1. Negative abnormal returns would lend support to the usefulness of stock option compensation in managerial pay packages.

I again extend the timeframe of my analysis one year into the economic recovery period to assess the relevance of the recessionary period metric. I posit that the impact of stock options, which incentivize volatility and risk taking, likely diminish in the economic recovery period. I test the following hypothesis:

**H3.2:** The impact of the percentage of CEO stock option compensation on firm performance diminishes in the economic recovery period.

I calculate the abnormal returns extending the timeframe of my analysis one year into the economic recovery period. Finding a decrease in positive abnormal returns during this post-recessionary period would lend support to hypothesis H3.2 of the diminished importance of stock option compensation in the economic recovery periods.
I expand on hypothesis H3.1 by examining whether firms with stronger corporate governance are more likely to administer stock option grants in a manner which enhances firm performance and is less likely to be associated with managerial malfeasance and CEO rent extraction. I further separate the top decile of CEO stock option compensation into high governance and low governance portfolios to investigate whether stronger corporate governance in firms with higher stock option compensation correlates to improved firm performance. For the firms with the highest percentage of option compensation, I examine the relationship between high percentage option compensation and high corporate governance versus high percentage option compensation and low corporate governance. I test the following hypothesis:

**H3.3** During recessionary periods, firms whose CEOs have a higher percentage of stock option compensation and stronger corporate governance will outperform firms whose CEOs have higher percentage of stock option compensation and weaker corporate governance.

Hypothesis 3.3 builds on the Hypothesis 3.1 by providing insight into whether firms with stronger corporate governance and relatively higher option compensation perform better during recessionary periods. I calculate the abnormal returns during the recession, and a finding of positive abnormal returns from a trading strategy that takes a long position in firms with high corporate governance and high option compensation and a short position in firms with low corporate governance and high percentage of stock option compensation would lend support to the effectiveness of corporate governance in the administration of CEO stock option compensation, support for hypothesis H3.3. Negative abnormal returns would lend support to the ineffectiveness of corporate governance in the issuance of CEO stock option compensation.

I again examine the economic recovery period to assess the relevance of the recessionary period metric. I posit that the connection between stronger corporate governance and higher CEO stock option compensation likely diminishes in the economic recovery period. I examine
firm performance for the previous portfolio trading strategy extending the timeframe of my analysis one year into the economic recovery periods. I test the following hypothesis:

**H3.4:** The impact of high percentage of stock option compensation and stronger corporate governance diminishes in the economic recovery period.

I calculate the abnormal returns extending the timeframe one year after each recession. Finding a decrease in positive abnormal returns during this extended time period would lend support to hypothesis H3.4 of the diminished importance of corporate governance and stock option compensation in the economic recovery periods.

### 1.3 Summary of Empirical Results

I begin this section by summarizing the results of my examination of the connection between corporate governance and firm performance. I examine the firms in the Bebchuk et al (2009) Entrenchment Index corporate governance dataset (EIndex) for the entire data period and then narrow my focus to the 2001 recession (3/2001 – 11/2001) and the 2007 – 2009 recession (12/2007 – 6/2009). I investigate the connection between governance and firm performance by forming two governance-based portfolios: a stronger corporate governance portfolio (the “Democratic” portfolio that contains firms with a lower EIndex) and a weaker corporate governance portfolio (the “Dictatorship” portfolio that contains firms with a higher EIndex). I then measure performance of this long high governance (buy high governance) and short low governance (sell low governance) trading strategy using Carhart (1997) four-factor model regressions\(^9\) to calculate monthly abnormal returns for the entire dataset period, 1995 – 2009. This trading strategy yields a compound annual abnormal annual return of 7.4%/year for the

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\(^9\) “Democratic” and “Dictatorship” are terminology used by Gompers et al (2003) to represent strong corporate governance firms and weak corporate governance firms, respectively.

\(^{10}\) I follow Gompers et al (2003), Cremers and Nair (2005), and Bebchuk et al (2009) and calculate abnormal returns using the Carhart (1997) four-factor model. This is discussed in detail in the Methodology section on Corporate Governance on Firm Performance during Recessions.
value-weighted portfolio and 4.8%/year for the equal-weighted portfolio. While my results lend support to the proposition that stronger corporate governance is associated with stronger firm performance, these are 50% lower than Bebchuk et al (2009) findings for the 1990s for value-weighted portfolios and a 35% lower for equal-weighted portfolios. A possible reason for this decrease might be the semi-strong efficient market theory that publically available research (in this case the level of a firm’s corporate governance) should not result in long-term abnormal returns. I also examine the abnormal returns for the entire 1995 – 2009 dataset period using daily returns instead of monthly returns, and I find the compound annual returns decrease slightly in size (between 8% and 9%). A robustness check of adding firms from the middle of the corporate governance spectrum to the high and low corporate governance portfolio indicates diminishing size and significance of the abnormal monthly returns, further supporting the connection between stronger governance and stronger firm performance.

I next examine the connection between corporate governance and firm performance during the 2001 and 2007 – 2009 recessions. To test this relationship, I examine the daily abnormal returns\(^{11}\) from a trading strategy that shorts the high corporate governance portfolio (Democratic portfolio) and takes a long position in the low corporate governance portfolio (Dictatorship portfolio) during both recessions. The daily abnormal returns for the value-weighted portfolio and the equal-weighted portfolio are not significant for either recessionary period. As I discuss in the prior paragraph, I find a decrease in the size of the abnormal returns for this trading strategy for the entire dataset when using daily return data instead of monthly return data. Further, the decrease in significance of the abnormal returns may be attributable to market efficiency forces as corporate governance measures are publically available information.

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\(^{11}\) Daily returns are used due to the limited number of observations associated with the shorter timeframe of the recessionary period analysis.
This non-significance of the abnormal returns when using daily data makes it difficult to assess the connection between corporate governance and firm performance during the two most recent recessions (lack of support hypothesis H1.1).

Next, I examine corporate governance and firm performance extending the timeframe of my analysis one year into both recovery periods. In the recovery period, I posit that importance of stronger corporate governance is diminished and should have less of an impact, and I anticipate that the daily abnormal returns should diminish during these more prosperous timeframes. I use the same methodology to calculate abnormal returns on the trading strategy that shorts low governance portfolios and takes a long position in high governance portfolios. The daily abnormal return regression results for the extended timeframe beyond the 2001 and the 2007 – 2009 are not significant. The non-significance of the extended timeframe neither supports nor refutes the importance of the recessionary metric (lack of support for hypothesis H1.2).

Next, I shift my focus from the results of corporate governance and firm performance to the results of excess CEO compensation and firm performance (H2.1 – H2.4). I posit that the unexplained or excess portions of the compensation regressions could be attributable to CEO ability, or the excess portion could be attributable to CEO rent extraction. I run regressions on CEO compensation (both cash compensation and total compensation) using Bebchuk and Grinstein (2005) compensation methodology and capture the residuals which I posit are a proxy for unexplained or excess CEO compensation. I form portfolios of top and bottom decile of unexplained CEO compensation shorting the high excess compensation and taking a long position in low excess CEO compensation.
The daily abnormal return results from the 2001 recession are positive and significant for equal-weighted portfolios formed from cash compensation residuals and total compensation residuals. The compound annual returns are 22.4%/year for cash compensation residuals and 29.2%/year for total compensation residuals. The daily abnormal returns are not significant for the 2007 – 2009 recession, which neither supports nor refutes that excess compensation is a result of CEO rent extraction or a reward for CEO ability. The results from the 2001 recession lend support to the theories siding with managerial malfeasance and rent extraction as opposed to those espousing that excess CEO compensation is a reward for ability leading to stronger firm performance (support for H2.1).

The results of my examination of excess CEO compensation in the extended post 2001 recessionary recovery period indicate support for the importance of the recessionary period measuring stick. The daily abnormal return results are significant for equal-weighted portfolios for cash compensation residuals and total compensation residuals, but the abnormal returns both decrease by roughly 40% when the timeframe is extended one year after the recession. This result lends support to the proposition that as measured by firms’ abnormal returns, managerial malfeasance and rent extraction decrease in importance during the post-recession economic recovery period. The analysis for the 2007 – 2009 recessionary period and one year post-recession is less compelling as none of the daily abnormal return results during the post-recessionary period is statistically significant. The decrease in abnormal return in the 2001 post-recessionary recovery period lends support to the proposition that this potential CEO rent extraction decreases in importance during economic recovery periods (support for hypothesis H2.2).
The results of my final analyses of excess CEO compensation are based on adding the Bebchuk et al (2009) EIndex corporate governance measure to the compensation regressions, lending insight into the connection between corporate governance and excess CEO compensation. Adding the EIndex corporate governance measure to the compensation regression equation should adjust for effects of poor corporate governance, and the regression equation residuals (unexplained portion of CEO compensation) should no longer contain effects of deficient corporate governance (entrenchment). Higher residuals from these regressions (greater excess compensation) should just be associated with CEO ability, which would lend support to the theory that stronger corporate governance prior to a recession mitigates agency costs, thus improving the pay-for-performance relationship during the subsequent recession.

I find that daily abnormal returns associated with a long position in low excess compensation and a short position in high excess compensation for the 2001 recession are positive and significant for equal-weighted portfolios formed from cash compensation residuals and total compensation residuals, which is counter to expectations based on incorporating corporate governance measures. The compound annual returns are 21.6%/year for cash compensation residuals and 29.1%/year for total compensation residuals. The daily abnormal returns are not significant for the 2007-2009 recession, which neither supports nor refutes that excess compensation is a result of CEO rent extraction or a reward for CEO ability. The 2001 recession daily abnormal returns are similar to the return from using excess compensation residuals from regressions that do not contain a governance measure, which would indicate that stronger corporate governance as measured by Bebchuk et al (2009) EIndex does not improve the relationship between excess CEO compensation and firm performance. The results from the 2001 recession indicate that corporate governance as measured by Bebchuk et al (2009) EIndex
does not improve the relationship between excess compensation and firm performance during this recessionary period. These results cast doubt on the usefulness of stronger corporate governance in improving the relationship between excess CEO compensation and stronger firm performance (support hypothesis H2.3).

Extending this analysis one year into each post-recessionary recovery period, I find compound annual abnormal return results from the post 2001 recession for the equal-weighted portfolios of 14.1%/year (cash compensation residuals) and 16.4%/year (total compensation residuals). None of the daily abnormal return results during the 2007 – 2009 post-recessionary period is statistically significant. The fact that the abnormal returns from the 2001 post-recessionary period for portfolios formed on an equal-weighted basis using both cash and total compensation measures\(^\text{12}\) decrease lends support to the proposition that as measured by a firm’s abnormal returns, managerial malfeasance and rent extraction decrease in importance during the economic recovery (support for H2.4).

The use of executive stock option grants as a component of the CEO’s compensation package is thought potentially to reduce agency costs and better align the CEO’s interests with the shareholders’ interest. This section reviews the results of my analysis of the benefits of stock option grants in CEO compensation packages (H3.1 – H3.4). I form portfolios based on the highest decile and lowest decile of percentage of CEO stock option compensation. The daily abnormal return results from a trading strategy of a long position in firms in the bottom decile of percentage CEO stock option compensation and short top decile of CEO stock option compensation for the 2001 recession as well as the 2007 – 2009 recession are not significant. The absence of any significant positive or negative abnormal return for these recessions indicates a lack of support for the benefits of stock option grants in CEO compensation package as well as

\(^{12}\) 14.1%/year versus 21.6%/year and 16.4%/year versus 29.1%/year
a lack of support for the danger of these grants. The results for the one year post-recessionary recovery periods are similarly insignificant (lack of support for hypotheses H3.1 and H3.2).

One potential reason for the non-significance of the prior results is the varying levels of corporate governance in top decile of percentage of CEO stock option compensation. I deconstruct the top decile of CEO stock option grant compensation (firms who use the greatest relative amount of option compensation in their pay packages) into strong corporate governance and weak corporate governance portfolios examining the daily abnormal returns from a long high corporate governance and high percentage option compensation and a short low corporate governance and high percentage option compensation. For the 2001 recessionary period, the unadjusted cumulative returns for value-weighted portfolios on the high corporate governance high option compensation (Democratic portfolio) noticeably increase through the period above the low corporate governance and high option compensation (Dictatorship portfolio) for the value-weighted portfolio. However, the abnormal returns from the long Democratic and short Dictatorship portfolio trading strategy are not significant. Nor are the daily abnormal returns from the other 2001 and 2007 – 2009 regressions. These results do not support the importance of stronger corporate governance in improving the connection between CEO option compensation and firm performance (lack of support for hypothesis H3.3). The results of extending the timeframe of my analysis one year after the 2001 and 2007 – 2009 recessions are similarly non-significant (lack of support for hypothesis H3.4).

1.4 Contribution

The purpose of my research is to add to the literature on the connections between firm performance and corporate governance, firm performance and CEO compensation, and firm performance and CEO stock option compensation by examining each of these areas during the
two most recent recessionary periods. Ferrary (2009), Amanatullah et al (2010), and Song and Tsai (2012) all utilize recessionary periods as the assessment period in their research. I further this strand of research by evaluating firm performance during recessionary periods from three different perspectives: corporate governance, excess CEO compensation, and CEO stock option compensation. I also examine the validity of the recessionary period metric by extending the timeframe of my analysis into the economic recovery periods following each of the two recessionary periods.

Research by Gompers et al (2003), Cremers and Nair (2005) and Bebchuk et al (2009) examine corporate governance metrics in an effort to quantify the relationship between corporate governance measures and firm performance. I extend the work of Bebchuk et al (2009) by examining their EIndex corporate governance measure beyond their original sample period, and more importantly, by examining the EIndex corporate governance measure and its relationship to firm performance during the two most recent recessionary sub periods. This extends the research on the correlation between stronger corporate governance and stronger firm performance as well as the ability of stronger corporate governance to mitigate agency costs during recessionary periods.

As I discuss in the Literature Review section which follows, there is mixed evidence over the ability of stronger corporate governance to remedy the potential disconnect between CEO compensation and firm performance. I utilize compensation regressions to estimate excess CEO compensation. I then investigate whether excess CEO compensation is associated with stronger firm performance during recessions and related to CEO ability, or whether excess CEO compensation is associated with weaker firm performance during recessions and related to CEO rent extraction. I further extend this area of research by utilizing Bebchuk et al (2009) EIndex
corporate governance measure in the CEO compensation regressions to lend insight into the connection among corporate governance, excess CEO compensation, and firm performance. This analysis extends research in the area of CEO compensation as well as examining the effectiveness of corporate governance in improving the connection between CEO compensation and firm performance by utilizing a more recent and more robust governance measure.

Finally my analysis extends the research in the area of stock option compensation. There is conflicting research in this area, as some point to the use of equity compensation and employee stock option grants in executive pay packages as an attempt to better align shareholder and managerial interest thus reducing agency costs, Coles et al (2006), while others maintain that stock option compensation is linked to financial scandals and managerial malfeasance, Cassidy (2002), Madrick (2003) and Radke (2005). Further, as stock option grants increase in value with increases in volatility (risk), then higher volatility (risk) should be connected to poorer firm performance during recessions. I examine the impact of stock option grants in CEO pay packages on firm performance during recessionary periods. I also add the EIndex corporate governance measure to this analysis furthering the research on the connection among stronger corporate governance, CEO compensation, and firm performance in recessionary periods.
2. Review of the Literature

2.1 Agency Theory

In my review of the literature, I begin by examining the background on agency theory, corporate governance, executive compensation, stock option compensation, and the challenges firms face during recessionary periods. Agency theory derives from the challenges created by disassociating corporate ownership and corporate management, as decisions within firms are made by managers acting as agents for the investors or owners. Management is charged with operating in shareholders’ best interests, usually defined in the Anglo-Saxon world as maximizing shareholder wealth, but frequently this shareholder maximization goal can be at odds with management’s personal goals. This “goal incongruence” is not the only issue shareholders face in the agency problem. There exists an information asymmetry between owners and operators, and monitoring an agent’s behavior is costly (Mangel and Singh (1993) and Tosi et al (2000)). Thus, the agency problems develop as agents can hide or pursue actions in their own interests and at the detriment of the owners. The resulting conflicting or improperly aligned interests between management and owners can lead to sub-optimal behavior and misallocation of firm resources, particularly in the form of questionable executive compensation and decision making.

In agency theory, the principal-agent relationship is based on the assumption of arm’s length dealings between shareholders and management. In an arm’s-length transaction, the parties are related or affiliated, but both parties function independently, and transactions occur without the parties’ ability to unduly influence or taint the process so that there is no apparent conflict of interest. Shareholders attempt to construct compensation agreements that deter
management from acting in its own self-interests, and instead motivate managers to behave in a manner which increases shareholder value. The principal agent theory relies on aligning shareholder and management incentives based on a connection between management behavior and pay-for-performance.

Fama and Jensen (1983) maintain that the agency issues associated with the separation of ownership and management of the firm have been debated by researchers dating back to Adam Smith’s the Wealth of Nations. Jensen and Meckling (1976) in their seminal article on agency theory posit that managers are thought to operate the firm for their own benefit, not for shareholder value, resulting in agency costs impacting firm value. The authors maintain that a manager who does not own the entire firm consumes more perks in comparison to the owner manager, which ultimately lowers firm value. This non-value adding behavior may be associated with rent extraction and pay for nonperformance. In an efficient market, the price of shares reflects these costs so that the owner bears the agency cost of equity if seeking outside equity financing. Corporate governance mechanisms, which I discuss in the following section, are one vehicle to correct goal incongruence between the principal (firm’s shareholders) and the agent (CEO). My research focuses on the whether corporate governance mechanisms are related to firm performance thus ameliorating this owner–agent conflict.

### 2.2 Corporate Governance and Firm Performance

The corporate form of business structure and resulting separation of ownership and management has existed for centuries, meaning that the agency conflicts resulting from this separation have been present for centuries as well (Hermalin (2005)). Corporate governance, which is the system by which an organization is ruled, or the state of being governed, attempts to mitigate the costs of these agency conflicts. Shleifer and Vishny (1997) describe corporate
governance as answering the question as to whether the firms’ stakeholders are properly compensated for their investment. There exists debate over the extent to which corporate governance systems are able to mitigate effectively agency costs. The majority of developed economies have well-functioning corporate governance systems, and some researchers, such as Brookman and Thistle (2009, pg. 331), maintain that “corporate governance functions reasonably well for the vast majority of firms,” while others researchers maintain that there is still room for improvement (Shleifer and Vishny (1997), Kaplan (2008)).

Gompers et al (2003), Cremers and Nair (2005), and Bebchuk et al (2009) all examine corporate governance metrics in an effort to quantify the relationship between corporate governance measures and firm performance. Gompers et al (2003) utilize Investor Responsibility Research Center (IRRC) data that follows 24 corporate governance provisions to develop a Governance Index (GIM) which measures the strength of a firm’s corporate governance structure. The authors form an equally weighted corporate governance index, which they construct by totaling the incidence of the 24 IRRC measures for each firm and subsetting the total for each firm into deciles. They form two portfolios, a “Dictatorship” portfolio and a “Democracy” portfolio. The Dictatorship portfolio (weakest shareholder rights) contains firms in the highest GIM decile, or GIM ≥ 14, and the Democracy portfolio (strongest shareholder rights) contains the firms in the lowest GIM decile, or GIM ≤ 5. They use Carhart (1997) methodology to calculate abnormal returns, and Gompers et al (2003) find that from September 1990 through December 1999 taking a long position in the Democracy portfolio and a short position in the Dictatorship portfolio yields a compound annual abnormal return of 8.5%/year. Gompers et al (2003) find that firms with stronger corporate governance outperform

13Current standard practice is that each governance measure receive equal weighting (La Porta et al (1998))
firms with lower corporate governance as measured by Carhart (1997) abnormal return methodology.


Next, Cremers and Nair (2005) examine how internal corporate governance mechanisms and external corporate governance mechanisms interact, as substitutes or complements, to affect firm performance as measured by abnormal returns. For internal corporate governance (active shareholders) the authors use two measures: the percentage of shares held by the single largest institutional blockholder and the percentage of shares held by the 18 largest public pension funds as their proxies. As a proxy for external corporate governance, the authors create a more parsimonious governance index, the Alternative Takeover Protection Index (ATI), which equally weighs three important anti-takeover factors: the existence of staggered boards, the existence of a poison pill, and restrictions on shareholders’ ability to call a special meeting. Cremers and Nair find that internal corporate governance and external corporate governance are complements by using Carhart (1997) abnormal return methodology. The authors find a trading strategy that shorts firms with a low ATI and takes a long position in firms with a high ATI yields a compound annual return of 10.8%/year when internal corporate governance is high based on the presence of a large institutional block holder, and a compound annual abnormal return of 9.5%/year when internal corporate governance is high based on the presence of large public pension funds. Cremers and Nair (2005) findings

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14 Cremers and Nair (2005) on page 2869
15 With a poison pill, the target company attempts to diminish the attractiveness during a hostile takeover by allowing existing shareholder to purchase shares at a discount, but not the acquirer.
further support the connection between stronger corporate governance and firm performance as measured by Carhart (1997) abnormal return methodology.

Bebchuk et al (2009, pg. 787) critique the ATI index in that Cremers and Nair (2005) “do not attempt to show either that other provisions do not matter or that each of the provisions used in their index matters.” Bebchuk et al (2009) expand on Gompers et al (2003) and Cremers and Nair (2005) research by performing a more all-inclusive analysis which individually examines all twenty-four IRRC governance measures, in an effort to determine which corporate governance measures most impact firm valuation. The authors begin their research by narrowing this data set and examining precatory resolutions (shareholders can initiate precatory proposals on various initiatives, but the results are nonbinding). Precatory proposals that have received majority support from shareholders, even for several consecutive years, have historically been rejected by the board of directors. They identified four predominant types of precatory resolutions (associated with six of the IRRC measures). To further validate their methodology, they solicited input from merger and acquisition specialists as well as major corporate law firms. Based on these inputs, they posit that the following six components of the IRRC have the greatest impact on corporate governance: staggered board, limitation on amending bylaws, limitation on amending the charter, supermajority to approve a merger, Golden Parachute, and Poison Pill.16 The first four limit shareholder voting power, and the last two are most prominently used in the face of potential hostile takeovers. As is standard practice in this strand of research, the six entrenchment provisions are each given equal weight in forming the authors’ Entrenchment Index (EIndex). Each firm in their sample therefore has an EIndex score between 0 (higher corporate governance) and 6 (lower corporate governance).

16 A listing of the six IRRC provisions used to form the Bebchuk et al (2009) Entrenchment Index provision is detailed in Table 1 in the appendix.
Similar to Gompers et al (2003), Bebchuk et al (2009) form high governance or Democratic portfolios and low governance or Dictatorship portfolios. They take a long position in the Democratic portfolio and a short position in the Dictatorship portfolio, and using Carhart (1997) abnormal return methodology, they find a compound annual abnormal return of 14.8%/year using value-weighted portfolios and 7.4%/year using equal-weighted portfolios. They further maintain that this relationship extends beyond correlation and into causality as increases in the EIndex (weaker corporate governance) during their sample period lead to decreases in firm valuation. This even holds for firms which began the period with a higher EIndex. As the IRRC measures pertain to shareholder value, Bebchuk et al (2009) maintain that the other 18 measures do not provide any additional explanatory power to their analysis only noise. They support this hypothesis by constructing their OIndex (equally weighted index of the “other” remaining 18 components of the IRRC),\(^{17}\) and after controlling for EIndex, find that the OIndex regression coefficients are statistically insignificant, small in size and occasionally have negative coefficients. As I discuss in the Hypotheses Section, I utilize Bebchuk et al (2009) EIndex to examine the connection between corporate governance and firm performance, the connection between corporate governance, excess compensation and firm performance, and finally the connection between corporate governance, CEO stock option grants and firm performance.

2.3 CEO Compensation

I transition from a review of the literature on the connection between corporate governance and firm performance to a review of the literature on the relationship between governance and firm performance to a review of the literature on the relationship between

\(^{17}\) A listing of the IRRC provision used to form the Bebchuk et al (2009) OIndex is detailed in Table 2 in the appendix.
corporate governance and executive pay. Mangel and Singh (1993) maintain that the board of directors is responsible for resolving agency issues (goal incongruence between owners and CEOs) by properly aligning the interests of the CEO with the shareholders’ interests, utilizing appropriate compensation packages in an effort to encourage this alignment. Bowen (1994) describes six main functions of the board of directors including evaluation and potential replacement of the CEO as well as monitoring management performance. Corporate boards of directors delegate much of decision-making process to the subcommittees of the board (Kesner, 1988). While board subcommittee structure varies from company to company, the compensation committee is common to the majority of companies and maintains a great deal of influence over the organizations’ activities. In an effort to improve the CEO pay for firm performance process, governmental regulatory agencies have increased requirements on the percentage of independent directors on the compensation committee at the same time tightening the definition on what constitutes an independent director (Kesner, 1994).

In spite of improvements to the corporation board structure and composition, and the compensation process, CEO salaries have increased at a disproportionately greater rate to corporate earnings over the past few decades (Frydman and Jenter (2010)). The authors demonstrate this greater rate by separating CEO compensation into two periods, pre-1970s and mid-1970s to present. Pre-1970s CEO compensation is characterized by lower levels of pay and small pay dispersion that contrasts with compensation after the mid-1970s which they describes as “dramatic” compensation levels with substantial dispersion across managers and firms, and higher pay-performance sensitivity. They find that large cap firms have shown the greatest increases in CEO compensation, but CEO compensation has increased for firms of all size. Bebchuk and Grinstein (2005) find that between 1993 and 2003, CEO compensation for S&P
500 firms increased 146% and that top-five executive compensation increased 125% (on an inflation adjusted basis). Gabaix and Landier (2008) find a “six-fold” increase in U.S. CEO pay between the years 1980 and 2003. These substantial increases in compensation as compared to firm performance have fueled debate over the potential disconnect in pay-for-performance, and the ability of stronger corporate governance to mitigate this disconnect. Montagne and Weinberg (2013) posit that more recent regulatory changes in say-on-pay for CEOs, greater scrutiny of board of directors, and increased emphasis on corporate governance improves the executive pay process. The following sections discuss two divergent theories associated with the CEO compensation process: the Contracting View and Managerial Power View.

### 2.3.1 Arm’s-length Bargaining and the Contracting View

Increases in CEO compensation do not necessarily mean that agency issues lead to a pay-for-performance disconnect. Bebchuk and Grinstein (2005) maintain that compensation can increase based on increases in the value of the executive’s service to the company, increases in the executive’s reservation wage (enticement to forego leisure consumption and continue working), or increases in the job requirements of the executive. In addition, compensation may increase during periods of economic expansion as the demand for executives’ services increases that ultimately lead to an increase in executive pay. Bebchuk and Grinstein (2005) describe the pay process as the compensation committee of the board of directors buying the services of the executive attempting to maximize shareholder value, while the executive is seeking to maximize his or her own benefit. The board of directors attempts to construct compensation agreements which deter management from acting in its own self-interests and instead motivate them to behave in a manner which increases shareholder value. Hall and Murphy (2003) support this line of reasoning, maintaining that an increase in the percentage of independent directors on the
board should result in a decrease in executive compensation if the managerial power theory (discussed in subsequent sections) were accurate.

The principal agent theory relies on aligning shareholder management incentives based on a strong sensitivity of management behavior and pay-for-performance (Bruce et al, 2005). In an arm’s-length transaction, the parties are related or affiliated, but both parties function independently, and transactions occur without either party able to unduly influence or taint the process so that there is no apparent conflict of interest. In the financial markets, arm’s-lengths transactions occur between willing buyers and willing sellers without duress from either party, and financial assets are then believed to have traded at a fair market value. The contracting view assumes an arms-length process and posits that compensation is used by shareholders to minimize agency costs and CEO rent extraction.

2.3.2 Support for CEO Compensation and Pay-for-Performance

The arm’s-length bargaining or contracting view maintains that boards and compensation committees determine executive pay to maximize shareholder value. This theory of the compensation process meshes with Kaplan (2008) who posits that current CEO compensation is appropriate. In support of his position, he cites that from 1990 to roughly 2007, the U.S. performed well on both absolute and relative basis, indicating that U.S. firms were not mismanaged by their executives. Kaplan agrees that CEOs do receive large compensation packages, but he argues that increases in the salaries of other “talented and fortunate groups” (hedge fund managers, professional athletes, top lawyers, for example) which outpace those realized by CEOs, suggest that “pay at the top appears to be systemic” (Kaplan (2008) pg.6). As further support for the appropriateness of CEO compensation, Kaplan finds that CEOs paid in the top quintile generate greater stock returns (60%) than their industry peers, while bottom
quintile CEOs generate smaller returns (20%). CEO turnover has increased, especially for poorer performing firms, a fact which Kaplan uses to suggest that boards of directors are not dominated by their CEOs. The author does acknowledge that corporate governance is not perfect, and that there have been some ethical abuses, but he goes so far as to suggest that the higher turnover rates increase the personal risk for CEOs indicating that they might actually be underpaid.

2.3.3 Managerial Power View and CEO Rent Extraction

At the opposite end of the arms-length or contracting view lies the managerial power view. The managerial power approach indicates that executives exert influence over boards and compensation committees. Bogle (2008) refutes Kaplan (2008), maintaining that the growth in corporate profits is not commensurate with the growth in CEO compensation nor the growth in the average worker’s wage. Bogle (2008) cites that between 1980 and 2004, average worker’s compensation increased 0.3% per year in real terms while CEO compensation increased at 8.5%. Further, corporate profits were less than ½ of their goal during this period and increased at 2.9% per year vs. increase in GDP of 3.1% per year (in real terms). These facts struggle to support an arms-length contracting view, and Bebchuk and Grinstein (2005) propose an alternate managerial influence bargaining model, maintaining that managers not only influence boards and ultimately compensation, but that their attempts to shield these practices waste even more resources and further reduce shareholder value.\textsuperscript{18}

The Managerial Power View suggests that directors with personal or ancillary relationships to management are more susceptible to managerial influence in the compensation process resulting in the management diverging from a shareholder maximization objective and

\textsuperscript{18} Also Bebchuk et al (2002)
potentially leading to rent extraction. Bebchuk and Grinstein (2005) maintain that the extent of this departure depends on market penalties and social costs. The authors posit that executive pay increases are consistent with the managerial power view as the bull market has made higher pay more readily defensible. They posit that decreased social consequences lessen the outrage against board members, and that more diluted shareholder control and greater anti-takeover mechanisms minimize the influence of potential hostile takeovers (also Bruce et al, 2005). Shleifer and Vishny (1997) also advocate against an arm’s-length bargaining process for executive compensation, positing a similar entrenchment theory, maintaining that managers make decisions which hinder the ability for them to be terminated. Some of these decisions increase shareholder value, but the authors argue that management typically invests beyond the value maximization point.

As further support for the Managerial Power View, Yermack (1997) looks at deficiencies in arm’s-length bargaining by examining managerial influence in the context of stock option award and announcement timing. His study finds that the timing of awards (stock options) coincides with favorable movements in company stock prices. Patterns of companies’ quarterly earnings announcements are consistent with an interpretation that CEOs receive stock option awards shortly before favorable corporate news. Daily et al (1998) maintain that the issue in executive pay-for-performance lies in the extent to which personal or non-work related associations erodes the independence of the compensation process. Directors may be reluctant to challenge CEOs as this may jeopardize not only the directors’ place on the board, but also current or future personal relationships with the CEO, as well as risk potential future business endeavors (future consulting for example). Bebchuk and Fried (2004) also advocate that independent board members frequently acquiesce to excess executive pay levels. Managerial
power, rent extraction, executive power, and skimming view are similar theories describing just such influence.

Bebchuk et al (2002) discuss managerial power and rent extraction in the design of executive compensation and question whether boards operate in an independent manner. The Managerial Power View suggests that boards do not operate at arm’s length in devising executive compensation arrangements; rather, executives have power to influence their own pay packages, and they use that power to extract rents. Executives’ desire to obfuscate their rent extraction might lead to the use of inefficient pay arrangements that provide suboptimal incentives and thereby hurt shareholder value. Compensation arrangements, and the various market forces and constraints that act on these processes, leave managers with considerable power to shape their own pay arrangements. Managerial power and the desire to camouflage rent extraction can explain significant features of the executive compensation landscape, including ones that have long been viewed as puzzling or problematic from the optimal contracting perspective.

Bebchuk and Fried (2006) provide an overview of executive pay procedures and the associated corporate governance structures. They believe that defective compensation is “widespread, persistent, and systemic” (pg. 6), as CEO compensation is subject to intentional manipulation in a flawed corporate governance system. The board of directors slate is typically proposed by management with substantial input from the CEO. The CEO’s input to the slate of the board of directors is a conflict of interest which potentially increases the agency problem. Additionally, CEOs frequently have prior social connections with board members as well as having influence over board members’ compensation. They posit that flaws in the executive compensation system hurt shareholders as such flaws do not properly incentivize managerial
effort leading to wealth extraction, and most existing compensation systems distort managerial incentives leading to inefficient decisions and ultimately decreased shareholder value. Further, the authors maintain that the increase in equity-based compensation has done little to reconnect pay to performance. For these reasons, Bebchuk and Fried (2006) maintain that boards do not operate in an arm’s length manner in determining pay arrangements, that the system has evolved from one of distorted incentives rather than a decline in the moral and ethical fiber of boards, and that these conditions ultimately lead to inefficient arrangements which potentially decrease shareholder value.

2.3.4 The Evidence against CEO Pay-for-Performance

Jensen and Murphy (1990) examine CEO compensation in an effort to quantify the sensitivity between firm performance and CEO pay. They use the Forbes Executive Compensation surveys from 1974 through 1986, which include over 2,000 CEOs. Their research indicates only a slight relationship between firm performance and CEO compensation. They find that a $1,000 change in shareholder wealth (change in value of commons stock) corresponds to only a two-cent change in CEO salary and bonus and only a $3.25 change in total CEO compensation supporting that CEO pay is very insensitive to firm performance. Jensen and Murphy reason that most CEOs hold “trivial fractions of their firms’ stock,”19 that CEO ownership levels have declined from 1940 through 1990, and that over the same period, the CEO pay to firm performance relationship has declined “substantially.”20 The authors hypothesize that both public and private political forces foster restrictions that hinder the CEO pay for firm performance sensitivity. Bebchuk and Fried’s (2006) position meshes with Jensen and Murphy

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19 Jensen and Murphy (1990) page 225
20 Jensen and Murphy (1990) page 227
(1990), but they go a step further in hypothesizing that the increase in equity-based compensation has done little to reconnect pay to performance.

Bertrand and Mullainathan (2001) examine CEO pay-for-performance to ascertain whether CEOs are compensated for luck. The authors define luck as firm performance which results from actions other than those initiated by the CEO, using three measures of luck: crude oil prices (oil industry), changes in industry-specific exchange rate (traded goods sector firms), and year-to-year differences in mean industry performance (proxy for the overall success of a particular sector). Bertrand and Mullainathan find that pay is just as responsive to luck as effort or ability, and the authors propose a skimming theory (rent extraction) as an alternative to the Contracting View, maintaining that entrenchment and complexity of the pay process enable CEOs to set their own pay. They do not find support for the Contracting View and question whether current CEO compensation structure is able to remedy the agency problem.

The previous Literature Review section provides support that stronger corporate governance measures lead to improved firm performance. However as I delineate in this section, there is mixed evidence over the ability of most firms’ current corporate governance structure to remedy a potential disconnect between CEO pay and firm performance. In support, Nagel (2010) finds that roughly two thirds of CEO pay increases are plausibly attributed to agency costs, social pressures, and CEO risk. Harris (2009) espouses that high levels of equity-based compensation actually incentivize financial malfeasance, and current monitoring systems are ineffective in encouraging or aligning executive and shareholder interests. I examine CEO compensation utilizing the previously discussed Bebchuk et al (2009) EIndex corporate governance measure to investigate whether excess compensation is associated with stronger or weaker firm performance. The connection among CEO compensation, corporate governance,
and firm performance should be particularly telling during recessionary periods. The challenges associated with recessionary periods are discussed in greater detail in section 2.5.

2.4 Option Compensation and Firm Performance

The prior section reviews the challenges faced when aligning CEO compensation with shareholder interests and the part played by the compensation process. In this subsection I examine the use of executive stock option grants in the CEO compensation process as a potential means to mitigate the agency problem. Executive stock option grants are financial instruments which give the holder the right to purchase a specified number of shares of the firm’s stock at a specified price (the exercise price) at some point in the future. Stock options are typically issued with a vesting period; they cannot be exercised for some predefined period of time and typically expire after ten years (Hall and Murphy (2003)).

Hall and Murphy (2003) study employee stock option grants and find that from 1992 through 2000 the average firm in the S&P 500 had total employee stock options grants which increased in real dollars from $22 million per company to $238 million per company. Further they find that during this same period CEO compensation increased threefold while CEO stock options increased at a ninefold rate. Coles et al (2006) also discuss this increase in the use of equity compensation for executives as an attempt to better align shareholder and managerial interest, thus reducing agency costs. Bebchuk and Grinstein (2005) document an increase in the equity-based compensation portion of executive compensation from 37% in 1993 to 55% in 2003. Along with Hall and Murphy (2003), they demonstrate that the proportion of equity-based compensation peaks in the 2001 to 2002 timeframe.
Hall and Murphy (2003) cite favorable tax and accounting treatment\(^{21}\) as contributing to the growth in employee stock option grants as employees receiving stock option grants did not create a taxable event. In 1972 the Accounting Principles Board in APB Opinion No. 25 required that companies only record and expense employee option grants’ intrinsic value (strike price were lower than the current market price), Radke (2005), Hayes et al (2012). From 1995 through 2005, the Financial Accounting Standards Board through FAS123 encouraged the use of “fair value” requiring companies to determine the fair market value of options granted, but the regulation did not place the additional requirement to expense these stock option grants. Shareholder activism leads to regulatory changes in FAS123 and issuance of FAS123r Share Based Payments. This regulation requires establishing a fair-value for these share-based payments by using the Black Scholes Merton model or the Binomial Lattice Model, and it also requires that these share-based payments are expensed, Radke (2005). FAS123r changes became effective for the first reporting period after June 15, 2005. Hayes et al (2012) maintain that firms reduced their use of employee stock options after the FAS123r regulatory change.

Research on the use of executive stock option grants cites numerous additional benefits associated with these stock option grants. Montagne and Weinberg (2013) maintain that the use of stock option grants is prevalent in executive compensation as it is thought to better align executives’ interest with shareholders’ interests. They incentivize CEOs to act in shareholder interest by strengthening the link between increased compensation and increased stock prices (Hall and Murphy (2003)). CEOs are not able to diversify their firm specific wealth to the same extent that the firms’ shareholders are, and this inability of managers to diversify can lead to undesired consequences. Amanatullah et al (2010) posit that managers choose riskier investment

\(^{21}\) The “granting of a stock option does not constitute a table event for either the company or the employee”, Hall and Murphy (2003)
opportunities when the outcomes are directly connected to these managers’ potential advancements and their careers. Option value increases with stock price volatility, and Hayes et al (2012) maintain that employee stock options help overcome potential CEO risk aversion resulting from CEOs being less diversified than typical shareholders. Executive stock option grants help firms acquire and retain managerial talent without direct cash outflows.

However, employee stock option usage has become increasingly more controversial (Hall and Murphy (2003)). Financial scandals like Enron and WorldCom are linked to excessive emphasis on stock prices exacerbated by executive stock option grants (e.g. Cassidy (2002), Madrick (2003) and Radke (2005)), and Madrick (2003) maintains that these financial scandals are a result of direct consequence of pervasive greed, and that executives and their lawyers, investment bankers, and accountants simply intentionally misled investors for the executives’ own benefit. Madrick (2003) cites Jensen in an interview in 2002 as being against the use of options as “they induce managers to lie.” Bizjak et al (2009) discuss option backdating finding it to be prolific and problematic. Montagne and Weinberg (2013) discuss another challenge associated with the use of executive stock option grants as they have too short of a time frame as well as incentives to artificially increase the stock price.

While executive stock option grants are a substantial component of many CEO pay packages, there is concern over whether this form of compensation better aligns CEO and shareholder interests. Such compensation may overly incentivize risk taking and potentially exacerbate managerial malfeasance. Bebchuk and Fried (2006) question whether the earlier increases in equity compensation improve the relationship between CEO pay and firm

22 Amihud and Lev (1981), Smith and Stulz (1985)
23 Radke (2005) sees this as a stronger driving force before the change in option expensing requirements.
24 Firms “look back” and select earlier favorable dates with lower stock prices for option awards
25 Neil Weinberg, editor in chief of American Banker
performance. I examine the CEO option compensation and whether this increased risk taking is detrimental to firm performance during recessionary periods and less of a factor in the economic recovery periods.

2.5 Recessions and Firm Performance

Recessions are periods of economic contraction which create very challenging environments for firms and their CEOs. Recessionary periods require greater effort by management as capital is more difficult to obtain and shareholders are more disillusioned (Bebchuk and Grinstein, 2005), and managing employees becomes even more challenging (Bidya, 2009). Gulati et al (2010) study 4,700 public companies during recessions including the three year before and after the recession. They find that 17% of companies in their sample do not survive a recession, and more importantly, that 80% do not regain their prior financial status in the three year post-recession window. The authors maintain that the CEOs of the more prosperous companies are able to navigate successfully a difficult balance between operating too defensively and operating too aggressively during recessionary periods.

The National Bureau of Economic Research (NBER) is a private, nonprofit organization which provides data defining recessionary periods. The NBER monitors U.S. economic activity by tracking business cycles and disseminating information on the most recent recessions and their duration, as well as other economic data. They define a recession as “the period between a peak and a trough,” and that recessions are characterized as a “significant decline in economic activity spreads across the economy and can last from a few months to more than a year.”

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NBER lists the dates of the two most recent recessions as March through November, 2001 (eight months) and December, 2007 through June, 2009 (18 months). The 2001 recession lasted slightly less than the average recession, while the 2007 – 2009 recession was the longest recession since World War II.28

The Bureau of Economic Analysis (BEA) is a government agency which provides economic data on the U.S. economy. Data from the BEA indicates that GDP in the 2001 recession declined in the 1st and 3rd quarters, as well as every quarter of the more recent recession with the exception of the 2nd quarter of 2008 (all based on 2005 dollars). Financial market declines were also notable during these periods. For the eight-month period from March 1, 2001 to November 1, 2001, the S&P 500 index lost almost 13% while the Dow Jones Industrial average dropped over 15%. During the first half of the most recent recession, December, 2007 through January, 2008, the S&P 500 Index lost 36% and the Dow Jones Industrial average dropped over 46%. Recessions are challenging not only from a macroeconomic and a financial market perspective, but also from the firm’s internal stakeholder perspective (the employees’ perspective). According to Bidya (2009), employee morale is difficult to maintain during recessions, and the author posits that human capital is “integral and indispensable” (page 27) to the organization’s success and emphasizes the importance of calming the firm’s workforce.

Recessions are challenging times for firms, and arguably a period when CEO ability matters the most. Three recent researchers examine performance metrics during recessionary periods. Ferrary (2009) examines managerial performance during recessions and finds that firms with predominantly higher levels of women managers perform better during recessionary periods. Amanatullah et al (2010) utilize the NBER guidelines for economic downturns in their

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28 Previously the longest postwar recessions were those of 1973-75 and 1981-82, both of which lasted 16 months.

Similar research by Song and Tsai (2012) examines whether firms whose CEO receive higher pay perform better during the most recent 2007 – 2009 recession. They utilize the CEO pay slice measure developed by Bebchuk et al (2011) as their measure for excessive pay. Bebchuk et al define CEO slice as the fraction of the compensation from the top five executives that is paid to the CEO. Song and Tsai attempt to discern whether this higher or “excessive” pay is associated with CEO ability or whether it is associated with CEO rent extraction. Their findings lend support to the CEO ability hypothesis as they find that higher paid CEOs perform better during recessionary periods. Song and Tsai’s findings are counter to earlier findings from Bebchuk et al (2011) who find that CEO pay slice is negatively correlated to firm value. Song and Tsai (2012) maintain that recessionary periods such as the one associated with the most recent financial crisis are a good metric for measuring CEO ability.

2.6 Research Contribution

Similar to Song and Tsai (2012), I further research during recessionary periods by examining the connection between corporate governance and firm performance, excess CEO compensation and firm performance, and percentage of option compensation and firm
performance\textsuperscript{29} during the two most recent recessions. My research also extends the work of Bebchuk et al (2009) by examining their EIndex corporate governance measure beyond their original sample period, and by examining their EIndex corporate governance measure and its relationship to firm performance during the two most recent recessionary sub periods. This extends the research on the relationship between stronger corporate governance and stronger firm performance as well as the ability of stronger corporate governance to mitigate agency costs during recessionary periods. I also examine the validity of the recessionary period metric by extending the timeframe of my analysis into the economic recovery periods following each of the two recessionary periods.

My research also extends work in the area of CEO compensation and firm performance. I examine the connection between excess CEO compensation and firm performance during recessionary periods in an effort to determine whether excess CEO compensation is associated with CEO ability or CEO rent extraction. Further, I utilize the Bebchuk et al (2009) EIndex corporate governance measure in the CEO compensation regressions to lend insight into the connection among corporate governance, excess CEO compensation, and firm performance. My analysis extends research in the area of CEO compensation as well as examining the effectiveness of corporate governance in improving the connection between CEO compensation and firm performance by utilizing a more recent and more robust governance measure.

Finally my analysis extends the research in the area of CEO stock option grants and firm performance by examining the connection between these stock option grants and firm performance during recessionary periods. Stock option grants increase in value with increasing volatility (risk), and this increase in volatility (risk) should be connected to poorer firm

\textsuperscript{29} As I discuss in the Methodology section, I measure firm performance using Carhart (1997) abnormal return methodology as per Gompers et al (2003), Cremers and Nair (2005), and Bebchuk et al (2009)
performance during recessions. I investigate this connection to further the research in the debate on using CEO stock option grants to better align CEO and shareholder interests. I also add the EIndex corporate governance measure to this analysis furthering the research on the connection among stronger corporate governance, CEO compensation, and firm performance in recessionary periods.
3. Methodology

3.1 Corporate Governance on Firm Performance during Recessions

As previously discussed, Gompers et al (2003), Bebchuk et al (2009), and others examine the correlation between IRRC data for individual years and firm performance during those years. I extend the work of Bebchuk et al (2009) and utilize their EIndex to examine the connection between a firm’s corporate governance prior to a recession and the firm’s performance during recession, using the two most recent recessionary periods (March 2001 through November 2001 and December 2007 through June 2009). I posit that better governed firms with stronger corporate governance structures are better positioned to weather difficult times associated with economic downturns. The year prior to the economic downturns, 2000 for the 2001 recession and 2007 for the 2007 – 2009 recession, is the baseline period for measuring corporate governance, and the subsequent economic downturns are the evaluation periods. I exclude real estate investment trusts (REITs) and firms with dual-class common stock, as REITs have their own governance structure, and dual class firms have voting rights provisions and structure which potentially render entrenchment provisions inconsequential.

To evaluate the connection of stronger corporate governance on firm performance, I follow methodology of Gompers et al (2003) and Bebchuk et al (2009) and form two corporate governance based portfolios, a low EIndex (high corporate governance) portfolio and a high EIndex (low corporate governance) portfolio. I utilize a trading strategy which shorts the high EIndex portfolio and takes a long position in the low EIndex portfolios. Similar to Bebchuk et al

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31 Data on executive compensation is not available for prior recessions, e.g. 7/90 through 3/91.
33 Similar to Ferrary (2009), Amanatullah et al (2010) and Song and Tsai (2012)
(2009), the high governance portfolio is comprised of firms with a 0 EIndex while the low governance portfolio contains firms with an EIndex of either 5 or 6.\textsuperscript{35} Consistent with prior work, I evaluate portfolios formed on both a value-weighted as well as an equal-weighted basis.

To assess the success of this trading strategy (stronger corporate governance resulting in better firm performance during a recession), I calculate abnormal returns from the long low EIndex and short high EIndex portfolios using daily data. I follow methodology used by Gompers et al (2003) and Bebchuk et al (2009) using the four-factor model of Carhart (1997).\textsuperscript{36} To evaluate properly the portfolio returns, it is important to adjust for differences in the “riskiness or style” \textsuperscript{37} of the two portfolios. The Carhart four-factor model adjusts for the differences in several factors: the market exposure or beta of the portfolios, the market capitalization or size of the portfolios, the book-to-market ratios, the value of the portfolio, and the impact of recent returns or momentum of the portfolio. Carhart posits that including these additional factors versus a standard one factor market model better adjusts for expected performance thus providing a better measurement for abnormal returns. The functional form of the abnormal return equation is:

\[ \text{diff}_t = a + b_1 \text{mkt}_t \cdot \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \epsilon_t \]

The regression variables are:

- \text{diff} which represents the daily return on the long high governance portfolio and short low corporate governance portfolio trading strategy

\textsuperscript{35} As previously mentioned, Bebchuk et al (2009) combine firms with EIndex scores of 5 and 6 (in their sample, an EIndex score of 6 only occurs in 0.2% to 0.7% of firms, while an EIndex score of 5 occurs for 2.8% to 4.6% of firms).

\textsuperscript{36} Gompers et al (2003) and Bebchuk et al (2009) utilize monthly data in their abnormal return regressions. I will be utilizing daily data due to the smaller sample lengths.

\textsuperscript{37} Gompers et al (2003) page 121
• *mkt_rf* is the excess daily return on the market calculated as the value-weighted return on all CRSP firms minus the risk free rate (Treasury bill rate)

• *hml* (high minus low) adjusts for the difference between the average return on two value portfolios and two growth portfolios

• *smb* (small minus big) reflects difference between the average return on the three small portfolios (value, neutral and growth) and three big portfolios

• *mom* (momentum) which captures the effect of a firm’s stock return momentum where momentum typically produces higher returns

• *a*, the regression equation intercept, represents the daily abnormal return from the long-high governance portfolio and short low governance portfolio trading strategy

While there is some disagreement as to whether or not the above factors are additional proxies for risk, there is more uniform agreement that the intercept, *a*, is an appropriate measure of the excess return on the trading strategy versus a passive investment portfolio (Gompers et al (2003)). I follow Gompers et al (2003), Cremers and Nair (2005), and Bebchuk et al (2009) methodology and utilize Carhart (1997) abnormal return methodology. I examine abnormal returns based on both a common stock market capitalization (value weighting) and an equal weighting of each stock in the portfolio. Membership in each portfolio was adjusted with the release of each new set of IRRC data. Based on the shorter timeframe associated with each recessionary period, I utilize daily stock return data rather than monthly data Gompers et al (2003) and Bebchuk et al (2009) use. Brown and Warner (1985) analyze implications of using daily stock return data in lieu of monthly data in event studies. They acknowledge that

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38 Fama French benchmark factors and Carhart momentum factors are obtained from Kenneth French website: [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). See Data section for more details.

39 For example, Gompers et al (2003) and Bebchuk et al (2009) find that their abnormal return results are not driven by industry factors.
individual stock return data exhibit “substantial departures from normality that are not observed with monthly data.” However, they find that abnormal return data calculated from ordinary least squares regression techniques are well-specified” in sample sizes of as few as five firms. I follow methodology of Bebchuk et al (2009) using White robust standard errors as they maintain that impact of heteroskedasticity can be mitigated by using these robust standard errors.

There is debate over whether abnormal returns should exist in a long-run timeframe perspective if financial markets are efficient. Efficient market theory hypothesizes that an investor will earn a return that is appropriate for the risk undertaken and that an investor cannot expect to consistently earn abnormal returns over time using costless trading strategies. The semi-strong form of market efficiency posits that stock prices reflect publically available information and that trading on publically available information, such as a firm’s corporate governance, will not result in abnormal returns. This implies that investors cannot consistently earn abnormal returns utilizing fundamental analysis. Evidence on the semi-strong form of market efficiency is mixed, but research suggests that it holds for widely-held and closely followed firms. Logically if we assume that markets are semi-strong form efficient, publically available research identifying trading strategies that result in a return greater than the risk adjusted rate should be priced out of the market reducing or eliminating the abnormal returns.

I first examine cumulative returns and abnormal returns for the high corporate governance and low corporate governance for the entire dataset period of January 1995 through 2009. Examining the entire period provides a benchmark comparison for the returns from the subset periods. I then examine the more challenging recessionary periods of March 2001 –

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40 Brown and Warner (1985) page 4  
41 Brown and Warner (1985) page 25  
42 1995-2009 is the time frame for the entire sample (analysis begins with standard deviation of monthly returns four years prior to the first estimation period in the year 2000).
November 2001 and December 2007 – June 2009, and I conclude this section by extending my analysis one year into the post-recessionary economic recovery period. I examine the post-recessionary period positing that strong corporate governance is more important during recessions and likely diminishes in the more prosperous economic recovery period. This would be exemplified by a decrease in the abnormal return from the Carhart (1997) four-factor model. The following section builds on this analysis by examining unexplained or excess CEO compensation and its connection with firm performance during recessions.

3.2 Excess CEO Compensation and Firm Performance during Recessions

In this section, I examine CEO compensation and the relationship between excess CEO compensation, as measured by residuals from compensation regression equations, and firm performance during recessionary periods. I begin by defining CEO Compensation (cash compensation versus total compensation) and then discuss the equations for estimating CEO compensation based on firm performance, firm size and firm risk. After controlling for these variables, I posit that the unexplained portion of the compensation equation, the residuals from the regressions, proxy for the excess portion of CEO compensation. I then examine whether this unexplained or excess compensation is a result of ineffective corporate governance and is negatively related to firm performance during recessionary periods, or whether it is compensation for intangible CEO ability and attributable to positive firm performance during recessionary periods. Finally, I add Bebchuk et al (2009) EIndex corporate governance measure to the compensation equation to examine whether it improves the relationship between excess compensation and firm performance during recessionary periods. This would lend support to the theory that stronger corporate governance prior to a recession mitigates agency costs thus
improving the relationship between CEO compensation and firm performance during the subsequent recession.

### 3.2.1 Defining CEO Compensation

There are numerous components of a CEO’s compensation (salary, bonus, long-term compensation such as pension or profit sharing plans, stock grants, options grants) and differing theories on which compensation measures should be used in analyzing the connection between CEO pay and firm performance. Attaway (2000) utilizes only total cash compensation in his regressions on the determinants of CEO compensation, maintaining that quantifying long-term compensation was fraught with “practical and methodological challenges” (2000, pg. 80). Similarly Lewellen and Huntsman (1970) are unable to find improvement in their regression of compensation when they use total compensation (salary, bonus, pension, profit sharing, and stock options) versus when they use only salary and bonus. Lewellen and Huntsman maintain that salary and bonus are an acceptable proxy for more complete measures of total compensation, which include long-term compensation. While Bebchuk and Grinstein (2005) also acknowledge potential limitations in the area of accurately defining total compensation (for example they cite that total compensation does not include the value of the executive’s pension plan as this data is not required nor readily reported), they define an executive’s total compensation as the sum of the executive’s salary, bonuses, long-term incentive plans, grant-date value of restricted stock awards, and the grant-date value of CEO stock options.\(^{43}\) The authors use a log transformation of total compensation as their dependent variable in their compensation regression equations.\(^{44}\) Cordeiro and Veliyath (2003) also utilize two separate measures of CEO compensation as their

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\(^{43}\) This describes the total compensation measure tdc1 from ExecuComp. See discussion of this variable in Data section which follows.

\(^{44}\) Similarly Daily et al (1998), Bertrand and Mullainathan (2001), etc. who use log transformation of compensation data to minimize impact of skewness and potentially heteroskedasticity
dependent variable in their compensation prediction regressions, the log of the sum of salary plus bonus, as well as the log of total compensation (sum of all compensation received by the CEO). For robustness purposes, I follow the methodology of Bebchuk and Grinstein (2005) and use two measures of CEO compensation, cash (salary plus bonus) and the more all-inclusive total compensation measure (tdc1 provided in ExecuComp).45 I obtain CEO Compensation from ExecuComp using “execid” which is the unique identifier for each CEO and company combination. Firms who had a change in CEO during either the compensation period (2000 or 2007) or the subsequent recessionary and post-recessionary periods (2001 – 2002 or 2007 – 2009) were excluded from the sample.46

3.2.2 Relationship between Firm Performance and CEO Compensation

A basic tenet of corporate finance is the proposition that management is charged with operating the firm to create value for shareholders. This proposition naturally leads to the expectation that a firm’s long-term profitability should be a determinant in how the firm’s CEO is compensated. Lewellen and Huntsman (1970) examine the relationship between firm performance and the compensation of the firm’s CEO, and they find support for a positive relationship between CEO compensation and firm profits. Ciscel and Carroll (1980) regress CEO pay (salary and bonus) on residual profit (profits attributable to efficiency) and sales and find that executives are compensated for increasing profits whether it be through improved efficiencies or increased sales. Mangel and Singh (1993) similarly find a significant positive relationship between return on equity (ROE) and the log of cash (salary plus bonus) compensation. Attaway (2000) uses the present ROE and finds a small positive relationship

46 Similar to Bebchuk et al (2011)
between firm performance as measured by ROE and CEO compensation. Deckop (1988) finds a statistically significant relationship between executive compensation and firm performance, as measured by profit. Cordeiro and Veliyath (2003) examine the relationship between compensation of the firm’s CEO and two measurements of firm performance (an accounting measure as well as a market based measure), and they find a positive relationship between compensation and the firm’s return on assets (ROA) as well as the firm’s stock market return.47 Bebchuk and Grinstein (2005) use prior year ROA and the prior two years market return data to control for past firm performance. I follow their methodology using both the accounting ROA and market return performance measures. I obtain net income and total assets from the Compustat database using the quotient to calculate the firm’s ROA. The firm’s daily and monthly stock returns are obtained from CRSP and annualized to provide the one year and two year annual stock return lags which Bebchuk and Grinstein (2005) use.

3.2.3 Relationship between Firm Size and CEO Compensation

As firm size increases, the complexities and responsibilities associated with managing the firm also increase, and therefore it is logical to assume that firm size and CEO compensation are positively correlated. Tosi et al (2000) maintain that firm size is the most consistent single predictor of CEO compensation accounting for more than 40% of variation in total CEO pay while firm performance measures account for less than 5% of variation in pay. Roberts (1956) and McGuire et al (1962) also find a strong correlation between CEO compensation and size, even more so than the correlation between compensation and firm profitability. In their research on CEO compensation and firm performance, Veliyath and Bishop (1995) also control for firm size by regressing firm performance on total assets and the log of total assets. Ueng et al (2000)

47 Also Core et al (1999)
examine small and large firms and find that size is a positively significant determinant of executive compensation for both subgroups. Bertrand and Mullainathan (2001) find firm size to be significant in explaining compensation. Daily et al (1998) find a consistent, positive and statistically significant relationship between firm size and CEO compensation. In their research on the determinants of CEO compensation, Cordeiro and Veliyath (2003) also find firm size significant in determining CEO compensation, and they control for size in their panel regressions using the log of sales as an independent variable. Bebchuk and Grinstein (2005) find that for their sample period, 1993 – 2003, CEO as well as top-five executive compensation increases with size. A preponderance of CEO compensation research utilizes size as a control variable, and I follow this research as well as using the log of total sales to control for firm size effects in predicting executive compensation.

3.2.4 Relationship between Firm Risk and CEO Compensation

Theories on the relationship between risk and return advocate that the compensation an investor expects to receive from an investment should be commensurate with the systematic (non-diversifiable) risk associated with that investment (as opposed to the total firm risk). This theory assumes that investors are properly diversified, and that only systematic risk is relevant in pricing financial assets. CEOs whose compensation is tied predominantly to their firm are unlikely to be completely diversified and would logically be more responsive to volatility in the firm’s stock returns (Bebchuk and Grinstein (2005)). It follows that their compensation would likely be partially dependent on their firm’s total risk. In their research on the determinants of CEO compensation, Cordeiro and Veliyath (2003) control for risk using the variance of daily stock returns as their proxy for firm specific risk. Miller et al (2002) and Banning and Chiles (2007) support similar relationships between higher firm specific risk and higher CEO
compensation. In their research on the growth of executive compensation, Bebchuk and Grinstein (2005) utilize the standard deviation of the firm’s monthly stock returns from the preceding four years.\textsuperscript{48} I follow this line of research and use the variability of monthly stock returns (standard deviations) from the prior four years to control for firm specific risk.\textsuperscript{49}

3.2.5 Impact of Industry on CEO Compensation

I also control for a firm’s industry grouping in the CEO compensation regressions. In their research on capital markets, Bhojraj et al (2003) find support for comovement of industry groupings in numerous financial ratios and market returns. Chan et al (2007) analyze industry classification groupings including Fama French 48 Industry Portfolios, and the authors find support for comovement of stock returns especially for larger stocks. Bebchuk et al (2009) find that using two digit SIC codes produces similar results to using the Fama French 48 industry portfolio dummies. Bhojraj et al (2003) find little difference in results based on the use of Standard Industrial Classification (SIC) compared to the Fama French 48 Industry classification portfolios. I again follow the methodology of Bebchuk and Grinstein (2005) and use the Fama French 48 Industry Portfolio codes.\textsuperscript{50} I obtain the firms’ four digit SIC code from both Compustat and CRSP, and I convert these four digit codes to the Fama French 48 Industry Portfolio two digit codes.

\textsuperscript{48} Similar to Aggarwal and Samwick (1999), Core et al (1999), and Cyert et al (2002)
\textsuperscript{49} Firm monthly return data is obtained from CRSP. For the 2000 CEO compensation regressions I calculate standard deviation of returns based on the years 1996 – 1999. For the 2007 CEO compensation regressions I calculate standard deviation of returns based on the years 2003 – 2006.
\textsuperscript{50} Obtained from Kenneth French website: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_48_ind_port.html
3.2.6 Compensation Estimation Regressions

After controlling for firm performance, firm size, firm risk, and the firm’s industry classification, I posit that the unexplained portion of the compensation equation, the residuals from the CEO compensation regressions, are a proxy for the excess portion of CEO compensation. I run CEO compensation regressions following the methodology of Bebchuk and Grinstein (2005) which is based on the previously discussed compensation determinants that control for firm performance, firm size, firm risk, and the firm industry classification. The CEO compensation regression equation is:

\[
\begin{align*}
\text{log}(\text{compensation}_{i,t}) &= b_0 + b_1 \text{log}(1 + \text{ROA}_{i,t-1}) + b_2 \text{log}(1 + \text{ret}_{i,t-1}) \\
&\quad + b_3 \text{log}(1 + \text{ret}_{i,t-2}) + b_4 \text{log}(\text{Rev}_{i,t-1}) + b_5 (\text{std ret}_{i,t-1}) \\
&\quad + b_6 \text{Ind Code}_{i,t-1} + \epsilon_{i,t}
\end{align*}
\]

For robustness purposes compensation_{i,t}, CEO compensation during the year prior to each recession, uses two measures, cash compensation (salary plus bonus) and total compensation (tdcl from ExecuComp). ROA_{i,t-1} is the firm’s net income divided by the total assets for the preceding year, ret_{i,t-1} is the firm’s annualized monthly returns for the preceding year, ret_{i,t-2} is the two year lag of the firm’s annualized monthly returns,^{51} Rev_{i,t-1} is the firm’s annual revenues for the prior year, std ret_{i,t-1} is the standard deviation of the firm’s monthly returns for the preceding 48 months, and Ind Code_{i,t-1} is the firm’s Fama French 48 Industry code.

I sort the residuals from the CEO compensation regression and separate them into deciles forming two portfolios, the top decile of excess compensation and the smallest decile of excess compensation. I investigate whether the returns from shorting the high compensation regression residuals and a long position in the low compensation regression residuals results in abnormal

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^{51} Bebchuk and Grinstein (2005) utilize the prior two years annualized stock returns to control for market base firm performance.
returns. The difference between firm performance during recessions for shorting the highest decile of excess CEO compensation and taking a long position in the lowest decile of excess CEO compensation provides support for whether this excess compensation is attributable to CEO ability or CEO rent extraction. Positive abnormal returns from this trading strategy during recessions would lend support to CEO rent extraction while negative abnormal returns would lend support to CEO ability.

3.2.7 Corporate Governance and CEO Compensation

I build on the previous subsection by examining whether stronger corporate governance prior to a recession improves the relationship between excess CEO compensation and firm performance during the subsequent recessions. In examining the determinants of CEO compensation, Cordeiro and Veliyath (2003) advocate a “holistic approach.” The authors maintain that compensation is more likely determined by a combination of firm specific variables, individual CEO variables, and corporate governance. For their corporate governance measures, Cordeiro and Veliyath find that inside director shareholdings and numbers of blockholders are negatively related to CEO compensation (although blockholders was only marginally supported).

Logically, stronger corporate governance mechanisms should lead to more efficient monitoring and lower monitoring costs, and therefore more appropriate CEO compensation. Building on the corporate governance component of CEO compensation research, Bebchuk and Fried (2003) maintain an inverse relationship between corporate governance and CEO compensation as they posit that weaker corporate governance and greater managerial power results in higher CEO compensation. Core et al (1999) find that firms with weaker corporate governance

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52 Cordeiro and Veliyath (2003) page 56
governance structures pay their CEOs greater compensation. The Bebchuk et al (2009) EIndex is a more current and comprehensive examination of the effectiveness of corporate governance in mitigating agency costs, and I use their EIndex as a measurement of the level of firm corporate governance in my compensation regressions. I add Bebchuk et al (2009) EIndex corporate governance measure to the previous compensation regression equation to examine whether it improves the relationship between excess compensation and firm performance during recessionary periods.

Adding EIndex to the compensation regression equation should adjust for effects of poor corporate governance, and the regression equation residuals (unexplained portion of CEO compensation) should no longer contain any effects of entrenchment. The higher residuals should just be associated with CEO ability. This would lend support to the theory that stronger corporate governance prior to a recession mitigates agency costs, thus improving the relationship between CEO pay and firm performance during the subsequent recession. Similar to Cordeiro and Veliyath (2003), I add a corporate governance measurement to the compensation regression equation. I utilize the previous compensation regression methodology of Bebchuk and Grinstein (2005), adding Bebchuk et al (2009) EIndex governance measure to the regression equation. The resulting compensation prediction equation is:

\[
\log(\text{compensation}_{i,t}) = b_0 + b_1 \log(1 + \text{ROA}_{i,t-1}) + b_2 \log(1 + \text{ret}_{i,t-1}) + b_3 \log(1 + \text{ret}_{i,t-2}) + b_4 \log(\text{Rev}_{i,t-1}) + b_5 \text{std} \_ \text{ret}_{i,t-1} + b_6 \text{Ind}_\text{Code}_{i,t-1} + b_7 \text{EIndex}_{i,t-1} + \varepsilon_{i,t}
\]

Each firm in the sample has an EIndex score between 0 (higher corporate governance) and 6 (lower corporate governance) depending on the incidence of the Bebchuk et al (2009) governance measures in their Entrenchment Index.
I sort the residuals from the CEO compensation regression and separate them into deciles forming two portfolios, the top decile of excess compensation and the smallest decile of excess compensation. I investigate whether the returns from shorting the high CEO compensation regression residuals and going long the low CEO compensation regression residuals results in abnormal returns. The difference between firm performance during recessions for this short highest decile of excess CEO compensation and long lowest decile of excess CEO compensation provides support for whether corporate governance, as measured by the firm’s EIndex, mitigates any potential rent extraction on the part of the firm’s CEO. Positive abnormal returns from this trading strategy during recessions would lend support to rent extraction and failure of the corporate governance to improve the relationship between CEO compensation and firm performance while negative abnormal returns would lend support to CEO ability hypothesis.

3.2.8 Post-Recession Estimation Periods

As previously discussed, I use the year prior to each economic downturn, 2000 and 2007 respectively, as the estimation periods for the CEO compensation regressions forming portfolios of high residual and low residual compensation (excess compensation). My initial focus is on the economic downturns, 3/2001 – 11/2001 and for 11/2007 – 6/2009, and the corresponding daily abnormal returns from the short high excess compensation and long low excess compensation portfolio trading strategy. Positive abnormal returns from this trading strategy would lend support to managerial malfeasance and CEO rent extraction while negative abnormal returns would support CEO ability. In this section, I shift my focus to the subsequent economic recovery period by extending the timeframe of my analysis one year after each recessionary period into the economic recovery period. I posit that the impact of both CEO ability and CEO rent extraction are likely to diminish during the recovery period when more businesses are
flourishing. To examine this theory, I rerun the abnormal return regressions, extending the timeframe by one year for each recessionary period. The results of the excess CEO compensation analysis are discussed in the Summary and Implications section.

3.3 Option Compensation and Firm Performance during Recessions

In addition to the impact of corporate governance on firm performance and the impact of corporate governance on the CEO pay-for-performance relationship, the components of the CEO pay package are also likely to impact firm performance during recessionary periods. In this section, I examine the stock option portion of the CEO compensation package and the relationship between high CEO stock option compensation versus low CEO stock option compensation on firm performance during recessionary periods. Since stock option value increases with volatility, CEOs with a higher percentage of compensation from stock option grants have greater incentives to increase the volatility or the risk of the firm. Riskier policy choices by executives manifest themselves as higher investment in research and development, lower investment in plant property and equipment, and higher usage of debt financing (Coles et al (2006)). This increased risk taking is likely to be more detrimental to firm performance during recessionary periods and less of a factor in the economic recovery periods.

Further, firms with stronger corporate governance are more likely to administer stock option compensation in a manner which enhances firm performance and are less likely to be associated with potential rent extraction and managerial malfeasance. I posit that this impact is likely to be greater during recessionary periods and lessen during economic recovery periods. I utilize the ratio of the value of CEO stock option grants to the value of total CEO compensation

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in the year prior to the recession to calculate the percent stock option compensation. I first examine returns from portfolios comprised of the top and bottom deciles of the percent of CEO stock option compensation. I posit that a higher level of CEO stock option compensation potentially incentivizes risk taking, as Cassidy (2002) suggests, and executive manipulation, as Bizjak et al (2009) suggest, and these affects are likely to be detrimental during recessionary periods. I then examine firm performance for portfolios of high percentage of CEO stock option compensation and low percentage of CEO stock option compensation extending the timeframe of my analysis one year into the recovery period (one year post-recession). I conclude this section by further deconstructing the top decile of CEO stock option compensation into high corporate governance and low corporate governance portfolios to investigate whether stronger corporate governance improves the connection between high CEO stock option compensation and firm performance during these same periods.

3.3.1 Option Compensation and Firm Performance during Recessions

I begin this subsection by examining the relationship between portfolios of high percentage CEO stock option compensation and low percentage CEO stock option compensation and firm performance during recessionary periods. I measure the value of CEO stock option grants and the value of total CEO compensation in the year prior to each recession, 2000 and 2007. For the year 2000, option grants are from ExecuComp variable `option_awards_blk_value` which is the “aggregate value of stock options granted to the executive during the year as valued using S&P's Black Scholes methodology.” This measure is available until the FAS123r regulations go into effect.\(^{54}\) For the year 2007, CEO stock option grants are from ExecuComp variable `option_awards_fv`, which is the grant date fair value of options granted during the year.

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\(^{54}\) See Literature Review for discussion of this regulation
as required by FAS 123r (as discussed in the Literature Review section, this is not necessarily a Black Scholes calculation). As previously detailed, I follow Bebchuk et al (2009) methodology and eliminate dual class firms as well as real estate investment trusts. Firms who are missing observations in either the ExecuComp CEO total compensation measure or the CEO stock option grants are excluded. I eliminate firms who had a change in CEO in 2000 through 2002 for the first recessionary period and in 2007 through 2009 for the second recessionary period.

I rank firms by the ratio of the value of CEO stock option grants during the year to the total CEO compensation during the year. I capture the top and bottom deciles of this percentage of CEO stock option compensation forming equal-weighted and value-weighted portfolios of the highest percentage option compensation and the lowest percentage of option compensation. I use Carhart (1997) four-factor methodology to calculate the daily abnormal returns to ascertain the benefits of this trading strategy. As I discuss in the Literature Review section, CEO stock option compensation incentivizes increased risk taking as well as potential managerial malfeasance associated with options. For these reasons, I posit that a trading strategy of a long position in low percentage CEO stock option compensation and a short position in high percentage CEO stock option compensation results in better firm performance as measured by positive abnormal returns during recessionary periods, 3/2001 – 11/2001 and for 11/2007 – 6/2009. Negative abnormal returns from this trading strategy would lend support to benefits of option compensation in mitigating agency costs and better aligning CEO and shareholder interests.

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55 REITs have their own governance structure, and dual class firms have voting rights provisions and structure which potentially render entrenchment provisions inconsequential; also Gompers et al (2003)
56 Bebchuk et al (2011)
3.3.2 Option Compensation and Firm Performance Post-Recession

I next shift my focus to the subsequent economic recovery period and the year following the end of the recession. I posit that the impact of both CEO ability and CEO rent extraction are likely to diminish during the recovery period where more businesses are flourishing. To examine this proposition, I utilize the same portfolio and trading strategies and rerun the Carhart (1997) four-factor abnormal return regressions extending the timeframe one year into the economic recovery.\(^{57}\) I examine the intercepts from the post-recession abnormal return regressions and compare them with the returns during the recession. A decrease in the daily abnormal returns would support the importance of utilizing the recessionary measuring period.

3.3.3 Option Compensation and Corporate Governance on Firm Performance during Recessions

In this subsection, I examine firms in the highest decile of stock option grants relative to total CEO compensation, and the impact of corporate governance on this high percentage of CEO stock option compensation on firm performance. As I discuss in the Literature Review section, there is numerous evidence on both sides of the stock option grant debate. Some research espouses the potential benefits of executive stock option grants in aligning CEO and shareholder interests and overcoming potential CEO risk aversion,\(^{58}\) while other research points to the dangers of stock option grants and potential managerial manipulation.\(^{59}\) I attempt to differentiate between these divergent theories by examining the corporate governance of the top decile of percentage of option compensation.

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\(^{58}\) See earlier discussion of Hall and Murphy (2003) in the Literature Review section

\(^{59}\) See earlier discussion of Bizjak (2009) in the Literature Review section
Research by Gompers et al (2003) and Bebchuk et al (2009), among others, has shown a connection between stronger corporate governance and improved firm performance. I posit that firms with stronger corporate governance may improve how firms issue and use stock option grants thus improving the impact of this compensation tool in CEO pay packages. I deconstruct the top decile of the percentage of stock option grants in CEO compensation (firms who use the greatest relative amount of option compensation in their pay packages) into stronger corporate governance portfolios (Democratic portfolios) and weaker corporate governance portfolios (Dictatorship portfolios). Using this top decile of CEO option compensation, I analyze whether firms with a combination of high corporate governance and high percentage option compensation perform better than firms with high percentage option compensation but low corporate governance. I use the EIndex as my measure for corporate governance and Carhart (1997) four-factor abnormal return methodology as my gauge of firm performance during recessionary periods. Firms with stronger corporate governance logically are more apt to have appropriate stock option compensation packages established for their CEOs. I posit that stronger corporate governance in firms with high percentage of CEO option compensation improves the use of this form of compensation.

3.3.4 Option Compensation and Corporate Governance on Firm Performance Post-Recessions

In this concluding subsection of option compensation methodology, I examine the highest decile of percentage of CEO stock option grant compensation and the relationship between high and low corporate governance on firm performance extending the timeframe of my analysis one year into the post-recessionary economic recovery periods. I posit that the impact of both CEO ability and CEO rent extraction are likely to diminish during the recovery period where more
businesses are succeeding. I use the same portfolio and trading strategies from the prior section, similarly examining the unadjusted cumulative return differences utilizing the Carhart (1997) four-factor abnormal return methodology extending the timeframe one year into the economic recovery. I compare abnormal returns from the recovery period with those from the recessionary period, and a reduction in abnormal return in post-recessionary period would lend additional support to the recessionary measuring period. The results of my analysis of CEO stock option compensation and firm performance during recessionary periods is discussed in the Summary and Conclusions in section 6.

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4. Data

In my research, I utilize five different datasets: the Bebchuk et al (2009) corporate governance Entrenchment Index dataset, the ExecuComp dataset on firms’ executive compensation, the Center for Research in Security Prices dataset (CRSP) for market return data, the Compustat dataset for firms’ accounting and financial data, and the Kenneth French dataset for industry codes and market return benchmarks. I collect data from 1995 through 2010 breaking the dataset into two periods, the 2001 recession and the 2007 – 2009 recession. Table 3 contains a complete listing of all variables used while Table 4 contains descriptive statistics for these variables.

4.1 EIndex Dataset

As previously discussed, the Bebchuk et al (2009) EIndex is a measure of the strength of a firm’s corporate governance varying from 0 (representing the highest level of corporate governance) to 6 (representing the lowest level of corporate governance). Data is from Bebchuk’s website\(^6\) and is based on the Investor Responsibility Research Center Institute (IRRC) datasets which include firms in S&P 500, S&P Mid-Caps, and S&P Small-Caps companies. Bebchuk et al (2009) exclude real estate investment trusts (REITs) and firms with dual-class common stock. REITs have their own governance structure, and dual class firms have voting rights provisions and structure which potentially render entrenchment provisions inconsequential.

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\(^6\) [http://www.law.harvard.edu/faculty/bebchuk/data.shtml](http://www.law.harvard.edu/faculty/bebchuk/data.shtml)
IRRC data begins in 1990, and I use Bebchuk et al (2009) data collected for the following dates: 7/1995, 2/1998, 2/2000, 2/2002, 1/2004, and 1/2006.\textsuperscript{62} For their EIndex, Bebchuk et al (2009) use CUSIP as primary firm identifier. The number of firms in each EIndex category for the years of 1995 and 2006 are displayed in Table 5. The EIndex is split roughly in half at a value of 3 with 49% of the firms having a value between 0 and 2 and 51% have a value between 3 and 6 in 2006. A relatively small percentage of firms are at the two extremes of the EIndex (e.g. in 2006 5.3% of firms had an EIndex of 0 while 3.85% of the firms had an EIndex of 5 or 6). The number of firms with an EIndex score of either 5 or 6 remained fairly stable over the sample period ranging from 4.0% at the start of the period to 3.8% at the end of the period (ranging from a low of 55 firms in 1995 to a high of 81 firms in 2002). While corporate governance for a particular firm is fairly time invariant,\textsuperscript{63} there is a decrease in the number of 0 EIndex firms in the sample, from 11.0% in 1995 to 5.3% in 2006 (ranging from a low of 90 in 2006 to a high of 181 in 1998). This decrease in the number of high governance firms occurred predominantly at the IRRC dataset years for 2000 and 2004. This is indicative of a small movement towards the midrange in this corporate governance measure.

4.2 ExecuComp Dataset

ExecuComp data is obtained directly from the firm’s annual proxy filings with the Securities and Exchange Commission. The ExecuComp dataset focuses primarily on compensation data such as salary, bonus, options, stock awards, and pensions. ExecuComp contains compensation data for the top five executives of companies in the S&P 1500 which includes 500 large capitalization U.S. stocks common stocks traded on NYSE and NASDAQ, S&P 400 (400 mid-

\textsuperscript{62} dates are per "Overview of IRRC Governance Database" in WRDS: http://wrds-web.wharton.upenn.edu/wrds/support/Data/_001Manuals and Overviews/_115RiskMetrics/Overview of IRRC Legacy Governance Database on WRDS.cfm
\textsuperscript{63} Bebchuk et al (2009)
capitalization common stocks), and S&P 600 (600 small capitalization stocks).\textsuperscript{64} Fiscal years begin on June 1\textsuperscript{st} and continue through May 31\textsuperscript{st} of the following year. I primarily use the Anncomp dataset in ExecuComp which lists executives by execid and provides compensation information. The following is a list of the ExecuComp variables and their definitions:

- **bonus**: value of bonus earned by the top five executives during the fiscal year in thousands
- **execid**: unique identifier for each CEO or executive and firm combination
- **gvkey**: Global Company Key is a unique six digit identifier for each company
- **option**: there are two reported measures for options based on the pre- and post-FAS123r reporting regulations. Firms made the switch in either calendar year 2006 or 2007 depending on their fiscal year end.
  - **option_awards_blk_value**: aggregate value of stock options granted to the executive during the year as valued using Standard & Poor’s information and Black Scholes methodology; values are reported in thousands based on pre FAS123r regulations
  - **option_awards_fv**: fair value of all options awarded during the year.\textsuperscript{65} This calculation is based upon the fair value at the grant date as per FAS123r regulations and is reported in thousands. This is not necessarily a Black Scholes calculation.\textsuperscript{66}
- **salary**: value of base salary earned by the top five executives officer during the fiscal year in thousands

\textsuperscript{64}It covers roughly 90\% of US stock market capitalization; per http://www2.standardandpoors.com/spf/pdf/index/SP_Composite_1500_Factsheet.pdf
\textsuperscript{65} ExecuComp provides the details in the Plan Based Awards table.
\textsuperscript{66} Per FAS123r, the Fair Value of Options Awarded during the year may also be done using the binomial valuation method.
• $tdc1$: total compensation in thousands of dollars and includes salary, bonus, value of restricted stock grants, value of stock options grants, long-term incentive payouts, and all other miscellaneous compensation

4.3 CRSP Dataset

I use the Center for Research in Security Prices dataset (CRSP) dataset primarily for stock market return and outstanding shares data. Data is obtained via Wharton Research Data Services (WRDS) website. The CRSP dataset contains daily and monthly prices on all listed NYSE, Amex, and NASDAQ common stocks. The following is a list of the CRSP variables and their definitions:

- $CUSIP$: eight character (numeric and alphanumeric) firm identifier; first six characters identify the issuer, while the last two characters identify the issue; they can change over time, but they are not re-used
- $hsiccd$: firm’s four digit Standard Industrial Classification code (SIC)
- $ret$: holding period return which represents the change in total value of investment in common stock over period of time per dollar of initial investment
- $shrout$: number of outstanding or publicly held shares in thousands

4.4 Compustat Dataset

The Compustat North America dataset contains quarterly and annual U.S. and Canadian income statement and balance sheet data as well as some market information on publicly held companies. In creating the dataset Standard & Poor's uses several sources for company information including 10-K and 10-Q SEC filings, newswires, and annual and quarterly reports to shareholders. The following is a list of the Compustat variables and their definitions:
• *at*: balance sheet total assets in millions

• *csho*: represents the net number of all common shares outstanding at year-end

• *fyear*: the fiscal data year; for the year ending between January 1\textsuperscript{st} and May 31\textsuperscript{st}, it is the prior year, while for year ending between June 30\textsuperscript{th} – December 31\textsuperscript{st} it is that year

• *ni*: represents the fiscal period income or loss reported by a company after subtracting expenses and losses from all revenues and gains in millions

• *revt*: income statement annual sales in millions

• *sich*: identifies the company's four digit Standard Industrial Classification Code (SIC) in the prior year

4.5 **Fama French Factors and Industry Code Datasets**

I use the Fama French dataset for market factors to model abnormal returns and for industry classification categories for compensation regressions. As I discuss in the Methodology section, the Carhart (1997) four-factor model adjusts for market returns, a size factor, a value factor, and a momentum factor. Including these additional factors versus a one factor market model better adjusts for expected performance providing a better measurement for abnormal returns. Fama French 48 Industry Portfolio Codes assign four digit firm SIC codes to one of 48 industry categories. Data is from Kenneth French website.\textsuperscript{67}

• *FF\_48*: Fama French 48 Industry Codes classification system assigns each firm in the NYSE, AMEX, and NASDAQ stock to an industry portfolio. To convert from a four digit SIC code to Fama French 48 codes, I use Compustat four digit sich code and if missing supplement with the four digit hsiccd code from CRSP.

\textsuperscript{67} [Link to Kenneth French website](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html)
• *hml*: high minus low; is the average return on two value portfolios minus the average return on the two growth portfolios and compensates for exposure to value stocks

• *mom* is the average return on the two high prior return portfolios minus the average return on the two low prior return portfolios and uses six value-weight portfolios including firms from the NYSE, AMEX, and NASDAQ stocks with prior return data; portfolios are formed on size and prior returns to compensate for momentum.

• *mkt_rf* or *R_m-R_f*, the excess return on the market, is the value-weight return on all NYSE, AMEX, and NASDAQ stocks obtained from CRSP database; risk free rate is the Treasury bill rate from Ibbotson Associates

• *smb*: small minus big; adjusts for small market capitalization minus big market capitalization and is the average return on the three small portfolios minus the average return on the three big portfolios and compensates for exposure to small stocks
5. Empirical Results

5.1 Corporate Governance and Firm Performance


5.1.1 Corporate Governance and Firm Performance 1995 - 2009

To examine the connection between corporate governance and firm performance, I form two governance-based portfolios, a stronger corporate governance portfolio (the Democratic portfolio contains firms with lower EIndex) and a weaker corporate governance portfolio (the Dictatorship portfolio contains firms with higher EIndex). The highest governance portfolio contains all firms with no incidence of any of Bebchuk et al (2009) entrenchment factors (0 EIndex) while the lowest corporate governance portfolio contains at least five of the six factors entrenchment factors (5 or 6 EIndex). The portfolios are updated with the release of each set of IRRC data based on any changes in the incidence of a firm’s entrenchment factors. The Democratic portfolio ranges in size from a high of 181 firms in 1998 to a low of 90 firms in 2006, while the Dictatorship portfolio ranges in size from a high of 81 firms in 2002 to a low of 55 firms in 1995.

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69 As previously mentioned, as there are few firms which possess all six EIndex provisions, and Bebchuk et al (2009) combine firms with EIndex scores of 5 and 6
I begin this section by visually examining the unadjusted cumulative monthly returns for the Democratic portfolio (high governance) and the Dictatorship portfolio (low governance) beginning in 1995 and ending in 2009. Figure 1 displays the unadjusted cumulative returns for both the Dictatorship and Democracy portfolios for the entire 15 year period (1995 – 2009) for portfolios formed on both a value-weighted basis (Panel A) and an equal-weighted basis (Panel B). For the value-weighted portfolio formation, the spread between the Democratic and Dictatorship portfolios cumulative monthly returns appears to widen prior to the 2001 recession, peaking in 2001, narrowing in the subsequent recovery period, and widening again in the 2007 – 2009 recession. For equal-weighted portfolio formation, the spread between the Democratic and Dictatorship portfolios is smaller but exhibits similar patterns. The unadjusted cumulative return figures based on daily data yield similar results.

A visual review of the Democratic and Dictatorship portfolio cumulative return figures indicates a separation between the high-governance and low-governance portfolios, which would lend support to the hypotheses that stronger corporate governance yielded greater returns. However the difference between two portfolios means, 0.226%/month for the value-weighted portfolio and 0.173%/month for the equal-weighted portfolio, are not significant at the 10% level. A more pertinent measure of the difference between the return on high governance and low governance portfolios is obtained by controlling for other factors. Gompers et al (2003) reason that one needs to control for “differences between the riskiness or ‘style’ of the two portfolios” by using a model that compensates for market factors. As is standard in this area of research, I calculate abnormal returns on both equal-weighted and value-weighted portfolios.

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70 1995-2009 is the time frame for the entire sample (analysis begins with standard deviation of monthly returns four years prior to the first estimation period in the year 2000).

using a four-factor model, Fama French three factors (Fama and French (1993)) plus Carhart momentum factor (Carhart (1997)).

The monthly abnormal returns for the entire dataset period, 1995 – 2009, for shorting the Dictatorship portfolio (low governance portfolio) and taking a long position in the Democratic portfolio (high governance portfolio) are detailed in Table 6. The abnormal monthly return for this trading strategy (the intercept from the Carhart (1997) four-factor regressions) based on a value-weighted portfolio formation, column (1), results in a 0.600%/month return, while the equal-weighted portfolio formation, column (2), results in a 0.393%/month return (significant at the 1% and 5% levels respectively). This yields compound annual returns of 7.4%/year for the value-weighted portfolio and 4.8%/year for the equal-weighted portfolio. For the 1990s, Bebchuk et al (2009) find a value-weighted compound annual abnormal return of 14.8% and find an equal-weighted compound annual abnormal return of 7.4%, and my findings for the 1995 – 2009 period are 50% lower than Bebchuk et al (2009) findings for the 1990s for value weighed portfolios and a 35% lower for equal-weighted portfolios. A possible reason for this decrease might be the semi-strong efficient market theory. As discussed in section 3.1, semi-strong efficient market theory implies that investors cannot consistently earn abnormal returns utilizing fundamental analysis. Therefore publically available research on higher corporate governance versus lower corporate governance firms, such as Gompers et al (2003) and Bebchuk et al (2009) use, should not result in long-term abnormal returns.

I also examine the abnormal returns for the entire 1995 – 2009 dataset period using daily returns. I find the compound annual returns for the value-weighted portfolio is 6.7% and for the equal-weighted portfolio is 4.4% (both significant at the 5% level). For the value-weighted portfolio the compound annual abnormal return based daily data is 8.9% less than the compound
annual abnormal return based on monthly data for the same 1995 – 2009 period. The equal-weighted portfolio shows a similar decrease of 8.3% when using daily return data instead of monthly return data. There is also a decrease in the statistical significance of the abnormal return (the intercept in the Carhart (1997) four-factor regressions) when using daily stock return data versus monthly stock return data. A potential reason for this decrease may be the increased noise associated with using daily return data instead of monthly return data. My results lends support to the proposition that stronger corporate governance over the entire dataset results in stronger firm performance as measured by this abnormal return methodology (albeit at a level less than Bebchuk et al (2009) find in the previous decade).

As a robustness check on the abnormal returns for this long strong corporate governance and short weak corporate governance trading strategy for the entire dataset, I examine the middle portion of the EIndex corporate governance spectrum as measured by abnormal monthly returns. I theorize that if holding a portfolio of high governance firms and shorting a portfolio of low governance firms produces a positive abnormal return, then adding more of the mid-level corporate governance firms should diminish this affect. Adding more firms from the middle of the corporate governance spectrum decreases the overall level of governance in the high governance portfolio and increases the level of governance in the low governance portfolio. The results of this “middling” of corporate governance are displayed on Table 7. I add the next level of EIndex to both the high- and low- governance portfolios forming the following EIndex based portfolio combinations: 0 vs. 5-6, 0-1 vs. 4-6, 0-2 vs. 3-6. The short low governance and long high governance trading strategy yields positive abnormal returns for all combinations which as anticipated drops monotonically as more firms in the middle portion of the EIndex are included. The value-weighted abnormal return for the 0 vs. 5-6 EIndex portfolio combination, column (1),
is 0.60%. As more of the middle EIndex firms are added (0-1 vs. 4-6), the abnormal return drops to 0.30% and then to 0.21%\textsuperscript{72} (for 0-2 vs. 3-6 EIndex portfolio combinations). This monotonic decrease in monthly abnormal returns lends support to the importance of the EIndex as a corporate governance measure in firm performance as measured by monthly abnormal returns.

5.1.2 Corporate Governance and Firm Performance during Recession

Next, I narrow the focus from the connection between corporate governance and firm performance during the entire dataset period to the connection between corporate governance and firm performance during the 2001 and 2007-2009 recessionary periods. I posit that stronger corporate governance is more relevant during recessionary periods, and therefore stronger corporate governance should result in better firm performance. To test this hypothesis, I examine high corporate governance and low corporate governance portfolio returns for both recessions. In 2001 there are 125 firms in the Democratic portfolio and 74 firms in the Dictatorship portfolio. In 2007 there are 90 firms in the Democratic portfolio and 65 firms in the Dictatorship portfolio. I again begin the analysis by a visual examination of the unadjusted cumulative returns for both the Dictatorship portfolio (low governance firms with EIndex of 5 or 6) and the Democracy portfolio (high governance firms with no incidence of any EIndex entrenchment factors) for the 2001 (Figure 2) and 2007 – 2009 (Figure 3) recessions. The 2001 recession value-weighted portfolio cumulative returns indicate a slight gap between the Dictatorship and Democracy portfolios during the middle of the recession, while the 2007 – 2009 value-weighted portfolio shows a widening in the opposite direction toward the end of the recession. Unfortunately these figures provide little insight into the connection between stronger

\textsuperscript{72} The value-weighted portfolio trading strategy for the 0-2 vs. 3-6 EIndex portfolio formation has an $\alpha$ of 10.8% and is therefore not statistically significantly different from zero at the 10% level.
corporate governance and firm performance as the difference of the daily unadjusted cumulative portfolio return means are not statistically significant at the 10% level. The figures are included in the attachments for the sake of completeness.

A more relevant assessment of the difference between the return on high governance portfolios and low governance portfolios is obtained by controlling for factors such as risk, size, etc. I again use the Carhart four-factor model (1997) to calculate daily abnormal returns\footnote{Again daily stock return data is used in lieu of the more typical monthly data due to the limited number of months in each of the two recessions (nine and eighteen respectively).} for the short low governance portfolio and long high governance portfolio trading strategy for both equal-weighted and value-weighted portfolio formation using the four-factor model. The abnormal return regression results are detailed in Table 8 for the 2001 recession. The abnormal returns for this first recessionary period are 0.0316%/day on a value-weighted portfolio basis, column (1), and 0.0202%/day on an equal-weighted basis, column (2). However neither abnormal return is statistically significant at the 10% level. The insignificance of these returns makes it difficult to assess the connection between corporate governance and firm performance using daily returns for the 2001 recession.

Next, I examine the abnormal return regression results for the second recession. The long high governance / short low governance trading strategy for the 2007 – 2009 recessionary period are detailed in Table 9. Column (1) details the results of the abnormal return regression using portfolios formed with value weighting while column (2) lists the regression results with portfolios formed from equal weighting. The abnormal return for the value-weighted portfolio is 0.0445%/day while the abnormal return for the equal-weighted portfolio formation is 0.0380%/day. Again neither of the regression intercepts is significant at the 10% level. The fact that the daily abnormal return regression results during both recessions are not significant
indicates a decrease in the impact of Bebchuk et al (2009) EIndex. This decrease in significance might be attributable to efficient market actions incorporating the value of stronger corporate governance in stock prices lessening the abnormal returns. The lack of significance is also similar to the decrease in size and significance of abnormal returns discussed in the previous section when abnormal returns are calculated using daily returns versus monthly return data.

5.1.3 Corporate Governance and Firm Performance post-Recession

I next turn my focus from corporate governance and firm performance during recessionary periods to corporate governance and firm performance during the subsequent economic recovery. I posit that importance of stronger corporate governance is diminished and should therefore have less of an impact in the recovery period than during the recessionary periods, and I therefore anticipate that the daily abnormal returns should diminish during these more prosperous time frames. To test this hypothesis, I examine returns for both the 2001 and 2007 – 2009 recessions by extending the timeframe of my analysis one year into the post-recessionary recovery period. I begin the analysis by a visual examination of the unadjusted cumulative returns for both the Dictatorship portfolio (5-6 EIndex firms) and the Democracy portfolio (0 EIndex firms) for the post 2001, Figure 4, and the post 2007-2009, Figure 5. There appears to be a slight narrowing between the two portfolios in the post-recessionary period, but again these figures provide little insight into the connection between stronger corporate governance and firm performance as only 2007 – 2009 equal-weighted portfolio return means are significantly different at the 10% level.

I calculate daily abnormal returns for the short low governance portfolio and long high governance portfolio trading strategy for both the value-weighted and equal-weighted portfolios using the Carhart (1997) four-factor model. The abnormal return regression results for the 2001
post-recessionary period are detailed in Table 10. Compared to the recessionary period, the abnormal returns for the first post-recessionary period are smaller for both the value-weighted and equal-weighted portfolios, 0.0106%/day versus 0.0316%/day on a value-weighted portfolio basis, -0.0160%/day versus 0.0202%/day equal-weighted on an equal-weighted basis. While the abnormal returns for the extended timeframe into the post-recessionary recovery period did decrease, the t-tests of the regression intercepts show that none of the abnormal returns are statistically significant at the 10% level. Therefore, I cannot definitively infer that the importance of corporate governance on firm performance is less in the recovery period extended timeframe than in it is during the recessionary period.

The daily abnormal returns for the 2007 – 2009 post-recessionary period are detailed in Table 11, and these abnormal returns demonstrate similar decreases when the timeframe of the analysis is extended into the post-recessionary recovery period. The abnormal return for the value-weighted portfolio is 0.0233%/day, column (1), and for the equal-weighted portfolio is 0.0213%/day, column (2). Again while the abnormal returns decrease for both value-weighted and equal-weighted portfolios when the timeframe of the analysis is extended into the post-recessionary recovery period, neither of these returns is significant at the 10% level. Since the abnormal returns do not increase when examining data in the recovery period, I can only provide minimal support for the diminished importance of corporate governance on firm performance in the post-recessionary recovery period.

5.2 Excess CEO Compensation on Firm Performance during Recessions

The prior section analyzes the connection between stronger corporate governance and firm performance. In this section, I examine the results of my analysis of CEO compensation and the relationship between “excess” compensation, as measured by residuals from
compensation regression equations, and the firm’s performance during recessionary periods. I posit that the unexplained portions of the compensation equations, the residuals from the regressions, are the excess portion of CEO compensation. For robustness purposes, my compensation regressions utilize two measures of CEO compensation; cash compensation composed of salary plus bonus and total compensation. I utilize the residuals from these regressions and form portfolios of high excess compensation (short position) and low excess compensation (long position). I calculate the unadjusted cumulative returns as well as the abnormal returns using the Carhart (1997) four-factor model for two different recessionary periods, 3/2001 – 11/2001 and 12/2007 – 6/2009. I then extend my analysis one year into the recovery period following each recession using the same methodology. Finally I add Bebchuk et al (2009) EIndex corporate governance measure in the CEO compensation regressions to examine whether adding a corporate governance measure impacts the connection between excess compensation and firm performance.

5.2.1 Excess CEO Compensation on Firm Performance during 2001 and 2007-2009 Recessions

I begin my analysis with an overview of the CEO compensation regressions for the year prior to each recession, 2000 and 2007. For robustness purposes, I perform regressions using two different measures for the dependent variable CEO compensation, cash compensation (salary plus bonus) and total compensation, and over two different recessionary periods, 2001 and 2007 – 2009. I use the compensation regression methodology of Bebchuk and Grinstein (2005). As previously discussed, the sample is based on the firms in the Bebchuk et al (2009) EIndex
dataset, and I also exclude firms that had a change in CEO during the compensation estimation year or in the subsequent recessionary and recovery periods. The compensation regression results are reported in Table 12. Column (1) provides parameter estimates (t-values are in parentheses below parameter estimates) for the year 2000 CEO compensation regression utilizing cash compensation (salary plus bonus) as the dependent variable, column (2) provides estimates utilizing total compensation and columns (3) and (4) provide the same information for the year 2007 compensation regressions.

Reviewing the parameter estimates, the accounting performance measure, $\log(1 + ROA_{t,t-1})$, is not significant for any of the regressions, nor is the measure of total firm risk, $\log(\text{std\_ret}_{t,t-1})$. The parameter estimates for the market based annual return performance measures, $\log(1 + ret_{t,t-1})$, are positive and significant for three of the four compensation regressions, while the two year lag of the annual return, $\log(1 + ret_{t,t-2})$, is only significant (and positive) for the year 2000 total compensation regression. As anticipated the proxy for firm size, $\log(\text{Rev}_{t,t-1})$, is the most robust determinant of CEO compensation, and the parameter estimate is positive and significant at the 1% level for all CEO compensation regressions. Using the Fama French 48 industry code dummy variable creates 47 dummy variables based on the Fama French firm’s industry classification. Based on the F-test, the industry code classification is significant for all four regressions. The regression $R^2$ ranges from a low of 0.22 for the year 2007 cash compensation regression (salary plus bonus regression) to a high of 0.44 for the for the year 2000 total compensation regression and is higher when using total compensation as the

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74 As previously discussed, Bebchuk et al (2009) exclude dual class firms and real estate investment trusts based on the nature of their governance structures.
75 Bebchuk et al (2011)
76 Fama French 48 Industry Codes classification system assigns each firm in the NYSE, AMEX, and NASDAQ stock to an industry portfolio and converts the firm’s four digit SIC code to one of the Fama French 48 codes.
The dependent variable for both recessionary periods.\textsuperscript{77} The sample size ranged from 685 in 2000 for cash compensation to 818 in 2007 for total compensation which results in top decile residual and bottom decile residual portfolios of between 68 and 82 firms. The following sections discuss analysis of these high excess compensation and low excess compensation portfolios from these regression equations.

I next examine the unadjusted cumulative daily returns for the portfolios formed on a long low excess CEO compensation and short high excess CEO compensation trading strategy. The portfolios in Figure 6 are based on residuals calculated using cash compensation (salary plus bonus) as the dependent variable, and display the value-weighted portfolio (Panel A) and equal-weighted portfolio (Panel B) for the 2001 recession while Figure 7 contains similar information from compensation regression equations using total compensation as the dependent variable. The cumulative return figures display a positive separation between the bottom decile portfolio and the top decile portfolio for both the cash and total compensation measures particularly for the equal-weighted portfolio formation. The difference between the mean of the bottom decile excess compensation and top decile excess compensation for equal-weighted portfolio for both cash compensation and total compensation are significant (0.100%/day at 10% level and of 0.136%/day significant at the 5% level). The differences of the means for the value-weighted portfolios are not statistically significant at the 10% level. The cumulative returns for the 2007 – 2009 recessionary period based on cash compensation residuals are in Figure 8 and based on total compensation residuals are in Figure 9. Neither shows significant differences between the high excess compensation and low excess compensation portfolios. The next step is to

\textsuperscript{77} For example, the year 2000 regression using total compensation has an $R^2$ of 0.44 versus an $R^2$ of 0.29 cash compensation regression equation.
compensate for factors such as differences in risk, size, value and momentum by calculating the abnormal returns.

As I discuss in prior sections, a more relevant evaluation for measuring the benefits of a short high excess compensation and long low excess compensation trading strategy is obtained by measuring abnormal returns using the Carhart (1997) four-factor model. Daily abnormal return results from the 2001 recession are detailed in Table 13. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression on cash compensation from the year 2000, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation. The daily abnormal return results, the regression intercepts, are positive and significant for equal-weighted portfolios formed from cash compensation residuals and total compensation residuals while the value-weighted portfolios are positive but not significant at the 10% level. The daily abnormal return ranges from 0.0801%/day for cash compensation residuals (a compound annual return of 22.4%/year) to 0.102%/day for total compensation residuals (a compound annual return of 29.2%/year). This means that a trading strategy of taking a long position on firms in the lowest decile of excess CEO compensation and a short position on firms in the highest decile of excess CEO compensation yields positive annual compound abnormal returns just under 30%/year for the 2001 recessionary period. This result lends support to the theories siding with managerial malfeasance and rent extraction as opposed to those espousing that excess CEO compensation being a reward for ability leading to firm performance.

Daily abnormal return results from the 2007-2009 recession are detailed in Table 14. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with
portfolios formed using CEO compensation residuals from a regression on cash compensation from the year 2007, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation. The abnormal returns (the regression intercepts) shed less light than those from the 2001 abnormal return regressions. None of the daily abnormal returns is significant. The trading strategy of taking a long position on firms in the lowest decile of excess CEO compensation and short position on firms in the highest decile of excess CEO compensation during the 2007 – 2009 recession is less compelling in its support of the rent extraction theory than the results from the 2001 recessionary period. However the results provide no support for theories espousing that excess CEO compensation is a reward for managerial ability that leads to firm performance. One potential reason that the rent extraction theory diminishes between the 2001 recession and the 2007 – 2009 recession is the increased emphasis on CEO compensation and the compensation process.

5.2.2 Excess CEO Compensation on Firm Performance Post 2001 and Post 2007-2009 Recessions

This section examines the bottom decile residual compensation and top decile residual compensation portfolio performance extending the timeframe of the analysis by one year into the post-recessionary economic recovery period. The portfolios in Figure 10 are based on residuals calculated using cash compensation as the dependent variable and display the value-weighted portfolio and equal-weighted portfolios, while Figure 11 contains similar information from compensation regression equations using total compensation as the dependent variable. The cumulative return figures display mixed results with some increase in the gap between portfolio returns as well as some narrowing of portfolio returns in the one year post-recession period. The
difference between the mean of the bottom decile excess compensation and top decile of excess compensation for equal-weighted portfolio for salary plus bonus compensation measure is 0.0723%/day and for the total compensation measure residuals portfolios is 0.0932%/day significant at the 5% and 1% levels respectively (the value-weighted portfolio means are not significant at the 10% level). These differences are slightly below those from the period during the first recession (0.100%/day for cash compensation residuals and 0.136%/day for total compensation residuals). This decrease would lend some support to the theory that corporate governance has greater importance in recessionary times than during the subsequent economic recovery. Figure 12 and Figure 13 contain unadjusted cumulative return data for the 2007 – 2009 recession. The differences of the means for the second recession are not statistically significant at the 10% level.

I next analyze the abnormal daily returns associated with a trading strategy which shorts the top decile of excess compensation residuals and takes a long position in the bottom decile of low excess compensation residuals extending the analysis from the recession to one year in the post-recessionary period. As I discuss in prior sections, I use Carhart (1997) four-factor model to evaluate the benefits of this trading strategy. Daily abnormal return results from the post 2001 recession and one year post-recession extended time period are detailed in Table 15. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression on cash compensation from the year 2000, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation. The daily abnormal return results are significant for equal-weighted portfolios for cash

78 Value-weighted difference of portfolio means using Salary + Bonus compensation regression residuals was only 12%.
compensation residuals and total compensation residuals, 0.0479%/day and 0.0609%/day respectively (significant at the 10% and 5% levels respectively). Neither of the abnormal return regressions for value-weighted portfolio is statistically significant. Both of these daily abnormal returns decrease from the results during the 2001 recession (0.0801%/day for cash compensation residuals and 0.102%/day for total compensation residuals). This is a decrease in the compound annual return from 29.2%/year to 16.5%/year when the timeframe is extended by one year into the economic recovery period. The positive abnormal returns generated from a trading strategy of taking a long position on firms in the lowest decile of excess CEO compensation and a short position on firms in the highest decile of excess CEO compensation decrease in the post-recessionary period for portfolios formed on an equal-weighted basis. This result lends support to the theories that as measured by firms’ abnormal returns, managerial malfeasance and rent extraction decrease in importance.

The analysis for the 2007 – 2009 recessionary period and one year post-recession are detailed in Table 16. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression on cash compensation from the year 2007, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation. None of the daily abnormal return results during the post-recessionary period are statistically significant. The lack of significance of these results does not support CEO rent extraction hypothesis, nor do they support CEO ability hypothesis for the 2007 – 2009 post-recessionary period. The lack of significance of the daily abnormal returns in the extended timeframe does not refute the importance of the recessionary metric.
5.2.3 Corporate Governance and Excess CEO Compensation on Firm Performance during 2001 and 2007-2009 Recessions

As I discuss in the Methodology section, adding the EIndex corporate governance measure to the compensation regression equation should adjust for effects of poor corporate governance, and the regression equation residuals (unexplained portion of CEO compensation) should no longer contain effects of entrenchment. Higher residuals from these regressions (greater excess compensation) should just be associated with CEO ability, which would lend support to the theory that stronger corporate governance prior to a recession mitigates agency costs, thus improving the relationship between CEO compensation and firm performance during the subsequent recession. If corporate governance measures are effective, the abnormal portfolio returns from shorting the highest decile of excess compensation and going long the lowest decile of excess compensation should be mitigated.

I begin with an overview of the CEO compensation regressions for the year prior to each recession, 2000 and 2007, including Bebchuk et al (2009) EIndex corporate governance variable using the compensation regression methodology of Bebchuk and Grinstein (2005) and Cordeiro and Veliyath (2003). For robustness purposes, I perform regressions using two different measures for the dependent variable CEO compensation, cash compensation (salary plus bonus) and total compensation, and over two different recessionary periods, 2001 and 2007 – 2009. As previously discussed, the sample is based on the firms in the Bebchuk et al (2009) EIndex dataset, and I also exclude firms who had a change in CEO during the compensation estimation year or in the subsequent recessionary and recovery periods. The compensation regression results are reported in Table 17. Column (1) provides parameter estimates (t-values are in

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79 As previously discussed, Bebchuk et al (2009) exclude dual class firms and real estate investment trusts based on the nature of their governance structures
80 Bebchuk et al (2011)
parentheses below parameter estimates) for the year 2000 CEO compensation regression utilizing cash compensation (salary plus bonus) as the dependent variable, column (2) provides estimates utilizing total compensation, and columns (3) and (4) provide the same information for the year 2007 compensation regressions.

The significance of the independent variables is similar to the prior compensation regressions which did not contain the Bebchuk et al (2009) EIndex governance measure. Reviewing the parameter estimates, the accounting performance measure, \( \log(1 + \text{ROA}_{it-1}) \), is not significant for any of the regressions, nor is the measure of total firm risk, \( \log(\text{std}_r\text{et}_{it-1}) \). The parameter estimate for the market based performance measures, \( \log(1 + \text{ret}_{it-1}) \), are positive and significant for three of the four compensation regressions, while the estimate for the market return two-year lag, \( \log(1 + \text{ret}_{lt-1}) \), is only significant (and positive) for one of the regressions. As anticipated, the proxy for firm size, \( \log(\text{Rev}_{lt-1}) \), is the most robust determinant of CEO compensation and is positive and significant at the 1% level for all CEO compensation regressions. Using the Fama French 48 industry code dummy variable creates 47 dummy variables based on the Fama French firm’s industry classification. Based on the F-test, the industry code classification is significant for all four regressions.

The coefficient for the EIndex corporate governance measure regression variable is positive and highly significant for both of the year 2007 CEO compensation regressions, but it is not significant for either of the year 2000 CEO compensation regressions (the year 2000 salary plus bonus regression t-value corresponded to an \( \alpha \) of 11%). EIndex is a linear measure which increases as corporate governance decreases, and Bebchuk and Fried (2003) maintain an inverse

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81 See Table 12
82 Fama French 48 Industry Codes classification system assigns each firm in the NYSE, AMEX, and NASDAQ stock to an industry portfolio and converts the firm’s four digit SIC code to one of the Fama French 48 codes.
relationship between corporate governance and CEO compensation as they posit that weaker corporate governance and greater managerial power results in higher CEO compensation. This coincides with the positive coefficient obtained from the compensation regressions for the EIndex. The regression $R^2$ ranges from a low of 0.23 for the year 2007 cash compensation regression to a high of 0.44 for the year 2000 total compensation regression and is higher when using total compensation as the dependent variable for both recessionary periods.\(^8^3\) The sample size ranged from 685 firms in 2000 for cash compensation to 818 firms in 2007 for total compensation, which results in top decile residual and bottom decile residual portfolios of between 68 and 82 firms. The following sections discuss analysis of these high excess compensation and low excess compensation portfolios from these regression equations.

I examine the unadjusted cumulative daily returns for the portfolios formed on a long position in the lowest decile excess CEO compensation residuals and a short position in the highest decile excess CEO compensation residuals where the compensation equations include the EIndex corporate governance measure during the 2001 and 2007 – 2009 recessions. The portfolios in Figure 14 are based on residual calculated using cash compensation as the dependent variable, and display the value-weighted portfolio returns in Panel A and the equal-weighted portfolio returns in Panel B for the 2001 recession, while Figure 15 contains similar information from compensation regression equations using total compensation as the dependent variable. The cumulative return figures display a positive separation between the bottom decile portfolio and the top decile portfolio for the cash compensation and total compensation measures for the equal-weighted portfolio formation as well as the value-weighted portfolio formation for the cash compensation residuals. The difference between the mean of the bottom decile excess

\(^8^3\) For example, the year 2000 regression using total compensation has a 0.44 $R^2$ versus a 0.30 $R^2$ for only cash compensation.
compensation and top decile of excess compensation for equal-weighted portfolio for the cash compensation measure is 0.098%/day and for the total compensation measure residuals portfolios is 0.136%/day (significant at the 10% and 5% levels respectively). The value-weighted portfolio means are not significant at the 10% level. The fact that the low excess compensation portfolios outperform the high excess compensation portfolios lends support to the CEO rent extraction proposition and a potential shortcoming in corporate governance to mitigate rent extraction. Figure 16 and Figure 17 contain unadjusted cumulative return data for the 2007 – 2009 recession. The differences of the means for the second recession are not statistically significant at the 10% level. The next step is to compensate for factors such as differences in risk in size, etc. by calculating the abnormal returns.

As I mention at the beginning of this section, adding the EIndex corporate governance measure to the compensation regression equation should adjust for effects of poor corporate governance, and the regression equation residuals (unexplained portion of CEO compensation) should no longer contain potential effect of poor corporate governance (CEO rent extraction). I follow the methodology in my prior sections and use the Carhart (1997) four-factor model to calculate daily abnormal returns to assess the benefit of a short high excess compensation and long low excess compensation trading strategy. The daily abnormal return regression results from the 2001 recession are detailed in Table 18. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression which includes the independent corporate governance variable EIndex on cash compensation from the year 2000, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation.
The daily abnormal return results are positive and significant for equal-weighted portfolios formed from cash compensation residuals as well as total compensation residuals (value-weighted portfolios are not significant). The abnormal returns for the equal-weighted portfolio formed from cash compensation residuals (long position in the lowest excess decile of excess CEO compensation and a short position in the highest excess decile of excess compensation) yields a daily abnormal return of 0.078%/day (significant at the 10% level) and the similarly formed total compensation portfolio yields a daily abnormal return of 0.102%/day (significant at the 5% level). These are equivalent to compound annual returns of 21.6%/year and 29.1%/year respectively for the 2001 recessionary period. This abnormal return is similar to the return from using excess compensation residuals from regressions that do not contain a governance measure. This result would indicate that stronger corporate governance as measured by Bebchuk et al (2009) EIndex does not improve the relationship between excess CEO compensation and firm performance. I offer several potential reasons for this result. First as I discuss in section 5.2, it could be attributable to the ineffectiveness of corporate governance in the recessionary sub periods. Second, it could be a result of the inability of corporate governance to ameliorate the CEO rent extraction discussed in the previous section. Third, it could be that research does not accurately assess or accurately measure the strength of corporate governance and thus don’t properly differentiate between stronger corporate governance firms and weaker corporate governance firms.

Daily abnormal return results from the 2007-2009 recession are detailed in Table 19. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression on cash compensation from the year 2007, column (2) utilizes equal-weighted portfolios, and columns (3) and (4)
provide the similar information based on residuals from compensation regression using total compensation. None of the daily abnormal returns (the regression intercepts) is significant for the 2007–2009 recession, and as such, the trading strategy of taking a long position on firms in the lowest decile of excess CEO compensation and short position on firms in the highest decile of excess CEO compensation during the 2007–2009 recession does not provide clear support for either effective governance or ineffective governance. Still, the results from the 2001 recession call into question the ability of stronger corporate governance to mitigate CEO rent extraction.

5.2.4 Corporate Governance and Excess CEO Compensation on Firm Performance Post 2001 and 2007-2009 Recessions

I begin the post-recessionary period section with a visual inspection of the unadjusted cumulative daily returns for the portfolios formed on a long position in the lowest decile excess CEO compensation residuals and a short position in the highest decile excess CEO compensation residuals where the compensation equations include the EIndex corporate governance measure, and the timeframe of the analysis is extended one year into the post-recessionary recovery periods. The portfolios in Figure 18 are based on residuals calculated using cash compensation as the dependent variable, and display the value-weighted portfolio and equal-weighted portfolio for the 2001 recession while Figure 19 contains similar information from compensation regression equations using total compensation as the dependent variable. Similar to the previously discussed post-recession trends, Figure 10 and Figure 11, the cumulative return figures display mixed results with some increase in the gap between portfolio returns as well as some narrowing of portfolio returns in the one year post-recession period. The difference between the mean of the bottom decile of excess compensation and top decile of excess
compensation for equal-weighted portfolio for the cash compensation measure (including the EIndex corporate governance measure) is 0.0767%/day (significant at the 5% level) and for the total compensation measure residuals portfolios is 0.0915%/day (significant at the 1% level) (the value-weighted portfolio means are not significant at the 10% level). The fact that the low excess compensation portfolios outperform the high excess compensation portfolios does lend support to the CEO rent extraction proposition and questions whether corporate governance mitigates CEO rent extraction. As before, the differences of the means in the post-recession are slightly below those from the period during the first recession. This decrease would lend some support to the theory that corporate governance has greater importance in recessionary times than during the subsequent economic recovery. Figure 20 and Figure 21 contain unadjusted cumulative return data for the 2007 – 2009 recession. The differences of the means for the second recession are not statistically significant at the 10% level, which hinders any assessment of the difference between these two portfolios. The next step is to compensate for factors such as differences in risk, size, and value by calculating the abnormal returns.

I analyze the abnormal daily returns associated with a trading strategy which shorts the top decile of excess compensation residuals and takes a long position in the bottom decile of low excess compensation residuals (regressions including EIndex) extending the timeframe of my analysis from the recession to one year in the post-recessionary period. As I discuss in prior sections, I use Carhart (1997) four-factor model to evaluate the benefits of this trading strategy. Daily abnormal return results from the post 2001 recession are detailed in Table 20. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression on cash compensation from the

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84 Value-weighted difference of portfolio means using Salary + Bonus compensation regression residuals was only 12%.  
85 0.0767%/day versus 0.0980%/day and 0.0915%/day versus 0.136%/day
year 2000, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation.

The daily abnormal return for the equal-weighted portfolios formed utilizing cash compensation residuals which included the firm’s EIndex is 0.0525%/day (significant at the 10% level) and 0.0605%/day (significant at the 5% level) for the total compensation residuals. Daily abnormal returns using value-weighted portfolios based on cash compensation residuals and total compensation residuals are not significant. The positive abnormal returns generated from the trading strategy of taking a long position on firms in the lowest decile of excess CEO compensation and a short position on firms in the highest decile of excess CEO compensation decrease in the post-recessionary period for portfolios formed on an equal-weighted basis using both cash and total compensation measures. This result lends support to the theories that as measured by firms’ abnormal returns, managerial malfeasance and rent extraction decrease in importance in the post-recessionary recovery period.

The analysis for the 2007 – 2009 recessionary period and one year post-recessionary recovery period are detailed in Table 21. Column (1) provides parameter estimates for value-weighted portfolios of daily returns with portfolios formed using CEO compensation residuals from a regression on cash compensation from the year 2007, column (2) utilizes equal-weighted portfolios, and columns (3) and (4) provide the similar information based on residuals from compensation regression using total compensation. None of the daily abnormal return results during the post-recessionary period is statistically significant. This non significance in the 2007 – 2009 post extended post-recessionary recovery period neither supports nor refutes the importance of the recessionary metric. Further, the fact that the abnormal returns from the extended 2001 post-recessionary recovery period for portfolios formed on an equal-weighted

86 0.0525%/day versus 0.0780%/day and 0.0605%/day versus 0.102%/day
basis using both cash and total compensation measures decreases lends support to the proposition that as measured by firms’ abnormal returns, managerial malfeasance and rent extraction decrease in importance during the economic recovery.

5.3 Option Compensation and Firm Performance during Recessions

The prior section analyzes the connection between excess or unexplained CEO compensation and firm performance during recessionary periods. The use of executive stock option grants as a component of the CEO’s compensation package is thought to potentially reduce agency costs and better align the CEO’s interests with the shareholder’s interest. As I discuss in the Literature Review section, there is much debate both in favor of and against the use of option compensation. CEOs are not able to diversify their firm specific wealth to the same extent as the firms’ shareholders and thus risk aversion may prompt CEOs to bypass risky value-creating projects. Employee stock options help overcome potential CEO risk aversion resulting from CEO being less diversified than typical shareholders.\textsuperscript{87} However occurrences of financial scandals like Enron and WorldCom have demonstrated that executive stock option grants might also be related to managerial malfeasance.\textsuperscript{88} In this section I investigate the use of options in the CEO’s compensation package and the connection between option compensation and firm performance during recessionary periods.

I start my analysis by ranking firms by the ratio of the value of stock options grants received by the CEO during the year to the total compensation received by the CEO during the year. I examine the top and bottom deciles of this ratio to determine whether portfolios formed on high percentage of CEO option compensation and low percentage of CEO option

\textsuperscript{88} Cassidy (2002), Madrick (2003), Radke (2005)
compensation are associated with better firm performance as measured by positive abnormal returns. I begin with a discussion of the results of my analysis of the returns for these top decile and bottom decile portfolios for the two recessionary periods, 2001 and 2007 – 2009, followed by an examination of the returns extending the timeframe of my analysis one year into the post-recessionary recovery periods. Next I deconstruct the top decile of percentage of CEO option compensation into high corporate governance and low corporate governance portfolios to determine if firms with stronger corporate governance demonstrate a better relationship between stock option compensation and firm performance. I examine these portfolios during each recession as well as the portfolio performance in the post-recessionary recovery period. To summarize, this section attempts to analyze whether stock option grants in the CEO compensation package are associated with an improved relationship between CEO pay and firm performance, better aligning CEO and shareholder interests, and decreasing CEO rent extraction and reducing agency costs.

5.3.1 Option Compensation and Firm Performance during Recessions

As previously discussed in the Methodology section on option compensation, I form two portfolios, one based on the highest decile of the ratio of CEO stock option compensation to total CEO compensation and one based on the lowest decile. Since more than ten percent of firms did not grant stock options to the CEO, the bottom decile of percentage of option compensation portfolio is comprised of all firms which did not grant any option compensation to their CEOs in the year prior to the recession. For the year 2000, there are 817 firms in the sample, of which 171 did not grant stock options to their CEO (20.9% of the sample). For the year 2007, there are 949 firms in the 2007, of which 400 did not grant stock options (42.1% of the sample). These
groups comprise the bottom decile of percentage of option compensation for the portfolio I use in the 2001 and 2007 – 2009 recession analyses.

I begin the analysis by a visual examination of the unadjusted cumulative returns for both the top decile and bottom decile portfolios for both value-weighted and equal-weighted portfolio formation for both recessionary periods, Figure 22 and Figure 23. For the 2001 recession, the cumulative returns for the bottom decile of percentage of option compensation are greater than the top decile with the gap narrowing toward the end of the recession, while for the 2007 – 2009 recession, the portfolios track very closely. However, the difference of the means is not statistically significant, and therefore I cannot reject the hypothesis that there is a difference between the two unadjusted portfolio means.

The abnormal daily returns from these portfolios provide a more relevant measure of the benefits of this trading strategy. The results of the long position in firms in the bottom decile of percentage CEO stock option compensation and short top decile of CEO stock option compensation for the 2001 recession are detailed in Table 22. Column (1) provides parameter estimates for value-weighted portfolios of daily returns and column (2) utilizes equal-weighted portfolios, and the abnormal return, the regression intercept, is not significant for either regression. As detailed in Table 23, the abnormal return results are similarly insignificant for the 2007 – 2009 regressions. The fact that the abnormal returns are neither positively significant nor negatively significant indicates that high versus low levels of CEO stock option compensation in aggregate are neither detrimental nor are they beneficial to firm performance during the two recessions. This non-significant result is consistent with the differing viewpoints on the benefits of option compensation discussed in the Literature Review section. I posit that a potential reason for this finding is the difference in the firm’s level of corporate governance, and that this
difference in corporate governance can differentiate between stock option grants which improve the connection between CEO pay and CEO performance and those which exacerbate the disconnect between CEO pay and CEO performance.

5.3.2 Option Compensation and Firm Performance Post-Recessions

This section examines the relevance of recessionary period as a barometer for firm performance by measuring impact of option compensation, extending the timeframe of the analysis one year into the post-recessionary recovery period. I again form portfolios based on highest decile and lowest decile of percentage of CEO stock option compensation. A visual examination of the unadjusted cumulative returns for the top decile and bottom decile portfolios for both value-weighted and equal-weighted portfolio formation for both extended timeframes is displayed in Figure 24 and Figure 25. For the 2001 recession and post-recession timeframe, the daily returns for the bottom decile of option compensation portfolio are greater than those for the top decile of option compensation, and this gap appears to widen in the post-recessionary recovery period. For the 2007 – 2009 recession and post-recession timeframe the portfolios again track much closer, and the cumulative returns for the top decile option compensation portfolio are slightly above the bottom decile. However, similar to the analysis during the recession, the unadjusted daily portfolio return means for both value-weighted and equal-weighted portfolios are not significant and inconclusive in their support or refute of the benefits of option compensation.

The results of the long position in firms in the bottom decile of percentage CEO option compensation and short top decile of option compensation for the 2001 recession and post-recessionary recovery period are detailed in Table 24. Column (1) provides parameter estimates for value-weighted portfolios of daily returns and column (2) utilizes equal-weighted portfolios,
and the abnormal return, the regression intercept, is not significant for either regression. As detailed in Table 25, the results for the regression intercepts are similarly insignificant for the 2007 – 2009 recession and post-recessionary recovery periods. The findings that the abnormal returns are neither positively significant nor negatively significant in this extended timeframe of my analysis indicate that I can neither support nor refute the importance of the recessionary measuring period. Next, I further examine the top decile of percentage of CEO option compensation as it relates to corporate governance and firm performance.

5.3.3 Option Compensation and Corporate Governance on Firm Performance during Recessions

The conflicting evidence discussed in the Literature Review section both in support of the use of options in CEO compensation packages and against the use of options concurs with the inconclusive nature of the results from the prior section. I posit that one potential reason for the mixed results of portfolios of high and low percent option compensation is associated with the firm’s corporate governance. There is a mixture of strong corporate governance and weak corporate governance in the highest decile of percentage of CEO option compensation. Strong corporate governance is a potential mitigating factor in rent extraction and managerial malfeasance, and therefore stronger corporate governance may potentially improve the alignment of high CEO option compensation and firm performance.

By deconstructing the top decile of CEO option compensation (firms which use the greatest relative amount of option compensation in their pay packages) into stronger corporate governance and weaker corporate governance portfolios, I am able to examine the impact of corporate governance on this form of compensation in the CEO pay package. Using this top decile of CEO stock option compensation, I analyze whether firms with high corporate
governance and high percentage option compensation perform better than firms with weaker corporate governance and high percentage option compensation. I use the EIndex as my measure for corporate governance and Carhart (1997) four-factor abnormal return methodology as my gauge of firm performance during recessionary periods. For the year 2000, of the 81 firms in the top decile of percentage of option compensation, 11 firms had an EIndex of zero and 12 firms had an EIndex of between 4 and 6. For the year 2007, of the 95 firms in the top decile of percentage of option compensation, 9 firms had an EIndex of zero and 19 firms had an EIndex of between 4 and 6.\(^8\)

I begin the analysis by a visual examination of the unadjusted cumulative returns for both the top decile and bottom decile portfolios for value-weighted and equal-weighted portfolio formation for both recessionary periods (Figure 26 for the 2001 recession and Figure 27 for the 2007 – 2009 recession). For the 2001 recessionary period unadjusted cumulative returns, the high corporate governance high option compensation (Democratic portfolio) noticeably increases through the period above the low corporate governance and high option compensation (Dictatorship portfolio). However, the difference between the mean of these two portfolios is not significant at the 10% level. For the 2001 recessionary period, the Democratic and Dictatorship portfolios closely track one another, as do the 2007 – 2009 recessionary period portfolios, and none of the differences of the mean is statistically significant.

Next, I use the Carhart (1997) four-factor model and examine the daily abnormal returns from a trading strategy which takes a long position in firms with high corporate governance and high percentage option compensation (Democratic portfolio) and shorting firms with low corporate governance and high percentage option compensation (Dictatorship portfolio). The results of this long Democratic portfolio position and short Dictatorship portfolio position for the

\(^8\) None of the firms in the year 2007 top decile sample had an EIndex of 6
2001 recession are detailed in Table 26. The value-weighted portfolio return, Column (1), is 0.094%/day and the equal-weighted portfolio return, column (2), is 0.0739%/day; however, neither abnormal return is significant at the 10% level. Table 27 contains the results of this long Democratic portfolio position and short Dictatorship portfolio position for the 2007 – 2009 recession. The value-weighted portfolio return, Column (1), is 0.0112%/day and the equal-weighted portfolio return, column (2), is -0.0031%/day, and again, neither abnormal return is significant at the 10% level. These results do not support the importance of stronger corporate governance in improving the connection between CEO stock option compensation and firm performance. One potential reason for the inconclusive nature of the results could be the inclusion of firms with an EIndex of 4 (these firms are included to create roughly similar samples sizes between the Democratic and Dictatorship portfolios). In 2001 67% of the firms in the Dictatorship portfolio have an EIndex of 4, and in 2007 84% of the Dictatorship portfolio was comprised of firms with an EIndex of 4. As I demonstrate in section 5.1.1, adding firms from the middle of the EIndex spectrum decreases the difference in the level of corporate governance between the Democratic versus Dictatorship portfolios and thus decreases the abnormal return from the long Democratic versus short Dictatorship trading strategy.

5.3.4 Option Compensation and Corporate Governance on Firm Performance Post-Recessions

This section examines the benefits of stronger corporate governance and higher percentage of CEO stock option compensation versus lower corporate governance and higher percentage of CEO stock option compensation by extending the timeframe of the analysis one year into the post-recessionary recovery period. I begin the analysis by a visual examination of the unadjusted cumulative returns for both the top decile and bottom decile portfolios for both
value-weighted and equal-weighted portfolio formation for both recessionary periods, Figure 28 for the post 2001 recession and Figure 29 for the post 2007-2009 recession. Again, only the 2001 recessionary period unadjusted value-weighted cumulative portfolio returns demonstrate a spread between the Democratic and Dictatorship portfolios; however, the difference of mean is not significant with at the 10% level.

The results of this long position in high corporate governance high stock option compensation and short low corporate governance high stock option compensation for the 2001 recession and one year post-recession period are detailed in Table 28 and in Table 29 for the 2007 – 2009 recession and one year post-recession period. The value-weighted daily abnormal return estimates are in Column (1) and the equal weighed daily abnormal return estimates are in column (2). None of the daily abnormal returns is significant for either the extended 2001 and 2007 – 2009 periods. The fact that the abnormal returns are neither positively significant nor negatively significant indicates that high governance and high option compensation versus low governance and low option compensation is not differentiated from the during recession analysis. This result neither supports nor refutes the importance of recessionary periods as compared to the post-recessionary recovery period.
6. Summary, Implications, Limitations and Future Research

6.1 Corporate Governance and Firm Performance Summary

I begin this section by summarizing the results of my analysis of the impact of corporate governance on firm performance. I examine the firms in the Bebchuk et al (2009) EIndex corporate governance dataset for the entire data period and then narrow the focus to the 2001 recession (3/2001 – 11/2001) and the 2007 – 2009 recession (12/2007 – 6/2009). I investigate the connection between governance and firm performance by forming two governance-based portfolios, a stronger corporate governance portfolio (Democratic portfolio contains firms with lower EIndex) and a weaker corporate governance portfolio (Dictatorship portfolio contains firms with higher EIndex). Regression results for Carhart (1997) four-factor monthly abnormal return for the entire dataset period, 1995 – 2009, for trading strategy which shorts the Dictatorship portfolio (low governance portfolio) and takes a long position in the Democratic portfolio (high governance portfolio) indicate positive returns for both value-weighted and equal-weighted portfolios. The annual return for this long high governance and short low governance trading strategy for a value-weighted portfolio is 7.4%/year, which lends support to the proposition that stronger corporate governance over the entire dataset results in stronger firm performance as measured by this abnormal return methodology. Interestingly, this is 50% lower than Bebchuk et al (2009) findings for the 1990s, and a potential reason for this this decrease might be semi-strong efficient market theory.\textsuperscript{90}

\textsuperscript{90} Semi-strong efficient market theory implies that investors cannot consistently earn abnormal returns utilizing fundamental analysis, and therefore publically available research such as governance measures should not result in long-term abnormal returns.
As a robustness check on the abnormal returns for this long high corporate governance and short low corporate governance trading strategy, I add firms to each portfolio from the middle portion of the EIndex corporate governance spectrum. I theorize that if holding a portfolio of high corporate governance firms and shorting a portfolio of low corporate governance firms produces a positive abnormal return, then adding more of the mid-level corporate governance firms should diminish this affect. The results of this “middling” of corporate governance yields decreasing positive abnormal returns, which, as anticipated, drops monotonically as more firms in the middle portion of the EIndex are included.\textsuperscript{91} This monotonic decrease in monthly abnormal returns lends support to the importance of the EIndex as a corporate governance measure in firm performance as measured by monthly abnormal returns.

Next, I narrow the focus of my results discussion from the entire dataset to the connection between corporate governance and firm performance during the 2001 and 2007-2009 recessionary periods. I posit that stronger corporate governance is more relevant during recessionary periods, and therefore stronger corporate governance should result in better firm performance. To test this hypothesis, I examine the daily abnormal returns\textsuperscript{92} from a trading strategy which shorts the high corporate governance portfolio (Democratic portfolio) and takes a long position in the low corporate governance portfolio (Dictatorship portfolio) during both recessions. Neither the value-weighted nor the equal-weighted portfolio abnormal returns results were significant for either recessionary period. As I discuss in section 5.1.1, there is a decrease in the size as well as the significance of the abnormal returns for this trading strategy for the

\textsuperscript{91} The value-weighted abnormal return for the 0 vs. 5-6 EIndex portfolio combination, column (1), is 0.60%. As more of the middle EIndex firms are added (0-1 vs. 4-6), the abnormal return drops to 0.30% and then to 0.21% (value-weighted portfolio trading strategy for dividing the sample in half, 0-2 vs. 3-6 EIndex portfolio formation, has an \( \alpha \) of 10.8% and is therefore not statistically significantly different from zero at the 10% level).

\textsuperscript{92} Daily returns are used due to the limited number of observations associated with limiting the timeframe of the analysis to the two recessionary periods (and one year post-recession).
entire dataset (as compared to Bebchuk et al (2009) findings for the prior decade), as well as a decrease in abnormal return when using daily return data instead of monthly return data. This non-significance of the abnormal returns when using daily data makes it difficult to assess the connection between corporate governance and firm performance during the two most recent recessions (neither refute nor support hypothesis H1.1).

Next, I examine corporate governance and firm performance during the post-recessionary recovery periods. In the recovery period, I posit that importance of stronger corporate governance is diminished and has less impact, and I anticipate that the abnormal returns should diminish during these more prosperous time frames. I use the same methodology to calculate abnormal returns on the trading strategy which shorts low governance portfolios and takes a long position in high governance portfolios. The daily abnormal return regression results for the extended timeframe beyond the 2001 and the 2007 – 2009 recessions are smaller than the abnormal returns during the corresponding 2001 and 2007 – 2009 recessions, which would lend some support to the importance of the recessionary metric. However, the regression intercepts are not significant. While the non-significance of the extended timeframe indicates that the recovery does not have greater impact than the recessionary period, the fact that neither set of abnormal returns is significant indicates that I cannot infer that the importance of corporate governance on firm performance is diminished in this recovery period (mixed support for hypothesis H1.2).

6.2 Excess CEO Compensation on Firm Performance during Recessions Summary

I now move from the results on corporate governance and firm performance to results from analysis of excess CEO compensation and firm performance. I posit that the unexplained or excess portions of the compensation regressions are a measure of CEO ability or CEO rent
The daily abnormal return results from the 2001 recession are positive and significant for trading strategies which short high excess compensation and take a long position in low excess compensation for portfolios formed from cash compensation residuals and total compensation residuals for equal-weighted portfolios. The daily abnormal return ranges from 0.0801%/day for cash compensation residuals (a compound annual return of 22.4%/year) to 0.102%/day for total compensation residuals (a compound annual return of 29.2%/year).

This means that a trading strategy of taking a long position on firms in the lowest decile of excess CEO compensation and a short position on firms in the highest decile of excess CEO compensation yields positive annual compound abnormal returns just under 30%/year for the 2001 recessionary period. This result lends support to the theories siding with managerial malfeasance and rent extraction as opposed to those espousing that excess CEO compensation is a reward for ability leading to firm performance (support for H2.1). Daily abnormal returns are all not significant for the 2007–2009 recession, which neither supports nor refutes that excess compensation is a result of CEO rent extraction or a reward for CEO ability.

Next, I discuss the results of my analysis of excess CEO compensation and firm performance, extending the timeframe of the analysis one year into the post-recessionary recovery periods. In the recovery period, I posit that the impact of excess compensation, whether based on CEO ability or CEO rent extraction, diminishes, and I anticipate that the daily abnormal returns from the analysis of this extended period diminish in comparison to the abnormal return during the recessionary period. Using similar methodology to the previous analysis I find that the daily abnormal return results are significant for equal-weighted portfolios for cash compensation residuals and total compensation residuals, 0.0479%/day and 0.0609%/day. Neither of the abnormal return regressions for value-weighted portfolio is statistically significant.
During the extended timeframe beyond the 2001 recession, the abnormal returns decrease from 29.2%/year to 16.5%/year (compound annual return basis), and this decrease in abnormal return lends support to the proposition that this potential rent extraction decreases in importance during economic recovery periods. The analysis for the 2007 – 2009 recessionary period and one year post-recession is less compelling as the daily abnormal return results during the extended timeframe are not statistically significant. The non-significance of the abnormal returns in this extended period around the 2007 – 2009 recession neither supports nor refutes the importance of the recessionary metric. However, the decrease in the abnormal return during the extended 2001 analysis lends support to the importance of the recessionary metric (support for hypothesis H2.2).

The results of my final analysis into excess CEO compensation are based on adding the Bebchuk et al (2009) EIndex corporate governance measure to the compensation regressions. This analysis lends insight into whether adding a corporate governance measure improves the connection between excess compensation and firm performance as the residuals from these compensation regressions should now be adjusted for difference in firm’s level of corporate governance. I follow the methodology in my prior sections and use the Carhart (1997) four-factor model to calculate daily abnormal returns to assess the benefit of a short high excess compensation and long low excess compensation trading strategy.

The daily abnormal return regression results from the 2001 recession are positive and significant for portfolios formed from cash compensation residuals and total compensation residuals for equal-weighted portfolios (0.078%/day and 0.102%/day respectively). The total compensation residuals yield a compound annual abnormal return of 29.1%/year for the 2001 recessionary (similar to the 29.2%/year result from the regressions which do not contain a
The daily abnormal return results from the 2007-2009 recession are not significant for the 2007 – 2009 recession, and this result neither supports nor refutes the usefulness of corporate governance in improving the relationship between corporate governance, excess CEO compensation, and firm performance during the second recessionary period. However, the results from the 2001 recession would indicate that stronger corporate governance as measured by Bebchuk et al (2009) EIndex does not improve the relationship between excess CEO compensation and firm performance. The results do support CEO rent extraction and refute CEO ability hypotheses and corporate governance as improving the CEO pay for performance relationship (support for hypothesis H2.3).

I next discuss the results of my examination of excess CEO compensation extending my analysis one year into the economic recovery period using the same abnormal return methodology. Using similar daily abnormal return methodology for the extended post 2001 recession yields 0.0525%/day for the equal-weighted portfolios formed utilizing cash compensation residuals and 0.0605%/day for total compensation residuals (daily abnormal returns using value-weighted portfolios based on cash compensation residuals and total compensation residuals are not significant). The daily returns in the extended 2001 timeframe decrease, lending support to the proposition that, as measured by firms’ abnormal returns, managerial malfeasance and rent extraction decrease in importance in the post-recessionary recovery period. None of the daily abnormal return results during the 2007 – 2009 post-recessionary period is statistically significant, which neither supports nor refutes the importance of the recessionary period metric. The fact that the abnormal returns from the 2001 post-recessionary period for portfolios formed on an equal-weighted basis using both cash and total compensation measures decrease lends support to the proposition that as measured by firms’
abnormal returns, managerial malfeasance and rent extraction decrease in importance during the economic recovery (support for hypothesis H2.4).

6.3 Option Compensation and Firm Performance during Recessions Summary

The prior section analyzes the connection between excess or unexplained CEO compensation and firm performance during recessionary periods and the post-recessionary recovery period. The use of executive stock option grants as a component of the CEO’s compensation package is thought to potentially reduce agency costs and better align the CEO’s interests with the shareholders’ interest. This section reviews the results of my analysis of the benefits of stock option grants in CEO compensation packages. I form two portfolios, one based on the highest decile of the ratio of the value of stock option grants received by the CEO to the total value of compensation received by the CEO, and one based on the lowest decile of the same ratio.

A trading strategy of a long position in firms in the bottom decile of percentage CEO stock option compensation and a short position in the top decile of percentage of CEO stock option compensation yields daily abnormal returns for the 2001 recession regressions as well as the 2007 – 2009 recession regressions, which are not significant. The absence of any significant positive or negative abnormal return for these recessions indicates a lack of support for the benefits of stock option grants in CEO compensation package as well as a lack of support for the danger of these grants (lack of support for hypothesis H3.1). The results for the analysis of the extended one year post-recessionary recovery periods are similarly insignificant. This non significance does not support or refute the importance of the recessionary period metric (lack of support for hypotheses and H3.2).
The non-significance of the prior results is consistent with the differing viewpoints on the benefits and detriments of stock option grant compensation discussed in the Literature Review section. I posit that a potential reason for this finding is varied levels of corporate governance in top decile of percentage of CEO stock option grant compensation. By deconstructing the top decile of CEO stock option grant compensation (firms who use the greatest relative amount of option compensation in their pay packages) into strong corporate governance and weak corporate governance portfolios, I examine the impact of corporate governance on stock option compensation in the CEO pay package. Using this top decile of the percentage of CEO stock option compensation, I analyze whether firms with high corporate governance and high percentage stock option compensation perform better than firms with low corporate governance and high percentage stock option compensation.

For the 2001 recessionary period, the unadjusted cumulative returns on the high corporate governance high stock option compensation (Democratic portfolio) noticeably increase through the period above the low corporate governance and high stock option compensation (Dictatorship portfolio) for the value-weighted portfolio. However, the abnormal returns from the long Democratic and short Dictatorship portfolio trading strategy are not significant. Nor are the daily abnormal returns from the other 2001 and 2007 – 2009 regressions. These results do not support the importance of stronger corporate governance in improving the connection between CEO option compensation and firm performance (lack of support for hypothesis H3.3). A potential reason for the inconclusive nature of the results could be the inclusion of firms with an EIndex of 4 (these firms are included to create roughly similar samples sizes between the Democratic and
 Dictatorship portfolios).\textsuperscript{93} I conclude this section by reviewing my results of extending the timeframe of my analysis one year post-recession. A trading strategy of a long position in high corporate governance and high stock option compensation (Democratic portfolio) and short low corporate governance and high stock option compensation (Dictatorship portfolio) for the 2001 and 2007 – 2009 recession and post-recession recovery periods yields non-significant results. This non-significance does not support the importance of the recessionary period metric, but it does not refute this metric either (lack of support for hypotheses and H3.4).

6.4 Implications

In this section, I discuss the implications of my research results. First, I find a decrease over time in the abnormal returns associated with trading portfolios on stronger corporate governance as measured by Bebchuk et al (2009) EIndex. Similarly, Cremers and Nair (2005) find a decrease in size of abnormal return associated with trading on Gompers et al (2003) GIM corporate governance measure when extending the timeframe two years beyond Gompers et al (2003) original sample period. My research finds a decrease in the connection between stronger corporate governance and firm performance of 50\% when utilizing value-weighted portfolios. I also find a lack of a connection between stronger corporate governance and firm performance during both the 2001 and 2007 – 2009 recessionary periods. These results could be attributable to two factors: market efficiency incorporating stronger corporate governance in security prices (discussed in the following Limitations section), or a decrease in importance of corporate governance on firm performance. The implication of the later reason would indicate that stronger corporate governance is not beneficial to firms during recessionary periods.

\textsuperscript{93} As detailed in section 5.1.1, adding firms from the middle of the EIndex spectrum to Democratic and Dictatorship portfolios decreases the resulting abnormal return from the long Democratic versus short Dictatorship trading strategy.
Another important implication of my research stems from the finding that trading on firms with low excess CEO compensation during the 2001 recession is associated with positive abnormal returns. Taking a long position on firms in the lowest decile of excess CEO compensation and a short position on firms in the highest decile of excess CEO compensation yields a positive compound annual abnormal returns of 29.2%/year for the 2001 recessionary period.\(^{94}\) This result indicates that firms with lower levels of excess CEO compensation perform better than firms with higher levels of excess CEO compensation during the 2001 recession. The implication of this result is support for theories positing that excess CEO compensation is a form of rent extraction rather than theories that support that excess CEO compensation is a reward for CEO ability. I also find that including the EIndex corporate governance measure in compensation regressions does not improve connection between excess CEO compensation and firm performance during the 2001 recession. The implication of this result again points to a potential shortcoming in corporate governance mechanisms, as the corporate governance measure does not improve the relationship between excess compensation and firm performance during the 2001 recession. Extending the 2001 recessionary period analyses one year into the post-recessionary recovery period, I find the compound annual abnormal return decreases to 16.4%/year.\(^{95}\) The implication of this finding is that rent extraction decreases in importance during the economic recovery from the 2001 recession.

My analysis of the second recessionary period does not support CEO rent extraction, nor does it support CEO ability theories. I believe the implication of the results from the second recession may be partially attributable to an increase focus on CEO compensation in the later part of this decade. Bebchuk and Fried (2006) discuss an increase in the scrutiny of CEO

\(^{94}\) For total compensation residuals in an equal weighted portfolio
\(^{95}\) For total compensation residuals in an equal weighted portfolio
compensation following “corporate governance scandals that began erupting in late 2001.” In addition to increased public scrutiny, legislation has been enacted which potentially mitigates the disconnect between CEO compensation and firm performance in the second half of this decade. One such example is the Sarbanes Oxley Act, which was enacted in July 2002 in response to scandals such as Enron and Tyco. Sarbanes Oxley (SOX) is federal law intended to improve corporate transparency and corporate responsibility. Montagne and Weinberg (2013) posit that more recent regulatory changes in say-on-pay for CEOs, greater scrutiny of board of directors, and increased emphasis on corporate governance improves the executive pay process. An implication of the difference in results in excess compensation and firm performance between the 2001 and 2007 – 2009 recessions would be support for effectiveness in increased public scrutiny and legislative actions in improving the relationship between firm performance and excess CEO compensation in the second recessionary period.

6.5 Limitations

One potential limitation of my research stems from the assumption that we are accurately measuring the level of corporate governance. The Investor Responsibility Research Center (IRRC) data follows 24 corporate governance provisions, and corporate governance measures, such as Gompers et al (2003) GIM index, Cremers and Nair (2005) ATI index, and Bebchuk et al (2009) EIndex, are created based on this information. Corporate governance mechanisms may exist that are not included in the IRRC dataset and yet may still impact firm performance. Further, the GIM, ATI and EIndex all give equal weight to their corporate governance measures. It is possible that some of the corporate governance measures contained in these indices are more important and should therefore be given greater weight.

96 Bebchuk and Fried (2006) page 6
A second potential limitation is associated with the model chosen to measure abnormal returns (firm performance). I follow previous research in this area by Gompers et al (2003), Cremers and Nair (2005), and Bebchuk et al (2009), among others, supporting that the Carhart (1997) four-factor model is an appropriate measure of abnormal returns and firm performance. While Gompers et al (2003) maintain that there is agreement that the intercept, $\alpha$, of these four-factor regressions is an appropriate measure of the excess return (firm performance), I acknowledge that using this methodology jointly tests my hypotheses as well as tests the appropriateness of the Carhart (1997) model in measuring abnormal returns especially during recessionary periods.

A third potential limitation in my research may be associated with efficient market forces. The semi-strong form of market efficiency posits that stock prices reflect publically available information and that trading on publically available information will not result in abnormal returns. If we assume that markets are semi-strong form efficient, it follows that publically available research identifying trading strategies that result in a return greater than the risk adjusted rate should be priced out of the market reducing or eliminating the abnormal returns. This implies that investors cannot consistently earn abnormal returns utilizing fundamental analysis. Evidence on the semi-strong form of market efficiency is mixed, but research suggests that it holds for widely-held and closely followed firms. If markets are semi-strong form efficient, then trading on IRRC data (publically available corporate governance information) should not result in long-term abnormal returns. As I previously mention, market efficiency could be a reason behind the decrease I find in abnormal return from trading on stronger corporate governance portfolios.
6.6 Future Research

One area of my future research will be in the change in impact of excess CEO compensation. My analysis of excess CEO compensation and firm performance during the 2001 recession indicates that trading on firms with low excess CEO compensation is associated with positive abnormal returns. This result lends support to theories espousing excess CEO compensation as a form of rent extraction rather than theories espousing excess CEO compensation as a reward for CEO ability. My analysis of the second recessionary period does not support CEO rent extraction theories, nor does it support CEO ability theories. I believe that one implication of the second recessionary period results may be attributable to an increase focus on compensation paid to CEOs in the later part of this decade. 97 As previously mentioned, a legislative example of this increased focus is the Sarbanes Oxley Act, which was enacted in July 2002 in response to scandals such as Enron and Tyco in an effort to improve corporate transparency and corporate responsibility. My future work in the area of excess CEO compensation will focus on the time period between the two recessions, examining the timing and reasoning for the decrease in abnormal return associated with excess CEO compensation.

My future research will also follow up on the connection between stock option compensation and firm performance during recessionary periods (the third set of hypotheses in my dissertation). As I previously discuss, an increase in equity compensation also impacts the riskiness of policy decisions via the executive’s sensitivity to volatility in their firm’s stock price (Coles et al, 2006). Amanatullah et al (2010) posit that managers chose riskier investment opportunities when the outcomes are directly connected to these managers’ potential advancements and or their careers. I reason that since stock option value increases with volatility

97 Bebchuk and Fried (2006) discuss an increase in the scrutiny of CEO compensation following “corporate governance scandals that began erupting in late 2001 (page 6).
(risk), CEOs would be incentivized to increase the risk of the firm. This increased risk and the concomitant incentives for managerial malfeasance associated with stock option grants are likely more detrimental to firm performance during recessionary periods and less of a factor in the economic recovery periods.

However, when I examine firm performance associated high percentage of CEO stock option grants, I find neither a positive nor negative connection between percentage of stock options and firm performance. Another approach to investigate the connection between stock option compensation and firm performance would be to examine the CEO’s sensitivity to volatility or risk. Coles et al (2006) examine forces behind managerial risk preferences and the resulting risk associated with their decisions by examining vega (the managerial sensitivity to changes in the volatility of the change in price of their portfolio). They calculate vega as the change in dollar value of managerial wealth for a 0.01 change in the annual standard deviation of the firm’s stock return. Coles et al (2006) research indicates that CEOs who have a higher sensitivity to the change in their wealth versus a change in the volatility of firm stock price make riskier decisions in the firm. The authors find that riskier decisions made by the CEO are associated with higher vega (the executives’ sensitivity to the volatility of their portfolio). My future research in this area will focus on the hypothesis that the propensity for CEOs to favor riskier policies is more likely associated with poorer firm performance during the recessionary periods.

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98 Riskier decisions are associated with greater investment in research and development, less investment in plant, property and equipment, and the greater the use of debt financing.
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Table 1: Entrenchment Index Provisions

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<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Staggered board</strong>: a board in which directors are divided into separate classes (typically three) with each class being elected to overlapping terms.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Limitation on amending bylaws</strong>: a provision limiting shareholders’ ability through majority vote to amend the corporate bylaws.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Limitation on amending the charter</strong>: a provision limiting shareholders’ ability through majority vote to amend the corporate charter.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Supermajority to approve a merger</strong>: a requirement that requires more than a majority of shareholders to approve a merger.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Golden parachute</strong>: a severance agreement that provides benefits to management/board members in the event of firing, demotion, or resignation following a change in control.</td>
</tr>
<tr>
<td>6</td>
<td><strong>Poison pill</strong>: a shareholder right that is triggered in the event of an unauthorized change in control that typically renders the target company financially unattractive or dilutes the voting power of the acquirer.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th></th>
<th><strong>Table 2: Other Index provisions</strong>&lt;sup&gt;100&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Limitation on special meeting:</em> a provision limiting shareholders’ ability to act by calling a special meeting (as opposed to waiting for the regularly scheduled shareholders’ meeting).</td>
</tr>
<tr>
<td>2</td>
<td><em>Limitation on written consent:</em> a provision limiting shareholders’ ability to act via written consent (as opposed to acting through a vote at the shareholders’ meeting).</td>
</tr>
<tr>
<td>3</td>
<td><em>Elimination of cumulative voting:</em> a provision eliminating shareholders’ ability to apportion their votes in an election.</td>
</tr>
<tr>
<td>4</td>
<td><em>Secret ballot:</em> a system of voting that ensures management does not look at individual proxy cards.</td>
</tr>
<tr>
<td>5</td>
<td><em>Director indemnification:</em> a charter or bylaw provision indemnifying the firm’s officers and directors against certain legal expenses and judgments as a result of their conduct.</td>
</tr>
<tr>
<td>6</td>
<td><em>Director indemnification contract:</em> a contract with individual officers and directors promising indemnification against certain legal expenses and judgments as a result of their conduct.</td>
</tr>
<tr>
<td>7</td>
<td><em>Limited director liability:</em> a provision that limits the personal liability of its directors.</td>
</tr>
<tr>
<td>8</td>
<td><em>Compensation plan:</em> a plan that accelerates benefits in the event of a change in control.</td>
</tr>
<tr>
<td>9</td>
<td><em>Severance agreement:</em> a contract which ensures executives some income protection in the event of losing their positions.</td>
</tr>
<tr>
<td>10</td>
<td><em>Unequal voting rights:</em> a provision by which voting power changes based on certain conditions.</td>
</tr>
<tr>
<td>11</td>
<td><em>Blank check preferred stock:</em> this is stock that, when authorized, gives the board broad discretion in establishing the stock’s voting, dividend, and other rights when issued.</td>
</tr>
<tr>
<td>12</td>
<td><em>Fair price requirements:</em> a requirement that a bidder pays all shareholders a “fair price,” typically the highest price paid by a bidder prior to a tender offer being made.</td>
</tr>
<tr>
<td>13</td>
<td><em>Cash-out law:</em> a provision that enables shareholders to sell to a controlling shareholder, usually at the highest price recently paid by the controlling shareholder.</td>
</tr>
<tr>
<td>14</td>
<td><em>Director duties:</em> a provision that permits the board to consider nonshareholder interests in evaluating a possible change in control.</td>
</tr>
<tr>
<td>15</td>
<td><em>Business combination law:</em> a law that limits the ability of an acquirer to conduct certain transactions with the acquired company postacquisition.</td>
</tr>
<tr>
<td>16</td>
<td><em>Antigreenmail provision:</em> a provision that prevents an entity from acquiring a block of stock in a company and selling it back to the company at an above-market price.</td>
</tr>
<tr>
<td>17</td>
<td><em>Pension parachute:</em> provisions that limit the ability of an acquirer from using surplus money in a pension plan to fund the acquisition.</td>
</tr>
<tr>
<td>18</td>
<td><em>Silver parachute:</em> a severance agreement that provides benefits to a large number of firm employees in the event of firing, demotion, or resignation following a change in control.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Description</th>
<th>Database</th>
<th>Company Identifier</th>
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</thead>
<tbody>
<tr>
<td>at</td>
<td>Firm’s total assets (used in the ROA calculation)</td>
<td>COMPUSTAT</td>
<td>CUSIP, GVKEY</td>
</tr>
<tr>
<td>bonus</td>
<td>CEO bonus</td>
<td>ExecuComp</td>
<td>GVKEY, EXECID</td>
</tr>
<tr>
<td>csho</td>
<td>Common shares outstanding (used in market capitalization calculation)</td>
<td>COMPUSTAT</td>
<td>CUSIP, GVKEY</td>
</tr>
<tr>
<td>EIndex</td>
<td>Entrenchment Index</td>
<td>Bebchuk</td>
<td>CUSIP, Ticker</td>
</tr>
<tr>
<td>execid</td>
<td>Unique company / executive identification number</td>
<td>ExecuComp</td>
<td>GVKEY, EXECID</td>
</tr>
<tr>
<td>ff_48</td>
<td>Fama French 48 Industry Portfolio classification</td>
<td>Fama French website</td>
<td>N/A</td>
</tr>
<tr>
<td>hml</td>
<td>High minus Low Fama French factor</td>
<td>Fama French website</td>
<td>N/A</td>
</tr>
<tr>
<td>hsiccd</td>
<td>Standard Industrial Classification Code (4 digit)</td>
<td>CRSP</td>
<td>CUSIP, PERMNO</td>
</tr>
<tr>
<td>mkt_rf</td>
<td>Stock market risk premium (value-weighted)</td>
<td>Fama French website</td>
<td>N/A</td>
</tr>
<tr>
<td>mom</td>
<td>Momentum Carhart factor</td>
<td>Fama French website</td>
<td>N/A</td>
</tr>
<tr>
<td>ni</td>
<td>Net Income (used in the ROA calculation)</td>
<td>COMPUSTAT</td>
<td>CUSIP, GVKEY</td>
</tr>
<tr>
<td>option_awards_blk_value</td>
<td>CEO stock option grant Black Sholes value (pre-FAS124r)</td>
<td>ExecuComp</td>
<td>GVKEY, EXECID</td>
</tr>
<tr>
<td>option_awards_fv</td>
<td>CEO stock option grant value (post-FAS123r)</td>
<td>ExecuComp</td>
<td>GVKEY, EXECID</td>
</tr>
<tr>
<td>prc</td>
<td>Firm’s stock price (used in the market capitalization calculation)</td>
<td>CRSP</td>
<td>CUSIP, PERMNO</td>
</tr>
<tr>
<td>ret</td>
<td>Firm’s holding period stock return</td>
<td>CRSP</td>
<td>CUSIP, PERMNO</td>
</tr>
<tr>
<td>revt</td>
<td>Firm’s revenue (used as a proxy for size)</td>
<td>COMPUSTAT</td>
<td>CUSIP, GVKEY</td>
</tr>
<tr>
<td>salary</td>
<td>CEO salary</td>
<td>ExecuComp</td>
<td>GVKEY, EXECID</td>
</tr>
<tr>
<td>shrout</td>
<td>Common shares outstanding (used in market capitalization calculation)</td>
<td>CRSP</td>
<td>CUSIP, PERMNO</td>
</tr>
<tr>
<td>sich</td>
<td>Standard Industrial Classification Code (4 digit)</td>
<td>COMPUSTAT</td>
<td>CUSIP, GVKEY</td>
</tr>
<tr>
<td>smb</td>
<td>Small minus Big Fama French factor</td>
<td>Fama French website</td>
<td>N/A</td>
</tr>
<tr>
<td>tdc1</td>
<td>CEO total compensation</td>
<td>ExecuComp</td>
<td>GVKEY, EXECID</td>
</tr>
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</table>
## Table 4: Summary Statistics

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<th>Variable Name</th>
<th>Period</th>
<th>Frequency</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev.</th>
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<tr>
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<td>1995-2009</td>
<td>Daily</td>
<td>3778</td>
<td>0.000165</td>
<td>0.000100</td>
<td>0.00676</td>
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<tr>
<td>hml</td>
<td>1995-2009</td>
<td>Monthly</td>
<td>180</td>
<td>0.003290</td>
<td>0.003400</td>
<td>0.03636</td>
</tr>
<tr>
<td>mkt_rf</td>
<td>1995-2009</td>
<td>Daily</td>
<td>3778</td>
<td>0.00026</td>
<td>0.00080</td>
<td>0.01267</td>
</tr>
<tr>
<td>mkt_rf</td>
<td>1995-2009</td>
<td>Monthly</td>
<td>180</td>
<td>0.00499</td>
<td>0.01420</td>
<td>0.04746</td>
</tr>
<tr>
<td>mom</td>
<td>1995-2009</td>
<td>Daily</td>
<td>3778</td>
<td>0.00025</td>
<td>0.00070</td>
<td>0.01029</td>
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<tr>
<td>mom</td>
<td>1995-2009</td>
<td>Monthly</td>
<td>180</td>
<td>0.00486</td>
<td>0.00770</td>
<td>0.05959</td>
</tr>
<tr>
<td>smb</td>
<td>1995-2009</td>
<td>Daily</td>
<td>3778</td>
<td>0.00005</td>
<td>0.00030</td>
<td>0.00619</td>
</tr>
<tr>
<td>smb</td>
<td>1995-2009</td>
<td>Monthly</td>
<td>180</td>
<td>0.00214</td>
<td>-0.00155</td>
<td>0.03833</td>
</tr>
<tr>
<td>Firm Market Capitalization (thousands)</td>
<td>1995-2009</td>
<td>Daily</td>
<td>5,326,138</td>
<td>6,897,233</td>
<td>1,532,936</td>
<td>22,598,302</td>
</tr>
<tr>
<td>Firm Market Capitalization (thousands)</td>
<td>1995-2009</td>
<td>Monthly</td>
<td>256,374</td>
<td>6,899,372</td>
<td>1,545,725</td>
<td>22,489,612</td>
</tr>
<tr>
<td>Firm Returns</td>
<td>1995-2009</td>
<td>Daily</td>
<td>5,326,091</td>
<td>0.000661</td>
<td>0.000000</td>
<td>0.03215</td>
</tr>
<tr>
<td>Firm Returns</td>
<td>1995-2009</td>
<td>Monthly</td>
<td>256,329</td>
<td>0.01280</td>
<td>0.00953</td>
<td>0.1403</td>
</tr>
<tr>
<td>CEO Cash Compensation (thousands)</td>
<td>2000</td>
<td>Annual</td>
<td>725</td>
<td>1,541.62</td>
<td>1,049.84</td>
<td>1,696</td>
</tr>
<tr>
<td>CEO Cash Compensation (thousands)</td>
<td>2007</td>
<td>Annual</td>
<td>833</td>
<td>1,104.07</td>
<td>847.56</td>
<td>2,336</td>
</tr>
<tr>
<td>CEO Total Compensation (thousands)</td>
<td>2000</td>
<td>Annual</td>
<td>721</td>
<td>6,670.31</td>
<td>2,792.00</td>
<td>24,494</td>
</tr>
<tr>
<td>CEO Total Compensation (thousands)</td>
<td>2007</td>
<td>Annual</td>
<td>833</td>
<td>5,805.82</td>
<td>3,831.21</td>
<td>7,015</td>
</tr>
<tr>
<td>ROA</td>
<td>1999</td>
<td>Annual</td>
<td>725</td>
<td>0.05131</td>
<td>0.04599</td>
<td>0.09188</td>
</tr>
<tr>
<td>ROA</td>
<td>2006</td>
<td>Annual</td>
<td>833</td>
<td>0.05992</td>
<td>0.05529</td>
<td>0.08395</td>
</tr>
<tr>
<td>Stock Return</td>
<td>1998</td>
<td>Annual</td>
<td>700</td>
<td>0.1226</td>
<td>0.0400</td>
<td>0.6062</td>
</tr>
<tr>
<td>Stock Return</td>
<td>1999</td>
<td>Annual</td>
<td>692</td>
<td>0.2112</td>
<td>-0.0219</td>
<td>1.2372</td>
</tr>
<tr>
<td>Stock Return</td>
<td>2005</td>
<td>Annual</td>
<td>820</td>
<td>0.1136</td>
<td>0.0704</td>
<td>0.3358</td>
</tr>
<tr>
<td>Stock Return</td>
<td>2006</td>
<td>Annual</td>
<td>829</td>
<td>0.1684</td>
<td>0.1390</td>
<td>0.2864</td>
</tr>
<tr>
<td>Std. Deviation Monthly Stock Return</td>
<td>1999</td>
<td>Monthly</td>
<td>692</td>
<td>0.1215</td>
<td>0.1059</td>
<td>0.0882</td>
</tr>
<tr>
<td>Std. Deviation Monthly Stock Return</td>
<td>2006</td>
<td>Monthly</td>
<td>829</td>
<td>0.0864</td>
<td>0.0790</td>
<td>0.0395</td>
</tr>
<tr>
<td>Revenue (millions)</td>
<td>1999</td>
<td>Annual</td>
<td>725</td>
<td>4,538.83</td>
<td>1,364.46</td>
<td>10,958</td>
</tr>
<tr>
<td>Revenue (millions)</td>
<td>2006</td>
<td>Annual</td>
<td>833</td>
<td>7,431.98</td>
<td>1,827.49</td>
<td>22,946</td>
</tr>
<tr>
<td>CEO Stock Option Grants</td>
<td>2000</td>
<td>Annual</td>
<td>817</td>
<td>4,506.58</td>
<td>923.15</td>
<td>24,280</td>
</tr>
<tr>
<td>CEO Stock Option Grants</td>
<td>2007</td>
<td>Annual</td>
<td>949</td>
<td>1,344.26</td>
<td>390.96</td>
<td>3,317</td>
</tr>
</tbody>
</table>
Table 5: Incidence of Entrenchment Index

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<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>0</td>
<td>151</td>
<td>11.04%</td>
<td>181</td>
<td>10.72%</td>
<td>125</td>
<td>7.58%</td>
<td>120</td>
</tr>
<tr>
<td>1</td>
<td>240</td>
<td>17.54%</td>
<td>321</td>
<td>19.02%</td>
<td>292</td>
<td>17.72%</td>
<td>252</td>
</tr>
<tr>
<td>2</td>
<td>348</td>
<td>25.44%</td>
<td>435</td>
<td>25.77%</td>
<td>406</td>
<td>24.64%</td>
<td>442</td>
</tr>
<tr>
<td>3</td>
<td>346</td>
<td>25.29%</td>
<td>424</td>
<td>25.12%</td>
<td>451</td>
<td>27.37%</td>
<td>451</td>
</tr>
<tr>
<td>4</td>
<td>228</td>
<td>16.67%</td>
<td>269</td>
<td>15.94%</td>
<td>300</td>
<td>18.20%</td>
<td>303</td>
</tr>
<tr>
<td>5</td>
<td>52</td>
<td>3.80%</td>
<td>48</td>
<td>2.84%</td>
<td>64</td>
<td>3.88%</td>
<td>74</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>0.22%</td>
<td>10</td>
<td>0.59%</td>
<td>10</td>
<td>0.61%</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>1368</td>
<td>100.00%</td>
<td>1688</td>
<td>100.00%</td>
<td>1648</td>
<td>100.00%</td>
<td>1649</td>
</tr>
</tbody>
</table>
Table 6: Democratic (long) / Dictatorship (short) Monthly Portfolio Returns 1995-2009

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimates</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td></td>
</tr>
<tr>
<td>α</td>
<td>0.006003 ***</td>
<td>0.003931 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.56)</td>
<td>(1.95)</td>
<td></td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.09129</td>
<td>-0.04334</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-1.39)</td>
<td>(-0.91)</td>
<td></td>
</tr>
<tr>
<td>smb</td>
<td>-0.29333 ***</td>
<td>0.00143</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-4.59)</td>
<td>(0.02)</td>
<td></td>
</tr>
<tr>
<td>hml</td>
<td>-0.90968 ***</td>
<td>-0.59715 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-9.54)</td>
<td>(-9.41)</td>
<td></td>
</tr>
<tr>
<td>mom</td>
<td>0.06774</td>
<td>-0.00477</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.26)</td>
<td>(-0.08)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>180</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.52</td>
<td>0.43</td>
<td></td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the monthly abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms with EIndex of 5-6 and going long firms with EIndex of 0 for the entire data period 1995-2009. Column (2) returns are based on equal-weighted portfolios. Portfolios are rebalanced based on each new issuance of IRRC data. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ diff_t = a + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \epsilon_t \]
Table 7: Democratic (long) / Dictatorship (short) Monthly Portfolio Returns 1995-2009

<table>
<thead>
<tr>
<th>Entrenchment Index</th>
<th>Abnormal Monthly Returns (1)</th>
<th>Abnormal Monthly Returns (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
</tr>
<tr>
<td>0 vs. 5-6</td>
<td>0.600%***</td>
<td>0.393%**</td>
</tr>
<tr>
<td></td>
<td>(2.56)</td>
<td>(1.95)</td>
</tr>
<tr>
<td>0-1 vs. 4-6</td>
<td>0.295%*</td>
<td>0.289%**</td>
</tr>
<tr>
<td></td>
<td>(1.83)</td>
<td>(2.31)</td>
</tr>
<tr>
<td>0-2 vs. 3-6</td>
<td>0.208%</td>
<td>0.107%</td>
</tr>
<tr>
<td></td>
<td>(1.62)</td>
<td>(1.32)</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the monthly abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms with low corporate governance (EIIndex of 5-6, 4-6, and 3-6) and going long firms with high corporate governance (EIIndex of 0, 0-1, and 0-2) for the entire data period 1995-2009. Column (2) returns are based on equal-weighted portfolios. Portfolios are rebalanced based on each new issuance of IRRC data. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *
<table>
<thead>
<tr>
<th>Variable</th>
<th>Value-Weighted (1)</th>
<th>Equal-Weighted (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha$</td>
<td>0.000316</td>
<td>0.000202</td>
</tr>
<tr>
<td></td>
<td>(0.61)</td>
<td>(0.57)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.13762 *</td>
<td>-0.08568 *</td>
</tr>
<tr>
<td></td>
<td>(-1.78)</td>
<td>(-1.83)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.44722 ***</td>
<td>0.007183</td>
</tr>
<tr>
<td></td>
<td>(-4.87)</td>
<td>(0.11)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.55225 ***</td>
<td>-0.04713</td>
</tr>
<tr>
<td></td>
<td>(-4.89)</td>
<td>(-0.56)</td>
</tr>
<tr>
<td>mom</td>
<td>-0.25177 ***</td>
<td>-0.40183 ***</td>
</tr>
<tr>
<td></td>
<td>(-3.15)</td>
<td>(-6.64)</td>
</tr>
<tr>
<td>Observations</td>
<td>188</td>
<td>188</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.49</td>
<td>0.56</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; $\alpha$ represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are calculated on value-weighted portfolios based on shorting firms with EIndex of 5-6 and going long firms with EIndex of 0 for the recessionary period 3/2001-11/2001. Column (2) returns are based on equal-weighted portfolios for the same time period. $t$-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[
diff_t = a + b_1 \text{mkt}_t \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \epsilon_t
\]
Table 9: Democratic (long) / Dictatorship (short) Portfolio Returns 2007-2009 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimates</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.000445</td>
<td>0.000380</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.09)</td>
<td>(0.90)</td>
<td></td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.19035 ***</td>
<td>-0.10015 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-6.48)</td>
<td>(-3.02)</td>
<td></td>
</tr>
<tr>
<td>smb</td>
<td>-0.35947 ***</td>
<td>-0.18205 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-4.80)</td>
<td>(-2.38)</td>
<td></td>
</tr>
<tr>
<td>hml</td>
<td>-0.49462 ***</td>
<td>-0.51975 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-7.04)</td>
<td>(-6.22)</td>
<td></td>
</tr>
<tr>
<td>mom</td>
<td>0.17321 ***</td>
<td>0.08462 **</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.51)</td>
<td>(2.09)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>397</td>
<td>397</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.69</td>
<td>0.54</td>
<td></td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms with EIndex of 5-6 and going long firms with EIndex of 0 for the recessionary period 12/2007-6/2009. Column 2 returns are based on equal-weighted portfolios. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

\[ \text{diff}_t = a + b_1 \text{mkt}_t \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \varepsilon_t \]
Table 10: Democratic (long) / Dictatorship (short) Portfolio Returns 2001 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value-Weighted</th>
<th>Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.000106</td>
<td>-0.00016</td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(-0.60)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.12079 ***</td>
<td>-0.03765</td>
</tr>
<tr>
<td></td>
<td>(-2.86)</td>
<td>(-1.16)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.45162 ***</td>
<td>0.08453</td>
</tr>
<tr>
<td></td>
<td>(-7.10)</td>
<td>(1.64)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.71427 ***</td>
<td>-0.22815 ***</td>
</tr>
<tr>
<td></td>
<td>(-9.17)</td>
<td>(-3.64)</td>
</tr>
<tr>
<td>mom</td>
<td>-0.1995 ***</td>
<td>-0.35927 ***</td>
</tr>
<tr>
<td></td>
<td>(-3.74)</td>
<td>(-9.03)</td>
</tr>
</tbody>
</table>

Observations 439 439
\( R^2 \) 0.41 0.51

The Data section provides details on the variables; \( \alpha \) represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms with EIndex of 5-6 and going long firms with EIndex of 0 for the recessionary period 3/2001-11/2002, one year post-recession Column (2) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1\%, 5\%, and 10\% levels are indicated by ***, **, and *

\[
diff_t = \alpha + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t
\]
Table 11: Democratic (long) / Dictatorship (short) Portfolio Returns 2007-2009 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>Parameter Estimates</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Value-Weighted</td>
<td>(2) Equal-Weighted</td>
<td></td>
</tr>
<tr>
<td>α</td>
<td>0.000233</td>
<td>0.000213</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.85)</td>
<td>(0.77)</td>
<td></td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.18874 ***</td>
<td>-0.08374 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-8.01)</td>
<td>(-2.89)</td>
<td></td>
</tr>
<tr>
<td>smb</td>
<td>-0.3452 ***</td>
<td>-0.15918 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-5.79)</td>
<td>(-2.59)</td>
<td></td>
</tr>
<tr>
<td>hml</td>
<td>-0.5132 ***</td>
<td>-0.47248 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-9.97)</td>
<td>(-7.84)</td>
<td></td>
</tr>
<tr>
<td>mom</td>
<td>0.15748 ***</td>
<td>0.11527 ***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6.49)</td>
<td>(4.55)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>649</td>
<td>649</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.68</td>
<td>0.52</td>
<td></td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms with EIndex of 5-6 and going long firms with EIndex of 0 for the recessionary period 12/2007-6/2010, one year post-recession. Column (2) returns are based on equal-weighted portfolios. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ \text{diff}_t = a + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \epsilon_t \]
### Table 12: Compensation Regressions for 2000 and 2007

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2000 Salary + Bonus</th>
<th>(2) Year 2000 Total Comp</th>
<th>(3) Year 2007 Salary + Bonus</th>
<th>(4) Year 2007 Total Comp</th>
</tr>
</thead>
<tbody>
<tr>
<td>$b_{0}$</td>
<td>8.444 ***</td>
<td>6.605 ***</td>
<td>9.700 ***</td>
<td>5.502 ***</td>
</tr>
<tr>
<td></td>
<td>(8.25)</td>
<td>(5.93)</td>
<td>(12.07)</td>
<td>(5.02)</td>
</tr>
<tr>
<td>$\text{Log}(1+\text{ROA}_{t,1})$</td>
<td>-0.256 **</td>
<td>-0.403</td>
<td>0.108</td>
<td>-0.369</td>
</tr>
<tr>
<td></td>
<td>(-0.91)</td>
<td>(-1.32)</td>
<td>(0.56)</td>
<td>(-1.40)</td>
</tr>
<tr>
<td>$\text{Log}(1+\text{ret}_{t,1})$</td>
<td>0.168 **</td>
<td>0.437 ***</td>
<td>0.088</td>
<td>0.264 *</td>
</tr>
<tr>
<td></td>
<td>(2.24)</td>
<td>(5.38)</td>
<td>(0.81)</td>
<td>(1.78)</td>
</tr>
<tr>
<td>$\text{Log}(1+\text{ret}_{t,2})$</td>
<td>-0.101</td>
<td>0.233 ***</td>
<td>-0.106</td>
<td>0.143</td>
</tr>
<tr>
<td></td>
<td>(-1.24)</td>
<td>(2.62)</td>
<td>(-1.17)</td>
<td>(1.16)</td>
</tr>
<tr>
<td>$\text{Log}(\text{Rev}_{t,1})$</td>
<td>0.305 ***</td>
<td>0.463 ***</td>
<td>0.187 ***</td>
<td>0.447 ***</td>
</tr>
<tr>
<td></td>
<td>(11.64)</td>
<td>(16.28)</td>
<td>(10.13)</td>
<td>(17.80)</td>
</tr>
<tr>
<td>$\text{Log}(\text{std}<em>{\text{ret}}</em>{t,1})$</td>
<td>-0.278</td>
<td>0.027</td>
<td>-0.037</td>
<td>0.560</td>
</tr>
<tr>
<td></td>
<td>(-0.68)</td>
<td>(0.06)</td>
<td>(-0.05)</td>
<td>(0.53)</td>
</tr>
<tr>
<td>$\text{Ind}<em>i \text{Code}</em>{t,1}$</td>
<td>2.13 ***</td>
<td>3.14 ***</td>
<td>1.53 **</td>
<td>1.92 ***</td>
</tr>
</tbody>
</table>

Observations 685 686 813 818
R$^2$ 0.29 0.44 0.22 0.38

$\text{ROA}_{t,i}$ is the return on assets for the prior year (net income divided by total assets), $\text{ret}_{t,i}$ is the annual stock return for the prior year, $\text{ret}_{t,2}$ is the annual stock return from two years prior, $\text{Rev}_{t,i}$ is the firm’s sales from the prior year, $\text{std}_{\text{ret}}_{t,1}$ is the standard deviation of monthly stock returns based on the prior four years, $\text{Ind}_i \text{Code}_{t,1}$ is the firm’s Fama French industry code from a portfolio of 48 industries (categorical variable; F Value is reported). Column (1) regression is for year 2000 with cash compensation (salary + bonus) as the dependent variable. Column (2) regression for year 2000 with total compensation as the dependent variable. Column (3) regression for year 2007 with cash compensation (salary + bonus) as the dependent variable. Column (4) regression for year 2007 with total compensation as the dependent variable. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *. F Value is reported for the categorical Fama French 48 Industry Code variable.

$$\text{Log(Compensation}_{i,t}$) = b_0 + b_1 \text{Log}(1 + \text{ROA}_{t,1}) + b_2 \text{Log}(1 + \text{ret}_{t,1})$$

$$+ b_3 \text{Log}(1 + \text{ret}_{t,2}) + b_4 \text{Log}(\text{Rev}_{t,1}) + b_5 \text{Log(Std}_{\text{ret}}_{t,1})$$

$$+ b_6 \text{Ind}_i \text{Code}_{i,t-1} + \varepsilon_{i,t}$$
Table 13: Abnormal Return for Long Bottom Decile of Excess Compensation and Short Top Decile for 2001 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2000 Salary + Bonus</th>
<th>(2) Year 2000 Total Compensation</th>
<th>(3) Year 2000 Total Compensation</th>
<th>(4) Year 2000 Total Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
</tr>
<tr>
<td>α</td>
<td>0.000404</td>
<td>0.000801 *</td>
<td>0.00036</td>
<td>0.00102 **</td>
</tr>
<tr>
<td></td>
<td>(0.70)</td>
<td>(1.75)</td>
<td>(0.38)</td>
<td>(2.06)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.26484 ***</td>
<td>-0.07713</td>
<td>-0.43435 ***</td>
<td>-0.12439 *</td>
</tr>
<tr>
<td></td>
<td>(-3.24)</td>
<td>(-1.15)</td>
<td>(-3.45)</td>
<td>(-1.65)</td>
</tr>
<tr>
<td>smb</td>
<td>0.30469 ***</td>
<td>0.16593 *</td>
<td>-0.21505</td>
<td>0.42183 ***</td>
</tr>
<tr>
<td></td>
<td>(3.09)</td>
<td>(1.94)</td>
<td>(-1.20)</td>
<td>(4.10)</td>
</tr>
<tr>
<td>hml</td>
<td>0.17189</td>
<td>-0.00215</td>
<td>-0.44666 *</td>
<td>0.30963 **</td>
</tr>
<tr>
<td></td>
<td>(1.21)</td>
<td>(-0.02)</td>
<td>(-1.81)</td>
<td>(2.11)</td>
</tr>
<tr>
<td>mom</td>
<td>0.0699</td>
<td>0.2405 ***</td>
<td>-0.01173</td>
<td>0.05450</td>
</tr>
<tr>
<td></td>
<td>(0.72)</td>
<td>(3.46)</td>
<td>(-0.09)</td>
<td>(0.73)</td>
</tr>
<tr>
<td>Observations</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
</tr>
<tr>
<td>R²</td>
<td>0.38</td>
<td>0.35</td>
<td>0.10</td>
<td>0.37</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on cash compensation for the recessionary period 3/2001-11/2001. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on total compensation for the recessionary period 3/2001-11/2001. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by **, **, and *.

\[
diff_t = a + b_1 \text{mkt}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \epsilon_t
\]
Table 14: Abnormal Return for Long Bottom Decile of Excess Compensation and Short Top Decile for 2007-2009 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2007 Salary + Bonus</th>
<th>(2) Year 2007 Total Compensation</th>
<th>(3) Year 2007 Total Compensation</th>
<th>(4) Year 2007 Total Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
</tr>
<tr>
<td>α</td>
<td>0.00039</td>
<td>0.000114</td>
<td>0.000041</td>
<td>-0.00029</td>
</tr>
<tr>
<td></td>
<td>(0.82)</td>
<td>(0.34)</td>
<td>(0.12)</td>
<td>(-0.86)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.25146 ***</td>
<td>0.10942 ***</td>
<td>0.02502</td>
<td>-0.10056 ***</td>
</tr>
<tr>
<td></td>
<td>(4.17)</td>
<td>(4.19)</td>
<td>(0.66)</td>
<td>(-3.80)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.22755 ***</td>
<td>0.26620 ***</td>
<td>-0.10385</td>
<td>0.37292 ***</td>
</tr>
<tr>
<td></td>
<td>(-2.61)</td>
<td>(4.96)</td>
<td>(-1.54)</td>
<td>(8.82)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.36813 ***</td>
<td>0.26981 ***</td>
<td>-0.22177 ***</td>
<td>0.15789 ***</td>
</tr>
<tr>
<td></td>
<td>(-3.59)</td>
<td>(4.47)</td>
<td>(-3.18)</td>
<td>(2.97)</td>
</tr>
<tr>
<td>mom</td>
<td>0.11332 **</td>
<td>0.10815 ***</td>
<td>0.11445 ***</td>
<td>0.03241</td>
</tr>
<tr>
<td></td>
<td>(2.49)</td>
<td>(3.32)</td>
<td>(3.29)</td>
<td>(0.98)</td>
</tr>
<tr>
<td>Observations</td>
<td>397</td>
<td>397</td>
<td>397</td>
<td>397</td>
</tr>
<tr>
<td>R²</td>
<td>0.28</td>
<td>0.23</td>
<td>0.22</td>
<td>0.28</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on cash compensation for the recessionary period 12/2007-6/2009. Column (2) returns are based on equal-weighted portfolios for the same period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on total compensation for the recessionary period 12/2007-6/2009. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

\[
diff_t = \alpha + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \epsilon_t
\]
Table 15: Abnormal Return for Long Bottom Decile of Excess Compensation and Short Top Decile for 2001 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Parameter Estimates</th>
<th>(1) Year 2000 Salary + Bonus Value-Weighted</th>
<th>(2) Year 2000 Salary + Bonus Equal-Weighted</th>
<th>(3) Year 2000 Total Compensation Value-Weighted</th>
<th>(4) Year 2000 Total Compensation Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
<td>Variable</td>
<td>Equal-Weighted</td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
</tr>
<tr>
<td>α</td>
<td>0.000356</td>
<td>0.000479 *</td>
<td>0.00314</td>
<td>0.000609 **</td>
</tr>
<tr>
<td></td>
<td>(0.93)</td>
<td>(1.66)</td>
<td>(0.52)</td>
<td>(2.15)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.13737 ***</td>
<td>-0.0449</td>
<td>-32755 ***</td>
<td>-0.04198</td>
</tr>
<tr>
<td></td>
<td>(-2.87)</td>
<td>(-1.16)</td>
<td>(-4.40)</td>
<td>(-1.15)</td>
</tr>
<tr>
<td>smb</td>
<td>0.37645 ***</td>
<td>0.16649 ***</td>
<td>0.07723</td>
<td>0.36519 ***</td>
</tr>
<tr>
<td></td>
<td>(5.66)</td>
<td>(2.95)</td>
<td>(0.73)</td>
<td>(6.27)</td>
</tr>
<tr>
<td>hml</td>
<td>0.29363 ***</td>
<td>0.0730 **</td>
<td>-0.31862 ***</td>
<td>0.29427 ***</td>
</tr>
<tr>
<td></td>
<td>(3.40)</td>
<td>(2.48)</td>
<td>(-2.64)</td>
<td>(4.31)</td>
</tr>
<tr>
<td>mom</td>
<td>0.20942 ***</td>
<td>0.1921 ***</td>
<td>0.05510</td>
<td>0.14673 ***</td>
</tr>
<tr>
<td></td>
<td>(3.47)</td>
<td>(4.68)</td>
<td>(0.66)</td>
<td>(3.46)</td>
</tr>
<tr>
<td>Observations</td>
<td>439</td>
<td>439</td>
<td>439</td>
<td>439</td>
</tr>
<tr>
<td>R²</td>
<td>0.42</td>
<td>0.33</td>
<td>0.12</td>
<td>0.39</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on cash compensation for the recessionary period 3/2001-11/2002. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on total compensation for the recessionary period 3/2001-11/2002. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ \text{diff}_t = a + b_1 \text{mkt}_t \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \varepsilon_t \]
Table 16: Abnormal Return for Long Bottom Decile of Excess Compensation and Short Top Decile for 2007-2009 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2007 Salary + Bonus Value-Weighted</th>
<th>(2) Year 2007 Salary + Bonus Equal-Weighted</th>
<th>(3) Year 2007 Total Compensation Value-Weighted</th>
<th>(4) Year 2007 Total Compensation Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.000359</td>
<td>-0.00008</td>
<td>0.000152</td>
<td>-0.00021</td>
</tr>
<tr>
<td></td>
<td>(1.14)</td>
<td>(-0.35)</td>
<td>(0.52)</td>
<td>(-0.91)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.23016 ***</td>
<td>0.06865 ***</td>
<td>0.006635</td>
<td>-0.12176 ***</td>
</tr>
<tr>
<td></td>
<td>(4.26)</td>
<td>(3.03)</td>
<td>(0.20)</td>
<td>(-5.69)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.19669 ***</td>
<td>0.21457 ***</td>
<td>-1.2081 ***</td>
<td>0.32398 ***</td>
</tr>
<tr>
<td></td>
<td>(-2.59)</td>
<td>(4.67)</td>
<td>(-2.12)</td>
<td>(8.88)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.37359 ***</td>
<td>0.13808 ***</td>
<td>-0.27289 ***</td>
<td>0.05969 ***</td>
</tr>
<tr>
<td></td>
<td>(-4.37)</td>
<td>(2.92)</td>
<td>(-4.73)</td>
<td>(1.45)</td>
</tr>
<tr>
<td>mom</td>
<td>0.09229 ***</td>
<td>0.02212 ***</td>
<td>0.07444 ***</td>
<td>-0.0230</td>
</tr>
<tr>
<td></td>
<td>(3.56)</td>
<td>(1.03)</td>
<td>(3.23)</td>
<td>(-1.01)</td>
</tr>
<tr>
<td>Observations</td>
<td>649</td>
<td>649</td>
<td>649</td>
<td>649</td>
</tr>
<tr>
<td>R²</td>
<td>0.24</td>
<td>0.18</td>
<td>0.21</td>
<td>0.24</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on cash compensation for the recessionary period 12/2007-6/2010. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess compensation for compensation regressions based on total compensation for the recessionary period 12/2007-6/2010. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[
diff_t = a + b_1 mkt\_rf_t + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t
\]
Table 17: Compensation Regressions for 2000 and 2007 with EIndex

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2000 Salary + Bonus</th>
<th>(2) Year 2000 Total Comp</th>
<th>(3) Year 2007 Salary + Bonus</th>
<th>(4) Year 2007 Total Comp</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salary + Bonus</td>
<td></td>
<td>Total Comp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.304***</td>
<td>6.480***</td>
<td>9.389***</td>
<td>4.706***</td>
</tr>
<tr>
<td></td>
<td>(8.10)</td>
<td>(5.80)</td>
<td>(11.52)</td>
<td>(4.27)</td>
</tr>
<tr>
<td>Log(1+ROA&lt;sub&gt;_t-1&lt;/sub&gt;)</td>
<td>-0.286 (-1.01)</td>
<td>-0.430 (-1.41)</td>
<td>0.098 (0.51)</td>
<td>-0.396 (-1.52)</td>
</tr>
<tr>
<td>Log(1+ret&lt;sub&gt;_t-1&lt;/sub&gt;)</td>
<td>0.172**</td>
<td>0.441***</td>
<td>0.087</td>
<td>0.262*</td>
</tr>
<tr>
<td></td>
<td>(2.30)</td>
<td>(5.43)</td>
<td>(0.80)</td>
<td>(1.78)</td>
</tr>
<tr>
<td>Log(1+ret&lt;sub&gt;_t-2&lt;/sub&gt;)</td>
<td>-0.085 (-1.03)</td>
<td>0.248***</td>
<td>-0.114</td>
<td>0.127</td>
</tr>
<tr>
<td></td>
<td>(5.30)</td>
<td>(2.77)</td>
<td>(-1.25)</td>
<td>(1.04)</td>
</tr>
<tr>
<td>Log(Rev&lt;sub&gt;_t-1&lt;/sub&gt;)</td>
<td>0.307***</td>
<td>0.465***</td>
<td>0.193***</td>
<td>0.463***</td>
</tr>
<tr>
<td></td>
<td>(11.72)</td>
<td>(16.35)</td>
<td>(10.36)</td>
<td>(18.38)</td>
</tr>
<tr>
<td>Log(std_ret&lt;sub&gt;_t-1&lt;/sub&gt;)</td>
<td>-0.243 (-0.59)</td>
<td>0.061</td>
<td>0.016</td>
<td>0.687</td>
</tr>
<tr>
<td></td>
<td>(0.14)</td>
<td>(0.02)</td>
<td>(0.14)</td>
<td>(0.66)</td>
</tr>
<tr>
<td>Ind_Code&lt;sub&gt;_t-1&lt;/sub&gt;</td>
<td>2.18***</td>
<td>3.19***</td>
<td>1.54**</td>
<td>2.10***</td>
</tr>
<tr>
<td>EIndex</td>
<td>0.042</td>
<td>0.040</td>
<td>0.042**</td>
<td>0.109***</td>
</tr>
<tr>
<td></td>
<td>(1.59)</td>
<td>(1.39)</td>
<td>(2.11)</td>
<td>(4.04)</td>
</tr>
<tr>
<td>Observations</td>
<td>685</td>
<td>686</td>
<td>813</td>
<td>818</td>
</tr>
<tr>
<td>R²</td>
<td>0.30</td>
<td>0.44</td>
<td>0.23</td>
<td>0.39</td>
</tr>
</tbody>
</table>

ROA<sub>_t-1</sub> is the return on assets for the prior year (net income divided by total assets), ret<sub>_t-1</sub> is the annual stock return for the prior year, ret<sub>_t-2</sub> is the annual stock return from two years prior, Rev<sub>_t-1</sub> is the firm’s sales from the prior year, std_ret<sub>_t-1</sub> is the standard deviation of monthly stock returns based on the prior four years, Ind_Code<sub>_t-1</sub> is the firm’s Fama French industry code from a portfolio of 48 industries (categorical variable; F Value is reported). Column (1) regression is for year 2000 with cash compensation (salary + bonus) as the dependent variable. Column (2) regression for year 2000 with total compensation as the dependent variable. Column (3) regression for year 2007 with cash compensation (salary + bonus) as the dependent variable. Column (4) regression for year 2007 with total compensation as the dependent variable. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *. F Value is reported for the categorical Fama French 48 Industry Code variable.

Log(compensation<sub>_t,i</sub>) = b<sub>0</sub> + b<sub>1</sub>Log(1 + ROA<sub>_t-1</sub>) + b<sub>2</sub>Log(1 + ret<sub>_t-1</sub>) + b<sub>3</sub>Log(1 + ret<sub>_t-2</sub>) + b<sub>4</sub>Log(Rev<sub>_t-1</sub>) + b<sub>5</sub>(std_ret<sub>_t-1</sub>) + b<sub>6</sub>Ind_Code<sub>_t-1</sub> + b<sub>7</sub>EIndex<sub>_t-1</sub> + ε<sub>_t,i</sub>
Table 18: Abnormal Return for Long Bottom Decile of Excess Compensation (EIndex) and Short Top Decile for 2001 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2000 Salary + Bonus</th>
<th>(2) Value-Weighted</th>
<th>(3) Equal-Weighted</th>
<th>(4) Year 2000 Total Compensation</th>
<th>(5) Value-Weighted</th>
<th>(6) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.000418</td>
<td>0.00078</td>
<td>*</td>
<td>0.000352</td>
<td>0.001016</td>
<td>**</td>
</tr>
<tr>
<td></td>
<td>(0.71)</td>
<td>(1.68)</td>
<td>(0.32)</td>
<td>(2.20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.23616</td>
<td>**</td>
<td>-0.02154</td>
<td>-0.37009</td>
<td>**</td>
<td>-0.11214</td>
</tr>
<tr>
<td></td>
<td>(-2.94)</td>
<td>(-0.32)</td>
<td>(-2.56)</td>
<td>(-1.62)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>smb</td>
<td>0.30120</td>
<td>***</td>
<td>0.18245</td>
<td>**</td>
<td></td>
<td>-0.11977</td>
</tr>
<tr>
<td></td>
<td>(2.93)</td>
<td>(2.04)</td>
<td>(-0.55)</td>
<td>(5.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hml</td>
<td>0.12575</td>
<td></td>
<td>-0.29061</td>
<td>0.34866</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.87)</td>
<td>(0.34)</td>
<td>(-1.08)</td>
<td>(2.57)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mom</td>
<td>0.07306</td>
<td>***</td>
<td>0.24091</td>
<td>***</td>
<td>0.01791</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.73)</td>
<td>(3.40)</td>
<td>(-3.30)</td>
<td>(0.26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td>188</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R^2</td>
<td>0.32</td>
<td>0.31</td>
<td>0.13</td>
<td>0.38</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions that include Bebchuk et al (2009) EIndex and are based on cash compensation for the recessionary period 3/2001-11/2001. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions that include Bebchuk et al (2009) EIndex and are based on total compensation for the recessionary period 3/2001-11/2001. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ diff_t = a + b_1 \text{mkt}_t \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \epsilon_t \]
Table 19: Abnormal Return for Long Bottom Decile of Excess Compensation (EIndex) and Short Top Decile for 2007-2009 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2007 Salary + Bonus Value-Weighted</th>
<th>(2) Year 2007 Total Compensation Equal-Weighted</th>
<th>(3) Year 2007 Total Compensation Value-Weighted</th>
<th>(4) Year 2007 Total Compensation Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.00027</td>
<td>0.000073</td>
<td>-0.00022</td>
<td>-0.00044</td>
</tr>
<tr>
<td></td>
<td>(0.59)</td>
<td>(0.22)</td>
<td>(-0.52)</td>
<td>(-1.30)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.23121 ***</td>
<td>0.12375 ***</td>
<td>0.01201</td>
<td>-0.09162 ***</td>
</tr>
<tr>
<td></td>
<td>(3.77)</td>
<td>(5.18)</td>
<td>(0.30)</td>
<td>(-3.61)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.21390 **</td>
<td>0.23384 ***</td>
<td>0.04165</td>
<td>0.41200 ***</td>
</tr>
<tr>
<td></td>
<td>(-2.46)</td>
<td>(4.74)</td>
<td>(0.63)</td>
<td>(9.26)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.36237 ***</td>
<td>0.22204 ***</td>
<td>-0.17101 **</td>
<td>0.11271 **</td>
</tr>
<tr>
<td></td>
<td>(-3.53)</td>
<td>(3.88)</td>
<td>(-2.40)</td>
<td>(2.11)</td>
</tr>
<tr>
<td>mom</td>
<td>0.09030 **</td>
<td>0.094344 ***</td>
<td>0.02019</td>
<td>-0.02647</td>
</tr>
<tr>
<td></td>
<td>(2.04)</td>
<td>(3.14)</td>
<td>(0.54)</td>
<td>(-0.80)</td>
</tr>
<tr>
<td>Observations</td>
<td>397</td>
<td>397</td>
<td>397</td>
<td>397</td>
</tr>
<tr>
<td>R²</td>
<td>0.27</td>
<td>0.24</td>
<td>0.06</td>
<td>0.28</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions on cash compensation that include Bebchuk et al (2009) EIndex and are for the recessionary period 12/2007-6/2009. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions that include Bebchuk et al (2009) EIndex and are based on total compensation for the recessionary period 12/2007-6/2009. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[
diff_t = \alpha + b_1 \text{mkt}_t \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \epsilon_t
\]
Table 20: Abnormal Return for Long Bottom Decile of Excess Compensation (with EIndex) and Short Top Decile for 2001 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 2000 Salary + Bonus</td>
<td>Year 2000 Total Compensation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
</tr>
<tr>
<td>$\alpha$</td>
<td>0.000359</td>
<td>0.000525</td>
<td>*</td>
<td>0.000484</td>
</tr>
<tr>
<td></td>
<td>(0.92)</td>
<td>(1.79)</td>
<td></td>
<td>(0.72)</td>
</tr>
<tr>
<td>$mkt - rf$</td>
<td>-0.09654</td>
<td>**</td>
<td>0.00845</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-2.03)</td>
<td></td>
<td>(0.22)</td>
<td></td>
</tr>
<tr>
<td>$smb$</td>
<td>0.38945</td>
<td>***</td>
<td>0.20007</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>(5.65)</td>
<td></td>
<td>(3.46)</td>
<td></td>
</tr>
<tr>
<td>$hml$</td>
<td>0.30093</td>
<td>***</td>
<td>0.23924</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>(3.39)</td>
<td></td>
<td>(3.35)</td>
<td></td>
</tr>
<tr>
<td>$mom$</td>
<td>0.17946</td>
<td>***</td>
<td>0.18367</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>(3.01)</td>
<td></td>
<td>(4.69)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>439</td>
<td></td>
<td>439</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.35</td>
<td></td>
<td>0.28</td>
<td></td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; $\alpha$ represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions based on cash compensation that include Bebchuk et al (2009) EIndex and are for the recessionary period 3/2001-11/2002. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions that include Bebchuk et al (2009) EIndex and are based on total compensation for the recessionary period 3/2001-11/2002. Column (4) returns are based on equal-weighted portfolios for the same time period. $t$-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

$$
diff_t = a + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \epsilon_t
$$
Table 21: Abnormal Return for Long Bottom Decile of Excess Compensation (with EIndex) and Short Top Decile for 2007-2009 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Year 2007 Salary + Bonus</th>
<th>(2) Year 2007 Total Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value-Weighted</td>
<td>Equal-Weighted</td>
</tr>
<tr>
<td>α</td>
<td>0.000301</td>
<td>-0.00006</td>
</tr>
<tr>
<td>(0.97)</td>
<td>(-0.29)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.21598 ***</td>
<td>0.08789 ***</td>
</tr>
<tr>
<td>(3.95)</td>
<td>(4.22)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.17987 **</td>
<td>0.19625 ***</td>
</tr>
<tr>
<td>(-2.37)</td>
<td>(4.65)</td>
<td>(0.39)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.35894 ***</td>
<td>0.11041 **</td>
</tr>
<tr>
<td>(-4.17)</td>
<td>(2.47)</td>
<td>(-3.16)</td>
</tr>
<tr>
<td>mom</td>
<td>0.07946 ***</td>
<td>0.02002</td>
</tr>
<tr>
<td>(3.16)</td>
<td>(1.01)</td>
<td>(0.63)</td>
</tr>
<tr>
<td>Observations</td>
<td>649</td>
<td>649</td>
</tr>
<tr>
<td>R^2</td>
<td>0.23</td>
<td>0.19</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions based on cash compensation that include Bebchuk et al (2009) EIndex and are for the recessionary period 12/2007-6/2010. Column (2) returns are based on equal-weighted portfolios for the same time period. Column (3) returns are based on value-weighted portfolios based on shorting firms in the highest decile of excess CEO compensation and going long the lowest decile of excess CEO compensation for compensation regressions that include Bebchuk et al (2009) EIndex and are based on total compensation for the recessionary period 12/2007-6/2010. Column (4) returns are based on equal-weighted portfolios for the same time period. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

\[
diff_t = \alpha + b_1 mkt_{t,rf} + b_2 hml_{t} + b_3 smb_{t} + b_4 mom_{t} + \epsilon_t
\]
Table 22: Abnormal Return for Long Bottom Decile of Option Compensation and Short Top Decile for 2001 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>-0.00045</td>
<td>0.000050</td>
</tr>
<tr>
<td></td>
<td>(-0.70)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.31668 ***</td>
<td>-0.07506</td>
</tr>
<tr>
<td></td>
<td>(3.34)</td>
<td>(-1.55)</td>
</tr>
<tr>
<td>smb</td>
<td>0.12933</td>
<td>0.32091 ***</td>
</tr>
<tr>
<td></td>
<td>(0.83)</td>
<td>(4.69)</td>
</tr>
<tr>
<td>hml</td>
<td>0.48747 ***</td>
<td>0.42400 ***</td>
</tr>
<tr>
<td></td>
<td>(2.77)</td>
<td>(4.81)</td>
</tr>
<tr>
<td>mom</td>
<td>0.38400 ***</td>
<td>0.35625 ***</td>
</tr>
<tr>
<td></td>
<td>(4.22)</td>
<td>(6.22)</td>
</tr>
</tbody>
</table>

Observations | 188 | 188 |
R² | 0.38 | 0.75 |

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation and going long firms in the bottom decile for the recessionary period 3/2001-11/2001. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ \text{diff}_t = a + b_1 \text{mkt}_t \text{rf}_t + b_2 \text{hml}_t + b_3 \text{smb}_t + b_4 \text{mom}_t + \varepsilon_t \]
### Table 23: Abnormal Return for Long Bottom Decile of Option Compensation and Short Top Decile for 2007 – 2009 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>-0.00029</td>
<td>-0.00006</td>
</tr>
<tr>
<td></td>
<td>(-0.96)</td>
<td>(-0.31)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.02610</td>
<td>0.02263</td>
</tr>
<tr>
<td></td>
<td>(-0.94)</td>
<td>(1.39)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.01778</td>
<td>0.23562 ***</td>
</tr>
<tr>
<td></td>
<td>(-0.32)</td>
<td>(7.32)</td>
</tr>
<tr>
<td>hml</td>
<td>0.26927 ***</td>
<td>0.29448 ***</td>
</tr>
<tr>
<td></td>
<td>(4.69)</td>
<td>(7.27)</td>
</tr>
<tr>
<td>mom</td>
<td>0.050854 *</td>
<td>-0.00857</td>
</tr>
<tr>
<td></td>
<td>(1.76)</td>
<td>(-0.39)</td>
</tr>
<tr>
<td>Observations</td>
<td>397</td>
<td>397</td>
</tr>
<tr>
<td>R²</td>
<td>0.11</td>
<td>0.48</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation and going long firms in the bottom decile for the recessionary period 12/2007-6/2009. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[
diff_t = \alpha + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t
\]
Table 24: Abnormal Return for Long Bottom Decile of Option Compensation and Short Top Decile for 2001 Recession and Post-Recession

Parameter Estimates

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha$</td>
<td>-0.00019</td>
<td>0.000024</td>
</tr>
<tr>
<td></td>
<td>(-0.38)</td>
<td>(0.09)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.18478 ***</td>
<td>-0.01248</td>
</tr>
<tr>
<td></td>
<td>(3.37)</td>
<td>(-0.40)</td>
</tr>
<tr>
<td>smb</td>
<td>0.16448 **</td>
<td>0.21528 ***</td>
</tr>
<tr>
<td></td>
<td>(2.09)</td>
<td>(4.16)</td>
</tr>
<tr>
<td>hml</td>
<td>0.43890 ***</td>
<td>0.31354 ***</td>
</tr>
<tr>
<td></td>
<td>(4.73)</td>
<td>(5.92)</td>
</tr>
<tr>
<td>mom</td>
<td>0.41028 ***</td>
<td>0.50941 ***</td>
</tr>
<tr>
<td></td>
<td>(6.74)</td>
<td>(14.22)</td>
</tr>
</tbody>
</table>

Observations | 439 | 439 |
R$^2$        | 0.34 | 0.71 |

The Data section provides details on the variables; $\alpha$ represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation and going long firms in the bottom decile for the recessionary period 3/2001-11/2002. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ diff_t = \alpha + b_1 mkt - rf_t + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t \]
Table 25: Abnormal Return for Long Bottom Decile of Option Compensation and Short Top Decile for 2007 – 2009 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha$</td>
<td>-0.00021</td>
<td>-0.00018</td>
</tr>
<tr>
<td></td>
<td>(-1.01)</td>
<td>(-1.22)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.06344 ***</td>
<td>-0.00490</td>
</tr>
<tr>
<td></td>
<td>(-2.74)</td>
<td>(-0.37)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.07343</td>
<td>0.19466 ***</td>
</tr>
<tr>
<td></td>
<td>(-1.58)</td>
<td>(6.73)</td>
</tr>
<tr>
<td>hml</td>
<td>0.17508 ***</td>
<td>0.21817 ***</td>
</tr>
<tr>
<td></td>
<td>(3.95)</td>
<td>(7.63)</td>
</tr>
<tr>
<td>mom</td>
<td>-0.01953</td>
<td>-0.06294 ***</td>
</tr>
<tr>
<td></td>
<td>(-1.13)</td>
<td>(-4.73)</td>
</tr>
</tbody>
</table>

Observations 649 649
R$^2$ 0.08 0.42

The Data section provides details on the variables; $\alpha$ represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation and going long firms in the bottom decile for the recessionary period 12/2007-6/2010. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[diff_t = a + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t\]
Table 26: Abnormal Return for Top Decile of Option Compensation Long Democratic and Short Dictatorship for 2001 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>0.000940</td>
<td>0.000739</td>
</tr>
<tr>
<td></td>
<td>(0.97)</td>
<td>(0.73)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.25177 **</td>
<td>-0.15550</td>
</tr>
<tr>
<td></td>
<td>(-2.16)</td>
<td>(-1.14)</td>
</tr>
<tr>
<td>smb</td>
<td>0.19604 *</td>
<td>0.37077 *</td>
</tr>
<tr>
<td></td>
<td>(0.82)</td>
<td>(1.82)</td>
</tr>
<tr>
<td>hml</td>
<td>0.39333 *</td>
<td>0.36563</td>
</tr>
<tr>
<td></td>
<td>(1.78)</td>
<td>(1.36)</td>
</tr>
<tr>
<td>mom</td>
<td>0.37241 ***</td>
<td>-0.59734 ***</td>
</tr>
<tr>
<td></td>
<td>(2.70)</td>
<td>(-4.05)</td>
</tr>
<tr>
<td>Observations</td>
<td>188</td>
<td>188</td>
</tr>
<tr>
<td>R²</td>
<td>0.43</td>
<td>0.15</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation with lowest EIndex (Dictatorship) and going long firms in the top decile of percentage of option compensation with highest EIndex (Democratic) for the recessionary period 3/2001-11/2001. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[ diff_t = a + b_1 mkt_{rf,t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t \]
Table 27: Abnormal Return for Top Decile of Option Compensation Long Democratic and Short Dictatorship for 2007 – 2009 Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \alpha )</td>
<td>0.000112</td>
<td>-0.00031</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(-0.51)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.15689 ***</td>
<td>0.06296 *</td>
</tr>
<tr>
<td></td>
<td>(2.80)</td>
<td>(1.96)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.36081 ***</td>
<td>-0.23838 ***</td>
</tr>
<tr>
<td></td>
<td>(-3.59)</td>
<td>(-2.74)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.44742 ***</td>
<td>-0.58923 ***</td>
</tr>
<tr>
<td></td>
<td>(-3.50)</td>
<td>(-5.58)</td>
</tr>
<tr>
<td>mom</td>
<td>0.07675</td>
<td>0.06587</td>
</tr>
<tr>
<td></td>
<td>(1.12)</td>
<td>(1.24)</td>
</tr>
</tbody>
</table>

| Observations | 397 | 397 |
| R\(^2\) | 0.14 | 0.25 |

The Data section provides details on the variables; \( \alpha \) represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation with lowest EIndex (Dictatorship) and going long firms in the top decile of percentage of option compensation with highest EIndex (Democratic) for the recessionary period 12/2007-6/2009. Column (2) returns are based on equal-weighted portfolios for the same timeframe. \( t \)-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

\[
diff_t = \alpha + b_1 mkt_{-}rf_t + b_2 hml_t + b_3 smb_t + b_4 mom_t + \epsilon_t
\]
Table 28: Abnormal Return for Top Decile of Option Compensation Long Democratic and Short Dictatorship for 2001 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>α</td>
<td>0.000491</td>
<td>-0.00006</td>
</tr>
<tr>
<td></td>
<td>(0.67)</td>
<td>(-0.08)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>-0.14650</td>
<td>-0.02791</td>
</tr>
<tr>
<td></td>
<td>(-1.36)</td>
<td>(-0.33)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.05947</td>
<td>0.40388 ***</td>
</tr>
<tr>
<td></td>
<td>(-0.42)</td>
<td>(3.10)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.29457 *</td>
<td>0.16018</td>
</tr>
<tr>
<td></td>
<td>(-1.71)</td>
<td>(1.04)</td>
</tr>
<tr>
<td>mom</td>
<td>0.71725 ***</td>
<td>-0.34703 ***</td>
</tr>
<tr>
<td></td>
<td>(5.90)</td>
<td>(-3.65)</td>
</tr>
<tr>
<td>Observations</td>
<td>439</td>
<td>439</td>
</tr>
<tr>
<td>R²</td>
<td>0.27</td>
<td>0.07</td>
</tr>
</tbody>
</table>

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation with lowest EIndex (Dictatorship) and going long firms in the top decile of percentage of option compensation with highest EIndex (Democratic) for the recessionary period 3/2001-11/2002. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *

\[
diff_t = a + b_1 mkt RF_t + b_2 hml_t + b_3 smb_t + b_4 mom_t + \epsilon_t
\]
### Table 29: Abnormal Return for Top Decile of Option Compensation Long Democratic and Short Dictatorship for 2007 – 2009 Recession and Post-Recession

<table>
<thead>
<tr>
<th>Variable</th>
<th>(1) Value-Weighted</th>
<th>(2) Equal-Weighted</th>
</tr>
</thead>
<tbody>
<tr>
<td>α</td>
<td>-0.00008 (-0.15)</td>
<td>-0.00029 (-0.70)</td>
</tr>
<tr>
<td>mkt - rf</td>
<td>0.17348 *** (3.73)</td>
<td>0.07725 *** (2.72)</td>
</tr>
<tr>
<td>smb</td>
<td>-0.28079 *** (-3.35)</td>
<td>-0.17776 ** (-2.34)</td>
</tr>
<tr>
<td>hml</td>
<td>-0.36429 *** (-3.86)</td>
<td>-0.47472 *** (-6.10)</td>
</tr>
<tr>
<td>mom</td>
<td>0.10936 ** (2.51)</td>
<td>0.11464 *** (3.25)</td>
</tr>
</tbody>
</table>

Observations: 649  
R²: 0.11

Parameter Estimates

The Data section provides details on the variables; α represents the daily abnormal return for the portfolio trading strategy. Column (1) returns are based on value-weighted portfolios based on shorting firms in the highest decile of percentage of stock option compensation with lowest EIndex (Dictatorship) and going long firms in the top decile of percentage of option compensation with highest EIndex (Democratic) for the recessionary period 12/2007-6/2010. Column (2) returns are based on equal-weighted portfolios for the same timeframe. t-values appear below parameter estimates in parenthesis. Statistical significance at the 1%, 5%, and 10% levels are indicated by ***, **, and *.

\[ diff_t = a + b_1 mkt_{rf_t} + b_2 hml_t + b_3 smb_t + b_4 mom_t + \varepsilon_t \]
Figure 1: Cumulative Portfolio Returns 1995-2009

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 2: Cumulative Portfolio Returns for 2001 Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 3: Cumulative Portfolio Returns for 2007-2009 Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 4: Cumulative Portfolio Returns 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 5: Cumulative Portfolio Returns 2007-2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 6: Bottom Decile / Top Decile Excess Compensation (Salary + Bonus) Cumulative Portfolio Returns for 2001 Recession

Panel A Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 7: Bottom Decile / Top Decile Excess Compensation (Total Compensation) Cumulative Portfolio Returns for 2001 Recession

Panel A Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 8: Bottom Decile / Top Decile Excess Compensation (Salary + Bonus) Cumulative Portfolio Returns for 2007-2009 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 9: Bottom Decile / Top Decile Excess Compensation (Total Compensation) Cumulative Portfolio Returns for 2007-2009 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 10: Bottom Decile / Top Decile Excess Compensation (Salary + Bonus) Cumulative Portfolio Returns for 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 11: Bottom Decile / Top Decile Excess Compensation (Total Compensation)
Cumulative Portfolio Returns for 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 12: Bottom Decile / Top Decile Excess Compensation (Salary + Bonus) Cumulative Portfolio Returns for 2007-2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal-Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 13: Bottom Decile / Top Decile Excess Compensation (Total Compensation) Cumulative Portfolio Returns for 2007-2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 14: Bottom Decile / Top Decile Excess Compensation including EIndex (Salary + Bonus) Cumulative Portfolio Returns for 2001 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 15: Bottom Decile / Top Decile Excess Compensation including EIndex (Total Compensation) Cumulative Portfolio Returns for 2001-2001 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 16: Bottom Decile / Top Decile Excess Compensation including EIndex (Salary + Bonus) Cumulative Portfolio Returns for 2007-2009 Recession

Panel A Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 17: Bottom Decile / Top Decile Excess Compensation including EIndex (Total Compensation) Cumulative Portfolio Returns for 2007-2009 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 18: Bottom Decile / Top Decile Excess Compensation including EIndex (Salary + Bonus) Cumulative Portfolio Returns for 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 19: Bottom Decile / Top Decile Excess Compensation including EIndex (Total Compensation) Cumulative Portfolio Returns for 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 20: Bottom Decile / Top Decile Excess Compensation including EIndex (Salary + Bonus) Cumulative Portfolio Returns for 2007-2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 21: Bottom Decile / Top Decile Excess Compensation including EIndex (Total Compensation) Cumulative Portfolio Returns for 2007-2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 22: Option Compensation and Firm Performance for 2001 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 23: Option Compensation and Firm Performance for 2007-2009 Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 24: Option Compensation and Firm Performance for 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 25: Option Compensation and Firm Performance 2007-2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Value-Weighted Returns on Bottom Decile and Top Decile Portfolios

Panel B  Equal-Weighted
Cumulative Equal Weighted Returns on Bottom Decile and Top Decile Portfolios
Figure 26: Option Compensation and Corporate Governance on Firm Performance for 2001 Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 27: Option Compensation and Corporate Governance on Firm Performance for 2007 – 2009 Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 28: Option Compensation and Corporate Governance on Firm Performance for 2001 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios
Figure 29: Option Compensation and Corporate Governance on Firm Performance for 2007 – 2009 Recession and One Year Post-Recession

Panel A  Value-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios

Panel B  Equal-Weighted
Cumulative Returns on Democratic and Dictatorship Portfolios