THREE ESSAYS IN CORPORATE FINANCE

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Three Essays in Corporate Finance

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SUMMARY

I focus on two areas of research for this dissertation. First, I look at incentives alignment, particularly of CEOs. Next I look at the effect of regulation on credit rating agencies.

This dissertation has three essays on corporate finance. The first essay is co-authored with Gary Caton, Jeremy Goh and Scott Linn. The essay is motivated by the CEO pay slice of Bebchuk, Cremers, Peyers (2011) and explores if the negative effect of pay slice on Tobin's Q, can be reduced or mitigated completely by the presence of friendly boards and equity incentive alignment. We find that this is the case, where connections between CEOs and board, and giving the CEO high equity portion of pay, reduces the negative effect of pay slice on Q.

The second essay is co-authored with Gary Caton and Jeremy Goh. We look at credit rating changes ability to predict operating profitability, particularly after Regulation FD and the Dodd-Frank Act. We find that this is the case, but only for specific sub groups of the rating changes.

The third essay looks at CEOs' involvement in earnings conference calls. Relative to their pay among the top-five executives, I find that CEOs who speak more than they are paid generate abnormal returns in the conference calls they speak at, and add firm value via Tobin's Q. They however are more susceptible to executive turnovers. Those who speak more than paid maintain their jobs.

CHAPTER ONE

The interaction effects of CEO power, social connections and incentive compensation on firm value

Abstract

We study the relation between company value and the interplay between CEO power, CEO equity incentives and the friendliness of the board of directors. Following Bebchuk, Cremers and Peyer (2011), we measure CEO power as the proportion paid to the CEO of the total compensation paid to the top five executives of the firm. We find that strong CEO equity incentives and the presence of a friendly board of directors both individually moderate the negative effect of CEO power on Tobin's q. Moreover, these variables also work together. We find that firm value tends to increase when equity incentives are combined with a friendly board. We conclude that the negative effects of CEO power on firm value are limited to firms with weak CEO equity incentive compensation plans and arms-length boards of directors.

The interaction effects of CEO power, social connections and incentive compensation on firm value

1. Introduction

We study company value at the intersection of CEO power, board friendliness, and CEO incentive compensation. Using the CEO pay slice (CPS) to measure CEO power, Bebchuk, Cremers and Peyer (2011) show that powerful CEOs are associated with lower company value. This finding is consistent with their view that powerful CEOs use their influence over the board of directors to reduce the board's monitoring effectiveness, allowing the CEO to extract rents from shareholders. Westphal (1999) points out, however, that directors are not merely monitors of managerial behavior, but that they have the equally important role of using their combined experience and expertise to effectively advise management. These two roles, monitoring and counsel, can be at odds with each other. Strong monitoring requires an arms-length relationship between the board and the CEO, while effective advice and counsel is more collaborative and social. Adams and Ferreira (2007), model this tension between the board's monitoring and advising roles using information sharing between the CEO and board as the key decision element. CEOs are reluctant to share information with an arms-length or adversarial board, while full information is precisely what the board needs to provide effective advice. In Adams and Ferreira's model, shareholders benefit from a friendly, collaborative relationship between the CEO and the board as long as the value of better advice, derived from more complete information sharing, is greater than the value lost through economic rents extracted by the CEO due to weaker monitoring. Finally, Westphal (1999) argues that through well-structured CEO incentive compensation plans, companies can enjoy enhanced value inherent in effective board advising while mitigating value losses due to weaker board monitoring. We hypothesize that friendly boards can increase value

through enhanced advice and counsel when the cost of weaker monitoring is mitigated through strong CEO equity incentive compensation.

We find that the presence of a friendly board of directors and strong CEO equity incentive compensation each individually moderate the negative effect of CEO power on firm value reported by Bebchuk et al. (2011). These two characteristics also work together. We find that firm value increases when equity incentives are combined with a friendly board. We conclude that the negative effects of CEO power on firm value are confined mainly to firms with weak CEO equity incentive compensation plans. Due to the dominance of agency theory, the monitoring function of the board of directors has received most of the attention from finance scholars. The board's advising and consultation function, while more fully explored in the management literature, is less well developed in the finance literature. We are the first to study the combined effects of board friendliness and incentive equity compensation on the interplay between CEO power and company value.

In Section I, we review the related literature and further develop our hypotheses. We explain the methodology for testing our hypotheses in Section II. Section III contains a discussion of our sample selection and provides a brief description of our sample. We present and discuss the results in Section IV. Section V presents a summary of the paper and our conclusions.

2. Literature Review and Hypothesis Development

2.1 CEO power and board monitoring

Increasingly, "outsized" CEO compensation is increasingly becoming an important topic in academia, the popular press, and importantly, in government. For example, Howell (2013) writes that when CEO compensation becomes too high, "in some cases reaching 500 times (that) of the average worker", CEOs and business in general lose the respect of the public. The Dodd-

Frank Wall Street Reform and Consumer Protection Act includes a political response to perceived "outsized" CEO compensation which requires shareholder advisory votes on executive pay. These rules were adopted by the SEC in 2011 (SEC (2011)). In advocating for increased shareholder say in the compensation of their firms' executives, Bebchuk and Fried (2006) argue that CEO pay is largely insensitive to performance, and that current corporate governance processes give managers undue power over their own pay levels and structure. Bebchuk, Cremers and Peyer (2011) examine a new measure of this CEO power directly, the CPS, which is defined as the proportion of combined total compensation of the top five executives earned by the CEO alone. Although computed using compensation data, Bebchuk et al. (2011) present the CPS as a measure of the board's perception of the importance or power of the CEO rather than a measure of his compensation. In this framework, the CEO may be *important to the firm* due to the firm's need for a talented, decisive leader, in which case a high CPS may indicate a high-value, strategic leader. Or the CEO may be *important in the firm* due to his power and influence over the board and the firm's other executives, in which case a high CPS may indicate a low-value, entrenched manager. Consistent with the latter, Bebchuk et al. (2011) show a significantly negative average relation between CPS and industry-adjusted Tobin's q, which they attribute to the agency problem of a powerful CEO extracting rents from a captured board to the detriment of shareholders. Using these results, the authors argue for stronger, more independent boards of directors and more direct shareholder control, both of which are intended to more closely monitor management.

According to the Corporate Director's Guidebook (2011), however, corporate directors "have a responsibility to act in the best interests of the corporation and its shareholders" and they "fulfill this responsibility through two primary board functions: decision-making and oversight" (see section 3). In general, the oversight function involves monitoring the company's management

and performance, while the decision-making function involves familiarity with and approval of corporate policy and strategy. These dual roles can be contradictory. Unbiased monitoring implies that directors maintain an arms-length, outsider-dominated relationship with the company's management (CEO). The monitoring capabilities of directors who are too dependent on or too friendly with the CEO may be compromised by this relationship (Bebchuk and Fried (2006)) leading to a captured board and consequential value decreases. Providing valuable advice and counsel on policy and strategy, on the other hand, requires trust between the CEO and the board for two closely related reasons. First, in order to provide timely, actionable advice the board depends on the CEO to reveal all pertinent information. Such information could potentially portray the CEO in a negative light. Ultimately, the CEO will only disclose full information when he trusts the board to use this information to benefit the company rather than to simply attack him (see Holmstrom (2005)). Without such trust, an arms-length, outsider-dominated board may not receive full information until it is released publicly or at time of crisis. And second, in order for the board to provide effective advice the CEO must reveal the need for and then accept and implement the recommendations of the board. CEO reluctance to disclose pertinent information to the board, or to ask for and then accept the board's recommendations limits the quality and usefulness of board advice. Adams and Ferreira (2007) model this tension between the monitoring and advisory roles of the board. In their model, both the value of the board's advice and the intensity of its monitoring increase as the CEO reveals more information. The increase in advice benefits both the firm and the CEO as firm performance increases, but increased monitoring intensity is personally detrimental to the CEO. The conclusion from the model is that shareholders benefit from a more friendly board when the marginal loss from reduced monitoring is less than the marginal gain obtained when the CEO more freely shares information with and thereby obtains

better advice and counsel from a CEO-friendly board. We test the deleterious effect of CEO power on company value.

2.2 Friendly boards

Many prior studies examine the effects of friendly boards of directors (See Bebchuk & Weisbach (2010) for survey of board research). Many of those define board structure as the proportion of inside versus outside directors (Raheja (2005), Coles, Daniel, Naveen (2008), Linck, Netter, Yang (2008)). Insiders are defined as directors who are also employees or former employees of the company, each of whom may be expressly dependent on the CEO. Outsiders include both directors who are fully independent of the firm, and gray directors whose outsider status is unclear. This latter group includes directors with business ties to the company and relatives of company officers. In this context, objectively defining a friendly board capable of providing valuable and timely advice, and in whom the CEO is willing to divulge full information, is difficult. Board insiders who are current employees are obviously subordinate to the CEO, which implies both a lower level of experience and a possible reluctance to "challenge the boss." Board insiders may also include the former CEO, who may have the experience to provide advice, but may be reluctant to interfere with the new CEO or whose interference the new CEO may resent. Board outsiders are assumed to be arms-length monitors, and are therefore not friendly by definition. Using a relatively new database, we redefine board structure to include directors who are "friendly" with and those who are "not friendly" with the CEO (Barnea & Guedj (2007), Fracassi & Tate (2012)) Boardex, developed by Management Diagnostics Ltd., contains biographical information on directors and senior executives throughout the world (see corp.boardex.com). The biographical data contained in the Boardex database includes educational details such as school, degree earned and graduation date; employment history; current

employment details including board memberships in other companies; and other social activities. Using this comprehensive database, we define a friendly director as an individual who has a high probability of actually being a friend of the CEO. Specifically, either the two individuals went to school together, worked together in the past, currently serve on a third company's board, or serve together as active officers or board members of a social club, philanthropic organization, athletic club, or other civic organization. With this history of being prominent in each other's social networks, it is likely that the CEO and the socially connected director know and trust each other. According to a pure form of agency theory, this situation would result in an entrenched manager who takes advantage of or colludes with such friendly directors in order to extract rents from stockholders. In the presence of strong equity incentive compensation, which may mitigate such agency problems, a well-motivated manager combined with a friendly, collaborative board of directors may be better equipped to maximize company value.

The question of trust has been examined in the management and sociology literature. Uzzi (1996) uses field research of apparel firms in New York's garment district to guide his development of a theory of trust and embeddedness. As defined by Uzzi, embeddedness is "the process by which social relations shape economic action." The effect of social relations is largely ignored by the economic logic of market exchange between arms-length, atomistic players. Uzzi finds embeddedness has "three features: trust, fine-grained information transfer, and joint problem-solving." Becoming embedded in the network implies having developed trust with network members through a series of mutual, non-obligatory, nonmarket exchanges. After having developed trust with the members of the network through these exchanges, trust becomes the governing mechanism through which behavioral expectations are formed and ultimately judged. Fine-grained information shared with network members is, according to Uzzi, detailed and

strategic, and increases the effectiveness and responsiveness of network members. Sharing this proprietary information requires absolute trust that the information will not be misused, while using the information requires trust in its accuracy. Joint problem-solving allows network members to coordinate actions and work out problems "on the fly" providing quicker and more direct feedback than can arms-length, contract-based relationships. Relating these findings to the context of corporate boards, it would be difficult for an outsider-dominated board to develop enough trust to induce the CEO to provide the fine-grained information the board needs to provide effective advice and consultation on policy and strategy (i.e., on-the-fly problem solving). This is where having a friendly director can facilitate trust-building between the CEO and the board, particularly if the board believes the CEO has strong alignment of incentives with shareholders. Westphal (1999) finds that higher levels of long-term, equity-based compensation, can enhance the connection between CEO-Board social ties and board advice while also reducing the negative aspects of weakened monitoring.

2.3 CEO monitoring through incentive compensation

Reduced formal board monitoring by a friendly board does not necessarily imply an increase in agency problems such as entrenchment and ultimately lower firm value. Researchers have proposed many solutions to a firm's agency problem including internal control mechanisms such as leverage (Jensen (1986)), managerial ownership (Stulz (1988)), and the takeover market (Jensen (1986) and Bebchuk, Cohen and Farrell (2009)). Bebchuk Cremers and Peyer (2011) examine each of these mechanisms empirically finding that firm leverage and a given manager's protection from the takeover market have negative effects on firm value measured using industry-adjusted Tobin's q, while finding no relation between firm value and managerial ownership. After accounting for each of these control mechanisms, Bebchuk et al. (2011) report a strong negative

relation between firm value and CEO power. Apparently, these three mechanisms are ineffectual in controlling the value-destroying agency problem associated with powerful CEOs.

One often proposed solution to the agency problem not examined by Bebchuk et al. (2011) is executive equity incentive compensation. Jensen and Murphy (1990) measure the sensitivity of CEO compensation to changes in share prices and find the average CEO's wealth increases by $3.25 for each $1,000 increase in firm value. Although this finding is statistically significant, Jensen and Murphy (1990) conclude that this level of pay-performance sensitivity is not high enough to induce incentive alignment with shareholders. Garen (1994) shows that Jensen and Murphy's conclusion about the level of pay-performance sensitivity holds little meaning due to high between-firm variability in measuring pay-performance sensitivity, and develops a principle-agent model that predicts significant between-firm variability in optimal pay-performance sensitivity. In his model, the variability in optimal pay-performance sensitivity is due to the underlying variability of the firm's profits. The higher the inherent variability in the firm's business (industry), the lower the optimal level of pay-performance sensitivity in the CEO's compensation contract, and the higher (lower) the salary (equity) component in his contract. Garen's modified model, which includes CEO choice of investment projects, indicates that CEO decision making becomes more risk-averse with a high pay-performance compensation contract. Garen's empirical work is consistent with his predictions: higher company variability tends to reduce pay-performance sensitivity and increase the salary component implying that pay-performance sensitivity may be company- or industry-specific. Using a new empirical methodology that explicitly accounts for this heterogeneity in compensation contracts across firms, Hermalin and Wallace (2001) find a significant positive relation between pay and performance. Mehran (1995) provides evidence supporting the role of equity incentives in inducing managerial

performance, reporting that firm performance is positively related to the percentage of compensation that is equity-based. We test the interaction between CEO equity incentive compensation, and its implied substitution for strong board monitoring, on the detrimental effects of CEO power on company value.

2.4 Hypotheses

Our first hypothesis relates to CEO power and company value. A powerful CEO may use that power to extract economic rents from the company and thereby reduce company value. On the other hand, a talented, well-motivated CEO intent on adding value to the company she leads needs the decision-making authority or power to do so. Following Bebchuk et al. (2011), our first hypothesis posits a negative average relation between CEO power and company value, but we do not expect this relation to hold in all cases. Our other hypotheses are related to the possible mitigation of this negative effect of CEO power on company value. If the board of directors is friendly with the CEO, it could imply either an entrenched, value-decreasing relationship or a collaborative, value-increasing relationship. While we do not posit the direction of the relation, in null form our second hypothesis states that social connections between the CEO and board of directors do not change the negative effect of CEO power on company value. If the CEO's interests are aligned with those of shareholders through a well-structured equity incentive compensation plan, we expect a mitigation of the negative effect of CEO power on company value. Therefore, we posit in our third hypothesis that powerful CEOs whose compensation plans contain a larger equity component will lead more valuable companies, while powerful CEOs compensated more with salary and bonuses will preside over less valuable companies. That is, when CEO's incentives are aligned with the interests of shareholders, we expect the negative effect of CEO power on company values to be reduced. Our final hypothesis combines the previous hypotheses:

when a friendly board of directors relies on a well-structured equity compensation plan for CEO monitoring, that this combination will lead to effective CEO-board collaboration, a self-monitored CEO, and consequentially higher company values.

3. Empirical Methods

We study the moderating effects of and interaction between the friendliness of the board of directors and CEO equity incentive compensation on the relation between firm value and CEO power. As noted above, following Bebchuk, et al. (2011), we use ***CPS*** to measure CEO power and Tobin's q (***Q***) to measure company value. CPS is the ratio of total CEO compensation to the combined total compensation of the top five executives in the firm, including the CEO. Q is the ratio of the firm's market value of assets, defined as total book value of assets less both book value of equity and deferred taxes plus market value of equity, to the firm's total book value of assets. We use the CEO's fraction of equity compensation (***FEC (ratio)***) to measure CEO incentive compensation, defined as the fraction of the CEO's annual incentive equity compensation (grants of stock, restricted stock and the Black-Scholes value of option awards) to his total annual compensation. We also use **FEC** which is a dummy variable that equals one if FEC (ratio) is above the industry-year median. In developing our board friendliness measure, we follow Fracassi and Tate (2012) who identify four basic social ties included in Boardex data, (i) current employment (typically external directorships in other firms), (ii) overlapping past employment in a previous mutual employer, (iii) education (which we define as same school, same graduation year and same degree), and (iv) other activities (active membership in clubs, organizations or charities)[1] Our primary measure of board friendliness, ***CONNEX***, is a dummy variable that equals one when at least one outside director has at least one of the four connections listed above. As a robustness

[1] See Fracassi and Tate (2012) for a more full description of this rich database.

test, we repeat our tests using the ratio of socially connected directors to total outside directors (CONN (ratio)). Due to potential endogeneity among these variables, we lag all independent variables.

For control variables, we follow Bebchuk, et al. (2011). ***E Index*** is a measure of corporate governance developed by Bebchuk, Cohen and Farrell (2009), which is simply the number of antitakeover provisions present in a given company's charter.[2] The greater the E Index, the more protected or entrenched is management. In general, stronger corporate governance implies a lower E Index. ***SIZE*** is the natural logarithm of the firm's total assets. ***ROA*** is the ratio of a firm's operating income before depreciation to total assets. ***Leverage*** is the ratio of a firm's long-term debt to total assets. ***R&D*** is the ratio of a firm's research and development expense to sales. ***R&D MISSING*** is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. ***CAPEX*** equals a firm's capital expenditures to total assets. **Insider Ownership** is the fraction of shares held by insiders as reported by Execucomp. **Company Age** is the current year minus the year in which the company was first listed on CRSP. **Diversified** is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. **Founder** is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. **Abnormal Total Compensation (Log)** is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. **Relative Equity Compensation** is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. **CEO Ownership ≥ 20%** is a

[2] Appendix A describes the governance characteristics that are included in the calculation of the entrenchment index. The data on governance characteristics are from the IRRC/Risk Metrics Group, Inc. databases. This data is collected by IRRC/Risk Metrics every two or three years. We use the lagged measure of E index in our analysis to avoid forward-looking bias.

dummy variable that equals one if the CEO holds at least 20% of outstanding shares. **CEO Tenure** is the number of years since becoming CEO. **CEO Outsider** is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. **CEO is Chair** is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp. **CEO is Only Director** is a dummy variable that equals one if the CEO is the only executive officer on the board. **Number of VPs** is the number of vice presidents among the top-five executives.

Our empirical methodology is similar to that of Bebchuk, et al. (2011), who run multiple OLS regressions with pooled time series and cross-sectional data using various combinations of firm and year fixed-effects dummies. As their measure of firm value, Bebchuk, et al, (2011) industry-adjust Tobin's q in order to control for industry shocks. Gormley and Matsa (2014) criticize industry-adjusting dependent variables to control for unobserved heterogeneity when used in regression analysis showing that such methods produce inconsistent estimates and can even reverse estimated relations between variables. Our first regression replicates that of Bebchuk et al. (2011), and uses industry-adjusted Tobin's q as the dependent variable, while all of our subsequent regressions follow the suggestion of Gormley and Matsa (2014) using raw, unadjusted Tobin's q, instead. All regressions use time and industry fixed-effects dummy variables, as suggested by Gormley and Matsa (2014), to control for unobserved heterogeneity in time and industry. We do not use firm fixed-effects variables since several of our independent variables (e.g., E index and CONNEX) have little within-firm variability over time.

Our primary tests involve the use of various interaction terms. For example, we interact the dummy variable CONNEX with the continuous variable CPS in order to determine whether the negative effect of CEO power on firm value is moderated in the presence of a friendly board

of directors. Interaction terms are relatively easy to interpret when one of the variables is dichotomous. In this case, the estimated coefficient on the interaction term CONNEX x CPS, which we call the second-order effect, will capture the effect of CPS on Q when the board is friendly, while the coefficient on CPS alone will capture the effect of CPS on Q when the board is arms-length. The effect of CPS on Q depends on one of only two conditions: whether CONNEX equals one or zero. Interaction terms involving two continuous variables, however, are more difficult to interpret because each of the variables can take on an infinite number of possible values, and their interaction effects are conditional on a potentially infinite number of values. Because of this, it is advantageous to center the variables. In addition to improving the interpretation of the resulting estimates, centering the continuous variables to be interacted can also reduce the collinearity between the interaction variable and the two related independent variables (Afshartous and Preston (2011)). We choose to center our interacted continuous variables at their mean values. After centering the independent variables, interpretation of their estimated coefficients, the first-order or non-interaction effects, changes from the effect on Y when other variables equal zero to the effect on Y when other centered variables equal their mean values. Similarly, interpretation of the interaction or second-order effect becomes the effect of one centered independent variable when both centered independent variables are at their mean value. Due to this conditionality, we illustrate our results using interaction plots that allow the centered independent variables to vary.

4. Sample Selection and Description

Our initial sample consists of all firm-years for which data is available from various sources over the eleven years from 2000 through 2010. Our first data filter was availability of executive compensation data on Execucomp. Since we study the impact of various CEO-related factors on firm value, we require the CEO to be in office over an entire sample year. Otherwise, our tests

may include some data for company performance over which the CEO had little or only partial control that year. Following Bebchuk, et al. (2011), we define the CPS as the proportion of the total compensation of the top five executives allocated to the CEO. Therefore, Execucomp must contain compensation data for the top five executives. Merging Execucomp data with that contained within Compustat resulted in a sample containing 22,056 firm-years. Merging our Boardex database into this preliminary sample resulted in 11,514 firm-year observations. And finally, merging with the E index data computed from IRRC/Risk Metrics Group, data, results in a final sample of 7,143 firm-year observations.

Table I presents various descriptive statistics for our sample. Sample firms have mean (median) total assets of around $2.7 billion ($2.3 billion), and mean (median) Tobin's q of about 1.8 (1.4). More interesting, CEO's garner a large part of total executive pay with a mean (median) CPS of 39.5% (39.6%). Sample CEOs have strong equity incentives with mean (median) CEO fraction of equity compensation (FEC) of 43.5% (46.5%). CONNEX is about 64%, implying that social connections between the CEO and board of directors are present in about 64% of our sample firms. CONNEX (ratio) indicates that about 19% of the outside directors at the average firm are socially connected to the CEO.

INSERT TABLE I ABOUT HERE

Table II provides the distribution of social connections through time for our sample. Each row represents a different sample year, and for each year we show the total number of connections between the CEO and the board of directors, and the proportions of firms with no connections, one connection, two connections and greater than two connections. The percentages reported in each row sum to 100%. Focusing on the sample totals in the last row, note that about 36% of the sample firm-years had zero connections between the CEO and the board, implying that about 64% had at

least one connection. Furthermore, 22% had one connection, 12% had two connections, and about 28% had more than two such connections.

INSERT TABLE II ABOUT HERE

Table III provides a matrix of estimated correlation coefficients for our variables. Among the independent variables, in general SIZE appears to be the variable with the highest correlations with other independent variables. The largest individual correlation coefficients are between Q and ROA (59%), capital expenditures and return on assets (46%), and Q and RnD (41%), which all seem intuitive. There is also a significantly positive correlation between SIZE and social connections (32%) indicating that larger firms are more likely to have social connections between the CEO and board of directors.

INSERT TABLE III ABOUT HERE

5. Results

5.1 Firm value and the CEO pay slice

We begin our analysis by replicating Bebchuk et al. (2011), the results of which we report in the first column of Table IV. Using the same control variables, and including year and industry dummy variables, we find a statistically significant negative relation between CPS and lagged, industry-adjusted Tobin's q. This is consistent with Bebchuk et al.'s (2011) finding that large CPS is related to lower industry-adjusted Tobin's q. As noted above, Gormley and Matsa (2014) show that using industry-adjusted dependent variables in pooled time-series cross-sectional regression analyses produces inconsistent coefficients and potentially incorrect inferences. Gormley and Matsa (2014) show that using unadjusted dependent variables instead along with the fixed-effects methodology provides consistent estimated coefficients and correct inferences. Following

Gormley and Matsa (2014), we re-estimate our Bebchuk et al. (2011) replication using the raw, unadjusted Q and year and industry fixed-effects dummy variables. The column 2 results for several of the variables, when contrasted with the industry-adjusted replication results in column 1, highlight Gormley and Matsa's (2014) critique. For the R&D-missing dummy variable, the coefficient reverses from a statistically significant (t-statistic=8.06) positive value to a statistically significant (t-statistic=-3.20) negative value. For the size variable, the coefficient reverses from a statistically significant (t-statistic=5.04) positive value to a statistically insignificant (t-statistic=-0.95) negative value. Most importantly, the estimated coefficient for CPS changes from a statistically significant -0.231 (t-statistic=-3.61) to an insignificant -0.054 (t-statistic=-0.85). This result casts doubt on Bebchuk et al. (2011)'s conclusion relating higher levels of CPS with lower firm value.

Despite the statistical insignificance of this result, we hypothesize that CPS can indicate the importance of the CEO to the firm (e.g., talent) and consequential relative value increases in some companies, while in others it may signal the importance of the CEO in the firm (e.g., entrenchment) and consequential value decreases. If CEO power is distributed somewhat equally, and are pooled together, we might expect to find insignificant results for the full sample as the value increases for one group tend to wash out value decreases for the other. We examine two variables, CEO incentive equity compensation and CEO social connections with the board of directors, which may help us distinguish between high CPS due to entrenchment from high CPS due to talent. The variable FEC, which as noted above we define as the fraction of a CEO's total annual compensation that comes in the form of incentive equity compensation, measures the CEO's economic incentive to act in the best interests of shareholders. To the extent that compensation can motivate managers in this way, higher FEC will reduce agency costs and lead

to higher firm value. The relation between CEO social connections with the board of directors, CONNEX, however, is not as clear. Such social connections could produce a "captured" board and thus lead to entrenchment of the CEO, or it could indicate a well-functioning relationship between a properly motivated CEO and a friendly board. We report the relation between each of these and firm value in columns 3 and 4 of Table IV. The estimated coefficient on FEC reported in column 3 indicates a positive relation between firm value and incentive alignment (t-statistic=6.07), which is consistent with the hypothesis that the market recognizes the agency cost-reductions associated with incentive equity compensation and rewards companies with such incentive structures with higher valuations. The estimated coefficient on CONNEX, however, is insignificantly different from zero (t-statistic=0.13) indicating that either CEO social connections with the board do not have value implications or that the effect is more complex than presently modeled.

INSERT TABLE IV ABOUT HERE

5.2 The interaction effects of incentive equity compensation and social connections.

Next, we test the interaction effects of incentive equity compensation and social connections on firm value. In Section II above, we posit that strong compensation incentives can differentiate between firms with talented, powerful (i.e., high-CPS) CEOs and firms with entrenched, powerful CEOs. Well incentivized CEOs are more likely to be important to the firm by using the power indicated by their large pay slice to make full use of all the firm's resources, including the board of directors' knowledge and experience, to increase firm value. Column 1 of Table V reports the results of interacting FEC with CPS. Note first the positive relation between firm value and FEC indicating positive effects of equity compensation regardless of CEO power. The positive estimated coefficient on this interaction term indicates that higher CEO incentive

compensation coupled with higher CPS tends to increase firm value. This finding is consistent with our hypothesis that powerful CEOs with strong incentive compensation use their power to increase firm value. Importantly, note that once this interaction is accounted for the estimate on CPS is significantly negative indicating that the high CPS of CEOs with lower levels of incentive compensation tend to be associated with lower firm value, which is consistent with entrenchment of powerful but poorly incentivized CEOs.

In Section II above, we suggest that a friendly board can indicate either a captured board and an entrenched CEO who is important in the firm, or a collaborative board and a talented CEO who is important to the firm. If the former is true, our interaction of the social connections dummy with CPS should be negative indicating a reduction in firm value when social connections are present. If the latter is true, however, the interaction term should carry a positive estimated coefficient as collaboration between a friendly board and the CEO leads to higher firm value. Column 2 of Table V reports the results of interacting CONNEX with CPS. Note first the insignificant coefficient on CONNEX indicating no independent relation between firm value and social connections between the CEO and board of directors. The positive estimated coefficient on the interaction term, however, is consistent with the hypothesis that when socially connected to the board, powerful CEOs tend to use their power in ways that leads to increased firm value. Note again that once the interaction is accounted for the relation between CPS and firm value is negative which is consistent with deleterious effects on firm value of powerful CEOs combined with arms-length boards.

Building on Adams and Ferreira (2007), Uzzi (1996), and Westphal (1999), our primary hypothesis is that firms with a friendly board and a powerful, well-motivated CEO with a friendly board will experience the benefits of a trust relationship between the board and management

without the agency costs that might normally be associated with weak monitoring. In these firms the powerful CEO feels more comfortable sharing full information with and asking for input from the friendly board while potential agency problems are mitigated due to the self-monitoring provided by the compensation contract. Column 3 of Table V reports the results of a regression that includes the interaction terms between both CPS and FEC, and CPS and CONNEX. , and shows that the estimated coefficients on both interaction terms maintain their significantly positive relation to firm value. This is consistent with our hypothesis that powerful CEOs, when combined with a friendly, collaborative board of directors and the self-motivation derived from strong incentive equity compensation, add value separately and together to the firms they manage. Also note the continued strong positive relation between firm value and higher equity compensation. The estimated coefficient on CPS continues to be strongly negative indicating that firm value tends to be lower when managed by powerful CEOs working without the benefits of a friendly board of directors and a strong incentive equity compensation plan.

Our next regression directly tests our hypothesis. If a well incentivized, self-monitored CEO makes use of the power indicated by a high CPS coupled with a collaborative board of directors with which he shares full information and from which he obtains effective advice and counsel, a third-order interaction term between these three variables would be significantly positive. That is, if equity incentive compensation and social connections between the CEO and firm directors together moderate the negative effects associated with a powerful CEO, the estimated coefficient on a third-order interaction term between these three variables should be significantly positive. Column 4 reports the results of this third-order interaction, and are consistent with our hypothesis. If the CEO is connected to the board, firm value increases as both

the proportion of equity compensation and CPS increase. In summary, firm value increases with increases in CPS and FEC, but only in the presence of a friendly board of directors.

INSERT TABLE V ABOUT HERE

5.3 Sub-sample analysis and endogeneity

Due to the endogeneity concerns between Q, CPS and FEC (ratio), and with high correlation between CPS and FEC (ratio), we split the sample into quintiles of FEC (ratio), looking at only the top and bottom quintile of FEC (ratio)[3]. We repeat the regressions of Q on CPS, Q on CONNEX, and the interaction regression of Q on CONNEX x CPS. In the low FEC sample (bottom quintile), CPS remains significantly negative, but in the high FEC sample (top quintile), CPS is no longer significant. In the interaction regression, the interaction term for the low FEC sample is negative, though no longer significant. The interaction term in the high FEC sample is positive, showing that the presence of high FEC, CONNEX attenuates CPS effect on Q.

INSERT TABLE VI ABOUT HERE

We then run instrumental variable regression, to attempt to address the endogeneity concerns with CPS and Q. We follow Bebchuk et. al. (2011) is choosing the instrumental variables. They are the industry median CPS, the number of vice presidents in the top-five executives, and a dummy variable for CEO is the only director. The results point to the same conclusion. The interaction term of CONNEX x CPS for the low FEC sample is significantly negative, while the interaction term for the high FEC sample is no longer significant.

INSERT TABLE VII ABOUT HERE

[3] We also used the median of FEC (ratio) to split the sample. The results are similar.

6. Conclusion

Using pay slice to indicate CEO power, Bebchuk et al. (2011) show that powerful, entrenched, overpaid CEOs are associated with diminished company values. A high pay slice, however, could also indicate a decisive, talented, fairly-compensated CEO. We develop a model that relies on CEO incentive compensation and board friendliness to separate these two CEO types. Boards of directors are tasked with seemingly contradictory functions of both monitoring and advising management. Effective monitoring implies an arms-length relationship, while effective advising requires full disclosure of pertinent information. Full disclosure, however, requires management to trust that directors will use the information to help the company and not to attack management. In our interaction model CEO incentive compensation substitutes strong self-motivation for strong, arms-length board monitoring, while social connections between management and the board produces trust facilitating full information disclosure.

Our empirical model tests the effects on company value of incentive compensation and board friendliness, interacted independently with CEO power, and interacted together with CEO power. Independently, incentive compensation is associated with higher company value, while board friendliness is not. When examined together, powerful CEOs with relatively strong incentive compensation increase value, while powerful CEOs with relatively weak incentive compensation tend to decrease company value. Similarly, companies with powerful CEOs and a friendly board of directors tend to have higher values than companies with powerful CEOs who do not have a social connection with the board. The estimated coefficient on a third-order interaction between incentive compensation, board friendliness and CEO power indicates that powerful CEOs with both friendly boards and stronger incentive compensation are associated with higher value. Taken together, these findings are consistent with our model of incentive

compensation acting to mitigate the agency costs associated with friendly boards of directors allowing those boards to provide effective advice and consultation, in conjunction with full information disclosure from the CEO to the board resulting from a higher level of trust, and ultimately higher company value.

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Appendix A

Components of the Bebchuk, Cohen and Ferrell (2009) Entrenchment Index

The index for a company receives a value of 1 for the presence of each of the six listed governance characteristics, thereby having a maximum value of 6.

a. Presence of a classified (staggered) board
b. Presence of limitations to shareholders' ability to amend the bylaws
c. Presence of supermajority voting for business combinations
d. Presence of supermajority requirements for charter amendments
e. Presence of golden parachutes for management
f. Presence of a poison pill

Table I. Sample Summary Statistics

This table contains summary statistics for our sample of 11,429 firm-years from 2000 through 2010. Q is Tobin's q, which we measure as the ratio of a firm's market value to its book value. CPS is the CEO pay slice, which is defined as the ratio of the CEO's total compensation to the total compensation of the firm's top five executives, including the CEO, as listed in Execucomp. FEC (ratio) is the ratio of the CEO's reported equity compensation to the CEO's total compensation. FEC is a dummy variable that equals one if FEC is above the industry-year median. E Index is Bebchuk's entrenchment index, available at (http://www.law.harvard.edu/faculty/bebchuk/data.shtml), and extended with WRDS ISS. CONNEX is a dummy variable that equals one if the CEO is socially connected to at least one member of the board of directors and zero otherwise. CONNEX (ratio) equals the ratio of the number of outside directors socially connected to the CEO divided by the total number of outside directors. Size is the natural logarithm of the firm's total assets. Insider Ownership is the fraction of shares held by insiders as reported by Execucomp. ROA is the ratio of a firm's operating income before depreciation to total assets. Capex equals a firm's capital expenditures to total assets. Leverage is the ratio of a firm's long-term debt to total assets. R&D is the ratio of a firm's research and development expense to sales. R&D Missing is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. Company Age is the current year minus the year in which the company was first listed on CRSP. Diversified is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. Founder is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. Abnormal Total Compensation (Log) is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. Relative Equity Compensation is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. CEO Ownership ≥ 20% is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares. CEO Tenure is the number of years since becoming CEO. CEO Outsider is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. CEO is Chair is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp. CEO is Only Director is a dummy variable that equals one if the CEO is the only executive officer on the board. Number of VPs is the number of vice presidents among the top-five executives.

Table I. (Cont'd)

Variable	No. of Obs	Mean	Standard Deviation	Minimum	Maximum	Median
Tobin's Q	22023	1.836	1.277	0.709	8.473	1.401
CPS	22054	0.386	0.122	0.000	0.955	0.381
FEC (ratio)	22028	0.404	0.290	0.000	1.000	0.430
FEC	22055	0.484	0.500	0.000	1.000	0.000
CONNEX	11429	0.616	0.486	0.000	1.000	1.000
CONNEX (ratio)	11429	0.183	0.222	0.000	0.950	0.111
Eindex	14749	2.689	1.342	0.000	6.000	3.000
Size	22023	7.547	1.746	1.233	14.986	7.407
Insider Ownership	22055	0.010	0.057	0.000	5.563	0.000
Insider Ownership^2	22055	0.003	0.211	0.000	30.946	0.000
ROA	22023	0.120	0.099	-0.244	0.397	0.119
Capex	22023	0.051	0.055	-0.033	0.804	0.036
Leverage	22023	0.195	0.191	0.000	4.394	0.164
R&D	22006	0.106	2.334	0.000	237.859	0.000
R&D Missing	22031	0.470	0.499	0.000	1.000	0.000
Company Age	22031	23.976	19.263	0.000	86.000	19.000
Diversified	22055	0.542	0.498	0.000	1.000	1.000
Founder	22055	0.258	0.438	0.000	1.000	0.000
Abnormal Total Compensation (Log)	22019	0.000	0.562	-2.986	4.043	-0.018
Relative Equity Compensation	19427	1.251	1.242	-2.577	63.848	1.157
CEO Ownership ≥ 20%	22055	0.007	0.084	0.000	1.000	0.000
CEO Tenure	22055	6.438	6.973	0.000	60.000	4.000
CEO Tenure Missing	22055	0.036	0.186	0.000	1.000	0.000
CEO Outsider	22055	0.703	0.457	0.000	1.000	1.000
CEO is Chair	22055	0.613	0.487	0.000	1.000	1.000
CEO is Only Director	22055	0.638	0.481	0.000	1.000	1.000
Number of VPs	20752	3.222	0.966	1.000	4.000	4.000

Table II. Distribution of social connections across time

Distribution of social connections among U.S. firms from 2000-2010. Our sample contains all executives and directors in the Boardex database whose companies are covered by the Compustat and CRSP databases. To be included in the final sample announcing firms must also have E index data available at Lucian Bebchuk's Website (http://www.law.harvard.edu/faculty/bebchuk/data.shtml).

Year	Total Connections	Proportion with zero	Proportion with one	Proportion with two	Proportion with > two
2000	371	29.7%	22.1%	12.9%	35.3%
2001	423	30.0%	21.3%	13.0%	35.7%
2002	527	33.6%	22.2%	8.3%	32.4%
2003	622	33.0%	24.8%	11.3%	31.0%
2004	751	35.0%	23.2%	13.7%	28.1%
2005	772	35.9%	23.8%	13.1%	18.3%
2006	847	35.9%	22.6%	14.0%	27.5%
2007	999	40.1%	22.1%	11.7%	25.2%
2008	958	38.4%	22.0%	14.3%	25.3%
2009	401	40.4%	21.5%	12.0%	26.2%
2010	395	43.0%	20.8%	10.9%	25.3%
Totals	7066	35.91%	22.40%	12.29%	28.21%

Table III. Pearson correlations among variables

Q is a proxy for Tobin's Q computed as the ratio of market value to book value; CPS is the CEO pay slice computed as the proportion of CEO total compensation to the total compensation of the top five executives; FEC (ratio) is the fraction of CEO equity compensation to total compensation; FEC is a dummy variable that equals one if FEC is above the industry-year median;. CONNEX (ratio) equals the ratio of the number of outside directors socially connected to the CEO divided by the total number of outside directors; CONNEX is a dummy variable that equals one if there is the CEO is socially connected to at least one outside director according to Boardex data; Insider Ownership is the fraction of shares held by insiders as reported by Execucomp; E_index is the Bebchuk, Cremers and Peyer (2011) entrenchment index; Size is the logarithm of total assets; ROA is the ratio of operating income before depreciation to total assets; Capex is the ratio of capital expenditures to total assets; Leverage is the ratio of long term debt to total assets; R&D is the ratio of research and development to total assets; R&D_missing is a dummy variable that equals one when R&D data is missing in Compustat; Company Age is the current year minus the year in which the company was first listed on CRSP; Diversified is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database; Founder is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP; Abnormal Total Compensation (Log) is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects; Relative Equity Compensation is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives; CEO Ownership ≥ 20% is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares; CEO Tenure is the number of years since becoming CEO; CEO Outsider is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO; CEO is Chair is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp; CEO is Only Director is a dummy variable that equals one if the CEO is the only executive officer on the board; Number of VPs is the number of vice presidents among the top-five executives;

Table III. (Cont'd)

Variable	Q	CPS	FEC (ratio)	FEC	CONNEX	CONNEX (ratio)	Eindex	Size	Insider Own	Insider Own2	ROA	Capex	Leverage	R&D	R&D Missing
Q	1														
CPS	-0.02	1													
FEC (ratio)	0.13	0.44	1												
FEC	0.08	0.29	0.73	1											
CONNEX	-0.06	0.05	0.04	0.06	1										
CONNEX (ratio)	-0.13	0.02	-0.01	0.05	0.64	1									
Eindex	-0.14	0.09	0.00	0.00	0.05	0.05	1								
Size	-0.21	0.07	0.13	0.19	0.30	0.30	-0.03	1							
Insider Ownership	0.00	-0.08	-0.07	-0.06	-0.02	-0.01	0.02	-0.13	1						
Insider Ownership2	0.00	-0.01	-0.02	-0.02	0.01	0.02	0.01	-0.03	0.70	1					
ROA	0.51	0.07	0.03	0.00	-0.05	-0.11	-0.04	-0.13	0.00	0.00	1				
Capex	0.07	-0.01	0.02	0.00	-0.03	-0.04	-0.01	-0.08	0.02	0.00	0.33	1			
Leverage	-0.20	0.05	0.01	0.01	0.10	0.08	0.05	0.17	-0.03	0.01	-0.09	0.07	1		
R&D	0.03	0.01	0.02	0.01	-0.02	-0.02	0.00	-0.05	0.00	0.00	-0.07	-0.02	0.00	1	
R&D Missing	-0.23	-0.02	-0.12	-0.03	0.16	0.26	0.02	0.28	-0.01	-0.01	-0.11	0.10	0.11	-0.03	1
Company Age	-0.16	0.12	-0.01	0.01	0.12	0.14	0.02	0.40	-0.11	-0.02	0.02	0.02	0.12	-0.02	0.05
Diversified	-0.13	0.10	-0.03	-0.04	0.06	0.04	0.07	0.14	-0.01	0.01	0.04	-0.02	0.13	-0.03	0.00
Founder	0.11	-0.10	-0.07	-0.05	0.01	0.01	-0.05	-0.18	0.17	0.02	0.00	0.02	-0.08	0.00	-0.03
Abnormal Total Compensation (Log)	0.20	0.31	0.38	0.27	0.03	0.05	0.06	0.01	0.00	0.01	0.15	0.09	0.04	0.01	-0.01
Relative Equity Compensation	-0.06	0.31	0.32	0.21	-0.01	0.00	0.05	-0.02	0.01	0.00	-0.04	-0.02	0.02	0.00	0.03
CEO Ownership ≥ 20%	0.02	-0.04	-0.02	-0.01	-0.01	-0.01	-0.02	-0.02	0.58	0.27	0.02	0.01	0.00	0.00	-0.02
CEO Tenure	0.05	-0.06	-0.10	-0.08	0.03	0.04	-0.05	-0.08	0.18	0.02	0.00	0.01	-0.08	-0.01	0.01
CEO Tenure Missing	0.03	-0.06	-0.09	-0.06	0.00	0.02	-0.04	-0.03	0.12	0.02	-0.02	-0.04	-0.04	0.00	0.04
CEO Outsider	-0.05	0.02	-0.05	-0.04	0.04	0.05	0.03	-0.06	0.04	0.01	-0.06	-0.07	0.00	0.01	0.01
CEO is Chair	-0.03	0.08	-0.02	0.01	0.14	0.15	0.04	0.23	0.03	0.01	0.03	0.01	0.02	-0.02	0.08
CEO is Only Director	-0.04	0.15	0.05	0.02	-0.09	-0.10	0.04	-0.05	-0.07	-0.01	-0.04	-0.03	0.04	0.01	-0.10
Number of VPs	0.00	0.09	0.03	0.00	-0.08	-0.06	0.01	-0.10	-0.06	-0.01	-0.03	0.01	0.02	0.00	-0.08

Table III. (Cont'd)

Name	Company Age	Diversified	Founder	Abnormal Total Comp (Log)	Relative Equity Comp	CEO Own ≥ 20%	CEO Tenure	CEO Tenure Missing	CEO Outsider	CEO is Chair	CEO is Only Director	Number of VPs
Company Age	1											
Diversified	0.26	1										
Founder	-0.38	-0.09	1									
Abnormal Total Compensation (Log)	0.03	-0.01	-0.01	1								
Relative Equity Compensation	0.02	0.02	-0.05	0.06	1							
CEO Ownership ≥ 20%	-0.04	-0.01	0.09	0.02	0.02	1						
CEO Tenure	-0.11	-0.04	0.47	0.00	-0.05	0.09	1					
CEO Tenure Missing	-0.03	-0.02	0.24	-0.07	-0.05	0.07	-0.11	1				
CEO Outsider	-0.08	-0.01	0.17	0.04	0.01	0.03	0.10	0.07	1			
CEO is Chair	0.20	0.09	0.12	0.07	-0.01	0.01	0.23	0.04	0.01	1		
CEO is Only Director	0.04	0.06	-0.10	-0.03	0.04	-0.03	-0.17	-0.02	0.03	-0.07	1	
Number of VPs	-0.03	-0.04	-0.03	-0.02	0.00	-0.03	-0.07	0.00	-0.04	-0.10	0.19	1

Table IV. Bebchuk et al. (2012) replication and extension

Pooled cross-sectional and time series regressions of Tobin's Q on CPS, FEC, CONNEX, and a set of control variables. Following Bebchuk et al. (2011), we define Tobin's q as the market value of assets divided by their book value. The dependent variable in Column 1 is industry-adjusted Tobin's q, which is computed by subtracting the 4-digit SIC industry median Tobin's q from that of the firm. The other dependent variables are the unadjusted Tobin's q for each firm. All independent variables are lagged one period to help ameliorate endogeneity concerns. CPS is the fraction of the total compensation of a firm's top five executives paid to the CEO only. FEC (ratio) is the ratio of the CEO's reported equity compensation to the CEO's total compensation. FEC is a dummy variable that equals one if FEC is above the industry-year median. E Index is Bebchuk's entrenchment index. CONNEX (ratio) equals the ratio of the number of outside directors socially connected to the CEO divided by the total number of outside directors. CONNEX is a dummy variable that equals one if the CEO is socially connected to at least one member of the board of directors and zero otherwise. Size is the natural logarithm of the firm's total assets. Insider Ownership is the fraction of shares held by insiders as reported by Execucomp. ROA is the ratio of a firm's operating income before depreciation to total assets. Capex equals a firm's capital expenditures to total assets. Leverage is the ratio of a firm's long-term debt to total assets. R&D is the ratio of a firm's research and development expense to sales. R&D Missing is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. Company Age is the current year minus the year in which the company was first listed on CRSP. Diversified is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. Founder is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. Abnormal Total Compensation (Log) is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. Relative Equity Compensation is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. CEO Ownership $\geq$ 20% is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares. CEO Tenure is the number of years since becoming CEO. CEO Outsider is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. CEO is Chair is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp. All regressions include year and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

Table IV. (Cont'd)

	(1) SIC Adjusted Q	(2) Q	(3) Q	(4) Q	(5) Q	(6) Q	(7) Q
CPS	-0.115**	-0.101	-0.120**				
	(-2.15)	(-1.55)	(-2.20)				
FEC (ratio)				0.0525*			
				(1.84)			
FEC					0.0126		
					(1.00)		
CONNEX (ratio)						-0.0113	
						(-0.32)	
CONNEX							-0.00960
							(-0.65)
Adjusted Q_{t-1}	0.724***						
	(108.60)						
Q_{t-1}		0.407***	0.744***	0.745***	0.745***	0.728***	0.728***
		(42.77)	(114.47)	(114.78)	(114.88)	(87.98)	(87.98)
E index	-0.00685	0.00541	-0.00921*	-0.00985**	-0.00982**	-0.000290	-0.0000674
	(-1.52)	(0.60)	(-1.96)	(-2.10)	(-2.09)	(-0.05)	(-0.01)
Size	-0.00581	-0.334***	-0.0130***	-0.0161***	-0.0147***	-0.0134**	-0.0129**
	(-1.46)	(-18.96)	(-2.65)	(-3.17)	(-2.94)	(-2.37)	(-2.27)
Insider Ownership	0.0842	-0.760*	0.000175	0.0595	0.0508	-0.258	-0.256
	(0.27)	(-1.77)	(0.00)	(0.19)	(0.16)	(-0.84)	(-0.83)
Insider Ownership^2	-0.0891	0.309	-0.0873	-0.111	-0.109	0.0412	0.0405
	(-0.44)	(1.31)	(-0.43)	(-0.55)	(-0.54)	(0.22)	(0.22)
ROA	0.378***	0.243**	0.339***	0.338***	0.331***	0.492***	0.494***
	(5.35)	(2.06)	(4.25)	(4.24)	(4.16)	(4.79)	(4.81)
Capex	-0.184**	-0.0272	-0.163*	-0.164*	-0.165*	-0.0560	-0.0564
	(-2.11)	(-0.31)	(-1.84)	(-1.86)	(-1.86)	(-0.56)	(-0.57)
Leverage	0.0237	-0.0196	-0.00634	-0.00865	-0.00831	0.0185	0.0191
	(0.68)	(-0.31)	(-0.16)	(-0.21)	(-0.21)	(0.39)	(0.40)
R&D	-0.00592***	-0.00996***	-0.00598***	-0.00597***	-0.00596***	0.0766**	0.0766**
	(-3.04)	(-4.84)	(-3.04)	(-3.03)	(-3.03)	(2.43)	(2.43)
R&D Missing	-0.00843	0.0652	-0.0602***	-0.0580***	-0.0588***	-0.0413**	-0.0412**
	(-0.71)	(1.35)	(-3.44)	(-3.31)	(-3.36)	(-1.97)	(-1.97)
Company Age	0.000518	0.0264***	-0.0000934	-0.0000659	-0.0000955	-0.000644	-0.000640
	(1.47)	(3.82)	(-0.24)	(-0.17)	(-0.24)	(-1.47)	(-1.46)
Diversified	-0.0171	0.0318	-0.0417***	-0.0414***	-0.0420***	-0.0316*	-0.0317*
	(-1.40)	(1.45)	(-3.04)	(-3.02)	(-3.06)	(-1.93)	(-1.94)
Founder	-0.0149	-0.0795*	-0.0142	-0.0142	-0.0138	0.0130	0.0134
	(-0.74)	(-1.87)	(-0.69)	(-0.69)	(-0.67)	(0.55)	(0.56)

Table IV. (Cont'd)

	(1) SIC Adjusted Q	(2) Q	(3) Q	(4) Q	(5) Q	(6) Q	(7) Q
Abnormal Total Compensation (Log)	0.0145	0.0184	-0.00394	-0.0225*	-0.0151	-0.0169	-0.0169
	(1.22)	(1.20)	(-0.33)	(-1.75)	(-1.26)	(-1.19)	(-1.20)
Relative Equity Compensation	0.0156***	0.0189***	0.0174***	0.00938*	0.0121**	0.0195***	0.0194***
	(2.86)	(3.31)	(3.15)	(1.66)	(2.24)	(3.20)	(3.20)
CEO Ownership ≥ 20%	0.0624	0.0976	0.0484	0.0452	0.0446	0.157	0.156
	(0.53)	(0.63)	(0.40)	(0.38)	(0.37)	(1.40)	(1.40)
CEO Tenure	0.000676	0.000120	0.000767	0.000894	0.000807	0.000872	0.000878
	(0.63)	(0.07)	(0.70)	(0.82)	(0.74)	(0.68)	(0.68)
CEO Tenure Missing	-0.00977	0.0816	0.00948	0.0113	0.00954	0.0151	0.0142
	(-0.23)	(1.06)	(0.22)	(0.27)	(0.22)	(0.22)	(0.20)
CEO Outsider	-0.00547	0.00778	-0.00391	-0.00412	-0.00441	-0.0212	-0.0208
	(-0.45)	(0.35)	(-0.31)	(-0.33)	(-0.35)	(-1.45)	(-1.43)
CEO is Chair	-0.0198	0.0266	-0.00733	-0.00766	-0.00826	0.0119	0.0121
	(-1.55)	(1.43)	(-0.56)	(-0.59)	(-0.63)	(0.80)	(0.81)
Constant	0.0828	2.870***	0.614***	0.572***	0.581***	1.342***	1.342***
	(0.98)	(16.13)	(8.57)	(8.19)	(8.31)	(9.80)	(9.80)
Firm Fixed Effects	No	Yes	No	No	No	No	No
Industry Fixed Effects	No	No	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	446.3	115.5	518.6	518.5	518.3	431.9	432.0
Adjusted R^2	0.609	0.759	0.708	0.708	0.708	0.744	0.744
Observations	11170	11227	11227	11227	11227	6506	6506

Table V: Firm value and interactions among independent variables

Pooled cross-sectional and time series regressions of Tobin's Q on CPS, FEC, Connect Dummy, and a set of control variables. Following Bebchuk et al. (2011), we define Tobin's q as the market value of assets divided by their book value. The dependent variables are the unadjusted Tobin's q for each firm. All independent variables are lagged one period to help ameliorate endogeneity concerns. CPS is the fraction of the total compensation of a firm's top five executives paid to the CEO only. FEC (ratio) is the ratio of the CEO's reported equity compensation to the CEO's total compensation. FEC is a dummy variable that equals one if FEC is above the industry-year median. E Index is Bebchuk's entrenchment index. CONNEX (ratio) equals the ratio of the number of outside directors socially connected to the CEO divided by the total number of outside directors. CONNEX is a dummy variable that equals one if the CEO is socially connected to at least one member of the board of directors and zero otherwise. Size is the natural logarithm of the firm's total assets. Insider Ownership is the fraction of shares held by insiders as reported by Execucomp. ROA is the ratio of a firm's operating income before depreciation to total assets. Capex equals a firm's capital expenditures to total assets. Leverage is the ratio of a firm's long-term debt to total assets. R&D is the ratio of a firm's research and development expense to sales. R&D Missing is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. Company Age is the current year minus the year in which the company was first listed on CRSP. Diversified is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. Founder is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. Abnormal Total Compensation (Log) is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. Relative Equity Compensation is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. CEO Ownership ≥ 20% is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares. CEO Tenure is the number of years since becoming CEO. CEO Outsider is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. CEO is Chair is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp. All regressions include year and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

Table V. (Cont'd)

	(1) Q	(2) Q	(3) Q	(4) Q	(5) Q	(6) Q
CPS	-0.155*	-0.113	-0.187**	-0.177*	0.127	0.104
	(-1.69)	(-1.45)	(-2.34)	(-1.85)	(0.74)	(0.74)
FEC (ratio)	0.0867				0.396***	
	(1.38)				(3.41)	
FEC (ratio) x CPS	-0.0221				-0.821***	
	(-0.15)				(-2.91)	
FEC		0.0319				0.233***
		(0.77)				(2.93)
FEC x CPS		-0.0363				-0.571***
		(-0.36)				(-2.95)
CONNEX (ratio)			-0.177			
			(-1.51)			
CONNEX (ratio) x CPS			0.413			
			(1.49)			
CONNEX				-0.0495	0.122	0.0814
				(-1.01)	(1.61)	(1.23)
CONNEX x CPS				0.102	-0.311	-0.259
				(0.88)	(-1.46)	(-1.48)
CONNEX x FEC					-0.471***	-0.295***
					(-3.18)	(-2.92)
CONNEX x CPS x FEC (ratio)					1.063***	
					(2.94)	
CONNEX x FEC x CPS						0.732***
						(3.00)
Q_{t-1}	0.743***	0.744***	0.727***	0.727***	0.726***	0.727***
	(113.50)	(113.92)	(87.60)	(87.60)	(86.91)	(87.30)
E Index	-0.00899*	-0.00914*	0.000242	0.000400	0.000219	0.000160
	(-1.91)	(-1.94)	(0.04)	(0.07)	(0.04)	(0.03)
Size	-0.0163***	-0.0144***	-0.0127**	-0.0126**	-0.0136**	-0.0127**
	(-3.22)	(-2.88)	(-2.26)	(-2.21)	(-2.31)	(-2.18)
Insider Ownership	0.0125	0.0139	-0.297	-0.299	-0.261	-0.258
	(0.04)	(0.04)	(-0.97)	(-0.97)	(-0.85)	(-0.84)
Insider Ownership^2	-0.0887	-0.0918	0.0566	0.0580	0.0484	0.0461
	(-0.44)	(-0.45)	(0.30)	(0.31)	(0.26)	(0.25)
ROA	0.359***	0.345***	0.499***	0.501***	0.516***	0.510***
	(4.48)	(4.32)	(4.86)	(4.88)	(5.00)	(4.96)
Capex	-0.160*	-0.161*	-0.0493	-0.0505	-0.0470	-0.0474
	(-1.81)	(-1.82)	(-0.50)	(-0.51)	(-0.47)	(-0.48)
Leverage	-0.00590	-0.00597	0.0198	0.0209	0.0167	0.0184
	(-0.15)	(-0.15)	(0.41)	(0.44)	(0.35)	(0.38)
R&D	-0.00596***	-0.00595***	0.0755**	0.0757**	0.0741**	0.0756**
	(-3.03)	(-3.02)	(2.39)	(2.40)	(2.35)	(2.40)
R&D Missing	-0.0580***	-0.0591***	-0.0430**	-0.0425**	-0.0401*	-0.0414**
	(-3.31)	(-3.37)	(-2.05)	(-2.03)	(-1.92)	(-1.98)

Table V. (Cont'd)

	(1) Q	(2) Q	(3) Q	(4) Q	(5) Q	(6) Q
Company Age	0.00000488	-0.0000489	-0.000601	-0.000620	-0.000613	-0.000618
	(0.01)	(-0.12)	(-1.37)	(-1.42)	(-1.39)	(-1.41)
Diversified	-0.0399***	-0.0411***	-0.0301*	-0.0300*	-0.0273*	-0.0291*
	(-2.91)	(-3.00)	(-1.84)	(-1.83)	(-1.67)	(-1.78)
Founder	-0.0154	-0.0145	0.0111	0.0112	0.0127	0.0142
	(-0.74)	(-0.70)	(0.47)	(0.47)	(0.53)	(0.60)
Abnormal Total Compensation (Log)	-0.0166	-0.00754	-0.00835	-0.00873	-0.0159	-0.0108
	(-1.27)	(-0.61)	(-0.56)	(-0.59)	(-1.01)	(-0.72)
Relative Equity Compensation	0.0128**	0.0159***	0.0234***	0.0230***	0.0197***	0.0221***
	(2.21)	(2.83)	(3.65)	(3.60)	(2.95)	(3.40)
CEO Ownership ≥ 20%	0.0494	0.0471	0.162	0.162	0.150	0.147
	(0.41)	(0.39)	(1.44)	(1.44)	(1.33)	(1.32)
CEO Tenure	0.000977	0.000833	0.000786	0.000859	0.000840	0.000716
	(0.89)	(0.76)	(0.61)	(0.67)	(0.65)	(0.56)
CEO Tenure Missing	0.0149	0.0116	0.0244	0.0201	0.0163	0.00813
	(0.35)	(0.27)	(0.35)	(0.29)	(0.23)	(0.12)
CEO Outsider	-0.00279	-0.00336	-0.0196	-0.0197	-0.0175	-0.0190
	(-0.22)	(-0.27)	(-1.34)	(-1.35)	(-1.20)	(-1.29)
CEO is Chair	-0.00573	-0.00700	0.0131	0.0135	0.0145	0.0136
	(-0.44)	(-0.54)	(0.88)	(0.90)	(0.97)	(0.91)
Constant	0.613***	0.612***	0.620***	0.615***	0.481***	0.512***
	(8.04)	(8.19)	(8.24)	(7.88)	(5.26)	(5.91)
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	493.7	493.3	406.9	406.8	364.8	364.6
Adjusted R^2	0.708	0.708	0.744	0.744	0.744	0.744
Observations	11227	11227	6506	6506	6506	6506

Table VI. Sub Sample Analysis

Pooled cross-sectional and time series regressions of Tobin's Q on CPS, Connect Dummy, and a set of control variables. Sub samples of high FEC (top quintile of FEC (ratio)) and low FEC (bottom quintile of FEC (ratio)). The dependent variables are the unadjusted Tobin's q for each firm. CONNEX is a dummy variable that equals one if the CEO is socially connected to at least one member of the board of directors and zero otherwise. Control variables follow Bebchuk et al. (2011) but is not shown here. All independent variables are lagged one period to help ameliorate endogeneity concerns. All regressions include year and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

High FEC: Top quintile of FEC

	(1) Q	(2) Q	(3) Q
CPS	-0.154		-0.616**
	(-1.08)		(-2.24)
CONNEX		-0.0347	-0.379***
		(-0.78)	(-2.66)
CONNEX x CPS			0.836**
			(2.56)
Constant	0.620	1.660***	0.808***
	(0.77)	(5.36)	(3.76)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
F-statistic	98.54	75.11	71.26
Adjusted R^2	0.695	0.728	0.729
Observations	2699	1476	1476

Low FEC: Bottom quintile of FEC

	(1) Q	(2) Q	(3) Q
CPS	-0.308**		-0.300
	(-2.43)		(-1.16)
CONNEX		0.0419	0.232*
		(0.75)	(1.73)
CONNEX x CPS			-0.514
			(-1.56)
Constant	0.676**	0.478**	0.598**
	(2.17)	(2.15)	(2.50)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
F-statistic	61.73	34.45	33.28
Adjusted R^2	0.702	0.683	0.687
Observations	1566	777	777

Table VII. Instrumental Variable Regressions

Instrumental variable regression of Tobin's Q on CPS, Connect Dummy, and a set of control variables. Sub samples of high FEC (top quintile of FEC (ratio)) and low FEC (bottom quintile of FEC (ratio)). The dependent variables are the unadjusted Tobin's q for each firm. The instrumental variables are industry median CPS, number of vice presidents among the top-five executives, and a dummy variable of CEO is the only director. CONNEX is a dummy variable that equals one if the CEO is socially connected to at least one member of the board of directors and zero otherwise. Control variables follow Bebchuk et al. (2011) but is not shown here. All independent variables are lagged one period to help ameliorate endogeneity concerns. All regressions include year and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

High FEC: Top quintile of FEC

	(1) 2SLS
CPS	1.245
	(0.67)
CONNEX	0.281
	(0.42)
CONNEX x CPS	-0.769
	(-0.47)
Constant	-0.297
	(-0.39)
Industry Fixed Effects	Yes
Year Fixed Effects	Yes
χ^2-distribution	4232.4
Adjusted R^2	0.731
Observations	1403

Low FEC: Bottom quintile of FEC

	(1) 2SLS
CPS	2.636*
	(1.81)
CONNEX	1.214**
	(2.50)
CONNEX x CPS	-3.186**
	(-2.44)
Constant	-0.502
	(-0.78)
Industry Fixed Effects	Yes
Year Fixed Effects	Yes
χ^2-distribution	1605.9
Adjusted R^2	0.626
Observations	728

CHAPTER TWO

The Effect of Regulation on Rating Changes' Predictability on Operating Profitability

Abstract

Rating agencies claim to have access to private information of the firms they rate, including operational and financial plans. Using this information, ratings analysts form opinions regarding the creditworthiness of each rated firm, an opinion that, according to Standard & Poor's, relies heavily on operating profitability. Using the recent repeal on the exemption for credit rating agencies from Regulation FE as a quasi-natural experience, controlling for prior profitability, we examine the ability of bond rating changes to predict changes in future operating profitability. For our full sample, we continue to find statistically significant adjusted operating profitability after both rating upgrades and downgrades. However, in sub-samples of rating changes across different investment grades, we find that rating agencies indeed rely on private information from the regulation. We conclude that rating changes have predictive power for operating profitability changes, which is consistent with agencies' claims of special access to non-public information.

The Effect of Regulation on Rating Changes' Predictability on Operating Profitability

1. Introduction

Credit Rating Agencies (CRAs) have come under fire recently for not foreseeing 2008's financial crisis, which was precipitated in part by the failure of highly-rated mortgage-backed securities. Ratings agencies analyze and form opinions about the creditworthiness of borrowers and individual securities using both public and private information, and publish those opinions in the form of categorical rankings from most (e.g., AAA) to least (e.g., D) creditworthy. We examine ratings changes for corporate borrowing in order to determine whether such changes are predictive for future operating profitability.

Also unclear is whether CRAs are good at analyzing public information nor rely more on private information from companies. Regulation has provided us with an opportunity to explore this subject. With the passage of Regulation Fair Disclosure (Reg FD), all public traded companies must disclose material information to all investors at the same time. CRAs are exempted from the fair disclosure requirements and they can received private information not privy to the rest of the market. However after the Global Financial Crisis of 2008, CRAs have come under intense fire by the regulators. The passage of the Dodd Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank) repealed the exemption of CRAs from Reg FD. Then on, CRAs cannot receive private information from publicly traded companies.

According to Standard & Poor's (S&P) (2005) *Corporate Ratings Criteria 2006*, "Members of the analytical team meet with the organization's management to review, in detail, key factors that have an impact on the rating, including operating and financial plans and management policies" (p. 10). This makes it quite explicit that operational plans, which lay the foundation for future operating

profitability, are fundamental in establishing a corporate borrower's rating[4][5][6]. *Corporate Ratings Criteria 2006* indicates that S&P uses a matrix system across two dimensions: business risk and financial risk. In their words, "Profit potential is a critical determinant of credit protection. A company that generates higher operating margins and returns on capital has a greater ability to generate equity capital internally, attract capital externally, and withstand business adversity. In fact, a company's profit performance offers a litmus test of its fundamental health and competitive position" (p. 26). The actual underlying process of choosing factors and transforming these factors into algorithms from which letter ratings are derived is proprietary (see Kaplan and Urwitz (1979) for a review of rating prediction models). The above quote, however, highlights the primary importance of operating profits in the bond rating process.

After an initial rating, agencies continue to monitor rated bonds. According to *Corporate Ratings Criteria 2006*, S&P may request rated companies to place the primary rating analyst on internal mailing lists for financial statements, press releases, and bank documents, in addition to conducting periodic telephone discussions of developments and annual meetings between the primary analyst and company representatives. Such monitoring allows rated firms' managers to better anticipate how planned operational and financial activities may affect their bond ratings. Sometimes monitoring uncovers a situation (e.g., a change in expected operating profitability) which compels the analyst to reconsider the current bond rating. In these situations, the company's rating may be placed on Credit Watch while a full analysis is performed, which may lead to confirmation of the current rating or a change in rating. Our aim is to study the effectiveness of

[4] While important for financial performance, a firm's financial plan should be largely independent from its operating performance since the latter is measured before considering financial costs.
[5] Management policies will help determine how successfully the operating plans are implemented. Since even the best plans will fail without proper implementation, operating performance may be affected by such policies. At their highest level, management policies involve corporate governance. See Borjaj and Sengupta (2003), Klock, Mansi, and Maxwell (2005) and Ashbaugh-Skaife, Collins, and LaFond (2006) for tests of the relation between corporate governance policies and bond ratings.
[6] The agencies rely on information from the rated companies, and are not generally equipped to detect fraud.

rating changes in predicting unexpected changes in a company's long-term operating profitability, and thereby, in signaling the non-public information on which the rating change was based. This is the first study we are aware of to focus on operating profitability subsequent to rating changes. Due to the public nature of much of the information set used by ratings analysts, many academic researchers dispute the significance of the information contained in bond ratings and their revisions. For example, Weinstein (1977) reports no significant effect of rating changes on bond prices, arguing that bond ratings are redundant since they are based primarily on publicly available accounting data such as contemporaneous operating profitability and leverage levels. Similarly, in their influential textbook, *Principles of Corporate Finance*, Brealey and Myers (2003) state their belief that the economic importance of bond ratings is greatly exaggerated by market participants.

2. Literature Review and Hypotheses Development

2.1 Relevance of Credit Ratings

Evidence has been mounting, that bond ratings are relevant. In perhaps the first statistical test of the effect of rating changes on stock prices, Griffen and Sanvicente (1982) report that bond rating downgrades are associated with negative abnormal stock returns in the month of the downgrade, and found no relation between upgrades and stock returns. Griffen and Sanvicente conclude that rating downgrades convey incremental information important to stockholders, while upgrades do not. Ederington, Yawitz and Roberts (1987) use regression analysis to show that bond yields are partially explained by both bond ratings and publicly available accounting variables, concluding that both provide incremental information to bond market participants. Ederington and Goh (1998) study the relation between changes in bond ratings, changes in earnings forecasts, and changes in reported earnings. Using a test for Granger causality, they show that the market clearly views rating downgrades as providing new information, while upgrades do not. More recently, Kisgen (2006) and Faulkender and Peterson (2006) argue that firms base their capital structure

decisions, at least in part, on credit ratings. Kisgen reports that firms whose debt rating is on an important borderline between ratings tend to issue less debt than firms whose ratings are not on the borderline, presumably to prevent their ratings from falling due to the increased leverage. Faulkender and Peterson show that firms with any credit rating, whether high or low, tend to issue more debt than firms that are not rated. Finally, Boot, Milbourn and Schmeits (2006) present a theoretical model that shows how credit ratings can act as a focal point in coordinating the actions of both bond investors and bond issuers. This coordination results from the specific combination of (a) an implicit contract between the rating agencies and the issuer, (b) the monitoring role of the rating agencies of this implicit contract, and (c) the regulatory investment constraints of fiduciary investors. These factors combine to result in an equilibrium in which investors and issuers choose optimal actions because of the credit rating.

While much of the more recent research highlights the importance of a bond rating per se, it does not necessarily imply that this importance is based on the rating's information content. Indeed, Boot, Milborn and Schmeits (2006) argue that the economic importance of bond ratings stems not from some specific information reflected in the rating, but from the ability of ratings to coordinate among investors the "desired" market equilibrium when absence of a rating would lead to multiple equilibria. If, however, rating analysts are privy to non-public information (e.g., operational plans), and given the importance of profit potential stressed in *Corporate Ratings Criteria 2006*, analysts would logically form future operating profitability expectations from their access to such information, which would ultimately be reflected in their ratings.[7] Thus, a change in a bond's rating may signal to the market a significant change in the analysts' expectations for operating profitability.[8]

[7] In 2000, Regulation Fair Disclosure was implemented which requires all publicly traded companies to disclose information to all market participants simultaneously. However, credit rating agencies were excluded from the regulation thus maintaining their access to private information.

[8] A rating change may also be caused by a change in some other factor considered by the agency, e.g., financial policy,

Most past empirical studies of bond rating revisions focus on the short-term valuation effects of such revisions (see Holthausen and Leftwich (1986); Hand, Holthausen, and Leftwich (1992); and Goh and Ederington (1993)). These papers report significant negative reactions to downgrades, little to no reaction to upgrades, and show that the valuation effect depends on the rating level, both before and after the rating change. Bond rating changes, however, may also convey relevant information aside from direct or short-term valuation effects. For example, Ederington and Goh (1998) examine the impact of bond rating changes on earnings expectations, finding that rating changes affect subsequent earnings forecast revisions. Dichev and Piotroski (2001) examine the effects of bond rating changes on long-term stock returns and report significant negative long-term abnormal stock returns of greater than 10% following downgrades and no significant long-term effects following upgrades. Finally, Jorion, Liu and Shi (2005) study bond rating changes after implementation of Regulation Fair Disclosure (Reg FD), which codifies into federal regulation an informational advantage to bond rating analysts, and conclude that both downgrades and upgrades convey more information after Reg FD was implemented.

2.2 *Source of Credit Ratings' Importance*

There are currently three lines of literature that seek to explain why markets react to credit ratings. First, investors view ratings as the expression of inside information received by CRAs from the companies. Jorion, Liu and Shi (2005) look at credit rating changes after Reg FD and revealed that both downgrades and upgrades communicate more information after the law was passed. Second, CRAs are viewed as skilled agencies to process public information such that ratings have an endorsement effect as shown in Wakeman (1990). The third line of enquiry as put forward by

rather than a change in expected operating profitability. Operating profitability, which is the focus of our analysis and is measured before interest expense, would be largely unaffected by changes in financial policy.
Therefore, inclusion of observations related to changes in factors unrelated to operating performance, such as financial policy, would tend to bias against finding changes in operating performance.

Opp, Opp and Harris (2013) suggests that reaction to rating changes is mainly because of the many regulations that depend on ratings, and they favor highly rated securities. White (2010) shows that regulations require certain institutions to only hold investment grade instruments.

Section 939B of the Dodd-Frank Act repeals CRAs exemption from Reg FD. Thus, if reactions to rating changes are reduced or muted after the repeals, it will show that the main source of credit ratings influence come from private information given to them due to Reg FD. This can also mean that credit rating changes no longer predict future operating profitability, as their access to inside information is reduced.

2.3 Hypotheses

Our first hypothesis relates to the prediction ability of credit rating changes on future long term operating profitability. Due to CRA's knowledge of companies' operational plans and impact on eventual credit ratings, I expect changes in credit ratings to predict firms' future long-term operating profitability. The next hypothesis relates to the source of credit rating informativeness. If CRAs have true analytical ability to crunch public information, the repeal of Reg FD should not impact the reactions to rating changes, and their ability to predict future long-term operating profitability. If they solely rely on non-public information from companies, due to Reg FD, the repeal will take away any prediction power they have.

The null hypotheses are as follow:

Hypothesis 1a: Firms' long-term operating profits do not improve after a credit rating upgrade.

Hypothesis 1b: Firms' long-term operating profits do not worsen after a credit rating downgrade.

Hypothesis 1c: Long-term operating profits changes following credit rating upgrades and downgrades are similar across credit rating levels.

Hypothesis 2a: Credit ratings changes do not predict firms' long-term operating profits after Reg FD.

Hypothesis 2b: Credit ratings changes still predict firm firms' long-term operating profits after Dodd-Frank.

The increase in raw operating profitability could be due to factors other than the rating change, such as industry or size effects. More importantly, prior operating profitability may both trigger the rating change itself and foreshadow subsequent changes in operating profitability. In order to separate the cause and effect relationship between a firm's prior operating profitability, its rating change, and its subsequent operating profitability, we control for prior operating profitability, as well as for industry and size effects. Following Loughran and Ritter (1997), we match each sample firm with a control firm on industry, size, and prior profitability in order to compute adjusted operating profitability surrounding rating changes.[9]

Although we found no other study of long-term operating profitability surrounding bond-rating changes, several papers examine accounting profitability immediately surrounding rating changes. As part of their study of earnings forecast revisions surrounding rating changes, Ederington and Goh (1998) examine changes in mean reported quarterly earnings in the months surrounding bond-rating changes. Regarding downgrades, they find decreases in quarterly earnings reports in the 6 months leading up to, the month of, and the month immediately after the downgrades, and no significant changes in quarterly earnings reports around upgrades. They interpret the lack of

[9] Loughran and Ritter (1997) base their analysis of the long-term operating performance after seasoned equity offerings on the recommendations of Barber and Lyon (1996)

significant earnings changes after month +1 as evidence that downgrades foreshadow reported earnings only in the very near future and that upgrades have no signaling power for future profitability. This interpretation is inconsistent with our findings.

Two papers examine changes in accounting ratios immediately surrounding rating changes as side issues to their main research questions. In their study of long-term stock returns, Dichev and Piotroski (2001) report statistically significant reductions in raw return on equity (ROE) for downgrades and marginal increases in ROE for upgrades between event year -1 and event year +1. In their analysis of the cross-section of stock returns, Avramov, Chordia, Jostova and Philipov (2007) use quarterly data to report differences between high-rated and low-rated companies' industry-adjusted accounting ratios, such as sales growth, profit margin, and net cash flows, surrounding rating downgrades.

While the results of these two papers are consistent with our findings, we believe this issue warrants a more comprehensive analysis for many reasons. Of primary importance are the regulatory implications of the efficacy of bond ratings. If ratings are merely a compilation and repackaging of already-public information, as some researchers claim, then current regulatory investment constraints related to ratings make little sense. However, if ratings serve to transform and disseminate confidential information regarding the operational plans of rated companies, then they provide a valuable service in terms of both market efficiency and investment suitability. Our finding of significant changes in operating profitability after bond-rating changes, while controlling for prior profitability, supports the rating agencies' claims of relevance as well as regulatory focus on ratings. Second, there is general disagreement between the findings of Ederington and Goh (1998) and Dichev and Piotroski (2001), and a more comprehensive analysis could help to settle the issue. Third, if it is true that rating agencies use private information such as internal operating plans, changes associated with these plans would be expected to take time to show their full

potential for improvement or deterioration of operating profitability. Examining profitability changes over a period longer than one quarter or one year may be necessary in order to judge the full effect of the signaled information. Fourth, changes in operating plans will affect changes in operating profitability and, as noted by Barber and Lyon (1996), using ROE to study changes in operating profitability is inferior for many reasons. For instance, the numerator of ROE, net income, which can include special, one-time items, tax issues, and is influenced by changes in capital structure, can actually mask changes in underlying operating profitability. Moreover, the denominator of ROE, the book value of equity, is historical in nature, while an analysis of operating profitability would more properly use a measure of the assets under the firm's control as a deflator. Finally, there may be systematic factors such as industry or size-related effects, or profitability-related effects that an analysis of raw, unadjusted figures cannot account for.

Therefore, we examine operating income before depreciation, deflated by total assets and adjust these figures following the Loughran and Ritter (1997) adaptation of the Barber and Lyon (1996) method in order to compute a measure of adjusted operating profitability. Then, in order to allow enough time for changes in operating plans to take effect, we follow adjusted operating profitability for three years after the rating change. In addition, we also form our sample differently from both Ederington and Goh (1998) and Dichev and Piotroski (2001), but similarly to Loughran and Ritter (1997) by eliminating firms with potentially contaminating rating changes within the seven year sample period thus assuring no duplicate sets of data.

3. Empirical Methods

Our starting sample consists of all bond rating changes reported by S&P corporate bond rating actions from S&P Capital IQ (CIQ), formerly known as RatingsXpress from 1985 to 2014. We use CIQ because they have issuer level ratings, instead of securities level ratings for the more commonly used Mergent's FISD database.

We use the issuer level ratings instead of securities level ratings because one problem encountered in conducting long-term research on revisions in bond ratings is overlapping revisions. This problem arises because rating changes for specific companies often come in series as new information comes to light. That is, downgrades (upgrades) may be followed by additional downgrades (upgrades) as a company's situation deteriorates (improves). Moreover, rating agencies do not coordinate among themselves simultaneous rating change announcements; thus, one item of new information may trigger multiple rating changes across the agencies as each agency revises and announces its revision sequentially in time. The problem is insignificant when the event window is short, e.g., 2 or 3 days, as with most bond rating studies to date.[10] Even when the event window is long, however, the correct choice of methodology may make it possible to avoid the problem represented by overlapping time periods. For example, in their study of the effects on long-term adjusted stock returns of bond rating changes Dichev and Piotroski (2001) use monthly returns and Fama-MacBeth regressions to alleviate the potential statistical problem. However, we are studying annual operating profitability changes over a 7-year sample period centered on a bond rating change, rendering use of monthly Fama-MacBeth regressions impracticable for our purposes.

The problem can be illustrated through an example. Suppose that bonds of company XYZ were downgraded by S&P from BBB+ to BBB on 15 January, from BBB to BBB- on 15 June,

[10] Although it is possible that market model parameter estimates could be affected.

and finally, from BBB- to BB+ on 15 October, all in the year 2000. If we were interested in a 3-day window around these downgrades, or if we could use Fama-MacBeth regressions using monthly data, then each bond rating change could be considered a separate and distinct sample observation. For a long-term operating profitability study, however, all three of these downgrades occur in the same sample year and would be identical across all profitability variables contained in the annual financial statements. Furthermore, suppose that in addition to the S&P downgrades, Moody's announces single-step downgrades for XYZ on 15 February, 15 July, and 15 November. Now the hypothetical sample contains six downgrade announcements for one firm in one year, all of which will be coupled with identical operating profitability variables. Finally, suppose a downgrade for XYZ also occurred on November 15, 1999, which would make the year 1999 year 0 for this particular downgrade. In this case, the annual operating profitability variables for the 1999 downgrade are identical to those for the year 2000 downgrades with a one-year lag.

From this example, it is clear that inclusion of overlapping bond-rating changes may bias downward standard errors since some of the assumed "independent" observations are actually identical to each other. To preclude the bias associated with overlapping observations, we search for a firm's first rating change during over the entire sample period and then eliminate subsequent rating changes that occur within four years of that first change. Unfortunately, screening our sample for potential overlapping bias may also lead to a sample selection problem similar to survivorship bias. This would be true if there is a systematic differential impact on the operating profitability results between firms' first ratings change and follow-on ratings changes. We test the robustness of our results to this potential problem by conducting our analysis without screening for overlapping rating changes. Our findings are nearly identical for both samples, and the associated inferences are unchanged. The only substantial difference is an increase in the statistical significance of the unreported results using the larger sample.

Elimination of overlapping rating changes from the preliminary CIQ sample results in a usable sample of 3862 downgrades and 2225 upgrades.

Table 1 contains the distribution of bond rating changes by year. Note that our sample begins in 1985 even though the CIQ bond data begins in 1923. This is due to the fact that company fundamental data from Compustat is only available from 1985 onwards.

INSERT TABLE I ABOUT HERE

To find out if there is any changes in predictability around Dodd-Frank, we look at the one year operating profitability after rating changes. two years after Reg FD, and two years after Dodd-Frank. The dates for Reg FD are between 23 October 2000 and 23 October 2002, while the dates for Dodd-Frank are between 4 October 2010 and 4 October 2012.

4. Results

4.1 Unadjusted Operating Profitability Changes Surrounding Rating Changes

Our primary focus is to examine whether bond-rating changes provide significant information about a company's future operating profitability. We measure operating profitability by the ratio of operating income before depreciation, depletion, and amortization to total assets (OIBD/TA). Figure 1 illustrates the contrast between the raw operating profitability of the full-samples of upgrades and downgrades. Note the increases in operating profitability in years 0 and +1 for the upgrade sample, as well as the sharp drop off in operating profitability for the downgrade sample in that year. In addition, note the pattern of decline in raw operating profitability for downgraded firms from year -3 to year +1. Judging from the unadjusted operating profitability values illustrated in Figure 1, it appears that year 0 is an inflection point for the profitability of upgraded firms, while downgraded firms' profitability appears to continue a downward trend.

INSERT FIGURE I ABOUT HERE

For the Reg FD period, we look at figure 2. Operating profits are quite large at the year of upgrades compared to the full sample, while operating profits before downgrades tend to trend downwards more than the full sample. For the Dodd-Frank period, operating profits before and after upgrades and downgrades are fairly stable.

INSERT FIGURE II ABOUT HERE

4.2 Adjusted Operating Profitability Changes Surrounding Rating Upgrades

Raw, unadjusted operating profitability can provide insights into the ability of management to efficiently and effectively use assets under their control. However, when examining potential changes in operating profitability due to some triggering event, such as a bond rating change, we need to adjust the raw numbers. Barber and Lyon (1996) evaluate methods of measuring adjusted operating profitability and suggest using the operating profitability of a benchmark firm to proxy for expected operating profitability changes. Each sample firm is matched with a benchmark firm selected from a set of potential benchmark firms chosen based on industry, asset size and pre-event operating profitability, all three measured at the end of the year preceding the event (year -1). Following Barber and Lyon, we obtain a set of potential matching firms that (a) have not been subjected to a credit rating change in the previous 5 years, (b) are classified in the same 2-digit SIC code, and (c) have book value of assets within the range of 25% to 200% of the sample firm.[11]11 From this set of firms, we select the matching firm with the closest OIBD/TA to that of the sample firm. If there are no potential matching firms that meet these criteria, then the industry match is dropped and the matching firm is the one within the range of 90% to 110% of asset size that has the closest OIBD/TA ratio. This methodology is intended to select a benchmark firm that is closest economically to our sample firm, but that has not experienced a rating change. Finally, we compute

[11] This range of asset size follows Loughran and Ritter (1997)

adjusted operating profitability by subtracting the operating profitability of matched firms from the operating profitability of sample companies.

Table III panel A presents the mean adjusted operating profitability results surrounding rating upgrades in the Reg FD and Dodd-Frank periods. For the Reg FD period, operating profitability surrounding the rating change, which is the adjusted operating profit after the rating change subtracting the adjusted operating profit before the rating change. Upgrades do signal an increase in operating profitability, with the change significantly positive, for one, two and three years surrounding the upgrades. Post Dodd-Frank, the economic change is lesser than during the Reg FD period, probably signifying a drop in unique information of upgrades.

Table III panel B presents the operating profitability results, for three sub-groups of rating changes. The first group contains upgrades that go from investment grade to investment grade. The second group contains upgrades that go from speculative to investment grade, while the last group contains upgrades that go from speculative to speculative grade. We can see that upgrades in the first two groups during the Reg FD period in fact do not predict operating profitability. It is only in the third group that operating profitability went up significantly post upgrade. The story is similar for the Dodd-Frank period, however the economic change is larger for the first two groups in the Dodd-Frank period, compared to the Reg FD period.

INSERT TABLE II ABOUT HERE

4.3 Adjusted Operating Profitability Changes Surrounding Rating Downgrades

Table IV panel A presents adjusted operating profitability surrounding rating downgrades. In the Reg FD period, downgrades do signal a decrease in operating profitability with the post rating change adjusted operating profits being significantly less than the pre rating change levels. Downgrades become economically and statistically more negative in the Dodd-Frank period, in one, two and three years surrounding the downgrade.

Table IV panel B shows the adjusted operating profitability, in similar three groups as with the upgrades. Group one contains downgrades that happen in the investment grade, group two contains downgrades that go form investment grade to speculative, while the last group contains downgrades in the speculative grade. In the Reg FD period, downgrades that happen in groups one and two are significantly negative, while those downgrades in the third speculative group are barely significant. In the Dodd-Frank period, we can see the opposite happen; downgrades in the first two groups become less negative and in some cases become insignificant from zero. In the third group however, downgrades become more significant, both economically and statistically.

INSERT TABLE III ABOUT HERE

5. Conclusion

Controlling for industry, size and pre-event operating profitability, we study changes in long-term operating profitability surrounding bond rating changes. When the rating change is an upgrade, subsequent adjusted operating profitability is persistently high for the full sample; both means during the Reg FD and Dodd-Frank periods are significantly positive. This is inconsistent with null Hypothesis 1a. Firm's long-term operating profitability do improve after a credit rating upgrade. However, our partitioned results indicate statistically significant improvements in adjusted operating profitability for just the third group of upgrades, and this drive the result for the entire upgrade sample. This allows us to reject the null for hypothesis 1c, partially for upgrades. We can reject null hypothesis 2a and 2b partially, because upgrades predict similar levels of adjusted operating profitability, in the Reg FD and Dodd-Frank periods, in all three sub-groups. Overall, rating upgrades provide a signal of improvements in long-term operating profitability, but only particularly for the lowest creditworthy firms.

After downgrades, adjusted operating profitability is persistently low for the full sample; Means for the Reg FD and Dodd-Frank periods are significantly less than zero. This finding

requires us to reject null Hypothesis 1b. The sub-groups however reveal a story, for both sub-groups and different periods. Null hypothesis 1b is only rejected for the first two groups in the Reg FD period, and for the third group in the Dodd-Frank period. After Dodd-Frank, downgrades in the first two groups do not seem to predict operating profitability anymore, probably due to decrease in private information. CRAs however do have an impact in the last group of downgrades.

Bond ratings reflect many factors. A primary firm-specific factor affecting a firm's rating is expected operating profitability, which can be used to service a firm's debt. Consequently, bond rating changes can be a result of changes in expected future operating profitability. After controlling for industry, size and pre-event profitability, our results indicate that bond-rating changes signal changes in expected future operating profitability. We conclude that bond-rating changes are a consequence, at least in part, of new non-public information that brings about a change in expected operating profitability.

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Figure I. Raw Operating Profitability Surrounding Rating Changes

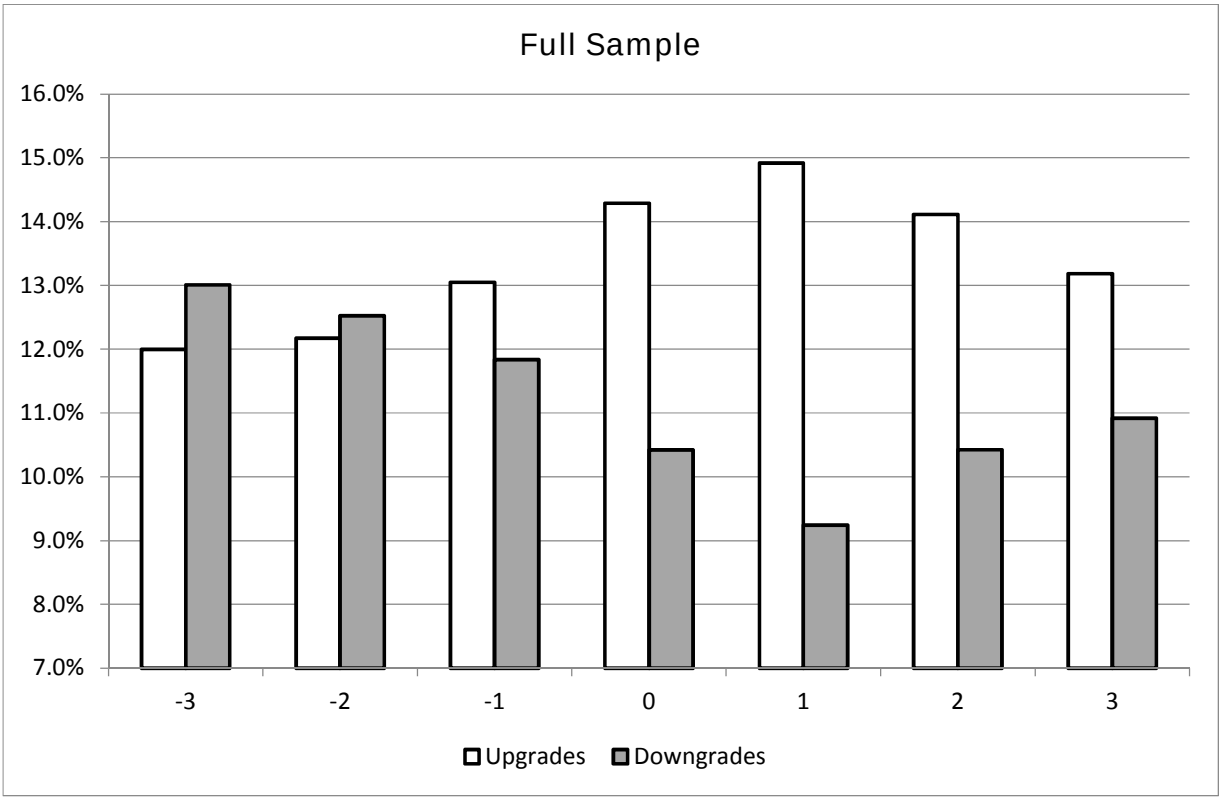
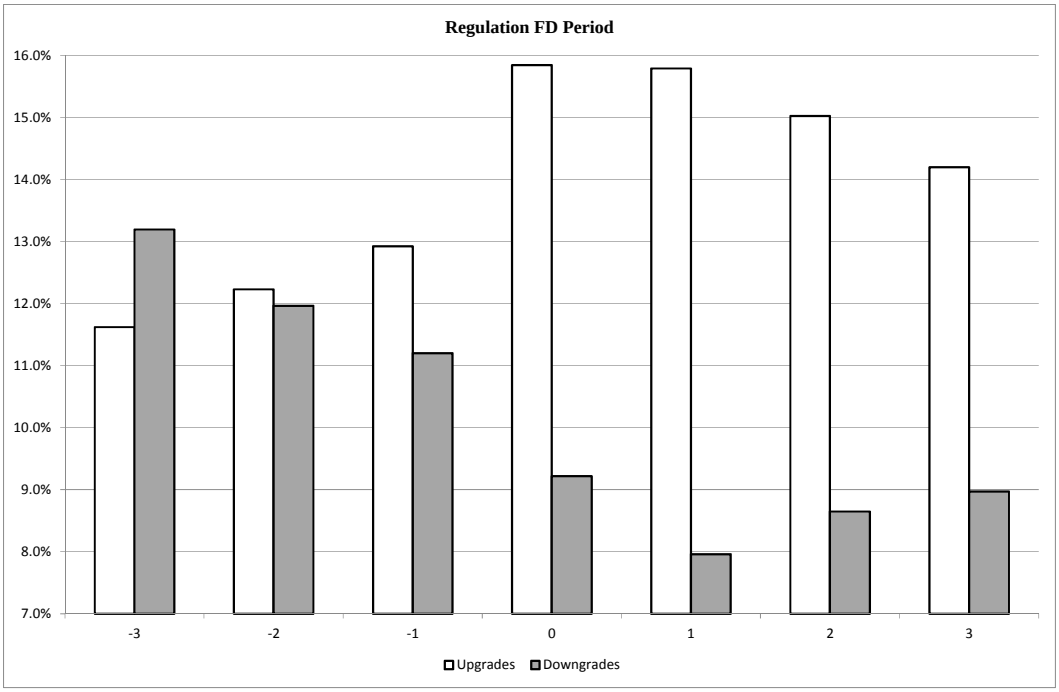


Figure II. Raw Operating Profitability – Regulation FD and Dodd Frank

The top figure shows the operating profitability surrounding rating changes, for the Regulation FD period, from 23 Oct 2000 to 23 Oct 2002. The bottom figure shows the operating profitability for the Dodd Frank period, from 4 Oct 2010 to 4 Oct 2012.



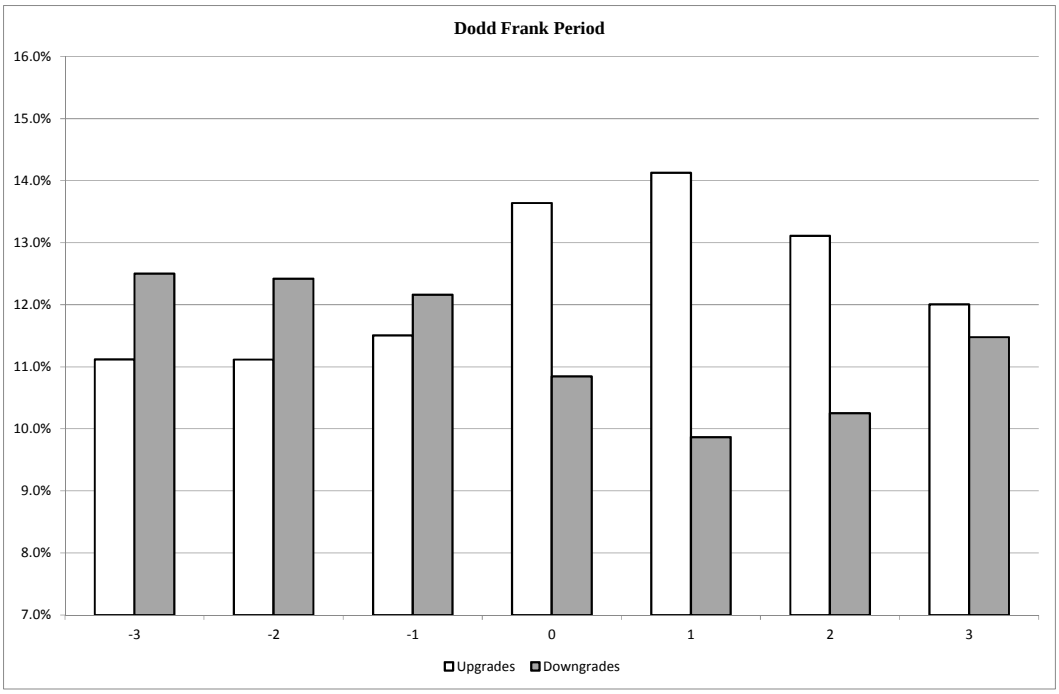


Table I. Distribution of Bond Ratings Changes Across Time

Distribution of bond rating changes of U.S. firms, upgrades and downgrades from 1985 to 2013. Our sample contains all issuer ratings changes in the Capital IQ database. To be included in the final sample, firms must have available compustat fundamental data.

Upgrade Year	N	Percent	Cumulative N		Downgrade Year	N	Percent	Cumulative N
1985	9	0.2%	9		1985	23	0.6%	23
1986	23	0.6%	32		1986	79	2.0%	102
1987	32	0.8%	64		1987	56	1.5%	158
1988	47	1.2%	111		1988	51	1.3%	209
1989	54	1.4%	165		1989	47	1.2%	256
1990	33	0.9%	198		1990	59	1.5%	315
1991	38	1.0%	236		1991	57	1.5%	372
1992	48	1.2%	284		1992	52	1.3%	424
1993	70	1.8%	354		1993	48	1.2%	472
1994	59	1.5%	413		1994	44	1.1%	516
1995	90	2.3%	503		1995	69	1.8%	585
1996	91	2.4%	594		1996	103	2.7%	688
1997	93	2.4%	687		1997	135	3.5%	823
1998	106	2.7%	793		1998	169	4.4%	992
1999	85	2.2%	878		1999	243	6.3%	1235
2000	60	1.6%	938		2000	250	6.5%	1485
2001	67	1.7%	1005		2001	299	7.7%	1784
2002	59	1.5%	1064		2002	265	6.9%	2049
2003	92	2.4%	1156		2003	192	5.0%	2241
2004	89	2.3%	1245		2004	125	3.2%	2366
2005	94	2.4%	1339		2005	201	5.2%	2567
2006	95	2.5%	1434		2006	175	4.5%	2742
2007	115	3.0%	1549		2007	206	5.3%	2948
2008	104	2.7%	1653		2008	246	6.4%	3194
2009	86	2.2%	1739		2009	260	6.7%	3454
2010	162	4.2%	1901		2010	97	2.5%	3551
2011	148	3.8%	2049		2011	113	2.9%	3664
2012	113	2.9%	2162		2012	135	3.5%	3799
2013	63	1.6%	2225		2013	63	1.6%	3862
Total	2225	57.6%	2225		Total	3862	100.0%	3862

Table II. Adjusted Operating Profitability Surrounding Upgrades

The mean adjusted operating profitability for sample firms subjected to a bond rating upgrade is reported below and is computed as the raw operating profitability of samples firms minus that of a match sample. Raw operating profitability is defined as $OIBD_{i,t}$ / $TA_{i,t}$, where $OIBD_{i,t}$ is the operating income before depreciation for firm i in year t; and $TA_{i,t}$ is the total assets of firm i in year t. Sample companies in Group 1 are those whose bond ratings were upgrade from one investment-grade rating to another. Those in Group 2 enjoyed a rating upgrade from speculative-grade to investment-grade. The debt of samples firms in Group 3 was upgrade from one speculative-grade rating to another. Post RegFD refer to upgrades in the two years after Regulation FD, from 23 Oct 2000 to 23 Oct 2002. Post Dodd Frank refer to upgrades in the two years after Dodd Frank, from 4 Oct 2010 to 4 Oct 2012. ***, **, * indicates statistical significance below the one, five and ten percent level.

Panel A: All Upgrades

Upgrades				
	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	173	0.0298	426	0.0197
		3.27		4.81
Lead2 - Lag2		0.0322		0.0299
		1.78		3.52
Lead3 - Lag3		0.0486		0.0186
		2.27		1.72

Table II. (Cont'd)

Panel B: Sub Groups Upgrades

Upgrades				
Invest to Invest	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	39	0.0124	80	0.0137
		0.58		1.96
Lead2 - Lag2		-0.0356		0.0118
		-0.85		0.91
Lead3 - Lag3		-0.0094		0.0023
		-0.21		0.13
Spec to Invest	N	Post RegFD	N	Post Dodd
Lead1 - Lag1	18	0.027757	41	0.006844
		1.37		0.38
Lead2 - Lag2		0.031041		0.087673
		1.65		1.41
Lead3 - Lag3		0.027947		0.061218
		1.52		1.11
Spec to Spec	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	116	0.035214	305	0.023134
		3.20		4.67
Lead2 - Lag2		0.052317		0.027799
		2.39		3.38
Lead3 - Lag3		0.068131		0.017883
		2.54		1.40

Table III. Adjusted Operating Profitability Surrounding Downgrades

The mean adjusted operating profitability for sample firms subjected to a bond rating downgrades is reported below and is computed as the raw operating profitability of samples firms minus that of a match sample. Raw operating profitability is defined as $OIBD_{i,t} / TA_{i,t}$, where $OIBD_{i,t}$ is the operating income before depreciation for firm i in year t; and $TA_{i,t}$ is the total assets of firm i in year t. Sample companies in Group 1 are those whose bond ratings were downgrades from one investment-grade rating to another. Those in Group 2 suffered a rating downgrade from investment-grade to speculative-grade. The debt of samples firms in Group 3 was downgraded from one speculative-grade rating to another. Post RegFD refer to upgrades in the two years after Regulation FD, from 23 Oct 2000 to 23 Oct 2002. Post Dodd Frank refer to upgrades in the two years after Dodd Frank, from 4 Oct 2010 to 4 Oct 2012. ***, **, * indicates statistical significance below the one, five and ten percent level.

Panel A: All Downgrades

Downgrades				
	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	672	-0.0159	334	-0.0388
		-2.66		-3.71
Lead2 - Lag2		-0.0152		-0.0323
		-1.50		-3.58
Lead3 - Lag3		-0.0168		-0.0206
		-1.50		-1.72

Table III. (Cont'd)

Panel B: Sub Groups Downgrades

Downgrades				
Invest to Invest	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	144	-0.0168	56	-0.0129
		-2.20		-1.31
Lead2 - Lag2		-0.0354		-0.0146
		-2.09		-1.37
Lead3 - Lag3		-0.0390		-0.0142
		-1.62		-0.71
Invest to Spec	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	59	-0.0193	26	-0.01559
		-1.53		-0.75
Lead2 - Lag2		-0.02603		-0.05161
		-2.32		-1.42
Lead3 - Lag3		-0.02341		-0.0287
		-1.72		-0.62
Spec to Spec	N	Post RegFD	N	Post Dodd Frank
Lead1 - Lag1	469	-0.0152	252	-0.04813
		-1.81		-3.46
Lead2 - Lag2		-0.00599		-0.03569
		-0.44		-3.08
Lead3 - Lag3		-0.00734		-0.02177
		-0.53		-1.46

CHAPTER THREE

Paying CEOs to not speak

Abstract

The CEO being the top executive person in the firm, often has the job of communicating to the outside world the company's past, current and future prospects. A CEO's communication frequency in an earnings conference call should be indicative of his or her knowledge of the company, and should commensurate with his or her remuneration. Companies that pay right should therefore have better aligned CEOs and thus experience more value added. I however find that those who speak more than paid reduce firm value, while those who speak relatively less add value. Such value reduction or addition remain even controlling for various firm and CEO characteristics. CEO turnovers however, exhibit the bearing of residual risk by silent CEOs.

Paying CEOs to not speak

1. Introduction

Executive compensation especially that of the CEO's, has outstripped the common rank and file especially in the recent years, to the point where the media and regulators have stepped in to inject more oversight into the amount and how they are paid. Top executives drive large companies and their decisions impact many aspects of others in the economy. However the measurement of their individual ability is difficult due to their job scopes. Therefore they are often judged on the wider outcomes like firm performance, which may be influenced by external factors like the general economy and other executives. The compensation of CEOs commensurate to their ability is an important topic to be studied.

A recent strand of literature has presented us with a direct measure of an executive's ability. CEOs, CFOs and other top members of top management tend to present and answer questions during quarterly earnings conference calls. As such meetings are attended by analysts, who are supposed to be the informed audience and can influence the firm's stock price, speaking at such calls, and amount of time taken up by an executive may indicate his/her extent of knowledge within the executive team. How much a CEO speaks during a call may suggest how much he knows and his ability to communicate.

Combined with the proportion of pay the CEO gets among the team, commonly known as the CEO pay slice (Bebchuk, Cremers and Peyer (2011)), it is possible to see if a CEO is overvalued or undervalued in his or her ability to speak. An overvalued CEO may be one who speaks less than or same amount as his peers, but get paid more, while an undervalued CEO may speak more than or same amount as his peers, but get paid less.

As the executive labor market is fiercely competitive and efficient, we will expect such distortions of value, if any, be corrected over time. Overvalued CEOs who oversee worsened firm performance may have their compensation decreased or terminated. Undervalued CEOs who add value to the firm may have their compensation improve or be employed in a larger, more important firm. CEO turnovers may be an outcome that may differ for these two groups of CEOs, and the CEOs who are rightly paid.

The media and regulators have often targeted CEOs for their huge levels of compensation, indicating that their reward do not match the effort and ability that they bring to the shareholders and the broader economy. However, the efficient contracting theory which is mainstream to the executive compensation literature implies that managers are rightly paid whether through their ability, their negotiating power or other means, to maximize firm value. The other strand of literature of managerial power states that executives determine their compensation via their power in the firm.

It is difficult to separate the two hypotheses regarding executive compensation, as they may not be mutual exclusive all the time. Firms that have efficient contracting may also allow managers to extract rents. I do not seek to separate the two but accept that there may be instances where managerial power may be enough to influence compensation but in the longer term efficient labor markets should ensure compensation are rightly altered to attract or drive out the talents that maximize firm performance. I also look at their compensation structure as this has important policy implications for how should regulators, and boards set up incentives to induce the best performance from executives and therefore translate to better firm performance.

I find that in conference calls where CEOs who speak lesser than paid, actually add more return around the conference call period. I also find that the market recognize the value of companies in which CEO who speak lesser than paid presides, via higher Tobin's Q. This however does not translate to less turnovers for such CEOs. CEOs who speak lesser than paid get more turnovers, especially being forced out of the company, when firm returns are bad.

2. Literature Review and Hypotheses Development

2.1 Executive Ability and Conference Calls

Aggarwal and Samwick (2003) and Ortega (2009) proxy an executive's ability via their job description or job titles. Matsumoto Pronk and Roelofsen (2011) show that quarterly earnings conference calls contain information over the associated press release. Bushee, Matsumoto and Miller (2003) argues that knowledge materializes as tangible information while Larcker and Zakolyukina (2012) knowledge appears as word choice during calls. Mayew and Venkatachalam (2012) went on further to 'listen' to the tones of executives' speech to determine knowledge. Li, Minnis, Nagar, Rajan (2014) looks at how many words an executive speaks during a call to determine if they possess information important in the firm.

2.2 Optimal CEO Compensation

Jensen and Murphy (1990) argues that the level of pay-performance sensitivity is not high enough to induce incentive alignment with shareholders. Garen (1994) shows that Jensen and Murphy's conclusion about the level of pay-performance sensitivity holds little meaning due to high between-firm variability in measuring pay-performance sensitivity, and shows that CEO decision making becomes more risk-averse with a high pay-performance compensation contract.. Hermalin and Wallace (2001) accounts for heterogeneity in compensation contracts across firms

and find a significant positive relation between pay and performance. Mehran (1995) provides evidence supporting the role of equity incentives in inducing managerial performance.

Managerial power hypothesis as put forward by Bebchuk and Fried (2006) predicts that poor corporate governance and captured boards allow CEOs to set their own pay, resulting in payment over their own ability. Kuhnen and Zweibel (2009) model CEOs that are subjected to the constraint that if they set their pay too much, they will get replaced. Such rent extraction may exist in equilibrium because ousting the incumbent is costly and the replacement may also extract rent.

On the other hand, the efficient contracting hypothesis states that CEO compensation match what the efficient labor market is able to bear. Rosen (1981, 1982) shows that larger firms should offer higher pay and be matched by better CEOs. Himmelberg & Hubbard (2000) show that due to the scale of operations under the CEO, even a small increment in CEO talent can result in large improvement in firm value and thus compensation.

2.4 Executive Turnover

Weisbach (1988) show that CEO turnover can be predicted by stock returns and changes in earnings as proxies for firm performance. When outsiders dominate the board, weaker prior performance drive more turnover than insider-dominated boards. Parrino (1997) looks at factors that affect the likelihoods of voluntary and forced CEO turnovers, and whether the replacement is an insider or from a within industry firm or outside industry firm. Parrino, Sias and Starks (2003) report that institutional investors reduce their ownership prior to CEO turnover. Bushman, Dai and Wang (2010) show that the information content of CEO talent is increasing in

idiosyncratic risk and decreasing in systematic risk. They conclude that the likelihood of CEO turnover follows this pattern and increases with idiosyncratic risk and decreases with systematic risk.

2.5 Hypotheses

My first hypothesis relate to the cumulative abnormal return surrounding conference calls, particularly that of silent CEOs who speak lesser than paid versus those who speak more than paid. This will show which group specifically add value when they speak. Market should pay attention to the short term impact of conference calls, especially when CEOs speak.

My next hypothesis looks at Tobin's Q of firms which the different CEOs oversee. Similar to the cumulative abnormal return study, market should reward or punish firms for having CEOs who speak more or less, in the longer term.

My last hypothesis looks at the probability of turnovers given the pay-ability differences. Silent CEOs who speak lesser than required over extended periods may see firm performance drop and subsequently be ousted, resulting in a forced turnover. Talkative CEOs may retain their jobs, despite bad performance, because they are always seen leading and talking.

My null hypotheses are as follow:

Hypothesis 1: The cumulative abnormal return of conference calls that silent CEOs talk at are no different from calls that talkative CEOs talk at.

Hypothesis 2: The Tobin's Q of firms where silent CEOs are at are no different from firms where talkative CEOs are.

Hypothesis 3: There is no difference in the probability of turnovers for silent and talkative CEOs.

3. Empirical Methods

For conference calls data, I access the fair wire disclosure dataset from Factiva and ProQuest. Extensive coverage of conference calls dates, attendees and the transcripts only begin in 2003 and I collect the sample until 2014. For CEO compensation and turnover data, I refer to Execucomp. I follow Li, et al. (2014) and construct a variable of CEO communication during conference calls; the number of characters a CEO spoke as a percentage of total characters spoken during the call (CEO Text).

Similar to Bebchuk, et al. (2011), I construct the CEO pay slice (CPS), which is the ratio of total CEO compensation to the combined total compensation of the top five executives in the firm, including the CEO, if applicable.

For CEO turnover, I follow Bushman, et al. (2010) in classifying the turnovers into forced or voluntary by checking the news. A CEO turnover is classified as forced (FORCED) if the news report that the CEO is fired, demoted, retires or resigns under disputed situations like policy differences and lawsuits. If a CEO retires before the age of 60 and the reason for retirement is not death, poor health or getting a new position, I also classify such turnovers as forced.

Following Li, et al. (2014), I sort the CEOs into quintiles of CPS and quintiles of CEO Text. CEOs on the same quintiles of CPS and CEO Text, and those who are one quintile off the other variable are considered on the diagonal, and are those where pay and communication levels are aligned. Those CEOs who are off diagonal should be ones that have a mismatch in compensation and communication ability. I construct a composite variable that take into account

both CPS and CEO Text. I rank CPS and CEO Text into percentiles by industry (SIC2) year. I then subtract the rank of CEO Text from CPS to arrive at **PayTextGap**. I also divide these CEOs into two groups; **Silent** CEOs are those who are in high quintiles of CPS but low quintiles of CEO Text. **Talkative** CEOs are those who are in the low quintiles of CPS but high quintiles of CEO Text. I form dummy variables for these two variables.

INSERT FIGURE I ABOUT HERE

I observe cumulative abnormal returns of quarterly conference calls with the full sample, the Silent and Talkative CEOs. Earnings control variables include the analyst consensus **earnings surprise** of the earnings release that the particular conference call is pegged to, the **dispersion of analyst forecasts**, and the **number of analyst forecasts used**. Other firm control variables are firm **size**, defined as the natural log of total assets. **Book to market** ratio, with the book equity being the shareholders' equity, plus balance sheet deferred taxes and investment tax credit (if any), minus the book value of preferred shares. The market value being the share price multiplied shares outstanding. Diversified is a dummy variable if the company reports revenue in more than one industry segment.

I also run multi-variate OLS regressions of PayTextGap, Silent and Talkative on Tobin's Q, controlled for industry and year. For control variables, we follow Bebchuk, et al. (2011). ***E Index*** is a measure of corporate governance developed by Bebchuk, Cohen and Farrell (2009), which is simply the number of antitakeover provisions present in a given company's charter.[12] The greater the E Index, the more protected or entrenched is management. In general, stronger corporate governance implies a lower E Index. ***SIZE*** is the natural logarithm of the firm's total

[12] Appendix A describes the governance characteristics that are included in the calculation of the entrenchment index. The data on governance characteristics are from the IRRC/Risk Metrics Group, Inc. databases. This data is collected by IRRC/Risk Metrics every two or three years. We use the lagged measure of E index in our analysis to avoid forward-looking bias.

assets. ***ROA*** is the ratio of a firm's operating income before depreciation to total assets. ***Leverage*** is the ratio of a firm's long-term debt to total assets. ***R&D*** is the ratio of a firm's research and development expense to sales. ***R&D MISSING*** is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. ***CAPEX*** equals a firm's capital expenditures to total assets. **Insider Ownership** is the fraction of shares held by insiders as reported by Execucomp. **Company Age** is the current year minus the year in which the company was first listed on CRSP. **Diversified** is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. **Founder** is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. **Abnormal Total Compensation (Log)** is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. **Relative Equity Compensation** is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. **CEO Ownership ≥ 20%** is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares. **CEO Tenure** is the number of years since becoming CEO. **CEO Outsider** is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. **CEO is Chair** is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp.

For turnovers, I run logistic regressions of PayTextGap, Silent and Talkative on total turnovers, and forced turnovers. The control variables include **Market Return**, which is the value-weighted CRSP return. **Firm-Specific return** is the difference between the firm return and market return, firm return defined as the return over the calendar year prior to the CEO turnover. **ROA** is

the ratio of a firm's operating income before depreciation to total assets. **CEO Tenure** dummies equal to one if a CEO has exactly that number of years of tenure.

4. Sample Selection and Description

Our initial sample consists of all firm-years for which data is available from various sources over the ten years from 2003 through 2013. Our first data filter was availability of executive compensation data on Execucomp. Since we study the impact of various CEO-related factors on firm value, we require the CEO to be in office over an entire sample year. Otherwise, our tests may include some data for company performance over which the CEO had little or only partial control that year.

Table I presents various descriptive statistics for our sample. Sample firms have mean (median) Tobin's q of about 1.8 (1.4). More interesting, CEO's garner a large part of total executive pay with a mean (median) CPS of 39.8% (40.0%). CEO also speak a lot at conference calls with mean (median) CEO % Text of 40.5% (41%).

INSERT TABLE I ABOUT HERE

Table II presents the correlation table among the important variables. CPS and CEO Text have low correlations, allaying concerns about endogeneity.

INSERT TABLE II ABOUT HERE

5. Results

5.1 Cumulative Abnormal Returns Surrounding Conference Calls

I run a few models of the independent variables on the cumulative abnormal returns (CAR) surrounding the conference calls. I look specifically at the three day period one day after the earnings release date, CAR1. Industry and Quarter fixed effects are controlled for.

PayTextGap is significantly positive, indicating that those at conference calls where CEOs who speak less than they are paid generate more returns than those who speak more. When I interacted PayTextGap with earnings surprise (SUE), the interaction is significantly positive, showing that during high SUE, those CEOs who speak less and are present generate more returns.

I then run Silent and Talkative dummy variables on CAR1. Silent CEOs actually do not generate more positive returns, but Talkative CEOs do generate significantly negative returns in good earnings, showing up in the interaction term between Talkative and SUE.

INSERT TABLE III ABOUT HERE

I then divide the sample into those conference calls that are pegged to positive SUE, and those which are pegged to negative SUE. The results are consistent in that the negative SUE are driving the main sample results. The significantly positive interaction term between PayTextGap and SUE show that those CEOs who speak lesser than paid lessen the negative effect of bad SUEs via conference calls. Silent CEOs too, lessen the negative effect of bad SUEs with a significantly positive coefficient on CAR1. Talkative CEOs on the other hand increase the impact of negative SUE.

INSERT TABLE IV ABOUT HERE

5.2 OLS regressions of PayTextGap, Silent and Talkative CEOs

I run multivariate OLS regression with pooled time series and cross-sectional data, with Tobin's Q as the dependent variable. PayTextGap is positive on Q, showing that firms with CEOs that speak lesser than paid are perceived to have higher growth opportunities. Silent CEOs are positive on Q too, reinforcing the fact that such CEOs bring value to the firm. Talkative CEOs destroy firm value, though it is not significant. The results may indicate that

CEOs who delegate, especially in conference calls, bring more value to the firm than CEOs who dominate the conversation.

INSERT TABLE V ABOUT HERE

5.3 CEO Turnovers

For turnovers, I run logistic regressions with dependent variables of turnovers and forced turnovers. For turnovers, high PayTextGap CEOs actually are more probable to turnovers, the same for Silent CEOs. Talkative CEOs are actually less likely to change their job. The turnovers happen when firm-specific returns are very negative.

The result is similar in forced turnovers, but less significantly for PayTextGap and Talkative CEOs. The two results may indicate that CEOs who speak more, are seem to be more engaged, and during bad times some action is better than no action. Silent CEOs, because they are paid a lot more than their peers, maybe bearing the risk in the event of bad stock returns.

INSERT TABLE VI ABOUT HERE

6. Conclusion

The results in various test point to the importance of CEO speaking in conference calls. Relative to their CPS, CEOs who speak more in conference calls tend to generate negative returns and worse Tobin's Q. CEOs who speak less tend to lessen the effect of bad earnings, while improving Tobin's Q. Turnovers however present the risks that such CEOs take. Silent CEOs bear more risk when the company is not doing well, and maybe seen as not putting enough effort relative to their executive team, thus being more likely to turnover or get forced out of the company. Talkative CEOs on the other hand, are relatively 'cheap' and are seen doing work, thus even though they destroy value, they stay on with their jobs intact.

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Figure 1. Silent and Talkative CEOs

The figure shows on which CPS - CEO % Text quintile a CEO is considered Silent or Talkative.

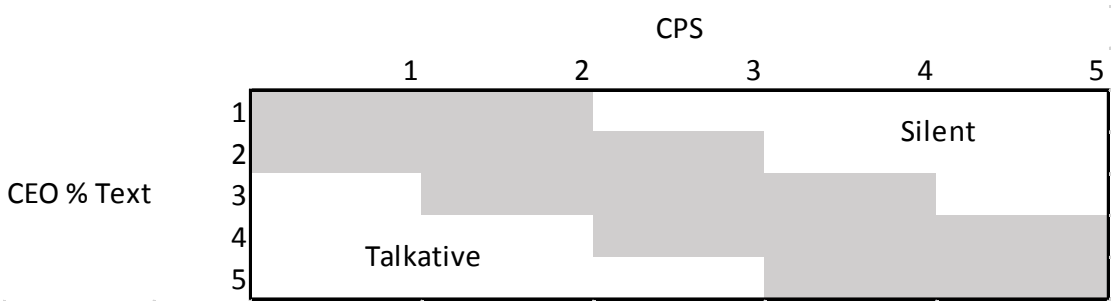

Table I. Sample Summary Statistics

This table contains summary statistics for our sample of 8305 firm-years from 2003 through 2013. Q is Tobin's q, which we measure as the ratio of a firm's market value to its book value. CPS is the CEO pay slice, which is defined as the ratio of the CEO's total compensation to the total compensation of the firm's top five executives, including the CEO, as listed in Execucomp. CEO % Text is the number of characters a CEO speaks at a conference call, as a percentage of total characters spoken. PayTextGap is the industry-year percentile rank of CPS minus the percentile rank of CEO % Text. E Index is Bebchuk's entrenchment index, available at (http://www.law.harvard.edu/faculty/bebchuk/data.shtml), and extended with WRDS ISS. Size is the natural logarithm of the firm's total assets. Insider Ownership is the fraction of shares held by insiders as reported by Execucomp. ROA is the ratio of a firm's operating income before depreciation to total assets. Capex equals a firm's capital expenditures to total assets. Leverage is the ratio of a firm's long-term debt to total assets. R&D is the ratio of a firm's research and development expense to sales. R&D Missing is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. Company Age is the current year minus the year in which the company was first listed on CRSP. Diversified is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. Founder is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. Abnormal Total Compensation (Log) is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. Relative Equity Compensation is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. CEO Ownership ≥ 20% is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares. CEO Tenure is the number of years since becoming CEO. CEO Outsider is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. CEO is Chair is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp. CEO is Only Director is a dummy variable that equals one if the CEO is the only executive officer on the board. Number of VPs is the number of vice presidents among the top-five executives.

Table I. (Cont'd)

Variable	No of Obs	Mean	Standard Deviation	Min	Max	Median
Q	8298	1.806	1.087	0.70	8.12	1.45
ROA	8298	0.035	0.127	-2.25	1.63	0.04
CEO % Text	8305	0.405	0.148	0.00	0.88	0.41
CPS	8305	0.398	0.112	0.00	0.95	0.40
PayTextGap	8305	-0.504	38.889	-98.00	99.00	0.00
Eindex	6046	2.826	1.240	0.00	6.00	3.00
Size	8298	7.835	1.735	2.87	14.67	7.69
Insider Ownership	8305	0.022	0.079	0.00	5.56	0.00
Insider Ownership^2	8305	0.007	0.340	0.00	30.95	0.00
Capex	8298	0.041	0.047	0.00	0.53	0.03
Leverage	8298	0.183	0.174	0.00	1.49	0.15
R&D	8295	0.055	0.225	0.00	10.22	0.00
R&D Missing	8300	0.411	0.492	0.00	1.00	0.00
Company Age	8300	25.737	19.851	0.00	88.00	19.00
Diversified	8305	0.338	0.473	0.00	1.00	0.00
Stock Return	8304	0.874	3.226	-18.65	52.04	0.75
Firm Specific Return	8304	0.798	3.125	-18.20	51.74	0.63
Market Return	8304	0.076	0.210	-0.45	0.30	0.13
Founder	8305	0.193	0.395	0.00	1.00	0.00
Abnormal Total Compensation	7880	0.019	0.502	-2.14	4.04	0.02
Relative Equity Compensation	7313	1.244	1.010	-2.58	30.90	1.18
CEO Ownership ≥ 20%	8305	0.012	0.109	0.00	1.00	0.00
CEO Tenure	8305	6.683	6.664	0.00	48.00	5.00
CEO Tenure Missing	8305	0.008	0.087	0.00	1.00	0.00
CEO Outsider	8305	0.723	0.448	0.00	1.00	1.00
CEO is Chair	8305	0.551	0.497	0.00	1.00	1.00
CEO Age > 60	8305	0.186	0.389	0.00	1.00	0.00
Number of VPs	7752	3.268	0.966	1.00	4.00	4.00
CEO is Only Director	8305	0.783	0.412	0.00	1.00	1.00

Table II. Pearson Correlation among Important Variables

Q is a proxy for Tobin's Q computed as the ratio of market value to book value; CPS is the CEO pay slice computed as the proportion of CEO total compensation to the total compensation of the top five executives; CEO % Text is the number of characters a CEO speaks at a conference call, as a percentage of total characters spoken. Size is the logarithm of total assets; ROA is the ratio of operating income before depreciation to total assets;

Variable	Q	ROA	CEO % Text	CPS	Size
Q	1				
ROA	0.323	1			
CEO % Text	0.030	0.002	1		
CPS	-0.008	0.073	0.083	1	
Size	-0.262	0.083	-0.216	0.098	1

Table III. Quarterly Earnings CAR1

Pooled cross-sectional and time series regressions of three day cumulative abnormal return one day after earnings release on PayTextGap, Silent, Talkative and a set of control variables. PayTextGap is the industry-year percentile rank of CPS minus the percentile rank of CEO % Text. CPS is the CEO pay slice computed as the proportion of CEO total compensation to the total compensation of the top five executives. Silent CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is more than CEO % Text. Talkative CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is less than CEO % Text. SUE is the analyst consensus earnings surprise. Size is the natural log of total assets. Book to market is the ratio where the book equity being the shareholders' equity, plus balance sheet deferred taxes and investment tax credit (if any), minus the book value of preferred shares. The market value being the share price multiplied shares outstanding. Diversified is a dummy variable if the company reports revenue in more than one industry segment. All regressions include quarter and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

Table III. (Cont'd)

	(1) CAR1	(2) CAR1	(3) CAR1	(4) CAR1	(5) CAR1	(6) CAR1
PayTextGap	0.00166**	0.00179***				
	(2.46)	(2.68)				
PayTextGap x SUE		0.0536***				
		(3.56)				
CPS	0.00141**	0.00138**	0.00165**	0.00167**	0.00163**	0.00158**
	(2.12)	(2.08)	(2.48)	(2.51)	(2.45)	(2.39)
CPS x SUE		-0.0451***		-0.00228		-0.0669***
		(-3.27)		(-0.11)		(-3.66)
Silent CEO			0.00104	0.00112		
			(0.78)	(0.85)		
Silent CEO x SUE				0.0381		
				(0.72)		
Talkative CEO					-0.00154	-0.00175
					(-0.92)	(-1.05)
Talkative CEO x SUE						-0.236***
						(-4.24)
SUE	0.0685**	0.0907***	0.0686**	0.0578*	0.0685**	0.177***
	(2.11)	(3.78)	(2.12)	(1.66)	(2.11)	(4.92)
Dispersion of Analyst Forecasts	0.00856	0.0131	0.00880	0.00907	0.00878	0.0160
	(0.57)	(0.88)	(0.58)	(0.60)	(0.58)	(1.08)
No. of Analyst Forecasts used in SUE	-0.0000241	-0.0000189	-0.0000198	-0.0000191	-0.0000197	-0.00000975
	(-0.22)	(-0.17)	(-0.18)	(-0.17)	(-0.18)	(-0.09)
Size	-0.000899	-0.000985	-0.000760	-0.000772	-0.000789	-0.000932
	(-1.48)	(-1.64)	(-1.25)	(-1.28)	(-1.31)	(-1.57)
Book to Market	-0.000132	-0.000179	-0.0000155	-0.0000478	-0.0000318	0.000137
	(-0.07)	(-0.10)	(-0.01)	(-0.03)	(-0.02)	(0.08)
Diversified	-0.00101	-0.000921	-0.000910	-0.000891	-0.000919	-0.000759
	(-0.63)	(-0.57)	(-0.57)	(-0.56)	(-0.57)	(-0.47)
Constant	0.219	0.220	0.214	0.214	0.217	0.218
	(0.73)	(0.73)	(0.71)	(0.71)	(0.72)	(0.73)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R squared	0.00923	0.0125	0.00895	0.00912	0.00898	0.0143
N	21982	21982	21982	21982	21982	21982

Table IV. Quarterly Earnings CAR1 – Positive & Negative SUE Sub Samples

Pooled cross-sectional and time series regressions of three day cumulative abnormal return one day after earnings release on PayTextGap, Silent, Talkative and a set of control variables. Model 1, 3, 5 are samples that contain positive SUE. Model 2, 4, 6 are samples that contain negative SUE. PayTextGap is the industry-year percentile rank of CPS minus the percentile rank of CEO % Text. CPS is the CEO pay slice computed as the proportion of CEO total compensation to the total compensation of the top five executives. Silent CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is more than CEO % Text. Talkative CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is less than CEO % Text. SUE is the analyst consensus earnings surprise. Size is the natural log of total assets. Book to market is the ratio where the book equity being the shareholders' equity, plus balance sheet deferred taxes and investment tax credit (if any), minus the book value of preferred shares. The market value being the share price multiplied shares outstanding. Diversified is a dummy variable if the company reports revenue in more than one industry segment. All regressions include year and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

Table IV. (Cont'd)

	(1) Positive SUE	(2) Negative SUE	(3) Positive SUE	(4) Negative SUE	(5) Positive SUE	(6) Negative SUE
PayTextGap	0.000822	0.000485				
	(0.90)	(0.37)				
PayTextGap x SUE	0.160	0.0406***				
	(0.75)	(3.51)				
CPS	0.000518	0.000228	0.000487	0.000668	0.000480	0.000175
	(0.61)	(0.18)	(0.60)	(0.52)	(0.57)	(0.14)
CPS x SUE	-0.161	-0.0435***	-0.0913	-0.0190**	-0.101	-0.0506***
	(-0.98)	(-3.87)	(-0.68)	(-1.98)	(-0.66)	(-3.48)
Silent CEO			-0.000410	-0.00191		
			(-0.25)	(-0.65)		
Silent CEO x SUE			0.371	0.0731**		
			(1.26)	(2.03)		
Talkative CEO					-0.00249	-0.000603
					(-1.12)	(-0.19)
Talkative CEO x SUE					0.221	-0.150***
					(0.42)	(-3.72)
SUE	0.596***	0.0429***	0.612***	0.00236	0.647***	0.0966***
	(4.98)	(2.94)	(6.03)	(0.14)	(5.47)	(3.70)
Dispersion of Analyst Forecasts	-0.0335**	0.0400	-0.0357**	0.0357	-0.0345**	0.0419
	(-2.01)	(1.54)	(-2.05)	(1.38)	(-2.02)	(1.61)
No of Analyst Forecasts used in SUE	-0.000109	0.000873***	-0.000107	0.000859***	-0.000105	0.000885***
	(-0.83)	(2.98)	(-0.82)	(2.94)	(-0.80)	(3.02)
Size	-0.00459***	0.00190	-0.00436***	0.00225*	-0.00442***	0.00172
	(-6.92)	(1.48)	(-6.47)	(1.76)	(-6.64)	(1.35)
Book to Market	0.00128	-0.00383*	0.00130	-0.00407**	0.00137	-0.00344*
	(0.62)	(-1.91)	(0.63)	(-2.06)	(0.67)	(-1.70)
Diversified	-0.00181	0.000579	-0.00179	0.000364	-0.00180	0.000855
	(-0.93)	(0.17)	(-0.93)	(0.11)	(-0.93)	(0.26)
Constant	0.179**	-0.944***	0.178**	-0.952***	0.181**	-0.946***
	(1.98)	(-7.91)	(2.01)	(-8.10)	(2.04)	(-7.88)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R squared	0.0404	0.0594	0.0405	0.0558	0.0399	0.0600
N	14433	5376	14433	5376	14433	5376

Table V. Firm Value OLS

Pooled cross-sectional and time series regressions of Tobin's Q on PayTextGap, Silent, Talkative CEOs and a set of control variables. Following Bebchuk et al. (2011), we define Tobin's Q as the market value of assets divided by their book value. The dependent variables are the unadjusted Tobin's Q for each firm. All independent variables are lagged one period to help ameliorate endogeneity concerns. PayTextGap is the industry-year percentile rank of CPS minus the percentile rank of CEO % Text. CPS is the CEO pay slice computed as the proportion of CEO total compensation to the total compensation of the top five executives. Silent CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is more than CEO % Text. Talkative CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is less than CEO % Text. E Index is Bebchuk's entrenchment index. Size is the natural logarithm of the firm's total assets. Insider Ownership is the fraction of shares held by insiders as reported by Execucomp. ROA is the ratio of a firm's operating income before depreciation to total assets. Capex equals a firm's capital expenditures to total assets. Leverage is the ratio of a firm's long-term debt to total assets. R&D is the ratio of a firm's research and development expense to sales. R&D Missing is a dummy variable that equals one when Compustat reports research and development as missing and zero otherwise. Company Age is the current year minus the year in which the company was first listed on CRSP. Diversified is a dummy variable that equals one if the company reports more than one unique industry segment on Compustat's segment database. Founder is a dummy variable that equals one if the CEO's tenure reported in Execucomp started before to the company's first listing in CRSP. Abnormal Total Compensation (Log) is the residual of a regression of total compensation of the top-five executives on Log Book Value with industry and year fixed effects. Relative Equity Compensation is the ratio of the fraction of equity compensation of the CEO to the average fraction of equity compensation of the other four top executives. CEO Ownership ≥ 20% is a dummy variable that equals one if the CEO holds at least 20% of outstanding shares. CEO Tenure is the number of years since becoming CEO. CEO Outsider is a dummy variable that equals one if the CEO was working at the company for less than one year before becoming CEO. CEO is Chair is a dummy variable that equals one if the CEO is also the chairman of the board using Execucomp. All regressions include year and industry fixed effects dummy variables. ***, **, * indicates statistical significance below the one, five and ten percent level.

Table V. (Cont'd)

OLS	(1) Q	(2) Q	(3) Q
Q_{t-1}	0.609***	0.608***	0.682***
	(21.27)	(21.18)	(24.83)
E index	0.00721	0.00865	0.00616
	(0.89)	(1.07)	(0.85)
Size	-0.0192**	-0.0178**	-0.0235***
	(-2.24)	(-2.09)	(-2.80)
Insider Ownership	-0.464	-0.608	-0.0244
	(-0.74)	(-0.95)	(-0.04)
Insider Ownership^2	0.263	0.391	-1.814
	(0.13)	(0.19)	(-0.97)
ROA	2.016***	2.026***	1.509***
	(4.66)	(4.67)	(3.62)
Capex	0.490	0.441	0.311
	(1.06)	(0.95)	(0.61)
Leverage	-0.204*	-0.201*	-0.0987
	(-1.69)	(-1.68)	(-0.79)
R&D	0.272***	0.265***	0.406***
	(2.79)	(2.72)	(2.63)
R&D Missing	-0.0379	-0.0398	-0.00687
	(-1.08)	(-1.14)	(-0.22)
Company Age	0.0000552	0.000148	0.000842*
	(0.10)	(0.27)	(1.65)
Diversified	-0.0753***	-0.0724**	-0.0788***
	(-2.71)	(-2.57)	(-3.09)
Founder	0.0213	0.0190	0.0361
	(0.55)	(0.49)	(0.95)

Table V. (Cont'd)

Abnormal Total Compensation (Log)	0.000787	0.0173	0.0240
	(0.03)	(0.64)	(1.24)
Relative Equity Compensation	0.00237	0.0116	0.00554
	(0.31)	(1.39)	(0.78)
CEO Ownership ≥ 20%	0.0707	0.0848	0.128
	(0.46)	(0.56)	(0.86)
CEO Tenure = 1	-0.00430	-0.00561	0.0371
	(-0.16)	(-0.21)	(1.51)
CEO Tenure = 2	-0.0240	-0.0261	-0.00698
	(-0.96)	(-1.04)	(-0.29)
CEO Tenure = 3 or 4	-0.0427*	-0.0423*	-0.0286
	(-1.96)	(-1.93)	(-1.39)
CEO Tenure = 5 or 6	-0.0704***	-0.0688***	-0.0501**
	(-3.12)	(-3.06)	(-2.43)
CEO Tenure Missing	0.00965	0.00435	0.0131
	(0.09)	(0.04)	(0.17)
CEO Outsider	0.00426	0.00600	0.000708
	(0.19)	(0.27)	(0.03)
CEO Is Chair	0.0104	0.0136	0.0172
	(0.50)	(0.66)	(0.89)
Constant	0.376***	0.343***	0.753***
	(3.60)	(3.32)	(7.47)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
F-statistic	63.63	62.40	102.0
Adj R squared	0.742	0.742	0.781
N	5534	5534	4702

Table VI. Turnover - Logistic Regressions

Logistic Regression of Turnover and Forced Turnover on PayTextGap, Silent, Talkative CEOs and a set of control variables. I follow Bushman et al. (2010) in classifying if a turnover is forced. PayTextGap is the industry-year percentile rank of CPS minus the percentile rank of CEO % Text. CPS is the CEO pay slice computed as the proportion of CEO total compensation to the total compensation of the top five executives. Silent CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is more than CEO % Text. Talkative CEO is a dummy equals to one if a CEO belongs to the off diagonal quintile where CPS is less than CEO % Text. Market Return is the value-weighted CRSP return. Firm-Specific return is the difference between the firm return and market return, firm return defined as the return over the calendar year prior to the CEO turnover. ROA is the ratio of a firm's operating income before depreciation to total assets. CEO Tenure dummies equal to one if a CEO has exactly that number of years of tenure. ***, **, * indicates statistical significance below the one, five and ten percent level.

	(1) Turnover	(2) Turnover	(3) Turnover	(4) Forced	(5) Forced	(6) Forced
PayTextGap	0.00535***			0.00515		
	(3.83)			(1.56)		
Silent		0.300***			0.511**	
		(2.64)			(2.03)	
Talkative			-0.272*			-0.327
			(-1.81)			(-0.90)
CPS	-0.742	-0.541	-1.232**	-0.732	-0.657	-1.028
	(-1.58)	(-1.17)	(-2.31)	(-0.75)	(-0.67)	(-0.87)
Firm Specific Return	-0.122***	-0.128***	-0.130***	-0.167***	-0.171***	-0.161***
	(-6.91)	(-6.27)	(-5.58)	(-4.24)	(-3.61)	(-3.36)
Firm Specific Return x PayTextGap	0.000446			-0.000292		
	(0.93)			(-0.32)		
Firm Specific Return x Silent		0.0383			0.00811	
		(0.94)			(0.11)	
Firm Specific Return x Talkative			0.0183			0.0756
			(0.36)			(0.61)
Market Return	-0.0961	-0.0632	-0.233	1.330	1.552	1.011
	(-0.12)	(-0.08)	(-0.24)	(1.02)	(1.25)	(0.62)
Market Return x PayTextGap	-0.00402			-0.00348		
	(-0.59)			(-0.21)		

Table VI. (Cont'd)

	(1) Turnover	(2) Turnover	(3) Turnover	(4) Forced	(5) Forced	(6) Forced
Market Return x Silent		0.343			-0.760	
		(0.57)			(-0.60)	
Market Return x Talkative			0.199			-0.538
			(0.26)			(-0.25)
ROA	-0.674***	-0.689***	-1.417***	-0.659*	-0.676*	-1.266**
	(-2.88)	(-3.02)	(-4.42)	(-1.94)	(-1.95)	(-2.39)
CEO Tenure = 1	0.0302	0.0344	0.0691	0.298	0.303	0.241
	(0.21)	(0.23)	(0.40)	(0.84)	(0.85)	(0.58)
CEO Tenure = 2	-0.513***	-0.514***	-0.433*	-0.238	-0.245	-1.100
	(-2.72)	(-2.73)	(-1.94)	(-0.53)	(-0.55)	(-1.50)
CEO Tenure = 3 or 4	-0.0320	-0.0224	0.114	0.430	0.433	0.489
	(-0.26)	(-0.18)	(0.81)	(1.55)	(1.55)	(1.61)
CEO Tenure = 5 or 6	0.202	0.204	0.233	0.641**	0.641**	0.607*
	(1.52)	(1.54)	(1.49)	(2.15)	(2.15)	(1.83)
Constant	-2.294***	-2.434***	-2.201***	-4.396***	-4.552***	-4.222***
	(-12.10)	(-13.14)	(-9.95)	(-10.83)	(-11.52)	(-8.18)
Pseudo R squared	0.0227	0.0210	0.0268	0.0320	0.0326	0.0364
N	7879	7879	6575	7879	7879	6575