Submitted to the SEC via https://www.sec.gov/cgi-bin/ruling-comments

Mr. Brent J. Fields
Secretary U.S. Securities and Exchange Commission
100 F Street,
NE Washington, DC 20549

Re: COMMENTS ON RECONSIDERATION OF DODD FRANK SECTION 953 (b), THE PAY RATIO RULE

Dear Mr. Fields:

My co-authors and I provide theoretical and empirical support for disclosure of the pay ratio found in section 953(b) of the Dodd Frank Act.

One problem encountered in empirical research is how to investigate disclosure that does not yet exist. Most researchers take the approach that something like the disclosure being investigated already exists. Consistent with this approach, we argue that employees are able to calculate something like the section 953 (b) pay ratio using their own compensation. If they think the CEO pay ratio is large because the CEO is using his power, they become unhappy because his pay is not fair and do not work very hard, which affects firm performance negatively. If they think it is large because the CEO is very competent, they are happy because they think his pay is fair and his effort will benefit them. The employees then work harder, which affects firm performance positively. We make our arguments using something called distributive justice theory and equity theory, neither one of which I must admit I is rocket science. We then use path analysis to empirically show we might be on the right path. This leads us to the conclusion that investors might benefit during their say-on-pay deliberations from knowledge that the happiness and effort of the employees of the firm is being damaged or enhanced by the amount the CEO is being paid compared to everyone else in the firm. So disclosure of the section 953 (b) pay ratio is a step in the direction of getting this information to investors about the consequences of the amount the CEO is paid.

I think our paper tells this story and we hope it is useful in your discussions.

Regards,

David B. Smith
Ray Dein Professor & Deloitte Scholar
College of Business Administration
University of Nebraska-Lincoln

An Investigation of the Implications of the Fairness of CEO Pay Dispersion for Employee Satisfaction and Firm Performance

Xiaoyan Cheng
University of Nebraska-Omaha
Omaha, NE, 68182

*David Smith
University of Nebraska-Lincoln
CBA 392
PO Box 880488
Lincoln, NE, 68588-0488
Ph: ██████████
Fax: 4██████████
██████████

Draft date: 3-24-2017

*Corresponding Author

An Investigation of the Implications of the Fairness of CEO Pay Dispersion for Employee Satisfaction and Firm Performance

Abstract

In this paper we argue that the perceived fairness of the CEO pay dispersion (e.g., the ratio of the CEO's compensation to the typical employee's) has strategic implications for firm performance. We use a distributive justice model and arguments from equity theory to assert firm performance is strategically enhanced by employee performance when the increased CEO pay dispersion is perceived to be associated with CEO ability and so is viewed as fair by employees. Alternatively, we argue firm performance may be strategically impaired by employee performance if the increased CEO pay dispersion is perceived to be associated with CEO power and so is viewed as unfair by employees. We use path analysis to show the indirect path, mediated by employee satisfaction is associated with higher firm performance than is indicated by only focusing on the direct path between the CEO pay dispersion from ability and firm performance. In addition, we show the indirect path, mediated by employee satisfaction is associated with lower firm performance than is indicated by only focusing on the direct path between the CEO pay dispersion from power and firm performance.

An Investigation of the Implications of the Fairness of CEO Pay Dispersion for Employee Satisfaction and Firm Performance

1. INTRODUCTION

"The chief executive of General Electric raked in a $37.3 million pay package last year, a large sum by any standard. But how much larger was it than the median pay of the 305,000 employees who helped General Electric earn billions in profits that year? The industrial giant did not disclose that comparison, and corporate America rarely reveals how the compensation of the chief executive stacks up against that of the workers in the ranks below. That will soon change." – Eavis (2015).

Past research chronicles the strategic importance that employees attach to pay dispersions with higher management such as the CEO (Guo, Libby, and Liu 2016; Cowherd and Levine 1992; Dornstein 1991).[1] The research concludes that employees' judgments about the equity of the resulting pay dispersions are important inputs that employees use to formulate strategic plans about the effort they will commit to company goals. Research suggests this behavior occurs because employees may gauge upper management's fairness and respect for others' contributions to the firm's success from the judgment they form about the size of and reasons for the CEO pay dispersion (De Cremer and Den Ouden 2009; De Cremer and Tyler 2005; De Cremer, van Dijke, and Mayer 2010).

The AFL-CIO run website Executive Paywatch (http://www.aflcio.org/Corporate-Watch/Paywatch-2016) finds the average CEO pay dispersion for the 500 largest US firms in 2015 is 335 to 1. The emotional responses reported by numerous websites to this information indicate companies may need to carefully incorporate strategic consequences from the CEO pay

---

[1] Past strategic management research refers to pay dispersion as the spread, range, variation, and inequality in pay levels across organizational levels (Shaw et al., 2002; Cowherd and Levine 1992).

dispersion into strategic plans. Though pay distributions between lower level employees and the next level of management such as their supervisors constitute a popular area of distributive justice theory research (Jasso, Törnblom, and Sabbagh 2016; Guo, Libby, and Liu 2016; Ohana, Meyer, and Meyer 2016), prior literature is less developed and the findings are mixed when investigating the impact of pay dispersion between the CEO and lower level employees (i.e., CEO pay dispersion) on organization effectiveness. For example, past research suggests that CEO pay dispersion is related to attracting and retaining the best CEO talent, thereby promoting organizational performance (Gerhart and Rynes 2003; Guthrie 2007; Lazear 2000). In contrast, the organizational justice literature (Bamberger, Biron, and Meshoulam 2014; Bobocel and Gosse 2015; Cowherd and Levine 1992) suggests that lower-level employees compare their salaries to the CEOs and such comparisons may cause deprivation and inequity perceptions, which adversely affects employee morale and relations, thereby hampering organizational performance. These mixed findings, along with the importance that Congress, organized labor and the Securities and Exchange Commission put on CEO pay dispersions such as the GE example highlighted in our introductory quotation, indicate a gap in the literature for our investigation of the strategic consequence of vertical pay dispersion. Vertical pay dispersion is defined as "pay differences between employees in jobs at different hierarchical levels" (Trevor, Reilly, and Gerhart, 2012: p. 586).

Our research begins by presenting a classic distributive justice theoretical model. In the terminality used in distributive justice theory (Jasso, Tornblom and Sabbagh 2016), we suggest that the board of directors are the *Allocators* of rewards that result in the *Actual Reward* (i.e., the CEO pay dispersion) and the CEO is the *Rewardee*. Our theoretical modelling focuses on the *Justice Evaluation* of the CEO pay dispersion by the *Observers* that are company employees and

our hypotheses focus on the *Justice Consequences*. Consistent with distributive justice theory, *Justice Consequences* involve strategic reactions by employees to the fairness of the firm's CEO pay dispersion (*Actual Reward*) when they compare it to the *Just Reward*. We argue that the *Just Reward* is a function of employees' perceptions of the contributions of CEO attributes. Consistent with the implications of past distributive justice research, we assume employee are aware that *Actual Rewards* are monotonically increasing with CEO attributes such as CEO power and CEO ability. Also we assume employees perceive *Just Rewards* to be monotonically increasing with attributes such as CEO ability but not with CEO power. Therefore, our distributive justice model's sentiments about CEO pay dispersions are consistent with the equity theory intuition highlighted by a recent *New York Times* best-selling book entitled *Capital in the Twenty-First Century* by French author Thomas Piketty. Piketty's research addresses the debate whether the CEO pay dispersions represent fair payment gaps for CEOs' superior skills and productivity or whether CEOs "have the power to set their own remuneration, in some cases without limit and in many cases without any clear relation to their individual productivity…" (Piketty, 2014: p. 517). Combining our distributive justice model with the intuition from Piketty (2014), we derive testable hypotheses that provide strategically important inferences about the relationship between CEO pay dispersion and firm performance as pay dispersion is explained by employees' perceived fairness arising from CEO attributes. From our application of equity theory and consistent with Piketty (2014), fairness is defined in terms of the components of the CEO pay dispersion related to CEO ability and the components related to CEO power.

Our empirical analysis employs path analysis to decompose the relationship between the CEO pay dispersion and firm performance into a direct path from pay fairness to firm performance and an indirect path mediated by the perceived employee satisfaction. Our two

stage procedure enables us to isolate CEO attributes from firm attributes in explaining CEO pay dispersion and then test the effects of pay fairness in organizations. In the first stage we construct a model that differentiates pay dispersion explained by CEO ability and CEO power, along with the economic determinants. This modeling allows us to separately test the importance of the direct paths between the CEO pay dispersion related to CEO power and to CEO ability with firm performance and of multiple indirect paths that may mediate these relationships in the second stage.

Our findings support the theory that pay dispersion that is explained by CEO power negatively affects firm performance through employee satisfaction, while pay dispersion that is explained by CEO ability positively affects firm performance through employee satisfaction. We use the term, "power" throughout the paper to mean the CEO's capacity that arises from CEO duality and CEO tenure to unduly influence the CEO pay dispersion.[2] We show that a *Justice Consequence* of larger CEO pay dispersions perceived fairly awarded to CEOs due to CEO ability is that employees strategically contribute more to the better performance of the firm as the CEO pay dispersion increases. Conversely, we show that the *Justice Consequence* of larger CEO pay dispersions due to CEO power is that employees strategically contribute more to the poorer performance of the firm as the CEO pay dispersions increase.

This paper makes several important contributions to both the academic literature and to current policy debates. First, our research responds to the call for a deeper understanding of the antecedents and consequences of pay dispersions (Connelly, Haynes, Tihanyi, Gamache, and Devers 2016). Our study advances knowledge of the *Justice Consequences* of pay fairness by suggesting the benefits and costs to firms from their strategic choices of CEO pay dispersions are

---

[2] We find that CEOs do not tend to abuse their influence relate to being founders or from their share ownership.

linked to employees' perceived fairness of the CEO pay dispersion. Second, our findings augment and complement research conducted in different areas (strategic management, economics, and industrial relations) with an attempt to resolve the theoretical inconsistencies in the relationship between pay dispersion and organizational performance (Eriksson 1999; Shaw et al. 2002; Ding et al. 2009; Trevor et al. 2012). We move beyond these existing research by suggesting that input-based distinction to firm performance between CEO power and CEO ability provides a resolution to inconsistencies in prior studies. Finally, our findings are somewhat mixed in their support for the call for greater disclosure of CEO pay dispersions. We provide evidence that employees currently appear able to strategically form judgments about CEO pay dispersions' fairness due to their knowledge about their firms' operations and pay structures. This conclusion is supported with our evidence that business performance appears to be unfavorably affected from decreased employee satisfaction as CEO pay dispersions increase unless the CEOs' actions demonstrate that they deserve to be paid the larger relative amounts (Bedchuk and Fried 2004; Tosi, and Greckhamer, 2004; Wade, O'Reilly, and Pollock 2006).[3] However, while showing employee satisfaction mediates CEO pay dispersions' relationship to firm performance, comments in the press such as our introductory quotation imply CEO pay dispersion information is not widely disseminated to investors. Greater dissemination of the information through, for example, Dodd-Frank required CEO pay ratio disclosure required by the Dodd-Frank Act, may make the information more transparent to investors during their say-on-pay voting.

---

[3] One obvious reason that employees are so adept at forming CEO pay dispersions based on their own circumstances is that they can easily calculate the dispersion of their own compensation compared to the proxy information about the CEO's compensation. However, the implication of the strategic importance of this calculation for the performance of the firm in important to investors which we suggest is captured by the yet to be disclosed Dodd-Frank CEO pay ratio.

7

2. Background and Hypothesis Development

2. 1 CEO Pay Dispersion, Distributive Justice, and Equity

Past research on the equity theory of social exchanges assumes that people prefer equity as a strategic choice in social exchanges in order to maximize their individual utility (Montada and Maes 2016: p.111). This means that equity theory is not necessarily at odds with self-interest.[4] Rather individuals believe an exchange relationship to be equitable and in their self-interest if the ratio of inputs (e.g., skills, experience, knowledge, and abilities) and outcomes is similar for all the interacting subjects (Homans 1961; Walster, Berscheid, and Walster 1978).[5] The equity theory view of self-interest also implies a relative view of fairness among employees about their compensation. We construct a distributive justice model in Figure 1 to show the implications of this relative perspective for vertical pay dispersions, which we define as the CEO's compensation relative to the typical company employee.

We make several assumptions about the total pool of funds available for all firm wages that are consistent with employees' relative assessments of their compensation with regard to the CEO's (Guo, Libby, and Liu 2016; Cowherd and Levine 1992; Dornstein 1991). First, we assume that employees view the quantity of total compensation funds available for distribution to be dependent upon the success of upper management's leadership ability, combined with the cooperative toil by the firm's labor force. Second, we assume that everyone is paid from the same pool of funds so that a firm's work force members judge more paid to one member of the work force (including the CEO) to imply less remaining for others.

---

[4] Equity theory research from this perspective is similar to Incentive Compatible Optimal Contracting Theory (Optimal Contracting Theory) found in finance (Nalebuff and Stiglitz 2003; Rosen 1986; Ehrenberg and Bognanno 1990).

[5] In his Nicomachean ethics (fourth century BC), Aristotle declared that "equals should be treated equally, and unequals unequally, in proportion to relevant similarities and differences."

Our distributive justice model in figure 1 is taken from Jasso, Tornblom and Sabbagh (2016) and contains three actors (*Allocator, Observer, and Rewardee*) and four key terms (*Actual Reward, Just Reward, Justice Evaluation and Justice Consequences*). We assume that the *Allocator* of the *Actual Reward* (e.g., Actual CEO Pay Dispersion) is the board of directors. Also we assume that the Actual CEO Pay Dispersion may be partly determined by CEO ability and partly by CEO power (Piketty, 2014; Trevor et al. 2012, Bebchuk, Cremers, and Peyer 2011; Baker, Jensen and Murphy 1988).[6] Following Trevor et al. (2012)'s approach, we use an input-based differentiation of pay dispersion by separating CEO pay dispersion that is tied to CEO ability from that is tied to CEO power. We assume that the *Observers* in our model are the company employees other than upper management. They determine the *Just Reward* (e.g., Just CEO Pay Dispersions), using a reasoning process consistent with equity theory and based on their knowledge of the CEO's strategic leadership success in accomplishing corporate goals. The *Observers* (i.e., employees) then perform *Justice Evaluations* that involve comparisons of the *Actual Reward* with the *Just Reward*. Though they may not fit the definition of insiders, we suggest that employees have sufficient knowledge to judge whether the actual CEO pay dispersion results from the CEO's power over the board of directors or from his/her strategic leadership success and ability.

The compensation literature (Gerhart and Rynes 2003; Lazear 2000; Trever et al. 2012) supports the potential positive implications of pay dispersions on firm performance. The literature concludes pay dispersions are sorting schemes linking pay to inputs that yield an advantage in attracting and retaining high ability CEOs. Past research on distributive justice, economic justice and equity theory suggests that employees respond more positively, the more

---

[6] Most corporate charters specifically state that two duties of the board of directors are (1) to hire and fire upper management and (2) to make remuneration decisions about upper management salaries.

the strategic indications stemming from the CEO's leadership style convince them that the CEO

is providing better, more successful, strategic management for achieving corporate goals (De

Cremer and Den Ouden, 2009; De Cremer and Tyler 2005; De Cremer, van Dijke, and Mayer

2010).   One reason is that these CEO-leadership accomplishments lead them to conclude that the

CEO's ability will result in a larger pool of funds for rewarding all employees (Konow and

Schwettmann 2016; Almås, Cappelen, Lind, Sørensen, and Tungodden 2011; Mittone and Ploner

2008).

Our distributive justice model in figure 1 lends itself to describing the response to

changes in the CEO pay dispersion as the CEO is perceived to be more competent.[7] We assume

that both the *Allocator*/Board of Directors and the *Observer*/employees have the approximately

the same information set about the CEO. One reason that this assumption seems to be realistic is

that the firm has no incentive to hide favorable accomplishments and ability of the CEO. From

the perspective of stock price enhancement, the management team has the incentive to make

these accomplishments widely known. Equity theory suggests that both the *Allocators* and

Observers have similar decision models with regard to CEO ability so we expect both actors to

come up with approximately the same conclusions. Therefore, consistent with equity theory, we

argue that the *Actual Reward* is perceived by the *Allocators* to be monotonically increasing with

CEO ability. In addition, equity theory predicts that *Just Reward* is perceived by the *Observers*

to be monotonically increasing with CEO ability. Referring to figure 1, this consistency implies

an employee/*Observer Justice Evaluation* of higher employee satisfaction, the greater the

perceived CEO ability. Finally, higher employee satisfaction implies a *Justice Consequence* of

*g*reater employee cooperative effort that mediates the outcome by the CEO to achieve even

---

[7] We use the terms "more competent" and "higher ability" to mean the same thing.

higher firm performance. Our argument leads to our first hypothesis stated in the alternative form as follows:

> *H1:*   *Employee satisfaction positively mediates the path between estimated size of pay*
>
>   *dispersion arising from CEO ability and firm performance.*

Alternatively, past equity theory research shows that employees respond more negatively, the more the CEOs' rent-seeking behavior convinces them that CEOs are using their power to achieve a higher CEO pay dispersion (Montada and Maes 2016).[8] This behavior is consistent with equity theory predictions that employees' dissatisfaction grows as employees realize the ratio of inputs to outcomes increasingly favors the CEO at their expense (Montada and Maes 2016; Homans 1961; Walster, Berscheid, and Walster 1978).

Employee dissatisfaction is a consequence of a conflict between the *Actual Reward* chosen by the *Allocator*/board of directors and the *Just Reward* identified by the *Observer*/employees. The *Actual Reward* chosen by the *Allocator*/board of directors is likely to be monotonically increasing with CEO power, while the *Just Reward* ascertained by the *Observer*/employees is likely to be decreasing or to have no relationship with CEO power. This conflict results because members of the board of directors (*Allocators*) may personally benefit from cooperating with the CEO and providing him with undeserved rewards. For example, it has been well documented in the literature that CEOs use their power to influence the appointment of friends to the compensation committee (Bebchuk and Grinstein 2005; Frydman and Saks 2010). Employee/*Observers* respond negatively to CEO power because they receive no benefits from the CEO-power related pay dispersion and are potentially injured as the size of the CEO pay dispersion grows without expanding the wage pool.

---

[8] The upper management behavior leading to their strategic use of power is explained by the finance theory called Managerial Rent-Seeking Theory.

The managerial rent-seeking literature provides a number of reasons that CEO power-influence on the size of CEO pay dispersions may be known to employees (Bivens and Mishel 2013; Piketty 2014). Many of the variables, as documented by past research, are associated with CEO power that are highly visible to company employees. These include having both the CEO and Chairman of the Board titles, and long tenure as CEO. In addition, the size of the CEO's compensation is prominently disclosed in company proxy statements so comparisons with other CEO's in the same industry, or in the case of employees, with their own salaries should be relatively easy. One outcome of this visibility is that CEO-power related pay dispersions that are insensitive to firm performance and attributed to undue influence of powerful CEOs are well-documented in the distributive justice literature (Bebchuk and Fried 2004). Therefore it can reasonably concluded that CEOs are visible public figures and are closely watched by company employees when attempting to use their power to influence the design of their own compensation packages.[9]

Our distributive justice model in figure 1 again lends itself to describing the response to changes in the CEO pay dispersion as the CEO is perceived to become more powerful. We again assume that both the *Allocator*/Board of Directors and the *Observer*/employees have the approximately the same information set about the CEO. Equity theory suggests that *Allocators/*board of directors and *Observers/*employees have very different decision models for estimating the appropriate *Actual Reward*/actual power-related CEO pay dispersion versus the *Just Reward*/ just power-related CEO pay dispersion. Referring to figure 1, past research in distributive justice and equity theory suggests that this conflict between the *Actual Reward* and *Just Reward* results in a *Justice Evaluation* that the *Actual Reward* is unfair and therefore leads

---

[9] In their book, *Pay without Performance*, Bebchuk and Fried (2004) discuss some of the dysfunctional consequences of the board's capture by powerful CEOs that results in greater employee dissatisfaction.

employee/*Observer* to experience deprivation and a sense of inequity (Akerlof and Yellen 1988;

Dornstein 1991; Shaw et al. 2002; Ferraro et al. 2005). Consistent with past research, higher

employee dissatisfaction implies a *Justice Consequence* of lower employee cooperative effort

and commitment that mediates the outcome by the CEO to achieve even lower firm performance.

Our argument leads to our second hypothesis stated in the alternative form as follows:

H2:   *Employee satisfaction negatively mediates the path between estimated pay dispersion*

      arising from CEO power and firm performance.

3. *Methodological Approach*

In this section we begin with calculation of our expected pay dispersions. Then we discuss

how we use these pay dispersions in our path analysis to investigate the CEO pay dispersion

relationships among employee satisfaction and firm performance.

3.1 *Calculation of "Raw" Firm-Year CEO Pay Dispersion Using Securities and Exchange Commission Guidance*

We follow guidance found in SEC Release Nos. 33-9452 (2013) to calculate the annual

CEO pay dispersions for each firm in our sample. This guidance states:

> *….the [annual] earnings of U.S. workers in various "industries" are publicly available from the Bureau of Labor Statistics. Therefore, investors may be able to approximate the ratio using the industry median employee compensation and the information about CEO compensation for the registrants subject to Item 402(c) (SEC Release Nos. 33-9452, p. 87).*

In footnote 151 of the *SEC Release Nos. 33-9452* the SEC is even more specific in it guidance:

> *The ratios in the figure [in the example found in SEC Release Nos. 33-9452] are calculated for each registrant with executive total compensation data from the Standard and Poor's COMPUSTAT Executive Compensation database which tracks compensation for the companies currently or previously in the S&P 1500 index and industry median employee wage information at each 3-digit NAICS level from the U.S. Department of Labor's Bureau of Labor Statistics (available at http://www.bls.gov/bls/wages.htm) (SEC Release Nos. 33-9452, p. 87).*

Our CEO pay dispersions are estimated exactly as described in footnote 151 for our variable

RAW_PAYRATIO[10]. Because *RAW_PAYRATIO* is skewed we use the natural logarithm of

RAW_PAYRATIO in our analysis, which we call *PAYRATIO.*

3.2   Calculation of Each Firm-Year Pay Dispersion Component that Explained by (1) CEO Ability and (2) CEO Power

3.2.1 Model for Disaggregating CEO Pay Dispersion

Our next step is to disentangle each firm-year CEO ability pay dispersion component and

CEO power pay dispersion component from firm or industry specific economic factors. We use

variables identified in past finance, management and accounting research to construct a model 1

that shows how these components are separately estimated (Connelly, Haynes, Tihanyi,

Gamache, and Devers 2016; Bloom and Michel 2002; Core and Guay 1999; Demerjian, Lev and

McVay 2012):

$$PAYRATIO= \alpha_0 + \sum_{j=1}^{k-1} \alpha_{jit}Ability + \sum_{j=k}^{m-1} \alpha_{jit}Power + \sum_{j=m}^{n} \alpha_{jit}Economic\ Factors + Year$$

$$Dummies + \varepsilon \qquad\qquad (1)$$

We also include a dummy variable year to control for firm-fixed effects.

The signs and sizes of coefficients a_{jit} from model 1 for each variable *j* and each firm-

year *it* allow us to estimate the predicted components of the total CEO pay dispersion that are

explained by (1) ability and (2) power. We estimate these predicted components of CEO pay

dispersions for each firm that are explained by *Ability* and *Power* using variables capturing these

attributes found in equation 1 along with their estimated coefficients as follows:

$$CEOABILITY = \sum_{j=1}^{k-1} \alpha_{jit}Ability \qquad\qquad (1a)$$

$$CEOPOWER = \sum_{j=k}^{m-1} \alpha_{jit}Power \qquad\qquad (1b)$$

---

[10] Total CEO compensation obtained from the Execucomp database scaled by median employee compensation in that industry obtained from U.S. Bureau of Labor Statistics

3.2.2   Variables for CEO Ability

Ability is estimated in model 1 using the summary measure of managerial ability developed by Demerjian, Lev and McVay (2012). The Demerjian et al. (2012) measure is based on managers' efficiency in transforming corporate resources to revenues, relative to their industry peers after controlling for key firm-specific characteristics. Following Demerjian et al. (2012), we first use Data Envelopment Analysis (DEA), an optimization program that determines the most efficient use of inputs in generating revenues, to estimate firm efficiency within its industry. Firms operating on the efficient frontier are assigned a score of one. The lower the firm score, the less efficient in generating revenue relative to its industry peers. A portfolio of inputs includes cost of inventory, general and administrative expenses, fixed assets, operating leases, past research and development expenditures, and intangible assets. Demerjian, et al. (2012) suggests that able managers are efficient in generating higher revenue for a given level of resources. DEA-generated firm efficiency measure, however, is affected by firm-specific characteristics that are expected to aid or challenge management's efforts. We then remove the effects of firm-specific characteristics by regressing firm efficiency on firm size, market share, positive cash flow, firm age, and business segment concentration. We also remove the time effect by controlling for year dummies. A Tobit regression model is estimated by industry. After isolating the effects for the above, the unexplained portion of firm efficiency reflects managerial ability (*Ability*), an unidentified driving force in determining firm efficiency (Demerjian, et al. 2012).

3.2.2   Variables for CEO Power

We use five variables to capture the effects of CEO power on the CEO pay dispersion that are found in the managerial rent-seeking research (Baker and Gompers 2003; Boone et al.,

2007): (1) whether the CEO is the board chair (*CHAIR*); (2) whether the CEO is the founder of

the company (*FOUNDER*); (3) CEO tenure (*TENURE*), measured as the logarithm of the number

of years since becoming a CEO; (4) CEO ownership (*OWNERSHIP*), measured as the percentage

of outstanding shares owned by CEO; and (5) the percentage of directors hired during a current

CEO's tenure (*HIRED_DIRECTOR*). Core et al. (1999) documents that CEO duality and

directors appointed by the current CEO are positively related to CEO power while CEO

ownership is negatively related to the CEO's willingness to use his/her power to affect the size of

the pay dispersion. Our reasoning that is supported by past research is that a founder CEO

generally has a big ownership stake in the company that he started. Therefore, even though the

founder status ensures that this individual is very powerful, his high ownership means the power

is usually not expressed by increasing his/her pay dispersion.[11] Past research shows that variables

not involving high CEO share ownership, such as *CHAIR, TENURE*, and *HIRED_DIRECTOR,*

positively influence the size of the CEO pay dispersion.

3.2.3   Economic Factors (Control Variables) of the CEO pay dispersion

We include a comprehensive list of economic factors from the prior literature to control

for other factors that might influence the dispersion of CEO pay dispersions among firms. We

justify each of these variables in the following sections.

We first include industry wide pay dispersion (*IND_MEDIAN*), the median pay

dispersion of other firms in the same two-digit industrial group, because CEO pay dispersion is

set by a compensation committee and the compensation committee usually hires consultants who

conduct analyses on the pay levels of other CEOs in peer group companies. We use firm's return

on assets (*ROA*) and annual stock market return (*RETX*) as a measure of firm performance. We

---

[11] Finkelstein (1992) posits that the CEO's founder status is an ownership dimension.

16

expect CEOs in firms with better firm performance to have higher pay dispersion. Firm risk is a proxy for firm's information and operating environment. Cyert et al. (1997) finds that CEO compensation is positively associated with stock return volatility. We measure firm risk as the standard deviation of return on assets (*STD_ROA*) and the standard deviation of annual stock returns (*STD_RETX*) over the prior five years. Consistent with prior literatures (Core et al. 1999; Smith and Watts 1992; Yermack 1995), we expect larger firms, firms with greater growth opportunities, and firms with more complex operations to have higher CEO pay dispersion, since these firms demand higher ability CEOs and therefore compensate their CEOs to a greater extent. We use the logarithm of total assets (*AT)* as a proxy for firm size.

We control for firm's growth opportunities by including market to book ratio (*MTB*) and capital expenditures (*CAP).* Market to book ratio is calculated as the ratio of the market value of equity to the book value of equity and capital expenditures is the ratio of capital expenditures to total assets. We include variables *FIRMAGE*, *BUSSEGS, GEOSSEGS,* and *FOREIGN* to measure the complexity of the firm's operation. Firm age (*FIRMAGE*) is the logarithm of the current year minus the year in which the firm was first listed on CRSP. Segments are measured as the logarithm of the number of business segments (*BUSSEGS)* and the logarithm of the number of geographic segments (*GEOSSEGS).* Foreign currency translation (*FOREIGN*) is equal to one if the firm reports foreign currency translation gains or losses, and zero otherwise. Ortiz-Molina et al. (2007) finds that capital structure affects the design of CEO compensation packages. We use *LEVERAGE*, the ratio of long-term debt to assets, as a proxy for capital structure.

In the analysis of CEO pay dispersion, we argue that the relative CEO compensation to median employee compensation is based on the bargaining power of CEO over the board and of

lower level employees relative to management. We expect higher ability CEOs and CEOs with greater power to have a strong advantage over the board in negotiating their compensation package. In contrast, the bargaining power of lower level employees increases with employees' skills and outside opportunities. We use R&D expenditures, scaled by total assets (*RD*), and physical capital intensity (*PPT_INTENSTY*). *PPT_INTENSTY* is measured as net property, plant, and equipment per employee in millions of dollars, to proxy for employee skills. R&D expenditures has been identified as a sources of innovation and employees' skills are crucial in enhancing innovation (Toner 2011). Faleye et al. (2013) suggests that firms with higher R&D investment need highly skilled employees to execute R&D projects. Physical capital intensity is used to capture the requirement of highly skilled employees for those capital intensive firms relative to labor intensive firms. Following Faleye et al. (2013), we use industry concentration (*I_CONCENTRATION*), industry homogeneity *(I_HOMOGENEITY)*, and employee unionization (*UNION*), to proxy employee outside opportunities. Industry concentration, calculated as the sales-based Herfindahl index over all COMPUSTAT firms in the same two-digits SIC industry. A higher Herfindahl index indicates an industry dominated by fewer firms, thus lessening employee outside opportunities. Industry homogeneity is perceived to measure the similarity among firms in the same industry, computed as the partial correlation between firm's return and an equally weighted industry index for all firms in the same two-digits SIC industry, holding market return constant.[12] Industry homogeneity captures the easiness of employee skills being transferable among firms in an industry. Employee unionization is measured as the percentage of

---

[12] We first calculate an equally weighted industry index by assigning firms' monthly returns to their respective 4-digit SIC industry code. Then we compute the partial correlation coefficient between the firm's stock returns and the industry index while holding market returns constant. Industry homogeneity is measured as the average partial correlation coefficient for all firms within an industry.

18

unionized employees at the industry in each year.[13] We expect CEO pay dispersion increases with industry concentration and decreases with R&D investment, physical capital intensity, industry homogeneity, and employee unionization.

3.5   Path Analysis

3.5.1 Description of the Path Analysis Model

Consistent with our distributive justice model in figure 1, we argue that the relationships between firm performance and CEO ability or CEO power pay dispersion components are both direct and indirect, as mediated by employee satisfaction. To test this argument in our empirical tests we use path analysis. Path analysis (see figure 2) allows us to separately investigate the two possible channels through which the perceived components of CEO pay dispersion related to CEO ability or CEO power are associated with firm performance. In the first channel, the component of pay dispersion linked to CEO ability or CEO power is hypothesized to have a direct effect on firm performance. In the second channel, employee satisfaction is hypothesized to have an indirect or mediating effect with the component of pay dispersion for CEO power or CEO ability on firm performance. Throughout the paper we refer to this second channel as the indirect or mediated path. Consistent with our distributive justice model in figure 1, we argue that the level of employee satisfaction is related to the employees' *Justice Evaluation* from comparing, for example, the estimated component of pay dispersion related to CEO ability (e.g., the *Actual Reward*) to their assessment of what pay dispersion related to CEO ability is fair (e.g., *Just Reward*). A positive relation between our estimate of *CEOABILITY* and firm performance provides evidence for confirming the predictions of the optimal contracting theory literature. A negative relation between our estimate of *CEOPOWER* and firm performance provides evidence

---

[13] This data is from the Current Population Surveys (CPSs) of the Bureau of Labor Statistics, which can be assessed at http://www.unionstats.com/. Due to data limitation, this variable is constructed at industry level.

for confirming the predictions of the managerial rent-seeking literature. The results from the

indirect path analysis mediated by employee satisfaction are the focus of our study and provide

evidence for testing our hypotheses.

Path analysis can be compared to traditional regression analysis in several dimensions. First,

like a regression analysis, path analysis is based on linear statistical model. Second, a regression

analysis requires the researchers to specify a dependent variable as well as a set of explanatory

variables, while path analysis requires researchers to identify source variables, mediating

variables, and outcome variables (Bebchuk et al. 2011; Baron and Kenney 1986). The

specification of the direct and indirect paths is derived from theory or from the reasoning about

the relationships among variables. Third, path analysis is similar to a regression analysis in

revealing the overall effects. However, path analysis provides evidence about the existence and

relative importance of direct and indirect paths that jointly, explain the overall effects. Finally,

path analysis is a highly flexible methodology that allows multiple source variables, each with its

own set of direct and indirect paths. A path diagram provides a convenient way to present

complex relationships among the source, mediating, and outcome variables.

Following prior studies that use path analysis (Bhattacharya et al. 2012; Defond et al.

2016; Pevzner et al. 2015), we estimate the following model:

$$PERFORMANCE_t = \alpha_0 + \alpha_1\, CEOABILITY_{t-1} + \alpha_2\, CEOPOWER_{t-1} + \alpha_3 SATISFACTION_t +$$

$$\alpha_4 Controls + e_t \qquad\qquad (2a)$$

$$SATISFACTION_t = \beta_0 + \beta_1\, CEOABILITY_{t-1} + \beta_2\, CEOPOWER_{t-1} + e_t \qquad\qquad (2b)$$

In model 2a, dependent variables (*PERFORMANCE)* are outcome variables. *Controls* are

relevant control variables in affecting firm performance. We include firm size (*SIZE*, measured

as the log of total assets) and growth opportunities (*MB*, measured as market-to-book ratio) as

well as the firm's market-adjusted return (*A_RETX*) to absorb the potential impact of stock return on firm performance. As indicated in figure 2, the path coefficient α_1 is the magnitude of the direct path from *CEOABILITY* to firm performance, while the path coefficient α_2 is the magnitude of the direct path from *CEOPOWER* to firm performance. The two indirect path coefficients that are the focus of our study are (1) $\beta_1 * \alpha_3$, which is the magnitude of the indirect path from *CEOABILITY* to firm performance mediated through employee satisfaction and (2) $\beta_2 * \alpha_3$, which is the magnitude of the indirect path from *CEOPOWER* to firm performance mediated through employee satisfaction. Following Bebchuk et al. (2011), we use one-year lagged the perceived pay fairness (*CEOABILITY* and *CEOPOWER)* in our models to alleviate the concern of endogeneity. Figure 2 shows the basic paths that operationalize our analysis.

3.5.2 Measures for Firm Performance

We use a market-based measure, adjusted Tobin's Q, and an accounting-based measure, adjusted return on assets, as our proxies for firm performance (PERFORMANCE). Tobin's Q is widely used in literature as a measure of firm value (Yermack 1996; Gompers et al. 2003; Bebchuk et al. 2011). Tobin's Q is defined as the market value of equity plus the book value of assets minus the total of book value of equity and deferred taxes, scaled by the book value of assets. Because of the importance of industry specific factors on firm performance, we follow Gompers et al. (2003)'s approach using industry adjusted Tobin's Q (*ADJ_Q*), measured as a firm's Q minus the median Q in the two-digit standard industrial classification group in each observation year.

However, Tobin's Q has been criticized due to its ambiguous relationship with firm performance confounded by the endogeneity problem (Dybvig and Warachka 2012). For example, inefficiency as a result of underinvestment lowers firm performance but increases

Tobin's Q. Therefore, we use an accounting-based measure of operating performance. ROA is defined as net income before extraordinary items and discontinued operations divided by the book value of assets. Similar to industry adjusted Tobin's Q, we use industry adjusted ROA (*ADJ_ROA*), which is a firm's ROA minus the median ROA in the two-digit SIC industry for a given year using all firms in COMPUSTAT.

3.5.3 Measures for Employee Satisfaction

Following Edmans (2011), our measures of employee satisfaction (SATISFACTION) are from the list of the "100 Best Companies to Work for in America", which has been featured in Fortune magazine since 1998. This list is compiled based on the survey scores evaluated by the Great Place to Work Institute in San Francisco. Great Place to Work Institute conducts an extensive employee survey every year and any company with at least five years old and more than 1,000 U.S. employees is eligible to participate in the survey. We use two proxies for SATISFACTION. The first is a dummy variable *BEST*, equal to 1 if a firm is on the list of the "100 Best Companies to work for the America" and 0 otherwise. The second is *RANKING*, the numerical employee satisfaction rating from the list of the "100 Best Companies to Work for in America", equals to 1 if firm is ranked in the top three deciles; equals to 2 if firm is ranked in the middle four deciles; equals to 3 if firm is ranked in the bottom three deciles; and equals to 4 if firm is not listed. *RANKING* takes the values from 4 to 1 with a higher number indicating lower employee satisfaction.

4. Sample Selection and Descriptive Statistics

4.1. Sample Selection

Our initial sample includes firms with CEO compensation data from the Execucomp database covering the period 2002 to 2011. Following prior studies, we exclude firms that are in

22

regulated industries [firms with standard industrial classification (SIC) codes between 6000 and 6999 and between 4900 and 4999]. Next, we delete firms with less than five years old and less than 1,000 U.S. employees, since the list of the "100 Best Companies to Work for in America" imposes these additional requirements for firms being eligible to participate in the survey. We then merge the data with COMPUSTAT, CRSP, and Corporate Library database to extract information on firm characteristics, stock return, and CEO power. In addition, we exclude firms without proxy statements given that some CEO power variables, such as CEO founder and CEO ownership, are extracted from proxy statements. These screenings result in a final sample of 4,890 firm-year observations.

4.1. Descriptive Statistics

TABLE 1 presents summary statistics of variables. To mitigate the impact of outliers, all continuous variables are winsorized at the top and bottom 1% of their distributions. The mean and median CEO pay dispersion (*RAW_PAYRATIO)* are about 146 and 89 times the average employee pay for our sample firms respectively.[14] To reduce the skewness, we use the natural logarithm of CEO pay dispersion. The mean (median) *PAYRATIO* is 4.39 (4.32). As for measures of employee satisfaction, about 9% of firms is in the *Fortune* 100 list and the mean (median) ranking score is 3.85 (4). Turning next to firm performance, Table 1 shows that the mean (median) value of Tobin's Q (*Q*) and return on assets (*ROA*) is 1.77 (1.48) and 0.10 (0.09) respectively. We use industry adjusted Tobin's Q and industry adjusted ROA to control for the impact of industry factors on firm value. The mean (median) *ADJ_Q* and *ADJ_ROA* across the sample is 0.24 (0.00) and 0.02 (0.01) respectively. Our results are consistent to the descriptive statistics in Adams and Ferreira (2009) and Bebchuk et al. (2011).

---

[14] Our unreported statistics indicate that the average (median) total CEO compensation in the sample is $5,536,023 ($2,235,457). The average employee in a 2-digit SIC code industry receives $41,969.

With respect to CEO power and ability variables, as shown in TABLE 1, about 62% of sample firms have dual CEO-chairman positions (*CHAIR*) and 4% firms have founder CEOs (*FOUNDER*). The average logarithm of CEO tenure (*TENURE*) is 1.69 and the average ownership held by CEOs (*OWNERSHIP*) is 3%. The proportion of directors hired during the CEO's tenure on average (*HIRED_DIRECTOR*) is 33%. *ABILITY* has a mean and median value of 0.02 and 0.01 respectively. TABLE 1 also presents summary statistics for other control variables described above. The descriptive statistics on firm characteristics and employee skills and outside opportunities are similar to those in Bebchuk et al. (2011) and Faleye et al. (2013).

5. Empirical Results

5.1 Results on the Determinants of CEO Pay Dispersion

TABLE 2 presents the results of the determinants of *PAYRATIO*. The regression models in TABLE 2 have significant explanatory power (adjusted $R^2 = 0.49$). Consistent with our expectation, we find CEO pay dispersion (*PAYRATIO*) is positively related to industry median pay dispersion (*IND_MEDIAN*), return on assets (*ROA*), standard deviation of return on assets (*STD_ROA*), standard deviation of stock returns (*STD_RETX*), firm size (*AT*), and the logarithm of the number of geographic segments (*GEOSSEGS*), and negatively related to firm leverage (*LEVERAGE*). Among employee skills and outside opportunities variables, we find that CEO pay dispersion positively correlates with R&D investment (*RD*) and industry concentration (*I_CONCENTRATION*). The positive coefficient on R&D investment is surprising since it implies companies with high R&D investment tend to have high CEO pay dispersion. As expected, the coefficients on physical capital intensity (*PPT_INTENSTY*), and industry homogeneity (*I_HOMOGENEITY*) are significantly negative.

24

With respect to CEO characteristics, we find that *PAYRATIO* is positively related to CEO duality (*CHAIR)* and CEO tenure (*TENURE*), suggesting that a powerful CEO is able to extract additional compensation from the firm. Consistent with Core et al. (1999), CEO ownership (*OWNERSHIP)* has significantly negative coefficient. In addition, founder CEOs (*FOUNDER)* is significantly and negatively correlated with *PAYRATIO*. The relative importance of founder CEOs in the company is not reflected by his or her relative allocation of reward. Our results suggest that CEOs do not seek more pay dispersion if they are founders or have higher ownership. Consistent to our expectation, we find that *PAYRATIO* is positively related to *ABILITY*, indicating that high competent CEOs receive more compensation relative to employee. Since CEO pay dispersion increases with CEO duality and CEO tenure while decreases with founder CEO and CEO ownership, we would like to emphasize that we use the word "Power" throughout the paper to mean that the undue influence of CEO power on compensation contract is arising from CEO duality and CEO tenure.

5.2 Results on Direct and Indirect Paths between the Predicted CEO Pay Dispersions and Firm Performance

In TABLE 3, we present the results of the direct path with the outcome variable, measured as *ADJ_ ROA* and *ADJ_Q,* and the indirect path mediated by employee satisfaction, measured as *BEST* and *RANKING* in models 1, 2, 3, and 4. We start our analysis by turning to *CEOABILITY*. The Pearson correlation between *CEOABILITY* and *PERFORMANCE* in model 1 and model 2 using performance measure *ADJ_ROA* is 0.1624; the correlation in model 3 and model 4 using *ADJ_Q is* 0.1063. These results imply firms with more competent CEOs that are rewarded with higher pay dispersions perform better. The positive relationship between the reward for CEO ability and firm performance shown by the direct path coefficient *p (CEOABILITY,*

PERFORMANCE) confirms an important past finding in the management literature related to equity theory and supports the optimal contracting theory in the finance literature.

Next, we calculate the total mediated path coefficient by *SATISFACTION* that forms the basis for the contribution of our study. This coefficient is calculated from the path coefficients between CEO ability and employee satisfaction (e.g., *p(CEOABILITY, SATISFACTION))* and employee satisfaction and firm performance (e.g., *p(SATISFACTION, PERFORMANCE*)) . We compute the total mediated path coefficient as the product of *p(CEOABILITY, SATISFACTION)* and *p(SATISFACTION, PERFORMANCE).* Consistent with our expectation that employees seem to be able to distinguish more competent CEOs from less competent CEOs, we find positive *p(CEOABILITY, BEST)* in models 1 and 3 and negative *p(CEOABILITY, RANKING)* in models 2 and 4.[15] Our total mediated path for *SATISFACTION* measure *BEST* provides an example of the economic significance of our results. The total mediated path is significantly positive, with a coefficient of 0.0093 in model 1 (0.0139 in model 3). The coefficient implies that a one-standard-deviation increase in predicted CEO pay dispersion from CEO ability results in 0.0093-standard-deviation (0.0139-standard-deviation) increase in adjusted ROA (adjusted Q) through *CEOABILITY*'s impact on employee satisfaction measured as *BEST*. In total our mediated path evidence is consistent with the conclusion that firms with more competent CEO tend to have more satisfied employees and firms with more satisfied employees perform better.

Following Bhattacharya et al. (2012), we measure the importance of direct and indirect (mediated) path as the ratio of that path coefficient to the total correlation between predicted pay dispersion arising from CEO ability and firm performance. These results show that the direct and

---

[15] *RANKING* with a higher number indicates lower employee satisfaction and, conversely, *RANKING* with a lower number indicates higher employee satisfaction.

26

mediated paths are significantly nonzero, and the direct link (80.67% in model 1, 82.45% in model 2, 70.27% in model 3, and 72.72% in model 4) is substantially more important than the indirect link (5.72% in model 1, 3.93% in model 2, 13.10% in model 3, and 10.60% in model 4). In summary, our results support the implications of our H1 that is stated in the alternative form to be that employee satisfaction positively mediates the path between estimated size of pay dispersion arising from CEO ability and firm performance. Our results are also consistent with equity theory that is popular in the management literature and the optimal contracting theory that is popular in the finance literature for explaining CEO pay dispersion (Core et al. 1999).

Next, we investigate the consequences for firm performance of the direct path associated with predicted CEO power pay dispersion, and the indirect path, mediated by employee satisfaction. First, the Pearson correlation between *CEOPOWER* and *PERFORMANCE* in model 1 and model 2 using performance measure *ADJ_ROA* is -0.0281; the correlation in model 3 and model 4 using *ADJ_Q is* -0.0522. These results imply firms with more powerful CEOs that are rewarded with higher pay dispersions perform worse. The importance of this finding is that this significant correlation, *r (CEOPOWER, PERFORMANCE),* is opposite (e.g., negative) to the positive correlation for pay dispersion related to CEO ability and firm performance (e.g., *r (CEOABILITY, PERFORMANCE)*). The relationship between CEO power and firm performance shown by the direct path coefficient *p(CEOPOWER, PERFORMANCE)* confirms an important findings in the finance and management literatures related to consequences of managerial rent-seeking behavior.[16]

---

[16] This finding confirms the views by Piketty (2014) in his book *Capital in the Twenty-First Century* and the views by Bedchuk (2004) in his books, *Pay without performance* and *Pay without performance: The unfulfilled promise of executive compensation.*

Second, we calculate the total mediated path coefficient. This coefficient is calculated from the path coefficients between CEO power and employee satisfaction (e.g., *p (CEOPOWER, SATISFACTION))* and employee satisfaction and firm performance (e.g., *p (SATISFACTION, PERFORMANCE*)). Similar to our analysis for CEO power, we use these two path coefficients to calculate the total mediated path coefficient for the indirect path between the expected pay dispersion related to CEO power and with firm performance that is mediated by employee satisfaction. The total mediated path coefficient for the indirect path is computed as the product of the path coefficient *p (CEOPOWER, SATISFACTION*) and *p (SATISFACTION, PERFORMANCE).* Consistent with our expectation that employees unfavorably differentiate more powerful CEOs, our findings suggest that as the CEO pay dispersion related to CEO power becomes larger, the negative effect on employee satisfaction is associated with greater decrease in firm performance. This contrasts with the higher employee satisfaction when the CEO pay dispersion is higher related to higher levels of CEO ability. [17] Our results support the implications of our H2 that is stated in the alternative form to be that employee satisfaction negatively mediates the path between estimated size of pay dispersion arising from CEO power and firm performance. Our total mediated path results for CEO power support equity theory and the managerial rent-seeking literature in management and accounting (Bivens and Mishel 2013; Piketty 2014)

In summary, we provide evidence about relationships between firm performance with CEO ability and CEO power that are mediated by employee satisfaction. We find that these relationships are consistent with our distributive justice model shown in figure 1. We show that

---

[17] In this case we find that as the CEO pay dispersion related to CEO ability becomes larger, the positive effect on employee satisfaction is associated with greater increase in firm performance than is explained by the direct path between CEO ability and firm performance alone.

28

the association between employee satisfaction and the *Justice Consequences* for firm performance may be linked to employees' *Justice Evaluation* of the fairness of the size CEO pay dispersion. Our results imply that the *Justice Evaluation* and the *Justice Consequences* may differ depending upon whether the CEO pay dispersion size is explained by CEO ability and CEO power.

5.3   *Additional Analysis: Do the results hold for High-Tech Firms?*

One limitation of our analysis so far is that the typical employees may be so far removed from the CEO in terms of education and training that they do not compare their compensations to the CEO's compensation. This might be the case for example in the retail industry for a company such as Walmart where the typical employee may be making much more that the minimum wage. However, in some industries such as high-tech industries, we suggest that the typical employee is not only well-compensated but also potentially as well educated as the CEO. We suggest that high-tech industries, identified with high research and development expenditure fit this pattern.

Our investigation in high-tech firms is also a response to inconsistent findings documented by extant research in economics and management (Levine 1991; Ferraro et al. 2015; Shaw et al. 2002; Trevor et al. 2012) regarding the impact of pay dispersion on firm performance in interdependent work settings. Interdependent work requires substantial employee interaction and cooperation. Siege and Hambric (2005) and Shaw et al. (2002) find that the harmful effects of CEO pay dispersions are pronounced in an interdependent work context, as the pressure for information exchange and coordination is strengthened in industries focusing on technology, innovation, and creativity and high pay dispersions increase employees' perceptions of inequity. In contrast, Trevor et al. (2012) differentiates between pay dispersion that is tied to employee

inputs and pay dispersion that is not. They find that in an interdependent work setting, the former is positively related to team performance while the latter is not or negatively related to team performance. Our study is aimed to provide such evidence in high-tech industries that fit a setting that tasks required for firm success are highly interdependent. Past research (Henderson and Fredrickson 2001; Siege and Hambric 2005; Simmons 2006) posits that technology intensity is a source of coordination needs and technological innovations force managers to integrate their differential specialties and therefore, the success of high-tech firms depends on the ability of employees to collaborate, interact, and share ideas.

Following OECD (The Organization for Economic Co-operation and Development)'s classification criteria, we define high-tech industries as those that spent 4% or more of sales on R&D expenditures. This screening process results in 772 observations in those high-tech industries. We then perform the path analysis in this subsample. TABLE 4 shows the direct and mediated effects of the predicted pay dispersions arising from CEO ability and CEO power on firm performance for high-tech firms.

As shown in TABLE 4, we find stronger effects in high-tech industries. The Pearson correlation between CEO ability and firm performance in TABLE 4 (TABLE 3) is 0.231 (0.1624) in model 1 and model 2 using *ADJ_ROA* and 0.1294 (0.1063) in model 3 and model 4 using *ADJ_Q.* Similarly, we find that the Pearson correlation between CEO power and firm performance in TABLE 4 (-0.0478 in model 1 and model 2 using *ADJ_ROA* and -0.1363 in model 3 and model 4 using *ADJ_Q*) is higher than those in TABLE 3 (-0.0281 in model 1 and model 2 using *ADJ_ROA* and -0.0522 in model 3 and model 4 using *ADJ_Q*). Our findings suggest that the path magnitudes in TABLE 4 are higher than those in TABLE 3. Interestingly, we find that the importance of indirect link between *CEOABILITY* (mediated by employee

satisfaction) and firm performance in TABLE 4 (13.24% in model 1, 9.67% in model 2, 15.11% in model 3, and 12.23% in model 4) is higher than that in TABLE 3 (5.72% in model 1, 3.93% in model 2, 13.10% in model 3, and 10.60% in model 4). Again, the importance of indirect link between *CEOPOWER* (mediated by employee satisfaction) and firm performance exhibits the similar pattern. Our study provides evidence that the correlation between CEO power/ability and firm performance attributable to the indirect link, mediated by perceived employee satisfaction, is more pronounced in high-tech firms. While we provide evidence consistent with Siege and Cambric's (2005) contention about detrimental effects of pay dispersions in high-tech firms, our research also indicates that high-tech firms with larger pay dispersions due to CEO ability have more satisfied employees and therefore, perform better. In this sense, our findings support Trevor et al. (2012)'s conclusion that a sorting perspective linking pay dispersion to employee inputs can facilitate group performance even in highly interdependent work settings. Our findings suggest sophisticated, well-educated employees in high-tech firms are able to more critically evaluate the reasonableness of CEO pay dispersion and therefore human capital is being paid closely to their respective marginal products. Overall, TABLE 4 results are consistent with our TABLE 3 results and with our argument about organizational justice.

6. Conclusions:

For a large sample of Execucomp firms during 2006–2012, we examine the path that links between predicted pay dispersions arising from CEO power and ability to firm performance. Using path analysis, we test for the existence and relative importance of these paths, using two measures of employee satisfaction and two measures of firm performance. Our results provide statistically reliable evidence of both a direct path and an indirect path. In addition, we find predicted pay dispersion arising from CEO power is negatively associated employee satisfaction

31

and firm performance, while predicted pay dispersion arising from CEO ability is positively associated employee satisfaction and firm performance.

Our results make contributions to both the current public policy debate about the usefulness of pay dispersions disclosures and whether the perceived fairness of CEO pay dispersions by company employees affects firm performance. First, our findings are important to investors, corporate directors, and regulators, and inform the public debate about the implications of the magnitude of the CEO pay dispersion. The usefulness of CEO pay dispersion disclosures has been attacked in recent years. Our results suggest that metrics derived from the CEO pay dispersion may provide valuable insight to investors about the financial information provided by company. Second, our results from sorting observations based on CEO characteristics and employee satisfaction suggest that the negative relationship between the CEO pay dispersion and firm performance is contingent on CEO power and may be mediated by employee satisfaction so our findings augment and complement past research about CEO power's negative consequences for the firm (Carcello et al. 2011; Cheng et al. 2014). Finally, we expand the existing literature dealing with the effect of CEO ability on firm outcome (Demerjian et al. 2013). While we provide strong evidence consistent with managerial rent-seeking theory, our research supports the view that more capable CEOs promotes employee satisfaction and firm performance. In summary, we believe that we contribute to the literature by shedding light on the importance of CEO power and CEO ability to the relation between the CEO pay dispersion and firm performance.

32

References

Adams, R., and D. Ferreira. 2009. Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics* 94(2): 291-309.

AFL-CIO, http://www.aflcio.org/Corporate-Watch/Paywatch-2016

Akerlof, G. A., and J. L. Yellen. 1988. Fairness and unemployment. *The American Economic Review* 78(2): 44-49.

Almås, I., A.W. Cappelen, J. T. Lind, E. Ø. Sørensen, and B. Tungodden. 2011. Measuring unfair (in)equality. *Journal of Public Economics* 95: 488–499.

Baker, G. P., M. Jensen, and K. Murphy. 1988. Compensation and incentives: Theory versus practice. *Journal of Finance* 43: 593-616.

Bamberger, P. A., M. Biron, and I. Meshoulam 2014. *Human resource strategy: formulation, implementation, and impact*. 2nd Edition, Routledge

Baron R.M., and D. A. Kenny. 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51:1173–1182

Bebchuk, L.A., 2009. *Pay without performance: The unfulfilled promise of executive compensation*. Harvard University Press.

Bebchuk, L. A., and J. M. Fried. 2004. *Pay without performance*. Cambridge, MA: *Harvard University Press*

Bebchuk, L. A., and Y. Grinstein 2005. The growth of executive pay. *Oxford Review of Economic Policy* 21 (2): 283-303

Bebchuk, L.A., K. J. Cremers, and U. C. Peyer. 2011. The CEO pay slice. *Journal of Financial Economics* 102 (1): 199-221.

Bhattacharya, N., F. Ecker, P. M. Olsson, and K. Schipper. 2012. Direct and mediated associations among earnings quality, information asymmetry, and the cost of equity. *The Accounting Review*: 87 (2): 449- 482.

Bivens, J., and L. Mishel. 2013. The Pay of Corporate Executives and Financial Professionals as Evidence of Rents in Top 1 Percent Incomes. *Economic Policy Institute Working Paper*. http://www.epi.org/publication/pay-corporate-executivesfinancial-professionals/

Bloom, M., and J. Michel. 2002. The relationships among organizational context, pay dispersion, and among managerial turnover. *Academy of Management Journal* 45.1: 33-42.

33

Boone, A. L., L. C. Field, J. M. Karpoff, and C. G. Raheja. 2007. The determinants of corporate board size and composition: an empirical analysis. *Journal of Financial Economics* (85): 66-101.

Bobocel, D. R., and L. Gosse. 2015. Procedural justice: a historical review and critical analysis. In R. Cropanzano and M. Ambrose (eds). *Oxford Handbook of Psychology Justice in Work Organizations* (pp. 51-87), New York, Oxford University Press

Carcello, J. V., T. L. Neal, Z. Palmrose, and S. Scholz. 2011. CEO involvement in selecting board members, audit committee effectiveness, and restatements. *Contemporary Accounting Research* 28(2): 396–430.

Cheng, X., L. Gao, J. Lawrence, and D. Smith. 2014. SEC Division of corporation finance monitoring and CEO power. *Auditing: A Journal of Practice and Theory* 33 (1): 29-56.

Connelly, B. L., K. T. Haynes, L. Tihanyi, D. L. Gamache, and C. E. Devers. (2016). Minding the gap antecedents and consequences of top management-to-worker pay dispersion. *Journal of Management* 42(4): 862-885

Core, J., and W. Guay. 1999. The use of equity grants to manage optimal equity incentive levels. *Journal of Accounting and Eco*nomics 28 (2): 151-184.

Cowherd, D. and D. Levine. (1992). Product quality and pay equity between lower-level employees and top management: an investigation of distributive justice theory. *Administrative Science Quarterly* 37 (2), 302-320.

Cyert, R., S. Kang, P. Kumar, and A. Shah. 1997. Corporate governance and the level of CEO compensation. *Working Paper, Carnegie Mellon University.*

De Cremer, D., and N. den Ouden. 2009. When passion breeds justice: Procedural fairness effects as a function of authority's passion. *European Journal of Social Psychology*, 39: 384–400.

De Cremer, D., and T. R. Tyler. 2005. Managing group behavior: The interplay between procedural justice, sense of self, and cooperation. In M. P. Zanna (Ed.), *Advances in experimental social psychology*. San Diego, CA: Elsevier Academic Press.37: 151–218.

De Cremer, D., M. H. van Dijke, and D. M. Mayer. 2010. Cooperating when "you" and "I" are treated fairly: The moderating role of leader prototypicality. *Journal of Applied Psychology* 95: 1121–1133.

Demerjian, P., B. Lev, and S. McVay. 2012. Quantifying managerial ability: A new measure and validity tests. *Management Science* 58 (7): 1229-1248.

Demerjian, P., B. Lev, and S. McVay. 2013. Managerial ability and earnings quality. *The Accounting Review* 88 (2): 463–498.

Defond, M. L., C.Y. Lim, and Y. Zang. 2016. Client conservatism and auditor-client contracting. *The Accounting Review* 91 (1): 69-98.

Ding, D., S. Akhtar and G. Ge. 2009. Effects of inter and intra-hierarchy wage dispersions on firm performance in Chinese enterprises. *International Journal of Human Resource Management* 20: 2370–2381.

Dornstein, M. 1991. *Conceptions of Fair Pay: Theoretical Perspectives and Empirical Research* (New York: Praeger)

Dybvig, P. H. and M. Warachka, 2012. Tobin's Q does not measure performance: Theory, empirics, and alternative measures, *Working paper, Olin School of Business, Washington University, St. Louis*

Eavis, P. 2015. SEC Approves Rule on CEO Pay Ratio. *New York Times*

Edmans, A. 2011. Does the stock market fully value intangibles? Employee satisfaction and equity prices. *Journal of Financial Economics* 101: 621-640.

Ehrenberg, R. G., and M. Bognanno. 1990. The incentive effects of tournaments revisited: Evidence from the European PGA Tour. *Industrial and Labor Relations Review* 43: 74S-88S.

Faleye, O., E. Reis, and A. Venkateswaran. 2013. The determinants and effects of CEO–employee pay ratios. *Journal of Banking and Finance* 37: 3258-3272.

Ferraro, F., J. Pfeffer, and R. I. Sutton. 2005. Economics language and assumptions: How theories can become self-fulfilling. *Academy of Management Review* 30: 8–24.

Finkelstein, S. 1992. Power in top management teams: dimensions, measurement, and validation. *Academy of Management Journal* 35: 505-538.

Frydman, C., and R. Saks 2010. Executive compensation: a new view from a long-term perspective, 1936–2005. *Review of Financial Studies* 23 (5): 2099-2138.

Gerhart, B., and S. L. Rynes. 2003. *Compensation: Theory, evidence, and strategic implications.* Thousand Oaks, CA: Sage.

Gompers, P. A., J. L. Ishii, and A. Metrick. 2003. Corporate governance and equity prices. *The Quarterly Journal of Economics* 118: 107-155.

Guo, L., T. Libby, and X. K. Liu. 2016. The effects of vertical pay dispersion: Experimental evidence in a budget setting. *Contemporary Accounting Research*.

Guthrie, J. P. 2007. Remuneration: Pay Effects at Work. In *The Oxford Handbook of Human Resource Management,* ed. P. Boxall, J. Purcell, and P. Wright, 344–63, Oxford: Oxford University Press

Henderson, A. D., and J. W. Fredrickson. 2001. Top management team coordination needs and the CEO pay gap: A competitive test of economic and behavioral views. *Academy of Management Journal* 44: 96-117.

Homans, G. C. 1961. *Social behavior: Its elementary forms*. New York, NY: Harcourt, Brace, & World.

Jasso, G., K. Y. Törnblom, and C. Sabbagh. 2016. "Distributive Justice," *Handbook of social justice theory and research*. New York, NY: Springer: 201-218.

Konow, J and L. Schwettmann. 2016. "The Economics of Justice." *Handbook of social justice theory and research*. New York, NY: Springer: 83-106

Lazear, E. P. 2000. Performance pay and productivity. *American Economic Review* 90: 1346–1361.

Levine, D. 1991. Cohesiveness, productivity, and wage dispersion. *Journal of Economic Behavior and Organization* 15: 237-255.

Mittone, L., and M. Ploner. 2008. Asset legitimacy and perceived equity in the dictator game (*CEEL Working Paper). Trento, Italy: University of Trento*.

Montada, L and J. Maes. 2016 "Justice and Self-Interest," *Handbook of social justice theory and research*. New York, NY: Springer: 109-125.

Nalebuff, B., and J. Stiglitz. 1983. Prizes and incentives: Towards a general theory of compensation and competition. *Bell Journal of Economics* 2: 21-43.

Ohana, O, M., M. Meyer, and M. Meyer. 2016. Distributive justice and affective commitment in nonprofit organizations: Which referent matters? *Employee Relations*, *38*(6):841-858.

Ortiz-Molina, H. 2007. Executive compensation and capital structure: The effects of convertible debt and straight debt on CEO pay. *Journal of Accounting and Economics* 43 (1): 69-93.

Piketty, T. 2014, Capital in the Twenty-First Century. *Belknap Press*

Pevzner, M., F. Xie, and X. Xin. 2015. When firms talk, do investors listen? The role of trust in stock market reactions to corporate earnings announcements. *Journal of Financial Economics* 117: 190–223

Rosen, S. 1986. Prizes and incentives in elimination tournaments. *American Economic Review* 76: 701-715.

Sabbagh, Clara, Manfred, and Schmitt, eds.2016. *Handbook of social justice theory and research*. New York, NY: Springer

Shaw, J. D., N. Gupta, and J. E. Delery, (2002). Pay dispersion and workforce performance: Moderating effects of incentives and interdependence. *Strategic Management Journal*, 23(6): 491-512.

Siege, P., and D. C. Hambric 2005. Pay disparities within top management groups: evidence of harmful effects on performance of high-technology firms, *Organization Science* 16: 259-274

Simmons, A. 2006. Organizational Justice: A Potential Facilitator or Barrier to Individual Creativity, *Doctoral Dissertation, Texas A&M University*

Smith, C.W., and R. L. Watts. 1992. The investment opportunity set and corporate financing, dividend, and financing policies. *Journal of Financial Economics* 32: 262—292.

Toner, P. 2011. Workforce skills and innovation: an overview of major themes in the literature. *STI/OECD EDU Working Paper, SG/INNO. OECD. Paris*

Tosi, H.L., and T. Greckhamer. 2004. Culture and CEO compensation. *Organization Science* 15: 657-670.

Trevor, V., G. Reilly, and B. Gerhart. 2012. Reconsidering pay dispersion's effect on the performance of interdependent work: Reconciling sorting and pay inequality. *Academy of Management Journal* 55(3): 585-610

Wade, J. B., C. O'Reilly, and T. Pollock. 2006. Overpaid CEOs and underpaid managers: fairness and executive compensation. *Organization Science* 17(5): 527-544.

Walster, E., E. Berscheid, and G. W. Walster. 1978. *Equity: Theory and research*. Boston, MA: Allyn & Bacon.

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

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

Appendix: Definition of Variables

CEO PAY DISPERSION

Raw_ PAYRATIO: CEO compensation divided by average employee pay in a 2-digit SIC code industry;

PAYRATIO: the logarithm of CEO compensation divided by average employee pay in a 2-digit SIC code industry;

CEOPOWER: predicted CEO pay dispersion arising from CEO power;

CEOABILITY: predicted CEO pay dispersion arising from CEO ability;

IND_MEDIAN: the median CEO pay dispersion in the two-digit industrial classification group;

EMPLOYEE SATISFACTION

BEST: a dummy variable, equal to 1 if a firm is on the list of the "100 Best Companies to work for the America" and 0 otherwise;

RANKING: equals to 1 if firm is ranked in the top three deciles of the "100 Best Companies to work for the America"; equals to 2 if firm is ranked in the middle four deciles of the "100 Best Companies to work for the America"; equals to 3 if firm is ranked in the bottom three deciles of the "100 Best Companies to work for the America"; and equals to 4 if firm is not listed.

Firm Performance

Q: the market value of equity plus the book value of assets minus the book value of equity, divided by the book value of assets;

ADJ_Q: industry adjusted Tobin's q;

ROA: income before extraordinary items scaled by total assets;

ADJ_ROA: industry adjusted ROA;

RETX: raw buy and hold stock returns for the year;

CEO Characteristics:

CHAIR: a dummy variable, equal to 1 if CEO is the founder of the company and 0 otherwise;

FOUNDER: a dummy variable, equal to 1 if CEO is the chair of the board and 0 otherwise;

TENURE: the logarithm of the number of years since becoming a CEO;

OWNERSHIP: the percentage of outstanding shares owned by the CEO;

HIRED_DIRECTOR: the percentage of directors appointed during a current CEO's tenure;

ABILITY: measure of CEO ability based on Demerjian, Lev, and McVay (2012)'s approach in estimating managers' innate ability;

Firm Characteristics:

STD_RETX: standard deviation of annual stock returns for the prior five years;

STD_ROA: standard deviation of annual return on assets for the prior five years;

CAP: total capital expenditures scaled by total assets;

LEVERAGE: total long-term debt scaled by total assets;

AT: the logarithm of total assets;

MTB: market value scaled by book value of the company;

FIRMAGE: the logarithm of firm age;

BUSSEG: the logarithm of the number of business segments;

GEOSEG: the logarithm of the number of geographic segments;

FOREIGN: a dummy variable, equal to 1 if the firm reports foreign currency translation gains or losses and 0 otherwise;

Employee Skills and Opportunities

RD: research and development expense scaled by sales;

PPT_INTENSITY: net property, plant, and equipment per employee in millions of dollars;

UNION: the percentage of unionized workers in the industry in each year;

I_CONCENTRATION: the sales-based Herfindahl index calculated based on all COMPUSTAT firms in

the same industry;

I_HOMOGENEITY: the mean partial correlation between firms' returns and equally weighted industry index, holding market return constant;

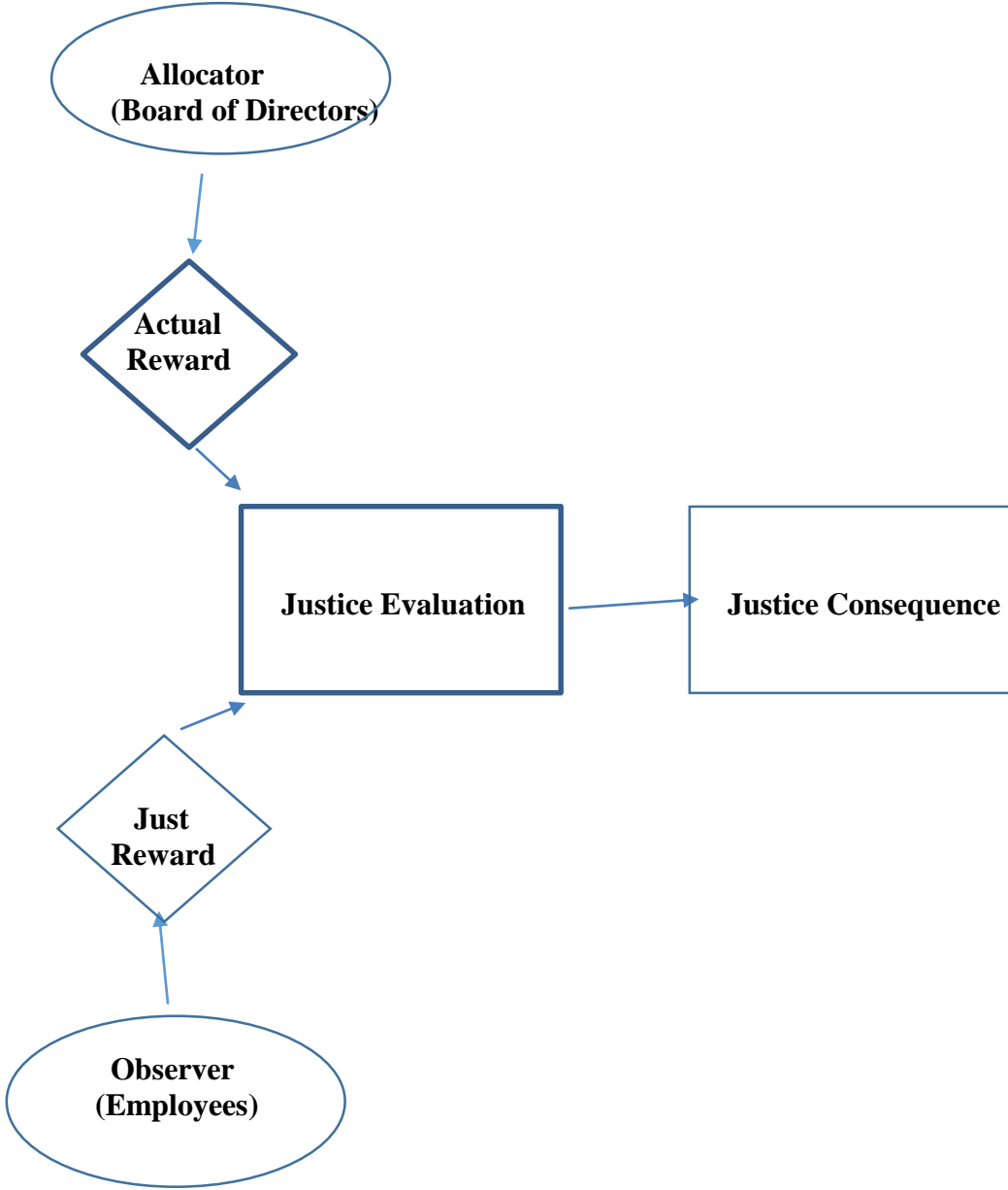**Figure 1: Distributive Justice Model for Determining CEO (Rewardee) Pay Dispersion**

Figure 2: Direct and Indirect Paths between Perceived CEO Pay Fairness and Firm Performance
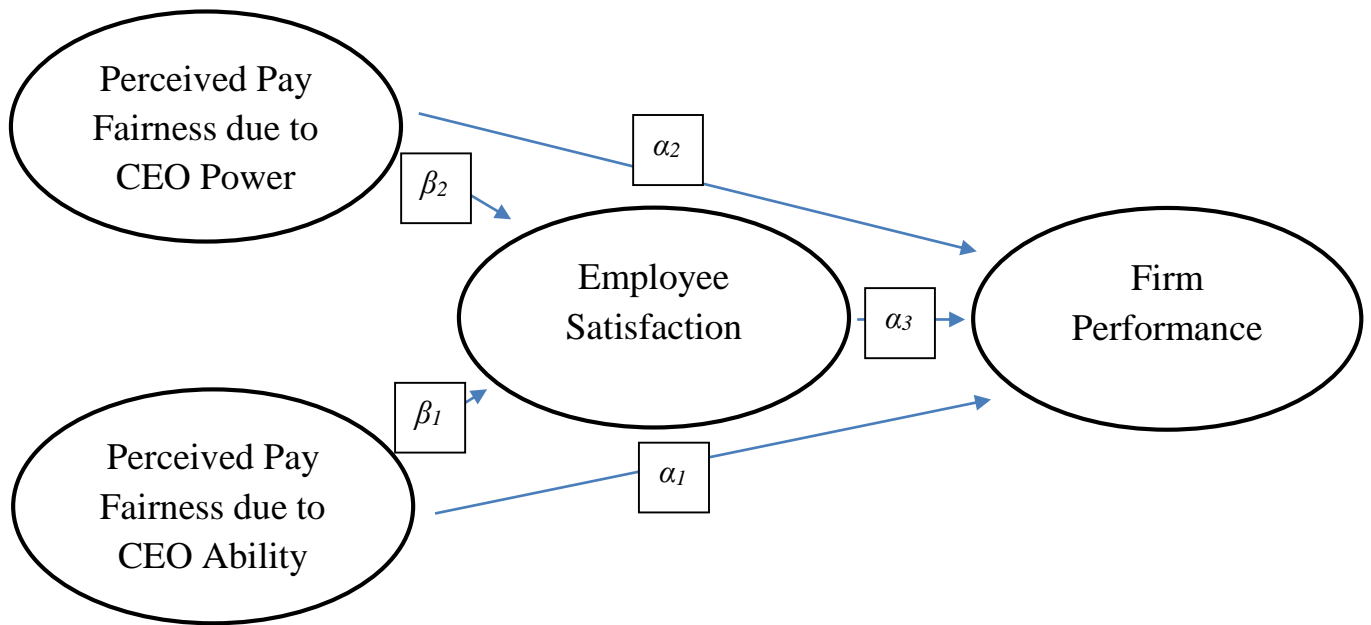
<p style="text-align: center;">**TABLE 1: Descriptive Statistics**</p>

Variable	Mean	Std Dev	25th Pctl	Median	75th Pctl
CEO Pay Dispersion					
RAW_PAYRATIO	146.19	193.29	43.03	89	176.48
PAYRATIO	4.39	0.93	3.97	4.32	5.3
IND_MEDIAN	4.26	0.44	4.06	4.18	4.75
Employee Satisfaction					
BEST	0.09	0.28	0	0	0
RANKING	3.85	0.52	4	4	4
Firm Performance					
Q	1.77	0.95	1.15	1.48	2.04
ADJ_Q	0.24	0.97	-0.26	0	0.42
ROA	0.1	0.08	0.05	0.09	0.14
ADJ_ROA	0.02	0.04	-0.03	0.01	0.07
RETX	0.03	0.43	-0.14	0.07	0.26
CEO Characteristics					
CHAIR	0.62	0.49	0	1	1
FOUNDER	0.04	0.19	0	0	0
TENURE	1.69	0.91	1.1	1.79	2.3
OWNERSHIP	0.03	0.09	0	0	0.02
HIRED_DIRECTOR	0.33	0.47	0	0	1
ABILITY	0.02	0.15	-0.08	0.01	0.08
Other Firm Characteristics					
STD_RETX	0.37	0.24	0.2	0.31	0.48
STD_ROA	0.03	0.04	0.01	0.02	0.04
CAP	0.04	0.04	0.02	0.03	0.06
LEVERAGE	0.56	0.22	0.4	0.55	0.69
AT	8.1	1.59	6.92	7.93	9.05
MTB	3.33	64.6	1.4	2.1	3.29
FIRMAGE	3.08	0.63	2.56	3.04	3.66
BUSSEG	0.88	0.74	0	1.1	1.61
GEOSEG	1	0.73	0.69	1.1	1.61
FOREIGN	0.33	0.47	0	0	1
Employee Skills and Opportunities					
RD	0.02	0.05	0	0	0.03
PPT_INTENSITY	0.17	0.06	0.03	0.04	0.09
UNION	0.11	0.08	0.04	0.11	0.16
I_CONCENTRATION	0.07	0.06	0.05	0.06	0.08
I_HOMOGENEITY	0.29	0.09	0.22	0.27	0.36

All variables are defined in Appendix.

Table 2: Determinants of CEO Pay Dispersion

	Pay Ratio	
Variable	Parameter Estimate	Standard Error
Intercept	-1.10 ***	0.13
IND_MEDIAN	0.58***	0.02
RETX	-0.01	0.03
ROA	2.20***	0.12
STD_RETX	0.13***	0.05
STD_ROA	1.56***	0.31
MTB	0.00	0.00
AT	0.35***	0.01
CAP	0.36	0.25
FIRMAGE	0.02	0.02
BUSSEG	0.02	0.02
GEOSEG	0.07***	0.01
FOREIGN	0.01	0.03
LEVERAGE	-0.05**	0.02
CHAIR	0.16***	0.02
FOUNDER	-0.12***	0.03
TENURE	0.004**	0.00
OWNERSHIP	-0.49***	0.10
HIRED_DIRECTOR	0.02	0.03
ABILITY	0.07***	0.02
RD	0.58**	0.27
PPT_INTENSITY	-0.07***	0.02
UNION	0.08	0.13
I_CONCENTRATION	0.42**	0.17
I_HOMOGENEITY	-0.77***	0.09
Year Dummies	YES	
Number of observations	4890	
Adjusted R^2	0.49	

*, **, *** indicate significance at the 10 percent, 5 percent, and 1 percent level, respectively, according to a two-tailed test. All variables are defined in Appendix.

TABLE 3: Direct and Mediated Effects of the Predicted Pay Dispersion (CEO Ability and Power) on Firm Performance

	Model 1	Model 2	Model 3	Model 4
	ADJ_ROA/ BEST	ADJ_ROA/ RANKING	ADJ_Q/ BEST	ADJ_Q/ RANKING
r(CEOABILITY, PERFORMANCE)	0.1624	0.1624	0.1063	0.1063
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Direct Path				
p(CEOABILITY, PERFORMANCE)	0.1310	0.1339	0.0747	0.0773
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
percentage	80.67%	82.45%	70.27%	72.72%
Mediated Path				
p(CEOABILITY, SATISFACTION)	0.0648	-0.0555	0.0666	-0.0543
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
p(SATISFACTION, PERFORMANCE)	0.1434	-0.1151	0.2093	-0.2076
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Total mediated path	0.0093	0.0064	0.0139	0.0113
	(0.02)	*(0.02*	*(0.02)*	*(0.02)*
percentage	5.72%	3.93%	13.10%	10.60%
r(CEOPOWER, PERFORMANCE)	-0.0281	-0.0281	-0.0522	-0.0522
	(0.02)	*(0.02)*	*(0.04)*	*(0.04)*
Direct Path				
p(CEOPOWER, PERFORMANCE)	-0.0202	-0.0208	-0.0365	-0.0362
	(0.04)	*(0.04)*	*(0.05)*	*(0.05)*
percentage	71.89%	74.02%	69.92%	69.35%
Mediated Path				
p(CEOPOWER, SATISFACTION)	-0.0274	0.0295	-0.0276	0.0291
	(0.06)	*(0.06)*	*(0.08)*	*(0.08)*
p(SATISFACTION, PERFORMANCE)	0.1434	-0.1151	0.2093	-0.2076
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Total mediated path	-0.0039	-0.0034	-0.0058	-0.0060
	(0.05)	*(0.05)*	*(0.08)*	*(0.08)*
percentage	13.98%	12.08%	11.06%	11.57%
Controls	YES	YES	YES	YES

p-values are reported in parentheses. All variables are defined in Appendix.

TABLE 4: Direct and Mediated Effects of the Predicted Pay Dispersion (CEO Ability and Power) on Firm Performance in High-Tech Industry

	Model 1	Model 2	Model 3	Model 4
	ADJ_ROA/ BEST	ADJ_ROA/ RANKING	ADJ_Q/ BEST	ADJ_Q/ RANKING
r(CEOABILITY, PERFORMANCE)	0.231	0.231	0.1294	0.1294
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Direct Path				
p(CEOABILITY, PERFORMANCE)	0.1609	0.1691	0.0882	0.0915
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
percentage	69.65%	73.20%	68.16%	70.71%
Mediated Path				
p(CEOABILITY, SATISFACTION)	0.1617	-0.1231	0.0823	-0.0709
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
p(SATISFACTION, PERFORMANCE)	0.1892	-0.1815	0.2375	-0.2232
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Total mediated path	0.0306	0.0223	0.0195	0.0158
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*
percentage	13.24%	9.67%	15.11%	12.23%
r(CEOPOWER, PERFORMANCE)	-0.0478	-0.0478	-0.1363	-0.1363
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Direct Path				
p(CEOPOWER, PERFORMANCE)	-0.0316	-0.0321	-0.0914	-0.0921
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*
percentage	66.11%	67.15%	67.06%	67.57%
Mediated Path				
p(CEOPOWER, SATISFACTION)	-0.0443	0.0432	-0.0781	0.0804
	(0.02)	*(0.02)*	*(0.01)*	*(0.01)*
p(SATISFACTION, PERFORMANCE)	0.1892	-0.1815	0.2375	-0.2232
	(0.00)	*(0.00)*	*(0.00)*	*(0.00)*
Total mediated path	-0.0084	-0.0078	-0.0185	-0.0179
	(0.05)	*(0.05)*	*(0.02)*	*(0.02)*
percentage	17.53%	16.40%	13.61%	13.17%
Controls	YES	YES	YES	YES

p-values are reported in parentheses. All variables are defined in Appendix.