Should the CEO Pay Ratio be Regulated?[+]

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I. INTRODUCTION

In an apparent effort to limit the escalation of executive compensation through tax policy, the federal government limits the deductibility of nonperformance compensation of the CEO, CFO, and the other three most highly paid executives. Section 162(m) of the Internal Revenue Code prohibits the deduction of more than one million dollars in nonperformance compensation per year for each of these executives.[1] In a further effort to seemingly discourage wide compensation gaps among executives and other employees, recent legislation requires the disclosure of a detailed relative executive compensation measure. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank),[2] enacted after the 2008 financial crisis, requires all publicly listed firms to disclose a pay ratio of annual CEO compensation to the median employee compensation (Pay Ratio).[3] Does the federal government have a legitimate interest in attempting to rein in the gap between CEO compensation and that of the median employee through disclosures? One question that should be answered is whether high levels of relative CEO pay harm shareholder interests. This is the question we address in this Article.

Prior to the Dodd-Frank Act, public corporations were required to disclose only CEO compensation along with the compensation of the four other most highly compensated officers.[4] To compute relative CEO compensation, researchers computed the CEO Pay Slice (CPS or Pay Slice), which is the ratio of the CEO's pay to the top five officer's compensation.[5] Opponents of the Dodd-Frank legislation have argued that also requiring disclosure of the Pay Ratio would simply add to the costs of compliance without providing any new

1. 26 U.S.C. § 162(m) (2017).

2. Dodd-Frank Wall Street Reform & Consumer Protection Act, Pub. L. No. 111-203, § 953(b)(1), 124 Stat. 1376 (2010) (codified as amended at 15 U.S.C. § 781).

3. Pay Ratio Disclosure, Securities Act Release No. 9877, Exchange Act Release No. 75610, 80 Fed. Reg. 50,104 (Aug. 18, 2015) [hereinafter Pay Ratio Rule]. The Pay Ratio Rule was adopted by the United States Security and Exchange Commission (SEC) by a three-to-two vote of the SEC Commissioners. Press Release, SEC, SEC Proposes Rules for Pay Ratio Disclosure (Sept. 18, 2013), http://www.sec.gov/News/PressRelease/Detail/PressRelease/1370539817895.

4. Executive Compensation, 17 C.F.R. § 229.402 (2019).

5. Lucian A. Bebchuk et al., *The CEO Pay Slice*, 102 J. FIN. ECON. 199, 202 (2011).

information to the market over and above the CPS.[6]

Growing CEO power is an important corporate governance and public policy question. What is less clear is whether increasing CEO power benefits or harms shareholder interests. In this paper, we investigate the information content CEO Pay Ratio in revealing the degree and costs of CEO power. We also compare and contrast our results with CPS to determine whether the Pay Ratio provides any further information to shareholders than is already available in the CPS.

The logic of the Dodd-Frank Act suggests that it is more difficult to manipulate the level and variability of the Pay Ratio than the Pay Slice. That is, manipulating the Pay Ratio would require changing the median worker compensation, which is presumably more difficult than simply making adjustments to the top four most highly compensated officers. Nevertheless, whether the newly mandated Pay Ratio disclosure provides any new information to the market regarding the level and consequences of CEO power is an empirical question, and the one we analyze in this study.

Using a sample of hand collected data, we analyze the relation among the Pay Ratio, the Pay Slice, and determinants and consequences of CEO power. We find that both the Pay Ratio and the Pay Slice are related to measures of CEO power. Importantly, they both remain significant when examined jointly. Hence, contrary to the claims of the opponents of the Dodd-Frank Act, the marginal explanatory power of the Pay Ratio is not subsumed by the CPS. This finding tells us that Pay Ratio provides new and additional information over and above the CPS.

Most interestingly however, we also examine the consequences of CEO power using both variables. Here we find that the Pay Ratio is more informative about the agency costs excessive CEO power imposes on shareholders. Specifically, we find that the cost of capital increases significantly as CEO power, as measured by the Pay Ratio, increases. Furthermore, the Pay Ratio dominates and eliminates the information content of the CPS as an explanatory variable for the cost of capital. Our finding indicates that to understand the costs imposed upon shareholders by excessive CEO power, we also need to pay attention to the Pay Ratio. This finding further undermines the assertions of the Dodd-Frank opponents that the Pay Ratio disclosure is simply unnecessary and onerous for the public corporations.

The remainder of this manuscript is organized as follows. In Part I, we discuss the evolution of CEO compensation. Part II analyzes various regulations regarding promoting disclosure of executive compensation in the United States, including a discussion of the debates surrounding whether disclosure of CEO pay should be mandated. Part III then addresses potential determinants of CEO compensation, while Part IV describes various theories for the contrasting difference in the Pay Ratio between the U.S. and Western Europe. We then provide, in Part V, empirical evidence that the Pay Ratio correlates with increases in the cost of capital for firms and dominates the CPS. Finally, we discuss policy implications and conclude.

6. *See, e.g.*, Jillian Loh, *Could the Pay Ratio Disclosure Backfire? Examining the Effects of the SEC's Pay Ratio Disclosure Rule*, 4 TEX. A&M L. REV. 417 (2017) (arguing that the disclosed data relates primarily to the company's workforce structure rather than its CEO's pay slice or the company's financial performance).

II. CEO COMPENSATION IN THE UNITED STATES

There is no denying the discrepancy between the pay of the CEO and the average worker in the United States. In 2017, "the average CEO of the 350 largest firms in the U.S. received $18.9 million in compensation" representing a "CEO-to-worker compensation ratio of 312-to-1."[7] That ratio was "far greater than the 20-to-1 ratio in 1965 and more than five times greater than the 58-to-1 ratio in 1989 (although it was lower than the peak ratio of 344-to-1, reached in 2000)."[8] To compare, in Europe the CEO-to-worker ratio is about 25-to-1.[9]

The pay discrepancy is especially prevalent for larger companies.[10] In 2018, the ratio for companies with a market capitalization (cap) above $25 billion was 213-to-1, but decreased as the size of the company dropped to only 32-to-1 for companies with a market cap below one billion dollars.[11] Similarly, companies with more employees tended to have lower average pay and a higher pay ratio.[12] The highest discrepancy of the Russell 3000 companies was Weight Watchers International Inc., which had a ratio of 5908-to-1 with the CEO's compensation in 2017 at "$35,524,002 while Weight Watchers' median employee received $6,013."[13]

These numbers may be even higher than those ratios suggest. In many cases, such as with the Weight Watchers example above, a large portion of the compensation CEOs receive comes in the form of stock options.[14] These stock options, when computing compensation, are valued at the time they were granted.[15] If the stock price increases before the CEO exercises the options, that value is not included in the compensation calculation.[16] Furthermore, in addition to their base pay and stock options, CEOs and executives often receive golden parachutes, which can pay departing executives millions of dollars, regardless of the reason for their departure.[17] In 2013, the average golden parachute for a CEO who was forced out of the job was $48 million.[18]

While CEO compensation has been increasingly connected to stock options, the

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7. LAWRENCE MISHEL & JESSICA SCHIEDER, ECON. POL'Y INST., CEO COMPENSATION SURGED IN 2017 1 (Aug. 16, 2018), https://www.epi.org/files/pdf/152123.pdf.

8. *Id.*

9. David R. Meals, *CEO & Employee Pay Discrepancy: How the Government's Policies Have Encouraged the Gap*, 6 J. BUS. ENTREPRENEURSHIP & L. 297, 298 (2013).

10. Jessica Phan, *CEO Pay Ratio: First Look at Disclosure Trends*, EQUILAR (May 22, 2018), https://www.equilar.com/blogs/385-ceo-pay-ratio-first-look-at-trends-2018.html.

11. *Id.*

12. *Id.*

13. *Id.*

14. *Id.* The compensation of the Weight Watchers' CEO "included several one-time compensation awards and benefits, which the Company does not expect to provide in future years, including equity hiring awards of RSUs and stock options." Phan, *supra* note 10.

15. Ralph Nader & Steven Clifford, *CEOs Aren't Disclosing their Real Compensation. The Pay Gap is Much Worse Than You Think.*, USA TODAY (May 17, 2018), https://www.usatoday.com/story/opinion/2018/05/17/ceos-real-wages-pay-gap-column/612615002.

16. *Id.*

17. Diana Hembree, *CEO Pay Skyrockets to 361 Times that of the Average Worker*, FORBES (May 22, 2018), https://www.forbes.com/sites/dianahembree/2018/05/22/ceo-pay-skyrockets-to-361-times-that-of-the-average-worker/#20341cdb776d.

18. Al Lewis, *Fraud, Failure and Bankruptcy Pay Well for CEOs*, MKT. WATCH (Aug. 28, 2013), https://www.marketwatch.com/story/fraud-failure-and-bankruptcy-pay-well-for-ceos-2013-08-28.

growth in CEO compensation is not simply a result of increases in stock prices. Rather, "[t]he growth in CEO compensation also outstripped the returns of shareholders: CEO pay growth has doubled the rise of the S&P Index over the past thirty years."[19] Furthermore, CEOs and other executives now retain more of the largest companies' profits.[20]

Unsurprisingly, the public response to high CEO pay has been harsh.[21] In 2011, the Occupy Wall Street movement began with a single blog post and ballooned into an international movement with protests in "951 cities in some 82 countries."[22] Although the movement ultimately faded, terms like the "1%" and the "99%" are engrained in American culture,[23] and the public opinion of CEO pay remains low.[24] According to a Stanford University nationwide survey, "[t]he vast majority (74 percent) of Americans believe that CEOs are not paid the correct amount relative to the average worker."[25] This is true, despite the respondents in the survey "grossly underestimat[ing] how much CEOs make."[26] Although "[t]he typical American believes a CEO earns $1.0 million in pay," the "median reported compensation for the CEOs of these companies is approximately $10.3 million."[27]

The distaste with high CEO pay does not mean that Americans would support regulation curtailing CEO pay, however. A study by the Cato Institute found that 73% of Americans believe that CEOs are paid "too much," with 56% of Democrats and 40% of Republicans believing that CEOs are not just overpaid, but that they are paid "far too much."[28] Despite this, the same study found that Americans are hesitant to support regulation of CEO pay.[29] Only 43% of respondents supported regulating the salaries of CEOs and nearly three-fourths of Americans "believe regulations often fail to have their intended effect."[30] More telling, 62% of respondents believed that regulations do more harm than good and 72% believed that regulations will not prevent future crises.[31] Importantly, the number of

19. Bryce Tingle, *How Good Are Our "Best Practices" When It Comes to Executive Compensation? A Review of Forty Years of Skyrocketing Pay, Regulation, and the Forces of Good Governance*, 80 SASK. L. REV. 387, 390 (2017).

20. *Id.* ("In 1993, mid-way through the growth in executive compensation, payments to the five highest-paid senior executives in a U.S. company absorbed, on average, 5 per cent of its profits; by 2003, this had increased to 10 per cent.").

21. Olubunmi Faleye et al., *The Determinants and Effects of CEO-Employee Pay Ratios*, 37 J. BANKING & FIN. 3258, 3258 (2013) ("Almost without exception, these reports are met with populist anger, motivated by a perception of inequity in corporate compensation practices.").

22. Bill Chappell, *Occupy Wall Street: From a Blog Post to a Movement*, NPR (Oct. 20, 2011), https://www.npr.org/2011/10/20/141530025/occupy-wall-street-from-a-blog-post-to-a-movement.

23. Katherine Connor Martin, *The Lexical Legacy of Occupy Wall Street*, OXFORD DICTIONARIES (Sept. 14, 2012), https://blog.oxforddictionaries.com/2012/09/14/occupy-wall-street.

24. DAVID F. LARCKER ET AL., AMERICANS AND CEO PAY: 2016 PUBLIC PERCEPTION SURVEY ON CEO COMPENSATION (2016), https://www.gsb.stanford.edu/faculty-research/publications/americans-ceo-pay-2016-public-perception-survey-ceo-compensation.

25. *Id.* at 4.

26. *Id.*

27. *Id.*

28. Emily Ekins, *Wall Street vs. The Regulators: Public Attitudes on Banks, Financial Regulation, Consumer Finance, and the Federal Reserve*, CATO INST. (Sept. 19, 2017), https://www.cato.org/survey-reports/wall-street-vs-regulators-public-attitudes-banks-financial-regulation-consumer. The distaste extended to the financial industry, with 66% of Americans believing that Wall Street bankers do not earn their money and that they "get paid huge amounts of money for essentially tricking people." *Id.* (internal quotation marks omitted).

29. *Id.*

30. *Id.*

31. *Id.*

Americans supporting regulation of CEO pay has trended downward since the recession. In 2009, according to a Gallup poll, nearly six in ten Americans supported the government limiting executive pay.[32] In 2018, however, when asked the same question, only 47% of Americans supported government action.[33]

The issue may not be how much CEOs are paid, but in what form they are paid. Stock options and other short-term incentives have faced heavy criticism in the media and among the general public.[34] To some extent, this criticism may be effective in influencing firm behavior.[35] Public opinion, often in the form of negative press coverage, may cause companies to restructure executive compensation.[36] One study found that although negative press coverage did not lead to reduced overall compensation for executives, bad press led companies to reduce stock options and instead "increase less contentious types of pay."[37]

Even though public perception of CEO compensation may be negative, there is little preventing companies from increasing the pay of their CEOs and other executives.[38] Apart from the requirements for disclosure and requirements that most compensation be incentive-based, not much has been done from a legal perspective to curtail CEO pay.[39] Companies retain large discretion to award high salaries and other incentives.[40]

Against this backdrop, the U.S. government has made various attempts to regulate disclosure of CEO pay.[41] The latest SEC regulation, pursuant to the Dodd-Frank Act of 2010, requires issuers to disclose the Pay Ratio between the company's median employee and the company's chief executive officer.[42] Furthermore, a number of market analysts and commentators have suggested there could be important economic consequences associated with the Pay Ratio disclosure.[43] For instance, there could be pressure on socially responsible investors and funds to call for compensation reform. Some local and state governments have also suggested that contracts to firms could be denied based on the Pay Ratio.[44]

III. REGULATIONS IN CONNECTION WITH EXECUTIVE COMPENSATION IN THE UNITED

32. Frank Newport, *Americans Split on Government Action to Limit Executive Pay*, GALLUP (Apr. 5, 2018), https://news.gallup.com/poll/232103/americans-split-government-action-limit-executive-pay.aspx.

33. *Id.*

34. Camelia M. Kuhnen & Alexandra Niessen, *Public Opinion and Executive Compensation*, 58 MGMT. SCI. 1249, 1250 (2012) ("We find that the negativity of coverage of executive compensation in the U.S. press varies substantially over time, with the most criticized pay component being stock options.").

35. *Id.*

36. *Id.*

37. *Id.* at 1270.

38. Randall S. Thomas & Harwell Wells, *Executive Compensation in the Courts: Board Capture, Optimal Contracting, and Officers' Fiduciary Duties*, 95 MINN. L. REV. 846, 846–47 (2011).

39. *Id.*

40. *Id.*

41. *See infra* Part II (discussing executive compensation regulations).

42. Pay Ratio Rule, *supra* note 3.

43. Loh, *supra* note 6; Christopher Saverino, Note, *Full Disclosure: Moving Beyond Disclosure Regulations to Affirmative Regulation of Executive Compensation*, 11 BROOK. J. CORP. FIN. & COM. L. 541, 541 (2017) ("This Note argues that Pay Ratio Disclosure, due to its burdensome compliance costs coupled with its lack of tangible benefits, should be invalidated."); Jim Staihar, *Income Inequality and Pay Ratio Disclosure: A Moral Critique of Section 953(b)*, 19 U. PA. J. BUS. L. 457, 461–63 (2017).

44. SARAH ANDERSON & SAM PIZZIGATI, INST. FOR POLICY STUDIES, THE CEO-WORKER PAY GAP 3 (2019), https://inequality.org/wp-content/uploads/2018/10/CEO-worker-pay-policy-brief.pdf.

STATES

The history of regulations requiring disclosure of executive compensation in the United States dates back to 1932. In 1932, the U.S. Government's Reconstruction Finance Corporation (RFC) gave bailout loans to several railroad companies.[45] In exchange for the bailouts, the Interstate Commerce Commission required all railroad corporations to disclose the names and salaries of executives making more than $10,000 a year.[46] The disclosure of executive salaries then led to public outcry. In the end, the RFC required companies receiving government bailouts to slash their executive compensation.[47] The U.S. Senate also authorized an informal cap of $60,000 per year for railroad presidents.[48] In 1934, the Securities and Exchange Commission (SEC) was created and tasked with managing public company disclosures.[49]

A. SEC Regulations Prior to the 2008 Financial Crisis

In 1934, the SEC mandated executive pay disclosure by requiring firms to make publicly available 10-K reports.[50] The SEC rules at the time required companies to disclose the names of their three highest paid executives and all compensation given to those executives in these reports.[51]

Throughout the 1970s the stock market was relatively stagnant.[52] Because options were a significant portion of executive compensation, companies devised creative ways to compensate their executives in flat years.[53] In 1978, as a response to this practice, the SEC required pay disclosures to include the value of perks,[54] and expanded the list of required executives for whom pay needed to be disclosed from three to five.[55]

In 1984, due to public outrage over golden parachutes, Congress approved a tax on

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45. MARTIN CONYON ET AL., THE EXECUTIVE COMPENSATION CONTROVERSY: A TRANSATLANTIC ANALYSIS 8 (2011), https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1004&context=ics.

46. *Id.*

47. *Id.*

48. *Id.*

49. *What We Do*, U.S. SEC. & EXCHANGE COMMISSION, https://www.sec.gov/Article/whatwedo.html (last updated June 10, 2013). The SEC was created pursuant to the Securities Exchange Act of 1934, Pub. L. 73–291, 48 Stat. 881 (codified as amended at 15 U.S.C. §§ 78a et seq.). The SEC is also responsible for enforcing the Securities Act of 1933, Pub. L. 73–22, 48 Stat. 74 (codified as amended at 15 U.S.C. §§ 77a et seq.).

50. *Id.*

51. JOHN CALHOUN BAKER, EXECUTIVE SALARIES AND BONUS PLANS 258, exh. 106 (1938), https://archive.org/details/executivesalarie028053mbp/page/n7.

52. Carola Frydman & Raven E. Saks, *Executive Compensation: A New View from a Long-Term Perspective, 1936-2005* 10 (Nat'l Bureau of Econ. Res., Working Paper No. w14145, 2008), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=972399.

53. *See Re-examining Stock Options as a Way to Compensate Executives*, U. PA.: KNOWLEDGE @ WHARTON (Mar. 13, 2002), https://knowledge.wharton.upenn.edu/article/re-examining-stock-options-as-a-way-to-compensate-executives/ ("Under the old system, popular during the 1970s when stock returns were flat, firms used accounting-based bonus plans to pay executives 'even if the stock price wasn't going up,' notes accounting professor John Core."); *see also* Karen Brettell et al., *Stock Buybacks Enrich the Bosses Even When Business Sags*, REUTERS (Dec. 10, 2015), https://www.reuters.com/investigates/special-report/usa-buybacks-pay (describing how numbers pertaining to executive compensation can be manipulated by executives and companies).

54. Ian Dew-Becker, *How Much Sunlight Does it Take to Disinfect a Boardroom? A Short History of Executive Compensation Regulation in America*, 55 CESIFO ECON. STUD. 434, 440 (2009).

55. Uniform and Integrated Reporting Requirements: Management Remuneration, Securities Act Release No. 33-6003 (Dec. 4, 1978).

golden parachutes if they are greater than three times annual pay.[56] Yet, rather than curbing the practice, the regulation was apparently seen by firms as an endorsement of golden parachutes.[57] Golden parachutes became increasingly common after the tax.[58]

In 1992, the SEC approved a rule requiring companies to include nonbinding shareholder resolutions regarding CEO compensation in their proxy statements.[59] Then in 1993, the Clinton administration implemented a strict limit on the corporate tax deductibility.[60] The Omnibus Budget Reconciliation Act defined non-performance-related compensation above one million dollars as unreasonable.[61] This characterization meant that non-performance-related compensation over one million dollars would not be corporate tax deductible as an ordinary business expense.[62] This effort also backfired.[63] President Clinton's advisers convinced him to include a loophole exempting performance pay from the analysis.[64] As a result, companies limited salaries to one million dollars and "defin[ed] the vast bulk of compensation as a reward for 'performance.'"[65]

The SEC also strengthened executive compensation disclosure rules in an effort to make shareholders more aware of the level of compensation given to executives and presumably to provide shareholders with more data for reining in executive overcompensation.[66] Previously executive compensation was often hidden in proxy statements and difficult to compare across companies. The SEC rules require standardized tables for listing compensation.[67] This increased transparency, but also may have also driven up executive compensation because it made it easier for executives to shop around for better compensation.[68]

In the mid-late 1990s, stock options were a widely used method of compensating

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56. Joann S. Lublin & Scott Thurm, *Behind Soaring Executive Pay, Decades of Failed Restraints*, WALL ST. J. (Oct. 12, 2006), https://www.wsj.com/articles/SB116062249630690247.

57. *Id.*

58. *Id.*

59. Kevin G. Salwen, *Shareholder Groups Cheer SEC's Moves on Disclosure of Executive Compensation*, WALL ST. J. (Feb. 14, 1992).

60. Sarah Anderson, *The Failure of Bill Clinton's CEO Pay Reform*, POLITICO (Aug. 31, 2016), https://www.politico.com/agenda/story/2016/08/bill-clinton-ceo-pay-reform-000195.

61. Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, § 13211, 107 Stat. 312, 469–71 (1993); Kevin J. Murphy & Michael C. Jensen, *The Politics of Pay: The Unintended Consequences of Regulating Executive Compensation* 3–4 (USC Gould Sch. of L., Research Paper Series, No. CLASS18-8, 2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3153147.

62. Murphy & Jensen*, supra* note 61, at 4 ("By February 1993, President Clinton backtracked on the idea of making all compensation above $1 million unreasonable and therefore non-deductible, deciding that only pay unrelated to the productivity of the enterprise was unreasonable." (emphasis removed)).

63. *Id.* at 7–8 (describing how companies restructured compensation to include stock options and how many companies raised the base salaries to a million dollars).

64. Anderson, *supra* note 60.

65. *Id.*

66. Paolo Cioppa, *Executive Compensation: The Fallacy of Disclosure*, 6 GLOBAL JURIST TOPICS 1, 2 (2006) ("The SEC's disclosure rules were conceived as an important vehicle toward greater understanding of corporate executive pay plans by shareholders and the public at large.").

67. *Id.*

68. This process is referred to as "benchmarking," whereby companies use peer companies to determine compensation packages for executives. This often leads to a cycle of increased pay, as companies fear being judged for their low executive pay. Ana M. Albuquerque et al., *Peer Choice in CEO Compensation*, 108 J. FIN. ECON. 160, 161 (2013).

executives.[69] Options become worthless, however, whenever the market price drops below the option strike price. As a result, firms often repriced options by changing the strike price.[70] In 1998, the Financial Accounting Standards Board required firms to expense re-priced options.[71] This meant that the difference between the value of the old options and the new options would show up on the firm's balance sheets as losses.[72]

In the early 2000s executive loans were a common form of compensation.[73] Firms often provided interest-free, or below market rate loans to their executives.[74] Many of these loans were eventually forgiven.[75] In 2002, loans to executives and directors were banned by the Sarbanes-Oxley Act.[76]

B. Regulations Post-Financial Crisis

The collapse of the subprime mortgage market in 2007, the international banking crisis in 2008, and the ensuing Great Recession which is the worst economic downturn since the Great Depression, is etched in America's collective memory.[77] In its wake, the country, and in particular its financial sector, faced a number of difficult questions on how to recover from the crisis and, even more importantly, how to prevent it from happening again.

Among the responses was a greater focus on wealth inequality and its impact on the economy.[78] In 2010, as part of larger reform in the Dodd-Frank Wall Street Reform and Consumer Protection Act, Congress passed a pay disclosure rule focused on CEO compensation.[79] The rule, adopted by the SEC in August of 2015, requires companies to disclose the annual total compensation of all employees excluding the CEO, the annual total compensation of the CEO, and the ratio of the two, i.e., the Pay Ratio.[80]

IV. CONTROVERSY SURROUNDING DISCLOSURE RULES ON EXECUTIVE COMPENSATION

Regulations requiring disclosure of executive compensation are controversial. Although the SEC states that disclosure of the Pay Ratio is to provide investors with additional

69. Avinash Arya & Huey-Lian Sun, *Stock Option Repricing: Heads I Win, Tails You Lose*, 50 J. BUS. ETHICS 297, 305 (2004).

70. *Id.* at 297 ("Repricing occurs in two ways: (1) either the exercise price is lowered, or (2) the existing options are cancelled and fresh options with a lower exercise price are issued.").

71. *Id.* at 305.

72. *Id.*

73. David Leonhardt, *It's Called A 'Loan,' But It's Far Sweeter*, N.Y. TIMES (Feb. 3, 2002), https://www.nytimes.com/2002/02/03/business/it-s-called-a-loan-but-it-s-far-sweeter.html.

74. *Id.*

75. *Id.*

76. Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, § 402, 116 Stat. 745 (2002); Kathleen M. Kahle & Kuldeep Shastri, *Executive Loans*, 39 J. FIN. & QUANTITATIVE ANALYSIS 791, 792 (2004).

77. *Chart Book: The Legacy of the Great Recession*, CTR. ON BUDGET & POL'Y PRIORITIES (June 6, 2019), https://www.cbpp.org/research/economy/chart-book-the-legacy-of-the-great-recession.

78. *See* Paul Krugman, *Why Inequality Matters*, N.Y. TIMES (Dec. 15, 2013), https://www.nytimes.com/2013/12/16/opinion/krugman-why-inequality-matters.html (discussing how the "impacts of inequality loom large" over the Great Recession). Perhaps ironically, the financial crisis may have increased wealth inequality in the United States. Moritz Kuhn et al., *Research: How the Financial Crisis Drastically Increased Wealth Inequality in the U.S.*, HARV. BUS. REV. (Sept. 13, 2018), https://hbr.org/2018/09/research-how-the-financial-crisis-drastically-increased-wealth-inequality-in-the-u-s.

79. Pay Ratio Rule, *supra* note 3; Staihar, *supra* note 43, at 459.

80. Pay Ratio Rule, *supra* note 3.

information,[81] it is widely theorized that the purpose of the law is to shame companies and CEOs for the high disparities within companies.[82] During the public comment period for the rule, the SEC "received over 287,400 comment letters—including more than 1,540 individual letters—that revealed numerous concerns with the proposed rule and 'the potential costs and benefits associated with its requirements.'"[83] Many supported the disclosure, believing that it would help prevent, or at least bring to light, corporate greed.[84] Many criticized the law, theorizing that it could backfire.[85] Among the arguments against the rule are that it may be costly for companies that do not typically calculate these numbers,[86] that it is inconsistent with the SEC's materiality threshold,[87] and that it may not survive judicial scrutiny.[88] Furthermore, pursuant to the Securities Act of 1933, public companies are already required to disclose the compensation of executives and directors.[89] Opponents argue the additional disclosures are unnecessary and ineffective.[90]

On the other hand, proponents of these regulations argue they are a way of keeping executives accountable to shareholders.[91] Yet, if say on pay laws were enacted to incite shareholders to demand reduction in CEO compensation, they largely failed. In 2013, 97% of executive compensation proposals were approved, and 72% of companies received more than 90% approval.[92]

John Carney argues the lack of opposition by shareholders to the high levels of CEO compensation is due to shareholders facing a modified prisoner's dilemma.[93] All shareholders would be better off if they cooperated by reining in executive pay, but if one group attempts to rein in executive pay unilaterally, it risks losing talented executives to other firms.[94] Thus, the rational decision is to leave executive compensation unchecked. Stephen Bainbridge argues most shareholders are rationally apathetic when it comes to making informed votes on executive compensation.[95] After weighing the cost of obtaining information against the relatively low impact of an individual vote, most shareholders simply

81. Loh*, supra* note 6, at 419.

82. IKE BRANNON, CTR. FOR CAP. MKT. COMPETITIVENESS, THE EGREGIOUS COSTS OF THE SEC'S PAY-RATIO DISCLOSURE REGULATION (2014), https://www.uschamber.com/sites/default/files/documents/files/Egregious-Cost-of-Pay-Ratio-5.14.pdf ("Another problem firms may face when trying to calculate the CEO pay ratio is that it necessitates compiling data in a way that most companies do not routinely collect.").

83. Loh, *supra* note 6, at 421.

84. *E.g.*, Sarah Anderson & Sam Pizzigati, *No CEO Should Earn 1,000 Times More than a Regular Employee*, THE GUARDIAN (Mar. 18, 2018), https://www.theguardian.com/business/2018/mar/18/america-ceo-worker-pay-gap-new-data-what-can-we-do (showing how disclosure could reduce corporate greed).

85. *See, e.g.*, Loh, *supra* note 6 (discussing how disclosure of executive earnings could backfire).

86. BRANNON, *supra* note 82.

87. Loh, *supra* note 6, at 437.

88. *Id.* at 448.

89. Executive Compensation, 17 C.F.R. § 229.402 (2019); Staihar, *supra* note 43, at 461.

90. Jie Cai & Ralph A. Walking, *Shareholders' Say on Pay: Does It Create Value?*, 46 J. FIN. & QUANTITATIVE ANALYSIS 299, 300 (2011) ("[A]llowing shareholder votes on executive compensation will distract the board and management and reduce the effectiveness of the board.").

91. *See id.* at 306 ("Allowing shareholders to have a say in executive pay may help reduce the agency costs between executives, directors, and shareholders; result in more efficient compensation contracts; and add value to the firm.").

92. John Carney, *Why 'Say on Pay' Failed and Why That's a Good Thing*, CNBC (July 3, 2013), https://www.cnbc.com/id/100860959.

93. *Id.*

94. *Id.*

95. Stephen M. Bainbridge, *Is 'Say on Pay' Justified?*, 32 REG. 42, 47 (2009).

do not care enough to dissent.[96] Furthermore, because the market has been doing well since the say on pay laws became effective, there is even less willingness to upset the status quo.[97]

SEC rules that force disclosure are based on the notion that shareholders, especially those in dispersedly held corporations, have neither the information nor the requisite incentives and resources to acquire the information necessary to adequately control executive pay inflation.[98] Overcompensated executives effectively receive their enhanced pay directly from shareholder returns. Yet, if shareholders are not sufficiently incentivized to do the necessary research that enables them to hold executives accountable, then government interventions that force standardized disclosures may be an effective way of informing shareholders who cannot inform themselves.[99]

Forced disclosures come with consequences, however. Making it easier for shareholders to compare CEO pay also makes it easier for CEOs to compare their salaries to their peers, which could push salaries up if talented CEOs are a scarce commodity.[100] If the goal of these disclosures is to drive down executive pay, the current regulations have not been successful—executive compensation has increased despite increased disclosure.[101] The increased salaries may support an argument that CEOs are undercompensated and that the opacity in the compensation process was one of the reasons for their under-compensation.[102] To the contrary, hedge fund managers tend to enjoy much higher compensation than CEOs of public companies, and their salaries are not subject to the same kind of scrutiny.[103]

The rule requiring corporations to disclose the CEO to median worker pay ratio has also been met with controversy. Unions laud the regulation for potentially exposing firms that lavishly compensate their executive at the workers' expense.[104] Opponents of the measure argue that providing these disclosures are time consuming, burdensome, and that

96. *Id.*

97. *See id.* at 44 ("Finally, and perhaps most importantly, Xavier Gabaix and Augustin Landier find that 'the six-fold increase of CEO pay between 1980 and 2003 can be fully attributed to the six-fold increase in market capitalization of large U.S. companies.' In other words, CEOs got richer because their shareholders got richer.").

98. Lucian Arye Bebchuk & Jesse M. Fried, *Executive Compensation as an Agency Problem*, 17 J. ECON. PERSP. 71, 82 (2003) ("[S]hareholders and regulators have increasingly looked to equity-based compensation to provide the desired link between pay and performance.").

99. *See* Robert J. Rhee, *Employee Say-on-Pay: Monitoring and Legitimizing Executive Compensation* (U. Fl. L. Scholarship Repository, Working Paper, 2014), https://scholarship.law.ufl.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1001&context=working (describing how a say on pay law can help shareholders, particularly institutional shareholders, police excessive compensation).

100. Albuquerque et al., *supra* note 68.

101. Benjamin E. Hermalin & Michael S. Weisbach, *Information Disclosure and Corporate Governance*, 67 J. FIN. 195, 198 (2012) ("One specific prediction is that an exogenously imposed increase in disclosure requirements should lead to an increase in executive compensation and turnover.").

102. *See* Jim Heskett, *Will Transparency in CEO Compensation Have Unintended Consequences?*, HARV. BUS. SCH.: WORKING KNOWLEDGE (Oct. 8, 2010), https://hbswk.hbs.edu/item/will-transparency-in-ceo-compensation-have-unintended-consequences ("There was concern that the legislation might actually have the opposite effect of what was intended. Tom Dolembo commented, 'Publicity will have the opposite effect . . . the information will support and raise current levels.' Guy Higgins commented, 'Recall that CEO compensation began to balloon only when the CEOs could see each other's comp packages and began thinking, 'I'm better than that doofus.'"").

103. Bainbridge, *supra* note 95, at 42.

104. Murphy & Jensen, *supra* note 61, at 40.

the disclosures are not informative.[105] Corporations with high ratios can justify the compensation gap by pointing to the work-life balance or other perks their workers receive.[106] In the calculation, corporations can also point to the inclusion of the pay of employees working abroad who make less in lower cost of living areas as a reason why the ratio is unfairly high.[107] Furthermore, a focus on the CEO Pay Ratio might incentivize CEOs to act in a way that hurts workers; the ratio can be reduced by automating unskilled work, firing low paid workers, converting some of them to part time, or decreasing nonwage compensation.[108]

V. DETERMINANTS OF CEO COMPENSATION

This Part addresses why CEOs are receiving such high compensation, especially in light of the rules requiring disclosure of executive compensation and the public's negative perception of excessive compensation. There are many theories and widespread debate on why CEO compensation is so high, particularly in the United States.

A. Setting of Executive Wages

Under the general neoclassical framework popular among contemporary economists, "the money wage rate is equal to, or at least, governed by the value of the marginal product of labour;"[109] that is, the level of compensation for workers, including executives, are somewhat dictated by their productivity or contribution to the firm. This view has been challenged both in general[110] (for example, the causality between wages and productivity may run in the other direction)[111] and specifically in the case of executives. For example, one study demonstrated that "given the deep ambiguity surrounding the worth of a CEO, executive compensation is influenced by social comparisons within networks."[112] Unable

105. *E.g.*, Loh, *supra* note 6.

106. *See* Jingcong Zhao, *What to Tell Employees When You Disclose the CEO Pay Ratio*, PAYSCALE (May 30, 2018), https://www.payscale.com/compensation-today/2018/05/ceo-pay-ratio-disclosure (advising companies on how to communicate to employees about salaries. One piece of advice was to discuss work-life balance and communicate that "[p]ay is a total package." and "more than just salary.").

107. *See* Deb Lifshey, *The CEO Pay Ratio: Data and Perspectives from the 2018 Proxy Season*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Oct. 14, 2018), https://corpgov.law.harvard.edu/2018/10/14/the-ceo-pay-ratio-data-and-perspectives-from-the-2018-proxy-season ("Not surprisingly, one of the strongest correlations and predictors of pay ratio was the percent of company employees located overseas. The lowest pay ratio band had roughly 9% of its employees located outside of the US, while those companies with a pay ratio of over 150 had more than a third of their workforce overseas.").

108. Alex Edmans, *Why We Need to Stop Obsessing Over CEO Pay Ratios*, HARV. BUS. REV. (Feb. 23, 2017), https://hbr.org/2017/02/why-we-need-to-stop-obsessing-over-ceo-pay-ratios ("A CEO wishing to improve the ratio may outsource low-paid jobs, hire more part-time than full-time workers, or invest in automation rather than labor.").

109. Bent Hanseri, *Marginal Productivity Wage Theory and Subsistence Wage Theory in Egyptian Agriculture*, 2 J. DEV. STUD. 367, 367 (1966).

110. In addition to the classic Marxist criticism, see, for example, Fred Moseley, *Piketty and Marginal Productivity Theory: A Superficial Application of an Incoherent Theory*, 44 INT'L J. POL. ECON. 105 (2015) (critiquing the marginal productivity theory and providing an explanation of increased capital shares of total income in major economies).

111. Meghan Millea, *Disentangling the Wage-Productivity Relationship: Evidence from Select OECD Member Countries*, 8 INT'L ADVANCES ECON. RES. 314 (2002).

112. Jerry W. Kim et al., *Executive Compensations, Fat Cats, and Best Athletes*, 80 AM. SOC. REV. 299, 321 (2015).

to directly measure productivity (a problem more generally with modern information or knowledge workers),[113] those deciding the compensation packages look to what peer firms are paying and set compensation on a comparative basis. Jerry Kim, Bruce Kogut, and Jae-Suk Yang suggest that this may have contributed to rising CEO pay over the last several decades, because firms do not wish for their pay packages to be "below the norm," leading to steadily rising pay.[114]

Complicating the matter is that since the 1980s, the rapidly growing proportion of CEO pay has come in the form of stock and stock options, rather than a simple salary or cash bonuses. Largely unheard of in the middle of the 20th century, stock options later came to dominate American executive compensation packages: by the early 1990s, 82% of plans included stock options, a proportion which rose to 97% by 1997.[115] Stock options are especially interesting because, as has been frequently pointed out,[116] they have an upside but no downside: should the stock price go down, the option can simply not be exercised, resulting in no absolute loss for the option holder. Adding options into a compensation package can, therefore, only increase the total level of compensation.[117] Indeed, at least one study has found that gains remain in down markets, although reduced, even when adjusting for risk and controlling for other factors.[118]

B. The Human Resource Perspective and CEO Value

Explanations for the increase in executive compensation often focus on economic, regulatory, and political rationales. These relate to the inability of shareholders to rein in executive pay[119] and the failure of the regulatory infrastructure to directly limit pay or empower shareholders to do so.[120] Although these are important aspects of the analysis, subjective and symbolic considerations also play a role. Edward Zagac and James Westphal argue that firms communicate the rationale for their executive compensation decisions in a way that emphasizes the scarcity of talented CEOs and the value that a specific CEO brings to the firm, justifying high levels of compensation as necessary to retain managerial talent.[121] This framing is important because it contrasts with the perspectives given by advocates of regulation who often focus on the ratio between median employee and CEO pay, or the dollar value of compensation as a baseline for regulation.[122]

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113. Julia Zhu & Sabina Shibalayeva, *How Can You Measure the Productivity of Knowledge Workers?* (Cornell Univ., Working Paper, No. 11-2017, 2017), https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1156&context=student ("The intangibility of knowledge makes knowledge workers especially hard to measure, which causes problems with standard measurement and evaluation.").

114. Kim et al., *supra* note 112, at 303.

115. Brian Maruffi et al., *How Does CEO Compensation in U.S. Corporations Compare with European and British Firms? A Review of the Literature*, 4 ACCT. & FIN. RES. 114, 119 (2015).

116. Benjamin B. Dunford et al., *The Dark Side of Stock Options: Downside Risk and Employee Separation* 4 (Cornell Univ., CAHRS Working Paper No. 01-09, 2001), https://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1071&context=cahrswp.

117. Maruffi et al., *supra* note 115, at 119.

118. Nuno Fernandes et al., *Are U.S. CEOs Paid More? New International Evidence*, 26 REV. FIN. STUD. 323, 338 (2013).

119. Bainbridge, *supra* note 95, at 47; Carney, *supra* note 92.

120. Hermalin & Weisbach, *supra* note 101, at 198.

121. Edward J. Zajac & James D. Westphal, *Accounting for the Explanations of CEO Compensation: Substance and Symbolism*, 40 ADMIN. SCI. Q. 283, 284 (1995).

122. Stephen Miller, *Determining CEO Pay Ratio Isn't So Simple*, SOC'Y HUM. RES. MGMT. (Aug. 7, 2015),

According to Zagac and Westphal, this debate presents a conflict between the agency perspective and the Human Resource (HR) perspective on Long-Term Incentive Plans (LTIPs) for executives.[123] The agency perspective emphasizes that management is an agent for the shareholders, and in situations where management's interests diverge from the shareholders', management might act in its self-interest to the detriment of shareholders.[124] One way to prevent this is through monitoring, but monitoring is costly and impractical for most shareholders.[125] Thus LTIPs can serve as a way of aligning shareholder interests with management to minimize behaviors that improve management's position at the expense of shareholders.[126]

HR theory focuses on the importance of attracting talented executives as an important organizational objective of a firm.[127] This assumes that there is a competitive market for talented executives and raising compensation levels is the main way to retain and acquire talent.[128] The primary mechanism for doing this is through LTIPs.[129] From this perspective, LTIPs serve a dual purpose, they help remedy the agency issue while also encouraging talented executives to join the firm and helping to retain existing ones.[130]

HR logic rejects the notion that management is inherently self-interested, rather it stresses its scarcity and importance to a firm.[131] Through the HR theory framework, good management is a valuable resource to be rewarded and retained.[132] Firms use these arguments to justify executive compensation decisions to shareholders and it leads to a lionization of executives, especially in successful firms.[133] CEOs like Steve Jobs, Elon Musk, and Jack Welch are synonymous with the companies they grew. Executives are often seen as

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https://www.shrm.org/resourcesandtools/hr-topics/compensation/pages/ceo-pay-ratio.aspx ("At a time when corporate profits are near an all-time high and income inequality is growing, employees and shareholders have a right to know whether companies are padding the wallets of executives at the cost of workers and the company's bottom line." (quoting Ken Hall, Teamsters Secretary Treasurer)).

123. Zajac & Westphal, *supra* note 121, at 285.

124. *Id.* at 286 ("[A]gency theory emphasizes the need to minimize managerial shirking through monitoring and incentive mechanisms.").

125. GRAEME GUTHRIE, THE FIRM DIVIDED: MANAGER-SHAREHOLDER CONFLICT AND THE FIGHT FOR CONTROL OF THE MODERN CORPORATION 164 (2017).

126. Zajac & Westphal, *supra* note 121, at 286.

127. *Id.*

128. *See id.* at 286 ("Most recently, HR management researchers have given increased attention to the implications for competitiveness of attracting and retaining those key organizational employees whose skills are not easily replaceable.").

129. *See* CLEARBRIDGE COMP. GRP., ANNUAL & LONG-TERM INCENTIVE PLAN DESIGN 1 (2017), https://www.clearbridgecomp.com/wp-content/uploads/CB100_Incentive-Design-White-Paper_121417.pdf ("Nearly all companies use some form of performance-vested LTI (92% of companies in 2017 vs. 90% in 2016), most commonly in the form of performance shares/units."); *see also* MERIDIAN COMP. PARTNERS, 2017 TRENDS AND DEVELOPMENTS IN EXECUTIVE COMPENSATION 16 (2017), http://www.meridiancp.com/wp-content/uploads/2017-Trends-and-Developments-in-Executive-Compensation.pdf ("Consistent with last year, 90% of sampled companies use two or three LTI vehicles for senior executives.").

130. Zajac & Westphal, *supra* note 121, at 288 ("LTIP explanations have a 'dual character.'").

131. *Id.* at 286.

132. *Id.*

133. Nancy F. Koehn, *Great Men, Great Pay? Why CEO Compensation is Sky High*, WASH. POST (June 12, 2014), https://www.washingtonpost.com/opinions/great-men-great-pay-why-ceo-compensation-is-sky-high/2014/06/12/6e49d796-d227-11e3-9e25-188ebe1fa93b_story.html?utm_term=.d05e551ed445 ("It is a system that rests on the Great Man theory of history: a school of thought that attributes virtually all important developments through time to heroic individuals.").

the only person for the job because shareholders correlate firm success with CEO leadership.[134] Option based incentive plans further this notion by tying executive compensation to stock price increases despite firm growth and success arising from a variety of factors outside the executive's control.[135]

Thus, as the argument goes, the high pay CEOs and other executives receive is simply a reflection of the market appropriately measuring human capital and other value successful executives would bring to a company.[136] Just as employees compete for the best job, companies compete for the best possible CEO.[137] Executives with more knowledge and skills are rewarded with higher compensation.[138] Excessive pay may thus result from the inability of companies to find executives with the talent and capabilities they need.[139] If shareholders are not actively monitoring the activities of executives, if they imply a causal relationship between the leadership of a CEO and increase in stock prices, and if they have been told that the market for talented executives is competitive, then it is no wonder that attempts to regulate CEO pay through increased transparency have failed. Shareholders often believe that the CEO is worth every penny.[140]

In addition, research has demonstrated that corporations typically benchmark compensation packages with those of peer firms.[141] Through benchmarking, firms are able to "justify excessively high CEO pay."[142] It is possible, however, that benchmarking is simply a method for gauging supply and demand and is a method enabling corporations to "compete for executive talent."[143] The high compensation, therefore, might not be a result of weak governance, but of "tighter labor markets."[144] In competitive markets, firms may be less likely to simply match the compensation of their peers.[145]

C. CEO Power and Board Capture Theory

One popular theory for the high compensation of CEOs is CEO power and board capture.[146] According to this theory, CEOs and other top executives are able to dominate

134. *Id.*

135. *Id.* ("Operating a sustainable enterprise, as any executive, manager or employee knows well, is inherently a team sport.").

136. Jordan A. Otten, *Theories on Executive Pay. A Literature Overview and Critical Assessment* 3–4 (Munich Personal RePEc Archive, Paper No. 6969, 2008), https://mpra.ub.uni-muenchen.de/6969/1/MPRA_paper_6969.pdf.

137. *Id.* at 8.

138. *Id.*

139. *Id.* at 9.

140. Alicia McElhaney, *Surprise! CEO Pay Disclosures Haven't Altered Shareholder Support*, INSTITUTIONAL INV. (Oct. 3, 2018), https://www.institutionalinvestor.com/article/b1b74byz9jjkzk/Surprise-CEO-Pay-Disclosures-Haven-t-Altered-Shareholder-Support; Dan Marcec, *Why Shareholders Support Increasing CEO Pay*, EQUILAR (Nov. 21, 2017), https://www.equilar.com/blogs/335-why-shareholders-support-increasing-CEO-pay.html.

141. Albuquerque et al., *supra* note 68, at 162.

142. *Id.* at 161.

143. *Id.*

144. *Id.* at 179.

145. *See* Hae Won Jung & Ajay Subramanian, *CEO Talent, CEO Compensation, and Product Market Competition*, 125 J. FIN. ECON. 48, 48 (2017) (arguing that "CEO talent matters more in more competitive markets with greater product substitutabilities").

146. Thomas & Wells, *supra* note 38, at 848. It is also sometimes referred to as Managerial Power Perspective. *Id.* at 852.

boards, effectively resulting in the board acting in the interests of the CEO, "rather than those of shareholders."[147] This process occurs because CEOs are largely able to control the director nomination process, and place friends or allies on the board.[148] In many cases, the board members were once members of management themselves, and are predisposed to large salaries or other management-friendly behaviors.[149] This leads to weak compensation committees that capitulate to the executives' demands or rely on consultants who are often biased advocates for the CEO.[150]

A study conducted by Marianne Bertrand and Sendhil Mullainathan examined how CEO pay changes as the firm experiences both exogenous shocks and operational changes and concluded that CEOs saw pay hikes when the firm was successful, even if the CEO had nothing to do with the success.[151] Their results were consistent with "[a] skimming model, where the CEO has captured the pay-setting process," further suggesting that CEO pay is, to a degree, independent of performance.[152] Drawing on the rich tradition of principal-agent theory, Richard Posner has additionally suggested that diffusion of ownership, and hence weaker monitoring and interest in firm operations on the part of shareholders, have allowed CEOs to capture more income than would otherwise be the case.[153] Posner's view is at least partially supported by Bertrand and Mullainathan's finding that CEOs see smaller gains from "lucky" exogenous shocks when the firm is well-governed,[154] although this approach to corporate analysis has been criticized.[155] Overall, Ricardo Correa and Ugur Lel found that the evidence is mixed—several studies argue that "CEO compensation policies are best explained by rent-seeking behavior of powerful managers . . . while others contend that CEO compensation is the outcome of an efficient bargaining process in the labor market."[156]

Furthermore, because the cost to directors of pay arrangements that hurt shareholders is low, directors have little economic incentive to resist a CEO's compensation demands.[157] In large, board directors have a harder time convincing other board members to criticize

147. *Id.* at 857.

148. Bebchuk & Fried, *supra* note 98, at 73–74. Another theory is that top executives are able to dominate boards by "sheer force of personality." Jill Barclift, *Corporate Governance and CEO Dominance*, 50 WASHBURN L.J. 611, 614 (2011).

149. *See* James D. Westphal & Poonam Khanna, *Keeping Directors in Line: Social Distancing as a Control Mechanism in the Corporate Elite*, 48 ADMIN. SCI. Q. 361, 361 (2003) (discussing how directors face social pressures to acquiesce to management).

150. J. Robert Brown, Jr., *Returning Fairness to Executive Compensation*, 84 N.D. L. REV. 1141, 1151 (2008).

151. *See generally* Marianne Bertrand & Sendhil Mullainathan, *Are CEOs Rewarded for Luck? The Ones Without Principals Are*, 116 Q.J. ECON. 901 (2001) (examining what creates CEO pay hikes and if the person themselves had anything to do with it).

152. *Id.* at 901.

153. Richard A. Posner, *Are American CEOs Overpaid, and, If So, What If Anything Should Be Done About It?*, 58 DUKE L.J. 1013, 1015 (2009).

154. Bertrand & Mullainathan, *supra* note 151, at 901.

155. *See, e.g.*, LYNN A. STOUT, THE SHAREHOLDER VALUE MYTH (2012) (noting principal-agent theory is one of the core principles underlying shareholder value theory).

156. Ricardo Correa & Ugur Lel, *Say on Pay Laws, Executive Compensation, CEO Pay Slice, and Firm Value Around the World* 1 (Fed. Res. Sys., Int'l Fin. Discussion Paper, No. 1084, 2013), https://www.federalreserve.gov/pubs/ifdp/2013/1084/ifdp1084.pdf.

157. Bebchuk & Fried, *supra* note 98, at 74.

the CEO, and CEOs have more power and are compensated better.[158] Moreover, where directors are members of numerous boards, they have less incentive to focus on any particular company, and the CEOs are compensated better.[159] In addition, on interlocking boards where board members of one company are CEOs of another and vice-versa, CEO compensation is also higher.[160] The relationship between board incentives and CEO compensation suggests that regulations aimed at directors may be more effective. CEO compensation is also negatively correlated with share ownership by the board's compensation committee.[161]

Similarly, managerial power or hegemony theory argues that the position of executives within a company, where management acts as agents, places them in "the natural position to have discretion in setting their own pay."[162] These effects may increase through management entrenchment.[163] That same entrenchment, however, may have a positive effect of giving management the security to "carry out long-term investments."[164]

The problems of board capture may be exacerbated as the size of a company grows.[165] Evidence has long indicated that as the firm grows, even when controlled for profits, so does executive compensation.[166] Although laws and regulations offer some safeguards to prevent board capture, surprisingly little has been done to limit executive pay.[167] Instead, there has been increasing focus on requiring independent directors on the board and in the executive compensation committees.[168] In addition to other SEC regulations, both the New York Stock Exchange and NASDAQ require that a board be composed of a majority of independent directors and that the audit, compensation, and corporate governance and nominating committees be composed of solely independent directors.[169] It is uncertain, however, how effective these regulations are at limiting the power of the executives.[170]

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158. David Yermack, *Higher Market Valuation of Companies with a Small Board of Directors*, 40 J. FIN. ECON. 185, 186 (1996); Theodore Eisenberg et al., *Larger Board Size and Decreasing Firm Value in Small Firms*, 48 J. FIN. ECON. 35, 37–41 (1998).

159. It is common for directors to serve on multiple boards, often as many as five or more. *E.g.*, Todd Wallack & Sacha Pfeiffer, *Debate Swirls on How Many Board Directorships are Enough*, BOS. GLOBE (Dec. 10, 2015), https://www.bostonglobe.com/metro/2015/12/09/some-corporate-directors-overboard-joining-many-boards-and-raising-performance-questions/pQBVAGZmCBJ4fzaKTGdziP/story.html (debating the optimal number of board members).

160. Kevin F. Hallock, *Reciprocally Interlocking Boards of Directors and Executive Compensation*, 32 J. FIN. & QUANTITATIVE ANALYSIS 331, 342 (1997).

161. Harry A. Newman & Haim A. Mozes, *Does the Composition of the Compensation Committee Influence CEO Compensation Practices?*, 28 FIN. MGMT. 41, 46–52 (1999).

162. Otten, *supra* note 136, at 11.

163. Karima Dhaouadi, *Effect of Corporate Governance on the Top Management Team Compensation*, 4 J. ECON. & INT'L FIN. 18, 22 (2012).

164. *Id.*

165. Thomas & Wells, *supra* note 38, at 879–80.

166. *Id.*

167. *Id.* at 846.

168. *See* Brown, Jr., *supra* note 150, at 1142 (describing how Delaware extended the business judgement rules based on the number of independent directors).

169. Joseph E. Bachelder III, *Exchange Rules on Independence of Compensation Committee Members*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (May 9, 2013), https://corpgov.law.harvard.edu/2013/05/09/exchange-rules-on-independence-of-compensation-committee-members.

170. Brown, Jr., *supra* note 150, at 1142 (arguing that the requirement for independent directors is "largely rendered meaningless through judicial legerdemain. Fairness, in short, was reduced to a rote head count"); *see also* S. Burcu Avci et al., *Do Independent Directors Curb Financial Fraud? The Evidence and Proposals for*

One issue is that independent outside directors suffer from "information capture," as they are often "unable to gather enough independent information to act as a watchdog or sometimes even to ask good questions."[171] Additionally, although the SEC requires a shareholder advisory vote on executive stock options and other similar forms of compensation, data indicates that this practice has a limited effect as individual shareholders have little incentive to monitor for excessive pay.[172] To challenge excessive pay, shareholders could invoke the waste doctrine.[173] That standard, however, "is almost never met," and generally requires egregious abuses by the board in setting executive pay.[174] Additionally, proponents of the board capture theory argue, and provide empirical data in support thereof, that courts "lack the institutional capacity to review the substance of executive compensation agreements—they 'are simply ill-equipped to judge the desirability of compensation packages and policies.'"[175] Moreover, the Delaware Supreme Court's decision in *In re Walt Disney Co. Derivative Litig.* dealt a blow to potential plaintiffs after the court declined to impose heightened scrutiny for a review of excessive compensation—and, under the facts of that case, denied the plaintiffs' challenge to excessive compensation based on a breach of good faith.[176]

A potentially more effective safeguard than the courts may be increased shareholder activism by hedge funds and other institutional investors who are increasingly "gain[ing] board seats across corporate America."[177] These investors have the power to monitor the board and prevent actions against the best interest of the shareholders.[178] Evidence indicates that investors who own at least five percent of the company may be effective at limiting excessive executive pay,[179] provided that they do not "have business relationships with the managers."[180]

D. Tournament Theory

There are several additional theories proposed to explain the current status of CEO and executive compensation. One such theory is tournament theory.[181] Under tournament

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Further Reform, 93 IND. L.J. 757 (2018) (discussing reform of independent directors); S. Burcu Avci et al., *The Elusive Monitoring Function of Independent Directors*, 21 U. PA. J. BUS. L. 235 (2018) (explaining monitoring of independent directors).

171. Kobi Kastiel & Yaron Nili, *"Captured Boards": The Rise of "Super Directors" and the Case for a Board Suite*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (June 28, 2017), https://corpgov.law.harvard.edu/2017/06/28/captured-boards-the-rise-of-super-directors-and-the-case-for-a-board-suite.

172. As part of the Dodd-Frank Wall Street Reform and Consumer Protection Act, section 14A added a "say-on-pay" provision requiring a nonbinding vote on executive compensation. 15 U.S.C. § 78n-1 (2012); Dennis Leech, *Incentives to Corporate Governance Activism* 8 (U. Warwick, Econ. Research Paper No. 632, 2002), http://fmwww.bc.edu/repec/res2003/Leech.pdf.

173. Thomas & Wells, *supra* note 38, at 873–74.

174. *Id.*

175. *Id.* at n.13 (quoting LUCIAN A. BEBCHUK & JESSE M. FRIED, PAY WITHOUT PERFORMANCE: THE UNFULFILLED PROMISE OF EXECUTIVE COMPENSATION 54 (2006)).

176. *Id.* at 878 (discussing the impact of *In re* Walt Disney Co. Derivative Litig., 906 A.2d 27, 75 (Del. 2006)).

177. Kastiel & Nili, *supra* note 171.

178. *Id.* at 23.

179. Dhaouadi, *supra* note 163, at 21.

180. *Id.*

181. *See generally* Edward P. Lazear & Sherwin Rosen, *Rank-Order Tournaments as Optimum Labor Contracts*, 89 J. POL. ECON. 841 (1981) (explaining tournament theory).

theory, employees compete to "win the pay differential associated with promotion to the next rung in the firm's compensation hierarchy, with the pay differential relative to the CEO representing the ultimate prize."[182] As competition intensifies with increased pay differential between levels, high CEO compensation may simply be a method to motivate employees and identify the best performers.[183] The high CEO pay, therefore, may operate to prevent executives from "rest[ing] on their laurels."[184]

E. Optimal Contract Theory

Proponents of optimal contract theory believe that market forces "lead to optimal pay levels and structures, compensating executives for the risks they are willing to take to manage the corporation in the best interests of its shareholders."[185] Once a company selects a CEO, it must then structure the compensation contract to "minimize agency costs given a set of constraints while steering the CEO toward actions benefitting shareholders."[186] One way this occurs is aligning the risk preferences of companies and executives.[187] Stock options, and other forms of incentive pay, allow companies to transfer risk to executives and attempt to ensure behavior benefiting the company.[188]

F. Costs Incurred by Terminated CEOs

A different justification for high CEO pay is the extensive costs incurred by CEOs who are terminated.[189] After termination, CEOs often have difficulties finding new employment and when they do, it may be at smaller corporations and for lesser pay.[190] This is especially important in industries with high turnover, as one study found that "a one percentage point increase in turnover risk is associated with about 7% greater subjective values of compensation."[191]

VI. INTERNATIONAL PAY GAP COMPARISON AMONG U.S. AND WESTERN EUROPEAN COUNTRIES

The gap between executive compensation and that of a company's rank-and-file worker is much higher in the U.S. than in Western Europe. According to a Belgium study, in 2017, the CEO-worker pay gap was 312:1 in the U.S.,[192] more than three times those of

182. Faleye et al., *supra* note 21.

183. *Id.* at 3260.

184. Otten, *supra* note 136, at 15 (quoting Sherwin Rosen, *Prizes and Incentives in Elimination Tournaments*, 76 AM. ECON. REV. 701 (1986)).

185. *Id.* at 3.

186. Sujit Sur et al., *Disentangling CEO Compensation: A Simultaneous Examination of Time, Industry, and Firm-level Effects*, 32 CAN. J. ADMIN. SCI. 30, 31 (2015).

187. Otten, *supra* note 136, at 3.

188. *Id.* at 11.

189. Florian S. Peters & Alexander F. Wagner, *The Executive Turnover Risk Premium*, 69 J. FIN. 1529, 1530 (2014).

190. *Id.*

191. *Id.* at 1531.

192. Jeff Stein & Jena McGregor, *Elite CEO Pay Jumps to Average of $19 Million, As Fears Mount Over the Wealthy Pocketing Gains*, WASH. POST (Aug. 16, 2018), https://www.washingtonpost.com/business/2018/08/16/embargo-hold-am-tomorrow-morning-ceo-pay-jumps-million-annually-fears-mount-over-wealthy-pocketing-gains/?noredirect=on&utm_term=.493b6926dc35.

the United Kingdom (94-to-1) and France (91-to-1), and more than seven times that of Sweden (40-to-1).[193] In contrast, the CEO-to-worker compensation ratio in European nations has risen much more slowly. Among S&P Europe 350 companies in 2015, for example, the ratio stood at 113:1 in France, 105:1 in the U.K., 84:1 in Germany, 70:1 in Sweden, and only 54:1 in Italy.[194] Other studies using different samples have found similar ratios, with one citing a ratio of 89:1 in Germany and only 40:1 in Sweden after examining nation-specific indices.[195] The lesson is clear: although the exact numbers vary by methodology, even the most unequal European nations have a compensation ratio equal to about a third of that found in the U.S. This Part reviews the existing literature on the causes and consequences of this difference.

A. Compensation Structure: Stock Options

Perhaps the most common explanation for the CEO/average worker pay disparity in the United States as compared to Europe is the difference in the structuring of compensation. For example, with regard to the U.S. and the United Kingdom, Martin Conyon and Kevin Murphy find that the different pay disparities "can be largely attributed to greater share option awards in the US arising from institutional and cultural differences between the two countries,"[196] and "the driving force behind the US premium is the prevalence and sheer magnitude of share option grants to US executives."[197] This holds for Europe in general, where stock options and other forms of stock-based compensation are less commonly awarded than in the U.S. For example, in 2016, share options were part of 9% of French executive compensation plans, 6% in Germany, and 19% in the Netherlands;[198] and although "performance shares" were more popular and were offered in 37% of French plans and in 49% of Dutch plans, their popularity is still dwarfed by that of stock-based compensation in the U.S.[199]

Differences in compensation structure are likely merely mediators of other factors. Conyon and Murphy note that in the U.S. and the U.K., "the traditional principal-agent model . . . does not offer promising explanations for the difference in pay levels and incentives in the two countries,"[200] and hence "institutional and cultural differences" are important alongside substantive economic differences.[201] In the academic literature,[202] and especially in the popular press, these differences are often described as a divergence

193. *Id.*

194. Patricia Kotnik et al., *Executive Compensation in Europe: Realized Gains from Stock-Based Pay* (ISI Growth, Working Paper, 2017), http://www.isigrowth.eu/wp-content/uploads/2017/06/working_paper_2017_07.pdf.

195. Xavier Baeten, *The Best Performing Companies Pay Their CEOs Relatively Less*, VLERICK BUS. SCH. (Dec. 20, 2017), https://www.vlerick.com/en/research-and-faculty/knowledge-items/knowledge/the-best-performing-companies-pay-their-ceo-s-relatively-less.

196. Martin J. Conyon & Kevin J. Murphy, *The Prince and the Pauper? CEO Pay in the United States and United Kingdom*, 110 ECON. J. 640, 640 (2000).

197. *Id.* at 668.

198. Baeten, *supra* note 195.

199. *Id.*

200. Conyon & Murphy, *supra* note 196, at 664.

201. *Id.* at 640.

202. *See generally* Michael Hodges & Stephen Woolcock, *Atlantic Capitalism Versus Rhine Capitalism in the European Community*, 16 W. EUR. POL. 329 (1993) (explaining capitalism in different communities).

between "Anglo-Saxon" (sometimes "Atlantic") capitalism on one hand,[203] and "Rhine" (sometimes "Continental") capitalism on the other.[204] In terms of corporate management and governance, the "Anglo-Saxon" approach can be best summarized by Milton Friedman's article summarized by its title: "The Social Responsibility of Business is to Increase Its Profits."[205] Pulling from principal-agent theory, this model essentially views CEOs as potentially irresponsible agents that need to be kept in line with the interests of the principals of the firm, namely, the shareholders.[206] Tying executive compensation to corporate performance, for example through stock options, is one way to ensure that the agent acts in line with the interests of the principal because, by granting stock, the agent becomes, in effect, a principal themselves.[207] Indeed, this model has led some to argue that the current levels of CEO compensation are not sufficient, and should be tied even more strongly to firm performance.[208]

In contrast with the Anglo-Saxon model, with its emphasis on property rights and governance by property owners through their agents, stands the so-called Rhine model "based on social solidarity."[209] The model is frequently characterized as promoting cooperation alongside competition[210] and "power-sharing and consensus management" within corporations: at least half of members on the supervisory boards of large German corporations must be workers,[211] with similar mandates being pushed by the European Union across its entire region.[212] In general, the difference can be (somewhat crudely and not entirely accurately) characterized as shareholder capitalism versus stakeholder capitalism.[213]

The Anglo-Saxon model is typically identified with a particular set of strategies and priorities regarding upper management, including their compensation. Josh Siepel and Paul Nightingale see the "Anglo-Saxon short-term managerial attitude [as] more risk-inclined,"[214] and further claim that Anglo-Saxon approaches to corporate governance are "more friendly to finance," while managerial policy is "more aggressive."[215] As mentioned

203. *See, e.g.*, *Out of the Ruins*, THE ECONOMIST (Mar. 25, 2010), www.economist.com/node/15772127; John Redwood, *. . . No, That Would Hurt Everyone*, WALL ST. J. (June 6, 2003).

204. *See, e.g.*, Stefan Baron, *Rhineland Capitalism's Last Hurrah*, WALL ST. J. (Nov. 26, 1999), https://www.wsj.com/articles/SB943580158322066782 (discussing Rhine capitalism); John Plender, *Continental Capitalism A La Carte*, FIN. TIMES (Feb. 21, 2003) (looking into Germany's capitalism structure).

205. Milton Friedman, *The Social Responsibility of Business is to Increase its Profits*, N.Y. TIMES MAG. (Sept. 13, 1970), https://graphics8.nytimes.com/packages/pdf/business/miltonfriedman1970.pdf.

206. *See, e.g.*, Posner, *supra* note 153, at 1015.

207. *E.g.*, Zajac & Westphal, *supra* note 121, at 285–86.

208. *See generally* Michael C. Jensen & Kevin J. Murphy, *Performance Pay and Top-Management Incentives*, 98 J. POL. ECON. 225 (1990) (discussing incentives for top management).

209. Hodges & Woolcock, *supra* note 202, at 329.

210. *See, e.g.*, Phillips, *supra* note 204.

211. Justin Fox, *Why German Corporate Boards Include Workers*, BLOOMBERG: OPINION (Aug. 24, 2018), https://www.bloomberg.com/opinion/articles/2018-08-24/why-german-corporate-boards-include-workers-for-co-determination.

212. *Id.*

213. Fabian Brandt & Konstantinos Georgiou, *Shareholders vs Stakeholders Capitalism* (Comp. Corp. Governance & Fin. Reg., Seminar Paper 2010), https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1002&context=fisch_2016.

214. Josh Siepel & Paul Nightingale, *Anglo-Saxon Governance: Similarities, Difference and Outcomes in a Financialised World*, 25 CRITICAL PERSP. ON ACCT. 27, 29 (2014).

215. *Id.* at 28.

earlier, a shareholder value view of corporate operations is key to promoting the use of stock options in corporate compensation in the U.S.,[216] and to a lesser extent, in the U.K.[217] More recently, the use of stock options has declined in the U.S.: as an average percentage of executive compensation, they peaked at 53% among S&P 500 firms in 2001, and declined to 21% by 2011.[218] They were largely replaced, however, by stock grants, which rose "from 8% of compensation in 2001 to 36% in 2011."[219] American executive compensation therefore remains heavily dependent on stock-based pay. In contrast, only 10% of major German firms offered stock options as compensation in 1997, compared to 97% of large U.S. firms in the same year.[220] In the U.K., the proportion of large firms offering stock options as compensation fell from nearly every major firm to only 68% between 1986 and 1997.[221] These and other opposing trends between the U.S. and U.K. have led some scholars to question whether "Anglo-Saxon capitalism" is still an appropriate term, given that the "original" Anglo-Saxon nation has diverged from American economic policy in recent years.[222]

B. Monitoring and Ownership Concentration

There are also differences in share ownership which should be acknowledged when comparing compensation of executives in U.S. companies with those in Western Europe. Most international companies have less dispersed share ownership structures than U.S. companies.[223] Specifically, in many continental European countries (such as Sweden, Spain, Belgium, Italy, and the Netherlands), most public companies have controlling shareholders,[224] who exercise a significant level of influence over the companies' top executives.[225] These controlling shareholders are also motivated to limit executive compensation.[226]

Howard Gospel and Andrew Pendleton examined the literature on ownership concentration, and found a distinction among nations with "market-outsider" versus "relational-insider" models of corporate governance.[227] The former have larger stock markets

216. Maruffi et al., *supra* note 115, at 119 ("Shareholders and academics [in the US] believed that an increased inclusion of stock options into CEO pay packages would give executives more rewards and penalties, motivating them to work towards firm value.").

217. *Id.* ("Stock options in the UK became controversial . . . LTIP performance share plans came to replace stock options.").

218. *Id.*

219. *Id.* at 120.

220. *Id.* at 119.

221. Conyon & Murphy, *supra* note 196, at 649.

222. Christopher J. Nock & Catherine Coron, *Post-Crisis Anglo-Saxon Capitalism*, 13 REVUE LITERATURES, HISTOIRE DES IDEES, IMAGES SOCIETIES DU MONDE ANGLOPHONE 1 (2015), https://journals.openedition.org/lisa/8202#quotation ("We then consider U.K. and U.S. responses to the financial crisis to determine if they have been sufficiently similar to merit the continued use of the 'Anglo-Saxon' label at the economic level." The authors especially address diverging policy paths following the Great Recession.).

223. Randall S. Thomas, *Explaining the International CEO Pay Gap: Board Capture or Market Driven?*, 57 VAND. L. REV. 1171, 1186 (2004).

224. *Id.*

225. *Id.* at 1186–87.

226. *Id.* at 1196.

227. Howard Gospel & Andrew Pendleton, *Corporate Governance and Employee Participation*, *in* A. WILKINSON, P. GOLLAN, M. MARCHINGTON, & D. LEWIN, HANDBOOK OF PARTICIPATION IN ORGANISATIONS, 504–25 (Oxford Univ. Press, 2009).

"dominated by institutional investors with wide portfolios of relatively small shareholdings in a large number of firms."[228] Because investors hold small amounts of stock of potentially hundreds of firms, comprehensive monitoring is prohibitively expensive, leading investors to buy and sell stock based largely on simple signals like earnings reports.[229] In contrast, "relational-insider" systems see smaller stock markets with higher concentrations of control of firms, with shareholders who are more directly involved with corporate governance, and firms rely "less on equity markets for raising capital . . . and more on relational borrowing."[230]

The significance of this differential depends on the theoretical underpinning considered. Principal-agent theorists have, for example, expressed worry that more diffuse ownership and hence weaker monitoring allows executives to "capture" the compensation process or otherwise grant themselves more generous compensation than would otherwise be the case.[231] On the other hand, where ownership is more concentrated and stock markets in general less developed, the opposite might occur, because stock-based compensation is not required as a "disciplinary" mechanism against would-be wayward executives.[232] In effect, more involved governance acts as a substitute for (expensive) stock incentives. Alternatively, others have argued that "incentive-orientated contracts" like stock-based compensation "motivate managers more towards profit maximization."[233] This may not be in the interest of more heavily invested stakeholders, who may be more interested in long-run stability and success or, alternatively, may be harmed by cost-minimization actions (such as layoffs) taken by a manager interested solely in maximizing profit.[234] Therefore, if ownership is more concentrated or some control is ceded to stakeholders like employees, the use of stock-based compensation through other means may be reduced.

The split between "market-outsider" and "relational-insider" systems maps onto the "Anglo-Saxon/Rhine capitalism" divide discussed earlier. Gospel & Pendleton note that "the US and UK are usually said to exemplify" market-outsider systems,[235] while "Germany is typically seen as the exemplar of" relational-insider systems.[236] Additionally, because employees in market-outsider systems "have predominantly market relationships with the firm . . . employee interests are assumed to be expressed through market mechanisms," leaving no room for employee voice in corporate governance.[237] In contrast, relational-insider models "tend to be characterized by forms of board representation and works councils" as well as union representation, leading to significant worker influence on corporate governance.[238] This representation, in turn, may lead directly to lower executive compensation as worker representatives have the option to vote on executive pay packages. Indeed, there is strong evidence that this is the case. One pan-European study found that

228. *Id.* at 508.
229. *Id.*
230. *Id.*
231. *See, e.g.*, Posner, *supra* note 153 *passim*.
232. Gospel & Pendleton, *supra* note 227, at 508.
233. Katharina Dyballa & Kornelius Kraft, *How Do Labor Representatives Affect Incentive Orientation of Executive Compensation?* 3 (IZA Discussion Paper Series, Working Paper No. 10153, 2016), https://papers.ssrn.com/sol3/Delivery.cfm/dp10153.pdf?abstractid=2826987&mirid=1&type=2.
234. *Id.*
235. Gospel & Pendleton, *supra* note 227, at 508.
236. *Id.*
237. *Id.*
238. *Id.* at 508–09

worker representation "is associated with less frequent use of stock options and lower total CEO remuneration,"[239] while having no impact on firm performance, after controlling for endogeneity,[240] although another study suggests that employee representation may increase the use of performance-based compensation, though this is not necessarily stock-based.[241]

C. Market Forces and the International CEO Pay Gap

Randall Thomas, offers five theories regarding market forces to explain the pay gap between U.S. and foreign top executives—marginal revenue product theory, tournament theory, opportunity cost theory, bargaining theory, and risk adjustment theory.[242] Considering marginal revenue theory, neo-classical economic analysis suggests that firms' marginal cost of the last worker hired should equal that worker's marginal revenue product.[243] It leads to the conclusion that "[i]f an executive contributes more to the firm, then the executive should be more highly compensated."[244] This theory produces several predictions: (1) firms with more growth opportunities will pay their executives more highly, (2) larger firms with more resources to be utilized by their executives to add more value will be able to pay them more highly, and (3) economies where CEOs have greater power within the firm should pay them more than economies where CEOs' powers are comparatively small.[245] Thomas argues that American firms are larger, have better growth opportunities, and have more powerful CEOs than firms in other countries. Therefore, the marginal revenue product theory would predict that U.S. executive pay would be higher than foreign pay because American CEOs "have higher growth opportunities that offer their managers more opportunities to contribute to firm value."[246]

Thomas goes on to argue that dispersed ownership and the winner-take-all culture in the United States explains the pay gap through tournament theory.[247] Dispersed shareholder systems, such as in the United States and the United Kingdom, give CEOs more power and increase the need for stock options. Investors in those markets have indeed strongly advocated for pay-for-performance.[248] On the contrary, in concentrated shareholder systems, control shareholders have financial incentives and greater abilities to monitor ineffective managers, making performance-oriented pay less useful.[249] Thomas noted

239. SIGURT VITOLS, BOARD LEVEL EMPLOYEE REPRESENTATION, EXECUTIVE REMUNERATION AND FIRM PERFORMANCE IN LARGE EUROPEAN COMPANIES 2 (2010), http://www.efesonline.org/database%20of%20employee%20ownership/Users/2010_ceo_pay_paper.pdf.

240. *Id.*

241. Dyballa & Kraft, *supra* note 233, at 1.

242. Thomas, *supra* note 223, at 1171–72.

243. *Id.* at 1200.

244. *Id.*

245. *Id.* at 1200–02.

246. *Id.* at 1203.

247. Thomas, *supra* note 223, at 1209–13.

248. *Id.* at 1179–80 ("Options generally serve three functions in the typical dispersed ownership American firm: they give executives incentives to work harder; they help align the incentives of executives with those of shareholders as a substitute for close shareholder monitoring; and they provide compensation and help with retention of talented executives."); William Alan Nelson II, *Ending the Silence: Shareholder Derivative Suits and Amending the Dodd-Frank Act so "Say on Pay" Votes May Be Heard in the Boardroom*, 20 U. MIAMI BUS. L. REV. 149, 172 (2012).

249. Thomas, *supra* note 223, at 1180.

a potential movement toward dispersed ownership in continental European, Asia, and Latin America, which, he predicts, could cause executive pay in those areas to shift toward incentive-based pay.[250]

Regardless of the ownership structure movements, Thomas also argues that "cultural factors may prevent companies outside of the United States from conducting tournaments that offer such highly lucrative prizes."[251] The winner-take-all story goes that "American society is built around the principle that the winner of any competition, including that to become a corporate CEO, is entitled to capture enormous benefits."[252] "In contrast, in Japan and Europe, many commentators have claimed that there are strong egalitarian impulses against large pay differentials or conspicuous displays of wealth."[253] The influence of these cultural differences manifests through both self-restraint within firms and broader societal resistance.[254]

According to opportunity cost theory, recent years have witnessed heightened demand for skilled managers as a result of increased access to financial markets and increased international competition.[255] Established firms then have to compensate their top executives more in order to retain them.[256] Thomas observes that continental Europe has not seen the same degree of financial market expansion as has occurred in the United States.[257] Increased openness in trade and markets in the United States invited more international competition, forcing domestic firms to deconstruct, and created opportunities for smaller manufacturers in the supply chain.[258] Technological advancements also helped smaller firms to operate more efficiently and to flourish.[259] Increased availability of capital and deregulation to encourage competition made it easier for managers to "break away" and to raise capital directly in the market.[260] These factors caused the average firm size in the United States to shrink and increased employment opportunities for U.S. executives.[261] "High executive pay is thus a reflection of skilled managers' value to firms in a world where human capital has become crucial."[262] Contrary to the situation in the U.S., foreign executives have limited access to capital.[263] "Venture capital funding . . . is much less available."[264] Opportunities for executives to "break away" and create their own firms are thus fewer.[265] Thomas points out that an emergence of a global market for executives could potentially level the executive pay landscape.[266]

In addition, bargaining power theory suggests that dispersed ownership structure in

250. *Id.* at 1216–17.
251. *Id.* at 1218–19.
252. *Id.* at 1220.
253. *Id.* (citations omitted).
254. Thomas, *supra* note 223, at 1221.
255. *Id.* at 1223.
256. *Id.* at 1224.
257. *Id.*
258. *Id.* at 1226.
259. Thomas, *supra* note 223, at 1226.
260. *Id.* at 1228.
261. *Id.* at 1226.
262. *Id.*
263. *Id.* at 1231–32.
264. Thomas, *supra* note 223, at 1232.
265. *Id.* at 1235.
266. *Id.* at 1235–38.

the United States makes hostile takeovers more possible, giving U.S. CEOs more power in those battles against takeovers.[267] For example, legal rulings from the 1980s "added to target management's powers . . . by reversing earlier prohibitions on stringent state anti-takeover laws."[268] In Europe, to the contrary, where control shareholder systems already have strong anti-takeover protections, hostile takeovers are rare.[269] This theory predicts that pay convergence would occur if ownership structures change in foreign firms and foreign executives enjoy more negotiating power.[270]

Finally, risk adjustment theory assumes that U.S. CEOs have more wealth tied up in their firms than their foreign counterparts, and therefore need to receive greater compensation as a risk premium, whereas foreign CEOs receive less compensation for lower firm-specific risk.[271] Unfortunately, data on foreign CEOs' holdings of their firms' stock options is lacking due to fewer disclosure laws in foreign countries[272] leaving this theory plausible but unverified.[273] Nonetheless, Thomas argues increased use of stock options by foreign companies has limited potential, largely due to control shareholder dominance.[274] In the end, Thomas argues that all five theories suggest that market forces will dictate whether the international pay gap will be reduced, and that government intervention is unnecessary.[275]

D. Slow Growth in Worker Compensation

Also important in determining the CEO-to-worker Pay Ratio is the compensation of the average worker. We noted earlier that there has been little growth in the average worker compensation in United States, rising only about ten percent between 1978 and 2013.[276] For many workers, these gains are smaller yet: in fact, real wages for male high school dropouts between 1963 and 2005 fell.[277] Even the best-performing educational group, males with postgraduate degrees, saw wages rise by only just over 60%.[278] In contrast, between 1960-1969 and 2000-2003, U.S. executive compensation rose over 800%,[279] while real per capita GDP just over doubled, rising by 123% between 1965 and 2003.[280] Therefore, the rising ratio between CEO and worker pay is also a story of stagnating pay for the average worker.

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267. *Id.* at 1241.
268. *Id.* at 1243.
269. Thomas, *supra* note 223, at 1249–50.
270. *Id.* at 1251.
271. *Id.* at 1252.
272. *Id.* at 1254.
273. *Id.*
274. Thomas, *supra* note 223, at 1254.
275. *Id.* at 1265–67.
276. Alyssa Davis & Lawrence Mishel, *CEO Pay Continues to Rise as Typical Workers Are Paid Less*, ECON. POL'Y INST. (June, 12, 2014), https://www.epi.org/publication/ceo-pay-continues-to-rise/.
277. David H. Autor et al., *Trends in U.S. Wage Inequality: Revising the Revisionists*, 90 REV. ECON. & STAT. 300, 305 (2008).
278. *Id.* at 308.
279. CAROLA FRYDMAN & RAVEN E. SAKS, HISTORICAL TRENDS IN EXECUTIVE COMPENSATION 1936-2003 44 (2005), https://inequality.stanford.edu/sites/default/files/media/_media/pdf/Reference%20Media/Frydman%20and%20Saks_2005_Elites.pdf.
280. *Constant GDP Per Capita for the United States*, FED. RES. BANK ST. LOUIS, https://fred.stlouisfed.org/series/NYGDPPCAPKDUSA (last visited Jan. 7, 2018).

In contrast, European wage growth is generally more robust. For example, real wages in the U.K. rose by about 50% between 1980 and 2016;[281] other European nations are summarized in the chart below.[282] With a handful of exceptions, wages of the average worker in various European countries grew to a greater extent over a shorter period of time compared to wages in the United States. The CEO-to-worker ratio gap is therefore not simply the result of disparate increases in executive compensation, with higher levels in the United States, but also of disparate increases in wages of the average worker, with Europe generally seeing stronger gains.

Nation	1990 average annual real* wage	2018 average annual real* wage	Percentage change
Austria	40,822	50,868	25.3%
Belgium	41,616	52,080	20.7%
Denmark	40,078	55,253	35.8%
Finland	33,509	44,111	32.7%
France	33,296	44,510	33.9%
Germany	37,172	49,813	29.0%
Ireland	24,469	47,952	75.3%
Italy	37,088	37,752	2.6%

***Note: All units are "In 2018 constant prices at 2018 USD PPPs;" this measure is one of the more conservative measures available in the database.[283]**

In addition, many European countries have laws that are protective of workers' rights,[284] which help reduce the CEO-worker pay gap. For example, "[t]he European Community (EC) mandates that all members, save the United Kingdom, require most of their corporations to establish procedures for employee consultation and worker council formation."[285] Many European countries also have laws "requiring work councils, setting wages, and limiting an employer's ability to fire workers."[286] These legal requirements may thus make attempts to stretch the CEO-worker pay differential more difficult.

E. Cultural Differences and Distributive Fairness

Cultural differences between the U.S. and European countries also play a role in creating the CEO-worker-pay-gap. Contrary to the "winner-take-all" spirit enshrined in the

281 *See* Rui Costa & Stephen Machin, *Real Wages and Living Standards in the UK* 2 (Centre for Econ. Performance, London Sch. Econ. & Pol. Sci., Paper EA036 2017), http://cep.lse.ac.uk/pubs/download/ea036.pdf (describing how real wages in the U.S. rose by roughly two percent each year from 1980 until the economic recession in 2008).

282 *Average Annual Wages*, Org. for Econ. Co-Operation & Dev., https://stats.oecd.org/Index.aspx?DataSetCode=AV_AN_WAGE# (last visited Dec. 28, 2018).

283. *Id.* USD PPPs refers to purchasing power parities in U.S. dollars. *See, e.g.*, *Purchasing Power Parities for GDP and Related Indicators*, ORG. FOR ECON. CO-OPERATION & DEV., https://stats.oecd.org/Index.aspx?DataSetCode=PPPGDP (last visited Oct. 14, 2019) (showing values of PPPs in several countries over the years).

284. Lawrence A. Cunningham, *Commonalities and Prescriptions in the Vertical Dimension of Global Corporate Governance*, 84 CORNELL L. REV. 1133, 1145 (1999).

285. *Id.* at 1141.

286. *Id.* at 1145.

American corporate system,[287] there are strong "egalitarian impulses" in many European societies.[288] The United Kingdom, for example, is thought by some to have a bias against wealth, thus resulting in lower executive pay.[289] Similar egalitarian cultures not only encourage CEOs in those cultures to exercise "self-restraint,"[290] but also to fear societal outrage that could result in reputational damage.[291]

Marc Moore finds that the modern regulatory policy framework on executive pay has been shifting its focus from financial performance to equity or distributive fairness.[292] For example, the E.U. "banker bonus cap" "prohibits (subject to limited exceptions) the annual variable remuneration (including bonus) of a senior banking company executive from exceeding 100 per cent of that individual's annual fixed (e.g., salaried) remuneration."[293] Domestic-level policy initiatives have included the imposition of bonus bans and rigid salary caps of €500,000 on employees of publicly "bailed-out" banks in Germany.[294] Moore observes, however, skepticism and criticism about the cost-effectiveness of pay equity regulations as politically motivated bureaucracy.[295] Thus, rational investors would likely not be interested in executive-pay related disclosures.[296]

VII. OUR EMPIRICAL STUDY: NEW EVIDENCE REGARDING THE COSTS IMPOSED BY THE CEO PAY RATIO

In this Part, we discuss our empirical study regarding whether the CEO pay ratio is informative. Our main variable of interest is the ratio of CEO pay to that of the median worker. We manually collected this data from firms' proxy statements for the fiscal year 2017. We computed the pay ratio as the value of CEO compensation divided by the median workers' salaries (the Pay Ratio). Because the ratio is highly skewed, we use the natural log of this ratio (log pay ratio) in the analyses.

The Pay Ratio can be a function of company characteristics such as size and growth opportunities. It can also reflect agency problems within the firm. In particular, CEO power and poor governance can lead to high compensation for the CEO compared to the median worker. In this paper, we examine what company characteristics determine the Pay Ratio. We also examine whether the Pay Ratio provides information about the CEO's role within the firm that is not captured by previously examined variables such as whether the CEO also chairs the board. To this end, we compute proxies for compensation inequality within the firm, utilizing measures of corporate governance and CEO power that have been previously used in the literature.

287. Thomas, *supra* note 223, at 1219.
288. *Id.* at 1220.
289. *Id.*
290. *Id.* at 1221.
291. *Id*.
292. Marc T. Moore, *Corporate Governance, Pay Equity, and the Limitations of Agency Theory*, 68 CURRENT LEGAL PROBS. 431, 431 (2015).
293. *Id.* at 439 (citations omitted).
294. *Id.*
295. *Id.* at 441.
296. *Id.*

A. Data

First, we compute a commonly used compensation inequality measure, the CEO pay slice. The CPS measure was first proposed by Lucian Bebchuk, Martijn Cremers, and Urs Peyer[297] and is calculated as the percentage of the total compensation of the top five executives captured by the CEO. The total compensation is the sum of salary, bonus, other annual pay, total value of restricted stock granted, the Black-Scholes value of stock options granted, long-term incentive payouts, and all other compensation, and is available from Compustat's ExecuComp database, identified as item TDC1. Bebchuk, Cremers, and Peyer show that the CPS reflects the extent to which the CEO is able to extract rents from the firm as opposed to measuring the relative abilities and importance of the CEO within the firm.[298] They find that the CPS is negatively associated with firm value and performance.[299] Following Bebchuk, Cremers, and Peyer, we also control for relative cash compensation (Rel cash comp), computed as the ratio of the fraction of cash compensation of the CEO to the average fraction of cash compensation of the other four top executives.

We use three variables as a proxy for CEO power. Our first measure is CEO-Chairman duality. This is based on evidence that if the same individual holds both positions (chief executive officer and chairman of the board of directors), then she has significant power over board decisions. Vidham Goyal and Chul Park find that when there is duality, CEO turnover is less sensitive to firm performance.[300] Adair Morse, Vikram Nanda, and Amit Seru show that powerful CEOs induce boards to shift the weight on performance measures toward those that are favorable to them.[301] To measure CEO-Chairman duality, we construct a dummy variable that takes on a value of 1 if the CEO is also the chairman of the board of the firm in that year. The data come from Compustat's ExecuComp database.[302]

The second measure of CEO power is tenure or the number of years the CEO has been working in her role as the CEO at the firm. Our use of CEO tenure as a proxy for CEO power is based on the notion that the longer a CEO's tenure, the greater her influence in the organization and in particular over her compensation. Consistent with this notion, Charles Hill and Phillip Phan find that longer CEO tenure reduces pay-for-performance sensitivity.[303] We measure CEO tenure by the number of years the CEO has held her current position at a given firm (CEO Tenure). The data also come from Compustat's ExecuComp database.

The third measure is the percentage of shares owned by the CEO (Pct CEO share). A number of scholars suggest that CEOs with greater levels of ownership can exert greater

297. Bebchuk et al., *supra* note 5, at 202.

298. *Id.* at 206.

299. *Id.* at 200.

300. Vidhan K. Goyal & Chul W. Park*, Board Leadership Structure and CEO Turnover*, 8 J. CORP. FIN. 49, 49 (2002) ("The results show that the sensitivity of CEO turnover to firm performance is significantly lower when the CEO and chairman duties are vested in the same individual.").

301. Adair Morse et al., *Are Incentive Contracts Rigged by Powerful CEOs?*, 66 J. FIN. 1779, 1779 (2011).

302. STANDARD & POORS, STANDARD & POOR'S COMPUSTAT, http://fccee.ugr.es/pages/facultad/vicedecanatos/vicedecanato-de-investigacion-y-posgrado/documentos/bases-de-datos/compustat-for-academics/! (last visited Oct. 29, 2019) (a subscription is needed to access the database).

303. Charles W.L. Hill & Phillip Phan, *CEO Tenure as a Determinant of CEO Pay*, 34 ACAD. MGMT. J. 707, 707 (1991) ("Results of empirical tests were consistent with this argument, suggesting that the relationship between CEO pay and stock returns weakens with tenure.").

influence on financial policy and strategic decisions at their firm.[304]

We then use three variables to measure the strength of corporate governance within the firm. The first is an index of managerial entrenchment (E index) proposed by Lucian Bebchuk, Alma Cohen, and Allen Ferrell.[305] The E index consists of six corporate governance provisions that are identified as most associated with shareholder value by Bebchuk, Cohen, and Ferrell.[306] The six provisions are classified boards, poison pills, golden parachutes, and supervisory voting requirements for charters, by-laws, and mergers. The E index gives an equal weight to each provision and ranges from 0 to 6. A higher E index indicates weaker shareholder rights or more entrenchment.

The second measure of corporate governance used is board independence. Independent board directors are defined as those who are not executives of the firm or affiliated with the firm's executives. There is a large body of empirical work that suggests more independent boards lead to better governance within a firm and better alignment of managerial incentives with those of the shareholders.[307] Our measure of director independence (Board Independence) is the percentage of directors of a firm in a given year who are classified as being independent and not affiliated with the firm.

The third measure is board size. Large boards tend to be less effective in coordination, communication, and decision-making, and suffer from free-riding problems. As a result, large boards are more likely to be controlled and influenced by the CEO. Consistent with this view, David Yermack[308] and Theodore Eisenberg, Stefan Sungren, and Martin Wells[309] find that large boards are associated with lower firm value. Active institutional investors also tend to reduce board size.[310] All director and board information come, from the Institutional Shareholder Services (ISS) Governance Services database.[311]

In the analyses, we also control for various firm characteristics. In particular, we compute log market capitalization (Log ME) from the Center for Research in Securities Prices (CRSP).[312] Using the Compustat, database we compute the log value of book-to-market ratio (Log BM), the ratio of book liabilities-to-assets (Leverage), return on assets (ROA),

304. *See* Ulf Von Lilienfeld-Toal & Stefan Ruenzi, *CEO Ownership, Stock Market Performance, and Managerial Discretion*, 69 J. FIN. 1013, 1013 (2014) (finding that CEO ownership increases firm value by incentivizing increased CEO effort); Enrico Onali et al., *CEO Power, Government Monitoring, and Bank Dividends*, 27 J. FIN. INTERMEDIATION 89, 93 (2016) (describing how CEO ownership increases CEO power in the banking industry through both an entrenchment and incentive effect). *See also* Yixin Liu & Pornsit Jiraporn, *The Effect of CEO Power on Bond Ratings and Yields*, 17 J. EMPIRICAL FIN. 744, 744 (2010) (finding that "powerful CEOs tend to maintain an opaque information environment" which leads to lower credit ratings).

305. Lucian Bebchuk et al., *What Matters in Corporate Governance?*, 22 REV. FIN. STUD. 783, 785 (2009).

306. *Id.* at 786.

307. *See, e.g.*, Michael S. Weisbach, *Outside Directors and CEO Turnover*, 20 J. FIN. ECON. 431 (1988) (discussing turnover in top management); Jay Dahya et al., *The Cadbury Committee, Corporate Performance, and Top Management Turnover*, 57 J. FIN. 461 (2002) (explaining turnover within the corporate framework).

308. David Yermack, *Higher Market Valuation of Companies with a Small Board of Directors*, 40 J. FIN. ECON. 185, 186–87 (1996).

309. Theodore Eisenberg et al., *supra* note 158.

310. *See* YiLin Wu, *The Impact of Public Opinion on Board Structure Changes, Director Career Progression, and CEO Turnover: Evidence from CalPERS' Corporate Governance Program*, 10 J. CORP. FIN. 199 (2004) (finding that companies decreased the number of inside directors after being identified by a large investor).

311. *Research Database*, ISS GOVERNANCE, https://www.issgovernance.com/securities-class-action-services/solutions/research-database/ (last visited Sept. 26, 2019).

312. *Why CRSP?*, U. CHI. BOOTH SCH. BUS.: CTR. RES. SEC. PRICES, http://crsp.com/main-menu/why-crsp (last visited Oct. 29, 2019).

that is, the ratio of income before extraordinary items to total assets in the last period, the ratio of capital expenditures-to-total assets (Capx/AT), total research and development spending (RD), and a dummy variable indicating whether research and development spending is missing. We also control for company age, computed as the difference between current year and the year the company was first listed on CRSP.

To examine how the Pay Ratio affects firm value, we compute the implied cost of capital following Ľubos Pástor, Meenakshi Sinha, and Bhaskaran Swaminathan[313] and Yan Li, David Ng, and Bhaskaran Swaminathan.[314] In particular, we compute the implied cost of capital (ICC) as the internal rate of return that equates the present value of expected future dividends to the current stock price, i.e., the value of $r_{i,e}$ that solves:

$$P_{i,t} = \sum_{k=1}^{k=\infty} \frac{E_t(FCFE_{i,t+k})}{(1+r_{i,e})^k} \quad (1)$$

$P_{i,t}$ is the price of firm i at time t, E_t is the expectation operator conditional on the information at time t, $FCFE_{i,t+k}$ is the dividend in year $t+k$. Following the literature, we assume that the present value of the dividend in year $t+k$ is the future dividend multiplied by one minus the plowback rate:

$$E_t(FCFE_{i,t+k}) = FE_{i,t+k} \times (1 - b_{i,t+k}) \quad (2)$$

where $FE_{i,t+k}$ and $b_{i,t+k}$ are the predicted dividend and the plowback rate in year $t+k$, respectively. The plowback rate is the fraction of earnings that is reinvested in the firm. We use mean and median of the consensus forecasts from the Institutional Brokers Estimate System (IBES)[315] database to approximate future dividends.

Following Pástor, Sinha, and Swaminathan[316] and Li, Ng, and Swaminathan,[317] we explicitly forecast the dividends for the first T years and sum them with the terminal value of all dividends after year $t+T$, where $T = 15$. For the first three years, we use analyst forecasts from the IBES as the dividend forecast directly. For years $t+4$ through $t+T+1$, we assume that dividends mean-revert to the steady-state value in year $t+T+2$, where the steady-state growth rate is approximated by the long-term GDP growth rate. Specifically, the dividend in year $t+k, k = 4, \ldots T+1$ is determined by:

$$FE_{i,t+k} = FE_{i,t+k-1} \times (1 + g_{i,t+k}) \quad (3)$$

313. *See generally* Ľuboš Pástor et al., *Estimating the Intertemporal Risk-Return Tradeoff Using the Implied Cost of Capital*, 63 J. FIN. 2859 (2008) (explaining how to compute implied cost of capital).

314. *See generally* Yan Li et al., *Predicting Market Returns Using Aggregate Implied Cost of Capital*, 110 J. FIN. ECON. 419 (2013) (giving a way to compute implied cost of capital).

315. *Institutional Brokers Estimate System*, REFINITIV, https://www.refinitiv.com/en/financial-data/company-data/institutional-brokers-estimate-system-ibes (last visited Sept. 26, 2019).

316. Pástor et al., *supra* note 313, at 2872 ("We use a 15-year horizon.").

317. Li et al., *supra* note 314, at 421 ("Following Pastor, Sinha and Swaminathan (2008), we use a 15-year horizon (T=15) to implement the model.").

where $g_{i,t+k}$ is the growth rate of firm i in year $t+k$, given by a function of the long-term GDP growth rate g and the growth rate in the previous year as follows:

$$g_{i,t+k} = g_{i,t+k-1} \times \exp\left(\frac{\log\left(\frac{g}{g_{i,t+3}}\right)}{T-1}\right) \quad (4)$$

We compute plowback rates for the first three years explicitly and assume the plowback rates between years $t+4$ and $t+T+1$ mean-revert linearly to a steady-rate. The plowback rates for the first three years equal one minus the firm's most recent net payout ratio p_t. The net payout ratio equals net payout NP_t divided by the firm's net income NI_t. The net payout is the gross payout, which is computed as the sum of common dividends plus the amount of common and preferred stock purchased by the firm, minus any issuance of new stock.

We assume that the long-term growth rate equals the steady-state return on new investments multiplied by the steady-state plowback rate and competition drives the return on new investment in the steady state down to the cost of equity, so that the steady-state value of the plowback rate is $b_i = \frac{g}{r_{i,e}}$.

The plowback rate in the year $t+k, k = 3, \ldots T$, then is

$$b_{i,t+k} = b_{i,t+k-1} - \frac{b_{i,t+2} - b_i}{T-1} \quad (5)$$

The terminal value at time $t+T$

$$TV_{i,t+T} = \sum_{n=1}^{\infty} \frac{FE_{i,t+T+n}(1-b_i)}{(1+r_{i,e})^n} = \frac{FE_{i,t+T+1}}{r_{i,e}} \quad (6)$$

Finally, ICC is the value of $r_{i,e}$ that solves the following equation:

$$P_{i,t} = \sum_{k=1}^{k=T} \frac{FE_{i,t+k}(1-b_{i,t+k})}{(1+r_{i,e})^k} + \frac{FE_{i,t+T+1}}{r_{i,e}} \quad (7)$$

B. Empirical Results

All the variables used in the analyses are listed and described in detail in Table 1. We also provide the source of the data in this table. As indicated earlier, our key data, namely the pay ratio, is hand collected.

Table 1: Variable definitions

This table lists and describes the variables used in the analyses.

Variable	Definition	Source

ICC med	Implied cost of capital computed using the median forecasts of EPS by following Chava and Purnanandam[318]	I/B/E/S
ICC mean	Implied cost of capital computed using the mean forecasts of EPS by following Pástor, Sinha, and Swaminathan[319]	I/B/E/S
Log pay ratio	The log value of CEO's compensation divided by the median of the workers' pay	Self-collected
CPS	CEO pay slice, computed as CEO's compensation divided by the total compensation of the top five executives	Execucomp
Log ME	The log value of market capitalization	CRSP
Log BM	The log value of the book-to-market ratio	Compustat
Leverage	Leverage, computed as the sum of market capitalization and book liabilities divided by market capitalization	Compustat
ROA	Return on assets, the ratio of income before extraordinary items-to-total assets in the last period	Compustat
Capx/AT	Capital expenditures divided by total assets	Compustat
RD	Total Research and Development (R&D) spending	Compustat
Rdmissing	Dummy set to 1 if R&D spending is missing, and 0 otherwise	Compustat
CompanyAge	Age of the company	CRSP
Eindex	Entrenchment (anti-takeover) Index	ISS
Rel cash comp	The ratio of the fraction of cash compensation of CEO to the average fraction of cash compensation of the other four top executives	Execucomp
Nboard	Number of board members	ISS
Board independence	Number of independent directors divided by total number of board members	ISS
CEO tenure	Number of years since becoming CEO	Execucomp
CEO is chair	Dummy, equal to 1 if the CEO is also the chairman and 0 otherwise	Execucomp
Pct CEO share	The percent of shares held by the CEO	Execucomp

In Table 2, we report the summary statistics of the variables used in the analyses. After matching to CRSP and Compustat ExecuComp we have the Pay Ratio data available for 233 firms for the fiscal year 2017. In Table 2, we see that there is significant variation in the pay ratio. The median value of the pay ratio is 115.[320] Assuming a median pay of $50,000 for the median worker, this puts the median CEO compensation for our sample at around $5.8 million.

318. Sudheer Chava & Amiyatosh Purnanandam, *Is Default Risk Negatively Related to Stock Returns?*, 23 REV. FIN. STUD. 2523, 2528 (2010).

319. *Id.* at 2524–25.

320. Computed as exp(4.749).

Table 2: Summary Statistics
This table reports the number of observations, average, standard deviation, minimum, 25th percentile, median, 75th percentile, and maximum of the variables used in the analyses. The variables are defined in Table 1.

Variable	N	Avg	Std	Min	P25	P50	P75	Max
ICC med	233	4.723	1.914	0.507	3.487	4.486	5.804	14.76
ICC mean	233	4.719	1.877	0.543	3.499	4.501	5.812	13.04
Log pay ratio	233	4.740	0.856	2.581	4.248	4.749	5.336	7.210
CPS	233	0.411	0.086	0.066	0.368	0.429	0.465	0.585
Log ME	233	8.925	1.499	5.582	7.807	8.773	10.00	12.65
Log BM	233	0.366	0.173	0.020	0.231	0.356	0.489	0.796
Leverage	233	2.694	2.254	1.028	1.375	1.724	2.584	17.49
ROA	233	0.049	0.062	-0.160	0.012	0.040	0.075	0.320
Capx/AT	233	0.032	0.040	0.000	0.003	0.022	0.049	0.373
RD	233	0.017	0.045	0.000	0.000	0.000	0.017	0.355
RD missing	233	0.494	0.501	0.000	0.000	0.000	1.000	1.000
Company age	233	39.854	21.67	0.000	23.000	35.00	50.00	91.00
Eindex	215	3.898	0.696	2.000	3.000	4.000	4.000	6.000
Rel cash comp	233	0.709	0.393	0.201	0.547	0.623	0.752	4.736
N board	215	10.484	2.480	6.000	9.000	10.00	11.00	29.00
Board independence	215	0.841	0.092	0.545	0.800	0.875	0.909	0.938
CEO tenure	233	7.464	6.027	1.000	3.000	6.000	10.00	32.00
CEO is chair	233	0.588	0.493	0.000	0.000	1.000	1.000	1.000
Pct CEO share	233	0.935	3.523	0.002	0.105	0.307	0.755	46.08

The Pay Ratio ranges from a low of 13[321] to a maximum of 1353[322] in the sample. The 25th and 75th percentile values are 70 and 218, respectively. Although our sample includes a limited number of firms, the distribution of company characteristics is similar to those reported in the literature.[323]

To compare the Pay Ratio with the previously used pay slice variable, we convert the Pay Slice to a ratio of CEO compensation to the average of the remaining four top executives. Using the Pay Slice ratios reported in Table 2, we see that the CEO compensation equals about three times the average of the remaining four top executive compensation.[324] The 25th and 75th percentiles correspond to a ratio of 2.3 and 3.5 times, respectively. Thus, the variability of the median CEO Pay Ratio is much greater than the variability in the previously studied pay slice variable.

321. Computed analogously as exp(2.581).
322. Computed analogously as exp(7.210).
323. *See, e.g.*, Bebchuk et al., *supra* note 5, at 202–04 (using data from 2015 firms).
324. Computed as Pay Slice *4 / (1-Pay Slice).

Our finding of much greater variability in the pay ratio makes intuitive sense. It is easier to reduce the Pay Slice level and variability by simply increasing the compensation of the other top four executives. However, to reduce the level and variability of the pay ratio requires manipulating the compensation of the median worker, which is a much more difficult exercise. As a result, we expect the pay ratio variable to be much more informative regarding CEO power than the Pay Slice variable.

In Table 3, we report the mean and median of the log pay ratio for the 5 and 12 Fama-French industry groups.[325] The median pay ratio is highest in the consumer durables sector (245, or a log value of 5.5) and lowest in the utilities sector (81, or a log value of 4.4). There is as much variation in the log pay ratio across industries as there is within industries. This finding suggests that the differences in the Pay Ratio are not driven purely by industry characteristics. In the multivariate analyses, we control for industry fixed effects to remove all industry characteristics that may influence the Pay Ratio.

Table 3: Worker-CEO pay gap in different industries
This table reports the mean and median of the log pay ratio in the industries classified by Fama-French. Panel A reports the results of Fama-French 5 industries, and Panel B reports results of Fama-French 12 industries.

Panel A: Fama-French 5 industries

FF5	**Freq**	**Avg**	**Median**
Consumer	32	5.247	5.487
Manufacturing	68	4.704	4.728
HiTec	22	4.940	4.956
Health	12	4.753	4.740
Other	99	4.556	4.597
Total	233	4.740	4.749

Panel B: Fama-French 12 industries

FF12	**Freq**	**Avg**	**Median**
Consumer NonDurables	8	5.225	5.323
Consumer Durables	7	5.450	5.508
Manufacturing	36	4.931	5.049
Energy	11	4.444	4.615
Chemicals	8	4.909	4.904
Business Equipment	18	4.959	4.958
Telephone and Television	3	5.093	4.954
Utilities	13	4.169	4.388
Shops	17	5.174	5.456
Health	12	4.753	4.740

325. *See* Eugene F. Fama & Kenneth R. French, *Dissecting Anomalies with a Five-Factor Model*, 29 REV. FIN. STUD. 69, 72 (2016) (using a five-factor model that places stocks in stocks into "two *Size* groups and three book-to-market equity (*B/M*) groups").

Finance	67	4.629	4.604
Other	33	4.394	4.452
Total	233	4.740	4.749

We report pairwise correlations in Table 4. The log pay ratio variable is most correlated with company size (0.57), company age (0.32), and the pay slice variable (0.31). The univariate analyses suggest that the Pay Ratio is also highly correlated with the implied cost of capital variable (0.24).

Table 4: Correlations
This table reports the correlations of the variables used in the analyses. The variables are described in detail in Table 1.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	ICC med	1.000	0.237	0.045	0.134	0.237	0.464	-0.106
(2)	Log pay ratio	0.237	1.000	0.309	0.568	-0.114	0.044	0.165
(3)	CPS	0.045	0.309	1.000	-0.010	-0.127	-0.216	-0.004
(4)	Log ME	0.134	0.568	-0.010	1.000	-0.084	0.135	0.088
(5)	Log BM	0.237	-0.114	-0.127	-0.084	1.000	0.521	-0.469
(6)	Leverage	0.464	0.044	-0.216	0.135	0.521	1.000	-0.381
(7)	ROA	-0.106	0.165	-0.004	0.088	-0.469	-0.381	1.000
(8)	Capx/AT	-0.048	-0.166	0.110	-0.105	-0.004	-0.311	0.104
(9)	RD missing	0.145	-0.291	-0.201	0.005	0.456	0.474	-0.332
(10)	Company age	0.000	0.317	0.133	0.406	-0.120	-0.134	0.097
(11)	Eindex	0.018	0.041	0.105	-0.242	0.025	-0.075	-0.044
(12)	Rel cash comp	-0.052	-0.245	-0.668	-0.127	0.036	0.018	0.059
(13)	N board	0.171	0.228	-0.136	0.488	0.123	0.329	-0.091
(14)	Board independence	0.082	0.211	0.180	0.280	0.037	0.052	-0.046
(15)	CEO tenure	-0.110	-0.049	-0.076	-0.074	0.064	0.127	-0.021
(16)	CEO is chair	0.119	0.253	-0.013	0.354	0.047	0.106	0.072

(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
-0.048	0.145	0.000	0.018	-0.052	0.171	0.082	-0.110	0.119
-0.166	-0.291	0.317	0.041	-0.245	0.228	0.211	-0.049	0.253
0.110	-0.201	0.133	0.105	-0.668	-0.136	0.180	-0.076	-0.013
-0.105	0.005	0.406	-0.242	-0.127	0.488	0.280	-0.074	0.354
-0.004	0.456	-0.120	0.025	0.036	0.123	0.037	0.064	0.047
-0.311	0.474	-0.134	-0.075	0.018	0.329	0.052	0.127	0.106
0.104	-0.332	0.097	-0.044	0.059	-0.091	-0.046	-0.021	0.072
1.000	0.073	0.082	0.024	-0.043	-0.175	0.026	-0.207	-0.026
0.073	1.000	-0.135	-0.054	0.144	0.219	0.021	0.092	0.100
0.082	-0.135	1.000	-0.140	-0.112	0.227	0.275	-0.129	0.180
0.024	-0.054	-0.140	1.000	0.122	-0.088	0.078	-0.006	-0.001
-0.043	0.144	-0.112	0.122	1.000	0.001	-0.077	0.137	0.042
-0.175	0.219	0.227	-0.088	0.001	1.000	0.150	-0.066	0.111
0.026	0.021	0.275	0.078	-0.077	0.150	1.000	-0.080	0.250
-0.207	0.092	-0.129	-0.006	0.137	-0.066	-0.080	1.000	0.292
-0.026	0.100	0.180	-0.001	0.042	0.111	0.250	0.292	1.000

To study the relation between the log pay ratio and other variables, we sort firms into two portfolios based on the Pay Ratio. Table 5 reports the summary statistics of the variables in each portfolio. As the log pay ratio increases from 4 to 5.4, CPS, log market capitalization, ROA, company age, number of board members, board independence, and the CEO/chair duality also increase significantly. Log book-to-market ratio, "RD-missing" dummy variable, and relative cash compensation, on the other hand decrease substantially from the low portfolio to the high portfolio. For instance, in low-pay group, 62.9% of the firms do not report any R&D expenditures. In high-pay group, this ratio falls to 35.9%, a decline of 27 percentage points.

Table 5: Univariate sorts based on log pay ratio
We sort firms into two portfolios based on the log pay ratio and compute the summary statistics of Log pay ratio, CPS, Log ME, Log BM, Leverage, ROA, Capx/AT, RD, RD missing, Company age, Eindex, rel cash comp, N board, Board independence, CEO tenure, and CEO is chair in each portfolio. Definition of these variables can be found in Table 1. This table reports the number of observations, mean, and standard deviation of these variables for each portfolio, as well as the difference and t-stat between the two portfolios.

	Low pay ratio			High pay ratio			High - Low	
Variable	N	Mean	Std	N	Mean	Std	Diff	t-stat
Log pay ratio	116	4.062	0.550	117	5.413	0.500	1.351	19.608
CPS	116	0.389	0.087	117	0.433	0.079	0.044	4.057
Log ME	116	8.124	1.151	117	9.720	1.380	1.596	9.591
Log BM	116	0.394	0.162	117	0.338	0.179	-	-2.507
Leverage	116	2.653	1.901	117	2.735	2.565	0.082	0.276
ROA	116	0.040	0.066	117	0.058	0.057	0.019	2.304
Capx/AT	116	0.037	0.050	117	0.027	0.025	-	-1.905
RD	116	0.015	0.053	117	0.019	0.036	0.004	0.644
RD missing	116	0.629	0.485	117	0.359	0.482	-	-4.268
Company age	116	34.707	18.41	117	44.957	23.46	10.25	3.711
Eindex	103	3.903	0.721	112	3.893	0.676	-	-0.105
Rel cash	116	0.791	0.502	117	0.628	0.213	-	-3.218
N board	103	10.049	2.795	112	10.884	2.083	0.835	2.468
Board independence	103	0.822	0.099	112	0.858	0.082	0.036	2.904
CEOtenure	116	7.957	6.793	117	6.974	5.139	-	-1.244
CEO is chair	116	0.474	0.502	117	0.701	0.460	0.227	3.596

Next, we examine the determinants of the log pay ratio in a multivariate setting controlling for various company characteristics. We run a cross-sectional regression with industry fixed effects using the five Fama-French industry groups. We control for firm size,

book-to-market, leverage, profitability (ROA), capital intensity (Capx/AT), R&D spending, and company age. After controls, the CPS remains statistically and economically significant. Regression coefficients reported in column (1) of Table 6 imply that a one standard deviation increase in CPS increases the ratio of CEO compensation to the median worker by about 22%. The entrenchment index (Eindex) is also significant. A one standard deviation increase in the Eindex increases the pay ratio by about 15%. Other proxies for CEO power and governance reported in columns (3) to (7) are insignificant. When we include all governance and CEO power variables in the same regression (column 8), the CPS and the Eindex variables remain significant.

Table 6: Determinants of Worker-CEO pay gap
This table reports the results of regression the log of pay ratio on various CEO power indicators and firm characteristics. Details of the variables are described in Table 1. The regressions include Fama-French 5 industry fixed effects. Standard errors are in parentheses below their coefficient estimates and are adjusted for heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% two-tailed levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Log pay	Log pay	Log pay	Log pay	Log pay	Log pay	Log pay	Log pay
CPS	2.516***							2.881***
	-0.567							-0.578
Eindex		0.222***						0.189***
		-0.06						-0.059
N board			-0.013					-0.006
			-0.017					-0.017
Board independence				0.551				-0.209
				-0.586				-0.55
CEO tenure					-0.002			-0.004
					-0.007			-0.007
CEO is chair						0.104		0.082
						-0.091		-0.1
Pct of CEO share							-0.005	0.009
							-0.005	-0.006
Log ME	0.305***	0.320***	0.309***	0.293***	0.306***	0.294***	0.303***	0.320***
	-0.029	-0.033	-0.035	-0.033	-0.031	-0.032	-0.031	-0.037
Log BM	0.275	0.232	0.287	0.279	0.28	0.264	0.276	0.313
	-0.311	-0.329	-0.352	-0.35	-0.328	-0.324	-0.328	-0.309

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Leverage	0.054***	0.052**	0.050**	0.046**	0.044**	0.043**	0.044**	0.063***
	-0.02	-0.021	-0.022	-0.022	-0.021	-0.021	-0.021	-0.02
ROA	1.18	1.039	0.944	0.996	0.853	0.805	0.872	1.471*
	-0.759	-0.927	-0.936	-0.931	-0.795	-0.815	-0.8	-0.889
Capx/AT	-1.741	-2.075	-2.203	-2.152	-1.968*	-2.018*	-1.906	-2.661*
	-1.067	-1.55	-1.821	-1.735	-1.146	-1.143	-1.176	-1.5
RD	-2.244***	-2.173***	-1.973**	-1.908**	-2.744***	-2.667***	-2.725***	-1.287
	-0.862	-0.822	-0.846	-0.913	-0.749	-0.775	-0.747	-0.924
RD missing	-0.532***	-0.528***	-0.530***	-0.540***	-0.555***	-0.558***	-0.551***	-0.488***
	-0.126	-0.146	-0.151	-0.15	-0.135	-0.135	-0.135	-0.139
Company age	0.001	0.003	0.003	0.002	0.001	0.001	0.001	0.002
	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
Constant	1.316***	1.262***	2.377***	1.958***	2.434***	2.471***	2.439***	0.315
	-0.442	-0.473	-0.353	-0.548	-0.337	-0.337	-0.331	-0.592
Observations	233	215	215	215	233	233	233	215
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.539	0.507	0.477	0.479	0.485	0.488	0.485	0.572

The results thus far suggest a strong link between the Pay Ratio and the CEO pay slice and the entrenchment index. However, does the Pay Ratio capture information not contained in the CEO Pay Slice and the entrenchment indexes with respect to firm performance and value? To answer this question, we examine how the Pay Ratio affects the implied cost of capital after controlling for the CPS and measures of CEO power and governance. If the Pay Ratio captures information about the agency problems within a firm above and beyond measures that have been previously used in the literature, then we would expect the Pay Ratio to show an increase the cost of capital after controls.

Table 7 reports the results of regressions where the dependent variable is the cost of capital. In columns (1) to (4), we report results using the median analyst forecasts as described in the previous Part. In columns (5) to (8), we report results using the average analyst forecasts. Looking at the coefficients reported in columns (1) and (5), we see that after controlling for firm characteristics and industry fixed effects, the Pay Ratio has a significant positive impact on the cost of capital. The CPS also has a positive impact (columns 2 and 6), but it is not as significant as the Pay Ratio.

Table 7: Worker-CEO pay gap and cost of capital
This table reports the regression results of predicting implied cost of capital using log pay ratio and CPS. In models (1) to (4), the dependent variable is the implied cost of capital computed from the median forecast of EPS, and in models (5) to (8), the dependent variable is the one computed from the mean forecast of EPS. Details of the variables are described in Table 1. The regressions include Fama-French 5 industry fixed effects. Standard errors are in parentheses below their coefficient estimates and are adjusted for heteroscedasticity. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% two-tailed levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABL	ICC med	ICC med	ICC med	ICC med	ICC mean	ICC mean	ICC mean	ICC mean
Log pay ratio	0.424***		0.354**	0.340**	0.428***		0.370**	0.359**
	-0.143		-0.16	-0.172	-0.145		-0.161	-0.174
CPS		2.579*	1.687	2.299		2.337*	1.407	1.846
		-1.316	-1.437	-2.196		-1.284	-1.403	-2.1
Log ME	-0.061	0.067	-0.041	-0.065	-0.062	0.068	-0.045	-0.068
	-0.08	-0.069	-0.083	-0.111	-0.081	-0.069	-0.084	-0.112
Log BM	0.628	0.742	0.645	0.254	0.749	0.865	0.763	0.397
	-0.838	-0.84	-0.836	-0.871	-0.821	-0.825	-0.82	-0.86
Leverage	0.495***	0.525***	0.505***	0.500***	0.483***	0.511***	0.491***	0.484***
	-0.131	-0.131	-0.132	-0.145	-0.123	-0.123	-0.124	-0.136
ROA	1.422	2.115	1.697	1.115	1.526	2.19	1.754	1.11
	-1.823	-1.865	-1.834	-2.093	-1.826	-1.871	-1.836	-2.1
Capx/AT	5.385**	4.774*	5.391**	2.82	4.937*	4.299	4.942*	2.342
	-2.628	-2.715	-2.719	-3.237	-2.601	-2.666	-2.678	-3.231
RD	-4.636*	-5.307**	-4.512*	-3.994	-4.448*	-5.174**	-4.345*	-3.863
	-2.395	-2.564	-2.474	-2.866	-2.383	-2.54	-2.45	-2.846
Rdmissing	0.45	0.237	0.426	0.26	0.423	0.207	0.403	0.237
	-0.325	-0.3	-0.326	-0.351	-0.322	-0.298	-0.323	-0.351

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Company age	-0.002	-0.002	-0.002	-0.004	-0.002	-0.002	-0.002	-0.004
	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
Eindex				0.038				0.029
				-0.156				-0.155
Rel cash comp				0.391				0.362
				-0.435				-0.423
Nboard				0.009				0.002
				-0.046				-0.044
Board independence				-0.564				-0.431
				-1.243				-1.215
CEO tenure				-0.055***				-0.054***
				-0.018				-0.017
CEO is chair				0.321				0.332
				-0.249				-0.246
Constant	2.627***	2.528***	2.061**	2.595*	2.632***	2.647***	2.160**	2.747*
	-0.811	-0.955	-0.965	-1.519	-0.809	-0.952	-0.964	-1.518
Observations	233	233	233	215	233	233	233	215
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.396	0.389	0.4	0.404	0.401	0.391	0.404	0.407

When we run a horse-race between the Pay Ratio and the CPS (columns 3 and 7), we find that the Pay Ratio comes out ahead, while the CPS measure loses all significance.[326] After including other measures of governance and CEO power (columns 4 and 8), the Pay Ratio still remains significant. In terms of economic significance, a one standard deviation increase in the log Pay Ratio increases implied cost of capital by 30 basis points (bps) after all controls.

VIII. POLICY IMPLICATIONS AND CONCLUSIONS

In this Article, we document that increasing CEO power hurts shareholder interests, which would seem to be a necessary condition for regulations requiring disclosure of relative CEO compensation. Specifically, we study the information content of a new variable, namely the Pay Ratio of CEO compensation to median worker compensation. Disclosure of this new variable was recently mandated by the Dodd-Frank Act[327] despite the objections of many opponents who argued that such disclosures are an unnecessary and onerous burden for corporations.[328]

Using a sample of hand collected data, we analyze the relation between the Pay Ratio, Pay Slice and determinants and consequences of CEO power. We find that both the Pay Ratio and Pay Slice are related to measures of CEO power. They both remain significant when we examine them jointly. Thus, contrary to the claims of the opponents of the Dodd-Frank Act, the marginal explanatory power of the Pay Ratio is not subsumed by the CPS. This finding tells us that the Pay Ratio provides new and additional information over and above the CPS. Thus, to understand the determinants of CEO power, disclosure of the Pay Ratio along with the Pay Slice provides a better picture than the Pay Slice alone.

Most interestingly however, we also examine the consequences of CEO power using both variables. Here we find that the Pay Ratio is much more informative about the agency costs of excessive CEO power imposed upon shareholders. To measure the costs imposed upon the shareholders, we use the cost of capital measure. If excessively powerful CEOs impose more costs on the shareholders, we would expect them to drive up the cost of capital.

Our empirical findings indicate that the cost of capital variable increases significantly as CEO power as measured by the Pay Ratio increases. Furthermore, the Pay Ratio dominates and eliminates the information content of the CEO Pay Slice as an explanatory variable for the cost of capital. Our finding indicates that to understand the costs imposed on shareholders by excessive CEO power, we also need to pay attention to the Pay Ratio. This finding further undermines the assertions of the Dodd-Frank opponents that the Pay Ratio disclosure is simply unnecessary and onerous for the public corporations. Our findings provide support for the requiring additional regulation of the Pay Ratio or CEO compensation.

326. A horse-race simply refers to the comparison of the effects of the two variables.
327. Pay Ratio Rule, *supra* note 3.
328. *E.g.*, Loh, *supra* note 6 (giving an example of an opponent that disclosures are unnecessary).