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Evolving Executive Equity Compensation and the Limits of Optimal Contracting

David I. Walker

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Evolving Executive Equity Compensation and the Limits of Optimal Contracting

David I. Walker

64 Vand. L. Rev. 611 (2011)

Executive equity compensation in the United States is evolving. At the turn of the millennium, stock options dominated the equity pay landscape, accounting for over half of the aggregate ex ante value of senior executive pay at large public companies, while restricted stock and similar compensation accounted for only about ten percent. Beginning in 2006, stock grants have displaced options as the single largest component of senior executive compensation at these firms. Accompanying this shift has been increased variation among companies in their relative emphasis on stock and options in equity pay packages. Both phenomena provide an opportunity for a rich exploration of executive pay contracting focusing specifically on equity pay design. Such an exploration is timely given the current focus in Washington on the relationship between equity compensation and corporate risk taking. This Article begins that exploration and has two primary aims. First, it describes the evolution in executive equity pay practices and the current equity compensation landscape. Second, it considers the extent to which this evolution and the current use of stock and option pay can be explained as a function of efficient contracting (and what “efficient contracting” means in this context). The analysis reveals several features of the executive equity pay landscape that suggest limitations on efficient compensation contracting. First, although directionally consistent with changes in the conventional economic determinants of equity pay design, the dramatic shift over the last decade from very heavy reliance on options to a more balanced emphasis on stock and options suggests that option expensing, option taint, and/or increased perceptions of option risk played leading roles. Second, the trimodal distribution of the mix of stock and options being granted in recent years suggests that optimizing incentives is not the sole consideration of issuing firms. Third, the extent to which the same mix of stock and options is granted to the

various member of the executive suite suggests that individual optimization is quite limited.

Evolving Executive Equity Compensation and the Limits of Optimal Contracting

*David I. Walker**

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INTRODUCTION

Executive equity compensation in the United States is evolving. At the turn of the millennium, stock options dominated the equity pay landscape, accounting for over half of the aggregate ex ante value of senior executive pay at large public companies, while restricted stock and similar compensation (stock) accounted for only about ten percent.¹ By 2006, stock grants had displaced options as the single largest component of senior executive compensation at these firms.² Accompanying this shift has been increased variation among companies in their relative emphasis on stock and options in equity pay packages.³ Both phenomena provide an opportunity for a rich exploration of executive pay contracting focusing specifically on equity pay design.

This Article begins that exploration and has two primary aims. First, this Article describes the evolution in executive equity pay practices and the current equity compensation landscape. Second, it considers the extent to which this evolution and the current use of

1. See *infra* Part II.B.
 2. See *infra* Part II.B.
 3. See *infra* Part II.C.

stock and option pay can be explained as a function of efficient contracting (and what “efficient contracting” means in this context).

Why focus specifically on equity pay design—the relative use of stock and options? As an initial matter, the subject is central to an important current policy debate in Washington. Although both stock and options can align executive incentives with shareholder interests, these instruments have very different incentive and risk properties. Some commentators and policymakers believe that heavy use of options led to excessive risk taking which contributed to the recent financial meltdown as well as earlier fiascos at Enron, WorldCom, Tyco, and other major U.S. corporations.⁴ There is, accordingly, a push in Washington and in academia for pay practices that will promote more conservative behavior. These practices include increasing vesting periods for equity pay, and, in some cases, replacing options with restricted stock.⁵ But, as noted previously, the transition from options to stock is already well under way, at least in the aggregate. Clearly, the policy debate should be informed by an up-to-date picture of these pay practices.

In addition, exploration of the evolution in the use of stock and options should provide important insights into contracting over executive pay. Most finance researchers embrace the optimal contracting model of the pay-setting process. Once it chooses to compensate its executives with equity instruments, a company acting in accordance with that model would select a mix of stock and options that minimizes agency costs in light of particular firm, market, and executive characteristics. Prior to 2005, accounting rules favored options over stock and may have dominated other considerations.⁶ Today, the regulatory playing field for stock and options is essentially

4. See, e.g., Judith F. Samuelson & Lynn A. Stout, *Are Executives Paid Too Much?*, WALL ST. J., Feb. 25, 2009, at A13 (arguing that the widespread use of stock options in executive compensation encouraged executives to focus on shorter-term goals and take greater risks).

5. See, e.g., Sanjai Bhagat & Roberta Romano, *Reforming Executive Compensation: Focusing and Committing to the Long-Term*, 26 YALE J. ON REG. 359, 361 (2009) (suggesting that executives not be allowed to dispose of equity compensation prior to retirement); Richard A. Posner, *Are American CEOs Overpaid, and, if so, What if Anything Should Be Done About It?*, 58 DUKE L.J. 1013, 1045–46 (2009) (suggesting that restricted stock should constitute a minimum fraction of CEO pay); Susanne Craig, *Cuomo, Frank Seek to Link Executive Pay, Performance*, WALL ST. J., Mar. 13, 2009, at C1 (relating comments of House Financial Services Committee Chairman Barney Frank advocating broader application of rules tying executive pay to long-term performance).

6. See *infra* Part I.C.1.

level,⁷ and current equity compensation arrangements should provide an unbiased gauge of the efficiency of executive pay packages, the barriers to efficient design, and prospects for improvement through regulation.

My exploration of the evolution and current state of executive equity pay design is divided into three parts. I begin by outlining and analyzing the dramatic aggregate shift away from options and towards restricted stock over the last decade at large, public companies. It is unlikely that changes in the firm, market, or individual characteristics that generate the conventional economic determinants of equity compensation design—such as firm growth opportunities, firm and market risk, or executive appetite for risk—fully account for the change.⁸ Other important factors include the 2004 change in generally accepted accounting principles (“GAAP”) that leveled the financial accounting playing field for stock and option compensation, the burst of the dot-com bubble in 2000 that increased the *perceived* risk of option compensation, and a number of corporate scandals beginning around 2002 that featured options and that may have increased the reputational cost to firms and executives of utilizing option compensation. To be sure, consideration of accounting rules, perceived option risk, and public hostility towards options is not necessarily inconsistent with efficient contracting. Such consideration may simply reflect optimization occurring at another level.

Next, I disaggregate the pay data so as to explore the trends on a firm-by-firm basis. In the late 1990s, many companies relied exclusively on options in delivering equity pay. Between 1996 and 1998, for example, forty percent of the sampled firms routinely granted options but failed to grant a single share of restricted stock.⁹ The data from this period are consistent with a model in which firms divided into two types—firms for which equity pay effectively meant options, as a result of favorable accounting treatment or other factors, and firms with an equity menu that included both stock and options.

One observes more variation in the use of stock and options in recent years than in the 1990s, but many companies continue to rely on a single equity compensation instrument, granting only stock or only options. However, companies granting a roughly fifty-fifty mix of

7. Of course, whether the playing field remains level and for how long depends on the outcome of efforts to increase regulation of executive pay noted above.

8. See *infra* text accompanying notes 73–78.

9. See *infra* Part II.C.1.

stock and options are also frequently observed.¹⁰ The current clustering of equity pay “mix” is puzzling within a model that views stock and options not as different in kind but as points along an economic continuum. Clustering might result from the additional transaction costs of employing more than one equity instrument, including the cost of complexity, but company proxy statement disclosures regarding executive pay provide little confidence that firms are optimizing equity pay arrangements even within the constraints of transaction costs.¹¹ Additional data suggest that clustering at a fifty-fifty mix may follow from a tendency to allocate resources pro rata among instruments, a decisionmaking shortcut known as the naïve diversification heuristic.¹²

Finally, I examine the mix of stock and options granted to the individual members of executive teams. Despite the theoretical importance of individual risk preferences, existing equity holdings, and primary job roles to equity pay design, seventy-eight percent of S&P 500 executives received the same mix of equity compensation in 2006 and 2007 as one or more of their colleagues in the executive suite, and in thirty-nine percent of the cases, all five members of the top team received the same mix.¹³ The high frequency with which firms grant options but not stock, stock but not options, or the same ratio of stock to options to each of their senior executives indicates that individualized optimization of equity pay packages is not pervasive. Limited individualization may result from transaction costs, including signaling costs, but more troubling is the assertion in numerous company proxy statements that a uniform mix of equity instruments serves to align incentives within the executive team. I argue that this view is overly simplistic and often incorrect.¹⁴

In combination, the data presented in this Article suggest that executive equity pay design is at best boundedly efficient. The conventional economic determinants of equity design, such as growth opportunities, firm and market risk, and executive risk preferences, clearly fail to tell the entire story. The evidence might be viewed as undermining the idea that executive pay packages are optimized, but at the least it demonstrates that optimization is limited by transaction

10. See *infra* Part II.C.2.

11. Proxy statements provide various rationales for the use of stock, stock options, or both, but rarely invoke transaction costs. See *infra* Part II.C.2.b.ii.

12. See *infra* Part II.C.2.b.iii.

13. See *infra* Part II.D.2.a. The size of the senior executive team varies firm by firm, but companies are required to report compensation for five executives.

14. See *infra* Part II.D.3.

costs or heuristics, and that forces generally not emphasized in the finance literature—such as accounting rules, perceived option risk, and complexity—are important determinants of equity compensation design.

However, many puzzles remain. This Article provides a number of possible explanations for why individualization of the mix of equity instruments granted to executives is not more pervasive and why the distribution of the mix of stock and options granted is clustered, but it provides no definitive answers. Despite these puzzles, the findings of this Article have important implications for the regulation of executive pay and for future empirical work on executive pay design.

I. THEORY AND BACKGROUND

One aim of this Article is to test whether senior executive equity pay practices are consistent with a story of efficient or “optimal” contracting. This Part briefly explains how stock and option compensation could be used to reduce managerial agency costs and create more efficient contracts. It also considers the effect of accounting and tax rules and transaction costs on equity design under an efficient contracting model, as well as a competing/complementary model that does not assume that boards and executives negotiate pay arrangements at arm’s length.

A. Using Equity Compensation to Align Managerial and Shareholder Interests

Managerial agency costs arise from separation of ownership and control.¹⁵ These costs reflect the divergence between share value

15. See Michael C. Jensen & William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 J. FIN. ECON. 305 (1976). In brief, the Jensen and Meckling (“J&M”) model begins with a sole proprietor-manager who sells shares of equity to nonmanaging outsiders, which creates a wedge between the manager’s private incentives and the incentives of the shareholders generally. The outside shareholders cannot perfectly (or costlessly) observe the manager’s effort or focus, and performance results are not completely within the manager’s control. Thus, the shareholders cannot ensure perfect fidelity to their objectives, and the manager, who now owns less than 100 percent of the cash flow rights, will tend to consume excessive perks, loaf, and otherwise extract private benefits, since he enjoys 100 percent of the benefit of such activities, but only a fraction of the cost, which is borne pro rata by all shareholders. The optimal contract in this situation would minimize agency costs, which J&M defined as the sum of 1) monitoring costs incurred by the principal, 2) bonding costs incurred by the manager-agent to better ensure loyalty to shareholder wealth maximization, and 3) the cost

maximizing actions of employees and employees' actual actions, plus the monitoring and bonding expenditures undertaken to reduce that divergence. Agency costs in the modern, widely-held corporation are, of course, unavoidable,¹⁶ but they can be reduced by designing compensation to better align managers' economic interests with those of shareholders. Clearly, long-term, equity-based compensation can play a role in shaping managerial incentives that straight salary cannot.¹⁷

Both stock and options tie pay to stock price performance. Stock compensation does so in a linear fashion. The paradigm case of stock compensation is a grant of stock at no explicit cost to the executive that cannot be sold or otherwise transferred until it "vests" in a certain number of years. If the executive's employment terminates prior to vesting, the stock typically must be returned. Assuming that the stock will ultimately vest, in the interim, the value of this restricted stock moves dollar for dollar with the firm's share price.

Options provide the holder with a right, but no obligation, to purchase shares of stock at a pre-determined exercise price.¹⁸ Thus, the defining feature of an option is that the payoff is based on the positive difference, if any, between the share price at exercise or settlement and the strike price of the instrument. If the share price on a potential exercise date fails to exceed the strike price, the option provides zero payout. Compensatory stock options typically are granted with an exercise price equal to the market price of the underlying stock on the date of the grant, and, like restricted stock, options typically vest and become exercisable several years following grant.

As described in the following figure, the value of an option increases and decreases with increases and decreases in the value of

of the residual divergence between the manager's actual decisions and shareholder wealth-maximizing decisions.

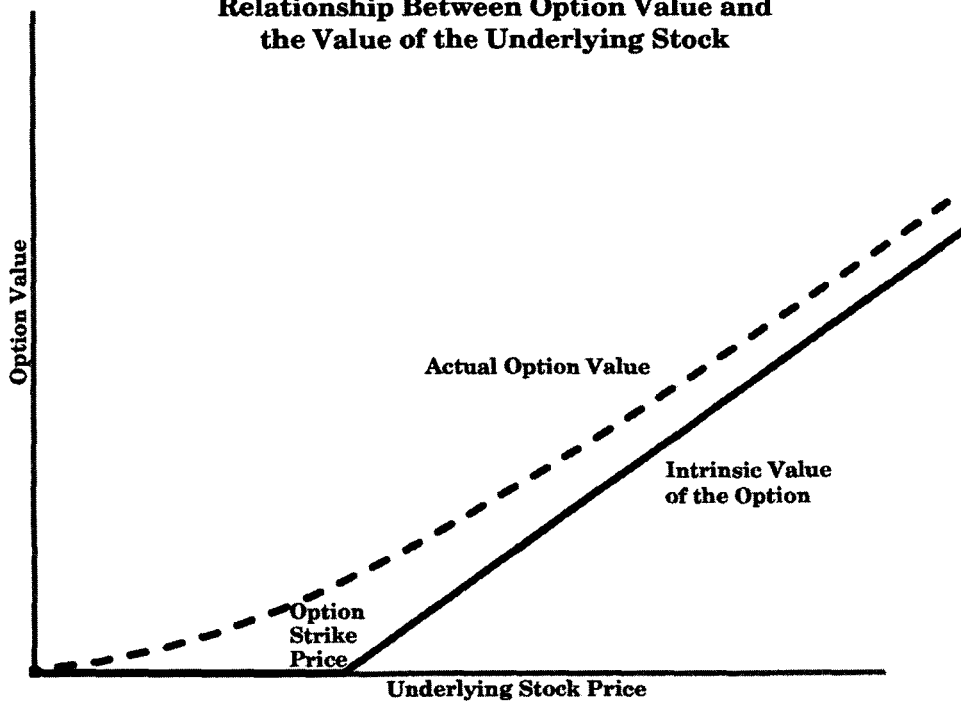
16. Going private transactions are an extreme way of reducing agency costs.

17. The effect is not always salutary. Given their human capital investment in their firms, executives tend to be more risk-averse than shareholders. Compensating executives with equity can increase executive risk aversion. See *infra* note 24 and accompanying text.

18. The strike price of employee stock options is almost always a fixed price specified at grant, and almost always equal to the fair market value of the stock at grant. A few firms have experimented with indexing strike prices to a basket of competing stocks or to a broad measure of the stock market, such as the S&P 500, with the idea of focusing the option payout on firm-specific performance rather than market movements generally. See Alfred Rappaport, *New Thinking on How to Link Executive Pay with Performance*, HARV. BUS. REV. Mar.-Apr. 1999, at 91, 101.

the underlying shares, but the relationship is not linear, it is convex.¹⁹ An option that is far out of the money—that is, with strike price far in excess of the value of the underlying shares—has a very low value and a value that is relatively insensitive to small changes in the price of the underlying shares. The value of an option that is far in the money—that is, with strike price far below the value of the underlying shares—approaches the current share price less the exercise price, and that value moves dollar for dollar with small changes in the price of the underlying shares. The situation in between is, well, in between.

Figure 1
Relationship Between Option Value and
the Value of the Underlying Stock



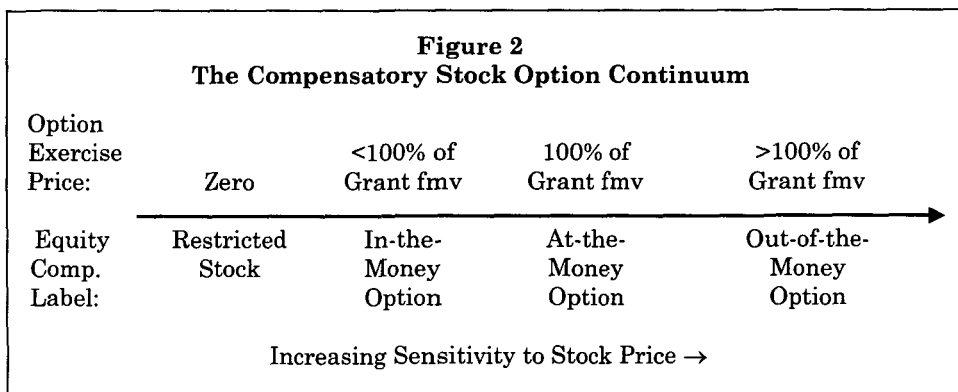
The sensitivity of an option's value to small changes in the underlying share price is known as the option's delta, and delta is simply the slope of the curve that plots the value of the option against the value of the underlying stock.²⁰ Compared with a share of

19. When graphed, a convex relationship presents a U-shaped curve. The relationship between option value and the price of the underlying shares tracks the right half of the U.

20. For example, an option delta of .75 means that when the price of the underlying shares changes by a small amount, the value of the option changes by seventy-five percent of that amount. See JOHN C. HULL, *OPTIONS, FUTURES, AND OTHER DERIVATIVES* 251 (6th ed. 2006) (explaining the concept of the option delta).

restricted stock, an at-the-money option on a single share of stock is both less expensive to grant and less sensitive to share price movement. However, *per dollar of compensation expense*, options produce stronger incentives than restricted stock. For example, an at-the-money option on a single share of stock might have a value that is forty percent of the value of a share of restricted stock, but a delta that is seventy-five percent of the delta of a share of restricted stock, yielding almost twice the sensitivity to share price per dollar of compensation expense.²¹

At the time of the grant, the sensitivity of option value to stock price depends on the exercise price of the option. Although I have thus far treated restricted stock and options as separate categories, economically, they are different in degree, not in kind. Economists view restricted stock as a zero strike price option, an option with zero convexity.²² Thus we can combine restricted stock and options into a compensatory stock option continuum as portrayed below.



As Figure 2 suggests, per dollar of compensation cost, the sensitivity of pay to stock price performance increases as one moves from left to right across the continuum.

In addition to increasing the sensitivity of pay to share price performance, adding options to compensation packages increases the sensitivity of pay to the *volatility* of share prices. Economists use the term “vega” to denote the sensitivity of option value to share price

21. Per dollar of compensation expense, the option would have a delta that was 1.9 times (.75/.4) the delta of the stock.

22. While option delta describes the sensitivity of the instrument to small changes in the underlying share price, the degree to which that sensitivity changes as the stock price changes (the second derivative of the value function) provides a measure of convexity, which is generally designated as option gamma.

volatility.²³ The value of shares is not directly affected by increases or decreases in volatility, and thus stock has vega of zero. The value of an option increases, however, with increasing volatility, and thus options have positive vega. The sensitivity of pay to stock price volatility is important in assessing the effect of compensation design on the willingness of executives to take on risky projects.

B. Conventional Economic Determinants of Optimal Equity Compensation Design

Of course, executive pay provides compensation as well as incentives, and optimizing the design of pay packages involves a tradeoff. On the one hand, firms want to provide high-powered incentives to encourage employees to work hard and to take on risky projects.²⁴ On the other hand, pay packages have to be mutually acceptable, and nondiversified employees apply large discounts to risky, high-powered incentive arrangements, creating a gap between their cost to shareholders and their value to employees.²⁵ The optimal pay arrangement would balance incentive generation with risk-bearing costs. From a shareholder's perspective, it's all about getting the most bang for your buck.

Ideally, employee, firm, and market characteristics should all be considered in determining the optimal sensitivity of equity compensation to share prices and volatility, and each of these areas contributes one or more of the economic determinants of equity pay sensitivity that are discussed in the literature. At the firm level, theoretical models developed by corporate finance researchers suggest that greater growth opportunities should result in more convex executive pay contracts that increase the incentives to exploit those

23. Hull, *supra* note 20, at 373, 791.

24. All else being equal, executives and other employees whose financial and human capital generally is overinvested in their companies tend to disfavor risky projects relative to diversified shareholders. See Brian J. Hall, *Six Challenges in Designing Equity-Based Pay*, 15 J. APPLIED CORP. FIN. 21, 29 (2003). In the wake of the recent financial crisis, regulators are concerned that incentive pay packages may have encouraged executives to take on too much risk, although the link is far from clear. The more traditional concern, however, has been a tendency towards conservatism.

25. See Brian J. Hall & Kevin J. Murphy, *Stock Options for Undiversified Executives*, 33 J. ACCT. & ECON. 3, 5 (2002) (explaining that "[r]estricting the trading and hedging activities of option recipients" causes executives receiving the options to "value the options below their cost to shareholders"); see also John E. Core et al., *Executive Equity Compensation and Incentives: A Survey*, ECON. POL'Y REV., Apr. 2003, at 27, 30 (noting that equity compensation is risky because stock prices are a noisy measure of firm performance and that recipients must be compensated for taking on the non-diversifiable risk).

opportunities.²⁶ To some extent, as growth opportunities increase, the benefit of encouraging executives to take on risk and maximize firm value more than offsets the discount the executives apply to risky compensation. In the same vein, optimal sensitivity of pay to performance increases with the desired riskiness of projects,²⁷ but decreases with firm risk generally and with firm leverage, which itself increases the risk of an option contract.²⁸ The overall market environment affects optimal sensitivity in a similar fashion, that is, market volatility should be negatively correlated with sensitivity.²⁹ Finally, optimal sensitivity increases with the marginal productivity of executive effort at the firm.³⁰

Numerous employee characteristics have been modeled by corporate finance researchers, but risk aversion appears to be the most important—and certainly the most frequently modeled—individual trait affecting optimal sensitivity.³¹ A highly risk-averse

26. See John Core & Jun Qian, *Option-Like Contracts for Innovation and Production 2* (Jan. 2000) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=207968. In practice, more convex pay contracts means more option-heavy pay packages.

27. See, e.g., Chongwoo Choe, *Leverage, Volatility and Executive Stock Options*, 9 J. CORP. FIN. 591, 593 (2003) [hereinafter Choe, *Leverage*]; Chongwoo Choe, *Maturity and Exercise Price of Executive Stock Options*, 10 REV. FIN. ECON. 227, 229 (2001).

28. See, e.g., Choe, *Leverage*, *supra* note 27, at 593. Although increased volatility increases the value of an option, the value of an option at grant reflects expected volatility. Because executives cannot diversify away option risk, as firm risk increases, the cost to executives of added convexity increases.

29. See Richard A. Lambert & David F. Larcker, *Stock Options, Restricted Stock, and Incentives 3* (Apr. 2004) (unpublished manuscript), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=527822.

30. See, e.g., *id.*

31. Studies examining risk aversion alone or in combination with other factors include Ingolf Dittmann & Ernst Maug, *Lower Salaries and No Options? On the Optimal Structure of Executive Pay*, 62 J. FIN. 303, 308 (2007); Gerald A. Feltham & Martin G.H. Wu, *Incentive Efficiency of Stock Versus Options*, 6 REV. ACCT. STUD. 7 (2001); Brian J. Hall & Kevin J. Murphy, *Optimal Exercise Prices for Executive Stock Options*, 90 AM. ECON. REV. 209, 209 (2000); Hall & Murphy, *supra* note 25, at 7; Yisong S. Tian, *Too Much of a Good Incentive? The Case of Executive Stock Options*, 28 J. BANKING & FIN. 1225, 1226 (2004); Lambert & Larcker, *supra* note 29, at 23; Yisong S. Tian, *Optimal Contracting, Incentive Effects and the Valuation of Executive Stock Options 4* (Apr. 30, 2001) (unpublished manuscript) [hereinafter Tian, *Contracting*], available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=268738.

Other characteristics that have been modeled include loss aversion, effort aversion, overall wealth, firm equity held, and outside investment opportunities. See, e.g., Anna Dodonova & Yuri Khoroshilov, *Optimal Incentive Contracts for Loss-Averse Managers: Stock Options Versus Restricted Stock Grants*, 41 FIN. REV. 451, 452 (2006) (loss aversion); Oded Palmon et al., *Optimal Strike Prices of Stock Options for Effort-Averse Executives*, 32 J. BANKING & FIN. 229, 230 (2008) (effort aversion); Dittmann & Maug, *supra* at 308 (effort aversion); Feltham & Wu,

optionee will more greatly discount options with more remote payoff prospects. Thus, as risk aversion increases, the optimal design shifts in the direction of stock.³²

Depending on firm and employee characteristics (and on model specifications), researchers have concluded that optimal equity compensation design ranges from far in-the-money options (essentially restricted stock) to far out-of-the-money options.³³ Optimal equity compensation design is quite sensitive to model specification, but even within a given model, optimal sensitivity is highly dependent on the assumptions listed above. Yisong Tian, for example, finds that at-the-money options are nearly optimal for executives who exhibit relatively low risk aversion; in-the-money options are optimal for those with somewhat greater risk aversion; and for executives who are highly risk averse, restricted stock is optimal.³⁴

Some of these theoretical findings are supported by empirical research. For example, John Core and Wayne Guay find that firms actively manage the level of new CEO equity incentives in response to deviations between existing incentives and optimal incentives associated with economic determinants such as firm size, growth opportunities, and monitoring costs.³⁵ In another study, Guay finds a positive association between the sensitivity of CEO wealth to firm risk and investment opportunities.³⁶

supra at 7 (effort aversion); Tian, Contracting, *supra* at 40 (effort aversion, overall wealth, firm equity held, and outside investment opportunities).

32. See, e.g., Tian, Contracting, *supra* note 31, at 32; see also Hall, *supra* note 24, at 31 (noting that under plausible assumptions, the “value-to-cost discount for stock is two to three times less than that of” at-the-money options).

33. Compare Hall & Murphy, *supra* note 31, at 26–27 (concluding that “when existing compensation is adjusted, incentives are maximized through restricted stock grants rather than options”), and Dittmann & Maug, *supra* note 31, at 305 (reporting results of a model indicating that CEOs should receive restricted stock instead of options), with Lambert & Larcker, *supra* note 29, at 2 (“[E]xercise price in the optimal contract is frequently far ‘out of the money.’”).

34. See Tian, Contracting, *supra* note 31, at 32–33. He suggests, for example, that options are more likely to be optimal for younger executives who are less likely to be risk averse than older executives nearing retirement. *Id.*

35. See John Core & Wayne Guay, *The Use of Equity Grants to Manage Optimal Equity Incentive Levels*, 28 J. ACCT. & ECON. 151, 152 (1999) (using delta as the measure of equity incentives).

36. See Wayne R. Guay, *The Sensitivity of CEO Wealth to Equity Risk: An Analysis of the Magnitude and Determinants*, 53 J. FIN. ECON. 43, 43 (1999) (using a vega-type measure of sensitivity of wealth to risk).

C. Optimal Equity Compensation in the Presence of Tax and Accounting Concerns and Transaction Costs

Absent tax and accounting concerns and transaction costs, the optimal contracting model predicts that companies that choose to compensate executives with firm equity would finely tailor equity compensation along the continuum presented above, taking into consideration firm, market, and individual employee characteristics. In the real world, firms do not and should not be expected to achieve this level of optimality. This Section discusses the impact of tax and accounting rules and transaction costs on equity pay design.

1. Accounting Rules

Through 2005, U.S. financial accounting rules favored conventional nondiscounted options over other forms of equity pay.³⁷ Specifically, companies were required to recognize as compensation expense the grant date intrinsic value of stock or options issued to employees.³⁸ (The intrinsic value of an option, also known as the option spread, is the positive difference, if any, between the value of the underlying stock and the option exercise price.) The expense was accrued ratably over the vesting period of the instrument, and at that point the accounting books were closed.³⁹ There was no requirement to update the expense for an option grant as its intrinsic value fluctuated over time. As a result, no expense was recorded at any point for options issued at or out of the money, because, by definition, these options had zero intrinsic value on the date of grant.⁴⁰ By contrast, restricted stock grants resulted in an accounting expense equal to the full fair market value of the underlying stock at grant, despite the

37. David I. Walker & Victor Fleischer, *Book/Tax Conformity and Equity Compensation*, 62 *TAX L. REV.* 399, 403–04, 410–11 (2009).

38. See Am. Inst. of Certified Pub. Accountants, *Accounting for Stock Issued to Employees*, Accounting Principles Bd. Opinion No. 25 (1972) [hereinafter APB 25].

39. See *id.* para. 12.

40. The FASB attempted to rationalize equity compensation accounting in the 1990s, but they succeeded only in implementing an elective regime that effectively left the 1972 standard in place while requiring firms to include pro forma earnings statements reflecting “fair value” accounting for options in the footnotes to their financials. See Fin. Accounting Standards Bd., *Accounting for Stock-Based Compensation*, Statement of Fin. Accounting Standards No. 123, § 5 (1995) [hereinafter SFAS 123]. Fair value was and is defined as the value arrived at through use of the Black-Scholes option pricing model or another appropriate model. *Id.* § 19.

restrictions on transfer.⁴¹ Discounted or in-the-money options resulted in an accounting expense equal to the “spread” at grant.

In December 2004, the Financial Accounting Standards Board (“FASB”) issued a new standard requiring firms to determine the grant date fair value of all equity compensation and to recognize the expense over the vesting period of the stock or option.⁴² For option compensation, this rule requires firms to calculate a grant date value using an option pricing model. The new standard largely eliminates the previous accounting-induced distortions between stock and option compensation, between discounted and nondiscounted options, and between conventional fixed exercise price options and options with exercise prices linked to a market index.⁴³

At this point some readers may ask why the old accounting rules would have created a distortion. Why would a financial accounting rule that has no impact on cash flow influence equity compensation design? Wouldn’t market analysts have seen through efforts by managers to minimize reported compensation expense through heavy use of stock options? The extent to which accounting treatment influences compensation choices is unclear. Changes in equity pay composition in the wake of the accounting standard revision, as presented below, support the notion that accounting matters, but other changes in the contracting environment make it impossible to isolate the impact of the change in GAAP.

Two other points are worth noting. First, there is a theoretical basis for believing that even cosmetic accounting effects (those having no direct impact on cash flows) are economically significant. The positive accounting literature has shown that in some cases reported earnings matter independently of cash flow because debt covenants and other contractual provisions may be tied to reported earnings. Given transaction costs, even cosmetic changes in earnings can affect the value of these contracts and thus shareholder value.⁴⁴ And, of

41. See *id.* § 18. The accounting expense for restricted stock is equal to the full fair market value of the stock at grant assuming that the employee is required to pay nothing explicitly for the stock, as is typical.

42. See generally Fin. Accounting Standards Bd., Share-Based Payment, Statement of Fin. Accounting Standards No. 123 (rev’d 2004).

43. I say “largely” because some potential for distortion remains. The fair value of an option is determined using the Black-Scholes or binomial model and is manipulable. Thus, options provide some accounting flexibility that stock compensation does not provide. See Walker & Fleischer, *supra* note 37, at 418–21 (describing potential for option expense manipulation).

44. See ROSS L. WATTS & JEROLD L. ZIMMERMAN, POSITIVE ACCOUNTING THEORY 133 (1986). The general idea is that in the presence of transaction costs, both renegotiation of earnings-based contracts to adjust for cosmetic changes and failure to do so can be costly.

course, managers are particularly sensitive to one type of contract tied to reported earnings—executive compensation contracts. Earnings-based bonuses may be affected by even cosmetic increases in reported income.⁴⁵

Second, unrelated empirical data confirm managerial sensitivity to accounting rules and practices. The evidence indicates that accounting choices vary systematically between firms, that corporations make operational changes in response to changes in accounting rules, and that firms sacrifice cash flows to boost reported earnings.⁴⁶ Whether rational or not, managers act as if accounting rules matter, and so they do matter.

2. Tax Rules

While the accounting-based distortion in equity pay design has largely been eliminated, tax-induced distortions remain and have recently become more important. Current U.S. tax rules all but preclude firms from issuing explicitly discounted stock options (that is, options with exercise prices less than the fair market value of the underlying stock at grant). Under regular U.S. tax rules, compensation arising from a nondiscounted option is not taxed until the option is exercised.⁴⁷ But under IRC § 409A, which was enacted in 2004, compensation income arising from a discounted option would be taxed at vesting, rather than at exercise, and would be subjected to an additional twenty percent penalty tax.⁴⁸ Given § 409A, the current equity pay menu is effectively limited to restricted stock (and economically similar instruments such as performance shares) and nondiscounted options.⁴⁹

45. See David I. Walker, *Financial Accounting and Corporate Behavior*, 64 WASH. & LEE L. REV. 927, 927 (2007); see also Gregg D. Polsky, *Controlling Executive Compensation Through the Tax Code*, 64 WASH. & LEE L. REV. 877, 923–24 (2007) (arguing that section 162(m) of the Internal Revenue Code, which disallows tax deductions for certain executive pay in excess of \$1 million per year that is not performance based, encourages firms to adopt objective, formulaic bonus structures that can be manipulated through cosmetic adjustments to earnings).

46. See generally Walker, *supra* note 45, at 935–43.

47. However, in calculating alternative minimum taxable income, the spread on an ISO at exercise is included. I.R.C. § 56(b)(3).

48. See generally David I. Walker, *The Non-option: Understanding the Dearth of Discounted Employee Stock Options*, 89 B.U. L. Rev. 1505 (2009).

49. Apparently, deductibility under § 162(m) of the Internal Revenue Code represents a second order tax consideration. Stock options qualify fairly easily as performance-based pay for purposes of this section and, thus, option payouts generally are fully deductible. Conventional, time-vested restricted stock is not considered performance-based pay and deductibility may be limited. One way to ensure deductibility of restricted stock is to condition vesting on

3. Transaction Costs

In light of the impact of IRC § 409A, it is highly unlikely that a firm wishing to create an equity pay package with intermediate convexity—that is, incentive properties in between those of stock and those of an at-the-money option—would issue an explicitly discounted option.⁵⁰ Instead, the firm would likely issue a combination of restricted stock and an at-the-money option. Although either approach can be used to achieve intermediate convexity, issuing two equity instruments instead of one increases transaction costs for both the firm and the employee. For the firm, maintaining and administering both stock and option plans increases the cost of drafting plans, drafting grant and (in the case of options) exercise documentation, maintaining systems to track unvested instruments, preparing SEC disclosures and tax documents, and so forth. For the employee, receiving both stock and options increases the cost of comprehending the economics and tax consequences of the compensation and of complying with SEC and IRS rules and regulations.

This is not to suggest, however, that the issuance of an explicitly discounted option (if not precluded under § 409A) would not also lead to additional transaction costs, at least initially. Employees are familiar with at-the-money options and restricted stock. They would have to invest time and effort in coming to understand a discounted option. However, if discounted options were common, one would think that the costs involved in achieving intermediate convexity through discounting would be less than that of combining stock and nondiscounted options.⁵¹

4. Intangible Considerations

Other considerations undoubtedly come into play when firms design compensation packages. In a world in which no tax or

achievement of performance objectives as well as continued employment. Many firms do so, but many other companies continue to grant conventional time-vested restricted stock. *See infra* text accompanying note 67. As firms commonly report in their proxy statements, deductibility under § 162(m) is a consideration, not a prerequisite, in compensation design.

50. As discussed *infra* note 58, compensation consultant Frederick W. Cook & Co. reports that since 2005, none of the largest 250 members of the S&P 500 has issued explicitly discounted options.

51. I also do not mean to suggest that incremental transaction costs associated with concurrent grants of stock and options are large. To the contrary, I suspect that the incremental administrative costs are modest, although the cost of complexity could be significant. *See infra* Part II.C.2.b.i.

accounting rules discouraged discounted options, firms might still avoid issuing such options to senior executives and might instead substitute more costly packages of at-the-money options and restricted stock because explicitly discounted options might be viewed by investors or the financial press as a give-away to the executives. There is evidence that explicitly discounted options are perceived as being more valuable, relative to nondiscounted options, than they actually are.⁵² By the same token, executives likely discount out-of-the-money options beyond the true economic discount, which may account for the paucity of these instruments, despite the lack of any tax or accounting rule discouraging firms from granting out-of-the-money options.

D. The Managerial Power View of the Executive Compensation Process

The discussion thus far has been predicated on the idea that companies optimize executive pay arrangements to minimize agency costs and maximize shareholder value. Most of the theoretical and empirical literature on executive pay proceeds from this basis, and this will be the standard against which the findings discussed in this Article will be tested. There is reason, however, to doubt whether this optimal contracting view provides a fully accurate picture of the executive pay-setting process. Many observed features of executive compensation appear to be inconsistent with a share value optimizing model and more consistent with a model developed several years ago by two colleagues and me.⁵³ This alternative view is based on the idea that executive pay practices do not uniformly reflect arm's length bargaining, and that executives exert more influence over the terms of their pay than would be expected in an arm's length bargaining situation. Under this managerial power view of the compensation-setting process, investor and financial press outrage play an important role in disciplining compensation. As a result, executives seek out low salience channels of pay and other means of camouflaging their compensation to minimize outrage and boost their own pay. We did not argue that this managerial power view of executive pay should replace the optimal contracting view, but that the two mechanisms

52. See Brian J. Hall, *The Pay to Performance Incentives of Executive Stock Options* 32 (Nat'l Bureau of Econ. Research, Working Paper No. 6674, 1998), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=108563 (finding a "bias toward valuing options according [to] what they would be worth if exercised today").

53. See generally Lucian Arye Bebchuk et al., *Managerial Power and Rent Extraction in the Design of Executive Compensation*, 69 U. CHI. L. REV. 751 (2002).

likely coexist, providing relatively more or less explanatory power at particular firms.

A managerial power view of executive pay can enhance our understanding of the use of stock and options in several ways. For example, I suggested above that public relations considerations might explain the absence of in-the-money options. This is really a managerial power story since explicitly discounted strike prices are likely to be highly salient and create significant investor backlash. Moreover, as I will discuss below, the reduction in option usage following mandated expensing would be consistent with the managerial power view if recognition of option pay as an expense increases salience relative to footnoting the expense. Thus, while the main thrust of this Article is to evaluate equity pay evolution against an efficient contracting backdrop and to re-evaluate what efficient contracting means in this context, I will consider alternative managerial power explanations from time to time.

II. EMPIRICAL OBSERVATIONS

This Part describes current senior executive equity pay design at S&P 500 firms and the evolution of equity pay over the last decade and evaluates those practices and that evolution in light of the theory discussed above. Specifically, this Part investigates (1) the evolution of the composition of senior executive equity compensation, both in the aggregate and on firm-by-firm basis; (2) differences among firms in how executives are currently compensated; and (3) variations in equity pay arrangements within the executive suites of individual firms.⁵⁴

Although non-equity compensation is discussed from time to time to provide context, the focus of this analysis is on the use of stock and options. My underlying assumption is that companies first decide to compensate with equity and then decide whether the form of equity pay should be restricted stock, performance shares, options, stock appreciation rights, or some combination of these and similar instruments.⁵⁵ As discussed above, absent accounting considerations or other constraints, efficient contracts should include the mix of stock

54. The ultimate source for the data analyzed is individual company proxy statements. However, as discussed in the Appendix, most of the data is taken from S&P's Compustat databases. See *infra* Appendix A.

55. This view is consistent with the process described in most large company proxy statement disclosures regarding executive pay. See *infra* note 117 and accompanying text.

and options that best balances incentives and risks. Focusing specifically on equity mix allows one to determine the extent to which these choices vary from firm to firm and within the executive suites of individual firms. An alternative mode of analysis that focused on the incentive properties of an executive's entire compensation package might miss patterns in equity pay practices that this study seeks to illuminate.

Similarly, this analysis focuses largely on *grants* of equity compensation rather than the *portfolios* of equity held by executives. I recognize that the incentives created by an executive's existing holdings of stock and options often outweigh those arising from the latest year's compensation.⁵⁶ However, I am looking for patterns in grant practices that may or may not be driven by optimal contracting. Moreover, as we will see, an examination of intra-firm variation in the relative use of stock and options suggests that the extent to which firms optimize new grants based on existing individual executive portfolios is limited.⁵⁷

A. Equity Pay Instruments Actually Observed

Although the utilization of various equity pay instruments has evolved over the last decade, there has been no real change in the fundamental building blocks. Consistent with tax and accounting rules discouraging explicitly discounted options, observed equity pay instruments fall into one of two discrete categories: (1) nondiscounted option-like instruments; or (2) restricted stock and equivalent instruments.⁵⁸

In the analysis that follows, "options" will include conventional time-vested employee stock options, including both nonqualified stock options and incentive stock options;⁵⁹ performance-vested stock

56. See, e.g., Core et al., *supra* note 25, at 35–38.

57. See *infra* Part II.D.

58. For a more detailed overview of long-term executive incentive compensation practice at large U.S. public companies, see FREDERICK W. COOK & CO., *THE 2009 TOP 250: LONG-TERM INCENTIVE GRANT PRACTICES FOR EXECUTIVES* (2009).

59. The non-qualified and incentive labels applied to stock options refers to their federal income tax treatment. See MYRON S. SCHOLES ET AL., *TAXES AND BUSINESS STRATEGY: A PLANNING APPROACH* 191–95 (2d ed. 2001) (discussing option tax treatment). Although these differences are important in some cases, given various limitations and current tax rates, the large majority of options granted are non-qualified options. See Brian J. Hall & Jeffrey B. Liebman, *The Taxation of Executive Compensation*, 14 *TAX POL'Y & ECON.* 7 (2000) (estimating that about five percent of options granted are incentive stock options).

options, which add a performance criterion to vesting in addition to the traditional retention criterion;⁶⁰ and stock appreciation rights (“SARs”), which are contracts, payable in shares or cash, that are economically equivalent to stock options. The large majority of options issued by large U.S. corporations are conventional, time-vested options. Frederick W. Cook’s 2009 report on the pay practices of the 250 largest S&P companies indicates that eighty-six percent of companies issuing options issued conventional, time-vested options, eight percent issued SARs, and six percent issued performance-vested options.⁶¹ As noted, the strike prices of almost all compensatory options issued by U.S. corporations are set equal to the fair market value of the company’s stock on the date of the option grant. Cook’s survey reported no instances of options issued in the money in 2009 and only two percent of companies issuing out-of-the-money options.⁶² My own review of fiscal year 2007 proxy statements of fifty randomly selected S&P 500 companies confirms the predominance of conventional options. Ninety-six percent of options granted by the sampled companies consisted of conventional at-the-money options.⁶³

In the restricted stock category, we observe conventional time-vested restricted stock that becomes nonforfeitable and unrestricted once a period of continued employment has passed,⁶⁴ performance-vested restricted stock,⁶⁵ and performance shares.⁶⁶ Performance

Employee stock options generally become exercisable, or vest, in installments, often ratably across the period beginning on the first anniversary of the grant and ending on the fourth anniversary of the grant. See FREDERICK W. COOK & CO., *supra* note 58, at 13 (providing data indicating vesting schedules of three to five years for ninety-eight percent of the executive stock options analyzed). If employment is terminated prior to vesting, options generally are forfeited.

60. As an example, in 2007 the CEO of Home Depot received an option grant that only vests if the company’s share price exceeds the grant date price by twenty-five percent for thirty consecutive trading days. See Home Depot, Proxy Statement (Form DEF 14A), at 32 (Apr. 11, 2008).

61. See FREDERICK W. COOK & CO., *supra* note 58, at 7, 18–23.

62. See *id.* at 7. Cook’s 2009 survey omits the category of discounted options. Cook’s 2008 survey reports no instances of companies granting discounted options since 2005. See FREDERICK W. COOK & CO., THE 2008 TOP 250: LONG-TERM INCENTIVE GRANT PRACTICES FOR EXECUTIVES (2008).

63. Data on file with author.

64. Restricted stock awards may vest in installments or “cliff vest” on a single date. As in the case of options, most senior executive stock awards vest on a three- to five-year schedule. FREDERICK W. COOK & CO., *supra* note 58, at 13.

65. Performance-vested restricted stock is analogous to performance-vested options. For example, in 2007 Moody’s granted restricted stock to senior executives that vests relatively slowly, or relatively quickly, depending on growth in the company’s annual operating income. See Moody’s Corp., Proxy Statement (Form DEF 14A), at 24–25 (Mar. 19, 2008).

shares are economically equivalent to performance-vested restricted stock.⁶⁷ Participants in performance share plans are entitled to receive shares (or the cash value equivalent) at the end of a specified period (often three years), but the number of shares actually delivered is a function of some measure of company performance, such as absolute or relative return on equity or earnings growth.⁶⁸ In the analysis that follows, restricted stock (performance-vested or conventional) and performance shares are referred to generally as “stock.”

There is more diversity in the design of stock awards than options awards. In my hand-collected sample of 2007 S&P 500 proxy statements, I found that forty-five percent of stock awards consisted of conventional time-vested restricted stock, twenty percent consisted of performance-vested restricted stock, and thirty-five percent consisted of performance shares.⁶⁹

B. Aggregate Increase in Stock and Decline in Option Compensation

Over the last decade, there has been a marked reduction in option compensation and an increase in stock compensation in the executive suites of S&P 500 companies. The following figure describes the aggregate contribution of stock options and stock to total senior executive pay at a panel of 350 companies that were members of the S&P 500 in 2008 and for which executive pay data is available from

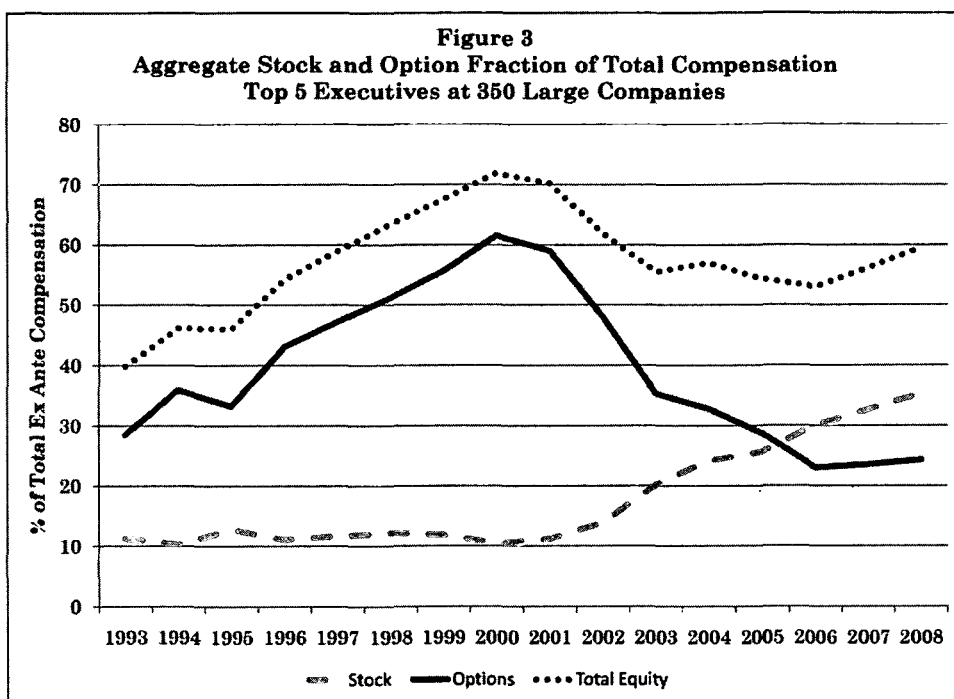
66. Performance shares were formerly known as phantom stock. See, e.g., Eli Ofek and David Yermack, *Taking Stock: Equity-Based Compensation and the Evolution of Managerial Ownership*, 55 J. FIN. 3, 7 (2000).

67. The difference between the two devices is that restricted stock is granted at the time of the award and is forfeited if the shares fail to vest, while performance shares are not issued until performance criteria are met. But this difference is not significant economically. For example, under either type of plan, participants may be entitled to dividends.

68. Northern Trust Corporation's fiscal year 2007 performance share awards are typical. Each participant was assigned a target number of shares. If the company achieves average three-year earnings per share (EPS) growth of 10 percent, 100 percent of the target shares will vest at the end of three years. If EPS growth is between 8 percent and 10 percent, a fraction of the shares will vest. If EPS growth exceeds 10 percent, a multiple of target shares, up to 125 percent at 12 percent average EPS growth, will vest. See Northern Trust Corp., Proxy Statement (Form DEF 14A), at 46 (Apr. 15, 2008).

69. Data on file with author. As discussed *supra* note 47 and accompanying text, deductibility of conventional time-vested restricted stock payouts may be limited under § 162(m) of the Internal Revenue Code, but deductibility of conventional time-vested stock option payouts generally is not limited. This difference likely explains the greater use of performance-vested stock than performance-vested options.

1993.⁷⁰ As the figure indicates, at the peak of the dot-com bubble in 2000, options accounted for over sixty percent of the aggregate ex ante value of senior executive pay at these companies; stock accounted for about ten percent. In 2007, options accounted for twenty-five percent, while stock accounted for thirty-three percent. Moreover, while the contribution of option pay to ex ante compensation has risen and fallen over the years, prior to 2002, stock had never accounted for fifteen percent of total ex ante compensation. Preliminary data for 2009 suggest that the shift from options to stock continues.⁷¹



70. The analysis was limited to the S&P 500 group of companies because of the labor intensive process of determining total stock grants in the pre-2006 period. See *infra* Appendix A. A panel approach was used to ensure that changes in aggregate compensation were not driven by changes in the membership of the S&P 500. However, an analogous graph based on the equity grants of the historic S&P 500 membership each year would be very similar.

71. As discussed in Appendix B, Compustat data for stock grants and total compensation is not directly comparable before and after 2006. Appendix B describes how the data were adjusted to increase comparability. Nonetheless, while the relative contribution of stock and options in each period should be comparable, the absolute contributions of both to total compensation may not be fully comparable pre-2006 and post-2007. Non-equity compensation includes salary, annual bonuses, long-term incentive compensation that is not equity based, perquisites, and other compensation such as earnings on deferred compensation that are treated as compensation.

1. Explaining the Shift from Option to Stock Compensation

The shift from a heavy emphasis on options and limited use of stock compensation to a mix favoring stock represents a substantial reduction in the average convexity of equity pay packages.⁷² What accounts for the shift in emphasis? This Section considers the role played by the economic determinants related to firm, market, and employee characteristics, as well as other potential contributing factors. The bottom line is that, while accounting treatment is a leading suspect, it is very hard to disentangle the numerous confounding factors causing this shift.

a. Firm and Market Economic Determinants

Although directionally consistent with the shift in emphasis from options to stock over the last decade, it seems unlikely that changes in firm or market fundamentals fully explain the shift. The firm level fundamentals most commonly identified in the theoretical and empirical literature as impacting the optimal mix of stock and options include growth opportunities, risk, and leverage.⁷³ As the following chart describes, proxies for growth opportunities (price-to-earnings ratios and market-to-book ratios) were somewhat greater for the panel of companies whose compensation is described in Figure 3 for the period prior to the peak of the dot-com bubble, when option pay dominated, than for recent years that have witnessed an aggregate shift in favor of stock. Reduced growth opportunities would be consistent with reduced reliance on options in the later period.⁷⁴ My proxies for leverage (ratio of long-term debt to total shareholder equity) and risk (stock price volatility) were lower for the earlier period, which again is consistent with decreased use of options in the

72. Because equity compensation in practice consists of binary combinations of stock and at-the-money options, convexity is essentially a function of the option-heaviness of the equity pay package; henceforth the terms "option-heaviness" and "convexity" will be used interchangeably.

73. See *supra* Part I.B.

74. In his comment on this Article, *Some Thoughts on the Evolution of Executive Equity Compensation*, 64 VAND. L. REV. EN BANC (forthcoming 2011), Professor Herwig Schlunk provides a much more sophisticated analysis of the change in perceived growth opportunities based on changes in price/earnings ratios ("P/E") relative to the riskless return. His analysis indicates that the reduction in perceived growth opportunities across the period is greater than the simple analysis provided here would suggest. However, Schlunk does not argue that the corresponding shift from option to stock compensation is evidence of optimal contracting. Rather, he argues that the shift reflects managerial opportunism.

later period since debt holders should prefer executives to take less risk and executives should discount risky compensation more as volatility increases.⁷⁵

Figure 4
Weighted Average Fundamentals for Panel of
350 Large Companies⁷⁶

	<u>1993–1997</u>	<u>2003–2007</u>
Price/Earnings	21.2	18.1
Market/Book	4.9	4.0
Debt/Equity	0.33	0.39
Volatility	23%	25% ⁷⁷

However, the magnitudes of these differences, particularly the difference in average volatility, are relatively modest, and the differences depend heavily on the exact period of measurement and the group of companies under observation. Perhaps some kind of tipping point story could be told, but otherwise firm fundamentals do not seem to tell the entire story.

There also has been some increase in volatility across the period at the broader market level. Over the 1993–1997 period, the Chicago Board Options Exchange Volatility Index averaged 15.5 percent; over the 2003–2007 period, the index averaged 16.1 percent.⁷⁸ Again, however, while directionally consistent with an increasing preference for stock over options, the four percent increase in market

75. Recall that increasing volatility increases the value of an option but also increases the discount placed on an option by a non-diversified, risk-averse executive. See *supra* note 25 and accompanying text.

76. All data is taken from the Compustat datasets. P/E is based on twelve-month trailing basic earnings per share and reflects averages of quarterly data. M/B and D/E reflect averages of annual data. D/E is defined as long term debt plus preferred stock divided by total shareholder equity. Volatility is sixty-month average volatility as reported in the Compustat database and utilized therein to calculate option values.

77. Volatility data is not reported after 2006, so the volatility figures for the latter period are for the sixty-month period beginning on January 1, 2002 and ending December 31, 2006.

There has been a large increase in firm-level volatility over the last fifty years, but it is difficult to account for the dramatic shift in equity design in the present decade based on that long-term trend. See Diego Comin & Thomas Philippon, *The Rise in Firm-Level Volatility: Causes and Consequences* 6 (Nat'l Bureau of Econ. Research, Working Paper No. 11388, 2005).

78. Volatility index data is available at CBOE, <http://www.cboe.com/data/HistoricalVolatility.aspx> (last visited Mar. 2, 2011).

volatility across the period seems much too small to account for the dramatic shift in emphasis from option to stock compensation.

b. The Burst of the Dot-Com Bubble

Some of the reduction in option utilization post-2000 may reflect a return to normalcy following the dot-com boom and crash. There is no survivor bias to the data presented in Figure 3. Technology firms that blossomed in the late 1990s and subsequently fell out of the S&P 500 are excluded from the panel. Nonetheless, the boom in the broader stock market and the options-based fortunes that were being made in the technology industries undoubtedly had a spillover effect on compensation design at large firms generally. Options looked very attractive to executives as stock prices marched upward during the 1990s, and irrational exuberance may have contributed to pay packages consisting of seventy percent equity at the peak.⁷⁹

Of course, that perception reversed as prices began sliding. As noted previously, risk aversion is the most frequently modeled individual-level characteristic affecting the optimal convexity of pay packages. While average stock price volatilities were not significantly higher after the dot-com crash than before, the burst of the bubble undoubtedly affected the *perceived* risk of options to executives, which would have shifted optimal pay packages in the direction of stock or cash.

c. Rebalancing Equity Portfolios

As many researchers have noted, in determining whether an executive has the appropriate level and type of incentives, one should look at the executive's entire equity portfolio, not simply a single year's grant.⁸⁰ The same principle applies in aggregate, and it is conceivable that the shift from option-heavy to stock-heavy grants after 2001 represents a rebalancing after several years of option-heavy grants. It is somewhat difficult to explain the unprecedented increase in stock compensation, but the shift is consistent with rebalancing to maintain pay sensitivity to stock price while limiting sensitivity to stock price volatility. A board could obviously reduce an executive's exposure to stock price volatility by paying her with cash instead of

79. See *supra* Figure 3.

80. See, e.g., Core et al., *supra* note 25, at 154, 180.

options, but doing so would also reduce the link between stock price and executive wealth.

However, the longer the shift in favor of stock compensation continues, the harder it will be to attribute that shift to temporary rebalancing rather than to a new steady-state equilibrium, and we may have already passed the point at which the rebalancing explanation loses power. Options typically are exercised within five or six years of grant,⁸¹ and the S&P 500 index rose steadily between 2003 and the middle of 2007, ultimately surpassing the 2000 peak, which would have facilitated exercise of options granted in the late 1990s. It is doubtful that a large overhang of options persists from the boom years of the 1990s.

d. Options-Related Scandals

A number of scandals since 2000 may have increased the negative connotations associated with options and encouraged firms to deemphasize their use in equity pay packages. Options figured prominently in the accounting scandals at Enron, WorldCom, and Tyco. Although the causes of the malfeasance in these cases were several, it was argued that option-heavy pay packages received by the senior executives of these firms led them to manipulate financial results and prop up share prices in the face of decaying business fundamentals.⁸² In addition, in 2006, the *Wall Street Journal* brought to light a wide ranging stock option backdating scandal that dominated business page headlines for almost a year and ultimately led to SEC investigation of over 100 U.S. companies.⁸³ Although the

81. See J. Carr Bettis et al., *Exercise Behavior, Valuation, and the Incentive Effects of Employee Stock Options*, 76 J. FIN. ECON. 446, 447 (2005) (finding for a sample of 140,000 option exercises by executives at almost 4000 firms between 1996 and 2002 that, on average, options were exercised a little over two years following vesting and more than four years prior to expiration); Jennifer N. Carpenter, *The Exercise and Valuation of Executive Stock Options*, 48 J. FIN. ECON. 127, 138 (1998) (finding for a sample of forty firms (mainly large manufacturers) that executive stock options granted between 1983 and 1984 were, on average, exercised after 5.8 years); Steven Huddart & Mark Lang, *Employee Stock Option Exercises: An Empirical Analysis*, 21 J. ACCT. & ECON. 5, 20 (1996) (finding that the median fraction of option life elapsed at the time of exercise ranged from 0.21 to 0.38 for options granted by seven public companies to a wide range of employees).

82. See, e.g., Paul M. Healy & Krishna G. Palepu, *The Fall of Enron*, 17 J. ECON. PERSPECTIVES 3, 13 (2003) (noting that “[h]eavy use of stock option awards linked to short-term stock price may explain the focus of Enron’s management on creating expectations of rapid growth and its efforts to puff up reported earnings to meet Wall Street’s expectations”).

83. Although credit for discovering backdating properly belongs to finance professor Erik Lie, the scandal received public attention after it was exposed in the *Wall Street Journal*. See Erik Lie, *On the Timing of CEO Stock Option Awards*, 51 MGMT. SCI. 802, 810 (2005) (providing

shift in emphasis from options to stock was largely accomplished by the time the backdating scandal was revealed, the scandal may have discouraged any rebound in option use with the recovery of the equity markets in 2006 and 2007.

e. Dividend Pressure

The corporate scandals in the early 2000s may have caused investors to increase the value placed on dividends. Steady dividends can play a corporate governance role in checking empire building and ensuring that reported earnings are real.⁸⁴ The 2003 reduction in tax rates for qualified dividend receipts also increased investor appetites for dividends, relative to other means of distributing gains to shareholders, and firms responded by increasing both regular and special dividend payouts.⁸⁵

An increased preference for dividends could have contributed to the shift from option-heavy executive pay packages to more stock-heavy packages. Holders of restricted stock typically receive dividends, while options holders generally receive no credit for dividends paid.⁸⁶ As a result, paying a dividend can be contrary to the interests of an executive who is holding options on a large number of shares. Holdings of restricted stock, on the other hand, do not discourage dividend payouts. In fact, dividends are a useful source of liquidity for executives who are constrained by vesting requirements or shareholding guidelines from disposing of the underlying shares. Not surprisingly, numerous studies have demonstrated a negative

convincing evidence that options were backdated); Charles Forelle & James Bandler, *The Perfect Payday: Some CEOs Reap Millions by Landing Stock Options When They Are Most Valuable*, WALL ST. J., Mar. 18, 2006, at A1 (reporting evidence of option backdating to a broad readership).

84. See generally RICHARD A. BREALEY ET AL., *PRINCIPLES OF CORPORATE FINANCE* (8th ed. 2005).

85. The Jobs and Growth Tax Relief Reconciliation Act of 2003 cut the top marginal federal income tax rate applicable to dividends from thirty-five percent to fifteen percent. For evidence on the impact on dividend payouts, see Jeffrey R. Brown et al., *Executive Financial Incentives and Payout Policy: Firm Responses to the 2003 Dividend Tax Cut*, 62 J. FIN. 1935, 1935 (2007) (reporting that thirty-five percent of S&P 1500 firms increased dividend payouts in 2003 compared with twenty-seven percent increasing payouts in the two prior years and that the rate of firms newly adopting dividend programs increased from about one in one hundred in 2001 and 2002 to one in ten in 2003).

86. See Kevin J. Murphy, *Executive Compensation*, in 3 *HANDBOOK OF LABOR ECONOMICS* 2485, 2509–10 (Orley Ashenfelter & David Card eds., 1999).

association between option holdings and dividend payouts,⁸⁷ and Jeffrey Brown, Nellie Liang, and Scott Weisbenner have shown that executives with greater stock ownership tended to increase dividends following the 2003 tax cut while executives holding more options did not.⁸⁸ Sophisticated investors would have anticipated this phenomenon and should have pushed for more stock and fewer options in executive pay packages, consistent with the observed shift in aggregate pay practices.⁸⁹

f. Stock Option Accounting

In its December 2004 Statement of Financial Accounting Standards (“SFAS”) No. 123R, the FASB mandated “fair value” accounting for options and other forms of equity compensation effective for fiscal years beginning after June 15, 2005. For most companies, the change was effective with the 2006 calendar and fiscal year,⁹⁰ and, as discussed above, the change largely eliminated accounting preferences for at-the-money options over stock and discounted options.

At first blush, the change in the accounting standard might appear to have occurred too late to account for a shift in emphasis from options to stock that began around 2002. But the change in accounting rules was not a surprise. The FASB clearly signaled its intention to revisit stock option accounting in 2002,⁹¹ and firms may have realized that the momentum had shifted at the time of Enron’s 2001 bankruptcy. Moreover, although the change in accounting rule did not take effect until 2006, it had retroactive effect in requiring that an expense be recognized for any previously granted option that remained unvested. Thus, companies that were sensitive to the accounting treatment of equity would have felt the new rule’s impact well before its effective date.

87. See, e.g., Christine Jolls, *Stock Repurchases and Incentive Compensation* (Nat’l Bureau of Econ. Research, Working Paper No. W6467, 1998) (finding that companies that rely heavily on stock option compensation for executives are more likely than other firms to repurchase shares, presumably as an alternative to paying dividends).

88. See Brown et al., *supra* note 85.

89. I thank Dhammika Dharmapala for this suggestion.

90. About seventy-five percent of S&P 500 firms have a fiscal year ending in December. See generally STANDARD & POOR’S 500 GUIDE (13th ed. 2010).

91. See Fin. Accounting Standards Bd., Invitation to Comment: Accounting for Stock-Based Compensation: A Comparison of FASB Statement No. 123, *Accounting for Stock-Based Compensation*, and Its Related Interpretations, and IASB Proposed IFRS, *Share-based Payment*, FASB Index No. 1102-001 (Nov. 18, 2002).

On the other hand, it is entirely possible that causation runs in the opposite direction. The FASB first seriously attempted to rationalize equity compensation accounting in 1995 but was rebuffed by corporate interests and congressional saber rattling.⁹² By 2004, the shift from option to stock compensation may have reduced the perceived cost of the accounting change to such an extent that, combined with the scandals mentioned above, corporate and political resistance to expensing option compensation were overcome. It is likely that both stories are true to some extent. The shift away from options probably facilitated revision of the accounting rules, and the revision of the accounting rules further contributed to the shift from options to stock.

Although it is difficult to disentangle the effects of accounting, option-related scandals, and other factors, two recent studies have concluded that changes in equity pay practices in the 2000s relate, at least in part, to stock option expensing. Lawrence Brown and Yen-Jung Lee found that reductions in option use following the announcement of SFAS 123R were associated with the strength of debt contracting concerns and other factors that proxied for a firm's willingness to exploit the previous accounting treatment and with reliance on option compensation generally.⁹³ An association between substantial reliance on option compensation and reduction in option use, however, would seem to be equally consistent with a story of firms moving away from options because of reputational concerns following option-related scandals. Mary Ellen Carter, Luann Lynch, and Irem Tuna found that firms that voluntarily began expensing options prior to mandatory expensing reduced option use and increased reliance on restricted stock.⁹⁴ The authors recognized the possibility that these companies might have first decided to shift from options to stock and then to expense option grants.⁹⁵ Their examination of proxy statements supported the idea that changes in

92. See SFAS 123, *supra* note 40; *Expensing Stock Options: Can FASB Prevail?* KNOWLEDGE@WHARTON, <http://knowledge.wharton.upenn.edu/article.cfm?articleid=975> (last visited Feb. 2, 2011) ("The last FASB effort to require an options-expense treatment, back in 1994, foundered in the face of political and industry opposition that threatened the Board's very existence.").

93. See Lawrence D. Brown & Yen-Jung Lee, *The Impact of SFAS 123R on Changes in Option-Based Compensation* (May 2007) (unpublished manuscript), available at <http://ssrn.com/abstract=930818>.

94. See Mary Ellen Carter et al., *The Role of Accounting in the Design of CEO Equity Compensation*, 82 ACCT. REV. 327 (2007).

95. See *id.* at 353.

pay practices followed the expensing decision and not vice versa, but they could not rule out reverse causation.⁹⁶

2. What Does the Shift from Option to Stock Compensation Tell Us About Efficient Contracting?

At the least, the recent shift from option to stock compensation suggests that factors that are not widely discussed by economists—financial accounting rules for equity compensation, option “taint” resulting from corporate scandals, and/or a perception that option compensation is riskier following the burst of a market bubble, despite the fact that firm-level risk is essentially unchanged—play an important role in compensation design. It seems unlikely that fundamental changes in firm, market, or even individual risk characteristics, as conventionally described, fully explain the shift.

To be sure, this evidence is not necessarily inconsistent with share value maximizing contracting. Responsiveness to accounting standards might be in the shareholders’ interest if driven by debt covenant concerns or other factors discussed in the positive accounting literature. Also, responsiveness to option backlash in the financial press or in Washington could be in the shareholders’ interest. And even if executive preferences or distastes for certain equity instruments are irrational, adapting pay packages to exploit those tastes might be in the shareholders’ interest. This evidence does suggest, however, that in order to conclude that executive equity pay packages observed throughout the 1990s and 2000s were the product of efficient contracting, our conception of efficient contracting would have to be widened considerably beyond that currently in vogue.

C. Firm-to-Firm Variation in the Use of Stock and Option Compensation

The overall trends in equity pay practices over the last decade are instructive, but in order to gain a deeper understanding of the forces shaping executive equity pay, this Section disaggregates the data and examines the variation in equity pay design from firm to firm. This Section focuses on the variation in the mix of stock and options granted to executives in the late 1990s, prior to the dot-com crash and rationalization of the stock option accounting rules, and again in 2007 after the dust had settled (although perhaps

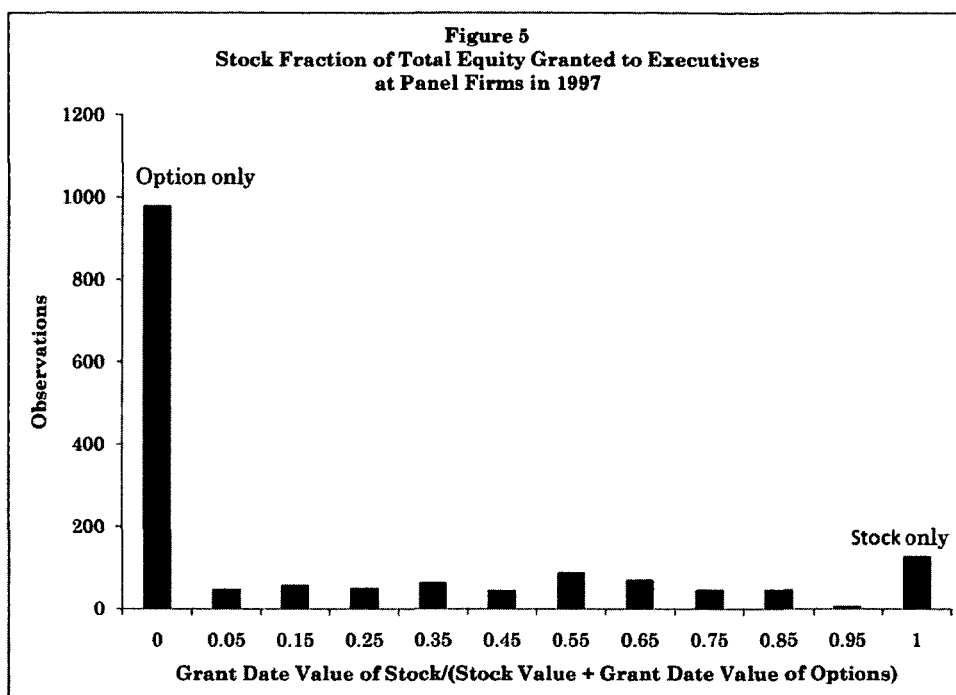
96. *See id.* at 354.

momentarily). We observe increased variation in the mix of stock and options granted, but in both periods we also observe clustering of firms at the extreme positions, that is, exclusive use of options or exclusive use of stock, and in the latter period at a 50/50 mix of stock and options. The high degree of clustering suggests that there may be barriers to firms optimizing equity pay through combinations of stock and options. In the 1990s, accounting rules may have created a hurdle, but accounting rules cannot explain the clustering in recent years.

1. 1997 Distribution

The distribution of the mix of stock and options granted to panel firm executives in 1997 is portrayed in the following histogram. The mix is defined as the ratio of the value of stock compensation conferred to the total value of equity compensation conferred. Thus, the ratio for an executive who received options, but not stock, would be zero; the ratio for an executive who received stock, but not options, would be one. The ratios for executives who received both stock and options fall somewhere in between.⁹⁷

97. Stock value is the value of the stock at grant with no adjustment for restrictions. Option value is the Black-Scholes ex ante value as reported in Compustat. The x-axis labels in the figure represent the midpoint of ratio ranges. For example, the eighty-nine observations at x-axis label 0.55 represent ratios greater than 0.50 up to and including 0.60.



Sixty percent of panel firm executives who received equity compensation in 1997 received an option grant but not stock. The roughly four-to-one aggregate ratio of option compensation to stock compensation for 1997 documented in Figure 3 did not result from most executives receiving an option-heavy mix of both stock and options, but from eight percent of executives receiving stock pay only and another thirty percent receiving a varied mix of stock and options.

Although not apparent from Figure 5, the variation in equity pay practices in 1997 took place largely at the firm level, rather than at the individual executive level. Instances in which some executives of a firm received stock or options only, while others received the other instrument only, or a mix of stock and options, were the exception. For example, fifty-two percent of the panel firms that granted equity pay in 1997 issued options but not stock. To be sure, not all companies issued equity to each senior executive each year,⁹⁸ and some firms might have granted stock in one year and options in another. However, even when gauged over a broader period, many firms

98. Eighty-six percent of the executives at panel firms received some amount of equity compensation during 1997.

limited themselves to providing exclusively option compensation in the mid to late 1990s. For example, forty percent of panel companies issuing equity to their senior executives over the 1996–1998 period failed to grant a single share of restricted stock.

The pattern of the 1997 distribution is difficult to reconcile with an efficient contracting story focusing solely on the conventional economic determinants of equity pay design. While one can imagine an environment in which growth opportunities, risk, leverage, and other economic factors would lead a large majority of firms to rely exclusively on options, in that scenario, one would expect a distribution resembling the left side of a “u” as the optimal package would consist of options but not stock at the largest number of firms, very option-heavy packages including some stock at the next largest group of firms, and more balanced to stock-heavy packages at a decreasing number of firms. Instead, in the mid to late 1990s, we observe a uniform or perhaps normal distribution of mixed equity grants seemingly appended to a large number of option-only observations, as well as a smaller, but still significant, number of stock-only observations.

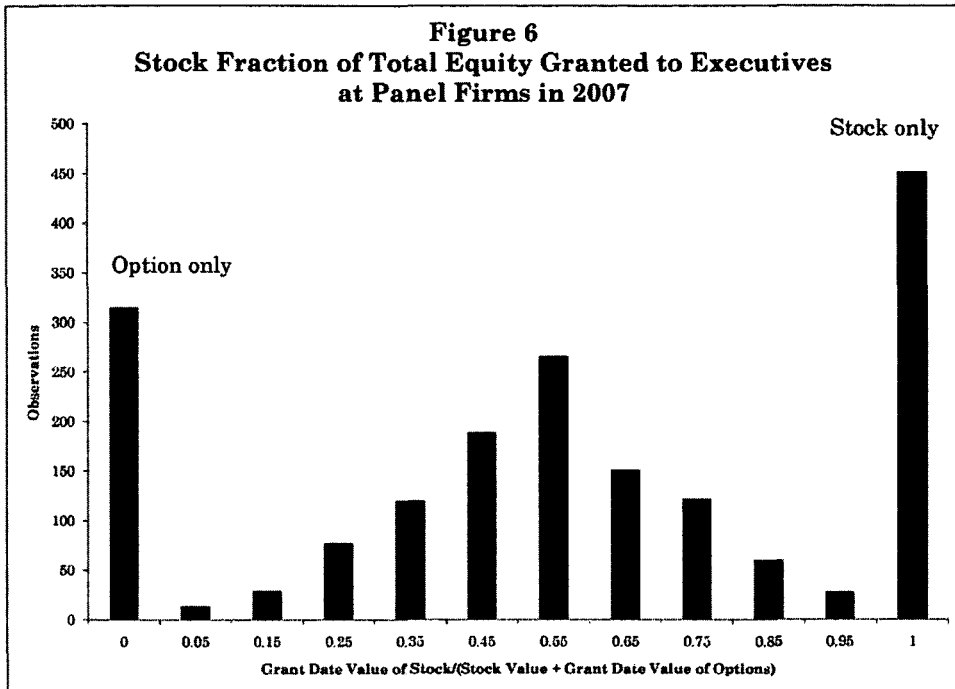
The 1997 distribution suggests the existence of (at least) two types of companies⁹⁹: companies at which the equity compensation menu consisted solely of options, and companies at which both stock and options were on the menu. What would account for a large number of companies limiting equity compensation to options? The most obvious explanation would seem to be differing responses to the inconsistent accounting treatment of stock and options under the old rule, SFAS 123. Firms that viewed option expense footnoting as equivalent to recognition should have selected the mix of stock and options (including option-only or stock-only packages) that optimized incentive creation and risk-bearing costs. On the other hand, firms that considered compensation expense recognition to be more costly than footnoting would have been more likely to forgo stock and rely purely on option compensation. However, while accounting rules may be a key part of the explanation, as the next subsection describes, we continue to observe clustering in the distribution of stock and options in the equity compensation mix even after the accounting playing field

99. A third possible type would be firms that limited equity compensation to stock. However, the frequency of stock-only grants is more plausibly explained as censoring of the distribution than is the frequency of option-only grants. See *infra* notes 103–07 and accompanying text for more on the censoring possibility.

was leveled, which suggests that some other phenomena are contributing to these patterns.

2. 2007 Distribution

The distribution of equity pay mix for panel firm executives in 2007 is portrayed in Figure 6.



As expected from the aggregated data, the 2007 distribution reflects a shift in emphasis from option to stock compensation, and the 2007 data are noteworthy in several other respects. First, the data indicate wide overall variation in the mix of equity conferred. Second, the distribution appears to be trimodal with clustering at the ends and in the middle.¹⁰⁰ Seventeen percent of the executives who received

100. Setting aside stock-only and option-only grants, the grant-year based distribution of the ratio of stock grants to total equity pay conferred for panel firms for 2007 is normal with a mean of fifty-three percent stock. Although ninety-three percent of panel firm executives received an equity grant in 2007, a focus on a single year's equity grants tends to overstate the clustering at the extremes of the distribution. Some executives who received only stock or options in 2007 may have received the other form of compensation in 2006 or 2005. Accounting data can be used to measure the distribution of equity holdings, rather than annual grants, but the distribution

equity grants in 2007 received options, but not stock. Twenty-five percent received stock, but not options. Another twenty-five percent received a mix composed of forty to sixty percent stock, by value.¹⁰¹ Third, the distribution of grants consisting of both stock and options is normal and centered, roughly, at a 50/50 mix. Indeed, ten percent of the mix observations fall within the center two percent of the range, that is, forty-nine to fifty-one percent stock. Fourth, although it is not apparent from this graph, most of the variation in mix is still occurring at the firm level rather than at the individual level. Thirteen percent of panel firms granted options but not stock to each of their executives who received equity in 2007, and twenty percent of firms granted stock but not options. In other words, the large majority of observations at either extreme of the distribution reflect consistent firm reliance on one form of equity compensation or the other.¹⁰²

A distribution ranging from 100 percent at-the-money options, through concurrent grants of stock and options, to stock-only grants, could be consistent with economic theory predicting that market, industry, and employee-level characteristics determine the optimal convexity of equity pay packages. However, it is difficult to square a trimodal distribution with the view that firms are optimizing equity pay convexity through the selection of equity instruments. One way to see this is to think of the x-axis in Figure 6 as the extent to which the equity pay packages are in the money. The option-only observations are essentially all at-the-money options. As one moves to the right, the equity pay packages move increasingly into the money until they become 100 percent in the money at restricted stock. Viewed in this way, we see that nondiscounted equity pay packages are very popular, modestly discounted packages are unpopular, significantly discounted packages are quite popular, severely discounted packages are unpopular, and maximally discounted packages are popular again.

based on accounting data remains censored or trimodal. Moreover, given the overall shift in emphasis from option compensation to stock in recent years, accounting-based data may overstate the extent to which firms are granting a mix of stock and options. Eli Lilly, for example, consistently issued options to its senior executives through 2003. In 2004 through 2006, it issued a mix of stock and options. In 2007 and since, it has issued stock exclusively. Apparently, 2004 through 2006 were transition years. However, accounting data for 2007 and later years continues to reflect mixed grants issued in 2004 through 2006.

101. The middle two columns of the histogram represent stock ratios ranging from just over forty percent up to and including sixty percent.

102. The extent to which firms grant the same equity compensation mix to the various members of the executive team is explored further in the following section. See *infra* Part II.C.2.b.

a. Censored or Truly Trimodal?

One possible explanation for this pattern is that the histogram reflects not a true trimodal distribution but a severely censored normal distribution with the “tails” of the distribution cut off and stacked up at the endpoints. Some censoring of the data would be expected because the observed endpoints, 100 percent stock and 100 percent at-the-money options, are somewhat artificial.

Consider the option-only endpoint. Several theoretical studies find that out-of-the-money options should be optimal in certain situations,¹⁰³ but these options are rarely observed. The paucity of out-of-the-money options might be explained as the result of excessive discounting of these options by recipients. There is evidence that recipients overvalue strike price discounts associated with in-the-money options.¹⁰⁴ This effect may result from a salience bias.¹⁰⁵ If strike price discounts are highly salient, it would make sense that strike price premiums would be as well. But in this case, salience would have the opposite effect. Highly salient strike price premiums would result in executives applying excessive discounts to out-of-the-money options.¹⁰⁶ If out-of-the-money options would be economically optimal in some cases, but for irrational executive antipathy, their absence might explain some clustering of observations at the (at-the-money) option-only end of the distribution.

Stock-only grants lie at the other end of the equity pay spectrum. Some clustering of observations at this end of the distribution might be explained as follows: Per dollar of equity compensation conferred, pay sensitivity to share price is reduced as one moves from option-only packages to mixed stock and option packages and then to stock-only packages. Further reduction in sensitivity requires a reduction in the size of stock grants relative to non-equity compensation. Thus, stock-only grants might reflect a wider range of pay for performance sensitivities than mixed grants,

103. See *supra* notes 33–34 and accompanying text.

104. See Hall, *supra* note 52, at 32 (finding a “bias toward valuing options according [to] what they would be worth if exercised today”).

105. On the salience bias, see generally A. Tversky & D. Kahneman, *Availability: A Heuristic for Judging Frequency and Probability*, 5 COGNITIVE PSYCHOL. 207 (1973).

106. The managerial power model of the compensation-setting process explains the dearth of out-of-the-money options as outrage management. In-the-money options would produce outrage on the part of investors and the financial press. Nondiscounted options, whether at or out of the money, are likely to produce similar investor and financial press response. If so, compensation value per unit of outrage is maximized by granting options at the money. See Bebchuk et al., *supra* note 53.

and a distribution focused solely on the mix of stock and options might censor a broader distribution of pay for performance sensitivity. If so, however, we would expect that the proportion of executives receiving stock-only grants who receive relatively modest amounts of equity relative to non-equity pay would exceed the proportion of executives receiving grants of both stock and options who received relatively modest equity pay. The 2007 data provide only limited support for this idea.¹⁰⁷

Moreover, even if some censoring of the data is to be expected, the question remains whether the frequency of option-only and stock-only observations reflects only censoring, or whether we have a true trimodal distribution of option-only, stock-only, and roughly equal grants. Censoring alone does not seem likely to account for the large amount of clustering of observations at 100 percent stock and 100 percent options relative to the normal curve in between. At the 100 percent option end of the spectrum, in particular, the rate of decline in observations from the right suggests that any censored tail would not be fat or long enough to account for the clustering that is observed.

Still another possibility is that the optimal distribution of equity mix is actually U-shaped. The extreme position of 100 percent options or 100 percent stock might be optimal for most firms. If so, however, the normal distribution of mixed grants in between is exactly inverted. No matter how it is sliced, the observed 2007 distribution is hard to square with a view that firms are blending stock and option grants to optimize the convexity of equity pay.

b. Explaining the Observed Distribution

i. Transaction Costs

The 2007 distribution of equity mix might be explained based on transaction costs. If creating and administering both stock and

107. For twenty-two percent of the executives who received stock grants but not options in 2007, the value of the stock accounted for a relatively modest thirty percent or less of total compensation. For executives receiving both stock and options, in only nine percent of the cases did equity pay account for thirty percent or less of total compensation. However, executives who received options but not stock were more likely than executives in either of the other two groups to receive pay packages that were light on equity compensation. In thirty-one percent of these cases, equity value accounted for thirty percent or less of total compensation. Thus, this data is as or more consistent with the intuitive idea that firms that place relatively less emphasis on equity pay are more likely to utilize a single pay instrument rather than both stock and option pay than with truncation of equity mix at the stock-only end of the distribution. *See infra* Appendix C.

stock option programs is more expensive than maintaining only one or the other, we would expect some firms, for which—transaction costs aside—a mix of stock and option compensation would be optimal, to limit themselves to a single form of equity pay. It would also make sense that firms for which a 50/50 mix of stock and options would be optimal would be more likely to overcome the transaction costs involved in granting both stock and options than firms for which a 90/10 or 10/90 mix would be optimal. Thus, although there is no *a priori* reason for positing a uniform distribution absent transaction costs, a transaction cost story could explain the transformation of a uniform distribution into the trimodal distribution with a normally distributed center observed in the 2007 histogram.

I am skeptical that *administrative* costs play much of a role in decisions to grant stock, options, or both. Drafting stock and option plans and the documents used to administer these plans is routine and should not be particularly expensive. Moreover, executives do not seem to be shy about spending money on the design and administration of their own compensation. Practitioners that I have interviewed share my skepticism that administrative costs play an important role in the design of executive compensation packages.

Other transaction costs could be more important. There is a cost of complexity, and options are inherently complex. Executives may not understand the relationships between share price, volatility, and option value. Even with modifications, the Black-Scholes option pricing model does not accurately value compensatory options.¹⁰⁸ Restricted stock is much more transparent, but moves to tie vesting to performance metrics add complexity to plain vanilla stock. Some companies explicitly recognize the cost of complexity in their proxy statement discussions of executive pay. In 2007, for example, Ford Motor Company eliminated new grants of performance stock citing the desire to “remove[] a level of complexity from the annual equity grant process.”¹⁰⁹

ii. Explanations Suggested by Proxy Statement Disclosures

In their proxy statements, companies are required to describe the processes by which executive compensation decisions are made

108. See Walker & Fleischer, *supra* note 37, at 424–26 (discussing inadequacy of the Black-Scholes model for valuing long-term, non-transferable options).

109. Ford Motor Co., Proxy Statement (Form DEF 14A), at 39 (Apr. 4, 2008).

and the bases for these decisions.¹¹⁰ Examination of these disclosures sheds some light on firm choices regarding equity pay instruments. Of course, these disclosures should be taken with a grain of salt. They are often written by lawyers rather than business people and contain a fair amount of boilerplate language. Thus, it may not be surprising that proxy statements reveal little indication that firms are focusing on optimizing the convexity of equity compensation in issuing options, stock, or a mix of the two.

A. Firms Issuing Solely Stock or Options

As noted above, equity packages consisting solely of stock or solely of options are not necessarily inconsistent with optimal contracting. The corner solution may be the efficient equity pay “mix” for these firms. For example, in its 2008 proxy statement, Exxon Mobil said the company relies exclusively on restricted stock awards because doing so “supports a risk/reward profile that reinforces a long-term view.”¹¹¹ Options, by implication, might incentivize excessive short-term risk taking. In addition, some firms that grant stock exclusively note the higher perceived value of stock to executives.¹¹² This explanation is in line with the suggestion in Part II.B that the bursting of the dot-com bubble may have increased the perceived risk of options to executives.

Other rationales cited by firms relying exclusively on stock as equity compensation have less to do with optimizing incentives. Firms grant stock to encourage retention,¹¹³ to allow executives to build an ownership stake,¹¹⁴ or to introduce other performance metrics into the equity pay process.¹¹⁵ But options that vest over time also encourage retention and allow executives to build ownership, and firms that rely exclusively on options sometimes cite these goals as well. The vesting of restricted stock is more commonly tied to performance measures

110. See SEC Regulation S-K, Item 402, 17 C.F.R. § 229.402 (2010).

111. Exxon Mobil Corp., Proxy Statement (Form DEF 14A), at 23 (Apr. 10, 2008).

112. See, e.g., Consol. Edison Inc., Proxy Statement (Form DEF 14A), at 26 (Apr. 11, 2008); Lennar Corp., Proxy Statement (Form DEF 14A), at 20 (Mar. 7, 2008).

113. See, e.g., Pinnacle W. Capital Corp., Proxy Statement (Form DEF 14A), at 19 (Apr. 10, 2008); Verizon Commc'ns Corp., Proxy Statement (Form DEF 14A), at 26 (Mar. 17, 2008).

114. See, e.g., Bemis Co., Proxy Statement (Form DEF 14A), at 18 (Mar. 19, 2008).

115. See, e.g., Progress Energy Inc., Proxy Statement (Form DEF 14A), at 27 (May 14, 2008); Int'l Paper Co., Proxy Statement (Form DEF 14A), at 52 (Apr. 8, 2008).

than option vesting, but there is no inherent reason that this should be the case.

Switching from options to stock reduces the number of shares that must be granted per dollar of compensation cost, and managing shareholder dilution is sometimes listed as a rationale for granting equity in the form of stock.¹¹⁶ While plausible enough, this shareholder relations consideration has nothing to do with optimizing incentives. Finally, some firms note that reliance on stock is related to managing compensation expense for accounting purposes,¹¹⁷ which simply seems to be an acknowledgement that options are no longer “free” from an accounting perspective.

Companies that rely exclusively on options as equity pay often cite as goals attracting and retaining executives and aligning their goals with those of shareholders,¹¹⁸ although retention seems to be emphasized less and shareholder alignment emphasized more by these firms relative to stock-focused companies. These companies often note that options provide value to executives only if share prices increase,¹¹⁹ which is true descriptively, but is not much of an explanation for granting all equity pay in the form of options.

B. Firms Issuing Both Stock and Options

The proxy statement disclosures of companies granting both stock and options suggest that these companies tend to view the instruments as serving different purposes. Conventional time-vested restricted stock, which has value as long as the firm is solvent, is often described as a retention tool or a means for executives to build a stake in their companies.¹²⁰ Options are described as a means of placing value at risk or of tying compensation to shareholder gains.¹²¹

116. *See, e.g.*, Verizon Commc'ns Corp., Proxy Statement (Form DEF 14A), at 25 (Mar. 17, 2008); Lennar Corp., Proxy Statement (Form DEF 14A), at 20 (Mar. 7, 2008).

117. *See, e.g.*, Unisys Corp., Proxy Statement (Form DEF 14A), at 24 (June 18, 2008); Lennar Corp., Proxy Statement (Form DEF 14A), at 20 (Mar. 7, 2008).

118. *See, e.g.*, Analog Devices, Proxy Statement (Form DEF 14A), at 27 (Feb. 6, 2008); U.S. Bancorp, Proxy Statement (Form DEF 14A), at 22 (Mar. 4, 2008); Ecolab Inc., Proxy Statement (Form DEF 14A), at 29 (Mar. 19, 2008).

119. *See, e.g.*, U.S. Bancorp, Proxy Statement (Form DEF 14A), at 22 (Mar. 4, 2008); Schlumberger Ltd., Proxy Statement (Form DEF 14A), at 22 (Feb. 29, 2008).

120. *See, e.g.*, Mattel, Inc., Proxy Statement (Form DEF 14A), at 37 (Apr. 24, 2008); Int'l Game Tech., Proxy Statement (Form DEF 14A), at 25 (Feb. 27, 2008).

121. *See, e.g.*, Mattel, Inc., Proxy Statement (Form DEF 14A), at 37 (Apr. 24, 2008); Int'l Game Tech., Proxy Statement (Form DEF 14A), at 25 (Feb. 27, 2008).

This is not to say that firms that grant both stock and options do so independently. According to proxy statements, these firms generally determine the ex ante value of equity compensation they plan to confer on executives and then divide that value between equity instruments with a view towards balancing the goals of retention and incentive generation.¹²² As noted above, ten percent of mixed grants of stock and options in 2007 were an almost exact 50/50 mix by ex ante value. There is no reason to think that a 50/50 mix would hit some sort of convexity sweet spot, but once the viewpoint shifts to balancing the use of complex equity instruments serving differing, although complementary purposes, it is not surprising that this sort of rough balancing takes place. In fact, it is perfectly consistent with the naïve diversification heuristic discussed in the next subsection.

iii. Mixed Equity Grants and the Naïve Diversification Heuristic

As Shlomo Benartzi and Richard Thaler describe the naïve diversification heuristic, “when asked to make several choices at once, people tend to diversify,” and the allocations tend to take the form of $1/n$, that is, equal allocation among the range of choices.¹²³ In an experiment on retirement savings, participants offered an investment menu including one bond fund and one stock fund tended to select a 50/50 allocation.¹²⁴ More interesting and surprising is Benartzi and Thaler’s finding that when given a choice of several stock funds and one bond fund, allocations to stocks increased, and when given a choice between several bond funds and one stock fund, allocations to bonds increased, all of which is consistent with $1/n$ allocation.¹²⁵

Although the data is not quite so clean, these patterns also appear in allocations of executive equity pay into stock and options. As noted above, “stock” compensation can and does take the form of conventional time-vested restricted stock, performance-vested restricted stock (which is actually time and performance vested), and

122. See, e.g., Mattel, Inc., Proxy Statement (Form DEF 14A), at 37 (Apr. 24, 2008) (dividing value equally into stock and options); Coca-Cola Co., Proxy Statement (Form DEF 14A), at 39 (Mar. 3, 2008) (allocating sixty percent of value to options and forty percent to stock); Kimberly Clark Corp., Proxy Statement (Form DEF 14A), at 43 (Mar. 4, 2008) (dividing equally into time-vested restricted stock, performance-vested restricted stock, and options).

123. Shlomo Benartzi & Richard H. Thaler, *Naïve Diversification Strategies in Defined Contribution Savings Plans*, 91 AM. ECON. REV. 79, 80 (2001).

124. See *id.* at 82 (reporting that thirty-four percent of respondents chose an exact 50/50 mix and, on average, allocated fifty-four percent of funds to the stock fund).

125. *Id.*

performance shares, which are contractual arrangements that are equivalent economically to performance-vested restricted stock. Each of these tools is available to every public company as are variants on conventional time-vested options, although option variants are much less frequently observed.

Beginning in 2006, all forms of stock compensation are coded as a single category in Compustat, which limits analysis, but prior to that year, conventional time-vested restricted stock and performance-vested restricted stock were coded as “restricted stock” and performance shares were coded as a separate category. Thus, for 2005 and prior years, one can identify and analyze the division of equity pay into three categories—two classes of stock and options.

Of 1,898 executives included in this study for 2005, 640 received a grant of restricted stock and options in that year but no performance shares. One hundred sixty-four received a grant of performance shares and options but no restricted stock. In total, 804 executives received restricted stock or performance shares, but not both, and options. For these executives, options represented fifty-three percent of ex ante equity pay, on average. For firms that made a decision to divide equity pay between two instruments—one form of stock and options—the allocations were distributed around a roughly 50/50 mix, which is consistent with naïve diversification.¹²⁶

However, 144 executives received a grant of restricted stock, performance shares, and options in 2005. For these executives, who received three equity instruments, options represented only thirty-two percent of total equity pay, on average. The difference in option use between these two sets of companies is puzzling from an optimal contracting perspective. Performance shares, time-vested restricted stock, and performance-vested restricted stock have essentially the same effect on incentive generation and risk-bearing costs.¹²⁷ Thus,

126. Given Compustat’s coding practices, we cannot know whether “restricted stock” grants in 2005 consisted of conventional, time-vested restricted stock or of performance-vested restricted stock, and it is possible that some executives received both. Given the relative scarcity of performance-vested restricted stock, however, we can safely assume that cases in which firms made grants of both time-vested restricted stock and performance-vested restricted stock were few.

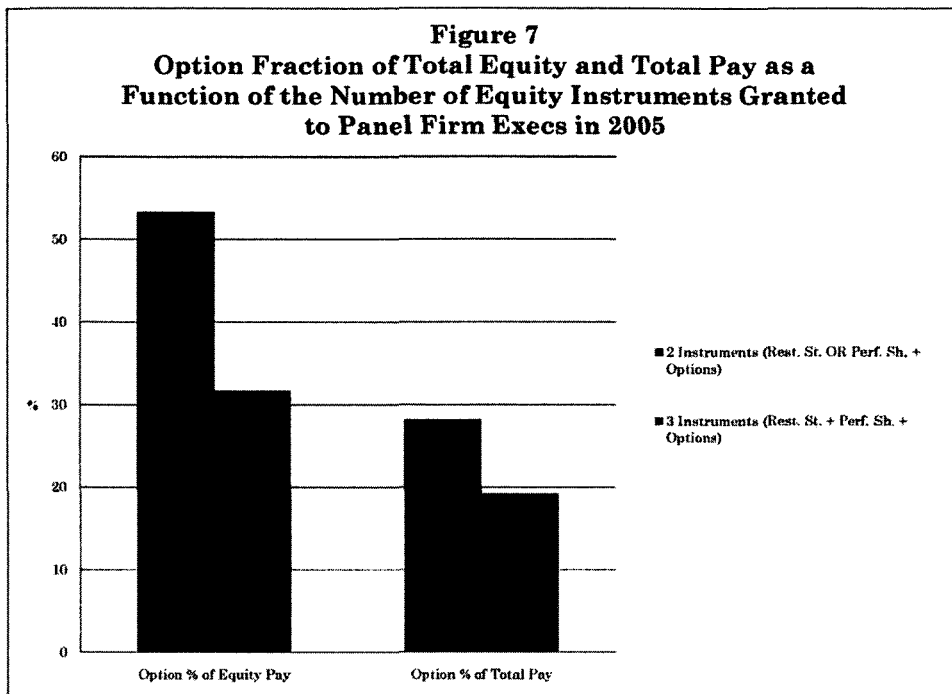
127. To be sure, performance shares and performance-vested restricted stock can provide an element of optionality that is not present in conventional time-vested restricted stock. If minimum performance targets are not met, the stock is lost. Generally, however, plans provide for a range of performance targets and payouts and cap payouts on the high side as well, so the asymmetric payouts that are achievable with options generally are not achievable with performance shares or performance-vested stock. The 2005 data suggest that firms consider performance shares and restricted stock to be roughly equivalent. When paired singly with

they should substitute for each other within an optimized pay package, but not substitute for options. Instead, we see that when three instruments are employed, option utilization falls, on average, to one-third, which is consistent with $1/n$ naïve diversification.

A possible explanation for this data—which is consistent with optimal contracting theory—is that the second stock instrument replaced non-equity compensation. That is, some companies might have decided to replace cash-based incentive pay with performance shares. In this story, firms that adopted the second stock instrument would maintain conventional stock and option grants, but as a fraction of equity pay granted, option use would decline. However, the evidence does not support this alternative hypothesis. For the 804 executives who received one form of stock compensation, option pay represented twenty-eight percent of total compensation; whereas options accounted for only nineteen percent of total pay for executives who received two forms of stock. It seems clear that the issuance of a second stock instrument displaced option use consistent with $1/n$ diversification among equity instruments.¹²⁸ This data is summarized in the following figure.

options, restricted stock constituted forty-six percent of the mix, on average, while performance shares constituted forty-eight percent of the mix, on average.

128. Similarly, the inclusion of a third equity compensation instrument did not appear to increase total compensation. Among executives receiving two equity instruments, mean total ex ante compensation was \$5.4 million (\$11.6 million for CEOs only); among executives receiving three instruments, mean total ex ante pay was \$5.2 million (\$10.7 million for CEOs only).



Although the evidence seems compelling, it is unclear why sophisticated directors advised by experienced compensation consultants would fall victim to the naïve diversification heuristic. Further research is needed on this question. Here I can only speculate. One possibility might be that the complexity of compensation schemes leads consultants and directors to focus on the technical differences between equity instruments, rather than their economic similarities, which in turn leads to naïve diversification.

iv. Other Contributors to the 2007 Distribution of Equity Mix

Several other factors may play a role in generating the trimodal distribution of equity mix observed in recent years, or portions of it. Although the issuance of both stock and options might represent optimization of incentives and risk-bearing costs, grants of multiple equity instruments could also represent an effort to reduce

transparency and the salience of individual elements of executive pay in accordance with the managerial power model of the pay-setting process.¹²⁹

Along the same lines, but perhaps less nefariously, the recent requirement that companies expense options may have removed an obstacle to non-option equity compensation at some firms. Once the accounting playing field was leveled, these firms gained access to a new compensation tool—restricted stock—but they weren't forced to abandon their old tools. As we have seen over the years, executive compensation instruments have a tendency to multiply. The advent of options, for example, did not totally displace non-equity incentive compensation. Obviously, if stock pay is treated as an add-on, one would see more mixed grants.

Alternatively, perhaps consultants profit from proposing more complex arrangements. Companies employing compensation consultants are less likely to rely exclusively on stock or exclusively on options in granting equity pay than are companies that go it alone,¹³⁰ but it is possible that the decision to hire a consultant follows from the decision to adopt a more complex pay arrangement rather than the reverse.¹³¹

Finally, one might think that executive equity mix would vary by industry or perhaps by headquarters location. But the data reveal few obvious industry patterns, and a recent study of option plans suggests that headquarters location is unlikely to impact the design of executive compensation.¹³²

3. Firm-to-Firm Variation in Equity Mix—Summary

Increased variation in executive equity pay mix in recent years may represent a move in the direction of optimal contracting, but the

129. See *supra* Part I.D (discussing the managerial power view of the compensation-setting process).

130. Of thirty-one S&P 500 companies that did not utilize a compensation consultant in 2007, fifteen (forty-eight percent) issued stock or options exclusively or almost exclusively (over ninety-five percent) to their senior executives in 2006 and 2007. Less than twenty-five percent of companies that employed a consultant relied exclusively or almost exclusively on stock or options. This difference is statistically significant at the one percent level. Data on file with author.

131. Ruth Bender, *Paying For Advice: The Role of the Remuneration Consultant in U.K. Listed Companies*, 64 VAND. L. REV. 361, 368–69 (2011).

132. Kedia and Rajgopal have recently found that headquarters location explains variation in broad-based option plans, but the authors found no evidence that location affected senior executive options plans. See Simi Kedia & Shiva Rajgopal, *Neighborhood Matters: The Impact of Location on Broad Based Stock Option Plans*, 92 J. FIN. ECON. 109, 125 (2009).

clustering of grants at 100 percent stock, 100 percent options, and a roughly 50/50 mix suggest significant limits to that optimization. While various transaction costs likely influence the observed patterns, decisionmaking in accordance with the naïve diversification heuristic may be particularly helpful in explaining the distribution of mixed equity grants.

D. Within-Firm Variation in Equity Pay Packages

Although we observe significant variation in recent years in the relative weight of stock and options in equity pay packages looking across S&P 500 firms, variation in the packages provided to the senior executives of a given firm generally is limited. The various members of the executive suite typically receive differing *levels* of equity compensation, but more often than not, the *fraction* of stock and options in these packages is the same. This “lockstep” grant behavior is more common among firms issuing solely stock or options, but it is frequently observed even in cases in which executives receive both stock and option grants in the same year. The limited degree of individualization may be surprising given the emphasis on individual risk characteristics in the optimal contracting literature.¹³³

1. Economic Theory and Individualization

As discussed above, the optimal convexity or mix of stock and options in executive pay packages should be a function of market, firm, and individual characteristics. Absent transaction costs, optimizing firms would be expected to tailor equity pay packages for individual executives and/or specific executive roles. Individual risk preferences, current holdings of stock and options, and individual scope to influence share price would all play a role. As we have seen, the theoretical literature on equity compensation focuses heavily on individual risk characteristics. Tian, for example, finds that the optimal equity package ranges from restricted stock to at-the-money options depending on the degree to which the recipient is risk averse.¹³⁴

133. The limited degree of individualization will not be surprising to practitioners. The primary aim of this section is to describe intra-firm grant practices and offer thoughts on why we do not observe a higher degree of individualization of equity mix. I do not mean to make any claims regarding the “right” level of individualization in the presence of transaction costs and other limitations.

134. See Tian, Contracting, *supra* note 31, at 32.

The empirical literature takes individual factors into account as well.¹³⁵ For example, Core and Guay find that firms actively manage the level of new CEO equity incentives in response to deviations between existing incentives and optimal incentives.¹³⁶ Unless executives at particular firms maintain their equity holdings in lockstep, one would expect variation in new grants based on the individualized equity portfolios of the executives. In terms of specific executive roles, one might imagine that, all else being equal, heads of research and development or technology should receive relatively option-heavy pay packages to encourage risk taking, while chief operating officers should receive relatively stock-heavy packages reflecting their greater focus on near-term performance.

2. In Practice, Individualization of Equity Mix Is Limited

a. S&P 500 Data

An examination of recent grants of stock and options to executives indicates that individualization is not the norm. In analyzing the degree to which stock and options are granted in lockstep fashion, I focused on grant-year data for the entire membership of the S&P 500 for the years 2006 and 2007, and I retained data for the top five executives for each firm-year for comparability.¹³⁷ This left me with complete data for 943 firm-years. I defined lockstep grants as follows: for executives receiving only stock (or only options) in a year, the grant was in lockstep if any of the executive's colleagues received only stock (or only options). For executives receiving a mix of stock and options, grants received by two or more executives were considered to be in lockstep if the standard deviation of the percentage of stock in each executives grant was less than one percent.¹³⁸

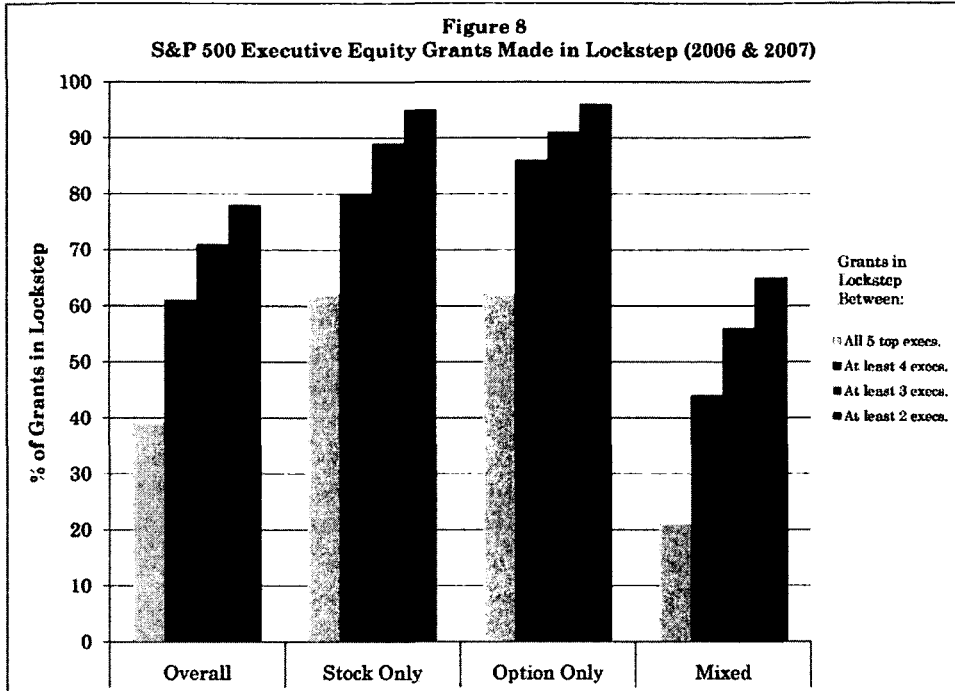
135. See *supra* notes 35–36 and accompanying text.

136. Core & Guay, *supra* note 35, at 152–54.

137. I am principally interested in within-firm variation in recent years (given much greater inter-firm variation) and thus there was no reason to limit my analysis to the panel of firms for which data is available back to 1992.

138. The one percent standard deviation cutoff is arbitrary, but is meant to count as lockstep cases with minor deviations in the mix of stock and options granted resulting from rounding the number of shares in equity grants or from grants occurring on different dates. For example, the five top executives of Assurant, Inc. received grants of both stock and options for 2006. Assurant, Inc., Proxy Statement (Form DEF 14A), at 22 (Apr. 12, 2007). The ratios of the values of their stock grants to the sums of those values and the values of their option grants were 21.9 percent, 20.4 percent, 21.4 percent, 20.9 percent, and 22.5 percent, with a standard deviation of 0.9

The frequency of equity grants made in lockstep is detailed in the following figure.



Seventy-eight percent of the executives who received an equity grant in 2006 or 2007 received their grants in lockstep with one or more colleagues. Thirty-nine percent of grants were made in complete lockstep, that is, each member of the executive team received the same mix of stock and options. However, the likelihood of receiving a grant in lockstep was not uniform across the distribution of grants. Ninety-five percent of the executives who received solely stock in 2006 or 2007 had one or more colleagues who also received stock but not options in that year, and sixty-two percent of stock-only grants were made in complete lockstep. Ninety-six percent of the executives who received solely options in 2006 or 2007 had one or more colleagues who also received options but not stock in that year, and sixty-two percent of option-only grants were made in complete lockstep. But lockstep

percent. This spread in ratios is at the high end of what was considered to represent a lockstep grant. To provide further context, the one percent standard deviation cutoff is about five percent of the standard deviation of the stock percentage (nineteen percent) for the entire population of 1,064 executives who received a mix of stock and options.

grants of a combination of stock and options were also common. Sixty-five percent of the executives who received both stock and options in 2006 or 2007 received a ratio of stock to options that was essentially the same as that received by one or more colleagues in that year, and twenty-one percent of mixed stock and option grants were made in complete lockstep, that is, with each member of the executive team receiving the same ratio of stock and options that year.

b. Proxy Statements

Frequent readers of the executive compensation sections of proxy statements will not be surprised by the high degree of lockstep equity grant behavior. Companies commonly describe a process through which they determine the individualized *value* of equity pay to be granted to each executive, and then describe either a firm-wide or executive suite-wide decision to grant equity to participants in the form of stock, options, or a specific mix of stock and options.¹³⁹ There are exceptions. In 2007, for example, McGraw-Hill's CEO received a more option-heavy equity pay package than his subordinates, which the compensation committee explained as follows:

We believe that the CEO should have a greater portion of long-term incentive compensation tied to stock options to provide greater upside and downside leverage based on share price performance. If our share price performance fails to result in an increase in the value delivered to our shareholders, we believe the equity gains realized by the CEO should have greater alignment with this outcome than the other named executive officers.¹⁴⁰

The McGraw-Hill approach matches the prediction of finance researchers, but it represents the exception, not the norm. Why don't more firms individualize equity mix?

3. Explaining the Limited Individualization of Equity Mix

a. Transaction Costs

Transaction costs could play two roles in encouraging lockstep equity grant behavior. First, to the extent that transaction costs, including the cost of complexity, result in companies relying exclusively on a single equity instrument, lockstep "mix" follows inevitably. Second, even in cases in which companies decide to grant both stock and options, informational barriers—principally the costs of

139. See, e.g., *supra* notes 111–15 and accompanying text.

140. McGraw-Hill Cos., Proxy Statement (Form DEF 14A), at 30 (Mar. 20, 2008).

collecting and verifying data on individual characteristics—may render individualization of equity packages inefficient. In order to individualize effectively, a company would need information on each executive's risk aversion, holdings of company equity and other wealth, etc. This data gathering would be costly and imperfect, and, as noted below, executives might have an incentive to conceal certain information.

On the other hand, a great deal of information that would be useful in individualizing equity mix is readily available and objectively determinable. Most firms already keep track of executive holdings of employer equity as a result of shareholding guidelines. An executive's position within the firm is transparent, as is his age. It would seem that using these factors alone, firms could improve upon lockstep grants of equity mix. The stated policies of some firms *not* to consider existing equity holdings when determining new equity grants further undermine the notion that transaction costs prevent individualization, although these comments could reflect rationalization more than affirmative policy.¹⁴¹

b. Signaling Issues

In order to fine tune equity mix, firms would need to take executive risk aversion into account, but because risk aversion is not objectively verifiable, an executive who reveals a high degree of risk aversion could undermine his career prospects.¹⁴² Suppose, for example, that a firm offered executives a menu of equally valued equity pay packages ranging from 100 percent restricted stock, through a mix of stock and options, to 100 percent options. Although the pure stock package would be relatively more valuable to a highly risk-averse executive (and the package would be more efficient), accepting that package might be read as revealing a lack of confidence in the firm's outlook or in an executive's own abilities, rather than inherent risk aversion.¹⁴³

141. See, e.g., Gen. Dynamics Corp., Proxy Statement (Form DEF 14A), at 18 (Mar. 21, 2008) (“[A]s a matter of principle, we do not consider the value of past equity grants when determining current compensation. Our responsibility in setting compensation is to ensure that the value of the equity grants, at the time they are received, is reasonable.”).

142. The economic literature on signaling posits that inferences can be drawn from choices that have differing costs for differing types. See Michael Spence, *Job Market Signaling*, 87 Q.J. ECON. 355, 358–59 (1973).

143. Of course, a high degree of inherent risk aversion might in itself be incompatible with certain executive roles in certain industries (e.g., chief development officer of a high tech company), while in other cases it might be viewed as a plus (e.g., COO of a utility company). This

Again, however, many of the individual factors that should play a role in optimizing equity mix—such as an executive’s age, position within the firm, and existing equity holdings—are objectively determinable and thus present much less of a signaling concern. The fact that an executive nearing retirement would prefer safer stock to riskier options should not signal a lack of confidence (or should produce a weaker signal). Moreover, a highly risk-averse executive may be able to reduce the negative signals sent by selecting a relatively safe equity pay package by demonstrating that his non-firm financial decisions are equally conservative. In sum, there would seem to be plenty of room to increase individualization even taking into account signaling concerns.

c. View that Individualization Is Less Important than Consistent Team Incentives

Another possible explanation for lockstep equity grants is that perceived benefits of uniform equity pay design offset the potential gains from individualization. Although executives have distinct primary roles within a company that might suggest differing incentives, many proxy statement disclosures stress the importance of uniform incentives that ensure that each executive is focused on the same team goals. Coca-Cola’s 2008 proxy statement notes that the company uses “the same combination of stock options and [stock] for all employees who are eligible for long-term equity compensation. This is to ensure that all eligible participants are aligned against the same objectives and priorities.”¹⁴⁴

Although ensuring commonality of interests has surface appeal, this approach ignores two key facts. First, executives receive differing amounts of equity pay, which throws off the alignment of

analysis assumes that a range of inherent risk aversion levels would be compatible with the job role and that the information problem lies in distinguishing inherent risk aversion from low skill.

At some companies executives are given a choice between receiving equity compensation in the form of stock or options. *See, e.g.*, Best Buy Co., Proxy Statement (Form DEF 14A), at 34–36 (May 12, 2008) (describing plan that allows senior executives to choose between equal value packages including one-hundred-percent options, a 50/50 mix of restricted stock and options, and two other combinations). Signaling aside, if the company set the price differential between the two instruments in such a way that shareholders would be indifferent, providing executives with a choice would seem to increase welfare. To my knowledge, however, very few companies employ this approach, perhaps because of the potential negative signals sent by those who do not elect option-heavy packages.

144. Coca-Cola Co., Proxy Statement (Form DEF 14A), at 39 (Mar. 3, 2008).

risk-taking incentives. Second, executives come into the year holding differing equity portfolios and differ in other ways (for example, predispositions, retirement horizons) that affect their overall risk preferences. Given these differences, individualization of current equity grants actually would be needed to avoid disparate risk preferences within the executive team. This is not to say that uniform equity mix is not a reasonable first approximation of the optimal equity mix for each executive, but it can only be a rough approximation.

Along the same lines, there may be morale-building value in the rough sort of egalitarianism that follows from lockstep grants of equity, that is, having everyone on the team receive the same mix of stock and options (although, to be sure, the CEO generally gets a lot more of both). In addition, lockstep grants of equity and all other compensation elements would ensure that the ordinal ranking of total compensation within the executive suite is preserved at least until the equity pay vests.¹⁴⁵ Suppose a firm made a restricted stock grant with ex ante value of \$1.2 million to the COO and an option grant with ex ante value of \$1 million to a senior VP and that salary, cash bonus opportunities, and all other elements of their pay packages were made in the same 1.2/1 ratio. It is quite possible that the senior VP's pay package could be more valuable at vesting, potentially leading to a disgruntled COO.

d. Naïve Diversification Heuristic

As discussed in the previous section, there is a tendency among firms that utilize one form of stock pay and options to divide equity grant value equally between the two instruments and among firms utilizing two forms of stock and options to divide value equally among the three instruments.¹⁴⁶ These tendencies are more consistent with the $1/n$ naïve diversification heuristic than with optimizing incentive generation and risk-bearing costs. Of course, to the extent that firms adopt this heuristic, there would be no reason to expect individualization of equity pay mix.

145. I thank Dan Shaviro for this suggestion. The value of equity grants post-vesting would, of course, depend on individual decisions regarding exercise. These decisions could disrupt the ordinal ranking of compensation within the executive suite even if all compensation were granted in lockstep. However, executives might reasonably view post-vesting gains and losses as being personal and distinct from pre-vesting value changes.

146. See *infra* Part II.C.2.iii.

*e. Self-Selection into Firms Obviates the Need
for Individualization*

Still another possibility is that firms establish equity compensation philosophies and that individual executives select firms that suit their risk preferences. If that were the case, individualization would be unnecessary. But this story seems implausible. As Figures 5 and 6 demonstrate, there have been dramatic shifts in equity design over the last decade at most large public companies that would have disrupted the alignment of individual and firm risk preferences, and yet, there have not been equally dramatic increases in executive turnover.¹⁴⁷

4. Statistical Analysis of Intra-Firm Equity Grant Behavior

a. Lockstep Versus Non-lockstep Firms

Although some of these explanations for lockstep equity design behavior appear to be testable, statistical analysis comparing a group of thirty firms that individualized pay packages in 2006 and 2007 with a group of almost 200 firms that granted stock, options, or a mix of the two in lockstep revealed few significant differences. The data are reported in the appendix. If informational costs tend to deter firms from individualizing pay packages within the executive suite, one might expect that firms that rely more heavily on equity pay or that are larger and have greater resources would be more likely to bear those costs and individualize. Individualizing firms did rely slightly more heavily on equity in 2006/2007 (fifty-four percent of total compensation consisted of equity versus fifty percent for lockstep firms) and had greater sales, assets, and market capitalization, on average, than the lockstep firms, but the differences were not statistically significant.

The dearth of statistically significant results might reflect the difficulty of clearly identifying lockstep and individualizing firms, the paucity of firms that individualize, or the fact that individualization, when it does occur, is driven by unique events that arise from time to time at most firms, relating to executive turnover or similar events. For example, the data indicate that individualizing companies provided lower average returns to shareholders than lockstep companies during the years immediately preceding the equity grants.

147. See *infra* Parts II.C.1–2.

It is conceivable that subpar performance led to increased executive turnover at these firms, which tended to disrupt lockstep equity grant behavior. In any event, the data appear to rebut any notion that individualization is pervasive when it comes to the selection and mix of equity instruments.

b. CEO Versus Non-CEO Equity Pay Mix

Even if information, signaling, or other transaction costs preclude fine tuning of pay packages based on a particular individual's characteristics or preferences, we might expect to observe systematic variation in equity pay convexity based on primary executive role. However, a comparison of CEO equity pay packages to those granted to subordinate executives provided no evidence of systematic variation.

CEO equity packages might be expected to be more option heavy than packages delivered to subordinates for several reasons. First, at most firms, CEOs have the greatest potential to impact share price, which suggests that CEO pay should be most closely tied to share price performance. Second, CEOs tend to have greater wealth than their subordinates, which reduces the relative cost of risky compensation. Finally, CEOs tend to hold more company stock than their subordinates, which dampens a manager's appetite for taking on firm-specific risk and increases the value of high-powered incentives to shareholders.¹⁴⁸ As noted above, McGraw-Hill's proxy disclosures indicate that that company has adopted just such an approach in determining equity pay mix.

The 2006 and 2007 S&P 500 data discussed above were used to investigate this hypothesis. Obviously, in cases in which all five top executives receive only one form of equity, CEO equity "mix" is identical to that of subordinates. However, even after eliminating cases in which firms granted only options or only stock to their senior executives, CEO equity pay packages were only three percent more option heavy than subordinate packages, on average, and the difference in means between the two populations was not statistically

148. This final factor is somewhat ambiguous, however, as increased shareholdings also reduce the subjective value of high-powered incentives to the executive relative to their cost. See Hall & Murphy, *supra* note 31, at 210–11 (finding that the value of at-the-money options to executives relative to the cost to shareholders is "decreasing in risk aversion, increasing in non-firm-related wealth, and decreasing in holdings of company stock").

different from zero.¹⁴⁹ This data provides no evidence that equity pay packages granted to CEOs are systematically more option heavy than those granted to subordinates.¹⁵⁰

5. Intra-firm Variation in Equity Mix—Summary

Individualization of executive equity pay mix within executive suites is not pervasive. To the extent that lockstep grants are attributable to the naïve diversification heuristic or a simplistic view that lockstep annual grants align team incentives, this behavior is suboptimal. However, transaction costs may play a significant role. Moreover, lockstep behavior is not necessarily in conflict with Core and Guay's findings that firms take existing CEO equity holdings into account in making new CEO grants. This evidence does not rule out the possibility that firms optimize equity grants for the CEO and then use the same equity mix below, but at a minimum the evidence indicates that firms generally are not optimizing throughout the executive suite in the manner Core and Guay suggest.

III. IMPLICATIONS

The preceding Parts focused on several phenomena that cause us to question whether equity pay packages are optimally designed or to re-evaluate what efficient contracting means in this context, including the dramatic shift in emphasis from options to stock in the 2000s, the current trimodal distribution of the use of stock and options from firm to firm, and the limited individualization of equity mix within executive suites. Many puzzles remain, and this work should be viewed as part of an accretion of theory and evidence on the executive pay-setting process.

149. After eliminating observations in which each executive at a firm received only stock or only options, I was left with 3,303 S&P 500 executive equity grants for 2006 and 2007, consisting of 634 CEO grants and 2,669 grants to subordinate executives. The mean ratio of stock value to total equity value for CEOs was 0.508 and for subordinate executives was 0.525. A two-tailed t-test was used to compare the means. The test yielded a t-statistic of -1.27 and a probability that there is in fact no difference in means of 20.5 percent.

150. CFO equity packages were also examined. One might expect CFO equity packages to be less option heavy given the nature of the role and the purported link between options holdings and earnings management. However, average S&P 500 CFO equity mix for 2006 and 2007 was virtually indistinguishable from the mix granted to the remaining senior executives. Only the CEO and CFO positions are identified in Compustat, so no analysis was performed for the COO or chief technology officer roles.

Although the primary thrust of this Article is descriptive, this Part will briefly explore the implications of the phenomena we have observed for corporate governance regulation, as well as for future empirical work in this area.

A. Regulation of Risk-Taking Incentives

Compensation structures that encouraged executives to take on excessive risk are among the most frequently cited causes of the recent financial crisis. In order to reduce the chances of a reoccurrence, many policymakers and commentators have called for more conservative pay arrangements.¹⁵¹ The bank bailout legislation enacted early in 2009 directs the Treasury to promulgate compensation standards for bailed out firms that will “exclude incentives for senior executive officers . . . to take unnecessary and excessive risks that threaten the value” of participating companies.¹⁵² More specifically, the bailout legislation precludes grants of options, limiting equity compensation to “long-term restricted stock.”¹⁵³ There is interest in Congress in expanding substantive executive pay regulation beyond banks.¹⁵⁴

To a large extent, however, a shift to a more conservative mix of equity compensation has already occurred. In recent years, many firms have switched from option-heavy pay packages to stock-heavy packages or to more balanced mixes of stock and option pay. At these firms, the shift away from option-heavy packages should have reduced executive appetites for risk. Of course, even at these firms, the shift from options towards stock does not mean that longer holding periods

151. See, e.g., Bhagat & Romano, *supra* note 5, at 363, 366–67 (suggesting that executives not be allowed to dispose of equity compensation prior to retirement); Posner, *supra* note 5, at 1045–46 (recommending that a “significant share” of executive compensation should be backloaded and suggesting that restricted stock should constitute a minimum fraction of CEO pay); Craig, *supra* note 5 (relating comments of House Committee on Financial Services Chairman Barney Frank advocating broader application of rules tying executive pay to long-term performance).

152. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111–5, § 7001(b)(2)–(3)(A) (2009).

153. *Id.* Under the Act, the stock cannot vest before the government loans are repaid. See *id.*

154. See, e.g., Craig, *supra* note 5 (reporting comments of House Financial Services Committee Chairman Barney Frank suggesting more widespread linkage of executive pay to long-term company performance); Press Release, H. Comm. on Fin. Servs., 111th Cong., Chairman Frank Holds News Conference to Discuss the Committee Agenda and Priorities for the Coming Year (Feb. 2, 2009), available at <http://www.knowledgeplex.org/news/3000221.html> (indicating in question and answer session that the potential extension of executive compensation regulation “doesn’t just go for TARP recipients”).

for equity pay, which have been widely suggested, would not be beneficial.¹⁵⁵

Regulators should also recognize that the shift in emphasis from options to stock over the last decade has not been uniform. As we have seen, equity compensation at a substantial minority of firms continues to consist almost entirely of options. The question that this Article does not resolve is whether reliance on options at these “holdouts” is efficient. Evidence on equity mix clustering, lack of individualization, and equity grant behavior that is consistent with the naïve diversification heuristic causes one to doubt the extent to which companies are optimizing equity grants. But one does not have to subscribe to the view that all executive pay arrangements are efficiently designed to conclude that one-size-fits-all pay regulation could be costly. Even if boards follow heuristics in designing equity pay packages, across the board mandates that preclude firms from issuing options could push pay arrangements further away from the efficient frontier.¹⁵⁶

On the other hand, the efficiency cost of imposing substantive executive pay regulation on companies must be a function of the efficiency of existing arrangements. If all executive pay packages are optimized currently, forcing firms to shift to a one-size-fits-all mix results in maximum efficiency loss. If current packages are not optimized currently, the efficiency loss of mandated regulation is less. This effect is fairly obvious if deviations from optimality result not from transaction costs but from reliance on heuristics or from a failure to fully understand how stock and options can be combined to manage risk and optimize incentives. But even if current arrangements are optimized once transaction costs are taken into account, the point still holds, if only to a lesser degree. It seems fairly clear that executive equity mix is far from ideal currently. Of course, this line of argument does not suggest that coercive pay regulation is a good idea, only that the cost of such regulation might be less than one would predict if one believed that current pay packages were finely tuned and completely efficient.

155. See, e.g., Bhagat & Romano, *supra* note 5, at 361 (advocating significantly greater holding periods for equity-based incentive compensation).

156. See David I. Walker, *The Challenge of Improving the Long-Term Focus of Executive Pay*, 51 B.C. L. REV. 435, 468–69 (2010) (suggesting that any coercive pay regulation aimed at remedying short-term thinking by executives should be limited to restricting the holding period of pay—and not the methods or instruments—in order to minimize inefficiencies); see also Bhagat & Romano, *supra* note 5, at 371–72 (recommending that executive pay consist of some combination of long-term stock and long-term option compensation).

B. Regulation of Executive Pay-Setting Processes

Substantive pay regulation aside, the trimodal distribution of equity mix convexity and the limited individualization within executive suites suggest that there is room for improvement in the processes utilized in determining equity pay mix. To the extent that deviations from the ideal equity mix result from transaction costs, improvement could be obtained only by reducing those costs. It seems likely, however, that some of the deviations reflect board reliance on heuristics or a failure to fully understand how stock and options can be combined to manage risk and optimize incentives. To this extent, improvement might be gained through regulation of the pay-setting process. Such regulation might even include shareholder “say on pay.”¹⁵⁷ Although we cannot expect uninformed shareholders to contribute in a useful way to a dialogue about equity pay design, evidence from the UK experience with “say on pay” suggests the possibility of improvements in compensation design resulting from coordinated intervention.¹⁵⁸

C. Empirical Work on Executive Compensation

The analysis presented in this Article is quite preliminary. It offers more puzzles than answers. Nonetheless, some of the findings regarding limitations on efficient contracting should be of interest and importance to researchers doing empirical work in this area. Chief among these, perhaps, is the paucity of individualized equity pay design within executive suites. Although it seems perfectly appropriate for researchers to take into account an executive’s entire portfolio in analyzing her incentives and risks, it does not seem appropriate to assume that firms routinely consider individual

157. “Say on pay” proposals uniformly involve an advisory up-or-down shareholder vote on executive compensation. See Jeffrey N. Gordon, “Say on Pay”: *Cautionary Notes on the U.K. Experience and the Case for Shareholder Opt-In*, 46 HARV. J. ON LEGIS. 323, 324–25, 338–40, 348–53 (2009) (discussing U.S. legislative proposals and corporate governance activists’ attempts to implement “say on pay”). The Dodd-Frank financial regulatory reforms enacted in 2010 mandate non-binding shareholder voting on executive pay beginning in 2011. Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111–203, § 951 (2010).

158. See Fabrizio Ferri & David Maber, *Say on Pay Votes and CEO Compensation: Evidence from the UK* 3–4, 23–25 (Oct. 15, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1420394> (finding that 2002 U.K. “say on pay” legislation had no effect on the level or growth rate of CEO pay, but finding an increase in pay sensitivity to poor performance). *But see* Gordon, *supra* note 157, at 345 (suggesting that the effect documented by Ferri and Maber could result in excessive executive conservatism).

portfolios in designing new equity grants. Existing portfolios may or may not play a role in determining the *amount* of equity pay received by an executive, but these and other individual characteristics appear to play little role in determining the mix of stock and options at the majority of companies, which grant stock and options in lockstep.¹⁵⁹

CONCLUSION

In the 1990s, there was little variation in the convexity of executive equity pay packages. There was variation in the size of option grants relative to other pay, but little variation in the mix of stock and options. Today, as a result of the leveling of the accounting playing field and other factors, there is much greater variation. Ultimately, the “empirical” question those of us working in this area seek to answer is whether executive pay processes are reasonably efficient. It is the contention of this Article that, given the increased variation, a focus on the mix of stock and options in pay packages can provide useful insights into the efficiency of those processes. This Article should be seen as beginning the process of mining that variation in hopes of learning more about firm choices in this important area.

In my view, the primary lesson that should be learned from this first pass at the data is that equity pay design, like executive pay generally, is at best boundedly efficient. Looking closely at the evolution and current state of equity compensation mix, as we have done, reveals several features that suggest a lack of or limitations on efficient contracting. First, although directionally consistent with changes in the conventional economic determinants of mix, the dramatic shift over the last decade from very heavy reliance on options to a more balanced emphasis on stock and options suggests that option expensing, option taint, and/or increased perceived option risk played leading roles. Second, the trimodal distribution of the mix of stock and options being granted in recent years suggests that optimizing convexity is not the sole consideration of issuing firms, and heuristics appear to be a key factor. Third, the extent to which the same mix of stock and options is granted to the various member of the executive suite indicates that individual optimization is quite limited.

159. As noted above, it is possible that companies optimize equity mix for CEOs and then apply the same mix in granting equity to subordinate executives. *See supra* notes 148–51 and accompanying text. It is clear, however, that firms generally do not optimize for each member of the executive team.

This evidence does not necessarily demonstrate that firms are not maximizing share value in determining equity pay mix, but if the packages observed represent optimal contracts, “optimization” must be occurring at a broader level than traditionally conceived, and transaction costs must play an important part in the decisionmaking.

APPENDICES AND TABLE

Appendix A: Data Source and Limitations

Annual disclosure of senior executive compensation is mandated for Securities Exchange Act-reporting companies under SEC regulation. These proxy statement disclosures are the ultimate source of data for this analysis. The regulations have evolved over the last decade, requiring disclosure in ever greater detail. One constant, however, has been the requirement to disclose compensation detail for the five most senior executives of the company.¹⁶⁰

Although details of the disclosure rules have changed frequently, the revision in the accounting rules for stock options in 2004 resulted in a fairly fundamental change in reporting.¹⁶¹ Through 2005, firms reported the entire ex ante value of stock grants in their summary compensation tables, as well as the number of shares underlying option grants. Beginning in 2006, firms reported the pro-rated annual accounting expense associated with stock and option awards in this pivotal table. Full grant date values were reported elsewhere in the proxy statement.¹⁶²

S&P's Compustat database includes executive compensation data extracted from the proxy statements of firms currently or historically included in the S&P 1500 index. The dataset goes back to 1992 and serves as the primary source of data for this Article, as supplemented to the extent necessary by examining individual firm proxy statements.¹⁶³

Compustat's database has evolved along with the evolution of SEC reporting requirements, with a major change in the way data are compiled through 2005 and beginning in 2006. In brief, beginning in 2006, Compustat reports the grant date fair value of stock and option awards as well as the annualized expense associated with such awards. Moreover, Compustat's primary measure of total compensation (TDC1) currently includes the grant date value of all instruments expensed as stock and all instruments expensed as options. Through 2005, this measure included the grant date value of actual stock and option grants but an ex post measure of the value of phantom stock grants. As discussed below, I have modified this measure of total compensation to increase the comparability of pre-2006 and post-2005 data.

160. Actually, even this requirement has evolved somewhat. The current rule requires disclosure for the CEO, CFO, and the three most highly compensated employees other than the CEO and CFO; prior rules required disclosure for the firm's CEO and the four most highly compensated employees other than the CEO. *Compare* 17 C.F.R. § 229.402(a)(3)(ii)–(iii) (2007) (new rule), *with* 17 C.F.R. § 229.402(a)(i)–(ii) (2006) (old rule). However, for most firms the two rules produce the same list of executives.

161. *See* Fin. Accounting Standards Bd., *supra* note 42.

162. *See* SEC Reg. S–K, 17 C.F.R. § 229.402(c)(2)(vi) (2010) (detailing requirements for summary compensation table); SEC Reg. S–K, 17 C.F.R. § 229.402(d)(2)(viii) (2010) (detailing requirements for table of plan-based awards).

163. The Compustat database is not error-free. We found numerous examples of miscoded data, and surely many more cases eluded us since we focused on errors that produced outlier results, such as the 2006 \$2.2 million restricted stock grant to an executive of Baxter International that is coded in Compustat as a \$2.2 billion grant. However, I have no reason to think that I could do a better job than S&P of coding this data even if I had several lifetimes to accomplish the task.

Appendix B: Compustat Data Definitions 1992–2005 and 2006 to Present and Modifications

Compustat revised many of its executive compensation data definitions following the FASB's 2004 revisions to stock option accounting and the SEC's revisions to proxy disclosures. These definitional changes complicate comparison of data across the two periods.

Ideally, we would have variables representing the total ex ante value of all stock awards (time-vested restricted stock, performance-vested restricted stock, and performance shares) and all option awards (traditional, performance vested, and SARs) for each year. These variables exist under the 2006 reporting format and are labeled STOCK_AWARDS_FV and OPTION_AWARDS_FV. For options, including SARs, there is a comparable variable under the 1992 reporting format, OPTION_AWARDS_BLK_VALUE, which is a Compustat generated ex ante valuation using the Black-Scholes methodology. For stock, there is not a comparable 1992 format variable. The variable RSTKGRNT provides the ex ante value of time-vested and performance-vested restricted stock grants, but does not include the value of performance shares. Under the 1992 reporting format, the ex post values of performance share grants were included along with long-term non-equity plan awards in the variable LTIP. Thus, in order to track and compare the ex ante value of all stock awards across the two periods, I constructed a total ex ante stock value for 1992–2005 that is roughly comparable to STOCK_AWARDS_FV by multiplying the target number of any performance shares granted (SHRTARG) by the granting company's year-end share value and summing this data with RSTKGRNT.

The inconsistency in stock grant reporting carries over to the total compensation variable TDC1, which is provided under both formats. Under the 1992 format, TDC1 includes salary, bonus, other annual compensation, the grant date value of restricted stock (but not performance shares), the grant date value of options and SARs (computed based on the Black-Scholes methodology), long-term incentive plan payouts (including performance share payouts), and other total compensation.

The 2006 version of TDC1 includes salary, bonus, non-equity incentive plan payouts, the grant date value of stock (including performance shares) and options (including SARs), deferred compensation earnings reported as compensation, and other compensation. It is not apparent how one would perfectly reconcile these two measures given the data available under the two formats. However, it is necessary to adjust the 1992 TDC1 measure to include ex ante performance share value if one wishes to compare the contribution of stock grants (including performance shares) and options to total compensation. Thus, I have created an adjusted TDC1 variable under the 1992 format equal to TDC1 as reported, less LTIP payouts, plus ex ante value of performance shares and non-equity plan awards.

Appendix C: Descriptive Statistics for Lockstep Equity Design Firms vs. Individualizing Firms 2006–2007

	Lockstep Firms			Individualizing Firms			P Value
	N	Mean	Median	N	Mean	Median	
Variable:							
Equity % of Total Comp.	197	49.7	51.3	31	54.1	55.9	0.165
Sales (\$ million)	197	14371	6359	31	17537	8390	0.585
Assets (\$ million)	197	33606	8419	31	58417	12442	0.419
Market Cap. (\$ million)	195	21359	10289	30	26651	12536	0.503
Total Sh. Return (1 yr)	195	20.84	17.91	30	8.28	8.93	0.000***
Total Sh. Return (3 yrs)	189	25.47	18.22	30	13.21	13.26	0.001***
ROA (%)	197	7.45	6.59	31	6.37	5.04	0.344
Volatility (%)	195	29.3	25.3	30	24.7	22.2	0.029**
Tobin's Q	163	1.85	1.38	22	1.69	1.39	0.647
Debt/Equity Ratio	194	0.27	0.14	30	0.36	0.16	0.527
G Index	181	9.35	9	28	9.04	9	0.510
E Index	181	2.10	2	28	2.18	2	0.767

This table reports means, medians, and P values from two-sided t-tests of the significance of the difference in means for potential determinants of equity pay design behavior. The symbols *, **, and *** indicate significance at the 10%, 5%, and 1% levels.

Lockstep firms granted the same ratio of stock to total equity pay (including ratios of zero and one) to at least four of the top five executives in 2006 or 2007, and equity grants in the other year were not inconsistent with the lockstep behavior.

Individualizing firms did not grant the same ratio of stock to total equity pay to any two executives in 2006 or 2007, and grants in the other year were not inconsistent with individualization.

Equity % of Total Compensation: Averaged for the top five executives for 2006 and 2007.

Sales, Assets, Market Capitalization, 1 and 3 Year Total Shareholder Return & Return on Assets: Averages of 2005 and 2006 data from Compustat. In accordance with common practice, determinants are lagged by one year.

Volatility: 60 month volatility through year end 2006 per Compustat.

Tobin's Q: Averages of 2005 and 2006 data from Compustat. $Q = (\text{market value of common stock} + \text{book value of debt and preferred stock}) / \text{book value of total assets}$.

Debt/Equity: Averages of 2005 and 2006 data from Compustat. Debt = long term debt + preferred stock. Equity = market value of common at year end.

G and E index: 2006 data from RiskMetrics.