Preliminary Draft
Comments Welcome

"Executive Compensation and Contracting"

by

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Revised March 28, 2006

*This paper was originally prepared for the Distinguished Speaker Address at the Conference on "Agency Problems and Conflicts of Interest in Financial Intermediaries" sponsored by the Federal Reserve Bank of New York, the Dice Center for Research in Financial Economics of the Ohio State University and the *Journal of Financial Economics* on December 3, 2004 in Columbus, Ohio. I gratefully appreciate helpful discussions with Cindy Alexander, Eli Berkovitch, Jonathan Glover, Ronen Israel, Allan Meltzer, Oded Sarig, Jonathan Sokobin, and Per Stromberg and the comments of participants at the above conference and informal presentations at the InterDisciplinary Center (Herzliya, Israel), the Washington, D.C. Alumni Chapter of Carnegie Mellon's Tepper School of Business and the Office of Economic Analysis of the Securities and Exchange Commission. However, these individuals are not responsible for any of the views, interpretations or errors herein. The Securities and Exchange Commission disclaims responsibility for any private publication or statement of any SEC employee or Commissioner. This presentation expresses the author's views and does not necessarily reflect those of the Commission, the Commissioners, or other members of the staff.

Abstract

This paper explores the implications of principal-agent theory for executive compensation to identify explanations for a number of compensation practices and to identify a variety of puzzles. We suggest several potential explanations for the level of executive compensation, highlight the role and causes of incentive-based compensation, identify several puzzling aspects of the design of employee stock option grant programs and address the role and incentives of the board of directors and their interaction with the firm's management.

I. Introduction

The issue of executive compensation and specifically whether senior executives are paid too much and the nature of the impact of the economic incentives confronting senior management have become highly contentious in recent years.[1] The purpose of this paper is to explore what we know from principal-agent theory about executive compensation and to identify some puzzles and problems that would benefit from further exploration. Our goal is to both explain aspects of practice and to question others. This may be of potential interest and relevance not only to the academic community, but also to the regulators of the financial markets.

In Section II we use economic principles to provide perspective on explanations for relatively high levels of executive compensation. Then we discuss in Section III the underlying basis for incentive compensation, interpret observed compensation patterns in light of theory and identify a number of puzzling aspects of many employee stock option programs. We address the role and incentives of the board of directors in Section IV. We conclude and identify some open questions in Section V.

II. The Level of Executive Compensation

Underlying this context is the reality that the income and wealth levels of senior executives are very large compared to those of most of the population. Furthermore,

[1] A broad perspective on CEO compensation is offered by Jensen, Murphy and Wruck (2004).

these have grown in relative terms over the last several decades.[2] Consequently, in the context of the broader society at least some of the attention on executive compensation may be motivated by concerns about fairness and even envy of the very successful individuals who obtain these positions. There also are important efficiency issues that underlie the interest in executive compensation—after all, if executives are paid "too much" (either on an absolute basis or too much incentive-based pay) economic inefficiencies may result from the distortion of decisions undertaken on behalf of major firms.

Of course, the executive positions in question tend to be highly desirable. Indeed, there are many aspiring candidates for the posts (even internal to many of the organizations seeking leaders), which raises the question of whether the firms need to pay so much—especially given that there appears to be an "excess supply" of candidates for an individual position. However, the individuals in question are not perfect substitutes—in the language of economics there is considerable heterogeneity in the package of skills that the candidates bring to these positions. This in turn raises the question of whether there are sufficient ex ante identifiable differentials in performance among prospective senior executives to justify the observed magnitudes of compensation. The issue is whether the truly superior individual can be identified ex ante based upon their relative track records and experiences. However, the impact of seemingly modest differences in the senior executive's skills upon the value of the firm may be substantial as illustrated

[2]This change in relative income and wealth is part of a broader change in the distribution of income and wealth over the last several decades, which may reflect the increasing importance of technology in the modern economy and the leveraged position of the CEO with respect to technology. Bebchuk and Grinstein (2005) explore alternative hypotheses for the growth in executive pay since 1993.

by the economics of "superstars" (e.g., see Rosen (1981)). Daines, Nair and Kornhauser (2004) examine how differences in skill explain differences in CEO pay.

The ultimate outcomes experienced by a firm are highly variable. Given that efficient compensation has the senior management sharing in the performance of the firm (a theme I return to below), the executive's compensation itself will be highly variable. Of course, much of this variability is outside the direct influence of the executive, e.g., reflecting market-oriented variability. In light of the nature of the compensation programs utilized, such as options and restricted stock, the senior executive's payoffs are highly variable and skewed, motivating some of the perspectives about the fairness of executive compensation. In the face of extremely positive outcomes—and without externally verifiable evidence of the executive's contribution--this again reinforces the fairness and envy issues. The form of the widely used compensation programs also points to the absence of relative benchmarks within the compensation structure (e.g., adjusting for the ex post performance of other firms in the industry or the market as a whole).[3]

One of the classic applications of "agency theory" in economics is to a manager (the agent) who operates a firm on behalf of its owners (the principal). Both the level and form of managerial compensation have been the subject of considerable interest. Before considering the form of compensation I think it is helpful to provide a perspective on why the level of compensation could be high. Principal-agent theory helps identify forces that lead to higher compensation than one would otherwise anticipate.

[3]It is often suggested that tax effects work against option payoffs being triggered by the relative performance of the firm. Benchmarking in practice seems more oriented to establishing the actual pay levels or parameters of the manager's compensation.

Clearly, high compensation (without addressing the issue of whether the compensation is too high) is necessary to attract talented individuals, who typically possess outstanding alternative opportunities. Indeed, a generic alternative for the executive is to consume leisure. Economists typically view leisure as a "normal" good, i.e., one whose demand is increasing in the individual's wealth. Analogously, the disutility of effort/work rises with wealth. Hence, to induce an executive to accept a position with significant responsibilities requires compensation that increases in his wealth. This complements but differs from the more traditional rationale for persistence in the compensation of highly talented executives, namely that one learns about productivity over time—as the market learns more about the skills of relatively successful executives their relative compensation should rise. The increase in the executive's compensation as the market learns about his skills can reflect a variety of alternative phenomena including (a) actual growth in the manager's skills over time (experience effects), (b) survivorship effects (so the distribution of skill of survivors is better than the unconditional (original) distribution) and (c) the impact of downward rigid wages and market competition for excellent performers. Along the latter line, Harris and Holmstrom (1983) show that if (1) labor contracts are binding upon the firms but not upon employees (so there is ex post competition for high quality employees) and (2) workers are risk averse and firms are risk neutral, then the efficient wage contract is downward rigid, i.e., one in which wages can rise but not decline over time. Wages will rise in this scenario whenever an outside firm is willing to improve upon the earlier labor market contract (and the incumbent firm meets the market competition).

The observation that sophisticated executives with higher wealth have higher value for alternative uses of their time applies not only to allocating their time to leisure, but also to allocating it towards the management of their financial assets.[4] This latter interpretation is particularly relevant for some senior executives in the financial services arena, whose skills would be especially germane to that task. To manage this specific problem, one well-known Wall Street partnership effectively required partners to loan much of their financial wealth to the firm for a preferred return. While this offered a source of capital in a capital intensive business, this approach also helped manage potential allocation distortions in both project choice and time effort between the firm and its partners, keeping the executive's "eye on the ball" in building the franchise rather than in managing personal financial wealth. Indeed, this type of restriction on their own portfolio management can induce key partners to retire after they have accumulated sufficient capital (perhaps after several years as partner), especially given inherent risk aversion by these partners. Of course, an interesting question in its own right is how to encourage optimal retirement.

From an agency theoretic perspective another important source of high pay levels for senior executives is that these positions are "prizes," typically internally allocated to the most successful performers.[5] This induces considerable effort among those competing for these prizes (the high effort of "associates" at large metropolitan law firms who are competing to join the partnership is along these lines). A "tournament" structure can even

[4]CEOs may also have such alternative business opportunities such as working for a private equity group, venture capital group or investment bank due to their skills in assessing opportunities.

[5]Seemingly, this interpretation is much less compelling if the senior position is filled with an external selection. However, such selections often need to be recruited from their other alternatives (e.g., they have won the tournament within their former firm).

induce efficient allocation of effort (see Lazear and Rosen (1981) and Green and Stokey (1983)) at lower levels in the organization and under restrictive conditions even perform as well as a direct contractual solution. Gibbons and Murphy (1990) illustrates how relative performance evaluation influences executive compensation empirically.

There are several more subtle aspects of the level of compensation. For example, a high compensation level is a way for the employer to signal that the incoming senior executive will have sufficient control over resources to be able to perform his job in an appropriate fashion. This type of control is difficult to verify or contract upon ex ante, but the level of compensation (which itself is contractible) may be an effective "signal" as the willingness of the firm to offer high compensation may be optimal only if the manager has sufficient control over internal firm resources. Analogously, even absent the board providing much control to the executive, high compensation can serve as a signal that the executive is valued as many executives desire to work for firms at which their talents are valued, even apart from the monetary rewards. Sarbanes-Oxley might lead to a further increase in the CEO's and CFO's compensation (relative to other executives) due to the potential need for compensating differentials for the CEO and CFO to be subject to liability associated with required certifications.

Finally, an interesting observation about the connection between the level of executive pay and the incentive of the executive to take risk has its roots in the comparative static analysis of a basic portfolio theoretic model. It is well known in portfolio theory that the incentive to take risk can vary with wealth. Consider an investor who is deciding what

amount of his assets to invest in a risky security versus a risk-free asset. Of course, if the investor had constant absolute risk-averse (exponential) preferences, the dollar demand for the risky asset would be independent of wealth. Analogously, the investor's willingness to bear risk in absolute terms will increase with wealth as long as the investor has decreasing absolute risk-averse preferences. By paying the executive more, his incentive to take more absolute risk on behalf of the firm is increased (a wealth effect) under decreasing absolute risk aversion (a relatively standard assumption).[6] In effect, the risk aversion of the manager can be overcome by paying the executive a lot (!) as well as by using instruments such as options that directly increase the incentive to bear risk (a substitution effect). However, this willingness to assume additional risk as wealth increases is limited. For example, in the special case of constant relative risk aversion the willingness to assume risk grows only in proportion to the executive's wealth.[7]

III. Incentive Compensation

An important reason that executive pay levels are often viewed as very high is that the assessment is performed on an ex post basis and focuses upon managers with high realized compensation. This in turn raises the question of why incentive pay is so crucial for senior executives.

One answer is that it is extremely important to incent naturally risk-averse executives (with limited wealth) to undertake valuable risky projects for the firm. Otherwise, the

[6]Consistent with the risk aversion hypothesis, the impact of the executive's wealth on the strength of executive incentives is documented in a Swedish sample by Becker (2006).

[7]Of course, as examined in the following section there typically are more direct (and cost effective) ways to alter managerial compensation to induce greater risk bearing than paying the managerial substantially more and exploiting his decreasing absolute risk aversion.

executive will be relatively more risk averse about his actions on behalf of the firm than "diversified" shareholders would prefer (reflecting "moral hazard"). The executive's compensation structure typically includes such features as restricted stock, options and bonuses to increase the executive's willingness to bear risk and overcome the manager's inherent risk aversion. These types of features overcome the executive's natural risk aversion relative to the shareholders of the firms and the capital market as a whole. In addition, from a signaling (adverse selection) perspective managers are anxious to signal their ability or their willingness to assume risk for the firm (types) by showing interest in incentive compensation. Of course, the pressures from a signaling equilibrium can force the executive to accept highly variable contingent compensation as otherwise, he may not be sufficiently confident about his ability to be a plausible occupant of these positions(!), despite his natural risk aversion. Notice that from the adverse selection perspective that incentive compensation can be particularly attractive to individuals who are highly able, not very averse to risk or highly confident. Some of these dimensions might be more important than others for a successful executive. This discussion emphasizes both the moral hazard and adverse selection rationales for performance-based compensation.

There is much at stake in managerial decisions. In fact, Jensen and Murphy (1990) argue that because the CEO receives only a small proportion of the value added to the firm ($3.25 per $1,000), there is not the optimal incentive.[8] However, this ignores the risk aversion of senior executives and their limited wealth relative to the capital market as a whole, which limits the amount of risk that the senior executives should bear in an

[8]With a somewhat different emphasis, Gibbons and Murphy (1992) show that as predicted by agency theory that executives with a shorter time to retirement receive greater explicit incentives because the implicit (market-based) incentives they face are relatively lower.

optimal solution (see Haubrich's critique (1994) of Jensen and Murphy (1990)).[9] To what extent is it efficient for senior executives to have a significant stake in improvements in the value of the firm, when they are inherently quite risk averse to the value of the firm? I would suggest that the issue is not whether the executive receives the full incremental value of the firm, which is not realistic or economically efficient given the executive's risk aversion and limited wealth, but whether marginal incentives are substantial for the executive (relative to his own rather than the firm's wealth). In fact, the interesting analysis in Aggrawal and Samwick (1999) shows that how pay-performance sensitivity varies with the riskiness of the firm is consistent with managerial risk aversion. The marginal incentive identified in Jensen and Murphy (1990) is considerable, especially given the limited wealth of the CEO compared to the capital market, and that the CEO is *only* the leader of the management team, i.e., others on the team *also* need incentive compensation. The CEO is simply the leader of a hierarchy or team (e.g., Holmstrom (1982)), but the incentive issues may extend beyond the leader of management. In fact, Yermack (2004) recently documents that incentive mechanisms provide directors with wealth increases as firm value increases. Another critique of the sensitivity calculation provided in Jensen and Murphy (1990) reflects the importance of dynamic incentives for the executive (e.g., see Margiotta and Miller (2000)).

An issue that has engaged a lot of popular attention is whether executive pay and especially the incentive portion of the compensation are too high. While moral hazard

[9]Another way to emphasize the significance of the manager's risk aversion is his limited wealth relative to the magnitude of risk to which the firm itself is exposed. In terms of sensitivity measures we would expect that under the optimal contract the manager's own wealth in percentage terms would be much more sensitive to his decisions than the sensitivity of the value of the firm in percentage terms to that manager's decisions.

and adverse selection arguments highlight the optimality of incentive-based compensation designs, the observed levels can be too high as well as too low. The optimality of positive incentives does not imply that observed incentives are too low and that more incentives would be better. In fact, there are both good and bad consequences of additional incentive compensation and the trade-off among these determines the optimal solution.[10]

While I have emphasized the potential value of significant incentives, there also are important reasons for incentive pay to not be too large as executives can be over-incentivized. For example, the actual compensation is paid out of the firm's resources (this is analogous to it being costly to the firm to pay an executive too much). The incentive compensation can lead to the firm's executives having too much incentive to take additional risk despite a lack of improvement in the value of the firm. Another potential adverse effect of too much incentive pay is that the executives may have large incentives to manipulate the short-run value of the firm. A number of recent papers provide empirical evidence of attempts by senior executives to influence the short-run value of the firm. For example, Bergstresser, Desai and Rauh (2006) provides cross-sectional information about manipulation of the assumed rate of return on pension assets and executive compensation programs. Bergstresser and Philippon (2005) offer evidence that the extent to which discretionary accruals are used to manipulate reported earnings is greater when the CEO's compensation is relatively more sensitive to the value of stock and option positions and that periods of high accruals also have the CEO exercising

[10]Core, Guay and Larcker (2003) offer a synthesis of equity compensation and executive incentives. Gillan, Hartzell and Parrino (2005) examine the circumstances in which the CEO is compensated by implicit vs. explicit agreements.

relatively more options and engaging in greater sales. Coles, Hertzel and Kalpathy (2005) suggest that low accruals follow cancellations of executive option grants, but then the stock price is not very sensitive to accruals. Yermack (1997) suggests that managers time option grants around corporate news announcements. Callaghan, Sally and Subramaniam (2004) offer evidence that the timing of repricings serves the interests of current executives.

Of course, even if there are excessive incentives in executive pay in the United States today (or especially during the dot.com era), it can be optimal to increase incentive compensation in other contexts (such as for European executives or for United States executives in other eras). This is clearly a context-specific assessment.

An especially important form of executive incentive compensation is employee stock options. One striking feature of these programs is the discreteness of vesting dates and option exercise dates. The option grants tend to occur infrequently (e.g., annually or quarterly). This seems to be rather puzzling. Why is that an efficient form of compensation, for example, as compared to a more continuous set of vesting dates, option exercise dates and option exercise prices? Given that relevant economic decisions are being made more frequently (continuously?), it is hard to rationalize compensation that is so discontinuous. Discontinuous compensation is vulnerable to manipulation, without obvious advantages over a smooth compensation profile. The nature of managerial risk aversion reinforces the disadvantage of discontinuous compensation and that there is not an obvious incentive benefit to such a compensation structure. From an incentive point of

view relatively constant incentives over time would appear to be efficient as compared to loading the incentives at particular times. In many contexts it is optimal to impose risk on a risk-averse manager due to incentive benefits, but that type of rationale is not an obvious explanation for infrequent and lumpy option grants.[11] An interesting quantitative question that this suggests is how much the firm could reduce the executive's compensation, while producing the same incentive benefits or the same expected utility for the manager.

In fact, the discussion above emphasizes that discontinuous or spiky compensation may suggest a design flaw in a variety of agency contexts. For example, a salesman often receives discontinuous compensation based upon whether he reaches a periodic quota. If the salesman perceives that the likelihood of hitting the threshold is too low, then the salesman may lack suitable marginal incentives.[12]

This discussion also indirectly speaks to a central aspect of many options programs in practice. If the option moves too far out of the money, the firm will sometimes reset the exercise price by granting new replacement options ("re-price" options). While this is often criticized and suggests that the original grant understated the intended

[11]In fact, the lumpy grants are less valuable to the executive from a traditional options valuation perspective, since the value of an option on a portfolio is less valuable than a portfolio of options on the corresponding components. This observation is the traditional option-theoretic insight that compares the value of a portfolio of options with the value of an option on the underlying portfolio (see Merton (1973)) and does not reflect the tradeoff between risk and incentives in situations with a risk-averse agent and risk-neutral principal that is the focus of the discussion in the text.

[12]By extension I conjecture that discontinuous marginal incentives can be problematic; this intuition is like the economic motivation underlying smooth pasting conditions in "free boundary" option exercise problems.

compensation, it may be necessary to provide the desired marginal incentives.[13] In understanding the incentive structure I think it is useful for firms to focus upon incentives that are "renegotiation proof." This would represent a substantial shift from current practice.[14]

IV. The Incentives of the Board of Directors

A final aspect of executive compensation that deserves much more attention is the role of the board of directors and the extent to which a board mitigates existing incentive problems and to what extent it creates incentive problems of its own. The role of the board is fundamental, but perhaps not adequately emphasized.[15] The board hires the Chief Executive Officer (CEO) and is responsible for managing succession. Yet there is typically a lot of interaction between the board and the CEO. In the past the CEO often tried to influence the composition of the board (an interesting empirical analysis of this is in Shivdasani and Yermack (1999)). This discussion emphasizes that "conflicts of interest" may be crucial. An interesting academic analysis of the importance of conflict of interest in the determination of CEO compensation is given by Bebchuk and Fried (2004a, 2004b), whose analysis is critiqued in Core, Guay and Thomas (2004).[16]

[13]However, to the extent that the criticism is based upon the enhanced level of compensation that criticism seems quite germane.

[14]Hall and Murphy (2003) provide an alternative critique of the use of options in practice, focusing on the widespread use of option grants.

[15]Chhaochharia and Grinstein (2004) examine recent changes in the nature of U.S. corporate boards. Hermalin and Weisbach (2003) focus upon the board's structure and its impact upon corporate performance.

[16]Lo (2003) provides support for the agency hypothesis in a novel fashion by examining the relative governance improvement and valuation change of companies that submitted a comment letter in opposition to the 1992 changes in Securities and Exchange Commission executive compensation disclosure rules.

The board sets the compensation for senior management, including the CEO, by a Compensation Committee. “Benchmarking” is often used, though the approach does not seem designed to produce a lot of effective information. Interestingly, the board is self-perpetuating (with new members selected by a Nominating Committee) and the auditor reports (in part) to the board (Audit Committee).

The incentives of the board are important. Unfortunately, board members are often disengaged. This could be either a consequence or cause of low compensation. Fich and Shivdasani (2006) present evidence that busy outside directors are often associated with poor corporate governance. The fiduciary responsibility of board members leads to some “sticks.” Are there sufficient “carrots” as well? I think that both positive and negative incentives are important from both an incentive view and to ensure adequate incentives to join boards (e.g., what economists call the “participation constraint”). It is striking how little compensation is offered to board members relative to senior executives; just to illustrate as a mathematical exercise, a board member may spend about 1/20 of the time of the CEO on firm business, but receives far less than 1/20 of the compensation. This seems to me to be one of the most fundamental puzzles in management compensation. Board members often have comparatively far less at stake, unlike the high-powered incentives for the CEO at the helm. Perhaps from this perspective, the lack of attention by some board members is not very surprising. One way to formulate the issue is to ask, why is the division of compensation between the board and key executives so skewed? The skewing in compensation suggests that there is little responsibility in being a board member, the position is very attractive, there are many substitutes for the prospective

board member or that the non-pecuniary benefits (such as networking) of being a board member are considerable. But there are many issues about the tradeoffs with respect to board compensation. These arise with respect to both the level of compensation and the implied incentives.

What is the right tradeoff with respect to the setting of board compensation? The answer depends, in part, on the nature of the board's contribution—as a resource for the CEO or as an independent agent of investors. These can conflict, although they are not mutually exclusive and may even be complementary. The balance that is achieved depends upon the level of compensation and incentives.

If it is desirable to have a relatively detached/independent board, for example, the current type of compensation may be appropriate. Because of the role of the CEO in selection or retention of board members, there is a natural reluctance of the board to "rock the boat," if the board positions are desirable and well paid. Of course, this is an argument against paying board members too much. In particular, one downside to higher board compensation could be a reduction in board independence (independence itself may be desired, as long as the board is motivated by the shareholder's interests; this in turn emphasizes the importance of identifying the role of the board and how that should be influenced by senior management). An alternative approach for recruiting engaged board members is to select large stockholders who are strategic (rather than passive) investors. This could at least help mitigate some of the public goods problems that are central in corporate governance.

Board members are very dependent upon the information that they receive from the management team and the outside auditor. This raises the issue of how can one ensure that the outside auditor is sufficiently forthcoming with the board. Consequently, it is important to ask good questions. For example, one former board member told me he would ask the auditors what did they discuss with the management team (or among themselves!) that they did not discuss with the board? Indeed, if the board were too adversarial with respect to the management team, management's incentives to communicate to the board would be greatly reduced. This points to a delicate aspect of trying to divorce the CEO from the board selection process—it is important to ensure that the executives are sufficiently forthcoming with their own boards. The contrast between real and formal authority highlighted by Aghion and Tirole (1997) helps illustrate that a less than completely independent board can be optimal in some settings—to the extent that the CEO has the discretion to make most decisions, he will have strong incentives to invest in obtaining the relevant information to make good decisions. Harris and Raviv (2004) emphasize the importance of communication and combining information by the board and senior management in a setting in which each has a partial information advantage and some decisions are delegated to the board to control agency concerns. Adams and Ferreira (2006) examine the CEO's incentives to share information with the board in a strategic information game in which the board both provides advice and monitors management. Inderst and Mueller (2005) argue that the executive's compensation structure can be designed to limit his ability to hide information from the board. Baranchuk and Dybvig (2005) emphasize the importance of incremental

information that a new board member brings to his board. The communication aspects and the interaction between the board and the CEO point to some of the subtlety in structuring the incentives for effective board behavior.

V. Concluding Comments

While my presentation suggests solutions to a few of the following issues, I think that there are a number of important matters that are deserving of further study. The broad issue concerns whether there are adequate safeguards in the setting of executive compensation so that agency conflicts are adequately mitigated.

A) Per the discussion earlier in the text, how can the design of option-based compensation be improved? Would it be beneficial to compensate executives more explicitly based upon the *relative* performance of their firm?[17] How costly quantitatively is the absence of relative benchmarks in typical option designs? How costly quantitatively are the discontinuities in the structure of senior executive option grants and overall compensation? How would focusing upon "renegotiation-proof" incentives alter the structure of compensation? How can the firm design its compensation structure to encourage optimal retirement decisions and promotion opportunities?

B) In recent years accounting firms and boards of directors have been criticized for their role in our corporate scandals. There are many open issues concerning the

[17]Rajgopal, Shevlin and Zamora (2006) recently argue that such compensation can be optimal if the CEO's outside alternative compensation changes with the state of the economy.

role of boards and other intermediaries. To what extent do intermediaries help avoid agency problems in setting senior executive compensation and what restrictions on intermediaries would further mitigate these agency problems? How can we evaluate the objectivity and effectiveness of these intermediaries? To what extent do compensation consultants lessen the agency problem in setting executive pay?[18] Should there be additional fiduciary obligations on compensation consultants that advise the board of directors with respect to executive compensation? What guidance can regulators provide to enhance the effective composition of boards of directors? How can management be encouraged to communicate fully and effectively to the board? To what extent are agency problems in setting executive compensation reflective of broader agency problems underlying the management of the firm?

C) Another important broad set of issues is how should tax and regulatory policy be altered to improve compensation practices? For example, what types of incremental disclosures with respect to executive compensation or its underlying bases would be helpful? How can regulatory policy be used to mitigate the inherent conflicts of interest? How can the taxation of options (such as the differential treatment of options benchmarked upon relative compensation) and executive compensation (such as the limit on compensation that is not incentive--

[18]The compensation consultants are widely criticized for selecting benchmarks that leads to executive compensation ratcheting upward over time. Of course, the fundamental reality is that only half of the executives can be above median performers, which *should be* reflected in the feedback that compensation consultants provide. Of course, half of the executives are below median performers, which should be reflected in the structure of recommended compensation.

based without a special surtax) be altered to avoid inefficient distortions in the structure of compensation?

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