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Remuneration, Retention, and Reputation Incentives for Outside Directors

DAVID YERMACK*

ABSTRACT

I study incentives received by outside directors in Fortune 500 firms from compensation, replacement, and the opportunity to obtain other directorships. Previous research has only shown these relations to apply under limited circumstances such as financial distress. Together these incentive mechanisms provide directors with wealth increases of approximately 11 cents per \$1,000 rise in firm value. Although smaller than the performance sensitivities of CEOs, outside directors' incentives imply a change in wealth of about \$285,000 for a 1 standard deviation (*SD*) change in typical firm performance. Cross-sectional patterns of director equity awards conform to agency and financial theories.

WHAT CAUSES OUTSIDE DIRECTORS to monitor managers, rather than collude with them? Fama and Jensen (1983) posit the existence of a market for outside directors' services, conjecturing that "Our hypothesis is that outside directors have incentives to develop reputations as experts in decision control. . . They use their directorships to signal to internal and external markets for decision agents that they are experts. . . The signals are credible when the direct payments to outside directors are small, but there is substantial devaluation of human capital when internal decision control breaks down. . ." (p. 315).

To date, most studies of the market for outside directors have focused on directors' accumulation of seats on additional boards, finding some evidence that fewer offers for new directorships are made to board members of firms that perform poorly. However, little research into outside directors has examined the most direct incentives—compensation and replacement—that form the backbone of rewards for company executives. Exceptions such as Gilson (1990) and Harford (2003) tend to focus on extreme circumstances, such as financial distress or hostile takeovers. For the vast majority of firms that do not face these crises, we have little evidence that outside directors face significant performance incentives.

This paper investigates the range of incentives received by outside directors, studying a panel of 734 directors elected to the boards of Fortune 500 firms

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between 1994 and 1996. I follow each director for 5 years after election, tracking compensation received, changes in equity ownership, other board seats obtained, changes in disclosed conflicts of interest, and departures from the board. All of these variables represent potential sources of motivation or discipline for an individual director. Studying how director incentives evolve over time seems especially important, because most new outside directors arrive at their firms with close to zero equity, little direct knowledge of the company's operations, and with their reputations dependent almost entirely on their current or former full-time jobs. As time passes these relations change, as directors accumulate equity in the firm and are more likely to influence—and be rewarded for—the company's strategy and performance.

I find statistically significant evidence that outside directors receive positive performance incentives from compensation, turnover, and opportunities to obtain new board seats. Together these incentives provide outside directors serving in their fifth year with wealth increases of approximately 11 cents per \$1,000 rise in firm value. This implies a change in director wealth of about \$285,000 for each 1 standard deviation (*SD*) change in the performance of the median sample firm. These results apply to a broad cross-section of firms in all performance ranges, not just those with extremely good or bad performance that have been the focus of prior research. Rewards from compensation and ownership account for more than half of total director incentives, with most of the balance related to the increased possibility of obtaining more board seats if the firm performs well. These findings represent something of a contrast to the idealized market for directors' services envisioned by Fama and Jensen (1983, p. 315), who hypothesized that the market works best when "payments to outside directors are small" relative to the after-market incentives related to the directors' reputations. Finally, I present evidence that directors' stock and option awards are related in rational ways to firms' investment opportunities, tax status, and liquidity, a finding that parallels previous research into CEO compensation.

Director compensation and replacement may have received little attention in past research because both of these incentive mechanisms are subject to severe conflicts of interest, as the board generally sets its own compensation and, in the absence of a rare proxy fight, decides upon its own members' continuation in office. However, external forces in recent years have constrained boards' ability to overpay or entrench themselves. Institutional investors have promulgated standards for corporate governance and attempted to enforce them through a mix of direct meetings, shareholder resolutions, and media campaigns against companies that they target for poor governance. Tying directors' pay more closely to stock performance through the use of options and other equity awards has represented one frequent goal of these shareholder initiatives. In noteworthy cases such as Archer Daniels Midland, American Express, W.R. Grace, and Walt Disney, these types of pressure have led directly to replacement of certain outside directors and/or changes in the structure of boards. Other firms have no doubt taken note of these examples and acted likewise.

The remaining sections of the paper are organized as follows. Section I describes the sample and data collection. Section II presents analysis of outside directors' incentives from compensation and ownership. Section III studies the relation between director turnover and company performance. Section IV investigates the effect of performance upon a director's obtaining additional directorships in other firms. Section V studies the possibility of an independent outside director obtaining special treatment from the company and becoming co-opted to grey or affiliated status. Section VI concludes the paper.

I. Data Description

Data for this study are based on the panel of director appointments examined in Shivdasani and Yermack (1999). That paper includes 766 outside director appointments in Fortune 500 firms announced in proxy statements between 1994 and 1996, excluding firms in the financial and electric utility industries, which tend to have larger boards dominated by local business executives. Outside directors are classified according to the standard taxonomy of independent and grey, with the latter category including those with disclosed conflicts of interest. These conflicts include special consulting contracts for the director, a significant business relationship between the firm and the director's main employer, a family relationship between the director and a top manager, and interlocking board memberships between the director and the CEO. I drop 29 observations from the original sample for directors who joined boards of sample companies due to acquisitions, since these directors were not new to their positions and could have been expected to have accumulated ownership and power within their boards greater than rookie directors appointed from outside. An additional four observations were reclassified from grey to inside and also dropped, and one new observation missed in the original data collection was added to the sample. The sample for this paper therefore includes 734 new outside directors, 607 of whom are classified as independent and 127 classified as grey. These 734 appointments involve 684 individual people (39 persons are appointed to two boards, 4 persons join three boards, and 1 person joins four). In seven cases, outside directors become officers of the company at some point after joining the board. These directors remain on the board as insiders, but because I am interested in incentives faced by outside directors, I stop tracking those directors at the point at which they move inside. One might conceivably view an outside director's possibility of becoming a company officer as a type of incentive, but because these events are rare, and because such individuals must surrender compensation from their prior positions if they change jobs, I do not pursue this analysis.

I gather data about directors by reading their biographies in the first five proxy statements published by the firm in which they appear. Twenty-eight percent of the directors do not survive in office for at least 5 years, leaving due to retirement from the board (16%), delisting of the company (11%), and as mentioned above, a change in status from outside to inside (1%). Slightly more than one-fifth of new directors are women and most directors own virtually no

stock when appointed, with a median ownership position of 0.0004% of shares outstanding.

From proxy statements I gather annual observations for each director about compensation received, board seats held in other firms, stock owned, committee memberships, and disclosed conflicts of interest. A large number of directors join their boards by appointment rather than shareholder election midway through the year before they first appear in a proxy statement. In these cases it can be difficult to ascertain whether they received partial or complete directors' fees. I generally assume that they have received the full fee unless specific disclosure or data about the director's stock ownership indicate otherwise; especially in the case of equity compensation, most firms appear to report carefully when a director receives less than the entire year's standard fee. Many boards that award equity compensation make very large awards to new directors in order to give them a critical mass of ownership in the firm, so it is important not to overlook compensation received during this first year or part-year on the board.

Directors receive compensation in the form of both shares of stock and stock options, sometimes simultaneously. Most company disclosures for this equity pay are much briefer for directors than for executives, so I generally do not know the basic terms of these awards such as the date, the stock price when awarded, vesting, or restrictions on sale. I therefore make a range of assumptions for use in valuing equity compensation and its incentive features. I assume that equity pay is awarded when the stock price equals the average price for the year, computed from the 12 monthly closing stock prices. All stock options are assumed to be awarded at-the-money with 10 year lives, in line with the overwhelmingly prevailing practice, and to vest ratably over 4 years. When firms give directors the opportunity to choose between cash and equity compensation, or deferral of cash compensation into an equity-based instrument, I assume that they choose the maximum amount of cash pay permitted unless disclosure indicates otherwise. This assumption assures that subsequent calculations about the importance to directors of equity compensation generally represent lower bounds. I assume no early exercise of options and no sale of stock compensation, at least for the first 5 years. I value options using the Black–Scholes method. Volatility and dividend yields for each firm-year are obtained for the vast majority of observations from the ExecuComp database; when firms are not covered by ExecuComp, I use the volatility and dividend rate assumptions reported by the company in its footnote about stock option compensation published in its annual Form 10-K.

Table I presents information about the annual compensation received by outside directors in the sample. A little under half of all directors receive stock options and about the same proportion receive direct stock awards, though a large majority (77%) receive at least one of these two types of equity pay in a given year. The average retainer from all sources is worth around \$70,000 when awarded, though the data are skewed by some firms making large annual equity awards worth many hundreds of thousands of dollars. Additionally, directors receive an array of lesser compensation in the form of meeting fees,

Table I
Descriptive Statistics

Shown here are descriptive statistics for key variables in a sample of 734 outside directors elected to the boards of Fortune 500 companies between 1994 and 1996. Data are obtained from company proxy statements. Grey directors have disclosed conflicts of interest with the firm or its officers. Stock ownership is measured according to the SEC's definition of beneficial ownership. Stock option values are calculated using the Black–Scholes method.

Outside directors in sample	734					
Remaining in sample in fifth year	529	(72%)				
Retire before fifth year	114	(16%)				
Firm is delisted before fifth year	84	(11%)				
Become inside directors before fifth year	7	(1%)				
		Mean	SD	Min.	Median	Max.
Age at election		54.0	7.4	30	54	75
Female		0.205				
Grey		0.163				
Shares held/shares outstanding	First year	0.0079	0.0788	0	0.000004	0.8808
	Fifth year	0.0052	0.0653	0	0.000047	0.8680
Stock ownership (000)	First year	\$8,572	\$84,696	\$0	\$21	\$1,606,588
	Fifth year	\$8,481	\$156,149	\$0	\$375	\$3,583,060
Other board seats held	First year	2.04	1.89	0	2	14
	Fifth year	2.27	1.73	0	2	9
Audit committee member	First year	0.254				
	Fifth year	0.529				
Compensation committee member	First year	0.158				
	Fifth year	0.453				
Cash retainer	(000)	\$26.3	\$10.8	0	\$25.0	\$85.0
	Nonzero	0.958				
Stock retainer	(000)	\$15.5	\$33.8	0	0	\$474.5
	Nonzero	0.480				
Stock option retainer	(000)	\$27.8	\$87.2	0	0	\$1,364.9
	Nonzero	0.440				

committee fees, group insurance coverage, and other fringe benefits; Perry's (2000) data indicate that these additional items increase the annual retainer's value by about one-third, a statistic similar to information tabulated in Linn and Park (2003). To keep the data collection and analysis tractable, I generally ignore these other types of director compensation, which by construction have little if any connection to company performance.

II. Compensation and Equity Ownership

A. Overview of Outside Director Compensation

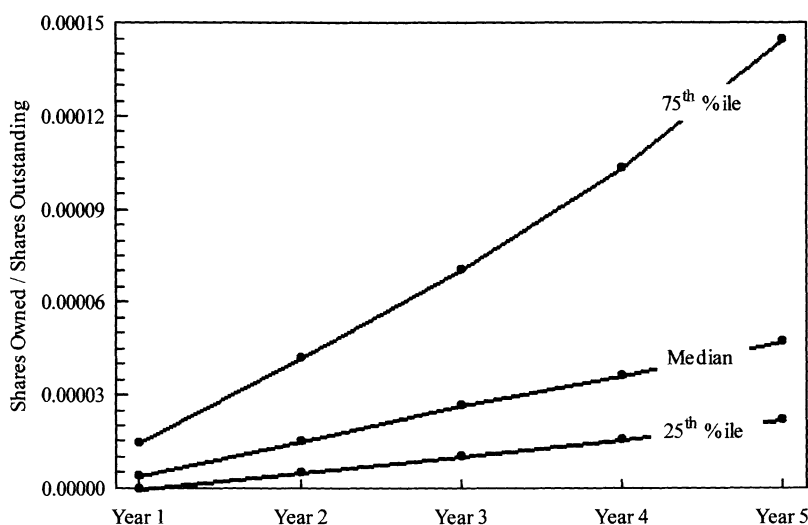
Corporate directors have never received bonuses or other incentive compensation tied to the success of the firm or their individual performance in the boardroom. Instead, director compensation for decades has followed an almost

identical structure across firms: a fixed annual retainer (and smaller additional fees for things such as meeting attendance), which can usually be deferred in a company-sponsored plan to avoid immediate income taxation. Retirement or other pension benefits were once widespread but mostly disappeared in the mid-1990s after institutional investor protest.

Since the late 1980s, an increasing number of firms have paid the annual retainer at least partly in equity, using either restricted stock or stock options. While the value of these fixed awards has exhibited little relation to firm performance, their subsequent appreciation has had the effect of tying directors' rewards much more closely to performance than before. Perry (2000), Bryan et al. (2000) Linn and Park (2003), and numerous industry surveys document the increasing use of equity in boards' annual retainers and Fich and Shivdasani (2003) study the characteristics of firms that adopt director stock option plans. In my sample, the average annual retainer paid to directors is \$69,435. Equity compensation delivers 62% of the total retainer value across the sample, with option awards (40%, valued on a Black–Scholes basis) having a more important role than stock awards (22%). Cash compensation makes up the remaining 38%. However, these statistics are somewhat misleading as an indicator of the representative director's compensation, since the median option award is zero.

B. Performance Incentives from Accumulated Options and Stock

Figure 1 shows that the use of equity compensation has the effect of significantly increasing outside directors' ownership stakes as their tenure increases. Most outside directors own little or no stock when first elected (by the time of the first ownership report in a proxy statement, many directors will have been serving on the board for a part-year, so that the ownership reported may well have come from directors' fees and not personal investment). In my sample, the median director's fractional ownership in the firm increases by nearly a factor of 12 when measured in the fifth proxy statement following his election compared to the first proxy statement. At this point, fifth-year directors own a median \$375,000 worth of their firm's equity, up from \$21,000 at election (a rising stock market over most of the sample period explains why the dollar value of ownership increases more rapidly than percent ownership). Mean values for outside director ownership percent and value (not tabulated) are much higher but are heavily skewed by a tiny handful of individuals with billion-dollar investments. Table II describes the magnitude and pay–performance sensitivity of remuneration received by outside directors over their first 5 years. The table is restricted to the 529 directors who remain on the board at least through the date of the fifth annual proxy statement after their election. The left column presents the value of fixed retainers received over the first 5 years, with equity compensation valued as of the award date and not according to its subsequent appreciation. Stock option award values are calculated using Black–Scholes methodology, with standard assumptions described in Section I above. The center



	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Median ownership (%)	0.0004%	0.0015%	0.0027%	0.0036%	0.0047%
Median ownership (\$000)	\$21	\$72	\$154	\$263	\$375

Figure 1. Accumulation of ownership of outside directors over first 5 years. Quartiles of the distribution of ownership for a sample of 734 outside directors elected to boards of Fortune 500 companies between 1994 and 1996. Ownership for each director is calculated as shares held divided by shares outstanding. All data are obtained from company proxy statements, with share holdings measured according to the SEC's definition of beneficial ownership. Data are tabulated separately for each of the director's first 5 years in office.

column reports the pay–performance sensitivity delivered by the inventory of cumulative stock option and restricted stock awards received during a director's first 5 years, measured as the delta or value change of these awards per \$1,000 change in shareholder wealth, a metric introduced as a measure of the strength of CEO incentives by Jensen and Murphy (1990). I calculate pay–performance sensitivity at the end of each director's fifth year in office and use the partial derivative of the Black–Scholes formula with respect to stock price in order to estimate option deltas. For shares of stock, the delta equals the number of shares owned by the director, divided by the number of shares outstanding, all times \$1,000. The right column recalculates the pay–performance sensitivity statistic including all stock owned by each director in year five, whether acquired through retainers paid by the firm, deferral of cash fees into company savings plans, or open market purchases. It is evident that data for incentive intensity are highly skewed by a few outside directors with extremely large ownership.¹

¹ The maximum delta of \$868 per \$1,000 change in shareholder wealth is exhibited by several partners of the leveraged buyout firm KKR who sat on the board of the grocery chain Bruno's.

Table II
Fees Received by Outside Directors in the First 5 Years

Shown here are descriptive statistics for the distribution of retainer fees received by outside directors elected to the boards of Fortune 500 companies between 1994 and 1996. Data are tabulated for the subsample of 529 directors who remain in office at the date of the fifth proxy statement released after their election. The first column reports the aggregate fixed retainer fees received during the first 5 years of service by each director, including cash, restricted stock awards, and stock options, which are valued using Black–Scholes methods. The second column shows the cumulative pay–performance sensitivity received by a director from his inventory of stock options and stock awards, calculated as the increase in value of these holdings with respect to a \$1,000 change in shareholder wealth, measured at the end of the director's fifth year. The third column shows pay–performance sensitivity from option and stock awards and any stock otherwise owned by each director, also measured at the end of the director's fifth year. The table does not include further remuneration received by directors, including meeting fees, committee fees, retirement benefits, insurance, and matching charitable contributions.

	Sum of Annual Retainer Values Measured as of Award Date	Pay–Performance Sensitivity per \$1,000 Change in Shareholder Wealth (option and stock awards only)	Pay–Performance Sensitivity per \$1,000 Change in Shareholder Wealth (including stock ownership)
Minimum	\$47,000	0	0
5 th percentile	\$131,000	0	\$0.007
10 th percentile	\$158,000	0	\$0.013
25 th percentile	\$198,000	\$0.005	\$0.026
Median	\$261,000	\$0.021	\$0.061
75 th percentile	\$375,000	\$0.070	\$0.184
90 th percentile	\$570,000	\$0.162	\$0.442
95 th percentile	\$723,000	\$0.270	\$0.680
Maximum	\$3,438,000	\$1.088	\$868.00
Mean	\$347,000	\$0.064	\$5.286
<i>SD</i>	\$341,000	\$0.118	\$65.390

Data in Table II indicate that the median outside director who has been in office for 5 years will experience an increase of about 6.1 cents in personal wealth related to equity compensation and ownership for each \$1,000 appreciation in the firm's market capitalization. Comparisons of this incentive measure to similar statistics for CEOs are available from Hall and Liebman (1998) and Murphy (1999), who study samples of Forbes 800 and S&P 500 companies, respectively. Hall and Liebman report that median CEO pay–performance sensitivity from equity pay and ownership rose steadily from \$2.51 per \$1,000 change in shareholder wealth in 1980 to \$5.29 in 1994. Murphy reports that by 1996, this statistic had increased to \$7.69 for firms in the lower half of the S&P 500 and to \$4.36 for firms in the larger half. Hall and Liebman tabulate deciles of their distribution of 1994 CEO wealth sensitivities. Their 10th percentile value of \$0.54 lies somewhere between the 90th and 95th percentiles of my own distribution for outside directors, indicating that nearly all CEOs have higher compensation and ownership incentives than nearly all outside directors. Near the top of the distribution of directors, however, some board members receive

very significant equity awards that can provide ex-post performance rewards exceeding those of some CEOs.²

These comparisons indicate that CEOs have equity incentives several orders of magnitude larger than those of board members, although this outcome should be expected, since directors neither work full-time on company business nor have direct management responsibility. Most boards of the sample companies have approximately 10 outside directors, and the aggregation of these directors' performance incentives will be much closer in magnitude to those of the CEO. Also, the incentives of each director will generally increase over time due to an accumulation of equity-based retainer awards. In my sample, the outside directors' median pay-performance sensitivity from stock and option holdings is 1.6 cents per \$1,000 change in wealth after 1 year, increasing to 2.8 cents after 2 years, then 3.8, 5.0, and finally 6.1 cents after 5 years, the point at which the statistics in Table II are tabulated. Beyond a director's fifth year, these incentives will likely continue to strengthen, although eventually the exercise of stock options and possible sale of the acquired stock may begin to counteract the incentives obtained from new awards.

C. Incentive and Risk Properties of Director Option Holdings

Much research in the past decade had examined whether stock and option awards to top managers conform to a variety of agency and financial contracting theories. Representative examples include Bizjak, Brickley, and Coles (1993) and Yermack (1995), who study the performance incentives of stock options, and Guay (1999) and Coles, Daniel, and Naveen (2003), who study options' risk incentives. In this section, I evaluate whether patterns of equity awards to outside directors also follow the leading theories identified in this literature. I use directors' stock and option holdings at the end of their fifth years in office as the basis for the analysis and include only shares awarded for compensation purposes.

I calculate two widely used measures of the incentive properties of directors' stock and option inventories. The pay-performance sensitivity, or delta, is the partial derivative of the Black-Scholes option value with respect to stock price for options, and equal to one by construction for shares. The risk sensitivity of options, or vega, is the change in the Black-Scholes value for each 0.01 change in stock volatility. I do not estimate vega incentives for shares of stock, because existing research shows that these statistics—which are arduous to calculate—have extremely small magnitude relative to vegas for options.³

² Forty-two directors, or about 8% of the sample, received more than \$1 million from the appreciation of their retainers over their first 5 years' service, and four directors received more than \$20 million. Though the most enriched directors worked for computer and technology firms that arguably benefitted from a price bubble in the late 1990s, other outside directors among the group of millionaires came from such diverse firms as General Electric, Costco, Ameritech, Viacom, Target, ConAgra, and Gap Stores.

³ See Guay (1999), Table II and Appendix A.2. The most comprehensive recent study of vega incentives, Coles, Daniel, and Naveen (2003), focuses entirely on option vegas on the assumption that stock vegas are negligible.

Table III
Incentive and Risk Levels of Director Option Holdings

Shown here are Tobit regression estimates of the incentive and risk levels provided by equity awards to outside directors. The sample includes 529 directors appointed by Fortune 500 companies between 1994 and 1996 who continue to serve on their boards for at least 5 years. The dependent variable in each regression equals either the change in value of a director's equity holdings per \$1 change in stock price (the delta), or the change in value per 0.01 change in stock volatility (the vega). Stock and option holdings are estimated by cumulating the shares and options awarded to directors for compensation during their first 5 years on the board and do not include open-market purchases. Option delta and vega calculations are derived from the Black–Scholes formula. Tobin's Q equals the market value of equity plus the book value of debt, divided by total assets. The tax loss carry-forward indicator equals 1 if the firm has a net operating loss carry-forward on its balance sheet. Standard errors robust to heteroskedasticity appear below each coefficient estimate in parentheses.

Dependent Variable (000)	Option Delta Estimate	Option Delta Estimate	Stock + Option Delta Estimate	Stock + Option Delta Estimate	Option Vega Estimate	Option Vega Estimate
Intercept	-5.6 (50.0)	84.5 (54.5)	-66.4 (42.4)	28.5 (26.2)	-0.07 (1.51)	0.46 (1.51)
Tobin's Q	48.4*** (17.8)	—	46.2*** (16.9)	—	0.41*** (0.15)	—
R&D/total assets	—	684.8** (299.4)	—	620.0** (244.8)	—	14.89* (8.52)
Zero dividend indicator	95.3*** (23.8)	111.5*** (43.4)	67.4*** (19.1)	74.5** (32.1)	—	—
Tax loss carry-forward indicator	-3.0 (11.5)	-2.9 (12.7)	-15.4* (8.9)	-19.3* (11.5)	—	—
Total debt/total assets	-19.4 (46.8)	-105.9*** (39.1)	8.5 (43.1)	-73.1*** (26.9)	—	—
Log (total assets)	-14.8** (6.8)	-9.9 (6.1)	-4.0 (3.8)	1.1 (2.7)	-0.08 (0.17)	-0.07 (0.17)
Observations	529	529	529	529	529	529

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Delta and vega measures of equity incentives appear as dependent variables in regressions with results reported in Table III. I estimate regressions in a Tobit framework, due to the significant number of zero-valued observations for directors who do not receive equity compensation. Estimates are shown along with robust standard errors, which are used in all remaining regressions to adjust for the possibility that error terms are correlated for certain subgroups (for instance, the several dozen individuals who appear in the sample more than once). Firm size, measured as the log of total assets, is included in each model as a control since the cost of delivering incentives based on firm risk or firm value increases with size. Before proceeding with the estimations, I note that the models I use assume that the explanatory variables arise exogenously. In reality, regressors measuring the firm's growth opportunities and financial policies are likely determined endogenously by a process that also affects the structure of director compensation as well as the selection of new directors. A

comprehensive model that takes complete account of this endogeneity can be difficult to implement. Coles, Lemmon, and Meschke (2003) and Himmelberg, Hubbard and Palia (1999) provide thorough treatments of this issue.

Among the many hypotheses of why firms award equity compensation, perhaps the most widely cited is to encourage risk-averse managers to pursue valuable but uncertain investment opportunities. In the presence of growth opportunities, according to theory, a manager's compensation scheme should have both a greater slope and more convexity with respect to the firm's equity value. Awards of stock options, which exhibit convexity with respect to the underlying stock price, can deliver both types of incentives. Outside directors are not likely to have the same risk aversion as top managers, since directors' human capital is not exclusively tied up in the firm, but it seems straightforward that the shape and direction of incentive payoffs recommended for directors should be similar to that of managers. I therefore expect both the deltas and vegas of directors' equity portfolios to exhibit a positive cross-sectional relation with measures of investment opportunities. Bryan et al. (2000) and Linn and Park (2003) provide a more lengthy discussion of outside director compensation and investment opportunities and make similar empirical predictions. I use two standard variables to measure investment opportunities: Tobin's Q , estimated as the market value of equity plus book value of debt over total assets, and research and development expenditures over total assets (I set equal to zero the large number of missing R&D observations on COMPUTSTAT). In line with theory, estimates in Table III exhibit positive, statistically significant associations between all dependent variables and both measures of growth opportunities.

In the presence of leverage, one would expect firms to award less equity compensation to mitigate the effects of the agency costs of debt (John and John (1993)). I use total debt (book value) over total assets as a measure of leverage and expect a negative association between this variable and stock and option deltas. Estimates in Table III support this hypothesis, as the coefficient estimate in each delta model is negative, though only two of the four have statistical significance.

Financial contracting theory predicts greater use of equity pay when the company faces a scarcity of cash. I use a (0, 1) indicator for whether the firm pays dividends as a proxy for cash scarcity. This variable's coefficient estimates have positive and highly significant associations with stock and option deltas, as predicted.

Stock option compensation under most conditions provides tax advantages, as the option holder's tax liability net of the corporation's tax deduction related to option compensation will generally have lower present value than for cash compensation. This effect arises mostly from the postponement of the tax obligation until the date of exercise (or beyond, if the optionee continues to hold the stock after exercise). To a lesser extent, tax savings also arise for restricted stock compensation, since part of the value of a stock award will eventually be taxed as a capital gain. I include a (0, 1) indicator for whether the firm has a net operating loss carry-forward in order to identify firms that cannot use these

tax benefits. This variable has a negative estimated association with stock and option deltas, as expected, though the estimated coefficients lack statistical significance in two of the four models.⁴

As a robustness check of the results in Table III, I recalculate option deltas and vegas after relaxing my assumption that option lives equal 10 years. Bettis, Bizjak, and Lemmon (2003) show that, like corporate executives, directors tend to exercise stock options well before expiration. Their paper uses a regression model to predict the time at which options are expected to be exercised, based mainly upon the underlying stock volatility. In my sample, this model implies exercise predictions generally between 4.5 and 6.0 years after the award date. I substitute these estimated exercise dates into the Black–Scholes formula in place of the standard assumption of 10 years. (Bettis, Bizjak, and Lemmon recommend more complex numerical methods, but these would involve an onerous amount of computation.) After shortening options' expected lives, I find that estimated option deltas become smaller, but the magnitude of this change is generally minor. Estimated vegas also become smaller, but the old and new vegas have extremely high correlation. After these changes, re-estimated regression coefficients for the models in Table III retain very similar signs and significance. For the delta estimates in the left two columns, magnitudes of the estimates are essentially unchanged. For the vega models in the right two columns, the coefficient estimates become smaller (in line with the reduction in vegas), but so do their standard errors.

Cross-sectional analysis of directors' equity awards thus appears to provide broad support for the proposition that firms award directors' shares and options in line with theories related to risk-taking, moral hazard, liquidity, and taxation. One qualification of the results in Table III is that the positive association between directors' option vegas and the variables measuring investment opportunities does not continue to hold if the option delta is included in those models as a control variable, as in Guay (1999). I find it difficult to interpret this change in results, however, because of multicollinearity. The option delta variable has clear positive associations with the growth opportunity variables, as shown in the first two columns of Table III, and by construction it also has a very high correlation with the option vega (the two variables' sample correlation coefficient is +0.50 in my data).

D. Pay–Performance Sensitivity of Annual Retainer Awards

The analysis above estimates pay–performance sensitivity according to the deltas, or changes in value with respect to market capitalization, of directors' inventories of stock and stock options. A further source of incentives may exist if revisions in the size of future option or stock awards (as well as the value

⁴ More properly, one should use the ratio of option over cash directors' compensation as the dependent variable for the hypotheses related to liquidity and taxation. Re-estimating the model in this functional form leads to virtually no change in the sign, significance, and relative magnitude of the coefficient estimates, and I do not reproduce the results in order to save space.

Table IV
Growth in Outside Director Retainers

Shown here are ordinary least squares estimates of the annual percentage change in directors' annual retainers against the annual percentage change in sales and the company's stock return, net of the CRSP value-weighted index. Standard errors robust to heteroskedasticity appear in parentheses below each coefficient estimate. The sample includes 734 outside directors elected to boards of Fortune 500 companies between 1994 and 1996 and includes observations for their second through fifth years in office. I exclude the first year of the sample because directors often receive large equity awards when joining boards. Directors' retainers include fixed cash compensation, stock awards, and stock option awards. Option awards are valued using the Black–Scholes approach.

	Estimate	Estimate	Estimate
Intercept	0.093*** (10.89)	0.093*** (10.58)	0.099*** (10.81)
Sales growth	−0.082** (2.29)	—	−0.089** (2.43)
Stock return, net of market	—	0.033** (1.98)	0.038** (2.32)
Observations	1,636	1,636	1,636
R ²	0.0032	0.0018	0.0056

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

of straight cash pay) depend on company performance. I investigate this possibility with the ordinary least squares regressions shown in Table IV. The dependent variable in each column is the year-over-year change in the retainer for each director (calculated by taking the log of this ratio), which I regress against the change in sales (again using the log of the ratio) and the net-of-market stock return (compounded continuously). Regression coefficients can be interpreted as estimated elasticities of the directors' retainers with respect to firm size and market capitalization, respectively. I use observations beginning with year two of each director's service, since many firms give abnormally large equity awards when an outside director joins a board.

Estimates in Table IV for the models' intercepts indicate that director fees exhibit a secular pattern of 9–10% annual increase. The estimated elasticity with respect to firm size is surprisingly negative, in the range of −0.08 (since the model's intercept exceeds +0.09, a firm that doubles in size would not see its directors' fees shrink, but rather grow more slowly over time).⁵ The estimated elasticity with respect to equity value is small but positive and significant, in a range of 0.03–0.04. To estimate the pay–performance sensitivity per \$1,000 change in shareholder wealth, I begin with the coefficient estimate for the stock return performance variable of 0.038 in the right-hand column of Table IV. Into this coefficient I divide the market capitalization of the median firm in my sample, about \$6.6 billion. I then multiply by the value of the typical annual

⁵ Numerous executive compensation studies have estimated this elasticity to be around 0.30 for top managers, a statistic that has remained surprisingly stable over time (see Baker, Jensen, and Murphy (1988) and Murphy (1999)).

retainer (see Section I above) to obtain a pay–performance sensitivity estimate of about \$0.001 per \$1,000 change in shareholder wealth. Assuming that any increase in the director retainer is permanent, and that the typical fifth-year director has an expected remaining tenure of 8.8 years in office (see the analysis of turnover in Section III below), the present value of the retainer increase at a real discount rate of 3% equals \$0.004 per \$1,000 change in shareholder wealth for a director of a firm of median size. This 0.4 cent per \$1,000 value sensitivity for new awards is an order of magnitude smaller than the 6.1 cents per \$1,000 estimated above for changes in the value of existing options and stock.

III. Company Performance and Director Turnover

Outside director turnover is much lower than turnover for executives. I use a binary (0, 1) variable to measure director turnover and set it equal to 1 for a given year's observation if a director does not appear in the next year's proxy statement. For firms that are delisted due to acquisitions and a few bankruptcies (delisting occurs following 3.75% of the sample observations), I set the turnover variable equal to missing for the year of delisting. The turnover variable equals zero for the seven outside directors who become insiders during the sample period, though I do not include them in the sample after their last years as outsiders. The unconditional rate of director turnover in my sample of directors with 5 years' service or less is 4.6%, exclusive of turnover related to delisting of the firm.

For CEOs and other executives, the threat of replacement represents an important complement to compensation in the array of incentives that mitigate agency problems. For outside directors, the threat of replacement is more attenuated, since directors do not report to a higher authority who might fire them for poor performance. Nevertheless, one would expect directors of underperforming companies to face pressure to leave their posts from institutional investors or major shareholders. These directors might also be tempted to abandon the firm in order to contain damage to their reputations, evade legal liability, and escape the workload of restructuring an underperforming firm. Under any of these scenarios, if poor performance of the company leads to departure of the director, he would have lost future income and the opportunity to increase his reputation as an expert in corporate oversight.

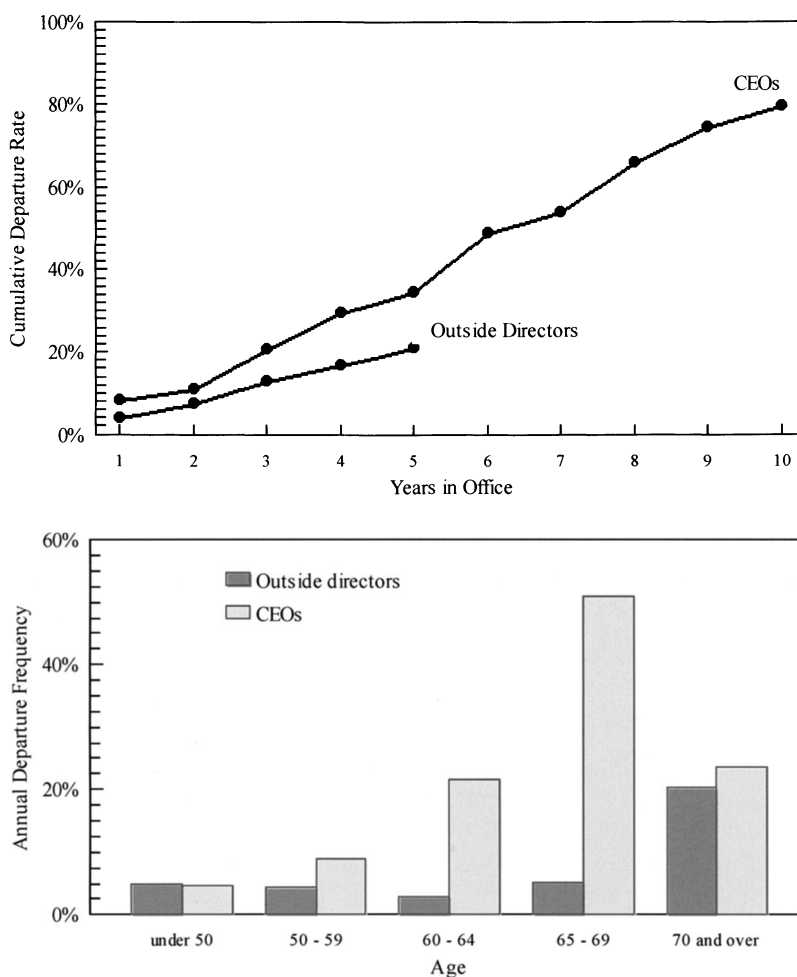
A significant body of research has examined the connection between CEO performance and turnover, but similar research into outside directors has been scant, generally limited to extraordinary circumstances such as mergers or bankruptcies. Among existing studies, Coles and Hoi (2003) come closest to investigating the director performance–turnover relation under general business conditions. That paper studies the retention of directors in 109 Pennsylvania companies after that state passed antitakeover legislation in 1989. Directors of firms that opt out of the legislation are significantly more likely to keep their board seats. Controlling for the outcome of the opt-out decision, the authors also find a positive association between firm performance and director retention within this sample of Pennsylvania firms. Among related studies,

Gilson (1990) examines turnover of outside directors in firms that experience financial distress and finds an annualized departure frequency of 19.5% during the distress period, much higher than the ordinary rate of director turnover. Harford (2003) finds that the overwhelming majority of outside directors lose their board seats after a firm is acquired, an unsurprising result since the firm ceases to exist (a small number will join the board of the acquirer). Brown and Maloney (1999) study boards of companies that make acquisition attempts. Among the bidders whose offers lead to the lowest announcement stock returns, higher turnover of outside directors occurs in advance of the bid, a result that may be consistent with a more general connection between poor performance and director turnover.

Figure 2a compares cumulative turnover rates for my director sample with the departure rates for CEOs of the same companies, exclusive of turnover related to delisting of the firm; the chart is constructed by calculating the unconditional turnover rate for all directors and CEOs in their first years, their second years, and so forth, and cumulating these annual rates geometrically. While the average age at appointment is 54 for both outside directors and CEOs, the figure shows that during their first 5 years in office, directors leave their positions at a frequency about 60% of the departure rate for CEOs. Figure 2b compares director and CEO turnover by age and illuminates clear disparities between the two groups (the figure is not meaningfully different if the sample is restricted to CEOs also serving in their first 5 years). In line with the retirement policies of most U.S. firms, a large majority of CEOs leave their positions at some point between ages 60 and 69. However, outside director turnover in the 60s age range is rare and virtually the same as for directors in their 40s and 50s. At age 70 and above, the annual departure frequency is about 20% for both outside directors and CEOs. (A significant number of sample firms report having mandatory retirement ages for outside directors, often at some age between 70 and 75).

I estimate logistic regressions to evaluate whether a performance–turnover connection exists for outside directors under general business conditions. I measure performance using the firm's annual stock return, minus the return for the CRSP (Center for Research and Security Prices) value-weighted index, with both returns compounded continuously before they are differenced. I include control variables to account for other factors that might influence director turnover: percent ownership in the firm, years of service, indicator variables for female directors, grey directors, members of the audit and compensation committees, directors' ages 65–69 and 70 and over, and indicator variables for calendar years.

Several papers document a connection between the departure of the CEO and contemporaneous changes in the board of directors (see Farrell and Whidbee (2000) and Hermalin and Weisbach (1988)). To reflect this known link between CEO turnover and director turnover, I use two indicator variables: (1) an indicator that takes the value of 1 in years in which the CEO also leaves his position, and (2) an indicator that equals 1 in all years subsequent to the departure of the CEO who was in office when the director first joined the board.



Figures 2a and 2b. Turnover frequencies for outside directors and CEOs, by tenure and age. Retirement frequencies for a sample of 734 outside directors appointed to the boards of Fortune 500 companies between 1994 and 1996, compared with retirement rates for the CEOs of the same companies. Turnover is tabulated cumulatively by years in office and by age. Turnover due to acquisition or delisting of the firm is excluded.

Logit regression estimates presented in Table V indicate a negative and significant association between director turnover and firm performance.⁶ Similar to the findings of papers studying CEO turnover, the director performance–turnover effect depends mostly on performance in the departure year itself, as the coefficient estimate for company performance lagged 1 year is near zero. While the data indicate an association between poor firm performance and

⁶ Re-estimating the regressions using an accounting measure of return on assets also leads to negative coefficient estimates, but they are not generally significant.

Table V
Outside Director Turnover

Shown here are logistic regression estimates of the turnover probability for outside directors. The sample includes 734 outside directors elected to the boards of Fortune 500 firms between 1994 and 1996 and includes the first 5 years in office for each director. Turnover due to acquisition or other delisting of the firm is excluded. The grey director indicator variable equals 1 if the director has a disclosed conflict of interest with the company or its officers. The indicator for appointing CEO no longer in office equals 1 in years following the departure of the CEO who appointed the director to the board. The stock return variable equals the firm's raw return for the fiscal year, minus the CRSP value-weighted index return, both compounded continuously. Standard errors shown in parentheses are robust to heteroskedasticity.

	Estimate	Estimate
Intercept	-2.11*** (0.73)	-2.12*** (0.73)
Years of service	-0.12 (0.13)	-0.12 (0.13)
Age 65–69 indicator	0.04 (0.29)	0.04 (0.29)
Age 70 and over indicator	1.79*** (0.38)	1.78*** (0.38)
Percent ownership	0.31 (0.87)	0.24 (0.93)
Grey	0.33 (0.22)	0.33 (0.22)
Female	-0.77*** (0.30)	-0.77*** (0.30)
Member of audit committee	-0.29 (0.19)	-0.29 (0.19)
Member of compensation committee	-0.50** (0.22)	-0.50** (0.22)
CEO departure year	0.86*** (0.22)	0.85*** (0.22)
Appointing CEO no longer in office	0.59*** (0.23)	0.59*** (0.23)
Stock return, net of market	-0.56** (0.24)	-0.56** (0.24)
Stock return, net of market (prior year)	—	-0.07 (0.24)
Year indicator variables	Yes	Yes
Sample size	3,025	3,025

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

departures of outside directors, one might attribute this pattern to many different motivations. Director turnover might be disciplinary in nature, if major shareholders or institutional investors respond to poor performance by agitating for changes in the board. Alternatively, directors might voluntarily leave poorly performing firms at a high rate, to contain the damage to their reputations, to limit legal liability, or to avoid the higher workload that boards usually undertake when performance drops (Vafeas (1999)). Since the news media

rarely reports director departures and almost never illuminates the reasons for an individual director's leaving, one cannot easily partition director turnover into forced and voluntary subsamples as many studies do for CEO turnover.

The estimates also illustrate a close connection between CEO turnover and the departure of outside directors. The indicator for years in which the CEO leaves office has a strongly positive and significant estimate, a *prima facie* indicator that disciplinary turnover applied to CEOs might spill over to cause replacements of some outside directors who may be allied with the executive. The indicator for the years following the departure of the CEO who had been in office when the director originally joined the board is similarly positive and significant. The latter variable might capture several effects. The director might lack a personal relationship with the new CEO that he enjoyed with his predecessor and therefore feel less inclined to continue serving. The new CEO may also wish to remake the board with directors of his own choosing, and tacitly encourage directors appointed by his predecessor to leave. Notwithstanding the link between CEO turnover and director turnover, however, director turnover is itself significantly impacted by poor performance; if the two indicator variables for CEO turnover are omitted from the regression, the coefficient estimate for the performance variable changes only modestly, from -0.56 to -0.60 .

Several additional control variables in the turnover regressions have interesting estimates with statistical significance. As suggested by Figure 2b, directors over age 70 retire at a significantly higher rate than other directors. Female directors exhibit significantly lower turnover rates than male directors, a result consistent with the well-publicized efforts of many firms to increase the diversity of their boards. If the regression is estimated separately for male and female directors, the performance variable's coefficient estimate becomes indistinguishable from zero for the female subsample. Members of key board committees, especially the compensation committee, also exhibit less turnover than other directors.⁷ These directors may have high value to the board due to their specific knowledge of key areas, and may have influence in corporate governance that insulates them somewhat from disciplinary turnover. Re-estimating the model after including indicator variables for different full-time job occupations held by the outside directors has virtually no impact on the results, and none of the occupation indicator variables has a significant estimate.

The association between poor company performance and higher outside director replacement represents a statistically significant finding, but it is less clear that the relation has sufficient strength to be economically important. I assess the economic significance of the performance–turnover relation for outside directors beginning with tests reported in Table VI. This table uses a transformation of the logit regression model to estimate the marginal effects upon the probability of departure of a unit change in key regressor variables; I calculate

⁷ This result does not extend to an indicator variable for directors who are members of the nominating committee, which has an estimate very close to zero if it is included in the model. I omit this variable because it is missing for numerous sample companies that have no nominating committee.

Table VI
Outside Director Turnover Compared to CEO Turnover

Shown here are the marginal effects of a unit change in various explanatory variables upon the probability of departure for outside directors and CEOs. Statistics are calculated using a logistic regression model, substituting coefficient estimates and sample means of each variable into the partial derivative of the likelihood function. Variable definitions and the description of the outside director sample are the same as in Table IV. Statistical significance is based on regression standard errors robust to heteroskedasticity.

	Outside Directors	CEOs
Years of service	-0.001	0.003***
Age 65–69 indicator	0.000	0.208***
Age 70 and over indicator	0.064***	0.046
Female	-0.030***	0.105
CEO departure year	0.033***	–
Appointing CEO no longer in office	0.020**	–
Stock return, net of market	-0.022***	-0.073***
Sample size	3,062	3,062
Unconditional departure frequency	0.046	0.138

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

these marginal effects by taking the partial derivative of the logit likelihood function and substituting in the regression coefficient estimates and sample means of each variable. For comparison purposes, I estimate a logit turnover model for the CEOs of my sample firms and report its estimated marginal effects side-by-side with those from the model for outside directors.

Estimates in Table VI indicate that the performance–turnover relation operates three to four times more strongly for CEOs than for outside directors; underperforming the market by 100% (in the continuously compounded specification used, this would equal 63% underperformance over the course of a year) is associated with an increase in the probability of CEO turnover by 7.3 percentage points, and of outside director turnover by 2.2 percentage points (the difference in these estimates is significant at levels well below 1%). Since the *SD* of the performance variable is about 0.39, these effects seem modest in economic terms. However, they are certainly important in relation to the unconditional frequency of outside director turnover of 0.046 in the sample; a 1 *SD* decline in the firm's performance would make the replacement of outside directors almost one-fifth more likely than otherwise. If the CEO leaves office during a given year, the probability of the outside director leaving rises by 3.3 percentage points,⁸ and in subsequent years it remains higher by 2.0 percentage points.

⁸ CEO turnover due to performance will itself make outside director turnover more likely, and the performance variable's estimated effect of -0.022 upon director turnover should arguably be more negative due to this feedback effect. If one multiplies the performance variable estimate of -0.073 for CEO turnover by 0.033, the CEO turnover variable's estimate for director turnover, and increases the -0.022 estimate by the product of these two numbers, it would become -0.025.

Again, these effects are large compared to the unconditional outside director turnover rate of 4.6%.

To transform the performance coefficient estimate in Table VI into an incentive-based estimate of the expected financial cost to a director per \$1,000 change in shareholder wealth, I divide the median sample firm's market capitalization of \$6.6 billion into the performance coefficient of -0.022 in the first column, and then multiply by the present value of the lifetime income that a director would expect to lose if he left the board.⁹ The incentive effect is estimated at approximately \$0.002, or two-tenths of 1 cent in directors' wealth, per \$1,000 change in shareholder wealth. Jensen and Murphy (1990) estimate this same statistic for CEOs as approximately \$0.30, more than 100 times stronger but still leaving it a relatively small part of the incentives for CEOs as it is for outside directors.

To investigate the performance–turnover relation for outside directors in more detail, I display in Figure 3 the departure rates for directors (again compared with their CEOs) according to deciles of the stock return performance variable. Along with the actual departure rates, the chart shows predicted rates in each decile calculated from logit coefficient estimates from the model in Table VI. The chart shows dramatically higher departure rates than expected for both directors and CEOs in the lowest performance decile, and rates generally close to the predicted level throughout the rest of the distribution. The data resemble the actual and predicted decile-by-decile turnover frequencies reported by Warner, Watts, and Wruck (1988, Table VII) in their study of top management turnover in large firms between 1963 and 1978. Like that earlier study, I find a strong concentration of turnover at the very bottom of the performance distribution, suggesting that performance must be extremely poor for both the CEO and director departure probability to increase meaningfully.

Finally, I estimate logit turnover regressions separately for each individual year of director service, to see whether the performance–turnover link strengthens or weakens as directors acquire seniority. The key coefficient estimate for the stock return performance variable is strongly negative in years one and two, with estimates of -1.88 (standard error 0.62) and -1.43 (0.39), respectively. After that the coefficient moves close to zero, with no statistical significance, in years three, four, and five. For outside directors, therefore, departures linked to poor performance of the firm appear to occur early in directors' tenures, if at all. This finding contrasts with similar analysis for CEOs of my sample firms,

⁹ I estimate the present value of this benefit stream as \$618,400, as follows. The typical fifth-year director is 59 years old. I assume that his unconditional probability of staying in office at each age between 60 and 75 is the same as displayed in Figure 2b for various age ranges, and that all directors definitely retire by age 75. I increase the assumed turnover probability each year by 3.75 percentage points to account for the possibility of losing a board seat due to delisting. These turnover frequencies imply expected remaining tenure of 8.8 years for a director aged 59. I assume that each director expects an annual retainer of \$92,460, equal to the mean annual retainer of \$69,345 cited above, and increased by one-third to account for additional payments for meeting attendance, committee memberships, and benefits. With a real discount rate of 3%, the present value of this amount for an 8.8-year period equals about \$618,400.

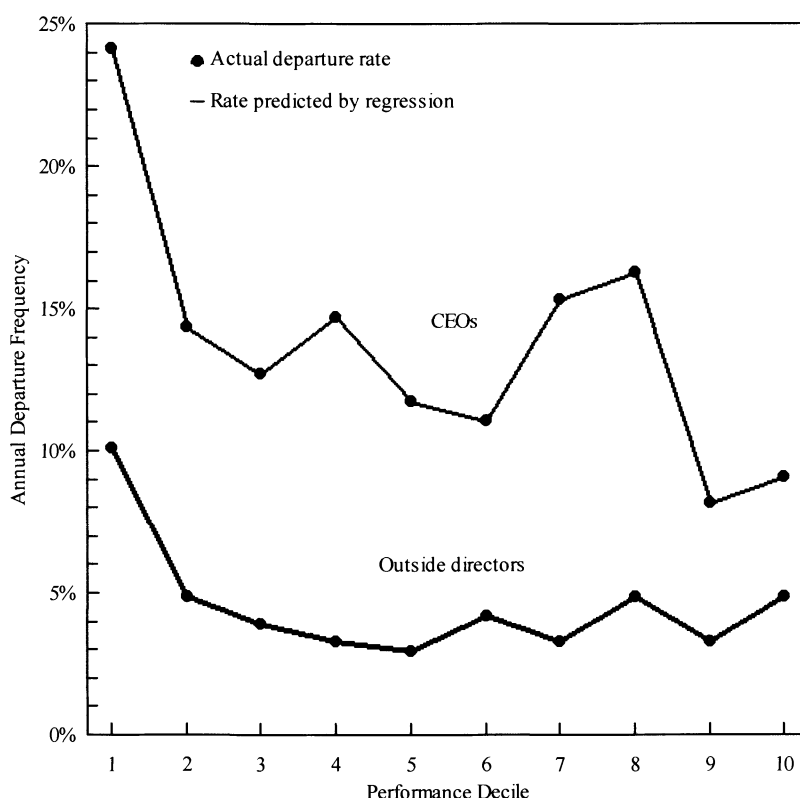


Figure 3. Turnover frequencies for outside directors and CEOs, by performance decile. Retirement frequencies for outside directors appointed to the boards of Fortune 500 companies between 1994 and 1996, compared with retirement rates for the CEOs of the same companies. Data are collected for the first 5 years in office of each director. The chart shows departure probabilities tabulated within performance deciles, with performance measured as the firm's annual stock return minus the return on the CRSP value-weighted index. Actual departure rates for directors and CEOs in each performance decile are compared with values predicted by the logit regressions shown in Table VI. Turnover due to acquisition or delisting of the firm is excluded.

as annual logit turnover regressions indicate a negative, significant relation between CEO departure and performance at every year of seniority, with little pattern over time. Moreover, the strength of the performance–turnover relation for new outside directors is at rough parity or even stronger than that estimated for new CEOs.

IV. Obtaining Directorships in Other Firms

Outside directors who develop reputations as skillful monitors might acquire additional directorships in other firms, as illustrated by a growing academic literature. Most of these papers have focused on the change in directors' other board seats in the aftermath of some extraordinary situation or event, rather

than the general performance of the firm (see Gilson (1990) (financial distress); Farrell and Whidbee (2000) (dismissal of CEO); Harford (2003) and Li and Keys (2003) (sale of the firm); and Coles and Hoi (2003) (opting out of antitakeover legislation)).¹⁰ Ferris, Jagannathan, and Pritchard (2003) come closest to studying whether the overall performance of a company affects the number of board seats by its outside directors under general and not extraordinary conditions. The authors find a positive association between performance and directors obtaining new board seats. However, a number of aspects of the authors' research design limits the applicability of the results. For outside directors who are not retired, performance is measured with respect to the director's primary employer, rather than for the firm in their sample on whose board he serves. For directors who do not have full-time jobs, performance is measured as an average across all companies on whose boards they sit, rather than for the sample firm. The authors measure performance only by accounting profitability rather than stock market returns. Finally, their regressions for the acquisition of directorships rely on a (0, 1) binary dependent variable that equals 1 if any new directorships are obtained; this specification takes account of neither the number of additional directorships received, nor the possibility that directors could lose rather than gain external board seats (this truncation of the dependent variable appears in several of the other studies cited above).

Figure 4 tabulates the distribution of the change in other board seats held by the outside directors who serve for the entire 5-year period of my sample. The chart, which is limited to directorships held in public companies, shows that a (0, 1) binary variable measuring the change in directorships does not do justice to the richness of the data; directors gain as many as five other board seats over the sample period, and a substantial number experience a net loss in board seats. The distribution has a mean change of +0.20 directorships (*SD* 1.28) and a median of 0.

I regress the 4-year change in board seats against the company's net-of-market stock returns during the director's tenure in office. I include indicator control variables for various director occupations, grey status, and gender. I include as a variable the company's rank in the Fortune 500, in the belief that appointment to the boards of the most visible public firms will by itself bring reputational benefits that increase with the prominence of the company. I also add to the model the number of other board seats already held by the director. One would expect new board seats to have a negative association with this variable, since directors serving on zero boards can only gain seats, while those on many boards may refuse new seats beyond a certain point or become unappealing candidates for further appointments if their time is spread thinly

¹⁰ Related research studies company performance and the outside directorships obtained by company executives. Kaplan and Reishus (1990) find that if a firm reduces its dividend, the likelihood falls of its executives gaining additional outside directorships. Brickley, Linck, and Coles (1999) find a connection between company performance during the CEO's final 4 years and the number of directorships the CEO holds after retiring, though the result holds only for accounting performance and not stock performance (see also Booth and Deli (1996) and Avery, Chevalier, and Schaefer (1998)).

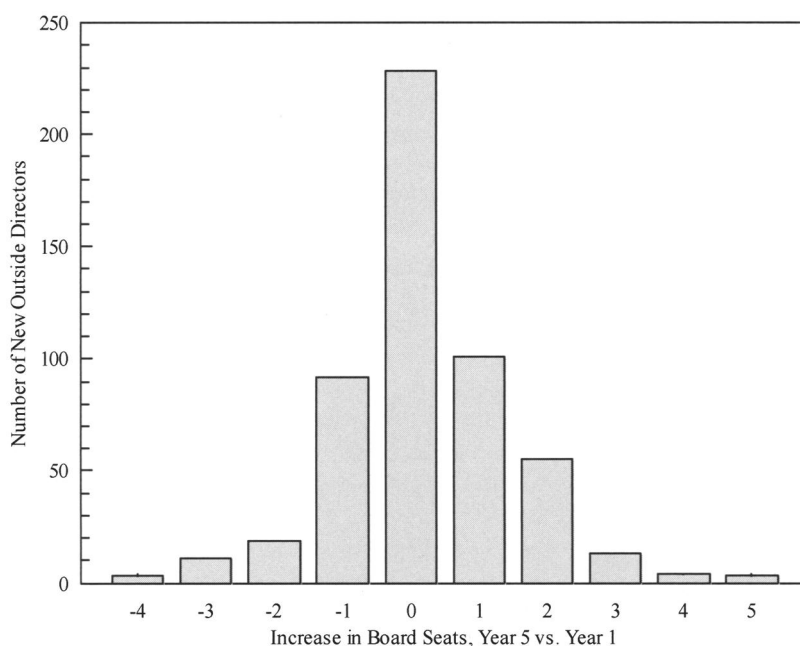


Figure 4. Outside directors' change in board seats over 5 years. Change in the number of directorships held in other public companies for a sample of 529 outside directors elected to the boards of Fortune 500 companies between 1994 and 1996. The change is calculated over a 4-year period from information disclosed in company proxy statements.

across many firms (Li and Keys (2003)). Table VII reports the regression estimates. The current year stock return refers to the fiscal year ended prior to publication of the fifth proxy statement in which the director appears, that is, the director's fourth year of service. I find that more than 1 year's lag of the performance model does not contribute to the model, so I do not report historical stock returns beyond 2 years.

Estimates in Table VII show a positive association between the company's performance in the previous 2 years and the net acquisition of new board seats by outside directors over the 4 years after their appointments. However, only the lagged performance variable has a significant estimate. If a smaller time period is used to measure the acquisition of directorships, such as the change over the director's first 2 or 3 years on the board instead of 4 years, I do not obtain significant results, suggesting that the market for directors' services takes time to assess and assimilate the monitoring ability of newly appointed directors. Using accounting profits instead of stock returns as the measure of performance also leads to positive estimates, but they are not significant. Grey directors receive fewer new board seats than independent ones, a result indicating that firms are reluctant to recruit directors who have exhibited conflicts of interest on other boards. The Fortune 500 rank variable has a negative estimate as expected, indicating that directors are more likely to obtain new board seats

Table VII
Additional Board Seats Obtained by Outside Directors

Shown here are ordinary least squares estimates of the number of board seats acquired by outside directors during their first 4 years of service on the boards of Fortune 500 companies. The sample includes 529 directors elected to company boards between 1994 and 1996 who continue to serve as directors of the same companies 4 years later. Information about board seats is limited to other public companies and is collected from director biographies published in the first and fifth annual proxy statements in which a director appears. Standard errors robust to heteroskedasticity appear in parentheses.

	Estimate
Intercept	1.08*** (0.31)
Grey	-0.25* (0.15)
Female	-0.19 (0.12)
Number of other board seats held when elected	-0.30*** (0.03)
Company rank in Fortune 500	-0.0005 (0.0003)
Stock return, net of market	0.12 (0.12)
Stock return, net of market, lagged one year	0.34** (0.15)
Occupation indicator variables	Yes
Sample size	529
R^2	0.23

***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

after they begin serving on the boards of more prominent firms, though the estimate just misses having statistical significance.

Given the stock performance variable's standard deviation of 0.39, the coefficient estimates for this variable and its lag suggest that 1 *SD* outperformance of the market for 2 years will lead to an expected increase of about 0.2 directorships for each outside director, a relation that appears to have some economic significance as well as statistical significance, given the potential remuneration described earlier.

To transform these estimates into an expected financial gain to a director per \$1,000 increase in shareholder wealth, I proceed in much the same way as in calculating incentives from compensation, ownership, and turnover. I take the sum of the current and lagged annual performance coefficient estimates in Table VII, divide it by the median sample firm's market capitalization of \$6.6 billion, and multiply by the present value of the expected lifetime income of a fifth-year director who joins a new board (see calculations in prior section). This method yields an estimate of \$0.043, or 4.3 cents, that a director can expect from increased wealth derived from the increased likelihood of obtaining more board seats for each \$1,000 increase in the firm's market cap.

I note that while the analysis indicates a positive association between firm performance and the opportunities for outside directors to serve on other boards, the change in directorships held is a somewhat imperfect measure of any director's reputation. On occasion directors may lose board seats by taking actions in shareholders' interest, such as agreeing to sell the firm or challenging the policies of ineffective managers. The raw number of board seats held may also become negatively associated with a director's monitoring capacity beyond a certain point, since directors sitting on very many boards may become inattentive or susceptible to cronyism.

V. Special Benefits for Outside Directors

Some outside directors may obtain special benefits from their service, such as personal consulting contracts with the corporation or a stream of business for their main employers. Others may enter into interlocking relationships with the CEO, obtaining mutual benefits by sitting on one another's boards or sitting together on a third board. The prospect of joining a board as an independent outside director and subsequently entering into one of these grey relationships may provide a form of incentive.

The possibility of independent directors becoming co-opted into grey status over time is suggested by data reported in Shivdasani and Yermack (1999), tabulated for the same sample used in this paper. The overall composition of the boards in the sample includes 25.8% grey directors, but only 10.6% of newly appointed directors have grey status. The disparity between these numbers could be explained by some combination of three effects: (1) grey directors serving longer than independent directors; (2) fewer grey appointments in recent years than in the past, or (3) a pattern of "corruption" in which independent directors acquire conflicts of interest and become grey over time. Possibility (1), that grey directors might serve for longer tenures than independent directors, is not supported by the data. The unconditional turnover frequency of grey directors is higher than for independents, and regression estimates in Table V indicate a higher turnover probability for greys as well (though the difference from independents is not quite statistically significant).

Data also do not support the hypothesis that independent directors might be systematically co-opted into grey status over time. Over the 5 years studied in the sample, I find 30 independent directors (5% of the sample) acquiring grey status at some point, the large majority through the creation of interlocks with the CEO. However, these changes are almost exactly offset by 26 grey directors in the original sample losing their conflicts of interest and becoming independent, most often when the CEO with whom the grey director was interlocked retires while the director remains on the board. Special consulting contracts or other personal benefits for outside directors are rare in the sample, as only 1.6% have them disclosed in proxy statements in any given year.

An interesting question is whether shareholders might predict which independent directors are most likely to move to grey status over time. I define a (0, 1) co-option indicator variable that equals 1 if an independent appointee

becomes grey at any point over their first 5 years on the board. I regress this variable in a probit model against percent ownership, indicator variables for the director's main occupation, the number of other boards on which the director sits, gender, age, indicators for committee membership, and the abnormal stock return that occurred when the director's appointment was originally announced. Among the occupational indicators, attorneys who join the board as independent directors exhibit a significant higher probability of turning grey; the result does not extend to other professional service providers such as investment bankers or consultants. Directors who sit on a large number of boards also are more likely to become grey, probably because they have a greater possibility for future interlocks with the CEO. Female directors are less likely than males to move from independent to grey status, though the result has borderline statistical significance. The abnormal stock return at the director's appointment has no association with the future probability of becoming grey.

I conclude that the prospect of extraordinary personal benefits plays little meaningful role as an incentive for outside directors. The explanation for the disparity between the recent rate of grey outside director appointments and the much higher cross-sectional average of grey outsiders already serving on boards appears to be due to a much-reduced tendency to appoint grey directors now than in the past.

VI. Conclusion

This paper analyzes the performance incentives of outside directors in a sample of leading U.S. companies. For more than 700 directors appointed by Fortune 500 firms between 1994 and 1996, I estimate the personal financial gains to directors when the firm's market capitalization increases. These wealth consequences may arise from compensation and ownership, the loss of the directorship if the firm performs poorly, the chance to obtain additional directorships if the firm does well, and special benefits related to personal contracting between the firm and the director or the director's main employer.

I estimate the total pay-performance sensitivity for fifth-year outside directors as \$0.110, or 11 cents, per \$1,000 change in shareholder wealth. More than half of the total incentives, or \$0.061, comes from changes in the value of stock and stock options. The increased likelihood of obtaining new directorships if the firm performs well provides the next strongest incentives, \$0.043 per \$1,000. Two much smaller sources of incentives are the expected costs of losing a board seat if the firm performs poorly, \$0.002, and the expected increase in the size of the annual turnover if the firm performs well, \$0.004. Further results indicate that stock and stock option awards to directors occur in line with standard compensation theories related to risk-taking, moral hazard, taxation, and liquidity.

Are these incentives economically meaningful for a typical director? In my sample the median firm has a market capitalization of \$6.6 billion, and the standard deviation of the annual stock return performance variable is about 0.39. This implies that 1 *SD* change in the firm's stock market performance results in a change in the market cap of about \$2.6 billion, which would change

a director's expected wealth by about \$285,000. Considering that an outside director may serve on several boards, these incentives appear nontrivial, albeit much smaller than those offered to top managers.

REFERENCES

- Avery, Christopher, Judith A. Chevalier, and Scott Schaefer, 1998, Why do managers undertake acquisitions? An analysis of internal and external rewards for acquisitiveness, *Journal of Law, Economics, and Organization* 14, 24–43.
- Baker, George P., Michael C. Jensen, and Kevin J. Murphy, 1988, Compensation and incentives: Practice vs. theory, *Journal of Finance* 43, 593–616.
- Bettis, J. Carr, John M. Bizjak, and Michael L. Lemmon, 2003, The cost of employee stock options, Unpublished manuscript, Portland State University.
- Bizjak, John M., James A. Brickley, and Jeffrey L. Coles, 1993, Stock-based incentive compensation and investment behavior, *Journal of Accounting and Economics* 16, 349–372.
- Booth, James R., and Daniel N. Deli, 1996, Factors affecting the number of outside directorships held by CEOs, *Journal of Financial Economics* 40, 81–104.
- Brickley, James A., James S. Linck, and Jeffrey L. Coles, 1999, What happens to CEOs after they retire? New evidence on career concerns, horizon problems, and CEO incentives, *Journal of Financial Economics* 52, 341–377.
- Brown, William O., and Michael T. Maloney, 1999, Exit, voice, and the role of corporate directors: Evidence from acquisition performance, Unpublished manuscript, Claremont McKenna College.
- Bryan, Stephen, Lee-Seok Hwang, April Klein, and Steven Lilien, 2000, Compensation of outside directors: An empirical analysis of economic determinants. Unpublished manuscript, City University of New York.
- Coles, Jeffrey L., Naveen N. Daniel, and Lalitha Naveen, 2003, Executive compensation and managerial risk taking, Unpublished manuscript, Arizona State University.
- Coles, Jeffrey L., and Chun Keung Hoi, 2003, New evidence on the market for directors: Board membership and Pennsylvania Senate Bill 1310, *Journal of Finance* 58, 197–230.
- Coles, Jeffrey L., Michael L. Lemmon, and J. Felix Meschke, 2003, Structural models and endogeneity in corporate finance, Unpublished manuscript, Arizona State University.
- Fama, Eugene F., and Michael C. Jensen, 1983, Separation of ownership and control, *Journal of Law and Economics* 26, 301–325.
- Farrell, Kathleen A., and David A. Whidbee, 2000, The consequences of forced CEO succession for outside directors, *Journal of Business* 73, 597–628.
- Ferris, Stephen P., Murali Jagannathan, and Adam C. Pritchard, 2003, Too busy to mind the business? Monitoring by directors with multiple board appointments, *Journal of Finance* 58, 1087–1112.
- Fich, Eliezer M., and Anil Shivdasani, 2003, The impact of stock-option compensation for outside directors on firm value, *Journal of Business*, forthcoming.
- Gilson, Stuart C., 1990, Bankruptcy, boards, banks, and bondholders: Evidence on changes in corporate ownership and control when firms default, *Journal of Financial Economics* 27, 355–388.
- Guay, Wayne R., 1999, The sensitivity of CEO wealth to equity risk: An analysis of the magnitude and determinants, *Journal of Financial Economics* 53, 43–71.
- Hall, Brian J., and Jeffrey B. Liebman, 1998, Are CEOs really paid like bureaucrats? *Quarterly Journal of Economics* 113, 653–692.
- Harford, Jarrad, 2003, Takeover bids and target directors' incentives: The impact of a bid on directors wealth and board seats, *Journal of Financial Economics* 69, 51–83.
- Hermalin, Benjamin E., and Michael S. Weisbach, 1988, The determinants of board composition, *RAND Journal of Economics* 19, 589–606.
- Himmelberg, Charles P., Robert G. Hubbard, and Darius Palia, 1999, Understanding the determinants of managerial ownership and the link between ownership and performance, *Journal of Financial Economics* 53, 353–384.

- Jensen, Michael C., and Kevin J. Murphy, 1990, Performance pay and top-management incentives, *Journal of Political Economy* 98, 225–264.
- John, Teresa A., and Kose John, 1993, Top-management compensation and capital structure, *Journal of Finance* 48, 949–974.
- Kaplan, Steven N., and David Reishus, 1990, Outside directorships and corporate performance, *Journal of Financial Economics* 27, 389–410.
- Li, Joanne, and Phyllis Y. Keys, 2003, Evidence on the market for professional directors, Unpublished manuscript, University of Delaware.
- Linn, Scott C., and Daniel Park, 2003, Outside director compensation policy and the investment opportunity set, Unpublished manuscript, University of Oklahoma.
- Murphy, Kevin J., 1999, Executive compensation, in Orley Ashenfelter and David Card, eds.: *Handbook of Labor Economics*, Vol. 3, North-Holland.
- Perry, Tod, 2000, Incentive compensation for outside directors and CEO turnover, Unpublished manuscript, Arizona State University.
- Shivdasani, Anil, and David Yermack, 1999, CEO involvement in the selection of new board members: An empirical analysis, *Journal of Finance* 54, 1829–1853.
- Vafeas, Nikos, 1999, Board meeting frequency and firm performance, *Journal of Financial Economics* 53, 113–142.
- Warner, Jerold B., Ross L. Watts, and Karen H. Wruck, 1988, Stock prices and top management changes, *Journal of Financial Economics* 20, 461–492.
- Yermack, David, 1995, Do corporations award CEO stock options effectively? *Journal of Financial Economics* 39, 237–269.