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<https://escholarship.org/uc/item/0j09j87d>

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### Publication Date

2006-03-01

# **WHY ARE FIRMS SOLD? THE ROLE OF THE TARGET CEO'S AGE, TENURE, AND SHARE OWNERSHIP**

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March 2006

Preliminary and Partial Draft. Please do not quote or cite without the permission of the authors.

## I. INTRODUCTION

Conventional wisdom holds the CEO to be the most important actor in the hierarchical world of the widely-held American company. The CEO manages the company, glories in its successes, and is blamed for its failures. In contrast, the company's board of directors acts principally in a supportive role by advising, monitoring, and compensating the CEO, and – inevitably – by replacing her when it becomes time to do so. Even shareholders usually exert influence principally through the medium of the CEO by, for example, lobbying the board to replace a CEO who has lost the confidence of the market. But how critical is the CEO in fact? More particularly, do identifiable features of CEOs make measurable differences in how companies are managed or behave?

One way to explore the CEO's influence is by examining the relationship between a CEO's personal characteristics and the decision to sell the company – a decision in which the CEO is inevitably closely involved and may even have initiated herself. Deciding to sell the company is among the most important decisions a CEO can make. But more than this, today's market for corporate control operates largely through friendly deals, which suggests that the CEO characteristics associated with selling the company are important for American corporate governance generally. Finally, the apparent relationship between a CEO's characteristics and the decision to sell the company may shed light on the extent to which these same characteristics are likely to influence other major corporate decisions.

In an earlier paper, we investigated the relationship between CEO option holdings and the decision to sell an S&P 500 company (Coates & Kraakman, 2004). In this paper, we examine several additional characteristics that might influence an S&P 500 company's CEO to sell the company or retire from it, including stock ownership, chronological age, and length of tenure as chief executive officer.

Our principal finding is that the duration of a CEO's service on the job is strongly associated with the sale of her company. The probability that a company will be sold peaks sharply between four and five years into a CEO's job tenure, and declines significantly thereafter. We interpret this result to suggest that the typical CEO's tenure has an implicit term structure. The CEO is allowed (or allows herself) four or five years to master the company's business and execute her business plan. If she succeeds, she

stays on the job – typically for eight or nine years; if she fails, there is an increased probability that the company will be sold or she will be forced to retire prematurely.

By contrast, we find that a CEO's share ownership and chronological age are only weakly associated with the sale of companies, although both are strongly associated with a CEO's departure from the company without a sale.

## II. PREVIOUS LITERATURE

Prior empirical research relating M&A to managerial incentives dates largely from the 1980s or early 1990s, and thus focuses on factors particularly salient in that period, such as manager ownership of stock and golden parachutes. For example, Walking and Long (1984) examine the reactions of managers to takeover bids, and a number of investigations attempt to predict takeover bids (Morck, et al., 1988; Mikkelsen and Partch, 1989; Shivdasani, 1989; Song and Walking, 1993).

Studies of recent friendly acquisitions from the target's side are scarce. Only one paper, by North (2001), addresses all of the CEO characteristics that are examined here. North analyzes the ability of various managerial and board characteristics to distinguish between 342 NYSE/AMEX target firms that were acquired in friendly transactions during the 1990s and a matched set of firms that were not acquired. North's principal finding is that share ownership by corporate officers and inside directors is *negatively* associated with acquisitions, while share ownership by non-management shareholders represented on the board of directors is *positively* associated with acquisitions (2001: 144-45). North finds managerial entrenchment to be the most plausible explanation of the negative relationship between insider share ownership and acquisitions. It should be noted, however, that the median firm in North's sample is much smaller than median S&P 500 firm and, correlatively, that insiders held a much larger percentage of company shares among North's sample firms than they did in our sample. Finally, neither the chronological age nor CEO tenure is significantly related to acquisitions in North's multivariate analysis (2001: 144).

Also relevant to our paper is an investigation by Huson, et al. (2001) of CEO turnovers, which tags a sample of CEO departures between 1971 and 1994 as "forced" or "voluntary," based on the authors' interpretations of contemporaneous press reports. Huson, et al., find that chronological age is highly significant, and negatively related to forced departures, as is CEO membership in one of the firm's founding families. By contrast, the authors find that the CEOs of poorly performing firms are significantly more

likely to be removed from office in forced departures than CEOs of strongly performing firms. The issue raised by the Huson, et al. investigation, for this paper, of course, is whether friendly acquisitions are more akin to forced departures or to voluntary departures – and, more generally, where company sales fit in the broader pattern of CEO turnovers.

### III. INITIAL HYPOTHESES

Agency theory suggests that the self-interest of CEOs ought to be a major determinant of when – and whether -- widely-held public companies are sold. Target CEOs presumably exercise discretion over the acquisition decision. Moreover, the literature indicates that most friendly transactions are initiated from the sell side, i.e., by the target (Boone & Mulherin, 2004). Thus we expect the personal characteristics of a target CEO to influence whether her company is sold by conditioning whether it is in her personal interest to sell the company. (In addition, there is no obvious reason why *buyers* of firms should care about the personal characteristics of their targets' CEOs, except insofar as they affect the targets' CEOs willingness to sell.)

The first personal characteristic that we examine is CEO share ownership. The literature has traditionally hypothesized that share ownership helps to align management's interests with those of shareholders – at least up to a point at which entrenchment becomes possible. Morck, Shliefer & Vishny (1988). As an initial hypothesis, then, we might suppose that managers holding more stock might be *more* likely to encourage friendly sales of their firms at premium prices. All else equal, CEOs with large shareholdings (and exercisable options) profit more from premium acquisition offers than do CEOs with small shareholdings. This is the “premium hypothesis.”

- *Hypothesis 1a. The probability that a company will be sold in a negotiated transaction increases as CEO shareholdings increases (at least over low ranges of CEO shareholdings).*

Alternatively, however, the empirical literature (North, 2001; Huson, et al., 2001) points to the opposite hypothesis: managers who hold more stock are less likely to sell or leave the firm, either because stock ownership is a measure of their attachment to the firm or of their power to entrench themselves. Our second hypothesis, then, is an “entrenchment-attachment hypothesis.”

- *Hypothesis 1b. The probability that a company will be sold in a negotiated transaction decreases as CEO shareholdings increases.*

The second personal characteristic of CEOs that we address is chronological age. At some point an older CEO must leave the firm, either by retiring or selling the firm, or by dying. A CEO in the vicinity of retirement or death can expect only limited compensation from an independent company. By contrast, a younger CEO with many years of service remaining can expect large amounts of additional compensation from continuing to work at the firm – compensation that she might not be able to obtain elsewhere. It follows that a firm is more likely to be sold as its CEO ages, particularly if she possesses large shareholdings.<sup>1</sup>

- *Hypothesis 2a. The probability that a company will be sold in a negotiated transaction increases as a CEO ages.*

A corollary of this hypothesis is that CEOs are particularly likely to sell their companies in the immediate vicinity of a mandatory or customary retirement age. For the many companies with mandatory retirement ages, a CEO can have no expectation of remaining on the job after this age is reached. From this, a second hypothesis follows:

- *Hypothesis 2b. The likelihood that a company will be sold in a negotiated transaction is particularly high when CEOs in the vicinity of the customary retirement age, i.e., between 62 and 66 years old.*

Finally, consider CEO tenure, or the number of years a CEO has served in the top position. Here, it seems, there are at least three plausible hypotheses. The first is the null hypothesis that CEO tenure should have no effect on the probability that a company will be acquired in a friendly deal. Duration of tenure is a structural attribute of a CEO rather than a personal attribute; it changes from one year to next for every continuing CEO. Thus, tenure does not immediately suggest why a given CEO might benefit more -- or less -- from a negotiated deal in the same obvious way that, say, the size of CEO shareholdings does. Moreover, North (2001) failed to find any relationship between tenure and becoming a target in a friendly acquisition. Thus, a hypothesis of “no relationship” is plausible.

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<sup>1</sup>This might be termed the *Van Gorkom* hypothesis, in honor of the well-known case in which the Delaware Supreme Court held directors personally liable for gross negligence in summarily approving the sale of a company initiated by a retiring CEO whom the Court suspected of seeking to cash out his own shareholdings in a kind of final period problem, at the expense of the company and its long-term shareholders. See *Smith v. Van Gorkom*, 488 A. 2d 258 (Del. 1985).

- *Hypothesis 3a. The probability that a company will be sold in a negotiated transaction is invariant over the CEO's tenure.*

Alternatively, however, one might suppose that even if increasing tenure does not change a CEO's fundamental interest – or lack of it – in a friendly transaction, increasing tenure does affect the CEO's ability to protect or realize her interest. Thus, one might expect that the longer a CEO serves, the more stable her position becomes – apart from the effects of advancing age. A long-serving CEO has survived more crises and had the opportunity to appoint loyalists to the management team, including more loyalists to the board of directors. One might expect, then, that job tenure insulates a CEO from shareholder pressure to enter deals, much as the accumulation of voting power through share ownership insulates a CEO from the pressure of outside shareholders. This is another variety of entrenchment hypothesis.

- *Hypothesis 3b. All else equal, the probability that a company will be sold in a negotiated transaction decreases as the job tenure of its CEO increases.*

Finally, one might expect CEO tenure to matter for negotiated deals not because it provides incumbent CEOs with a means of defending their positions, but because it forces failing CEOs to search for an exit opportunity. CEOs who are under severe pressure because their policies are failing can either resign or urge the sale of the company. Tenure is important here partly because it takes time for failure to become noticeable, and for a CEO to convince other players in the firm to accept a negotiated sale. But tenure is also important because failure is more likely to occur during a CEO's initial years in office than in her later years, after she has already survived a first round of challenges. It follows the probability of a deal is likely to be highest at the end of an implicit first term in a CEO's tenure. Hence, a third, "term-structure" hypothesis:

- *Hypothesis 3c. All else equal, the probability of a negotiated deal initially increases in years of CEO tenure, reaches a maximum, and then declines as a CEO's tenure period continues to lengthen.*

#### **IV. COLLECTION OF DATA AND BASIC VARIABLES**

We constructed a data set that included four kinds of information: (1) company-level data as well as CEO compensation and demographic data for companies in

Standard & Poor's (S&P) 500 index; (2) data about the ownership structure of these companies, including CEO ownership; (3) information on whether these companies had been acquired and, if so, by whom and at what price; and (4) governance-related data for these companies.

#### **A. Compensation and Demographic Data**

The bulk of our data fell into the first of these categories. We extracted executive compensation data for S&P 500 companies from Compustat's Execucomp database, which is derived from annual proxy statement filings with the SEC. For each year from 1992 to the present, Execucomp maintains data on all firms in the S&P 500 for that year (which exceeds 500 because S&P removes a small number of firms each year, primarily due to acquisitions).<sup>2</sup> We collect data on chief executive officers (meaning the single highest paid officer<sup>3</sup>) for any given firm for all firms in the S&P 500 at any time from 1992 to 2004. Our total sample includes panel data representing 6449 firm-years, with partial data in the Execucomp database for 1992 and 2004.

For each annual observation, we gather data on CEO equity ownership and compensation. Thus we record the CEO's total direct compensation (TDC), as well as the discrete components of TDC.<sup>4</sup> We also report the top officer's end-of-year total holdings of shares of stock, vested options, and unvested options. We calculate the value of CEO stock holdings (SHARVAL) by multiplying CEO shareholdings by the company's end-of-year stock price. Similarly, we calculate CEO percentage shareholdings (SHARPCT) by dividing the number of CEO shares by total shares outstanding. Execucomp maintains data on the intrinsic value of options (i.e., the difference between strike prices and the company's end-of-year stock price). The sum of the intrinsic value of a CEO's vested and unvested options is reported as OPTVAL. For the 1995-2000 sub-period, we supplement our regression analysis with an estimate

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<sup>2</sup> Execucomp's 1992 data is substantially incomplete; we include it in what we report, but our results are qualitatively unchanged when we drop 1992 observations. Our access to Execucomp was through Wharton's on-line collection of databases. In the Wharton collection, Execucomp does not make publicly available its codes for S&P 500 membership for firms no longer included in the S&P 500 (i.e., historic S&P 500 membership) and commingles those observations with firms that were but no longer in the Midcap and Smallcap indices, so we hand-code historic S&P membership by reference to S&P annual publications.

<sup>3</sup> Although not all top executive officers have the title "Chief Executive Officer," for brevity we refer herein to top executive officers as CEOs.

<sup>4</sup> These include SALARY, BONUS, LTIP (long-term incentive payments), RSTKGRNT (restricted stock grants), and BLKSHVAL (the Black-Scholes value of new option grants).



of the Black-Scholes value of each CEO's total given fiscal option holdings at the end of a year, estimated as described in Hall and Liebman (1998).<sup>5</sup>

In addition, we obtained CEO age and employment data from Execucomp, which lists CEO ages, initial employment dates, and dates on which CEOs acquired their firms' top job.<sup>6</sup> Since Execucomp's age data was spotty, we supplemented the database by direct reference to proxy statements for approximately half the sample, and report the corrected data as AGEYEAR.

The Execucomp database also provided us with most of our control variables, including the annual market capitalization (MKTCAP) and book value (ASSETS) of the companies in our data set. We calculated our principal control for firm size as the natural log of book value (LNASS). Finally, the Execucomp database allowed us to generate a variety of measures of firm performance, which we then adjusted for calendar year and one-digit SIC industry classifications. The full set of these performance measures are listed in Table 1. Most of these variables are highly intercorrelated and yield similar results in multivariate analysis. We selected the two performance measures with the lowest inter-measure correlation ( $r= 0.21$ ) for the analysis we report in this paper: (1) annual change in sales revenue adjusted by SIC code and calendar year (SYSALECHG),<sup>7</sup> and (2) the ratio of a firm's Tobin's Q to the industry-wide Tobin's Q (RELATIVEQ).<sup>8</sup> Crudely speaking, these variables measure a firm's growth trajectory and economic performance respectively.

## **B. Blockholder Data**

We supplemented the Execucomp control variables with data on block ownership from two sources. Our most reliable blockholder data was extracted from the Dlugosz, et al. (2004), database, which contains share ownership data for many companies

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<sup>5</sup> The Hall-Liebman estimates assume that CEOs exercise their oldest options exercised first, and derive an updated Black-Scholes value for options assumed to remain in each CEO's portfolio with an assumed risk-free-rate of 6%. We obtained similar results using the Hall-Liebman data, which we do not report in this paper.

<sup>6</sup> Oddly, Execucomp maintains data on the current age of a CEO for any given observation year, even if the observation year is historic. That is, the "CEO Age" variable will be, say, 60 for each yearly observation for a given CEO who is 60 at the time the data is downloaded from the database. We have adjusted the CEO age data in our database accordingly.

<sup>7</sup> SALECHG was adjusted for the effects of industry and calendar year by regressing SALECHG on industry and calendar year dummy variables and employing the residuals as values for SYSALECHG. A similar technique was used to adjust all variables beginning with the prefix "SY".

<sup>8</sup> We are grateful to Allen Ferrell for supplying us with the program and parameters used to calculate RELATIVEQ174. The industry-wide q's calculated for this variable rely on two-digit Fama-French industry classifications.

including S&P 500 between from 1996 – 2001. For each company, we collected the *percentage* of shares held by five classes of blockholders with 5% or more of the company’s outstanding shares and the *number* of 5%+ blocks that fell in each of these classes. Our five mutually-exclusive classes of blockholders were institutional investors, corporate blockholders (e.g., parent companies), individual blockholders, blocks held by trusts and foundations, and blocks held by issuer affiliates such as corporate ESOPs. When the coding of a blockholder was in doubt on the basis of its name alone, we searched proxy statements to ensure accurate coding. To obtain blockholder data prior to 1996, after 2001, we turned to the CDA Spectrum database with the same coding procedure. Altogether we obtained direct blockholder observations for 6,203 firm-years, although the CDA Spectrum data appears to be considerably noisier than the Diugosz, et al., data.

We do not parse out the effects of particular classes of blockholders on deals in this paper. Instead, we employ a composite measure, BLOCKSCORE, to serve as a rough control for the aggregate influence of ownership structure on the deal decision. BLOCKSCORE takes the value of “1” if there is “insider ownership” of a block of 5% or more by the CEO or a trust, the value of “2” if there is no 5%+ blockholder, the value of “3” if there is one or more individual or institutional blockholders (other than the CEO or a trust), and the value of “4” if there is a corporate blockholder. As these ascending values imply, blockholders appear to either encourage or discourage negotiated deals. Large shareholders held by CEOs or insider trusts significantly lower the probability of a deal; large blocks in the hands of outside corporations significantly increase the deal probability; and large blocks held by institutional investors or outside individuals marginally raise the probability of a deal. Figure A1 in the Appendix graphs the effects of blockholder classification on deal probabilities.

### **C. Data on Deals**

We obtained information on the occurrence of deals from the Thomson Financial Securities Data M&A database for each firm in our sample. We then matched each yearly observation with the subsequent year’s data from the M&A database, to produce a variable (DEAL), coded “0” if the company was not acquired in the subsequent year, or “1” if it was.<sup>9</sup> We supplemented this procedure by deriving a list of all companies that

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<sup>9</sup> To ensure that the transactions are of the type in which we are primarily interested (sales of control, not acquisitions or partial block sales), we exclude deals unless they involve a merger or an acquisition of at least half a company’s voting stock, and we review each deal in the sample to verify that the company in our sample was being acquired and not truly an acquiror (as when

were removed from the S&P 500 before the end of the sample period, searching news reports in Lexis/News for an explanation for the removal, and correcting DEAL where news reports indicated that the company was acquired.

#### **D. The RETIRE Variable**

Because we view the negotiated sale of companies as a mode of CEO exit, we supply a second variable – RETIRE – as a point of comparison. RETIRE assumes the value of “0” in a current year if, in the succeeding year, there is no deal and the firm remains in the S&P 500 without turnover of its CEO. RETIRE assumes the value of “1” if there is no deal, the firm remains in the S&P 500, but a new CEO takes the helm in the succeeding year. Thus, RETIRE, DEAL, and continuing CEO are mutually exclusive categories. Note, however, that unlike CEO exits due to DEAL, we lack direct information about the reasons for exits reflected in RETIRE. No doubt many CEOs in fact retire, while others are dismissed, find other employment, or die on the job. For this reason, we attempt to enhance the value of RETIRE as a benchmark by contrasting the behavior of DEAL and RETIRE for CEOs who are 60 years old or younger. After age 60, mean RETIRE values for CEOs increase sharply, most likely as a result of firm retirement policies or deaths on the job. By implication, RETIRE values for CEOs below the age 61 (75% of our firm-years) are more likely to result from CEOs’ performance on the job.<sup>10</sup>

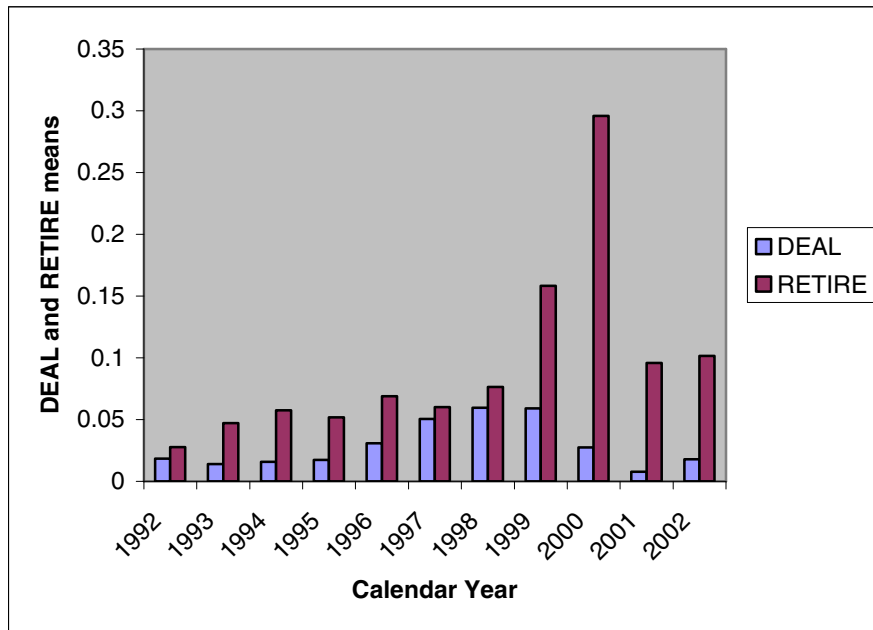
The patterns of RETIRE and DEAL over time highlights the importance of economy-wide developments during the years for which we have panel data. During the boom years 1993 – 1999, share prices, CEO pay, and acquisition activity all rose sharply. By contrast, during the bust and recovery years from mid-2000 to 2004, stock prices, CEO pay, and acquisition activity first dropped sharply and then recovered gradually. Figure 1, below, illustrates how radical the changes in S&P acquisition activity were over this period.

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NationsBank acquired BankAmerica but maintained BankAmerica’s stock listing and renamed the combined company BankAmerica).

<sup>10</sup> This observation originates with Husun, et al. (2001).

**Figure 1: DEAL and RETIRE Means by Calendar Year**



During 1998 and 1999, total turnover for S&P 500 CEOs under 61 years old was about 12% per year, of which almost half (6%) resulted from transactions in which firms were sold. During 2001, the year of the bust, total turnover for CEOs under 61 jumped to an astounding 31% in one year, of which less than one-tenth (2.7%) was the result of acquisition activity.<sup>11</sup> By 2003, total turnover had again subsided to an annual rate of 12%. But in 2003, unlike 1998 –1999, deals were responsible for only one-seventh of all exits of CEOs under 61. Clearly, then, the role of friendly deals in triggering CEO turnover has varied dramatically from one macro-economic period to the next.

Given such enormous variation in the year-by-year incidence of deals, a reader might question whether any relationships between CEO characteristics and deals remain stable over the thirteen-year span of our panel data. The answer appears to be that most but not all do. Appendix Table A-1 applies our basic multivariate model, developed in Section V below, separately to the 1992-1999 and 2000-2004 subsamples with generally similar results, after allowing for differences in significance levels that arise from the paucity of deals during the 2000-2004 period.

<sup>11</sup> For all S&P 500 firms and CEOs, the 2001 figures were 2.5% deals and 33.3% retirements respectively.

## V. UNIVARIATE ANALYSIS

Table 1 below presents a univariate analysis of our sample, comparing mean values for “firm years” that are negative or positive for DEAL. T-values and significance levels for the differences in means between non-deal cases and deal cases are presented in the far right-hand column.

**Table 1, Differences of Means for Principal Control Variables,  
Sorted by DEAL = 0 or DEAL = 1**

Variable	Description	Mean, Deal=0	Mean, Deal=1	t-values*
SYMARKETBOOK	Ratio of market to book value	15.0	-509.3	5.81***
SYSALESCHG	Year-to-year change in sales revenue	2.68	-8.27	3.99***
SYROA	Return on Assets (Earnings/Book)	0.16	-2.28	3.03**
SYTRS3YR	Total return on shares over 3 years	0.22	-6.08	4.02***
SYQ74	SIC/year adjusted Tobin's q	0.017	-0.556	6.35***
SYQ	Unadjusted Tobin's q	2.19	1.66	6.21***
SYINDUSQ1	SIC/year adjusted, industry-adjusted q	0.007	-0.159	2.66**
RELATIVEQ	Tobin's q/industry-adjusted q	1.18	0.97	7.49***
LNASS	Log of asset value	8.89	8.97	-0.73
SYLNASS	SIC/year adjusted log of asset value	0.003	-0.107	1.36
SYMKTCAP	SIC/year adjusted market capitalization	1.9e+07	-6.5e+08	1.43
RISK	Black-Scholes volatility of share price	0.335	0.338	-0.25
NUMINSTBLOCK		1.59	1.62	-0.28
NUMCOBLOCK	Number of 5%+ company shareholders	.053	.098	-1.76
NUMINDIVBLOCK	Number of 5%+ individual shareholders	.288	.241	0.84
NUMTRUSTBL'K	Number of 5%+ trust shareholders	.051	.029	1.63
NUMSELFBLOCK	Number of 5%+ self shareholders	.094	.099	-0.22
BLOCKSCORE	Composite Score for 5%+ blockholders	2.80	2.60	-3.65***
TDC	CEO's total annual direct compensation	7664	7168	0.80
SYTDC	Year/SIC adjusted total direct compensation	24	-836	1.46
OPTVAL	Total exercise value of CEO options	2.93e+07	1.77e+7	1.92
SYOPTVAL	Year/SIC adjusted CEO option value	3.21e+06	-1.10e+7	3.64***
RISKOPTVAL	Risk/option value interaction term	1.15e+07	6.70e+07	3.62***
CHUTESEV	Gold parachute or severance agreement?	0.646	0.763	-3.17**
SHARVAL	Market value of CEO's shares	1.89e+08	4.80e+07	5.14***
SYSHARVAL	Year/SIC adjusted CEO share value	5.19e+06	-1.78e+8	5.64***
LOGSHARVAL	Log of market value of CEO's shares	16.2	15.6	3.81***
SYLOGSHARVAL	Year/SIC adjusted log of CEO share value	0.019	-0.668	4.70***
SHARPCT	Percentage of total shares held by CEO	1.50	0.86	3.00**
AGE	CEO's chronological age in years	55.58	55.74	-0.34
TENURE	Years on the job as CEO	6.88	5.50	3.16**

\* Two-sample t-tests with unequal variances

Many results in Table 1 echo what we reported in our earlier investigation of option compensation and DEAL. (Coates & Kraakman.) First, DEAL is strongly related to all measures of firm performance: the more poorly the company performs in a given year, the more likely it is to be sold in the following year. Second, a CEO's golden parachute or severance agreement makes the sale of the firm significantly more likely. Both results are reassuring. The first suggests that a rational market for corporate control operates through the vehicle of friendly acquisitions. Poorly performing companies are sold more frequently than other companies, presumably in the expectation that new management can do more with their assets. The second finding confirms the importance of compensation arrangements intended to facilitate profitable company sales.

### **A. CEO Share Ownership and Deals**

The univariate data in Table 1 suggests that CEOs with more shares are less likely to sell their firms than CEOs with fewer shares. Table 1 shows significant differences in the mean value of CEO shareholdings between no-deal and deal firms (variables SHARVAL through SYLOGSHARVAL), and a significant difference in the mean ownership percentages held by deal and non-deal CEOs.

To explore this point further, we constructed two dummy variables to reflect whether S&P 500 CEOs were above the 50<sup>th</sup> percentile in the (adjusted) dollar value of company shares that they held (VALUEOWNER), and above 50<sup>th</sup> percentile in the percentage of shares that they held (PCTOWNER). As Table 2a indicates, the median value of shareholdings for CEOs above the 50<sup>th</sup> percentile were almost an order of magnitude greater than median values for CEOs below the 50<sup>th</sup> percentile in each case. As Table 2b shows, however, only the division of the sample into owners and managers by dollar amount (VALUEOWNER) yields a significant difference in the probability of a deal.

**Table 2a. Mean and Median Values of CEO Shareholdings for VALUEOWNER and PCTOWNER**

	MEAN VALUE OF SHARES	MEDIAN VALUE OF SHARES
Manager	4,500,000	3,200,000
Value Owner	36,500,000	42,000,000
Manager	9,000,000	3,900,000
Percent Owner	35,900,000	27,000,000

**Table 2b. Probability of DEAL by VALUEOWNER and PCTOWNER**

		Dummy = 0	Dummy = 1	t-value
VALUEOWNER	if SYSHARVAL IN TOP 50%	0.036	0.021	3.26***
PCTOWNER	if SHARPCT IN TOP 50%	0.030	0.026	0.89

At first cut, then, Table 2b undercuts the premium hypothesis: CEOs who own more shares are *not* more willing and/or able to sell their companies. But Table 2b only marginally strengthens the entrenchment-attachment hypothesis because only the *value* of CEO holdings is robustly associated with deals, not the *percentage* of these holdings. Thus, entrenchment does not seem to be a significant factor discouraging the sales of firms, at least at the 0.5% ownership level that characterizes the median CEO flagged for PCTOWNER.<sup>12</sup> Rather it appears that CEOs who invest more, in dollar amounts, have less desire to sell out, possibly because their shareholdings reflect greater optimism about their firms' prospects.

### **B. Deals and CEO Age**

We framed two hypotheses about the likely relationship between deals the chronological ages of CEOs: first, that CEOs would become more willing to sell their companies as they grew older and the value of their expected future compensation declined; and, second, that CEOs would be especially likely to sell between the ages of 61-65, when firm-specific retirement policies would exert maximum influence. Causal inspection of Table 3 suggests that both hypotheses are unsupported with respect to DEAL, but strongly supported with respect to RETIRE.

**Table 3. DEAL and RETIRE Means by Chronological Age Deciles**

Age	Decile	Frequency	DEAL Mean	RETIRE Mean
38-48	1	660	.027	.122
49-51	2	561	.034	.100
52-53	3	554	.020	.080
54	4	699	.029	.120
55-56	5	736	.035	.117
57-58	6	359	.045	.115
59	7	680	.024	.137
60-61	8	614	.029	.150
62-63	9	498	.034	.272
64-	10	569	.030	.350

<sup>12</sup> Note, however, that percentage of CEO share ownership does appear to significantly lower the probability of deals at much higher ownership levels of 5% or more of outstanding shares.

As Table 3 demonstrates, there is no simple correlation between a CEO's chronological age and the sale of her company. On average CEOs who are 64 or older are about as likely to sell their companies as all CEOs who are 63 and younger. By contrast, age is strongly related to CEO turnover without the assistance of deals (RETIRE). Note that the probability of a CEO exiting for non-deal related reasons remains roughly constant from 38 to 61 but begins to increase dramatically after the age of 62. Finer parsing of the RETIRE data (not shown here) demonstrates that the probability of retiring for non-deal related reasons peaks at age 63 and declines sharply after age 66. We take this data to indicate that strong retirement policies encourage CEOs to leave between the ages of 63 and 66, even if they do not give rise to a higher probability of doing a deal.

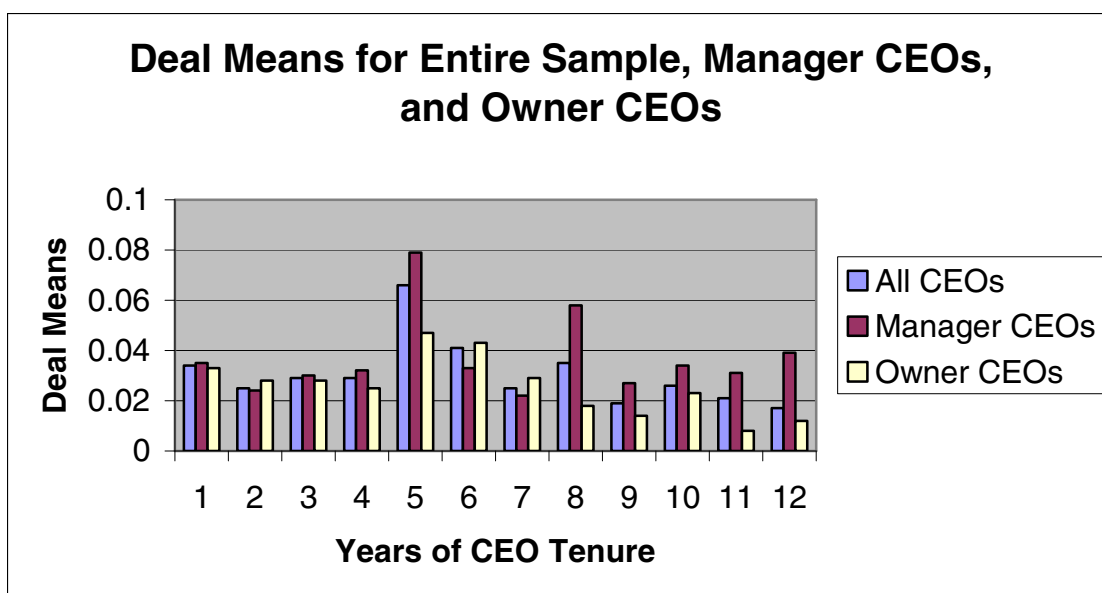
Further to the point, CEO departures following deals tend to occur at earlier ages (for the exiting CEOs) than do departures that occur for other reasons. The median age for all CEOs in our sample is 56, which is precisely the age that the median manager-CEO sells his firm. By contrast, the median age at which CEOs retire for non-deal-related reasons is 59. Thus, the univariate evidence strongly implies that deals are not simple substitutes for retirement in the typical CEO's life cycle. There remains, however, the possibility that CEO turnover is associated with company performance and other factors unrelated to age prior to, say, 60 years old, and strongly associated with age after this point. We explore this possibility in the multivariate analysis below in Section VI.C.

### **C. Tenure on the Job, Deal, and Retire**

If the chronological age of CEOs appears to have little to do with the decision to sell the company, CEO tenure on the job appears to have a great deal to do with it, albeit not in a linear way. The most surprising finding of this Paper is that DEAL is strongly associated with the fifth year of a CEO's tenure. Consider Figure 2 below.



Figure 2



In Figure 2, the mean number of deals during the fifth year of a CEO’s tenure is almost twice as high as the mean number of deals in any other tenure year; and the mean number of deals for “manager” CEOs (who are not valueowners) is even higher. More than a sixth of all deals occurred during the fifth year CEOs’ tenures ( $32/183 = 17.5\%$ ) for the sample as a whole, while 20% of all deals involving manager CEOs occurred during the fifth year of tenure. Manager CEOs also experience a secondary upsurge of deals during their eighth year of tenure. By contrast, deal levels for managers and valueowners are nearly identical during the four years prior to the fifth year of tenure, after which they continue to diverge. Finally, not only do manager-CEOs make more deals than owner-CEOs (as Table 1 indicated), but manager-CEOs are especially likely to make more deals during their fifth year on the job.

Table 4 provides a similar contrast between the means for DEAL and RETIRE for CEOs below the age of 61. Here the principal point to note is that RETIRE means are not nearly as volatile as DEAL means. To the extent that any tenure year prompts more retirements than any other, however, it is the eighth year. Additional analysis (not shown below) indicates that, as in the case of DEAL, the high level of retirements in the eighth year of tenure is due to the departure of manager-CEOs rather than owner-CEOs.

**Table 4**  
**Deal and Retire Means by Years of CEO Tenure for CEOs Under 61**

<b>Tenure</b>	<b>Freq.</b>	<b>Mean (Deal)</b>	<b>Mean (Retire)</b>
0	426	.027	.092
1	629	.028	.106
2	563	.024	.104
3	497	.029	.101
4	420	<b>.070</b>	.108
5	339	.044	.108
6	279	.027	.111
7	235	.027	<b>.152</b>
8	199	.015	.144
9	175	.036	.114
10	137	.016	.132
11	700	.019	.140

To capture the effects of the unusual deal activity that occurs during the fifth year of CEO tenure in our model, we introduce a new summary variable, LOGMIDCEO5, or the natural log of the absolute value of  $[1 + (5 - \text{CEOYEARS})]$ , which implies that DEAL probabilities decline as the temporal distance on either side of a CEO's 5<sup>th</sup> year increases.

## **VI. DEALS AND OTHER DEPARTURES: MULTIVARIATE ANALYSIS**

Multivariate logit regressions predicting DEAL and RETIRE largely confirm the results of the univariate analysis, while also adding new insights. We introduce as controls in these regressions certain variables that we had previously found to be significant predictors of DEAL. (Coates and Kraakman, 2004):

1. *Dummy variables for both calendar year and industry.*
2. *Several firm-level characteristics, including the Black-Scholes volatility of company share prices (RISK); the log of book value (LNASS); and the two measures of growth and economic performance discussed above: year-to-year changes in sales revenue (SYSALECHG) and the ratio of Tobin's Q to Industry Tobin's Q (RELATIVEQ).*
3. *An ordinal measure of the aggregate influence of ownership structure discussed above (BLOCKSCORE), which ranges from "1" when either the CEO or a trust holds 5% or more of a company's stock, to "4" when an outside corporation holds 5% or more of the company's stock.*

4. Two compensation variables that we had previously determined to relate strongly to DEAL: the immediate exercise value of CEO options (OPTVAL), and a term capturing the interaction between OPTVAL and Black-Scholes volatility (RISKOPTVAL).
5. The log of the value of CEO shareholdings, adjusted for calendar year and SIC (SYLOGSHARVAL).

Finally, in addition to these control variables, our basic model includes measures of the principal CEO characteristics that we investigate: the CEO's chronological age (AGE), TENURE, our measure of the effects of CEO tenure (LOGMIDCEO5), and a term reflecting the interaction between age and tenure (TENURE\_AGE).

In our basic model, we perform logit regressions of DEAL and RETIRE on our control and target variables. We performed three regressions for each set of results that we report: a standard logit regression in which we control for one-digit SIC industry codes and calendar year with dummy variables; a logit regression in which we fix the effects of calendar year and control for one-digit SIC codes with dummy variables; and, finally, a logit regression in which we fix the effects of two-digit SIC codes and control for calendar year with dummy variables. In most cases, the three regressions yielded similar results. We report the results of the standard logits and note material differences with the fixed-effect logits.

#### **A. The Basic Model: Predicting DEAL and RETIRE**

Table 5 displays the results of regressing DEAL and RETIRE, respectively, on our target and control variables. For comparison purposes, the two right-hand columns provide the same regressions for the subsample of CEOs below the age of 61.

The column on the far left provided the basic DEAL model, in which two of our three target variables are significantly associated with deals. AGE is positively associated with DEAL, the product of age and CEO job tenure (AGE\_TENURE) is negatively associated with DEAL. But only one measure of temporal "distance" from the 5<sup>th</sup> year of CEO tenure carries a significant negative association with deal. Apparently CEO age is associated with a higher probability that a company will be sold, but age combined with job tenure reduces the probability of a sale: older CEOs who have already been in office for a lengthy period are unlikely to sell the company. Seemingly independent of the age-tenure interaction, however, deals become less likely as CEOs are farther out on either side of their fifth years in office. Finally, in contrast to age and

job tenure, the monetary value of a CEO's shareholdings is not significantly related to her decision to sell the firm.<sup>13</sup>

The control variables in our basic model track results that we had already obtained in an earlier analysis of a smaller dataset (Coates & Kraakman, 2004). Both firm performance variables--the growth measure (SALECHG) and the return measure (RELATIVEQ)—are significantly and negatively related to DEAL, indicating that poorly performing firms are more likely to be sold. Apparently the market for corporate control does work to shift assets through the mechanism of friendly transactions. Another familiar result is that insider block holdings, as measured by BLOCKSCORE, tend to discourage deals, while outsider holdings encourage them. In addition, Table 5 confirms a relationship that our earlier paper found between DEAL and the character of CEO option holdings: a risky firm and valuable options, considered individually, increase the probability of a deal, but high risk and valuable options *together* decrease the probability of a deal, presumably because volatility confers a waiting value on the CEO's options that may be sacrificed if the company is sold (Coates & Kraakman, 2004).

**Table 5. Logit Models of DEAL and RETIRE<sup>14</sup>**

	DEAL Entire Sample	DEAL Under 61 years	RETIRE Entire Sample	Retire Under 61 years
SYLOGSHARVL	-.106 (-1.68)	-.105 (-1.46)	<b>-.067 (-2.05*)</b>	-.037 (-.94)
AGE	.074 (1.67)	.077 (0.85)	<b>.046 (3.18***)</b>	.023 (1.16)
TENURE_AGE	-.021 (-1.65)	-.027 (-1.45)	<b>.021 (4.74***)</b>	.009 (1.29)
LOGMIDCEO5	<b>-.332 (-2.01*)</b>	<b>-.425 (-2.14*)</b>	-.028 (-0.33)	.050 (0.46)
TENURE	.046 (1.15)	.092 (1.15)	-.025 (-1.56)	.022 (0.88)
OPTVAL	<b>1.21e-08 (2.55**)</b>	<b>1.15e-08 (1.98*)</b>	-1.26e-09 (-0.59)	8.20e-10 (0.43)
RISKOPTVAL	<b>-3.39e-08 (-2.46*)</b>	-3.71e-08 (-1.92)	1.05e-09 (0.32)	-2.01e-09 (-0.64)
BLOCKSCORE	.362 (1.85)	.338 (1.33)	.093 (1.24)	.130 (1.28)
RELATIVEQ	<b>-.602 (-1.95*)</b>	-.565 (-1.45)	-.044 (-0.50)	-.102 (-0.98)
SYSALECHG	<b>-.016 (-3.04***)</b>	<b>-.016 (-2.61**)</b>	.001 (1.09)	.001 (1.19)
LNASS	-.127 (-1.06)	-.012 (-0.08)	<b>.134 (2.87**)</b>	.088 (1.39)
RISK	<b>3.14 (3.40***)</b>	<b>2.95 (2.63**)</b>	<b>1.69 (4.32***)</b>	<b>2.38 (5.14***)</b>
N	4168	3254	4218	3281
Pseudo R2	0.117	-.101	0.145	0.165

<sup>13</sup> The percentage of CEO share ownership and the log of this percentage were even less strongly tied to the decision to sell than SYLOGSHARVAL.

<sup>14</sup> These logit regressions – and those reported subsequently -- include dummy variables for calendar year and one-digit SIC classifications, with loadings that are not reported here. All logits were repeated with two-digit SIC fixed effects without a material difference in results. Standard errors are robust. Significance levels are “\*” = <.05; “\*\*” = <.01, and “\*\*\*” = <.001.

The second column from the left in Table 5 provides a parallel analysis for the subsample of firms with CEOs under 61 years old. Not surprisingly, the age-related variables AGE and TENURE\_AGE do not reach statistical significance for either DEAL regression. Of greater interest to us, the term-related variable LOGMIDCEO5 is slightly more significant for younger CEOs than for older ones, providing additional evidence that the importance of the CEO's fifth year is related to her position in the company, not her age or other personal characteristics.

The comparison with the behavior of RETIRE is instructive. As might be expected, age is a significant predictor of RETIRE, i.e., whether CEOs will leave their firms for non-deal-related reasons. Consistent with our results for DEAL, moreover, the product of age and tenure (AGE\_TENURE) is more strongly associated with RETIRE than is age alone. If long-serving CEOs do not sell their companies, they can only exit by retiring or dying in office. More puzzling is the significant negative relationship between share ownership (SYLOGSHARVAL) and RETIRE. We conjecture that this association reflects the fact that long-serving CEOs who are most likely to retire are also more likely to have accumulated large shareholdings over the course of their tenure. The fact that that the association between shareholdings and RETIRE falls away in the under-61 subsample (together with that between RETIRE and AGEYEAR) lends plausibility to this conjecture.

## **B. The Role of Share Ownership: Value-owners versus Managers**

Notwithstanding the muted effects of CEO share ownership in the basic model, it is useful to explore the consistency of our results across the categories of value-owner and manager CEOs, since the career paths of these two classes of managers are dramatically different in many respects.<sup>15</sup> Table 6 offers this comparison for both DEAL and RETIRE.

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<sup>15</sup> The median value-owner CEO in our sample had already served for seven years and had become CEO at the age of 48; the median manager-CEO had served as the top officer for three years and had become CEO at the age of 51. Many value-owners were presumably founders of their firms or members of a founder family.

**Table 6. Logit Models: Value-owners versus Managers**

Dependent Variable =>	DEAL		RETIRE	
	Manager-CEOs	Owner-CEOs	Manager-CEOs	Owner-CEOs
SYLOGSHARVAL	-.120 (-1.64)	-.206 (-1.08)	-.106 (-1.90)	-.072 (-1.08)
AGE	.018 (0.58)	.048 (1.26)	<b>.055 (2.41**)</b>	<b>.040 (2.13*)</b>
TENURE AGE	.006 (0.01)	-.025 (-1.83)	<b>.027 (3.25***)</b>	<b>.016 (2.92**)</b>
LOGMIDCEO5	-.173 (-0.82)	-.468 (-1.75)	.009 (0.07)	.051 (0.40)
TENURE	-.037 (-0.06)	.068 (1.57)	-.019 (-0.57)	-.027 (-1.37)
OPTVAL	<b>3.86e-08 (2.30*)</b>	<b>1.39e-08 (2.15*)</b>	2.23e-09 (-0.16)	2.15e-10 (0.13)
RISKOPTVAL	-9.35e-08 (-1.91)	<b>-4.92e-08 (-2.14*)</b>	-1.32e-08 (-0.48)	-7.65e-10 (-0.29)
BLOCKSCORE	<b>.457 (2.03*)</b>	.082 (0.33)	<b>.309 (2.20*)</b>	-.006 (-0.07)
RELATIVEQ	-.096 (-0.29)	<b>-1.07 (-2.85**)</b>	-.140 (-0.73)	-.001 (-0.01)
SYSALECHG	<b>-.018 (-2.73**)</b>	-.016 (-1.69)	.003 (1.08)	.001 (.68)
LNASS	.154 (1.38)	-.006 (-0.05)	.029 (0.51)	.084 (1.78)
RISK	<b>2.97 (2.69**)</b>	<b>3.70 (2.16*)</b>	<b>1.72 (3.03***)</b>	<b>1.48 (2.62**)</b>
N	1879	1974	2049	2169
Pseudo R2	0.102	0.1431	0.196	0.1083

Clearly CEO share ownership matters when the sample is divided into value-owners and manager CEOs, even if share ownership did not emerge as a important predictor of DEAL or RETIRE in the analysis of the entire sample.

With respect to DEAL, the most striking contrast between owners and managers is that owners escape the full influence of the compensation variables, OPTVAL and RISKOPTVAL, which appear to play an important role in motivating deals entered into by manager CEOs.<sup>16</sup> This is not surprising. The incentive effects of unexercised options held by value-owners are likely to be mitigated by those of the median owner's shareholdings, which were worth in excess of \$34 million in our sample. Similarly, ownership structure matters to DEAL for manager CEOs but not for owner CEOs, presumably because owner CEOs are frequently large blockholders themselves. A further point of interest is that the two firm performance variables carry different weights for owners and managers. Managers sell the company when revenue growth (SALESCHG) lags relative to industry norms while owners are more likely to sell when economic returns fall below industry norms (RELATIVEQ).

With respect to RETIRE, in contrast, firm performance and option compensation are unimportant for both manager and owner CEOs. The variables relating to chronological age matter most for both groups, while the presence of large outside

<sup>16</sup> While option compensation is significantly associated with DEAL for both managers and owners, the coefficients for managers are twice as large as those for owners.

blockholders is associated with the “retirement” of manager CEOs but not owner CEOs. Thus, as in the case of DEAL, there is evidence of shareholder influence on CEO exit, but only in the subsample in which CEOs themselves are relatively small shareholders.

Returning to our initial hypotheses, we conclude that the more detailed investigation largely supports the inferences suggested by the univariate analysis. In support of the entrenchment hypothesis, the multivariate results suggest that large CEO shareholdings deter deals by neutralizing the influence of equity compensation and outside blockholders. The only evidence favoring the incentive hypothesis is that owner CEOs appear to take poor economic returns much more seriously in considering a sale of the company, but they appear to take revenue growth only slightly less seriously than their manager counterparts.

### **C. The Role of Age: Old CEOs vs. Young CEOs**

Dividing our sample into companies with “young” CEOs (below 57 years old) and “old” CEOs (above 56 years old) yields additional insights into the probable effects of age on DEAL. Young CEOs are, with statistical significance, more likely than old CEOs to sell slow-growing companies, and to sell during the mysterious fifth year of their tenure on the job. Old CEOs are less responsive to firm performance and tenure, but appear to be more responsive to option compensation in deciding to sell. The role of age is distinctly less interesting in decisions to sell the company, however, than it is in predicting RETIRE. None of our target or control variables (with the exception of volatility of share price) appear to predict RETIRE for CEOs below the age of 57. By contrast, age-related variables are, as one might expect, powerful predictors of RETIRE for CEOs older than 56. A final point worth noting here is the strong negative association between share ownership and the probability of RETIRE for companies with older CEOs, which finds an echo in the DEAL model as well. We conjecture that this association is further evidence that CEO share ownership is likely to indicate an attachment to the company for older CEOs, which militates against either selling the company or leaving it in some other way. Contrary to our two initial hypotheses, aging is not associated with selling the company, and, for older CEOs, significant shareholdings appear to discourage leaving the company by any route, be it a sale or retirement.

**Table 7. Logit Models: Young CEOs vs. Old CEOs**

	DEAL		RETIRE	
	Young CEOs	Old CEOs	Young CEOs	Old CEOs
SYLOGSHARVAL	-.070 (-0.99)	-.178 (-1.63)	-.014 (-0.29)	<b>-.172 (-3.64***)</b>
AGE	.037 (0.76)	.034 (0.81)	.009 (0.35)	<b>.113 (5.50***)</b>
TENURE AGE	-.028 (-1.15)	-.006 (-0.94)	.019 (1.33)	<b>.023 (4.70***)</b>
LOGMIDCEO5	<b>-.547 (-2.46*)</b>	-.064 (-0.27)	.196 (1.36)	-.123 (-1.01)
TENURE	.058 (1.07)	-.006 (-0.12)	.005 (0.13)	-.036 (-1.75)
OPTVAL	1.41e-08 (1.32)	<b>1.81e-08 (2.15*)</b>	2.36e-10 (0.12)	-9.20e-10 (-0.24)
RISKOPTVAL	-7.05e-08 (-1.65)	-4.03e-08 (-1.73)	-1.03e-09 (-0.32)	-3.97e-09 (-0.44)
BLOCKSCORE	.236 (1.09)	.312 (1.36)	.228 (1.78)	-.067 (-0.73)
RELATIVEQ	-.381 (-1.10)	-.589 (-1.58)	-.123 (-0.97)	.070 (0.57)
SYSALECHG	<b>-.020 (-2.93**)</b>	-.010 (-1.20)	.002 (1.54)	.000 (0.01)
LNASS	-.190 (-1.79)	-.022 (-0.18)	.014 (0.24)	<b>.109 (2.22*)</b>
RISK	<b>3.06 (2.76**)</b>	2.66 (1.83)	<b>2.12 (4.16***)</b>	0.35 (0.58)
N	2297	1751	2294	1924
Pseudo R2	0.136	0.113	0.178	0.110

#### **D. The Effects of CEO Tenure**

Our most intriguing result in both the univariate analysis and the basic model is the role of CEO tenure plays in conditioning the timing of deals, and thereby influencing CEO turnover. Apart from chronological age, why should tenure matter? A reasonable conjecture, we believe, is that there is an implicit term structure in the positions of S&P 500 manager CEOs. Roughly speaking, a CEO is allowed the opportunity to implement her policies during the first five or six years of her tenure, during which she will only be displaced for conspicuously poor performance. Toward the end of the five-year term, a poorly performing firm may be sold if the prospects for improved performance are dim. After the initial five-year term ends, however, the CEO and her policies become known quantities. At this point, a firm is increasingly less likely to be sold, but its CEO becomes more likely to leave for other reasons. Consider the following two bar graphs in Figures 3 and 4: one contrasting DEAL means for firms with high and low relative increases in sales revenue (the performance measure most closely associated with DEAL), and the other contrasting RETIRE means for firms with high and low relative Tobin's q (the performance measure most closely associated with early retirements).



Figure 3

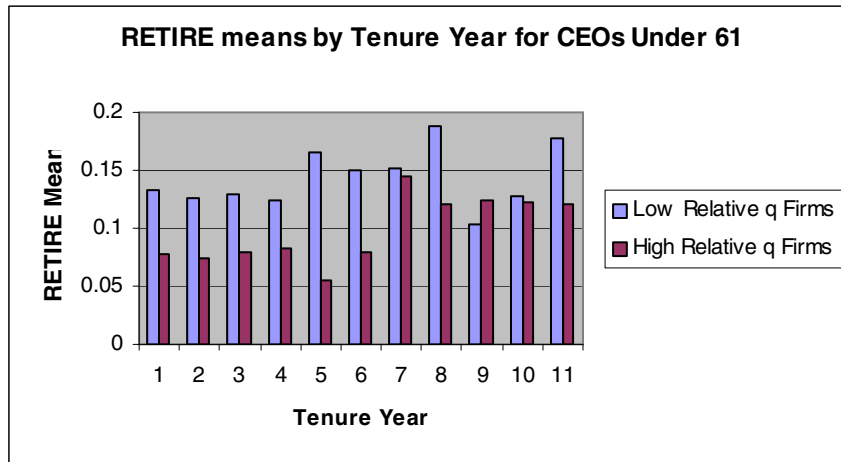
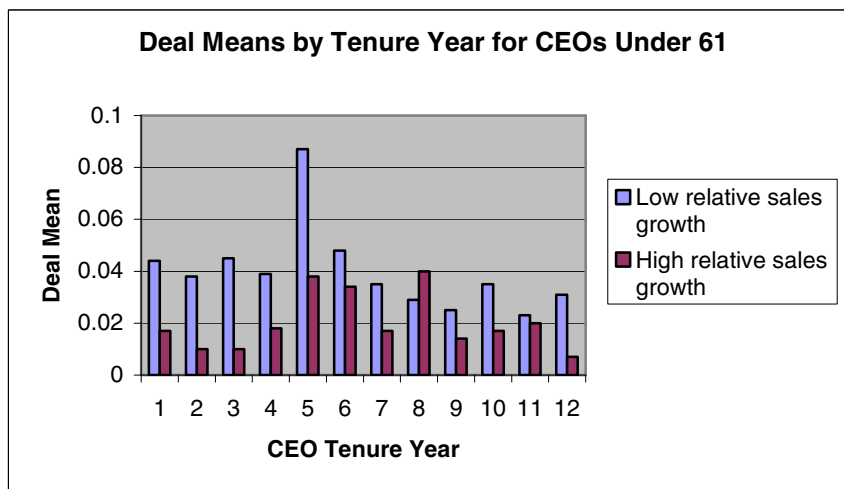


Figure 4



Figures 3 and 4 suggest that a CEO's fifth year is different from previous years, both for deal-related and non-deal turnover. The fraction of poorly-performing companies that are sold jumps sharply in the fifth year, as does the fraction of CEOs in poorly performing companies who "retire" without a sale of the company. But the fraction of highly performing firms that are sold increases only slightly, and the fraction of CEOs in highly performing firms who resign actually drops. After the sixth year of CEO tenure the probability that an S&P 500 company will be sold declines permanently, while the probability that the CEO with "retire" for reasons unrelated to performance increases dramatically, but the link between performance and CEO turnover generally weakens as CEO tenure increases.

Table 8, below, embellishes these observations by comparing logit regressions results for DEAL and RETIRE before and after the fifth year of CEO tenure. The results in Table 8 confirm that large-block shareholders, low relative growth, and low relative q all contribute to sales of the firm generally and that large shareholders and low growth contribute particularly to deals during the first five years of a CEO's tenure. The contrast between the profiles of CEOs in initial years of their tenure and those with more than five years on the job resembles the contrast between manager CEOs and owner CEOs. Low sales growth is the principal correlate of deals during the early years of a CEO's tenure (even though a low Tobin's q is the principal correlate with RETIRE for low tenure CEOs). By contrast, a low Tobin's q is strongly associated with DEAL for longer-serving CEOs, just as it is for owner CEOs. Table 8 also reveals a result unexpected on the basis of prior analysis of panel data ending in 2000: option compensation appears to exercise a stronger influence on the deal decisions of long-serving CEOs than on decisions of CEOs in their first five years of tenure. A simple reason might be that longer-serving CEOs had accumulated many more unexercised options (median OPTVAL was \$3.83 million for CEOs in tenure years 1-5, and \$6.99 million for CEOs with more than five years of tenure).

**Table 8. Logit Regressions on DEAL and RETIRE; Subsamples With CEO Tenure Above and Below 5 years.**

CEO TENURE	DEAL			RETIRE	
	Entire Sample	1 – 5 years	5+ years	1 – 5 years	5+ years
SYLOGSHARVAL	-.106 (-1.68)	-.067 (-0.90)	-.180 (-1.51)	-.039 (-.78)	<b>-.114 (-2.62**)</b>
AGE	.074 (1.67)	.079 (1.10)	-.104 (-1.08)	<b>.057 (2.52**)</b>	.003 (0.11)
TENURE_AGE	-.021 (-1.65)	-.035 (-0.93)	.025 (0.99)	<b>.038 (2.58**)</b>	<b>.027 (3.45***)</b>
LOGMIDCEO5	<b>-.332 (-2.01*)</b>				
TENURE	.046 (1.15)	.282 (1.33)	-.021 (-0.39)	-.122 (-1.49)	-.027 (-1.78)
OPTVAL	<b>1.21e-08 (2.55**)</b>	-8.44e-09 (-0.68)	<b>1.44e-08 (2.92**)</b>	8.68e-09 (1.55)	-2.01e-09 (-0.71)
RISKOPTVAL	<b>-3.39e-08 (-2.46*)</b>	4.01e-09 (0.15)	<b>-3.47e-08 (-2.31**)</b>	<b>-2.61e-08 (-2.02)</b>	1.90e-09 (0.45)
BLOCKSCORE	.362 (1.85)	.330 (1.07)	.317 (1.27)	<b>.370 (2.80**)</b>	-.069 (-0.73)
RELATIVEQ	<b>-.602 (-1.95*)</b>	-.357 (-0.93)	<b>-1.05 (-2.13*)</b>	<b>-.437 (-2.57**)</b>	.168 (1.62)
SYSALECHG	<b>-.016 (-3.04***)</b>	<b>-.019 (-2.80**)</b>	-.009 (-1.19)	.004 (1.26)	.001 (0.84)
LNASS	-.127 (-1.06)	.008 (0.05)	<b>-.476 (-2.40*)</b>	.052 (0.75)	<b>.227 (3.32***)</b>
RISK	<b>3.14 (3.40***)</b>	<b>4.24 (3.02***)</b>	.780 (0.47)	<b>2.20 (3.67***)</b>	<b>1.50 (2.52**)</b>
N	4168	2138	1678	2327	1891
Pseudo R2	0.117	0.101	0.142	0.185	0.119

## E. Takeover Premia Levels

Premia levels in negotiated transactions provide additional insight into the increased probability of a deal during the fifth year of a CEO's tenure. If fifth-year deals provide an exit at the end of the first term for CEOs who don't expect their companies to do better, earlier deals are more likely to be mid-term bailouts in response to clear business failures. Consistent with this conjecture, we would expect premia levels to be lower in the years prior to a CEO's fifth year than during it. Similarly, premia should be lower immediately after the fifth year of CEO tenure – at least until the end of the CEO's "second term" if there is one. From this perspective a breakdown of mean and median premia levels by CEO year is suggestive. Table 10 provides mean and median deal premia measured as a percentage of market price from four-weeks and from one-week before the announcement of a deal. As the results in Table 9 indicate, not only are deals more than twice as common during the fifth year of CEO tenure but mean and median premia levels tend to be higher during the fifth year than they are during most other years. (There is also a hint of another uptick in deals and premia levels during the eighth year of tenure, but the numbers here are small to make a confident statement.)

**Table 9: Deal Premia – 4-Week and 1-Week Means and Medians by Year of CEO's Tenure**

Year of CEO Tenure	Frequency	Mean Prem4w	Median Prem4w	Mean Prem1w	Median Prem1w
1	16	47.64429	37.84	42.90857	23.995
2	17	33.75	32.79	27.88187	19.1
3	18	28.61412	18.32	24.61353	20.92
4	16	36.44188	34.335	39.38875	38.105
5	32	<b>43.62968</b>	<b>43.94</b>	<b>40.03968</b>	<b>36.29</b>
6	17	30.864	32.42	29.97867	21.45
7	9	22.6325	20.065	21.99143	22.47
8	11	<b>40.72273</b>	<b>39.98</b>	<b>43.69</b>	<b>41.4</b>
9	5	49.195	42.605	42.89	31.255
10	6	34.682	31.11	38.652	35.66
11	5	35.392	27.94	30.886	32.84
12 or More	22	41.97222	35.205	38.98667	38.38

Equally telling, a simple regression model of four-week and one-week deal premia indicates that only four of the control and investigation variables considered in this paper —RISK, log of asset value, relative sales growth (SYSALECHG) and relative Tobin's q (RELATIVEQ)—are significant predictors of premia levels. But a dummy

variable representing the fifth year of CEO tenure is also a significant predictor of premia levels. This robust model indicates that firms with higher relative sales growth are sold for larger premia than firms with a lower growth history (even though low-growth firms are more likely to be acquired in the first instance), and firms with lower market returns on assets as measured by relative Tobin's q are likely to fetch higher premia (just as they are more likely to be acquired in the first instance). Both of these results are intuitive, although it is comforting to find that the same performance variables that influence the probability of deals also appear to set premia levels. For us, however, it is equally interesting that the term structure of CEO tenure appears to influence premia levels as well as the incidence of deals. While we cannot claim to know the exact mechanism for this influence, we suspect that the answer may lie in the more deliberate and predictable character of end-of-term deals.

**Table 10. Least Squares Models of 4-Week and 1-Week Deal Premia  
Robust standard errors**

	<b>4-Week Premia</b>	<b>1-Week Premia</b>
LOGMIDCEO5	12.6 (2.59**)	11.0 (2.34**)
SYSALECHG	.327 ((2.93**	.292 (2.45*)
RELATIVEQ	-12.4 (-3.05**)	-11.6 (-2.16*)
AGE	0.68 (0.80)	1.07 (1.31)
LNASS	-2.26 (-1.89)	-2.76 (-2.47**)
RISK	42.6 (2.49**)	33.9 (1.77)
N	153	152
R-squared	0.211	0.197

#### **F. Summary of Multivariate Findings**

With the aid of our original hypotheses, set out in Part III, we can summarize the results of this Paper over the range of S&P 500 companies as follows.

First, CEO share ownership, although important for many purposes, has only a modest direct effect on the probability of a deal – an effect that loses statistical significance in the multivariate analysis. Thus we fail to find direct support for either the premium hypothesis or the entrenchment/attraction hypothesis at the ownership levels that predominate in one sample of S&P 500 companies. The more important effect of share ownership on negotiated deals may be indirect. Option holdings and company risk appear to condition the DEAL decisions of CEOs with modest shareholdings (by

S&P 500 standards) more than those of CEOs with larger shareholdings.<sup>17</sup> Put differently, neither the value of CEO options nor any other compensation variable significantly influence the DEAL decisions of CEOs who are in the top quarter of the sample by the value of their shareholdings.

Second, the chronological age of CEOs is unrelated to DEAL as a matter of simple correlation, even though age correlates powerfully with general CEO turnover arising from other causes. Thus, we find little support for the hypothesis that age drives CEOs to sell their firms in their final period to cash out short-term gains on their accumulated shareholdings (i.e., what might be termed the “*Van Gorkom hypothesis*”<sup>18</sup>).

Third, our results suggest that CEO tenure plays a pivotal role in the DEAL decision at many firms. We reject the null hypothesis that CEO tenure is unimportant to the negotiated sale of the firm, and find the term structure hypothesis to be strongly supported. During the initial five years of a CEO’s tenure, deals are not only more likely, but they are also powerfully associated with firm performance and share ownership by institutional blockholders. After the fifth year of tenure, however, deals decline in frequency, and those that do occur no longer appear to track shareholder influence or sales growth, but they are strongly influenced by CEO option compensation. This result is consistent with the tenure-related entrenchment hypothesis detailed in Part III above.

## VI. DISCUSSION AND POLICY IMPLICATIONS

To return to our starting point, conventional wisdom asserts that the CEO is the most important actor in the governance of large American public companies, and this Paper underscores the centrality of the CEO – at least for the all-important decision to sell an S&P 500 company in a negotiated transaction. Significantly, however, of the three CEO characteristics that we examine, it is not the *personal* attributes of the CEO -- age and shareholdings -- that matter most, but the *structural* (or sociological) attribute, namely, CEO tenure on the job. We interpret this finding to reflect the fact that the appointment of a new CEO marks the beginning of a new organizational regime, a new

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<sup>17</sup> In addition, in unreported regressions, we confirm for our sample the findings previously reported by others, that CEO share ownership and firm performance are correlated. As noted above, moreover, poorly performing firms are more likely to be sold, all else equal, than firms that perform better. But once direct controls for performance are included in a deal prediction model, the direct effect of those controls dominate the indirect effects of CEO share ownership.

<sup>18</sup> See note 1 supra.

management style, and often a new business plan. It takes time for a new CEO to implement her policies in a large S&P 500 firm. It also takes time for the board, the shareholders, and the CEO herself to accumulate the information necessary to evaluate her progress. Moreover, if a serious problem emerges, it takes even more time to determine that the best solution lies in selling the firm, rather than in replacing the CEO or embarking on a different business plan. It is these organizational factors, we suggest, that underlie the peaked incidence of negotiated deals during the fifth year of CEO tenure. There is enough uniformity in the time horizons of CEOs, boards, shareholders to support an implicit term structure.

More remains to be done to test this term structure hypothesis. If it is correct, however, it would seem to have useful implications for the behavior of CEOs, boards of directors, investors (particularly arbitrageurs), and perhaps even for the administration of corporate legal principles on occasion.

One application is to inform boards and CEOs themselves about the circumstances in which sales of companies typically occur. Boards should consider CEO tenure when exercising their own monitoring and advising roles. Some directors may be unaware (or at least unselfconscious) about the fact that CEOs typically enter a probationary term of up to five years after first assuming office, during which their performance is monitored particularly closely. Perhaps boards should formally key their monitoring practices to this implicit term structure. They could, for example, initiate a particularly searching review of company performance during the fifth year of a CEO's tenure, and perhaps even place the question of whether the company should be sold on the table for the CEO to address. The rationale would be that by a CEO's fifth year, it should be possible to judge not only her business plan but also whether the firm is well-positioned to succeed under any circumstances in its current market with its existing assets. Directors are now elected for one-to-three year terms, but for some purposes establishing longer cycles of monitoring and decisionmaking for the board might be useful.

Conversely, some boards might not be aware that the difficulty of selling a firm appears to increase significantly after a CEO's fifth year in office. Our data suggest that CEOs with more than four years of tenure tend to run better performing firms than less experienced CEOs. On average, CEOs who survive their first term are better CEOs – or CEOs blessed with better companies – than CEOs who have not yet completed their first term. But this survivorship explanation can only take us so far, since it also seems that

poor performance has little to with when a firm led by a veteran CEO is sold. Thus, it seems that the declining probability of deals with CEO tenure may reflect not only the survival of the fittest, but also the survival of the most entrenched CEOs.

The relevance of our findings for legal decision-makers follows similar lines. To the extent that the Delaware Chancery Court is called upon to assess the proportionality of management defenses in a hostile takeover setting, it must inevitably touch upon the reasonableness of the board's reliance on management's projections and business plan. Here the modal practice of boards in friendly deals is relevant. A board confronted with a hostile offer might reasonably argue that, barring conspicuous management failure or an extremely rich offer, it has good reason to protect a recently-appointed CEO until her policies can be fully implemented and evaluated. This is, after all, how boards behave in their decisions to entertain friendly deals. The board's argument would be strengthened, moreover, if it could point to the presence of large-block institutional shareholders who seem to favor the sale of underperforming firms.

Conversely, there is less to learn about the business plans and managerial talents of veteran CEOs who have already completed a full five-year term on the job, and there is much more to fear from CEO entrenchment. It follows that judges, like boards themselves, should be more skeptical of a veteran CEO's opposition to a premium offer, particularly if the firm is performing poorly relative to its peers.

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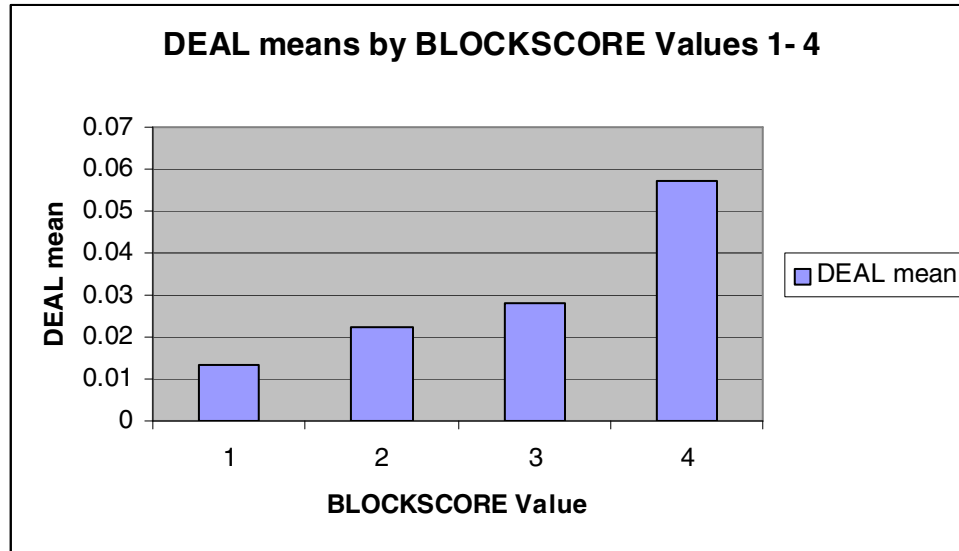
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## Appendix

### Figure A – 1



1. Blockscore = 1: At least one 5%+ share voting block held by the CEO and/or a trust.
2. Blockscore = 2: No 5%+ share blocks held by anyone.
3. Blockscore = 3: At least one 5%+ held by an individual, ESOP, or institutional investor, and no voting blocks held by a company, the CEO, or a trust.
4. Blockscore = 4 : At least one 5%+ voting bock held by an outside company.

**Table A-1**  
**Basic Model for DEAL and RETIRE for 1992 – 1998, and 1999 – 2004 Periods**

	DEAL 1992-1999	DEAL 1999-2003	RETIRE 1992-1999	RETIRE 1999-2003
SYLOGSHARVL	-0.024 (-0.47)	-0.160 (-1.72)	<b>-0.168 (-2.97**)</b>	-0.019 (-0.47)
AGE	<b>.166 (2.68**)</b>	<b>-0.118 (-2.44*)</b>	<b>.087 (3.70***)</b>	<b>.038 (2.16*)</b>
TENURE_AGE	<b>-0.043 (-2.52**)</b>	.029 (1.70)	<b>.033 (5.05***)</b>	.010 (1.66)
LOGMIDCEO5	-0.352 (-1.46)	<b>-0.626 (-2.47**)</b>	-0.242 (-1.68)	.050 (0.46)
TENURE	.077 (1.51)	-0.017 (-.28)	-0.036 (-1.51)	-0.005 (-0.21)
OPTVAL	<b>2.98e-08 (2.19*)</b>	<b>1.67e-08 (2.34*)</b>	-8.62e-09 (-1.37)	6.90e-10 (0.31)
RISKOPTVAL	<b>-1.31e-07 (-2.26*)</b>	-4.07e-08 (-1.91)	8.21e-09 (0.96)	-2.21e-09 (-0.58)
BLOCKSCORE	.494 (1.78)	.045 (0.18)	-0.053 (-0.44)	.147 (1.52)
RELATIVEQ	-0.367 (-0.88)	-0.764 (-1.64)	<b>.316 (2.29*)</b>	-0.181 (-1.57)
SYSALECHG	<b>-0.021 (-3.26)</b>	-0.012 (-1.23)	-0.003 (-0.77)	.003 (1.92)
LNASS	-0.059 (-0.32)	-0.142 (-0.87)	<b>.182 (2.43*)</b>	.116 (1.87)
RISK	<b>6.36 (3.31)</b>	1.96 (1.76)	<b>1.92 (2.28*)</b>	<b>1.65 (3.68***)</b>
N	2328	1773	2249	1869
Pseudo R2	0.128	0.157	0.148	0.126

