

Alternative Mechanisms for Corporate Control

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An important function of the board of directors of a public corporation is to monitor the top management team and to replace it when necessary. Although some writers (Eugene Fama and Michael Jensen, 1983) suggest that boards carry out this control function effectively, others (for example, Myles Mace, 1971) conclude that boards do not do very much. Jensen holds the failures of boards of directors responsible for the advent of hostile takeovers.

This paper adds to our understanding of the functioning of corporate boards by contrasting the circumstances in which boards succeed in disciplining top managers with those in which substitute control devices, such as, hostile takeovers, come into play. We examine a variety of performance and management characteristics of 454 of the 1980 Fortune 500, and follow the management changes and takeovers that these firms experience between 1981 and 1985. It is easy to summarize our main findings. Internally precipitated complete turnover of the top management team,¹ which we associate with

successful monitoring by the board, is more likely to occur in firms that underperform their industry, but is no more likely to occur in troubled industries than in healthy industries. In addition, internally caused complete turnover is less prevalent in firms run by founders or "one-man" management teams. In contrast, hostile takeovers, which we associate with the board's failure to discipline managers, are predictable based on poor performance of the whole industry, and are disproportionately targeted at firms with "one-man" management teams. Finally, to the extent that they are disciplinary, friendly acquisitions seem to be encouraged by corporate boards that are faced with poor performance relative to a healthy industry.²

These findings are consistent with the following characterization of the board's disciplinary role. The board of directors looks at other firms in the same industry to evaluate the performance of its firm's managers, and replaces top managers when the firm underperforms its industry, that is, when the managers can be blamed with some confidence. On the other hand, when the whole industry is suffering, the board is reluctant to make changes that raise market value. In particular, even when board members know how to raise value, they may refuse to do so because the required changes in a declining industry (layoffs, investment cutbacks, and divestitures) harm employees who are considered more important to the organization than

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¹Non-takeover-related complete turnover of top managers appears to be the best measure of forced internally precipitated change, as opposed to orderly transitions. We do not treat ordinary internal succession as a control change, since it does not usually represent a response to management problems.

²In previous work in this area, Anne Coughlan and Ronald Schmidt (1985), Jerold Warner, Ross Watts, and Karen Wruck (1988), and Michael Weisbach (1988) find that poor performance of the firm raises the likelihood of replacement of the Chief Executive Officer. Joel Hasbrouck (1985), Krishna Palepu (1986), David Ravenscraft and F. M. Scherer (1987) and Randall Morck, Andrei Shleifer, and Robert Vishny (1988a) examine the characteristics of takeover targets. The contribution of the current paper is, first, to differentiate between industrywide and firm-specific performance failures, and, second, to contrast hostile takeovers and internal turnover as control devices.

shareholders who are only “out for speculative profit.” In these cases, a hostile bidder often buys the firm and implements profit-increasing changes against the wishes of both the board and the top management of the target. More generally, takeovers come to play a role in replacing managers who the board is unable or unwilling to discipline, as in firms with one-man management teams. Section I of the paper discusses the data we use in our empirical work, and presents the basic characteristics of firms that undergo different forms of control change. Section II presents the main empirical results that identify characteristics conducive to various types of control change. Section III concludes.

I. A Brief Description of the Data

A. Types of Control Changes

The analysis in this paper is based on the sample of all publicly traded 1980 Fortune 500 firms. Of the 454 firms in the sample, 82 have been acquired by third parties or went through a management buyout (MBO) in the period 1981–1985. Based on an examination of the *Wall Street Journal Index*, 40 of those appear to have started hostile and 42 friendly. We call an acquisition hostile if the initial bid for the target (which need not be a bid by the eventual acquirer) was neither negotiated with its board prior to being made nor accepted by the board as made. Initial rejection by the target’s board is thus taken as evidence of the bidder’s hostility, as is active management resistance to the bid, escape to a white knight, or a management buyout in response to unsolicited pressure. We sort acquisitions on the basis of the initial mood because we are interested in firm characteristics that sparked the bidding in the first place. Targets that are not classified as hostile are called friendly.

Following Morck, Shleifer, and Vishny (1988a), we exclude friendly management buyouts (MBOs)—those proposed by management in the absence of visible evidence of outside takeover threat—from our sample of acquisitions, since they neither represent control changes nor resemble ordinary targets of friendly offers in their characteristics.

This reduces the sample of friendly acquisitions to 34. Also, following the evidence in Morck et al. (1988a), we treat hostile MBOs—that are defensive responses to a hostile bid or 13-D filing—as regular hostile takeovers. Our sample of hostile takeovers stays at 40 observations.

Among the firms that have not been acquired, we define complete turnover as a complete change between 1980 and 1985 in the list of officers signing the letter to shareholders in the annual report. A firm experiences a complete turnover if none of the officers who signed the annual report in 1980 also signs in 1985. An alternative way to define complete turnover would be using changes in the list of people holding top titles rather than in the list of signers. The trouble with following this path is that titles can be retained by figureheads, who have no effective control or power. Signers of the annual report, in contrast, seem to be in active control. We focus on complete rather than partial turnover of signers because we are interested in disciplinary management changes forced by the board. Most of the changes in which one cosigner of the annual report replaces another, presumably represent ordinary succession rather than disciplinary action by the board. Consistent with this interpretation, Morck et al. (1988b) find that partial (CEO only) turnover is actually preceded by abnormally *good* performance. This might be expected if choosing a successor from the existing management team is a reward for good performance.³

Where a company has experienced a management turnover prior to a hostile takeover, this company is treated as an acquisition and not as a turnover. This happens in 4 out of 40 hostile takeovers. While in these cases the board is arguably trying to deal with the management problems, it is not providing an adequate solution. A takeover is still required to provide an alternative that maximizes shareholder wealth. Similarly, if management turns over prior to a friendly acqui-

³In approximately 80 percent of the cases of partial (CEO only) turnover, the replacement CEO is one of the other signers of the 1980 annual report.

sition, which also happens in 4 out of 34 cases, the turnover cannot be properly viewed as solving the need for new management. Accordingly, we classify these cases as friendly acquisitions.

The above definition yields 93 cases of complete turnover. This number seems too high as a measure of disciplinary turnover, and doubtless still includes some ordinary successions. Some such non-disciplinary cases are planned CEO retirements accompanied by the appointment of an outside replacement team, but such cases are rare (Richard Vancil, 1987). More commonly, these are cases where the planned internal successor did not come from the list of 1980 signers of the annual report. Overall, although our definition probably covers most extraordinary non-takeover-related management changes, it also covers some cases of ordinary replacement that only add noise.

B. Performance Characteristics by Type of Control Change

This study uses three different measures of performance: average Tobin's Q , stock market abnormal returns, and employment growth rates. Average Tobin's Q is equal to the ratio of the firm's market value to the replacement cost of its physical assets. Tobin's Q can be viewed as measuring the intangible assets of the firm, such as future growth opportunities, monopoly power, goodwill, rents appropriated away from unions, as well as the quality of management. We use the level of Q , rather than its change over some interval of time preceding the control change, in order to capture the effects of problems that have built up over time. Especially for measuring industrywide problems, looking at the level of Q might be preferred to looking at changes in Q over short periods, since we do not really know when the problems started or when the market learned about them. Our two other measures of performance—stock returns and employment growth over 1978–1980—reflect more recent news about, and changes in, the firm and its industry.

Tobin's Q was obtained from the Griliches' *R&D Master File* (Clint Cummins, Bronwyn

Hall, and Elisabeth Laderman, 1982) for 1980. Its numerator is the sum of the actual market value of the firm's common stock and estimated market values of preferred stock and debt.⁴ The denominator of Q is the replacement cost of the firm's plant and inventories also taken from the *R&D Master File*. Values of Q are available for only 371 firms, primarily because of the difficulty of obtaining values of long-term debt and, in some cases, of the replacement cost. In this final sample of 371 firms, there are 80 cases of complete turnover, 31 hostile takeovers, and 17 friendly acquisitions.

The second measure of performance is the cumulative abnormal return over the period 1978–1980, calculated using the Capital Asset Pricing Model. The data for returns are the standard monthly series from the Center for Research in Securities Prices. The reason for using abnormal returns is that they capture the market's evaluation of more recent news about the firm's current and future profitability. Our sample using returns consists of 427 non-OTC firms, of which 87 went through complete turnover of management, 37 were targets of hostile takeovers, and 32 of friendly ones.

The third measure of performance is employment growth over the 1978–1980 period. Although employment growth is not a clear-cut measure of performance, we use it for two reasons. First, it is more closely related to the business side, as opposed to being based on stock market prices. Use of such a measure enables us to say that takeover targets are not characterized solely by being priced by the market below the true value of their earnings streams under current operating strategies. Second, employment growth is

⁴The market value of common stock is taken from Standard & Poor's *COMPUSTAT* tape. The market value of preferred stock is estimated by dividing the preferred stock dividend figure (reported on *COMPUSTAT*) by the Moody's preferred dividend rate for the median-risk companies. The market value of the firm's debt is taken as the value of its short-term liabilities net of its short-term assets (from *COMPUSTAT*) plus an estimate of the market value of its long-term debt. Estimates of the market value of long-term debt for our firms were obtained from the NBER's *R&D Master File* (see Cummins, Hall, and Laderman).

probably a reliable measure of industry health even if it is an ambiguous measure of a firm's performance relative to its industry. Our employment growth sample consists of 449 firms, of which 93 went through complete turnover of management, 39 were targets of hostile takeovers, and 34 of friendly ones.

Although we consider takeovers and management changes during the period 1981 to 1985, all our performance measures are calculated based on the data from a prior period. In doing this, our aim is to avoid mixing in the effects of the market's anticipation of future restructuring activity. Starting in the early 1980s, a large component of market valuation of many industrial firms may have been traceable to the expected premium from a takeover or a restructuring. Prior to that period, corporate restructurings were less prominent, and hence it is likely that the market valued firms primarily as going concerns under the current management. Since two of our three performance measures are based on stock market prices, our results depend on these prices reflecting expected future profitability under current management, and not the expected premium from a control change. Our need to use performance data from the 1978–1980 period also ruled out any attempt to gear our performance measures to the tenure of any particular manager. This would have been even more problematic in our case because we are interested in changes in the whole top management team over a given period of time rather than the departure of any given executive.

For all three performance measures, we look separately at industrywide and firm-specific performance. For each firm in the sample, we consider both the average Q of its industry at the 3-digit SIC code level and the deviation of its Q from the average Q of its industry. Analogously, we look at both industry abnormal returns, and at the deviation of the firm's abnormal return from the industry average, as well as at industrywide and firm-specific employment growth rates. This differentiation between industry effects and firm-specific effects is the main contribution of this study. We are interested in find-

ing out whether boards respond differentially to industrywide and firm-specific problems, and whether takeovers are differentially targeted at firms with these distinct types of problems.

As an initial look at the data, Table 1 presents the means of performance measures of our sample companies for four categories of firms. The first three categories include firms that experienced one of the three types of management change: complete turnover, hostile takeover, or friendly acquisition; the fourth category includes the remaining (“residual”) firms. The results in the first row show that firms experiencing complete turnover or an acquisition, especially a hostile one, have an average Q lower than that of residual firms. Tobin's Q of complete turnover firms is 0.734, which is 27 percent below Tobin's Q of residual firms equal to 0.932. Tobin's Q of hostile takeover targets is 0.524, which is 44 percent below 0.932, while Tobin's Q of firms acquired in a friendly deal is 0.774.

The decomposition of Q into an industry-specific component, IQ , and a firm-specific component, DQ , reveals important differences between hostile takeovers and complete turnover as control devices. While among firms experiencing complete turnover IQ is not appreciably lower than it is for residual firms, among hostile takeover targets IQ is on average 19 percent below that for residual firms. To the extent that IQ measures industry performance, this evidence suggests that hostile takeovers are targeted at firms in troubled industries, but that complete management turnover is not associated with industry troubles. The evidence on firm-specific performance, as measured by DQ , shows that both targets of hostile acquisitions and firms experiencing complete turnover underperform their industries. Both complete turnover and hostile target firms have an average DQ of -0.14 . Although firms sold to friendly acquirors show both DQ and IQ below that of residual firms, these differences are not as large as the corresponding performance shortfalls of hostile takeover and complete turnover firms.

The results using abnormal stock returns during the period 1978–1980, also presented

TABLE 1—MEANS OF PERFORMANCE AND TOP MANAGEMENT VARIABLES BY CONTROL OUTCOME

	Complete Management Turnover	Hostile	Friendly	No Outcome
1980 Q	0.734	0.524	0.774	0.932
1980 Industry Q	0.831	0.691	0.862	0.855
1980 Q —Industry Q	-0.138	-0.139	-0.0370	0.0647
Total Abnormal Stock Return, 1978–1980 ^a	-0.0729	-0.113	-0.0561	0.0519
Industry Abnormal Stock Return, 1978–1980	0.0138	-0.0850	0.0944	0.0051
Abnormal Stock Return— Industry Abnormal Stock Return, 1978–1980	-0.0714	-0.0531	-0.149	0.0507
Employment Growth Rate, 1978–1980	0.0184	0.0152	0.0195	0.0476
Industry Employment Growth Rate, 1978–1980	0.0376	0.0220	0.0472	0.0376
Employment Growth Rate— Industry Growth Rate, 1978–1980	-0.0220	-0.0081	-0.0277	0.0115
Founding Family Represented on Top Management Team	0.118	0.100	0.412	0.286
Equity Stake of Top Executive	0.0266	0.0103	0.0978	0.0547
Age of Top Executive in 1980	60.6	55.0	57.1	56.3
One-Man Top Management Team ($BOSS = 1$)	0.161	0.35	0.265	0.220
Young One-Man Top Management Team (Age of Boss ≤ 60)	0.0538	0.300	0.265	0.185

^aAll Abnormal returns are estimated from a monthly CAPM equation for 1/78 through 12/80. These numbers are converted to total abnormal returns over the period 1/78–12/80 for ease of interpretation.

in Table 1, largely but not always corroborate those using Tobin's Q . Over this period, firms experiencing complete turnover or hostile takeover have abnormal returns of -7.3 percent and -11.3 percent respectively, compared to +5.2 percent for firms experiencing no control outcome. Targets of friendly bids have 1978–1980 abnormal returns of -5.6 percent. Also, consistent with the results on Q , the industry abnormal return is -8.5 percent for targets of hostile takeovers, and +1.4 percent for complete turnover firms.

The results on Tobin's Q and on abnormal returns are also in some ways different. The most interesting difference between the results using Tobin's Q and abnormal returns is the evidence on friendly acquisitions. During the 1978–1980 period, the industrywide abnormal return on these firms is +9.4 percent, but the firm-specific abnormal return is -14.9 percent. This suggests that

targets of friendly acquisitions, like firms undergoing complete turnover of top management, are not in troubled industries but are experiencing some firm-specific problems prior to control change.

Evidence on employment growth for 1978–1980 closely mirrors that for 1978–1980 stock market returns. Firms experiencing complete turnover have substantially lower employment growth rates than their industry peers, whereas those industry peers grow at rates comparable to the rest of the Fortune 500. Targets of hostile takeovers are in low employment growth industries, and there is some evidence that these firms also lag their industry peers. Finally, targets of friendly bids are in industries with high employment growth, but significantly lag behind their industry peers.

Despite the close parallels between the results for stock market returns and employment growth, these employment numbers

should be interpreted with caution. A high level of employment growth *relative to industry peers* is not necessarily a signal of superior performance, since excessive employment growth can itself be an important deviation from value-maximization. At the same time, *industrywide* employment growth is probably a reliable indicator of industry health. Accordingly, our finding that targets of hostile takeovers belong to industries with low employment growth supports our interpretation of the results for Tobin's Q and abnormal returns as related to poor performance and not just to stock market undervaluation.

The inconsistency of our results for friendly acquisitions using alternative performance variables should probably be attributed to the different aspects of performance that Tobin's Q and the other two variables measure. Targets of friendly mergers are often thought to have considerable intangible assets, such as a growing customer base, to which the acquirer can add management skills or access to capital. As a result of having such intangible assets, these firms are unlikely to have a low measured Tobin's Q , even if they are performing poorly. Our evidence then suggests that the likely candidates for a friendly acquisition are firms with considerable intangible assets that have recently underperformed their industry.

Whether performance is measured using Tobin's Q , stock market returns, or employment growth, poor industry performance is prevalent among targets of hostile takeovers. In contrast, firms experiencing complete management turnover are best characterized by their poor performance relative to their own industries and not by poor industry performance. The evidence is less clear as to whether poor performance within industry is also important in predicting hostile takeovers. We defer formal testing of these relations to the multivariate analysis section.

C. Management Characteristics

Performance alone does not determine which (if any) control devices are used; characteristics of top management may also be important. These include the age of the

Forbes-specified top executive, his equity position in 1980, and a dummy indicating whether any signer of the annual report is from the founding family. The equity position of the Forbes-listed top executive, obtained from the 1980 Corporate Data Exchange Directory of Fortune 500, can proxy for both the degree of entrenchment and the financial incentive to accept a friendly offer.⁵ Top officer members of the founding family, identified by looking at annual reports extending if necessary to the turn of the century, may have a special ability to resist challenges to their control even without a substantial ownership stake by virtue of having handpicked the board over the years. Age is obtained from 10-K forms.

This paper uses one additional measure of the status of the top executive. This dummy variable, called *BOSS*, is obtained from 1980 annual reports of our sample companies. *BOSS* is set equal to 1 if only one executive holds any of the three titles of Chairman, President, and Chief Executive Officer that exist in the company and he is also the sole signer of the letter to shareholders in the annual report. Of the 113 executives who satisfy the first criterion all but 12 satisfy the second; the rest cosign the annual report with a Vice Chairman or a Vice President and hence are arguably not completely alone at the helm. The *BOSS* variable thus tries to identify top executives who either completely dominate the management of their company, or else have no clear internal replacement.

Since *BOSS*es are alone at the helm, their retirement or removal is, by construction, a complete turnover. Because we are interested in the effect of entrenchment on the form of control device used, we want to minimize the impact of planned retirements on our results. To this end, we focus on young *BOSS*es. The dummy variable *YBOSS* is set equal to 1 for companies run by a *BOSS* no more than 60 years of age in 1980. Except

⁵Ralph Walkling and Michael Long (1984) find that managers with a larger stake are less likely to resist a tender offer. Morck, Shleifer, and Vishny (1988a) find that higher management ownership reduces the likelihood of hostile bids, and raises that of friendly ones.

for members of founding families, *YBOSSes* are probably the most difficult to discipline through internal control devices. Of the 101 *BOSSes* in the sample, 79 are young *BOSSes* (*YBOSSes*), and the other 22 are over 60. By comparison, 111 firms count among their top management a member of the founding family.

The lower part of Table 1 presents the characteristics of top management by type of control change. Not surprisingly, a firm experiencing complete turnover is about 40 percent as likely to be run by a founder or a member of the founding family as a residual firm. Similarly, targets of hostile takeovers are only 35 percent as likely to be run by a member of the founding family as residual firms. In contrast, firms run by founding families are more likely to be targets of friendly acquisitions than residual firms. The equity stake of the Forbes-listed top executive behaves similarly to the founding family variable. It is lower in firms experiencing complete turnover or a hostile takeover, but higher in targets of friendly acquisitions.

The higher average age of the CEO in firms experiencing complete turnover reflects greater incidence of retirements. More interesting is the result that the average top executive of a target of a hostile bid is younger than that of a no-outcome firm, suggesting that hostile takeovers might be a way to get rid of CEOs with an otherwise long expected employment with the firm. Top executives of targets of friendly acquisitions, by contrast, are as old as those of residual firms.

The most interesting results concern the *BOSS* variable defined above. A firm experiencing complete turnover is less likely to be run by a *BOSS* than a residual firm, despite the fact that *any* turnover of a *BOSS* is automatically a complete turnover. A firm experiencing complete turnover is only 30 percent as likely to be run by a *BOSS* aged 60 or under as a residual firm, although this could reflect a pure age effect (see Section III for evidence to the contrary). In contrast, targets of hostile takeovers are more likely to be run by both young and old *BOSSes* than the no-outcome firms. The probability that a hostile target is run by a young *BOSS* is 1.6 times the probability that a no-outcome firm

is run by one. Firms acquired in friendly deals are also more likely to be run by young *BOSSes*.

This preliminary evidence suggests that characteristics of management might be extremely important in determining the form of control change. Some managers, such as founders, owners of large stakes, or young *BOSSes* seem to be relatively immune to internal discipline. But not all of these types are equally difficult to remove in a takeover. Young *BOSSes* in particular may be managers against whom hostile takeovers are much more effective than action by the board. It is also interesting that friendly takeovers are more likely to occur in firms with young *BOSSes*. In these cases, the board might welcome an acquisition because it cannot itself solve the management problem. These cases differ from hostile takeovers where boards are presumably unwilling to condone the disciplinary changes sought by the raiders.

II. Multivariate Analysis

This section presents 4-choice logit estimates of the determinants of the form of control change. The four choices are: complete turnover of the top management (not followed by an acquisition), hostile takeover, friendly acquisition, and none of the above (residual firms). To avoid inducing spurious correlations because large firms are less likely to be acquired, we control for firm size in the logits. The measure of size we use is the logarithm of the total market value of the firm, calculated identically to the numerator of Q . Hence, all the multinomial logits are estimated on the subsample of 371 firms for which we could compute Q , even when abnormal return or employment growth is used as the measure of performance. Tables 2 and 3 present logits and implied probabilities respectively for all performance measures.

The results using Q as a measure of performance indicate that, relative to the probability of being a residual firm, the probability of complete turnover is lower when the firm is run by a member of the founding family, when the top executive is aged 60 or under, when the firm outperforms its indus-

TABLE 2—MULTINOMIAL LOGIT MODELS OF CONTROL OUTCOMES USING VARIOUS PERFORMANCE MEASURES

Control Outcome	Specification A: Tobin's Q			Specification B: Abnormal Stock Return			Specification C: Employment Growth		
	Complete Turnover	Hostile Takeover	Friendly Takeover	Complete Turnover	Hostile Takeover	Friendly Takeover	Complete Takeover	Hostile Takeover	Friendly Takeover
Intercept	0.954 (1.09)	2.39 (1.88)	-1.85 (-1.13)	0.877 (0.962)	1.27 (0.937)	-1.72 (-1.04)	1.40 (1.63)	2.45 (1.96)	-1.75 (-1.07)
Log of Total Market Value	-0.101 (-0.796)	-0.434 (-2.27)	-0.0867 (-0.374)	-0.0955 (-0.765)	-0.466 (-2.39)	-0.132 (-0.606)	-0.167 (-1.39)	-0.583 (-3.16)	-0.141 (-0.638)
Founding Family on Top Management Team = 1	-1.14 (-2.40)	-1.41 (-1.69)	-0.388 (-0.596)	-1.22 (-2.49)	-1.42 (-1.67)	-0.611 (-0.883)	-1.07 (-2.35)	-1.48 (-1.77)	-0.332 (-0.519)
Age of Top Executive \leq 60 in 1980 = 1	-1.54 (-4.89)	-0.139 (-0.256)	-0.550 (-0.836)	-1.64 (-5.13)	-0.382 (-0.689)	-0.464 (-0.677)	-1.62 (-5.29)	-0.269 (-0.501)	-0.624 (-0.949)
Equity Stake of Top Executive	-1.29 (-0.787)	-7.00 (-1.22)	1.90 (1.02)	-0.479 (-0.261)	-5.37 (-0.952)	3.56 (1.61)	-1.58 (-0.956)	-7.64 (-1.21)	1.77 (0.975)
Young One-Man Top Management Team (Age of Boss \leq 60)	-0.850 (-1.49)	0.540 (1.14)	1.12 (1.85)	-0.770 (-1.34)	0.778 (1.59)	1.08 (1.80)	-0.820 (-1.43)	0.738 (1.54)	1.12 (1.83)
Industry Q	-0.140 (-0.378)	-1.84 (-2.25)	-0.0878 (-0.139)	-	-	-	-	-	-
Q —Industry Q	-0.949 (-2.28)	-1.68 (-1.90)	-0.321 (-0.521)	-	-	-	-	-	-
Industry Abnormal Return, 1/78–12/80 (Monthly)–0.0003	-	-	-	-0.00687 (-0.000349)	-68.00 (-1.99)	25.76 (0.778)	-	-	-
Abnormal Return— Industry Abnormal Return, (Monthly)	-	-	-	-31.58 (-2.39)	-28.97 (-1.43)	-25.97 (-1.12)	-	-	-
Industry Employment Growth,	-	-	-	-	-	-	-1.14 (-0.354)	-9.20 (-2.01)	4.91 (0.943)
Employment Growth—Industry Employment Growth,	-	-	-	-	-	-	-3.52 (-1.74)	-2.62 (-1.00)	-0.710 (-0.342)
		$N = 353$			$N = 341$			$N = 359$	

Note: t -statistics are in parentheses.

try, and when it is run by a *BOSS* aged 60 or under, although the last effect is not significant at conventional levels. Since we are controlling for age, we are capturing the marginal effect of young *BOSS* only. In the logit, the log odds of a complete turnover versus no outcome is not significantly affected by industry Q , or by the equity stake of the top executive. In terms of probabilities, starting from the “base case” in which the performance variables are set equal to their median values and all of the other independent variables are set equal to their mean values, when Q relative to industry falls to the top of its lowest quartile, the estimated probability of a complete turnover

rises from 17.7 percent to 20.0 percent. The estimated probability drops from 17.7 percent to 8.8 percent when the firm is run by a member of the founding family.

The log odds of a friendly acquisition relative to no outcome (residual firms) does not seem to be significantly affected by almost any of our variables, although this result is at least partly due to the small number (17) of friendly acquisitions in the sample for which we have complete data. Notably, young age, membership in the founding family, and ownership stake have no statistically significant influence on the log odds of a friendly acquisition. We do, however, find the probability of a friendly acquisition to be

TABLE 3—ESTIMATED PROBABILITIES FROM MULTINOMIAL LOGIT MODELS USING VARIOUS PERFORMANCE MEASURES

	Specification A: Tobin's <i>Q</i>			Specification B: Abnormal Stock Return			Specification C: Employment Growth		
	Probability of Complete Turnover	Probability of Hostile Takeover	Probability of Friendly Takeover	Probability of Complete Turnover	Probability of Hostile Takeover	Probability of Friendly Takeover	Probability of Complete Turnover	Probability of Hostile Takeover	Probability of Friendly Takeover
Base Case ^a	0.177	0.057	0.049	0.179	0.060	0.045	0.182	0.056	0.045
Founding Family Present	0.088	0.023	0.043	0.084	0.024	0.034	0.095	0.021	0.041
No Founding Family	0.214	0.074	0.049	0.219	0.076	0.047	0.217	0.074	0.045
Age of CEO > 60	0.389	0.046	0.052	0.404	0.055	0.043	0.407	0.047	0.049
Age of CEO ≤ 60	0.125	0.059	0.045	0.123	0.058	0.043	0.126	0.056	0.041
Young One-Man Top Management Team	0.087	0.088	0.120	0.092	0.110	0.105	0.090	0.100	0.109
No Young One-Man Top Management Team	0.203	0.051	0.039	0.204	0.051	0.036	0.207	0.049	0.036
Industry Performance at Top of Lowest Quartile	0.176	0.084	0.048	0.177	0.077	0.040	0.184	0.069	0.039
Firm Performance Relative to Industry at Top of Lowest Quartile	0.200	0.074	0.049	0.211	0.069	0.051	0.204	0.060	0.044

^aThe base case is where the performance variables are at their medians and all other variables are at their means. The rows following the base case are estimated probabilities evaluated at various points differing from the base case only in the value of the respective independent variable.

higher for firms run by *BOSS*es aged 60 or under.

Consistent with our earlier evidence, the log odds of a hostile takeover versus no outcome increases with poor performance of the industry and with poor performance within industry. Starting at the base case (performance variables at their median values and all others at their mean values), the probability of a hostile acquisition increases from 5.7 percent to 8.4 percent when industry *Q* drops to the top of its lowest quartile. Similarly, the probability of a hostile takeover rises from 5.7 percent to 7.4 percent when *DQ* falls to the top of its lowest quartile.

Two more results from this regression are worth emphasizing. First, poor performance within industry is typical of both targets of hostile takeovers and of firms experiencing complete turnover, but poor industry performance is typical only of the former. The effect of *IQ* on the log odds of hostile acquisition versus complete turnover is statistically significant at the 5 percent level ($t = 1.97$), whereas the corresponding effect of *DQ* on the log odds ratio is not ($t = 0.779$). This is consistent with the view that boards are more successful in addressing firm-specific than industrywide problems.

Second, the presence of a *BOSS* aged 60 or under actually has opposite effects on the log odds of complete turnover versus no outcome and of hostile takeover versus no outcome. The log odds of a complete turnover versus a hostile takeover declines significantly ($t = 2.03$) in the presence of a young boss. In terms of probabilities, the presence of a young boss is associated with a rise in the probability of a hostile takeover from 5.7 percent to 8.8 percent and a fall in the probability of complete turnover from 17.7 percent to 8.7 percent starting at the mean value of the young *BOSS* variable.⁶

One interpretation of these results is that young *BOSS*es can effectively stand up to the board of directors, but succumb to hostile bidders. In contrast, members of founding families seem to neither turn over nor lose out to hostile bidders, indicating that

⁶The main base case that we use is where the age of the CEO less than or equal to 60 dummy is set equal to its mean of 0.73. If, instead, the age dummy is set equal to 1 at the base case, then the presence of a young boss is associated with a rise in the probability of a hostile takeover from 6.0 percent to 9.0 percent and a fall in the probability of complete turnover from 12.5 percent to 6.0 percent. This may be a better base point around which to evaluate the effect of the young boss variable.

they are more effectively entrenched than the young *BOSS*s. The ownership stake of the top executive also has a negative effect on the log odds of both these outcomes relative to no outcome, although the estimates are not statistically significant.

The results for abnormal stock returns are very similar to those for Tobin's *Q*: the presence of a founder, young age of the top executive, good performance relative to industry, and the presence of a young *BOSS* all reduce the log odds of complete turnover versus no outcome, although the coefficient on the young *BOSS* variable is not significant. The estimated probability of a complete turnover rises from 17.9 percent to 21.1 percent as 1978–1980 abnormal returns relative to industry decline to the top of the lowest quartile starting from the base case. The presence of a young *BOSS* again raises the log odds of a friendly acquisition. Starting at the base case (with the young *BOSS* dummy equal to its mean of 0.174), the presence of a young *BOSS* raises the estimated probability of a friendly acquisition from 4.5 percent to 10.5 percent.⁷

The most important difference in the results for Tobin's *Q* and abnormal returns is that, when abnormal returns are used, poor performance relative to industry no longer significantly raises the log odds of a hostile takeover. Using either measure, we have the result that, relative to residual firms, poor industry performance raises the odds of hostile takeovers, whereas poor performance within industry raises the odds of complete turnover. The log odds of a hostile takeover vis-à-vis complete turnover increases significantly with poor industry performance measured either by *Q* ($t=1.97$) or abnormal returns ($t=1.84$). The effect of poor firm-specific performance on the log odds of a hostile takeover versus complete turnover shows no clear tendency at all.

The results using abnormal returns also confirm the finding using Tobin's *Q* that

large firm size and the presence of the founding family reduce the log odds of a hostile acquisition versus no outcome. The presence of a young *BOSS* raises the log odds of a hostile takeover ($t=1.59$). In fact, the effect of young *BOSS* on the log odds of complete turnover versus hostile takeovers is highly significant ($t=2.21$). In terms of probabilities, having a young boss at the helm is associated with an estimated increase in the probability of hostile takeover from 6.0 percent to 11.0 percent and an estimated reduction in the probability of complete turnover from 17.9 percent to 9.2 percent starting at the base case.⁸ These multivariate results bear out our earlier finding that young *BOSS*s are less vulnerable to a threat by the board and more vulnerable to one by a takeover artist.

The results using 1978–1980 employment growth track fairly closely those for the other performance measures. The most notable exception is that the idiosyncratic component of employment growth comes in much less strongly in predicting both complete turnover and hostile takeovers than the idiosyncratic components of either abnormal returns or Tobin's *Q*. This is consistent with the ambiguity of the firm-specific component of employment growth as a measure of relative performance. On the other hand, low industry employment growth predicts hostile takeovers, consistent with the accuracy of industry employment growth as an indicator of industry health. The employment numbers thus support our conclusion that hostile takeovers are targeted at firms in troubled industries.

III. Concluding Comments

This paper has attempted to assess the effectiveness of the board of directors in disciplining top managers. We have found that the board is not completely unrespon-

⁷If the age of the CEO dummy is set equal to 1 at the base case, then the estimated probability of a friendly acquisition rises from 4.3 percent to 9.8 percent starting from the base case (young *BOSS* equal to its mean of 0.174) and going to a firm with a young *BOSS*.

⁸If the age of CEO dummy is set equal to 1 at the base case, then the presence of a young boss at the helm is associated with an estimated increase in the probability of hostile takeover from 5.8 percent to 10.4 percent and an estimated reduction in the probability of complete turnover from 12.3 percent to 6.2 percent.

sive to poor performance. When a firm significantly underperforms its industry, the probability of complete turnover of the top management team rises. This result suggests that boards compare the performance of the firm with that of other firms in its industry, and sometimes remove top managers when they cannot keep up with the industry.

But the 1980s have presented the board of directors with a harder problem. During this period, because of deregulation, commodity price shocks, and foreign competition, whole industries such as airlines, oil, and steel have suffered adverse shocks. As discussed by Jensen (1986) and Shleifer and Vishny (1988), shareholder value could be raised in many of these industries through painful measures such as restructurings, sell-off of assets, employee layoffs, and wage reductions. Despite wide disagreement about whether there are net social gains from such strategies, it is fair to say that shareholders typically benefit from them.

The evidence in this paper indicates that corporate boards have not been the main force behind removing unresponsive managers in poorly performing industries. Instead, this function has been accomplished by hostile takeovers. Our evidence supports the view that takeover organizers have taken advantage of opportunities raised by the ineffectiveness of internal control devices such as the board of directors and incentive pay. To the extent that internal control devices are cheaper to operate and are more conducive to long-term planning by incumbent management than are hostile takeovers, the replacement of the oversight function of the board by the external market for corporate control might be deemed a third-best situation.

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