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ALTERNATIVE MECHANISMS FOR CORPORATE CONTROL

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ABSTRACT

We examine performance and management characteristics of Fortune 500 firms experiencing one of three types of control change: internally precipitated management turnover, hostile takeover, and friendly takeover. We find that firms experiencing internally precipitated management turnover perform poorly relative to other firms in their industries, but are not concentrated in poorly performing industries. In contrast, targets of hostile takeovers are concentrated in troubled industries. There is also weaker evidence that hostile takeover targets underperform their industry peers. We interpret this evidence as consistent with the idea that the board of directors is capable of firing managers whose leadership leads to poor performance relative to industry, but that an external challenge in the form of a hostile takeover is often required when the whole industry is in decline.

The evidence also indicates that firms run by a member of the founding family are less likely to experience either internally precipitated top management turnover or a hostile takeover. On the other hand, firms whose top management team is dominated by a single, relatively young top executive, while lacking in internal discipline, are more likely to experience a hostile takeover.

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1. Introduction.

Ineffective boards of directors have been held responsible for many woes of American companies (Mace, 1971, Jensen, 1986), including the advent of hostile takeovers. The board is blamed for both failing to recognize the problems of the firm, and for failing to stand up to top officers when tough solutions to these problems are needed. Where the board fails, external control devices come to play a role.

An alternative view suggests that the board serves its monitoring and control functions effectively (Fama and Jensen, 1983). Consistent with this view, Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988) and Weisbach (1988) find that poor performance of the firm increases the likelihood of Chief Executive Officer (CEO) replacement, and attribute this to monitoring by the board. Evidently, boards can deal with at least some of the problems of the firm.

The question then is: which problems of the firm can the board of directors deal with effectively and which ones instead trigger the external control market? Arguably, the board's effectiveness depends in part on whether the problem experienced by the firm is idiosyncratic or industry-wide. In the former case, it might be relatively easy for the board to assess blame and fire a CEO whose leadership causes the company to underperform its otherwise healthy industry. In the case of industry-wide problems, such as those caused by foreign competition, technological progress, or deregulation, the board's problem is much harder. It is then less clear that the firm is making mistakes, or what those mistakes are, when the whole industry is suffering. With this kind of uncertainty, most boards would be reluctant to blame the CEO for the firm's problems, let alone fire him. Even when the board understands that changes are needed, it might

refuse to force the current CEO (or his replacement) to divest divisions, close plants, lay off workers, cut wages, and take other painful measures that might increase profits in a declining industry. Under these circumstances, an external challenge to the board's authority may be necessary to enforce shareholder wealth maximization.

The board's effectiveness also depends on the status and power of the CEO. Some managers, by virtue of their ability, ownership stake, tenure, or status as founders might be able to dominate the board, rather than be controlled by it -- whatever problems the company faces. If the board's comparative advantage is to deal with certain types of problems and with handling particular CEOs, companies going through internally-caused management turnover will be different than targets of hostile takeovers. By contrasting the characteristics of the two types of firms, this paper tries to find out what boards do in fact accomplish.

Our analysis focuses on three alternative means of control change in a sample of 454 publicly-traded Fortune 500 companies that we follow between 1981 and 1985. The control methods that we study include internally-caused complete turnover of the top officers of the corporation, friendly sale of the company, and the hostile takeover[1]. 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 those do not usually represent responses to management problems (Vancil, 1987). In fact, we present evidence in section 4 that, far from being used as a disciplinary device, internal succession is associated with abnormally good performance. Friendly acquisitions are

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[1]Other recent studies of the characteristics of takeover targets include Hasbrouck (1985), Palepu (1986), Ravenscraft and Scherer (1987), and Morck, Shleifer and Vishny (1988).

studied because they too represent control changes, but not necessarily of the same disciplinary nature as hostile takeovers (Morck, Shleifer and Vishny, 1988, present evidence on this point). As such, friendly acquisitions provide a useful contrast to both hostile takeovers and internally-caused complete turnover.

We find that complete top management turnover is associated primarily with poor performance of a firm relative to its industry and not with adverse industry shocks. In contrast, hostile takeovers are targeted at firms concentrated in troubled industries. While targets of hostile takeovers also underperform their already troubled industries, this effect is less pronounced than poor performance of their industries. This evidence is consistent with the following conclusions: In many cases, boards of directors succeed in comparing the performance of their companies to the industry standard, and in dismissing management teams that underperform the industry. In contrast, boards typically fail to deal with problems faced by an entire industry in trouble. These boards are either unsure that management is doing a bad job in responding to the adverse industry shock, or they refuse to force changes that an improvement of profits requires, such as divisional selloffs or wage reductions. In this respect firms acquired in friendly deals are more similar to firms experiencing complete turnover than they are to targets of hostile takeovers. To the extent that they are disciplinary at all, friendly deals seem to be encouraged by corporate boards that are faced with poor performance relative to a healthy industry.

We also find that firms run by members of the founding family and CEOs with large direct ownership are less likely to experience either complete management turnover or a hostile takeover. Both disciplinary devices are less effective against CEOs with strong attachment to the firm, who either

control the board or can better weather a hostile threat. In an additional attempt to measure poor internal discipline, we focus on firms where the top management team consists of a single individual. We define such firms as cases where only one executive holds any of the three titles of chairman, chief executive officer and president and where he is also alone in signing the letter to shareholders in the annual report. We find that, as long as such one-man firms are run by a young top executive, they are less likely than an average firm to experience complete turnover of the management team, but more likely than an average firm to be a target of a hostile takeover. Hostile takeovers may thus be a way to deal with these young "bosses" whom the board cannot effectively control.

In summary, our evidence indicates that, given the current capabilities of boards of directors, internal turnover and hostile takeovers provide complementary means of enforcing maximization of shareholder value.[2] Hostile takeovers become relevant precisely when the problems of the firm and the status of top management make the board's disciplinary role too difficult to perform effectively.

Section 2 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 changes. Section 3 presents the main empirical results that attempt to identify characteristics conducive to particular means of control change. Section 4 compares firms experiencing complete turnover of the management team -- used as a proxy for disciplinary turnover -- with firms experiencing a partial turnover of top management. Section 5 concludes.

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[2]Which does not necessarily coincide with social welfare; see Shleifer and Vishny (1988) and Shleifer and Summers (1988).

2. Basic results on alternative forms of control change.

The question raised in the introduction is whether the form of control change depends on a firm's performance problems and characteristics of top managers. This section compares mean characteristics of firms that were acquired in a friendly deal, a hostile deal, or that underwent an internally precipitated control change. The subsequent section presents a multinomial logit model in which all the determinants of alternative types of change are treated simultaneously.

2a. Types of Management 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 acquiror) 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 the analysis of Morck, Shleifer and Vishny (1988), we exclude friendly 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, Shleifer and Vishny (1988), we treat hostile MBOs -- that are defensive responses to a hostile bid or 13-D filing -- as if they were 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. Signing the annual report, in contrast, seems to be a more effective proxy for leadership. We focus on complete rather than partial turnover of signatures because we are interested in disciplinary management changes forced by the board. Presumably, most changes in which one co-signer of the annual report replaces another represent ordinary succession rather than disciplinary action by the board. The results in section 4 strongly support this conclusion.

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 acquisition, 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 cases of ordinary succession. Some such non-disciplinary cases might be planned CEO retirements accompanied by the appointment of an outside replacement team, but such cases are rare (Vancil, 1987). More commonly, these would be 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.

In section 4, we separately look at the cases of partial turnover, in which the Forbes-listed top executive (usually the CEO) changes between 1980 and 1985 but there is no complete turnover in the list of signers of the letter to shareholders. (The Forbes-listed top executive is always among the signers of the letter to shareholders in the annual report.) Our sample includes 70 cases of such partial turnover. Arguably, incumbent top executives are partly competing for their jobs with other executives in the company. On that theory, even replacement by a member of the same management team can be disciplinary. Our view, supported by the results of section 4, is that most of the partial turnovers in our sample represent ordinary succession and not disciplinary changes. Accordingly, we focus on complete turnover to gauge the effectiveness of the board as a control device.

2b. 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. As such, Tobin's Q can be viewed as measuring the intangible assets of the firm. These may include future growth opportunities, monopoly power, goodwill, rents appropriated away from unions, as well as the quality of management. Our measure of Q was obtained from the Griliches R & D Master File (Cummins, Hall and Laderman, 1982) for 1980. The numerator is the sum of the actual market value of the firm's common stock and estimated market values of preferred stock and debt[3]. The denominator of Q is the replacement cost of the firm's plant and inventories, A, also taken from the R & D Master File. Values of Q are not available for 85 firms, primarily because of the difficulty of obtaining values of long term debt and, in some cases, replacement cost A. Our final sample for results using Q consists of 371 firms. These include 80 cases of complete turnover, 31 hostile takeovers, and 17 friendly acquisitions.

Since we are looking at an imperfectly measured Q, the interpretation of Q as a measure of the valuation of intangible assets can be problematic. The replacement cost of assets could be overstated, for example, if the firm

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3. The market value of common stock is taken from Standard and 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 long-term debt for our firms were obtained from the NBER's R&D Master File (see Cummins, Hall and Laderman, 1982). These estimates are constructed on the assumption that all long-term debt has an orignial maturity of 20 years, and using a matrix of bond prices in year t for bonds due in year s from the Moody's corporate BAA bond price series. The age structure of corprate debt is estimated from changes in the firm's book value of long-term debt in each of the 20 previous years on the COMPUSTAT tape. Using this age structure estimate and the bond price matrix, Cummins et al. (1982) calculate the value of each firm's long-term debt.

bought its assets long ago and their value depreciated significantly because of technological progress, foreign competition, or other changes. In these cases, the inflation-adjusted historical cost is a poor guide to the true replacement cost, but a very low Q is probably still a reliable indicator of a declining firm.

Our 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.

Our third measure of performance is employment growth over the 1978-1980 period. Although employment growth is not an unambiguous 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 their current operating strategies. Second, employment growth seems like a fairly reliable measure of industry health even though it may be an ambiguous measure of firm performance within an industry. Our sample using employment growth 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. This is done for two reasons. First, it is difficult to find an appropriate way to compare performance of firms that experienced control changes between 1981 and 1985 with those that experienced none, except by looking at all of them prior to the hazard period. While for the sample of firms experiencing change it might be more natural to look at performance closer to the time of that change, there is no natural time frame in which to measure performance of firms where the management stayed intact. More importantly, in choosing a prior period, our aim was 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.

For all three performance measures, we look separately at industry-wide 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. Analagously, 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 industry-wide 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 finding out whether boards respond differentially to industry-

wide and firm-specific problems, and whether takeovers are differentially targeted at firms with these distinct types of problems.

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 suggest that firms experiencing complete turnover or a hostile takeover have an average Q statistically significantly lower than that of residual firms. Tobin's Q of complete turnover firms is .734, which is 27% below Tobin's Q of residual firms equal to .932 (t=-2.20). Tobin's Q of hostile takeover targets is .524, which is 44% below .932 (t=-3.00). In contrast, Tobin's Q of firms acquired in a friendly deal is .774, which while lower than that of residual firms, is not statistically significantly so.

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[4]. 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% below that for residual firms (t=-2.02). To the extent that IQ measures industry performance, this evidence indicates that hostile takeovers are targeted at firms in troubled industries, but that complete management turnover is not associated with industry troubles.

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[4]Note that in Table 1 the means of the industry and within industry components of the performance variables do not sum identically to the means of the performance variables themselves. This happens because the means are calculated using slightly different subsamples due to missing data.

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. Complete turnover firms have an average DQ of -.14, which is significantly below DQ for no outcome firms (t=-2.56). Hostile targets also have an average DQ of -.14, with the test for equality vis a vis no outcome firms having a t-statistic of -1.79.

Although firms sold to friendly acquirors show both DQ and IQ below that of residual firms, these differences in performance are not statistically significant. Moreover, they are not nearly as large in magnitude as the corresponding performance shortfalls of hostile takeover and complete turnover firms. We cannot then conclude that targets of friendly acquisitions are concentrated in troubled industries, or that they significantly underperform their industries. Friendly acquisitions are not significantly related to performance as measured by Q, IQ or DQ.

The results using abnormal stock returns during the period 1978-1980 are also presented in Table 1. Evidence on cumulative 1978-1980 abnormal returns largely but not always corroborates that on Tobin's Q. Over this period, firms experiencing complete turnover or hostile takeover have abnormal returns of -7.3% and -11.3% respectively, compared to +5.2% for firms experiencing no control outcome. Targets of friendly bids have 1978-1980 abnormal returns of -5.6%, but this is not reliably different than the abnormal returns for no outcome firms. Also, consistent with the results on Q, the industry abnormal return is -8.5% for targets of hostile takeovers, and +1.4% for complete turnover firms.

The results on Tobin's Q and on abnormal returns are also in some ways different. First, the firm-specific component of abnormal returns for hostile takeover targets is not reliably different from the firm-specific

abnormal return for no outcome firms. The univariate returns data thus suggest that hostile takeovers are primarily associated with industry-wide troubles and less with firm-specific troubles, while the converse is true about complete turnover. Some multivariate tests of whether firm-specific problems matter for hostile takeovers are presented in Section 3.

The second interesting difference between the results using Tobin's Q and abnormal returns is the evidence on friendly acquisitions. During the 1978-1980 period, the industry-wide abnormal return on these firms is +9.4%, but the firm-specific abnormal return is -14.9%, which is different from that for no outcome firms at the 5% level. This suggests that targets of friendly acquisitions, like firms undergoing complete turnover of top management, 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 weak 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 <u>relative to industry peers</u> 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, <u>industry-wide</u> 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 acquiror 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 would then suggest that the likely candidates for a friendly acquisition are firms with considerable intangible assets that have recently underperformed their industry.

Although no clear picture emerges for performance characteristics of friendly acquisitions, the results support a consistent picture of performance of firms subject to "disciplinary" control changes. 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.

2c. Management Characteristics.

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

considered here have been previously studied by Morck, Shleifer and Vishny (1988) to compare targets of hostile and friendly acquisitions. These include the age of the Forbes-specified top executive, his equity position in 1980, and a dummy indicating whether a member of the top management team 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 companies, 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 a sequence of 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 hand-picked 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 not used in our previous research. 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

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

dominate the management of their company, or else have no internal replacement in mind.

Since BOSSes 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 BOSSes. 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 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.

Table 2 presents the characteristics of top management by type of control change. Not surprisingly, a firm experiencing complete turnover is about 40% 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% 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, although this result is only marginally significant. This finding replicates the result in Morck, Shleifer and Vishny (1988) that founders are harder to force out in a hostile takeover but are more likely to sell their firms when they choose to retire or diversify. The earlier paper did not consider management turnover.

The equity stake of the Forbes-listed top executive works largely the same way as the founding family variable. It reduces the likelihood of complete turnover and of a hostile takeover, but raises that of a friendly

acquisition. Our preferred interpretation of this result is similar to that for the founding family variable.

The higher average age of the CEO in firms experiencing complete turnover probably 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. This result suggests 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 main results in Table 2 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% as likely to be run by a BOSS aged 60 or under as a residual firm, suggesting that young BOSSes are relatively immune to internal discipline. Of course, this may largely reflect a pure age effect. In section 3, we estimate the impact of a young BOSS controlling for age.

BOSSes have a radically different experience with hostile takeovers than they do with complete turnover. Targets of hostile takeovers are more likely to be run by both young and old bosses than the no outcome firms, with the differences significant at the 10% level. Thus the probability that a hostile target is run by a young BOSS is .3, which is 62% higher than .185, the probability that a no outcome firm is run by a young BOSS. This suggests that to get rid of a young BOSS one may have to buy the company. Firms acquired in friendly deals are also more likely to be run by young BOSSes, but this result is not statistically significant.

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 BOSSes seem to be relatively immune to internal discipline. But not all of these groups are equally difficult to remove in a takeover. Young BOSSes in particular may be a class of 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. These may represent situations in which board members welcome an acquisition because they cannot work out a solution to their management problem themselves. But these cases may differ from the hostile takeovers where the board is presumably unwilling to condone the disciplinary changes sought by the raider.

Although the evidence presented in this section sheds light on the functioning of various control devices, it is not conclusive. The problem is that many of the performance and management variables are correlated with each other. In the next section, we turn to a multivariate analysis to determine which characteristics of the firm determine the form of control change.

3. 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. 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 market value of the firm's assets, 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 3 and 4 present the results using Q as the measure of performance. The omitted category are firms that neither were acquired nor experienced a complete turnover (residual firms).

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 industry, 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 rather than log odds ratios, 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% to 20.0%. The estimated probability drops from 17.7% to 8.8% when the firm is run by a member of the founding family. These estimated probabilities are contained in Table 4.

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 higher for firms run by BOSSes 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. This log odds ratio is also higher for firms not run by a member of the founding family and, albeit with a t-statistic of only 1.14, firms that are run by a young BOSS. Young age by itself has no real effect on the probability of a hostile (or for that matter friendly) acquisition. Finally, the results indicate that large size reduces vulnerability to a hostile takeover, as one would expect.

These estimates are interpreted in terms of probabilities in Table 4. 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% to 8.4% when industry Q drops to the top of its lowest quartile. Similarly, the probability of a hostile takeover rises from 5.7% to 7.4% 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% level (t=1.97), whereas the corresponding effect of DQ on the log odds ratio is not (t=.779). This is consistent with the view that boards are more successful in addressing firm-specific than industry-wide 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% to 8.8% and a fall in the probability of complete turnover from 17.7% to 8.7% starting at the base case (i.e., the mean value of the young BOSS variable).

One interpretation of these results is that young BOSSes 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 they are more effectively entrenched than the young BOSSes. The ownership stake of the top executive also has a negative effect on the log odds of both control changes relative to no outcome, although the estimates are not statistically significant.

Tables 5 and 6 present the results of the logit using abnormal returns for the 1978-1980 period instead of Tobin's Q. The results for complete turnover 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% to 21.1% as 1978-1980 abnormal returns relative to industry decline to the top of the lowest quartile starting from the base case. As in the previous logit, the presence of a young BOSS raises the log odds of a friendly acquisition. Starting at the base case for all other independent variables, the estimated probability of a friendly acquisition rises from 4.5% to 10.5% going from a firm without a young BOSS to one with a young BOSS.

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 a 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 rather than log odds ratios, having a young boss at the helm is associated with an estimated increase in the probability of hostile takeover from 6.0% to 11.0% and an estimated reduction in the probability of complete turnover from 17.9% to 9.2% starting at the base case. These multivariate results bear out our earlier finding that young BOSSes are less vulnerable to a threat by the board and more vulnerable to one by a takeover artist.

Tables 7 and 8 present the results of a multinomial logit using 1978-1980 employment growth as a performance measure. Again, the results fairly closely track 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.

4. Complete and Partial Turnover.

One issue raised in the introduction is whether complete turnover of the management team (defined using the list of signers of the letter to shareholders in the annual report) is an adequate proxy for disciplinary turnover. We have already recognized that this variable includes some cases that are not disciplinary, such as ordinary retirements or deaths of sole signers. The question addressed in this section is whether the complete turnover variable omits some disciplinary replacements. In particular, we look at the characteristics of firms experiencing a partial turnover of top officers to see if they look like firms in need of disciplinary intervention.

On our definition, a firm experiences partial turnover if a) its Forbes-designated top officer changes between 1980 and 1985, and b) the turnover of the list of signers is not complete. This definition suggests three ways in which partial turnover can occur. First, one of the 1980 signers could become the Forbes-listed top executive by 1985. Second, an insider who was not a signer could get rapidly promoted to top executive, while some of the 1980 signers remain among the top management signing the letter in 1985. Third, a top executive could be brought in from the outside, but some

managers who signed in 1980 continue to do so in 1985. Of the 70 cases of partial turnover, 54 are examples of a 1980 signer becoming the Forbes-listed top executive in 1985, 6 are examples of an insider who did not sign in 1980 being promoted to top executive by 1985 ahead of some 1980 signers, and 10 are examples of a new top executive being brought from outside, while some 1980 signers continue to sign in 1985. This evidence suggests that partial turnover consists predominantly of internal succession.

Even internal succession can be disciplinary in nature, however. This would be the case if the board asks the CEO to resign, but still invites one of the current top managers to replace him. To evaluate this possibility, Table 9 presents mean performance characteristics of three types of firms. These include firms experiencing complete turnover (already described in Table 1), firms experiencing partial turnover, and firms in which the 1980 top executive is still at the helm in 1985.

The results on performance measures suggest that firms experiencing partial turnover do better than firms experiencing complete turnover. In particular, they have a statistically significantly higher average Q that appears to be primarily a within industry effect. Partial turnover firms have the average DQ of .131, compared to -.138 for complete turnover firms. The t-statistic for the difference between the two is 2.23. Interestingly, partial turnover firms seem to be outperforming even the no turnover firms in their industry (with DQ of .131 compared to .042), although this difference is not statistically significant. It is hard to reconcile the result that firms with partial turnover outperform their industry with the notion that partial turnover is typically a disciplinary action.

Similar results obtain using abnormal returns as a measure of performance. Most importantly, the firm-specific component of abnormal

returns is quite different for the two types of turnover. Firms experiencing partial turnover have average firm-specific abnormal return of +12.9%, compared to -7.1% for the complete turnover firms. The t-statistic for the difference between the two is 2.66. Furthermore, the firm-specific abnormal return for firms where the Forbes-listed top executive does not change is only 2.6%, which is much lower than 12.9% (t=1.41), the figure for partial turnover firms. This evidence indicates that firms experiencing partial turnover exhibit superior within-industry performance.

These results suggest that far from being a disciplining device, partial turnover is more of a reward to the current management team for especially good performance. This seems plausible: the board should be more inclined to pick a successor from the incumbent management team when its operating strategy proves successful and hence worth continuing. Consistent with this interpretation, the primary source of superior performance is within industry, where partial turnover firms outperform both complete turnover and no turnover firms. This evidence supports our not treating partial turnover as a disciplinary control outcome.

5. 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 unresponsive 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, selloff 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 the board of directors has not been a major force in 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. Shleifer and Vishny (1988) have made some proposals aimed at making internal control devices more effective, and so rendering hostile takeovers less important for shareholders.

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TABLE 1: Means of Performance Variables by Control Outcome[a]

	Complete management turnover	Hostile	Friendly	No outcome
1980 Q	.734 (-2.20)	.524 (-3.00)	.774 (-.856)	.932
1980 Industry Q	.831 (-.395)	.691 (-2.02)	.862 (.0696)	.855
1980 Q - Industry Q	-.138 (-2.56)	-.139 (-1.79)	-.0370 (-.662)	.0647
Total abnormal stock return 1978-1980[b]	-.0729 (-2.19)	-.113 (-2.03)	-.0561 (-1.17)	.0519
Industry abnormal stock return 1978-1980	.0138 (.229)	-.0850 (-1.76)	.0944 (1.54)	.0051
Abnormal stock return - industry abnormal stock return 1978-1980	-.0714 (-2.08)	-.0531 (-1.24)	-.149 (-2.34)	.0507
Employment growth rate 1978-1980	.0184 (-1.86)	.0152 (-1.36)	.0195 (-1.11)	.0476
Industry employment growth rate 1978-1980	.0376 (-.0086)	.0220 (-1.79)	.0472 (1.00)	.0376
Employment growth rate - Industry growth rate 1978-1980	-.0220 (-1.92)	-.0081 (-.763)	-.0277 (-1.44)	.0115

[a]Numbers in parentheses are t-statistics for test of equality of means for no outcome and respective control outcome.

[b]All 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.

TABLE 2: Means of Characteristics of Top Management for Different Control Outcomes, 1980[a]

	Complete Turnover	Hostile	Friendly	No outcome
Founding family represented on top management team	.118 (-3.30)	.100 (-2.52)	.412 (1.52)	.286
Equity stake of top executive	.0266 (-1.99)	.0103 (-2.26)	.0978 (1.80)	.0547
Age of top executive in 1980	60.6 (6.09)	55.0 (-1.21)	57.1 (.628)	56.3
One-man top management team (BOSS=1)	.161 (-1.21)	.35 (1.83)	.265 (.596)	.220
Young one-man top management team (age of boss $\leq$ 60)	.0538 (-3.08)	.300 (1.71)	.265 (1.12)	.185

[a]Numbers in parentheses are t-statistics for test of equality of means for no outcome and respective control outcome.

TABLE 3: Multinomial Logit Model of Control Outcomes using Tobin's Q as a Performance Measure

	Control Outcome		
	Complete Turnover	Hostile Takeover	Friendly Takeover
Intercept	.954 (1.09)	2.39 (1.88)	-1.85 (-1.13)
Log of Total Market Value	-.101 (-.796)	-.434 (-2.27)	-.0867 (-.374)
Founding Family on Top Mgmt. Team = 1	-1.14 (-2.40)	-1.41 (-1.69)	-.388 (-.596)
Age of top executive ≤ 60 in 1980 = 1	-1.54 (-4.89)	-.139 (-.256)	-.550 (-.836)
Equity stake of top executive	-1.29 (-.787)	-7.00 (-1.22)	1.90 (1.02)
Young one-man top management team (age of boss ≤ 60)	-.850 (-1.49)	.540 (1.14)	1.12 (1.85)
Industry Q	-.140 (-.378)	-1.84 (-2.25)	-.0878 (-.139)
Q - Industry Q	-.949 (-2.28)	-1.68 (-1.90)	-.321 (-.521)
N = 353			

Note: t-statistics are in parentheses.

TABLE 4: Estimated Probabilities from Multinomial Logit Model Using Tobin's Q as a Performance Measure

	Probability of Complete Turnover	Probability of Hostile Takeover	Probability of Friendly Takeover	Probability of No Control Change
Base case[a]	.177	.057	.049	.717
Founding family present	.088	.023	.043	.846
No founding family	.214	.074	.049	.662
Age of CEO > 60	.389	.046	.052	.513
Age of CEO ≤ 60	.125	.059	.045	.770
Young one-man top management team	.087	.088	.120	.705
No young one-man top management team	.203	.051	.039	.706
Industry Q at top of lowest quartile	.176	.084	.048	.692
Q - Industry Q at top of lowest quartile	.200	.074	.049	.677

[a]The 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.

TABLE 5: Multinomial Logit Model of Control Outcomes using Abnormal Return as a Performance Measure

	Control Outcome		
	Complete Turnover	Hostile Takeover	Friendly Takeover
Intercept	.877 (.962)	1.27 (.937)	-1.72 (-1.04)
Log of Total Market Value	-.0955 (-.765)	-.466 (-2.39)	-.132 (-.606)
Founding Family on Top Mgmt. Team = 1	-1.22 (-2.49)	-1.42 (-1.67)	-.611 (-.883)
Age of top executive ≤ 60 in 1980 = 1	-1.64 (-5.13)	-.382 (-.689)	-.464 (-.677)
Equity stake of top executive	-.479 (-.261)	-5.37 (-.952)	3.56 (1.61)
Young one-man top management team (age of boss ≤ 60)	-.770 (-1.34)	.778 (1.59)	1.08 (1.80)
Industry abnormal return 1/78-12/80 (monthly)	-.00687 (-.000349)	-68.00 (-1.99)	25.76 (.778)
Abnormal return - Industry abnormal return 1/78-12/80 (monthly)	-31.58 (-2.39)	-28.97 (-1.43)	-25.97 (-1.12)
N = 341			

Note: t-statistics are in parentheses.

TABLE 6: Estimated Probabilities from Multinomial Logit Model Using Abnormal Return as a Performance Measure

	Probability of Complete Turnover	Probability of Hostile Takeover	Probability of Friendly Takeover	Probability of No Control Change
Base case[a]	.179	.060	.045	.716
Founding family present	.084	.024	.034	.858
No founding family	.219	.076	.047	.657
Age of CEO > 60	.404	.055	.043	.497
Age of CEO ≤ 60	.123	.058	.043	.776
Young one-man top management team	.092	.110	.105	.693
No young one-man top management team	.204	.051	.036	.708
Industry abnormal return at top of lowest quartile	.177	.077	.040	.706
Abnormal return - industry abnormal return at top of lowest quartile	.211	.069	.051	.669

[a]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.

TABLE 7: Multinomial Logit Model of Control Outcomes using Employment Growth as a Performance Measure

	Control Outcome		
	Complete Turnover	Hostile Takeover	Friendly Takeover
Intercept	1.40 (1.63)	2.45 (1.96)	-1.75 (-1.07)
Log of Total Market Value	-.167 (-1.39)	-.583 (-3.16)	-.141 (-.638)
Founding Family on Top Mgmt. Team = 1	-1.07 (-2.35)	-1.48 (-1.77)	-.332 (-.519)
Age of top executive ≤ 60 in 1980 = 1	-1.62 (-5.29)	-.269 (-.501)	-.624 (-.949)
Equity stake of top executive	-1.58 (-.956)	-7.64 (-1.21)	1.77 (.975)
Young one-man top management team (age of boss ≤ 60)	-.820 (-1.43)	.738 (1.54)	1.12 (1.83)
Industry employment growth 1978-1980	-1.14 (-.354)	-9.20 (-2.01)	4.91 (.943)
Employment growth - Industry employment growth 1978-1980	-3.52 (-1.74)	-2.62 (-1.00)	-.710 (-.342)
N = 359			

Note: t-statistics are in parentheses.

TABLE 8: Estimated Probabilities from Multinomial Logit Model Using Employment Growth as a Performance Measure

	Probability of Complete Turnover	Probability of Hostile Takeover	Probability of Friendly Takeover	Probability of No Control Change
Base case[a]	.182	.056	.045	.717
Founding family present	.095	.021	.041	.843
No founding family	.217	.074	.045	.664
Age of CEO > 60	.407	.047	.049	.498
Age of CEO ≤ 60	.126	.056	.041	.778
Young one-man top management team	.090	.100	.109	.700
No young one-man top management team	.207	.049	.036	.708
Industry employment growth rate at top of lowest quartile	.184	.069	.039	.708
Employment growth rate - industry employment growth rate at top of lowest quartile	.204	.060	.044	.692

[a]The 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.

TABLE 9: Means of Performance Variables by Control Outcome[a]

	No outcome	Complete turnover	Partial turnover
Q	.894 (1.31)	.734 (2.27)	1.04
Industry Q	.849 (.342)	.831 (.554)	.873
Q - Industry Q	.0415 (.945)	-.138 (2.23)	.131
Total abnormal return[b]	.0285 (1.30)	-.0729 (2.55)	.125
Industry abnormal return	.0090 (.370)	.0138 (.441)	-.0069
Abnormal return - Industry abnormal return	.0256 (1.41)	-.0714 (2.66)	.129

[a]Numbers in parentheses are t-statistics for test of equality of means for partial turnover and respective control outcome.

[b]All 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.