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ABSTRACT

We study division manager turnover and promotions in firms with two divisions. Turnover is negatively related to division accounting performance and positively related to industry performance. After controlling for these factors, turnover is not significantly related to firm performance or the performance of a firm's other division. Promotions are highly related to whether one division is performing better than the other, but only weakly related to the magnitude of the performance difference. Firms vary their use of intrafirm and interfirm performance benchmarking in a manner consistent with theoretical expectations. We conclude that divisional accounting figures provide or capture useful information for evaluating managerial personnel.

JEL Classification: J41; G34; M51; L22
Key words: Turnover; Promotions; Internal labor markets; Performance measurement; Division managers

1. Introduction

How is managerial performance measured and rewarded in organizations? This is an important question if we wish to understand the incentive structure of corporate managers. While much has been learned concerning Chief Executive Officers (CEOs), comparatively little is known about individuals serving below the CEO. Individually these managers may have only a relatively small effect on an organization, but as a group they are likely to have a significant impact on a firm's profitability. Consistent with this view, several studies suggest that incentive problems at the division manager level can lead to substantial losses in firm value (e.g., Rajan, Servaes, and Zingales (2000), Scharfstein and Stein (2000)).

In this paper we provide evidence on these issues by studying job changes of division managers in firms with two divisions. We study penalty outcomes in which managers depart from their employer and do not immediately take a job elsewhere, and reward outcomes in which managers are promoted within the firm. By studying the relation between these outcomes and various measures of performance, we are able to identify the metrics that appear to be most closely associated with a firm's assessment of its managerial personnel. This analysis provides us with some general evidence on how internal labor markets function near the top of organizational hierarchies, and some specific evidence on the management of multi-division firms.

We find that there is a strong negative relationship between divisional accounting performance and division manager turnover. This indicates that accounting information at the divisional level does provide or capture useful information regarding managerial performance. For the sample as a whole, managers do not appear to be benchmarked against their internal counterparts for replacement decisions, as a manager's turnover is not significantly related to the performance of the firm's other division. However, further examination reveals that the extent of

internal benchmarking varies by whether the firm's divisions are in the same industry, with less internal benchmarking occurring for divisions in the same industry. This suggests that the turnover mechanism may help foster inter-divisional cooperation in situations where cooperation is particularly important. Division manager turnover does appear to be positively related to industry performance, suggesting that firms conduct some industry-based relative performance evaluation (RPE) when deciding to dismiss managers.[1] Consistent with theoretical expectations, industry benchmarking in turnover decisions appears to be most pronounced in homogeneous industries.

When we turn to promotions, we find that managers at better performing divisions of firms are significantly more likely to be promoted than managers at poorer performing divisions. Interestingly, the sign of the performance difference between divisions is a more important predictor of promotions than the magnitude of any difference. This evidence supports one of the fundamental assumptions of the tournament theory, namely that managers are promoted based on ordinal rankings of performance (e.g., Lazear and Rosen (1981)). Our evidence indicates that managers who want to be promoted will have a nonlinear incentive structure; they will care a great deal about winning the race against their counterpart at the other division, but little about how much they win by. More generally, our evidence supports the idea that internal career concerns can serve as incentive devices in organizations. We find little evidence that other factors such as industry performance, divisional growth, or a manager's tenure at the firm play an important role in promotions.

Taken as a whole, our evidence indicates that accounting measures at the divisional level do provide or capture useful information on managerial performance and that this information is used by firms in evaluating managerial personnel. Consequently, division managers should have

[1] Many CEO turnover studies implicitly assume that RPE takes place by using industry-adjusted performance metrics. For evidence on RPE in CEO turnover, see Barro and Barro (1990) and Engel, Hayes, and Wang (2003).

substantial incentives to increase their division's accounting performance. Some accounting measures appear more related to performance evaluation than others, with the level of a division's return-on-assets (ROA) generally being more consistently related to job changes than some other reasonable alternatives. In some firms, particularly those with divisions in different industries, the internal labor market appears to offer little incentive for interdivisional cooperation. Superior performance at the other division does not help a given manager keep her job, and it will lower the likelihood of her promotion if it pushes the other division ahead of hers.

The rest of the paper is organized as follows. In section 2 we discuss the related literature and further motivate our analysis. In section 3 we outline our sample construction and present descriptive statistics. Our analysis of turnover is reported in section 4, and in section 5 we present the promotion results. Section 6 concludes.

2. Related literature and motivation

In this section we review the existing evidence on performance evaluation for executives below the CEO and motivate our empirical strategy.

2.1 Compensation

Several papers examine incentive compensation for executives below the CEO. Many of these studies are concerned with explaining intrafirm pay differentials. For example, authors have explored the role of tournament theory in explaining pay differences between a CEO and her subordinates and how factors such as managerial power and concerns for equity affect senior executive pay (e.g., O'Reilly, Main, and Crystal (1988), Lambert, Larcker, and Weigelt (1993), and Main, O'Reilly, and Wade (1993)).

A subset of these studies focus on the relation between senior executive compensation and measures of performance. Some of these studies are based on survey data, while others are based on actual compensation data. The results in these papers suggest that senior executives are compensated based on metrics related both to firm performance and to individual performance, with relatively more weight placed on individual performance when it is a relatively more precise signal of managerial effort or ability.[2] In the specific case of division managers, this empirical literature suggests that divisional accounting figures are, in fact, used by firms when assessing individual performance for compensation purposes.

This compensation evidence is interesting and important in that it confirms some of the predictions of theories of optimal incentive contracts in the presence of multiple performance signals (e.g., Holmström (1979, 1982), Banker and Datar (1989)). However, given the heavy use of stock options as a compensation device for senior executives (e.g., Hall and Liebman (1998)), it would appear that the majority of a typical senior executive's variation in employment-based wealth depends primarily on overall firm performance. Presumably the benefits of this type of compensation structure, for example fostering cooperation, offset any costs induced by a scheme that will frequently reward and penalize managers for activities and events not under their direct control.

2.2 Turnover

When managers perform poorly, firms may choose to remove them from office. Similar to compensation choices, a firm's dismissal policy can be viewed as a component of an incentive system to motivate effort from managers. Alternatively, a firm's dismissal policy can be viewed

[2] For studies using survey data, see Bushman, Indjejikian, and Smith (1995) and Keating (1997). For studies that use actual compensation data, see Murphy (1985), Leonard (1990), Fisher and Govindarajan (1992), Aggarwal and Samwick (2003), and Wulf (2006). Lambert and Larcker (1987) present evidence on performance evaluation in the presence of multiple performance metrics in a CEO compensation context.

as part of an ability screening mechanism that attempts to assign the optimal individual to each managerial position. Under either view, we would expect managerial turnover to be related to metrics that provide useful information concerning an individual's performance.[3]

Existing evidence suggests that non-CEO executive dismissals are less related to overall firm performance than they are for the CEO (e.g., Fee and Hadlock (2004)). This is consistent with the idea that executives are evaluated less based on overall firm performance and more based on performance in activities directly under the individual's control.[4] However, it is unclear how performance is measured at the individual level and whether the accounting system is successful in creating such metrics. In the special case of subsidiary bank managers, Blackwell, Brickley, and Weisbach (1994) show that managerial turnover is negatively related to a subsidiary's return on assets (ROA) and positively related to the ROA of the bank's other subsidiaries. Whether the Blackwell, Brickley, and Weisbach (1994) results hold more generally for managers of non-financial firms is an open question.

With the exception of the aforementioned studies, our knowledge of the role of performance in the turnover of key corporate managers below the CEO is quite limited.[5] In particular, the role of the accounting system in creating information for assessing managerial talent and the weight placed on individual versus firm-level metrics in performance evaluation is unresolved.

2.3 Internal promotions

[3] Kwon (2005) discusses the incentives versus sorting explanation of turnover. See Jovanovic (1979) for an important model of turnover. Non-performance factors should also be related to senior manager turnover, for example the "closeness" of the management team (e.g., Wagner, Pfeffer, and O'Reilly (1984)).

[4] On a related noted, the evidence of Fee and Hadlock (2003) on outside hiring indicates that firm performance is weighed less heavily in outsiders' perceptions of managerial abilities as one descends down the corporate hierarchy.

[5] A recent study by McNeil, Niehaus, and Powers (2004), discussed below, examines turnover of division managers. See Mian (2001) for a study of CFO turnover.

Promotions are a particularly important event both for executives and for their employers. The incentive for executives to earn promotions is high, as promotions are often accompanied by large increases in prestige, compensation, and future career opportunities. In fact, Baker, Jensen, and Murphy (1988) argue that promotions are the primary incentive device in many organizations. From an employer's perspective, the choice of its most senior executives can have an important impact on the profitability and direction of the firm.[6]

While promotions are important events, our knowledge of these events is limited, particularly for senior executives. Several researchers have studied the career profiles of lower level workers within firms, often using personnel records from a single firm.[7] These studies have generated a wealth of findings concerning typical career profiles within firms. For example, researchers have found evidence consistent with the presence of "fast tracks" and internal tournaments within organizations. A few researchers have also examined variation in career profiles across different types of organizations (e.g., Baron, Davis-Blake, and Bielby (1986), and DiPrete (1987)).

While this literature has generated many findings that are consistent with firms continually evaluating managerial ability and promoting superior talent, direct evidence on the link between objective measures of performance and the promotion decision is sparse.[8] Blackwell, Brickley, and Weisbach (1994) report that number two executives of bank subsidiaries are promoted internally to the number one position at the subsidiary when the subsidiary is performing well. While this indicates that organizations tend to promote internally

[6] See Hayes and Schaefer (1999) for market evidence on the value of key corporate managers.

[7] For empirical analyses of this type, see Rosenbaum (1979), Sheridan, Slocum, Buda, and Thompson (1990), Lazear (1992), Baker, Gibbs, and Holmström (1994a, 1994b), and Gibbs (1995). Several researchers have advanced theories of wage and promotion dynamics within firms that are consistent with the empirical evidence. See, for example, Gibbons and Waldman (1999a, 1999b, 2002).

[8] See Medoff and Abraham (1980) for evidence on the role of subjective measures of performance in promotions.

when the organization is doing well, it does not identify the role of individual performance in choosing amongst the set of internal candidates. Progress on this issue has been restricted to certain specialized labor markets. In particular, Kwon (2006) reports that promotions of insurance claim processors in a large firm are strongly related to measures of individual productivity. Additionally, Fee, Hadlock, and Pierce (2006) report that the likelihood of an NFL assistant football coach being promoted is increasing in measures of individual performance.

At the corporate division manager level, little is known about the determinants of promotions. Certainly we would expect a firm's assessment of a manager's ability to be a primary consideration in the promotion decision. Thus, if divisional accounting figures are informative with regard to ability, these figures should be related to the likelihood of a promotion. However, since there are a limited number of positions near the top of a corporate hierarchy, an executive's performance relative to other divisional managers may be the relevant factor governing the promotion decision. In fact, much of the theory of tournaments assumes that managers are promoted based on ordinal ranking of performance rather than cardinal performance metrics (e.g., Lazear and Rosen (1981), Rosen (1986)). Whether this basic assumption is true for executives near the top of the corporate hierarchy has never, to our knowledge, been tested.

It is possible that firms promote managers based on factors that are not related to perceived general ability, for example seniority in the firm or the historical relationship between a division and corporate headquarters. If this is the case, or alternatively if accounting performance is only weakly related to ability, we may not observe a relationship between promotions and divisional performance. These alternatives also suggest that promotions may be related to manager or division specific characteristics, a possibility that we examine below.

2.4 Multi-division firms

Assessing how managerial performance is measured and rewarded for non-CEOs is a research challenge because there are often no candidate measures of individual performance available. By focusing on division managers, we are able to exploit segment accounting figures to construct performance metrics that pertain to activities under the individual's control. While not our primary focus, an added benefit of our focus on division managers is that we can provide some evidence regarding the management of diversified firms, since many (but not all) multi-division firms are fairly diversified. Theoretical models of diversified firms typically assume that the information and incentive structure of these firms is quite different from that of focused firms, with the potential for both costs and benefits arising from these differences.[9] By studying the internal labor markets of multi-division firms, we are able to identify some facts that are relevant for interpreting these models and related discussions.

In a recent paper that is closely related to ours, McNeil, Niehaus, and Powers (2004) find that turnover of division managers in diversified firms is more sensitive to accounting performance than the turnover of CEOs of comparable single segment firms. This finding suggests that the threat of turnover may be a particularly important incentive device for division managers at diversified firms. Our study can be distinguished from the McNeil, Niehaus, and Powers (2004) study in that we are attempting to understand the relationship between division managers *within* a multi-division firm, while those authors compare division manager turnover *across* types of firms (diversified versus focused firms). However, our paper does confirm and elaborate on some of their findings regarding turnover and divisional accounting performance. The analysis of division manager promotions is unique to our study.

[9] A partial list of recent models illustrating the costs and/or benefits of diversified firms includes Gertner, Scharfstein, and Stein (1994), Stein (1997), Scharfstein and Stein (2000), and Rajan, Servaes, and Zingales (2000).

2.5 Empirical strategy

In the analysis that follows, we examine the relation between various performance metrics and division manager job changes. As the prior literature reveals, there are clearly non-performance considerations that go into a turnover or promotion decision. Moreover, turnover decisions have a two-sided nature as they can be initiated by the employer or by the employee. While we cannot model all of the complexities of these decisions, a common feature of many models of job assignments is that poor performance is typically a signal that a manager is suboptimally matched to a firm either because of low ability or a poor employee-employer match. At the same time, strong performance is frequently hypothesized to signal high ability and therefore is an indicator that managers should optimally be reassigned to more senior positions either at the current firm or an alternative employer.

Under these scenarios, we would expect to observe a relation between measures of individual performance and the job changes we study. Thus, our analysis can be viewed as a test of whether the performance metrics we study provide incremental information regarding managerial effort/ability or the quality of the manager-firm match. If other factors that we cannot observe are the primary determinant of job change decisions, our ability to detect a role for performance will be limited.

In measuring performance, there are a variety of possible metrics that may plausibly be related to the evaluation of managerial talent. For example, firms may use a rate-of-return measure such as ROA in evaluating managers. Alternatively, they may instead rely on non-normalized measures of profitability such as total operating profits or net income.[10] Employers may choose to focus on the levels of these performance metrics, or alternatively they may look

[10] Baker and Hall (2004) discuss theoretical conditions under which managers should optimally be evaluated based on metrics that are or are not normalized by assets.

more closely at recent changes. In addition, firms may or may not choose to adjust these measures to filter out market or industry-wide movements.

Prior studies that examine the relationship between accounting performance and managerial job changes vary in their choice of performance metrics. For example, Blackwell, Brickley, and Weisbach (1994) focus on the level of ROA as their primary measure, while Engel, Hayes, and Wang (2003) use industry-adjusted changes in ROA. These differences are not surprising, as it is unclear a priori what metric (or combination thereof) is most appropriate. For example, since profitability figures tend to exhibit mean reversion (e.g., Freeman, Ohlson, and Penman (1982), Fama and French (2000)), both changes and levels of recent profitability may contain information regarding the long-term value created by a corporate manager.[11] Ideally, we would like to identify the metric or metrics that are most informative with regard to managerial effort or ability. However, given our limited knowledge of the managerial production function, successfully accomplishing this identification purely on a priori grounds is difficult.

The approach we take below is to use a division's level of ROA as our initial measure of division performance. This choice makes our results easy to compare to Blackwell, Brickley, and Weisbach (1994), the prior study that is most related to ours. We then proceed to examine the role of alternative performance metrics as predictors of managerial job changes. Given the high degree of collinearity between these alternative metrics and relatively small sample sizes, in many cases it is difficult to empirically sort out which metrics are more important predictors of job changes. However, we are able to offer some relevant evidence. As we report below, many, but not all, of our conclusions appear robust to the choice of performance metric.

[11] Applying Holmström's (1979) informativeness principle, we might expect firms to rely on a large set of metrics to evaluate managers. However, given small samples and high levels of collinearity between most reasonable metrics, practicality dictates studying a limited set of performance measures.

Since we rely on accounting measures such as ROA as performance metrics, it is worth noting that these measures may be coarse indicators of managerial performance. For example, transfer pricing rules and arbitrary accounting decisions may have a large impact on these measures of individual performance.[12] While we attempt to select our sample in a way that minimizes this noise in the accounting metrics, any residual noise arising from the coarseness of our performance measures should impart a downward bias in our various estimates of how job changes respond to changes in performance.

3. Sample selection and data description

3.1 Choosing the Initial Sample

We begin with the universe of active publicly traded firms listed on Compustat as of the end of fiscal year 1992. Since we expect that division managers are more likely to be compared to each other when they have jobs with similar levels of responsibility, we restrict attention to firms that have two divisions of similar size. Accordingly, we select all firms with exactly two segments as of the end of 1992 and retain firms for which the sales of each segment are greater than 25% and less than 75% of total firm sales. After we impose these sample restrictions and eliminate foreign firms, we arrive at a sample of 297 firms.

As is well known, segment accounting disclosure rules allow firms considerable discretion in defining a segment. Consequently, in many cases the public accounting figures for a segment do not correspond in any meaningful way to an actual operating unit with a well-defined management team. To match segment accounting information with division managers in

[12] Some of these biases may not pertain to all of the measures we explore. For example, arbitrary rules regarding allocation of overhead costs to divisions may have a substantial impact on the level of a division's accounting profits but only a negligible impact on the division's annual change in profits.

a sensible manner, we examine each firm's listing in the *Directory of Corporate Affiliations.* When necessary, we supplemented this data source with information reported in *Standard & Poor's Register of Corporations, Directors and Executives,* corporate proxy statements, annual reports, and 10-K filings.

We match segments listed on Compustat with units listed in the directories as of the start of fiscal 1993 by carefully comparing unit names reported in these two data sources. In many cases this matching was quite natural. For example, RJR Nabisco lists a tobacco and food segment on Compustat and it has a RJR Reynolds Tobacco division and a Nabisco Foods division listed in the Directory of Corporate Affiliations. In cases where there is not an obvious match, we search through the firm's 10K statement to further understand its labeling of segments and divisions. In many cases we can unambiguously match a segment to one or more units listed in the directories via this procedure.[13] If we cannot unambiguously make a match, we exclude the firm from the sample. We are deliberately conservative in our matching procedure so as to maximize the likelihood that the segment accounting figures do correspond to activities directly under a manager's control.

After matching segments with divisions, we assign the division manager title as of the start of fiscal 1993 to the individual listed as the division head at that point in time in the Directory of Corporate Affiliations. In some cases, described further below, we identify multiple individuals heading a division and assign each of them the division head title. We then retain in the sample all firms with two divisions for which at least one manager for each division could be identified as of the start of 1993. The resulting sample (143 firms) should contain a set of firms

[13] In most cases, the Compustat segment corresponds to a single unit in the directories. However, in a few cases we match a segment to a set of subunits listed in the directories and assign the division manager title to the set of individuals heading the subunits. Details on how we treated these cases of multiple managers are reported below.

in which segments correspond in a meaningful way to a large operating unit of the firm and an associated management team.

While many of our sampling choices are driven by practical considerations, it is worth contemplating the possible effect of these choices on our subsequent inferences. The benefit of choosing a sample of firms with two divisions is that it is easy to identify an unambiguous internal counterpart unit for each division. This should maximize our ability to detect the presence of internal benchmarking in performance measurement. In addition, the requirement that segments are fairly symmetric in size should increase the likelihood that the division managers we study are at relatively the same level of responsibility and, consequently, that these individuals compete for many of the same promotion opportunities.

Since we do exclude firms that do not have two segments or that have two asymmetric segments, there are a large number of organizations that we do not examine. We suspect that the character of our inferences would apply to these organizations in situations that are similar to those we study, namely, settings in which natural internal counterpart performance measures are available and/or in which a fixed pool of promotion candidates can be identified. However, further research with more refined data will ultimately be needed to evaluate this assertion.

Since a firm's choice of organizational structure is endogenous, the inferences we make are conditional on a firm having chosen a two segment organizational form. We view these conditional inferences as the ones of primary interest, since it makes little sense to contemplate the role of counterpart units' accounting numbers in performance evaluation for firms that are not organized into distinct units. In interpreting the conditional inferences we report, it is relevant to note that firms that do not choose the organizational form we study are likely to be the ones for which this form is suboptimal. For example, if internal cooperation across activities is very important, it is reasonable to expect that this may lead a firm to adopt a single segment

organizational structure.[14] Consequently, our inferences concerning internal incentives to compete would apply only to firms where the deleterious consequences of such an incentive structure are not too large.

3.2 Following the Sample

After identifying our initial sample, we record the evolution of division manager identities forward up to the end of fiscal year 2000. In recording this information, a few complications arise. In some cases, our data sources indicate that a firm diversifies into three or more distinct segments. In other cases, firms change their focus and start operating as a single segment firm. In both of these cases, we stop following the firm in the first year of the change in corporate structure. There are some cases, however, where a firm starts reporting data for three or more segments, but it is evident that the new segment information simply reflects a finer partition of the firm's previous segment definitions. In these cases, we aggregate the information on the newly defined segments so that our definition of what constitutes a division at a given sample firm is comparable over time.[15] The end result is that we construct a sample in which (a) each firm has exactly two divisions each year, (b) divisions typically consist of a single segment, and (c) in some (post-1993) cases a division is composed of more than one segment.

As we mention above, in some cases we cannot identify a single manager heading a division. Sometimes this occurs because a firm lists more than one manager as the head of a division. Alternatively, in some cases our sources do not list a division head, but rather they list

[14] If this behavior does occur, standard sample selection considerations would suggest that the proxies we use for the importance of cooperation across divisions in our subsequent analysis may be a weak measure of the intended effect.

[15] As discussed by Berger and Hann (2003), a major change in segment disclosure rules in 1998 resulted in firms reporting more disaggregated segment information after the change. Consistent with this change, approximately 15% of sample divisions experience an increase in 1998 in the number of segments corresponding to the division. The qualitative nature of our main results are unchanged if we exclude the 1998 to 2000 period.

only the heads of subunits of the division. These subunit heads in some cases were previously identified as division heads. To deal with these cases in a practical manner, whenever we cannot identify a single individual as the division head, we assign the division manager title to the set of the most senior individuals who are associated with the top management of that division. This procedure should match individuals to accounting figures that pertain to, at the very least, a substantial part of the activities they oversee. However, because of these cases and other inconsistencies in how job titles are reported over time, we need to use care to assure that minor changes in labeling of an individual's position are not mistakenly classified as turnover or promotion events.

Basic summary statistics for the resulting sample of 1,294 division-manager-year observations are reported in Table 1.[16] Since firms drop out of the sample over time, the number of observations declines from a high of 268 observations in 1993 to a low of 63 observations in 2000. The mean number of segments in a division is 1.04, illustrating that for the vast majority of observations a division is composed of a single segment. The mean number of managers at each division is 1.18, indicating that in most cases we are able to identify a single individual as the division head. While our sample selection procedures assure that the divisions in each firm are of fairly similar size at the start of the sample period, the figures in Table 1 indicate that this symmetry holds throughout the sample. In particular, if we define a firm's larger (smaller) division to be the one with the largest (smallest) sales in a given year, the sample-wide mean (median) ratio of larger division sales to smaller division sales is 1.54 (1.18).

3.3 Identifying job changes

[16] We include an observation if we can observe the identity of the division manager at the start of the fiscal year and the division and firm are still in existence at year end. In a few cases we found that a listed division manager was also simultaneously serving as the firm's president, CEO, or COO. We exclude these cases and remove from our sample any firm-years in which an individual with one of these titles is the sole head of one of the firm's divisions.

For each individual who is serving as a division manager as of the start of a given fiscal year, we use corporate directories and filings to determine whether that individual is still serving as a division manager at the start of the subsequent fiscal year. If they are, we refer to this as a "no change" observation. In all other cases, we conduct a news search on the individual in the *Factiva* database. This database includes over 8,000 international business and general publications including virtually all major newspapers, magazines, newswires, and industry trade publications. Consequently, we expect that most important job movements of sample executives can be tracked by searching this database.

In a substantial number of these cases we are able to confirm from news sources and corporate filings that there was no substantive change in an individual's job title or responsibilities. Presumably these are cases in which a firm has multiple managers heading all or part of a division, and consequently the directories are not consistent in assigning the division head title. Since these cases appear to be instances in which an individual who is attached to a division experiences no real change in position, we treat these as "no change" observations. As we report in Table 2, 86.01% of all observations fall into the no change category.

In cases in which a manager does experience a substantive change in job title, we assign the change to one of several mutually exclusive categories. The first four categories include all cases in which an individual actually departs from her employer. As we report in Table 2, 128 observations are placed into one of these four categories, implying a departure rate of 9.89%. The "jump" category is for job changes in which an individual leaves the firm and immediately accepts employment elsewhere. The "exogenous" category is for job changes related to exogenous events such as poor health, death, or a corporate control event. The "forced/demote" category includes cases in which news articles indicate that the individual was forced from office or the individual was demoted (loses job responsibilities) and leaves soon thereafter. All

remaining cases in which the individual leaves the firm are placed in the "generic" turnover category. These are typically events that are simply described as resignations or retirements or cases for which no specific news article on the event can be found.

Consistent with the idea that firms are often reluctant to disclose the true reasons behind a manager's departure, the figures in Table 2 indicate that a majority of turnover events fall into the generic category. The evidence reported by Fee and Hadlock (2004) indicates that generic departures for senior executives below the CEO are typically far from voluntary. For example, they report that generic turnover is frequently associated with severance payments to the departing executive and a low likelihood of securing new employment comparable to the old position.

Given this prior evidence, in our subsequent analysis we follow the fairly standard practice of grouping forced departures and generic turnover together and proceed to estimate models predicting when these events occur. To the extent that this treatment misclassifies some job dismissals, we will bias downwards our ability to detect a relation between performance and job dismissals.[17] In what follows we do use age controls to allow for the possibility that some of the turnover for older managers is likely related to voluntary normal retirements rather than involuntary forced departures.

The final five job change categories are for instances in which an individual stays with the firm but appears to experience a substantive change in job title. As a group, these cases account for 53 of the sample 1,294 observations (4.10%). Turning to each of the five categories within this group, there is only a single instance in which a division manager stays with the firm after an apparent demotion. In this case, a division president was demoted to a newly created

[17] If we misclassify a substantial portion of turnover events, one would expect this problem to be more severe for smaller firms in the sample where press coverage is less comprehensive. However, as we report below, we find no evidence that our estimated models of turnover vary in any significant way with firm size.

position of divisional vice president (of the same division). The CEO declined to elaborate on the reasons for the reassignment and the executive stayed with the firm for several more years. This confirms the finding of Baker, Gibbs, and Holmström (1994a) that outright demotions are rare in internal labor markets. There are also two instances in which managers are reassigned within the firm to what appear to be largely ceremonial positions (Vice Chairman with no executive responsibilities, head of special projects).

For the remaining cases, we closely examine the executive's old title and new title to try to assess the likelihood that the change represents a promotion. If the individual's new job title is corporate CEO, president, COO, CFO, or Chief Administrative Officer, we assign the observation to the "definite promotion" category. This is the most frequent type of internal job change and represents 1.93% (25 of 1,294) of all sample observations. For the remaining cases, if the individual either (1) assumes a position that has some general corporate oversight or (2) keeps their old position but is given additional new responsibilities, we assign the observation to the "probable promotion" category. This category represents .77% of all observations. All other cases, representing 1.16% of the sample, are placed in the "lateral" category. In these cases the individual experiences a change in job title but we do not have sufficient evidence to place the observation into one of the promotion groups. Since demotions appear to be rare, we suspect that many of these cases do in fact represent promotions. However, to be conservative, in most of our analysis of promotions below we exclude the lateral job change group.

3.4 Firm, division, and manager characteristics

Using the Compustat database, we construct variables related to firm and division characteristics. We collect age information by conducting news searches on each division manager and inspecting corporate filings. The variables on firm and division characteristics are

available for all but a small number of observations, while age data is available for approximately 85% of the sample.

As we discuss earlier, our initial measure of divisional performance is the division's ROA, defined as the division's operating profit divided by end of year assets for the 1-year period ending immediately prior to the observation year.[18] The summary statistics on divisional performance in Table 2 indicate that the job changes where an individual departs from the firm have performance that is below the sample-wide figures, while the opposite is true for the lateral move and promotion categories. Formal tests of the difference in ROA between individuals who are promoted (grouping probable and definite promotions together) and those who are potentially dismissed (grouping forced/demote and generic departures) are significant at the 1% level for both means (using a t-test) and medians (using a Wilcoxon ranksum test). This initial univariate evidence suggests a link between performance and job outcomes, a possibility we explore in more depth below.[19]

Summary statistics for several firm, division, and manager-specific variables are reported in Table 3. The figures indicate that the average division is responsible for approximately half of the firm's sales and slightly less than half of the firm's assets. Presumably this difference reflects the fact that some corporate assets (e.g., corporate headquarter buildings) are not attributed to either division. The typical division manager is about 50 years old, indicating that many of these individuals are sufficiently far from retirement that career concerns could have a substantial impact on incentives. The latter rows in Table 3 report summary statistics for a variety of performance variables. For comparison purposes, we also report figures for the entire Compustat

[18] All accounting and stock return variables in this paper are winsorized at the 1st and 99th percentile levels.

[19] The performance of divisions where managers jump to other employers does not appear to be abnormally high. While we are hesitant to infer too much from 12 cases, this finding is consistent with some of the findings of Fee and Hadlock (2003) who find that performance is not strongly related to lateral movements across firms.

universe for some variables. The median firm in our sample is somewhat larger than the median Compustat firm, while the median division manager in our sample is slightly younger than the median Compustat firm CEO. Additionally, our sample firms appear to be somewhat more profitable (as measured by ROA) than the median Compustat firm.

4. Division manager turnover

4.1 Baseline models

We estimate logit models in which each division-manager-year is treated as a single observation and the dependent variable is coded based on job changes that occur during that year. In our turnover analysis, we assign the dependent variable a value of 1 for changes that we categorize as either forced or generic departures. The dependent variable is set to 0 if the manager experiences no job change, and to missing for all other job changes. Since it is well known that management turnover rates are highly elevated when managers approach retirement age (e.g., Coughlan and Schmidt (1985), Weisbach (1988)), we exclude observations for managers aged 63 or older from the estimation.[20] All explanatory variables are measured as of the start of the observation year, except for flow variables, which are derived from information in the year prior to the observation year.

In column 1 of Table 4, we report results for our simplest model in which divisional ROA is the only performance measure. The estimated coefficient on this variable is negative and significant (t = -2.14), indicating that poor accounting performance does elevate the likelihood of departure. These estimates imply that the probability of division manager turnover when the

[20] The character of our basic turnover and promotion results in Tables 4 and 8 are robust to eliminating age restrictions. We include an age variable in all estimated models. The coefficient on age is positive and significant in all of the turnover models in Table 4, likely reflecting a higher rate of natural retirements for older managers.

division is at the 90th percentile performance level is 6.11%, increasing to 10.22% when the division's performance is at the 10th percentile level. This evidence supports the general notion that divisional accounting numbers provide or capture useful information which is relied on by firms when evaluating division managers.

Motivated by the theory of relative performance evaluation (RPE), in column 2 of Table 4 we add an industry ROA variable to the specification. This variable is set equal to the median ROA of all Compustat segments that operate in the same 2-digit SIC industry as the division. The estimated coefficient on industry performance has the expected positive sign, and it is significant at the 5% level. This finding indicates that division managers are evaluated relative to industry benchmarks, supporting the RPE hypothesis in this context.[21]

In addition to industry benchmarking, division managers may also be evaluated based on their performance relative to their counterparts within the firm. To investigate, we add to our empirical model a Counterpart ROA variable which is set equal to the ROA of the firm's other division (i.e., the one not led by the manager under consideration). As we report in column 3 of Table 4, the estimated coefficient on this variable is positive, small in magnitude, and insignificant. If we remove the industry performance variable and re-estimate this equation, the counterpart ROA variable remains insignificant. Thus, we find little evidence of within-firm RPE for divisional managers with regard to the dismissal decision. This contrasts with the results of Blackwell, Brickley, and Weisbach (1994), who find strong evidence of within-firm RPE when they estimate similar models on a sample of subsidiary bank managers.

To explore the role of firm performance, in column 4 of Table 4 we include the firm's ROA as an explanatory variable. The coefficient on firm ROA is small, negative, and

[21] Motivated by Albuquerque (2005), we experimented with using as an alternative measure of industry performance the median ROA of segments in a division's same size-industry quartile (2-digit industry, size measured as book value of assets). The estimated coefficient on industry performance was smaller and insignificant using this benchmark, suggesting that it may be a noisy performance benchmark in a division manager turnover context.

insignificant. The significance level of the coefficient on divisional performance drops slightly in this specification (to the 10% level), which is not surprising given the natural correlation between division and firm performance. In column 5 of Table 4 we instead use a firm's 1-year excess stock returns as our measure of firm performance. The coefficient on firm performance in this case is also negative and insignificant, while the coefficient on division performance is significant at the 5% level. Taken as whole, these estimates indicate that poor division performance is associated with significantly elevated rates of division manager turnover. Holding division performance constant, firm performance appears to have little effect on a division manager's tenure. Thus, the typical firm's dismissal policy appears to offer little in terms of incentives to take actions that assist the firm as a whole if these actions do not benefit the division directly.

Fee and Hadlock (2004) report that senior managers are frequently dismissed as a team and non-CEO departures are often related to the CEO's departure (see also Hayes, Oyer, and Schaefer (2006)). To investigate this phenomenon in our sample, we collect information on CEO turnover from the Compact Disclosure CDs and annual releases of the Compustat PCPlus database. In column 6 of Table 4 we include in the empirical specification a dummy variable indicating whether the CEO departed during the observation year or in the previous year. The estimated coefficient is positive and significant, confirming that division manager turnover is elevated in periods around CEO changes. The estimates imply that the predicted probability of a division manager departing increases from 7.19% up to 11.53% in the event of a recent CEO departure.[22] In this specification, the coefficient on divisional performance remains negative and

[22] It may be puzzling that CEO departures significantly predict division manager turnover while firm performance does not. In a larger sample, Fee and Hadlock (2004) document independent roles for firm performance and CEO departures in senior manager turnover. The sample we study here is smaller, and thus our power to detect an independent role for firm performance in turnover may be limited. In addition, since we are able to control for division performance, the incremental information content of firm performance in the Table 4 models may be small.

significant, indicating that divisional performance plays an independent role in the decision to remove a division manager.

To gauge the goodness of fit of our turnover models, we present in Table 5 statistics on actual turnover rates versus predicted probabilities. In Panel A (Panel B) we sort the sample into quintiles based on a division's ROA (industry adjusted ROA) and report for each quintile the actual turnover rate and the mean predicted probability of turnover using the estimates in model 1 (model 2) of Table 4. The fit of the models seems reasonable in that the predicted and actual turnover rates are in most cells fairly close to one another. In addition, as we move across performance quintiles, in most cases (all but two) actual turnover rates increase monotonically. The fit of the model seems to be worst in quintile 2 (second highest performance quintile), where the model slightly overestimates the likelihood of turnover, and quintile 4, where the model underestimates this likelihood. In Panel C of Table 5 we assign observations to quintiles based on predicted probabilities derived from the estimates in column 2 of Table 4. The actual and predicted turnover rates are again fairly close to one another, and the actual turnover rates increase monotonically across quintiles.

As a final check, we select from each firm one division based on a numerical sort of Compustat segment identification number and estimate model 2 of Table 4 on one half of the sample. We use the resulting estimates to predict turnover probabilities for the other half of the sample and report in Panel D of Table 5 the actual and predicted turnover rates for quintiles based on the derived predicted probabilities. While clearly the match between actual and predicted turnover rates is not as close in this panel where we are using out-of-sample estimates, the fit of the model still seems quite reasonable. The actual turnover rates are weakly monotonic across quintiles and indicate a sharp increase in actual turnover rates when the model predicts

these rates to rise. A simple logit model predicting turnover in the second half of the sample as a function of the out-of sample predicted probabilities reveals a significant relation (p-value = .04)

Summarizing our turnover results to this point, we find: (1) evidence that divisional accounting performance is related to division manager turnover, (2) evidence that firms evaluate division managers relative to industry benchmarks, and (3) no convincing evidence that division managers' dismissals are independently affected by firm performance or the performance of a firm's other divisions.

4.2 Alternative performance metrics

As discussed earlier, it is not clear which performance metrics are most informative with regard to a division manager's effort or ability. Our initial choice of ROA is drawn from prior studies in this area, particularly Blackwell, Brickley, and Weisbach (1994). Since some other studies use changes in ROA or changes in industry-adjusted ROA as their performance measure, we experiment with using these measures in place of ROA in models corresponding to columns 1 and 6 of Table 4.[23] When we use 3-year or 5-year changes in ROA, or, alternatively, changes in industry-adjusted ROA, the results for models corresponding to columns 1 and 6 of Table 4 are qualitatively unchanged. In particular, poor divisional performance is associated with significantly elevated dismissal rates. However, when we use 1-year changes in ROA or industry-adjusted ROA as our performance measure, the coefficients are insignificant. Thus, it appears that accounting performance levels and changes are both related to division manager turnover, provided that changes are measured over a sufficiently long period.

[23] When predicting turnover in year t, the 1-year (3-year, 5-year) change in ROA is defined as the division's ROA during year t-1 minus the division's ROA in year t-2 (t-4, t-6). When we industry adjust, we first subtract off the median 2-digit industry ROA in each year and then calculate changes.

While it is typical to normalize performance by some measure of size, it is possible that this treatment is not appropriate. For example, a high ROA in a large division will correspond to greater profit generation than a high ROA at a small division. Consequently, one might expect the sensitivity of turnover to ROA to be greater for individuals managing larger divisions.[24] To investigate, in results that we omit for brevity, we add to model 1 of Table 4 a term that interacts ROA with a dummy variable indicating whether the division was the larger division of the firm. Alternatively, we interact ROA with the fraction of the firm's assets that are derived from the division less one half. In both cases the sign on the interaction term is insignificant. The results here are similar if we use industry adjusted ROA in place of ROA. Finally, if we use total division profits in place of ROA as our performance measure in model 1 of Table 4, the coefficient on this performance metric is not significant. Thus, our sample reveals little evidence that firms adjust return figures by asset size when dismissing managers.

4.3 Robustness of turnover findings

The models of turnover in Table 4 include relatively few control variables. To check the robustness of our results to the inclusion of some additional explanatory variables, we experiment with a variety of modifications. In particular, we experiment (one at a time) with altering the models in columns 1 and 6 of Table 4 by: (a) adding a year trend, (b) adding year dummies, (c) adding a control for division size, (d) adding a control for firm size (log of inflation adjusted assets), (e) adding the fraction of the firm's sales derived from the division, and (f) adding a variable indicating whether the division has the same 2-digit SIC code as the firm. When we add these variables, they are in almost all cases insignificant, while the coefficients on

[24] This will depend on whether profit ratios or total profits are more informative with regards to managerial effort or ability. Stewart (1991) outlines many problems with using profitability ratios to incentivize managers.

the performance variables change very little in magnitude or statistical significance.[25] In cases (d), (e) and (f) above, we additionally experimented with interacting the added variables with divisional ROA. Only one of the six interaction terms is significant (10% level).

One concern with the logit models we present above is that we assume that all observations are independent, even though in many cases we observe the same individual in the sample for multiple years. Consequently, it is possible that we have understated the standard errors in this analysis. To investigate, we consider in Table 6 several alternative econometric techniques to adjust the estimates and/or the standard errors in models corresponding to specification 6 of Table 4.

In column 1 we present estimates with standard errors that are robust to possible heteroskedasticity and serial correlation. The findings with this modification are qualitatively unchanged from what we report earlier. In column 2 we calculate standard errors using the bootstrap procedure outlined by Effron and Tibsharani (1986). The results again are very similar to our earlier findings. In column 3 we consider an alternative possible error structure by estimating a random effects probit model with individual random effects. This allows for the possibility that there is a person-specific job departure factor. Again, as we report in the table, the findings using this estimation framework are similar to the earlier models.

An alternative approach for modeling binary response models in which a single exit can take place is to use duration analysis techniques (see Kiefer (1988)). These methods have the advantage that they can account for tenure dependence in an individual's turnover likelihood. In the case of discrete data, this approach can be implemented by estimating logit models that

[25] All performance variables that are significant in the Table 4 models remain significant at the 10% level or better. The individual year dummy variables are significant in some cases at the 10% level. We also experiment with estimating models 1 and 6 of Table 4 on a restricted sample that includes only the oldest executive at the division under the age of 63. In this slightly smaller sample the coefficients on division performance change only slightly in magnitude and remain significant at the 10% level.

condition explicitly on an individual's tenure (see Singer and Willett (2003)). The relation between future turnover and past survival is then captured in the tenure dummy variables. In column 4 of Table 6 we present a logit model of this type. The coefficients in this column are similar in magnitude and statistical significance to the earlier columns. Thus, it appears that our findings are robust to the possibility of tenure dependence.

An alternative way to account for tenure dependence is so estimate a discrete-version of a Cox proportional hazards model using the methods described by Kalbfleisch and Prentice (2002).[26] A coefficient above one (below one) in these models implies that the indicated variable shifts the hazard function upwards (downwards), thus indicating that the variable decreases (increases) average career length. As we report in column 5 of Table 6, the coefficient on division performance (industry performance) is significantly below 1 (above 1), indicating that superior performance relative to the industry is associated with keeping the division manager position for a longer time. This helps to again confirm the robustness of our findings.

4.4 Variation in turnover behavior across firms

The findings we report above suggest that firms do not benchmark division managers against their counterparts at other divisions when making turnover decisions. This contrasts with the findings of Blackwell, Brickley, and Weisbach (1994). An explanation for the differing results may stem from differences between the samples. The subsidiary banks in the Blackwell, Brickley, and Weisbach (1994) sample are separate legal entities with distinct businesses under common ownership, whereas the divisions in our sample are likely to have more blurred boundaries and to be more interdependent. Consequently, the costs of using internal

[26] We use Stata to implement these methods. As discussed by Beck, Katz, and Tucker (1998) and Singer and Willet (2003), there is a close connection between logit models (with tenure controls as explanatory variables) and duration techniques.

benchmarking in our sample may be relatively larger in terms of discouraging needed cooperation in a setting where there is substantial scope for intrafirm trade and joint use of common assets. In addition, for the entities in our sample, discretion in cost allocations and economic linkages across divisions may increase the informativeness of a counterpart division's performance as a positive signal of a given manager's abilities.

To further investigate this line of thinking, we seek to identify firms where intrafirm cooperation is relatively more important and/or where the aptitude of one division manager may positively impact the other division. Following the motivation of Bushman, Indjejikian, and Smith (1995), we identify divisions that operate in the same 2-digit SIC code as divisions that are relatively more likely to have these characteristics. Consequently, we may expect these divisions to have a relatively low propensity to dismiss division managers following strong performance at the counterpart division. The results in column 1 of Table 7 are consistent with this suspicion. In this model where we interact counterpart divisional performance (industry-adjusted ROA) with the industry overlap dummy variable, the coefficient on the interaction is negative and significant. This indicates that managers with internal counterparts in the same industry are benchmarked less against their internal counterparts, consistent with the general notion that internal benchmarking is used less when the costs of using it are particularly high.

Our preceding results do indicate that the managers are benchmarked against their industry. RPE theory would suggest that this benchmarking should be particularly pronounced in industries where there is a high-degree of correlation in economic performance across firms. To investigate, we use Parrino's (1997) measure of industry homogeneity to study whether the sensitivity of turnover to industry performance is particularly high in these types of industries. As we report in column 2 of Table 7, we find a significant positive coefficient on the interaction

of industry ROA and this homogeneity variable. Thus, the variation in industry benchmarking across firms in our sample appears to further support the predictions of RPE theory.[27]

4.5 Extension of turnover results

As we discuss above, McNeil, Niehaus, and Powers (2004) study differences in turnover between division managers in diversified firms and CEOs of comparable non-diversified entities. To examine this issue in our sample, we conduct a similar analysis. Specifically, for each division-year in our sample, we select a matching observation by choosing a focused firm (at least 95% of sales from a single segment) with a CEO under the age of 63 in the same 2-digit industry with book assets that are closest to the division being matched. We also require the matching firm's assets to be within plus or minus 25% of the division's assets. Divisions without a match are discarded from the subsequent turnover analysis. We then use the name file in the annual releases of the Compustat PCPlus database and the Compact Disclosure annual CDs to determine whether the matching firm experienced a change in CEO during the year.

For the resulting sample, we code a turnover variable as 1 if the manager leaves the firm (for any reason) and 0 otherwise. Estimates for a logit model predicting turnover using this variable are reported in column 3 (for division managers) and column 4 (for matching focused firm CEOs) of Table 7. Performance is measured as industry-adjusted ROA.

The estimates we report are broadly consistent with the findings of McNeil, Niehaus, and Powers (2004) in the sense that the magnitude of the performance coefficient is substantially more negative when predicting division manager turnover (column 3) versus stand alone CEO

[27] As Powers (2005) discusses, interpreting interaction terms in logit models can be problematic because of model nonlinearity. Following Ai and Norton (2003), we have checked whether the estimated marginal effect of divisional performance on turnover at each data point does change as the SIC overlap and industry homogeneity variables are varied. The median Z-statistics for these marginal effects are significant at the 5% level. The main results in Table 7 are qualitatively unchanged if we use the alternative estimation techniques employed in Table 6.

turnover (column 4). However, the difference between these coefficients is not significant (t=.95), perhaps due to relatively small sample sizes.[28] Thus, while our results hint at the findings reported by McNeil, Niehaus, and Powers (2004), the evidence we present is less conclusive than theirs. This may simply reflect differences in power owing to alternative sample construction techniques.

5. Promotions

5.1 Models of division manager promotions

We now turn to models of promotions. We first estimate logit models in which the dependent variable assumes a value of 1 if a division manager experiences a job change that we categorize as a probable or definite promotion, 0 if there is no job change, and missing for all other job change events. Since managers near retirement age are unlikely to be promoted, we again exclude managers aged 63 or older from the estimated models.

In column 1 of Table 8 we report estimates for a model in which a division's own ROA is the only performance measure. While the coefficient on division ROA is positive, it is not significant at conventional levels (t=1.29). Thus, in this initial model, we are unable to detect a significant relationship between performance and promotions. In column 2 we add Counterpart ROA (i.e., the other division's ROA) to the specification. In this case, the coefficient on own performance becomes significant at the 10% level, while the coefficient on counterpart performance has the expected negative sign, but is not significant. These estimates only weakly hint at the possibility that managers are promoted based on within-firm relative performance.

[28] If we use 3-year changes in industry adjusted ROA as the performance measure, the difference in the turnover-performance sensitivity between division managers and matching CEOs is larger, but still insignificant.

As we discuss above, it may be that managers are promoted primarily based on ordinal rankings of performance. To investigate, in column 3 of Table 8 we include a dummy variable indicating whether a division's ROA exceeds the ROA of the division's counterpart. The coefficient on this variable is positive and highly significant (t = 2.59), and the magnitude of the effect appears to be substantial. For a manager at a division with performance below the other division, the implied likelihood of a promotion in any given year is 1.72%. This figure almost triples to 4.90% if the division is the superior performer at the firm.

To determine whether it is the sign or the magnitude of the performance difference between divisions that is more closely related to promotions, we include in column 4 of Table 8 both the dummy variable indicating superior within-firm relative performance, and a variable measuring the magnitude of this performance difference (i.e., division ROA minus counterpart ROA). In this model, the coefficient on the dummy variable remains positive and highly significant, while the coefficient on the magnitude of the performance difference has a negative sign (opposite of expected) and is insignificant. Thus, it does appear that promotions serve as rewards for superior performance, but the key determinant is not the magnitude of the raw or relative performance, but simply whether the performance exceeds the internal competition.[29]

The evidence we report above is consistent with a tournament theory view in which performance is a signal of ability and those with the highest perceived ability are promoted when a job opening arises. However, since openings may arrive infrequently over time, the models we estimate above may not present a complete picture of promotion behavior. Thus, we also estimate conditional logit models of promotions. This approach restricts attention to observations in which one of the firm's division managers is promoted and estimates a model

[29] While the theoretical motivation is less clear, these results suggest that the same type of ordinal evaluation scheme may be used in turnover decisions. To investigate, we estimated turnover models 1 and 6 of Table 4 with the added dummy variable indicating that a division's ROA exceeded the internal counterpart. In both cases the added coefficient was insignificant, suggesting that there is nothing special about ordinal rankings in turnover decisions.

predicting which manager is chosen.[30] The conditional logit framework implicitly assumes that the (within-firm) relative value of the explanatory variables affects the relative likelihood of promotion conditional on a job opening arising.

In column 5 of Table 8 we present estimates from a simple model of this type. The coefficient on division ROA is positive and significant at the 10% level. This weakly suggests that greater relative performance leads to a relatively greater likelihood of promotion when a promotion is available. In column 6 we use instead as our performance metric the dummy variable indicating superior within-firm relative performance. The coefficient on this variable is positive and highly significant (t=2.79). This suggests once again that there is something particularly important about ordinal rankings of performance in the promotion decision.[31]

The estimated magnitude of the effect in model 6 of Table 8 is quite large. For a firm with a single manager at each division, the estimated likelihood that the poorer performer is chosen for a promotion when an opportunity appears is only 20.07%, while for the superior performer this figure is 79.93%. The actual proportion of promotion cases where the promoted individual comes from the division with a higher ROA is 76.92%. The close match between actual and predicted probabilities indicates that the model fits the data well.

To summarize, we find that a division's performance relative to the other division is an important determinant of promotions. It appears that what matters is not the magnitude of any performance difference, but rather the sign. These results hold both in unconditional models in which we include all division-manager-years, and in conditional models in which we restrict attention to division managers at firms that have chosen to promote an internal manager.

[30] For more on the conditional logit model, see McFadden (1973) and Greene (1993).

[31] If we include both division ROA and a dummy variable indicating superior relative performance in one model, the dummy variable is positive and significant at the 10% level while the level variable is positive but insignificant.

5.2 Alternative Performance Metrics

Similar to our turnover analysis, in unreported results we examine whether the findings on promotions in Table 8 are sensitive to our modeling choices. When we use changes in division ROA (1-year, 3-year, or 5-year) rather than the level of ROA as the performance metric, the coefficient on divisional performance is generally insignificant and sometimes of the wrong sign. Thus, our sample suggests that promotions are more related to the level of accounting performance than to recent changes. When we add variables related to industry or firm performance to the Table 8 specifications, the coefficients on these variables are in all cases insignificant. Thus, we find no compelling evidence that industry benchmarking or firm performance is an important component in the promotion decision.[32]

We also investigate whether the sensitivity of job changes to profitability varies by division size. When we modify the models in Table 8 in an analogous way to our modifications in the turnover analysis, we find no evidence that the sensitivity of promotion to performance varies by division size. Moreover, when we replace the dummy variable for having a greater profit rate (ROA) than the counterpart with a dummy variable indicating a greater profit level than the counterpart, the coefficient is in all cases positive and insignificant.

In summary, the evidence indicates that firms rely on a fairly simple rule of promoting the manager from the division with the greater rate of profitability. Sophisticated adjustments to ROA figures via industry adjusting, considering recent changes, or adjusting by division size are not evident. Of course promotions are relatively rare events compared to turnover, so our power to make strong distinctions between alternative performance metrics may be limited.

[32] The results in Table 8 are slightly weaker if we use industry-adjusted divisional ROA as the performance metric, further indicating that industry based RPE is not an important consideration in promotions. We are also unable to detect any significant relation between industry homogeneity and the use of industry benchmarking in promotions.

5.3 Robustness and extensions of promotion results

In the case of turnover, we find above that managers are benchmarked less against their counterparts at other divisions when the divisions are in the same industry. To see whether this effect is also present for promotions, in unreported results we add to the model in column 6 of Table 8 a term interacting the dummy variable for superior performance (i.e., ROA > counterpart ROA) with the dummy variable indicating that the divisions are in the same 2-digit industry. The coefficient on the interaction term is negative, but not quite significant (p-value=.12). Thus, the sample does not offer strong support for the hypothesis that internal benchmarking is lessened when divisions are in the same SIC code. However, the sign on the point estimate is at least consistent with the character of our earlier findings in the case of turnover.

In our analysis of promotions the dependent variable assumes a value of 1 for job changes that we categorize as definite or probable promotions. Since this choice is somewhat arbitrary, we experiment with (a) including the lateral movement job changes in with the promotion group (a looser definition), and (b) restricting the promotion group to only include changes that we categorize as definite promotions (a stricter definition). Under the looser definition, the results we report in Table 8 with regard to the performance variables are qualitatively unchanged. Under the stricter definition, the only performance variable that is significant is the dummy variable indicating greater within-firm relative performance (in columns 3 and 6). This slight change is not surprising given the smaller number of promotion events when we use the stricter definition. Taken as a whole, it appears that our findings are fairly robust to the definition of a promotion.

Since it is possible that firms reward seniority in promotion decisions, it is interesting that the age coefficients in Table 8 are in all cases insignificant, and in some cases negative. When we experiment with replacing the age variable with a manager's relative age defined as age less

the age of the oldest division manager at the other division, this variable is also insignificant. In addition, when we include quadratic terms for age or relative age these are insignificant. Thus, we are unable to uncover any convincing evidence of a role for seniority in promotions.

Some theoretical models hypothesize that division managers have a strong preference for growth. Thus, it is interesting to consider the role of sales growth in promotions. To investigate, we experiment with including in the models of Table 8 a variable measuring the division's 1-year or 3-year sales growth rate (measured in percentage terms). In all cases, the coefficient on the sales growth variable is insignificant, while the coefficients on the divisional performance variables maintain their same signs and significance levels with a few minor exceptions. Thus, it does not appear that growth for its own sake is rewarded in the promotion process.

Similar to our turnover discussion, a possible concern with the traditional logit models of promotions in Table 8 is the presence of multiple observations on the same individual. To address these concerns, in unreported results we have estimated the specifications in columns 1-4 of Table 8 using the robust cluster, bootstrap, random effects probit, and tenure control approaches employed earlier in the turnover analysis. The results when we use these alternative econometric approaches are very similar in character to what we report in the Table 8.

Finally, we experiment with adding several additional control variables to the models of Table 8. In particular, we experiment (one at a time) with: (a) adding a year trend, (b) adding year dummies, (c) adding a control for firm size (log of inflation adjusted assets) (d) adding the fraction of the firm's sales derived from the division, (e) adding a dummy variable indicating whether the division is in the same industry as the firm, and (f) adding measures of 1-year and 3-year sales growth (in %). When we estimate these models, none of these additional variables are significant, with the exception of firm size, which is positively related to the probability of a

promotion.[33] Moreover, the coefficients on the variables related to divisional performance are qualitatively unchanged with these additions.[34]

6. Conclusion

Our understanding of how executives below the CEO are evaluated and rewarded in the internal labor market is limited. Using information on job changes of division managers in firms with two divisions, we are able to provide some relevant evidence. We find that there is a strong negative relationship between divisional accounting performance and the likelihood that a division manager will depart from her employer. This evidence supports the idea that divisional accounting figures either provide or capture useful information that is relied on in evaluating managers. Firms appear to adjust this information by comparing managers against industry benchmarks, with more industry benchmarking occurring in more homogeneous industries.

After controlling for divisional performance, we are unable to detect any significant sample-wide relationship between turnover and either firm performance or performance at the firm's other division. Thus, for the sample as a whole, the threat of dismissal appears to do little to incentivize managers to internalize the effect of their actions on the other division or the firm as a whole. However, we report some evidence that is consistent with the hypothesis that division managers are benchmarked less against their internal counterparts when there is more scope for cooperation across divisions and/or a joint output feature to divisional performance

[33] When we use division size in place of firm size, the coefficient is positive and significant in the logit models, but negative and insignificant in the conditional logit models. This indicates that promotions are more likely at larger firms (with larger divisions), but that a division's relative size within the firm is not related to promotion likelihood. This evidence additionally suggests that firms do not typically assign better managers to larger divisions, consistent with the notion that managers often stay with their division of origin as their career progresses.

[34] In the case of multiple managers, if we restrict attention to a single manager at each division by including only the oldest individual under the age of 63, the results for models 3 and 5 of Table 8 are qualitatively unchanged.

metrics. This suggests that the degree to which firms use internal benchmarking depends on the relative costs and benefits of such an approach.

Promotions are only weakly related to the level of a division's performance, but they are strongly related to the sign of the performance difference between divisions. These findings are consistent with the presence of a tournament aspect to promotions in which managers are evaluated based on ordinal rankings of performance. The incentive structure induced by this selection process may create an element of competition between managers, but our results indicated that promotion incentives may become dull once it becomes clear who the winner is. Our evidence on promotions also supports the general notion that internal labor markets and career concerns can have a meaningful impact on managerial incentives near the top of the corporate hierarchy.

The evidence we present is an early step in trying to understand the internal governance and incentive structure of firms. Our results answer some questions, suggest some puzzles, and lead to some natural further questions. One unresolved issue is the link between firms' compensation systems and internal labor markets. We know that compensation systems reward senior managers heavily based on firm performance via the use of stock options, while the internal labor market, at least for many division managers, appears to emphasize performance metrics related more directly to activities directly overseen by the manager. This raises the question of how compensation systems and labor markets fit together in determining incentives and in helping firms optimally select and retain managerial talent.

Finally, in our analysis we deliberately choose to study positions for which natural measures of individual performance are generated by the accounting system. However, for many managerial positions, clear quantifiable measures of individual performance are not as readily apparent. It would be interesting to understand how managerial talent is evaluated for these

types of positions. For example, are subjective evaluations of individual performance relied on more heavily in these settings? These and related questions await future research.

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Table 1: Sample Characteristics

Number of firm-years	548
Number of division-years	1096
Number of manager-years	1294
Number of managers in 1993	268
Number of managers in 2000	63
Mean number of segments per division	1.04
Mean number of managers per division	1.18
Mean (larger division's sales / smaller division's sales)	1.54
Median (larger division's sales / smaller division's sales)	1.18

Note.- The sample includes all manager-years in which we can confirm that a division manager was employed as of the start of a fiscal year and the firm had two distinct divisions as of the start and end of the fiscal year. Some divisions have more than one manager in a given year. We exclude from the sample all firm-years in which one individual heads both divisions or in which one of the division managers holds the title of corporate President, COO, or CEO. The first (last) sample year is fiscal 1993 (fiscal 2000). Divisions are composed of either segments or, in some cases described in the text, multiple segments. Divisional accounting data is derived from the segment data listed in the Compustat database. Number of segments and managers per division are calculated by treating each division-year as one observation while relative division size is calculated treating each firm-year as one observation.

Table 2: Turnover Statistics

	Number of Observations	% of Total	Mean ROA	Median ROA
Total manager-years	1294	100.00%	14.22%	12.97%
No change	1113	86.01%	14.32%	12.96%
Depart - Jump	12	0.93%	10.94%	10.56%
Depart - Exogenous	4	0.31%	6.45%	16.55%
Depart - Forced/Demote	13	1.00%	12.73%	10.89%
Depart - Generic	99	7.65%	12.08%	10.53%
Stay - Demotion	1	0.08%	10.26%	10.26%
Stay - Ceremonial	2	0.15%	14.82%	14.82%
Stay - Lateral	15	1.16%	17.33%	17.74%
Stay - Probable Promotion	10	0.77%	22.41%	19.05%
Stay - Definite Promotion	25	1.93%	16.48%	14.78%

Note. - The sample includes all manager-years from 1993 to 2000 in which we can confirm that a division manager was employed as of the start of a fiscal year and the firm had two distinct divisions as of the start and end of the fiscal year. We determine a manager's fate as of the end of each year by using information in the *Directory of Corporate Affiliations*, other corporate directories, public filings, and news articles. All observations are assigned to a single category depending on the manager's position as of the end of the year. The "No Change" category is for individuals who experience no substantive change in job title. The "Jump" category is for individuals who depart to immediately join a new employer. The "Exogenous" category is for managers who leave for health, death, or corporate control related reasons. "Forced/Demote" departures are cases in which managers were overtly forced from office or leave after a loss in job responsibilities. The "Stay-Demotion" category is for managers who stay with the firm after losing job responsibilities. The "Ceremonial" group is for managers who are reassigned within the firm to positions that appear to be ceremonial. "Lateral" moves are internal changes in job title for which there is no clear evidence on the relative responsibility level of the new and old positions. "Probable promotions" are job changes in which an individual is assigned new responsibilities in addition to old ones or in which the individual is assigned to a position with some general corporate responsibilities. "Definite promotions" are cases in which an individual obtains the position of corporate CEO, President, COO, CFO, or Chief Administrative Officer. The mean and median ROA figures are calculated over the set of all observations in each row where each manager is matched to his/her's division's ROA. Divisional ROA is defined as divisional operating profit after depreciation in the fiscal year prior to the observation year divided by (end of year) total divisional assets. The ROA variable is winsorized at the 1st and 99th percentiles.

Table 3: Sample Summary Statistics

	Sample Mean	Sample Median	Compustat Mean	Compustat Median
Firm Size (Assets)	1,634.13	456.56	2,597.53	181.28
Firm Size (Sales)	1,479.25	474.86	1,195.82	123.32
Division Size (Assets)	710.76	179.49		
Division Size (Sales)	727.91	217.02		
Manager Age	50.92	50.00	53.65	53
Division ROA	14.22%	12.97%		
1-Year Change in Division ROA	0.37%	0.58%		
3-Year Change in Division ROA	0.84%	1.00%		
Counterpart ROA	15.04%	13.98%		
Industry ROA	8.11%	7.97%		
Firm ROA	9.73%	9.19%	7.92%	5.76%
1-Year Excess Stock Return	1.32%	-0.78%	0.46%	-0.14%

Note: The sample includes all manager-years from 1993 to 2000 in which we can confirm that a division manager was employed as of the start of a fiscal year and the firm had two distinct divisions as of the start and end of the fiscal year. All firm, division, and manager characteristics are measured as of the start of the fiscal year. Asset and sales figures are inflation adjusted to millions of 1999 dollars. Division ROA is defined as divisional operating profit after depreciation in the fiscal year prior to the observation year divided by (end of year) total divisional assets. A division's 1-year (3-year) change in ROA is defined as the division's ROA in the annual period ending at the start of the observation year less the division's ROA in the annual period ending one year prior to (three years prior to) the observation year. For each division-manager-year, Counterpart ROA is the ROA of the firm's division not led by the manager. Industry ROA is the median ROA of all segments on the Compustat tape that operate in the same 2-digit SIC industry as the division. If a division operates in more than one segment, we use the simple mean of each segment's industry ROA to calculate the division's industry ROA. Firm ROA is defined as the firm's operating income after depreciation divided by (end of year) total assets. The 1-year Excess Stock Return is calculated as the firm's stock return over the fiscal year ending immediately prior to the observation year less the CRSP value-weighted index return over this same period. All accounting return and stock return variables are winsorized at the 1st and 99th percentiles. The figures in the sample mean and median column are for our sample of division managers. The figures in Compustat mean and median columns are figures calculated over the universe of all Compustat firms for fiscal years 1993-2000. We do not report division-related figures for the Compustat universe, as Compustat firms vary substantially in their divisional structure. The age data for the sample mean and median (Compustat mean and median) columns refers to the age of the division manager (company CEO).

Table 4: Logit Models of Division Manager Turnover

	Predicted Sign	(1)	(2)	(3)	(4)	(5)	(6)
Division ROA	-	-1.96**	-2.42**	-2.31**	-2.16*	-2.13**	-2.38**
		(0.92)	(0.96)	(0.96)	(1.14)	(0.97)	(1.02)
Industry ROA	+		8.51**	8.60**	8.60**	8.33**	6.87**
			(3.35)	(3.40)	(3.35)	(3.32)	(3.42)
Counterpart ROA	?			0.42			
				(0.81)			
Firm ROA	-				-0.72		
					(1.73)		
1-year Excess Stock Return	-					-0.48	
						(0.31)	
CEO Departure	+						0.52**
							(0.26)
Age	+	0.04**	0.04**	0.04*	0.04**	0.04**	0.03*
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Constant		-4.15***	-4.75***	-4.83***	-4.73***	-4.80***	-4.49***
		(1.02)	(1.07)	(1.08)	(1.07)	(1.08)	(1.13)
Log-Likelihood		-279.71	-276.57	-273.73	-276.48	-268.18	-244.41
Pseudo R^2		.017	.028	.028	.028	.032	.033
Model Chi-Squared		9.68	15.97	15.47	16.13	17.74	16.84
Number of Observations		983	983	975	983	952	841
<u>Actual Turnover Rates</u>							
Pred. Prob. <= Median		7.52%	5.89%	5.74%	5.89%	5.66%	5.70%
Pred. Prob. > Median		9.37%	11.00%	11.09%	11.00%	11.37%	12.14%
<u>Implied Probabilities</u>							
Div. ROA at 10^{th} percentile		10.22%	10.46%	10.31%	10.14%	10.08%	11.01%
Div. ROA at 90^{th} percentile		6.11%	5.54%	5.62%	5.76%	5.76%	5.91%
CEO Departs							11.53%
CEO Stays							7.19%

Note.- The dependent variable in all models assumes a value of 1 if a division manager departs during the year for reasons other than jumping to a new employer or leaving for exogenous reasons (i.e., health, death, or corporate control events). The dependent variable is set equal to 0 if the manager experiences no substantive change in job responsibilities and to missing for all other types of job changes. Observations for managers aged 63 or older are excluded from the estimation. Asymptotic standard errors from the maximum likelihood estimation are reported under the coefficient estimates. All performance variables are defined in the note to Table 3. The CEO Departure variable is a dummy variable assuming a value of 1 if the firm experiences a change in the identity of the CEO during the observation year or the prior year, and 0 otherwise. The actual turnover rates are the turnover frequencies for all observations in each specification that are predicted to fall below/above the median predicted value based on the model estimates and observation characteristics. The implied probabilities in each column are calculated using the reported coefficient estimates assuming that all variables except the indicated variable are held constant at their sample means. The model chi-squared statistic is for the joint significance of adding all explanatory variables to an initial model that only includes a constant.

*Significant at the 10% level

**Significant at the 5% level

***Significant at the 1% level

Table 5: Predicted and Actual Turnover Probabilities

	Observed Turnover Rate	Predicted Turnover Rate
Panel A: ROA quintiles		
ROA Quintile 1 (highest ROA)	5.24%	5.55%
ROA Quintile 2	5.08%	7.64%
ROA Quintile 3	9.84%	8.40%
ROA Quintile 4	11.68%	9.43%
ROA Quintile 5 (lowest ROA)	10.24%	11.00%
Panel B: Industry-adjusted ROA quintiles		
Industry-Adjusted ROA Quintile 1 (highest ind. adj.-ROA)	4.69%	5.04%
Industry-Adjusted ROA Quintile 2	5.15%	7.27%
Industry-Adjusted ROA Quintile 3	8.59%	8.56%
Industry-Adjusted ROA Quintile 4	11.62%	9.39%
Industry-Adjusted ROA Quintile 5 (lowest ind. adj.-ROA)	11.94%	11.80%
Panel C: Predicted probability quintiles		
Predicted Prob. Quintile 1 (lowest predicted prob.)	4.06%	4.27%
Predicted Prob. Quintile 2	6.19%	6.42%
Predicted Prob. Quintile 3	6.74%	7.97%
Predicted Prob. Quintile 4	12.06%	9.81%
Predicted Prob. Quintile 5 (highest predict prob.)	13.00%	13.65%
Panel D: Predicted probability quintiles – out of sample prediction		
Predicted Prob. Quintile 1 (lowest predicted prob.)	5.10%	3.50%
Predicted Prob. Quintile 2	5.10%	6.05%
Predicted Prob. Quintile 3	7.14%	7.91%
Predicted Prob. Quintile 4	9.18%	10.21%
Predicted Prob. Quintile 5 (highest predicted prob.)	12.24%	14.57%

Note.- In Panel A (Panel B) we group the sample of division managers into quintiles based on a division's ROA (industry-adjusted ROA). The figures in the observed turnover rate column are the actual turnover rates for the divisions in the indicated group and the figures in the predicted turnover rate column are the mean predicted probability of turnover for divisions in the indicated group using the estimates in column 1 of Table 4 (for Panel A) and column 2 of Table 4 (for Panel B). In Panel C we group the sample of division managers into quintiles based on an observation's predicted probability of turnover using the model in column 2 of Table 4. The panel reports actual turnover rates and mean predicted probabilities for each quintile. For the calculations in Panel D, we divide the sample in half based on a numerical sort of Compustat segment identification number. We estimate model 2 of Table 4 on one half of the sample and use the resulting estimates to predict turnover probabilities for the other half of the sample. The figures in Panel D group observations by quintiles based on these out-of-sample predicted probabilities and report actual turnover rates and mean predicted probabilities for each quintile.

Table 6: Alternative Models of Division Manager Turnover

	(1)	(2)	(3)	(4)	(5)
	Logit, Robust Cluster	Logit, Bootstrap Std. Error	Random Effects Probit	Logit Conditional on Tenure	Discrete Cox Hazard
Division ROA	-2.38***	-2.38**	-1.26**	-2.64**	.12**
	(0.87)	(0.95)	(0.52)	(1.03)	(.03)
Industry ROA	6.87**	6.87**	3.91**	6.83*	379.09*
	(2.84)	(3.38)	(1.87)	(3.54)	(.06)
CEO Departure	0.52**	0.52**	0.27**	0.54**	1.42
	(0.26)	(0.24)	(0.13)	(0.26)	(.19)
Age	0.03	0.03	0.02	0.02	1.03
	(0.02)	(0.02)	(0.01)	(0.02)	(.19)
Constant	-4.49***	-4.49***	-2.39***	-4.89***	
	(1.17)	(1.18)	(0.56)	(1.24)	
Log-Likelihood	-244.41	-244.41	-244.22	-236.52	-232.04
Model Chi-Squared	19.85	15.44	16.21	30.37	12.41
Number of Observations	841	841	841	829	841

Note.- The models in columns 1-3 are binary response models of turnover with the same sample and variables as in Table 4. The estimates in column 1 are maximum likelihood logit model estimates with standard errors that are robust to heteroskedasticity and are clustered by individual to account for potential serial correlation. The estimates in column 2 calculate standard errors using the bootstrap procedure outlined by Effron and Tibsharani (1986) procedure and implemented in Stata using the vce(bootstrap) option with 200 repetitions. The estimates in column 3 are maximum-likelihood estimates for a random effects probit model with an assumed random effect for each division manager. The estimates in column 4 are logit estimates where we condition on tenure by including individual tenure dummy variables (estimates on these dummies not reported). For all columns except column 5 we report coefficient estimates with standard errors in parentheses. In column 5 we report the results of a discrete-time version of a Cox proportional hazards models as implemented by Stata. We report in the column hazard ratios with estimated p values in parentheses. Hazard ratios less than one (greater than one) indicate a negative (positive) relationship between the independent variable and the likelihood of turnover. In the column 5 model each division manager career is treated as a single observation. Careers are assumed to end when a division manager departs in a turnover event using the same turnover criteria as the other columns. All other job changes are treated as right censored observations. For consistency with our earlier results, all managers who remain in office at age 63 are treated as right censored after that point. In columns 4 and 5 we assume that managers who appear in the sample in the first sample year started in their position 4 years prior. In column 5 these observations are treated as left censored. The age variable in column 5 is the age of the individual when they assumed their division manager position and thus does not vary over time. All other explanatory variables vary over time and are defined as in the earlier columns and tables.

*Significant at the 10% level

**Significant at the 5% level

***Significant at the 1% level

Table 7: Variation in Turnover Across Firms

Sample	Predicted Sign	(1) Division Managers	(2) Division Managers	(3) Division Managers	(4) Focused Firm CEOs
Division ROA	-		-3.24***		
			(1.13)		
Industry-adjusted ROA	-	-2.59**		-2.77**	-1.70***
		(1.03)		(0.98)	(0.54)
Counterpart Industry-Adjusted ROA	?	1.40			
		(1.05)			
Counterpart Industry-Adjusted ROA	-	-3.77**			
X SIC Overlap		(1.77)			
Industry ROA	+		6.41		
			(5.30)		
Industry ROA	+		3.23***		
X Homogeneity Index			(1.16)		
Age	+	0.04*	0.04*	0.04**	0.02
		(0.02)	(0.02)	(0.02)	(0.02)
SIC Overlap	?	0.49			
		(0.31)			
Homogeneity Index	?		-0.28***		
			(0.10)		
CEO Departure	+	0.41	0.42		
		(0.27)	(0.28)		
Constant		-4.90***	-4.74***	-4.35***	-3.28***
		(1.10)	(1.13)	(1.01)	(1.08)
Log-Likelihood		-240.27	-214.76	-262.79	-210.84
Pseudo R^2		.038	.060	.027	.022
Model Chi-Squared		18.99	29.43	14.77	9.44
Number of Observations		833	791	855	649
Actual Turnover Rates					
Pred. Prob. <= Median		5.53%	3.93%	7.94%	9.24%
Pred. Prob. > Median		11.29%	12.22%	13.82%	12.21%

Note.- The sample and dependent variable in columns 1 and 2 are the same as in Table 4 above. Asymptotic standard errors are reported in parentheses beneath the coefficient estimates. The SIC overlap variable is coded as a 1 if the two divisions of the firm include segments with the same 2-digit SIC code. The homogeneity index variable is the industry homogeneity measure for a division's 2-digit SIC code as reported by Parrino (1997) less the sample mean for this measure. In columns 1-3, Industry-adjusted ROA is a division's ROA in the year preceding the observation less the 2-digit industry median ROA of all Compustat segments over that same period. The sample in column 3 includes all division managers under the age of 63 for which we could identify a CEO of a size-industry matched focused firm under the age of 63 following the procedures outlined in the text. The sample in column 4 is the set of matching CEOs. The dependent variable in columns 3 and 4 is a simple binary variable taking a value of 1 if the individual leaves the firm during the year and 0 if the individual stays with the firm. In column 4 industry-adjusted ROA is defined as the firm's ROA in the year preceding the observation less the median ROA of all firms in the same 2-digit SIC code over the same period. In constructing all variables, division and firm ROA are winsorized at the 1st and 99th percentiles. In each model actual turnover rates are calculated for the set of observations that are predicted to fall below/above the median predicted value based on model estimates and observation characteristics. *Significant at the 10% level, **Significant at the 5% level, ***Significant at the 1% level

Table 8: Logit Models of Division Manager Promotions

		(1)	(2)	(3)	(4)	(5)	(6)
Estimation Procedure	Predicted Sign	Logit	Logit	Logit	Logit	Conditional Logit	Conditional Logit
Division ROA	+	1.42	1.92*			9.48*	
		(1.10)	(1.11)			(4.88)	
Counterpart ROA	-		-0.18				
			(1.30)				
Dummy for Division ROA > Counterpart ROA	+			1.08***	1.32**		1.38***
				(0.42)	(0.56)		(0.50)
Division ROA - Counterpart ROA	+				-0.82		
					(1.25)		
Age	?	-0.04	-0.03	-0.03	-0.03	0.01	0.03
		(0.03)	(0.03)	(0.03)	(0.03)	(0.06)	(0.06)
Constant		-1.54	-2.27	-2.32*	-2.84*		
		(1.47)	(1.57)	(1.61)	(1.60)		
Log-Likelihood		-144.18	-133.76	-131.34	-131.13	-20.44	-18.85
Pseudo R^2		.013	.014	.032	.034	.137	.204
Model Chi-Squared		3.67	3.91	8.73	9.17	6.46	9.64
Number of Observations		934	924	924	924	69	69
Actual Promotion Rates							
Pred. Prob. <= Median		2.57%	2.16%	1.73%	1.73%	22.22%	17.14%
Pred. Prob. > Median		4.71%	4.55%	4.99%	4.98%	54.55%	58.82%
Implied Probabilities							
Div. ROA at 10^{th} percentile		2.86%	2.44%			21.94%	
Div. ROA at 90^{th} percentile		4.22%	4.15%			80.73%	
Div. ROA > Counterpart				4.90%	5.46%		79.93%
Div. ROA ≤ Counterpart				1.72%	3.94%		20.07%

Note.- The dependent variable in all models assumes a value of 1 if a division manager experiences a job change during the year that we categorize as a definite or probable promotion. The dependent variable is set equal to 0 if the manager experiences no substantive change in job responsibilities and to missing for all other types of job changes. Observations for managers aged 63 or older are excluded from the estimation. Asymptotic standard errors from the maximum likelihood estimation are reported under the coefficient estimates. The estimates in column 1-4 are derived from logit models estimated over the set of all division-manager-years. The estimates in columns 5 and 6 are derived from conditional logit models restricted to the set of division-manager-years in which one of the firm's division managers was promoted during the year. In constructing all variables, division ROA figures are winsorized at the 1st and 99th percentiles. In each model actual promotion rates are calculated for the set of observations that are predicted to fall below/above the median predicted value based on model estimates and observation characteristics. The implied probabilities in each column are calculated using the reported coefficient estimates assuming that all variables except the indicated variable are held constant at their sample means. The model chi-squared statistic is for the joint significance of adding all explanatory variables to an initial model that only includes a constant.

*Significant at the 10% level

**Significant at the 5% level

***Significant at the 1% level