



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

SCIENCE @ DIRECT®

Journal of Corporate Finance 12 (2006) 797–817

Journal of  
CORPORATE  
FINANCE

[www.elsevier.com/locate/jcorpfin](http://www.elsevier.com/locate/jcorpfin)

## Organizational complexity and CEO labor markets: Evidence from diversified firms

Tammy K. Berry<sup>a</sup>, John M. Bizjak<sup>b,\*</sup>,  
Michael L. Lemmon<sup>c</sup>, Lalitha Naveen<sup>d</sup>

<sup>a</sup>*Berry Consultants, College Station, TX, United States*

<sup>b</sup>*Department of Finance, Portland State University, Portland, PO Box 751, OR 97207, United States*

<sup>c</sup>*Department of Finance, University of Utah, United States*

<sup>d</sup>*Department of Finance, Georgia State University, United States*

Received 12 January 2005; received in revised form 20 April 2005; accepted 25 April 2005

Available online 20 July 2005

---

### Abstract

We examine whether CEO turnover and succession patterns vary with firm complexity. Specifically, we compare CEO turnover in diversified versus focused firms. We find that CEO turnover in diversified firms is completely insensitive to both accounting and stock-price performance, but CEO turnover in focused firms is sensitive to firm performance. Diversified firms also experience less forced turnover than focused firms. Following turnover, replacement CEOs in diversified firms are older, more educated, and are paid more when hired. Collectively, our results indicate that the labor market for CEOs is different across diversified and focused firms and that firm complexity and scope affect CEO succession.

© 2005 Elsevier B.V. All rights reserved.

*JEL classification:* G30; G34; J24; J31

*Keywords:* Managerial labor market; CEO turnover; Diversification; Corporate governance

---

---

\* Corresponding author. Tel.: +1 503 725 3727; fax: +1 503 725 5850.

*E-mail addresses:* [tammy@berryconsultants.com](mailto:tammy@berryconsultants.com) (T.K. Berry), [johnb@sba.pdx.edu](mailto:johnb@sba.pdx.edu) (J.M. Bizjak), [finmll@business.utah.edu](mailto:finmll@business.utah.edu) (M.L. Lemmon), [lalitha@gsu.edu](mailto:lalitha@gsu.edu) (L. Naveen).

## 1. Introduction

Finding the right CEO is an important organizational decision, and is critical to the success of a company because of the key strategic role a firm's chief executive performs. For instance, Jack Welch, former Chairman and CEO of GE, stated that "Finding the right person (as successor) is the most important thing I can do for the company." Yet, despite the importance of the CEO position, relatively little is known about how organizational structure and industry characteristics, in particular the complexity and scope of the firm's operations, affect the labor market for CEOs, the ability of the firm to find the right CEO, and the corresponding costs of replacing an existing CEO.

To better understand these issues, we examine how CEO turnover varies with the level of firm diversification. Because of their more complex organizational structure relative to focused firms, diversified firms provide an interesting setting in which to examine the labor market for CEOs and the association between organizational structure and organizational costs (Coase, 1937).<sup>1</sup> While there is some evidence on how regulation affects the labor market for CEOs and the cost of CEO replacement (Palia, 2000; Hadlock et al., 2002), much less is known about the labor market for CEOs in the context of non-regulated industries. In addition, examining turnover in diversified companies is important given the considerable interest in the costs and benefits of diversification as a business strategy.

We find a number of important differences in the turnover process between focused and diversified firms. We find that CEO turnover is *completely insensitive* to both accounting and stock-price performance in diversified firms. In contrast, CEO turnover in focused firms is sensitive to both accounting and stock-price performance. While earlier studies have documented an inverse relation between CEO turnover and performance, ours is the first study that examines this relation in the context of diversified and focused firms.<sup>2</sup> We also find that performance improvements following CEO turnover are larger for diversified firms relative to focused firms. Because the firm will replace the CEO only if the expected benefits of replacement outweigh the expected costs, the results on turnover-performance sensitivity and performance improvements following turnover are supportive of the view that replacement costs are higher for CEOs in diversified firms.

One hypothesis is that the supply of qualified candidates is limited because managing a diversified firm is a more difficult task than managing a focused firm, and therefore diversified firms require a CEO of greater ability (e.g., Finkelstein and Hambrick, 1989; Rose and Shepard, 1997). Consequently, diversification restricts the firm to a smaller labor pool of capable candidates, making it more costly for the firm to find a suitable CEO replacement. A second hypothesis is that CEO replacement costs are higher in a diversified firm because diversification itself is associated with managerial entrenchment. For example, Shleifer and Vishny (1989) argue that one way in which managers can make

---

<sup>1</sup> McNeil et al. (2003), in a related study, compare turnover of subsidiary managers of diversified firms with turnover of CEOs of focused firms with similar asset structure. In their study, both the managers of the subsidiaries and the CEOs of the stand-alone firms have similar managerial responsibilities, but work in different types of organizations. In our study we are arguing managerial responsibility changes based on the organization.

<sup>2</sup> See for example, Coughlan and Schmidt (1985), Warner et al. (1988), and Weisbach (1988).

themselves harder to replace is by diversifying the activities of the firm to match their specific human capital. Alternatively, diversification could be the outcome of empire building by entrenched managers.

We examine several pieces of evidence to shed light on the degree to which the higher CEO replacement costs in diversified firms are better explained by the ability-matching or entrenchment hypotheses. Although the two hypotheses share many common predictions regarding aspects of the turnover process and characteristics associated with the incumbent CEO, they offer some differing predictions, particularly regarding characteristics associated with the replacement or new CEO. Accordingly, to help explain the reason for the higher replacement costs that diversified firms face when replacing the CEO, we focus our attention primarily on characteristics of the new CEOs in our sample and how these characteristics vary with organizational complexity. Specifically, we examine CEO age and educational background (e.g., Chevalier and Ellison, 1998, 1999; Palia, 2000), tenure in the firm, and compensation (e.g., Rosen, 1982; Rose and Shepard, 1997) as a function of diversification.

We find that *replacement* CEOs in diversified firms tend to be older and we find some evidence that they are more educated than their counterparts in focused firms. Moreover, after controlling for other determinants of pay, we find that new CEOs of diversified firms are paid more *when hired* relative to new CEOs of focused firms, and that this wage premium is constant across both forced and voluntary turnovers. To the extent that age and education reflect differential ability, these results are consistent with the view that diversified firms draw chief executives from a more talented labor pool. The finding that the wage premium is passed on to the new CEO, even following forced turnover, is not consistent with entrenchment. We also find that incumbent CEOs of diversified firms have the same tenure as CEOs of focused firms, and that diversified firms are more likely to have a formal succession plan in place prior to turnover. Both are results that we would not expect under managerial entrenchment.

Finally, Shleifer and Vishny (1989) suggest that CEOs may entrench themselves, or make themselves harder to replace, by tailoring the firm's activities to match their unique human capital. If diversification is the result of entrenchment, and is suboptimal, we would expect to find significantly more restructuring following turnover in diversified firms (especially following forced turnover) as the existing asset structure would be unlikely to be matched to the characteristics of the new CEO. In contrast, if diversification is a value-added strategy, then firms would presumably attempt to hire a new CEO with the ability to manage the current asset structure, and there would be less need for restructuring. We examine the extent of restructuring following CEO turnover, and observe no significant difference in the amount of restructuring activity between diversified and focused firms following either voluntary or forced CEO turnover. Consequently, we argue that, taken as a whole, the evidence is most consistent with the notion that the higher CEO replacement costs in diversified firms are driven by the need for higher ability CEOs to manage the more complex asset structure in diversified firms.

Our paper makes two important contributions to the literature. First, we provide new evidence on how the decision to replace a CEO and the choice of a replacement depend on the nature and scope of the organization. Parrino (1997) examines how industry homogeneity influences the costs of CEO succession, and finds evidence that intra-

industry appointment of a new CEO is less costly in a homogenous industry. [Palia \(2000\)](#), and [Hadlock et al. \(2002\)](#) examine labor markets in the context of regulated firms. [Himmelberg and Hubbard \(2001\)](#) argue that differences in the labor market for CEOs have contributed to the significant increase in CEO pay documented over the last decade. Their findings depend on varying elasticities of demand for CEOs based on firm characteristics. They do not, however, directly examine, as we do, if there are differences in the CEO succession process or CEO quality for different types of firms.

Second, we provide some indirect evidence that CEO entrenchment may not be a major source of the well-documented valuation discounts associated with firm diversification ([Lang and Stulz \(1994\)](#) and [Berger and Ofek \(1995\)](#)). Prior work in this area has been limited, and largely inconclusive. [Denis et al. \(1997a,b\)](#) find that diversified firms tend to refocus following external pressure or poor performance, and view this as evidence of agency costs in diversified firms. [Schoar \(2002\)](#) finds that employees of diversified firms on average earn more than employees of focused firms, and conjectures that diversification discounts could be related to rent dissipation in diversified firms. [Rose and Shepard \(1997\)](#) attribute the higher wages paid to CEOs of diversified firms to higher ability of these managers, rather than agency problems. Our evidence also suggests that diversified firms have more skilled CEOs relative to focused firms. Finally, [Matusaka \(2001\)](#) argues that diversification is a reflection of organizational capabilities that allow a firm to be profitable in multiple lines of business. If CEO ability is part of these organizational capabilities, then our evidence is consistent with Matusaka's notion.

The paper is organized as follows. Section II describes the data. Section III presents evidence on whether the replacement costs differ between focused and diversified firms. Section IV and V provide further evidence on the reasons for the higher replacement costs. Section VI contains the conclusion.

## 2. Data

To examine the turnover process in focused and diversified organizations we begin with firms included in the Forbes Annual Compensation Surveys from 1988–1997 that had market and accounting data on CRSP and Compustat, which results in a sample of 718 firms. Information on these firms is then obtained for the years 1988–1998 (Since the Forbes compensation data typically relates to the prior year, the actual data obtained is for the years 1987–1997). Details of the CEO name, age, tenure, education and founder status are taken from the Forbes annual compensation surveys. If the firm is not listed in Forbes surveys in prior or subsequent years, CEO details are obtained through proxy statements. We adjusted the data for inflation. Consequently, data such as salary and bonus are in constant (1997) dollars.

FASB No. 14 and SEC Regulation S-K require firms to report segment information for fiscal years ending after December 15, 1977. We use data from the Compustat Industry Segment (CIS) database from 1987 through 1997 to compute our measures of firm diversification. The CIS database reports the number of different business segments, up to a maximum of 10, as defined by the firm under FASB No. 14. Segment data on Compustat are available for 559 firms. We delete 35 financial firms (primary SIC codes 6000–6999)

because segment data is seldom reported for these firms. The final sample includes only firm years that have information on stock returns, accounting performance, book assets, and segment data and consists of 4820 firm year observations for 502 different firms in 1990.<sup>3</sup>

We measure diversification in two different ways. The first measure of diversification is an indicator variable set equal to one if the firm reports operations in multiple business segments. As a second measure of diversification, we use one minus the firm's segment-sales based Herfindahl index, given by  $1 - \sum_{i=1}^{\text{numseg}} \left[ \frac{(\text{segment sales}_i)^2}{(\text{company sales})^2} \right]$ . This Herfindahl-based measure, which is equal to zero for single segment firms, places less weight on a firm's smaller segments. For a firm reporting segment data for the maximum of ten different business segments, the maximum value of the Herfindahl-based measure is 0.90.<sup>4</sup>

A turnover event occurs when the identity of the CEO changes. Turnover is set equal to zero for 1987 (the base year for the sample), and is equal to one every time the CEO changes thereafter. Turnovers that are due to mergers are excluded from the sample, also interim successions (where the CEOs are clearly nominated in an interim capacity and hold office for less than a year) are not considered as turnover events.<sup>5</sup> To identify forced departures, a classification similar to Parrino (1997) is used. First, all CEO departures that are reported in the business press as forced are classified as forced departures. Second a departure is identified as forced when the CEO is under 60, and the reasons for leaving do not include death, illness, the acceptance of any position within or outside the firm or any reason unrelated to the firm's activities. Turnover dates and announcements are obtained from Dow Jones News Retrieval Service.

In each year, if the firm has a President or COO distinct from the CEO/Chairman, then the firm is denoted as having a formal succession plan. This definition of succession planning follows Vancil (1987) who argues that an "heir apparent" to the CEO is usually appointed to the President/COO position in managed successions. This information is obtained from Compact Disclosure, which gives information (that is obtained from the firm's proxy statement) regarding the firm's top executive officers, their designation and compensation. Compact disclosure data are taken from December of each year (if the December data is not available, the immediate prior month is taken). If data are unavailable on Compact Disclosure, then data are taken from proxy statements.

### 3. Empirical evidence on the succession process in focused and diversified firms

In this section, we provide evidence on whether the costs of CEO replacement differ in diversified and focused firms. We examine differences in the type of turnover, the

<sup>3</sup> The data are fairly evenly distributed over time. For example, the number of observations in each year ranges from 429 to 507.

<sup>4</sup> For robustness, when calculating the sensitivity of turnover to performance we also use a measure of unrelated diversification. The results are qualitatively similar using this measure of diversification, which treats segments as related if they share the same two-digit SIC code.

<sup>5</sup> We repeated all of the analysis below including mergers and none of the result changed. Other studies that have examined CEO turnover have also removed mergers. For example, see Warner et al. (1988), Weisbach (1988), and Parrino (1997).

Table 1  
Summary statistics of financial and CEO characteristics partitioned by single versus multiple segments

	Single segment	Multisegment	ANOVA (prob>F)	Wilcoxon (prob>Z)
Book value of total assets (\$ millions)	5650	9975	0.000	0.000
Number of segments	1	3.36	0.000	0.000
One minus the Herfindhal index	0	0.47	0.000	0.000
Stock-price return relative to the value weighted index for the prior year	0.035	-0.002	0.000	0.082
ROA relative to the industry average for the prior year	0.067	0.034	0.000	0.000
Age of CEO	56.17	57.35	0.000	0.000
Number of years with the firm	21.72	23.63	0.000	0.000
Number of years as CEO	8.81	7.29	0.000	0.000
Salary and bonus (\$ 000s)	1202	1317	0.000	0.000
Fraction of firms with succession plans	0.42	0.46	0.003	0.003

The sample consists of 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. Data on compensation and CEO characteristics come from the Forbes surveys covering the years 1987 through 1997. If firms drop out of the Forbes survey, data on compensation and CEO characteristics are gathered from corporate proxy statements. Segment data come from the Compustat Industry Segment database for the years 1987 through 1997. Firms are classified as multisegment if they report operations in more than one business segment under FASB No. 14 and SEC Regulation S-K. Financial and returns data are taken from Compustat and CRSP. ROA is calculated as earnings before interest, depreciation and taxes divided by total assets. All numbers reported are means. Dollar values are expressed in 1997 dollars.

sensitivity of turnover to firm performance, and performance improvements following turnover.

### 3.1. Sample characteristics and preliminary evidence on turnover

Table 1 presents summary statistics on firm and CEO characteristics in focused and diversified firms. The focused firms in our sample have average book assets of \$5650 million. The diversified firms in the sample are approximately twice as large with average book assets of \$9975 million. The diversified firms have an average of 3.36 different business segments and an average Herfindahl-based diversification measure of 0.47, indicating that these firms have a fairly broad scope of operations.<sup>6</sup> Diversified firms exhibit somewhat lower stock-price performance for the sample period relative to focused firms. The average stock returns relative to the value-weighted market index are -0.2% for diversified firms and 3.50% in focused firms. Accounting performance (ROA) is measured as earnings before interest taxes and depreciation divided by total book assets. Industry-adjusted accounting performance is calculated relative to the median firm in the sample firm's primary SIC code using the tightest SIC grouping with at least five firms. The industry-adjusted return on assets is 6.7% in focused firms and 3.4% in diversified firms.

On average CEOs of diversified firms tend to be older (by more than a year) and have a shorter tenure as CEO (7.3 years) compared to CEOs of focused firms (8.8 years).

<sup>6</sup> When we measure diversification using the number of unrelated segments the average for multisegment firms is 2.48.

Consistent with Rose and Shepard (1997), we find that CEOs of diversified firms have higher levels of fixed pay, earning on average approximately \$115,000 more per year in salary and bonus than CEOs of focused firms. Finally, we find that diversified firms are slightly more likely to have a named successor to the CEO position than their counterparts in focused firms.

Table 2 presents details of the CEO turnover events both for the full sample and conditional on turnover. There are a total of 517 turnovers, of which 71 (13.7%) are classified as forced, and 102 (19.7%) involve outside succession. The unconditional frequency of turnover in the sample is 10.7% ( $=517/4820 \times 100$ ), which is similar to that documented in other studies. Parrino (1997) documents a 12.2% turnover rate over the period 1969–1989, while Huson et al. (2001) report 10.5% over the period 1971–1994. The frequencies of forced turnover and outside succession in our sample are also similar to those reported elsewhere. In Parrino (1997), 13.0% (15.1%) of the turnovers are classified as forced (outside) and 16.2% (19.0%) of the turnovers in Huson et al. (2001) are forced (outside).

Examining the summary statistics separately for focused and diversified firms reveals that the unconditional rate of turnover is similar across focused (10.7%) and diversified firms. In focused firms, however, 24.8% of all turnovers involve outside CEO replacement, while this number is lower (16.5%) for diversified firms. The difference is statistically significant at the 5% level ( $p=0.02$ ). The smaller incidence of outside CEO replacement in diversified firms is also consistent with these firms having a larger pool of internal candidates. In focused firms, 17.8% of all turnovers are forced. For diversified firms, the corresponding number is 11.1%, and the difference is statistically significant at the 5% level ( $p=0.03$ ). The results presented above provide some preliminary evidence that the CEO turnover process is different for focused and diversified firms. In the next subsection we provide a more formal analysis of differences in the turnover process between focused and diversified firms in a multivariate framework.

Table 2  
Breakdown of succession type by inside/outside, forced/voluntary partitioned by focused and diversified firms

Different types of turnover	Full sample	Number of departures (percentage of total turnovers)		<i>F</i> -test ( <i>p</i> -value)
		Single segment firms	Multisegment firms	
Inside	415	152 (75.2%)	263 (83.5%)	0.02
Outside	102	50 (24.8%)	52 (16.5%)	0.02
Voluntary	446	166 (82.2%)	280 (88.8%)	0.03
Forced	71	36 (17.8%)	35 (11.1%)	0.03
Full sample	517	202 (100%)	315 (100%)	
Full sample turnover rate	10.7%	10.7%	10.7%	0.95

The numbers in parentheses are percentages based on the total number of firm–year observations and the *F*-tests are based on the total number of firm–year observations. The sample consists of 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. Data on compensation and CEO characteristics come from the Forbes surveys covering the years 1987 through 1997. Segment data come from the Compustat Industry Segment database for the years 1987 through 1997. Firms are classified as multisegment if they report operation in more than one business segment under FASB No. 14 and SEC Regulation S-K. Financial data come from Compustat.

Table 3A  
Logistic regressions estimating the probability of CEO turnover

Independent variables	Diversification measure	
	Dummy equal to one for multisegment firms	One minus the Herfindahl index
Intercept	-2.946 (0.000)	-2.947 (0.000)
Age dummy	2.275 (0.000)	2.272 (0.000)
Log of assets	0.062 (0.064)	0.059 (0.079)
Change in industry-adjusted ROA, $\beta_0$	-3.217 (0.079)	-3.420 (0.052)
Stock-price performance relative to the market, $\beta_1$	-0.821 (0.001)	-0.816 (0.001)
Diversification measure	-0.027 (0.766)	0.048 (0.757)
Diversification measure* industry-adjusted ROA, $\beta_2$	2.289 (0.456)	5.694 (0.335)
Diversification measure* relative stock-price performance, $\beta_3$	0.611 (0.101)	1.291 (0.071)
$\chi^2$ test: $\beta_0 + \beta_2 = 0$ ( $p$ -value)	0.15 ( $p=0.70$ )	0.20 ( $p=0.66$ )
$\chi^2$ test: $\beta_1 + \beta_3 = 0$ ( $p$ -value)	0.59 ( $p=0.44$ )	0.64 ( $p=0.43$ )
Pseudo $R^2$	0.10	0.10
Number of observations	4796	4796

The dependent variable is one if identity of the CEO changes. Independent variables include stock-price performance relative to the market index the year prior to turnover, accounting performance relative to the industry average the year prior to turnover, firm size, CEO age dummy (=1 if departing CEO was between 64 and 66, =0 otherwise), a variable representing diversification, and the diversification variable interacted with accounting and market performance. The sample consists of 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. Data on compensation and CEO characteristics come from the Forbes surveys covering the years 1987 through 1997, for a total of 4796 firm years. Financial and segment data come from Compustat. All standard errors and  $p$ -values are adjusted for autocorrelation.  $p$ -values are in parentheses. All dollar values are expressed in 1997 dollars.

### 3.2. Multivariate analysis of CEO turnover

In Table 3A, we use logit regressions to examine the factors that affect CEO turnover in focused and diversified firms. The dependent variable is equal to one in firm years where the person occupying the CEO position changes and is equal to zero otherwise. We employ two different measures of diversification. The first measure of diversification is a dummy variable equal to one if the firm has more than one business segment. The second is the Herfindahl-based measure of diversification. Consistent with previous literature, we include as independent variables firm size (natural log of total assets), a dummy variable equal to one if the CEO is between the age of 64 and 66 to control for normal retirement, market-adjusted stock returns, and changes in accounting performance.<sup>7</sup> Additionally, we include a measure of firm diversification, and interaction terms between the firm performance measures and the measure of diversification. The performance and diversification variables are measured in the year prior to the turnover year. In all of the analyses, the reported  $p$ -values are adjusted for within firm autocorrelation.

In the model specification discussed above, the interaction term measures whether changes in performance have a differential impact on the odds of turnover between focused

<sup>7</sup> Our model specifications are similar to other studies that have examined firm performance and CEO turnover. For example, see Warner et al. (1988), Weisbach (1988), Cannella and Lubatkin (1993), Parrino (1997), and Mikkelsen and Partch (1997).

and diversified firms and not whether performance changes have differing effects on the likelihood (i.e., probability) of turnover (see Powers (2005) and Ai and Norton (2003)). We present the current model for comparison to previous literature. For completeness, in Table 3B, we also present the results directly measuring differences in the effects of performance on the likelihood of turnover between focused and diversified firms.

Similar to previous literature, in both model specifications reported in Table 3A, the odds of turnover are positively related to firm size and the CEO age dummy variable and negatively related to firm performance. The coefficients on the two measures of diversification are not statistically significant at conventional levels, indicating that, all else equal, the rate of turnover is similar in focused and diversified firms. The overall rate of turnover need not be lower in diversified firms, even if the costs of turnover are higher, if diversified firms are more likely to manage the succession process. We discuss succession planning in more detail below.

The performance results above indicate that the odds of CEO turnover decline with increases in stock return and accounting performance in *focused firms*. The sensitivity of turnover to performance for a diversified firm is measured by the sum of the stock return coefficient and the coefficient on the diversification performance interaction variable. Examining the sum of these two coefficients indicates that, in contrast to focused firms, stock-price performance in diversified firms is *not* related to the odds of turnover in diversified firms. In Model 1, for example, a Chi-squared test of the sum of the stock return coefficient and its interaction with the diversification measure cannot reject the hypothesis that the odds of turnover are unrelated to stock-price performance in diversified firms ( $\chi^2=0.59$ ,  $p=0.44$ ). Similar results are obtained using the Herfindahl-based measure, and with accounting-based performance measures.<sup>8</sup>

As noted above, the coefficient on the interaction term measures whether performance changes are related to the odds of CEO turnover, and not whether the probability of turnover is related to performance. To test whether the sensitivity of the likelihood of turnover to performance is different between diversified and focused firms we compute the marginal effects as suggested by Powers (2005). The sensitivities are computed holding all the other variables at their mean values. Standard errors are computed using the delta method suggested in Greene (2003).

Table 3B reports the sensitivities of the likelihood of turnover to performance for diversified and focused firms. We find that for focused firms, the likelihood of turnover is

---

<sup>8</sup> Potentially differences in other governance characteristics could affect how turnover differs between diversified and focused firms. Anderson et al. (2000) find diversified firms have more outside directors and lower CEO ownership. Denis et al. (1997a,b) find that turnover is less sensitive to performance in firms with high managerial ownership. They suggest that high ownership insulates managers from disciplinary events. All of our results continue to hold when we also control for CEO ownership. Weisbach (1988) finds some evidence that outside directors increase the sensitivity of turnover to performance. Since we do not have evidence on board composition we do not include that variable in our regression. We do not anticipate, however, that this would have any significant effect on our findings. If greater outsider representation on the board increases monitoring of the CEO, we would, *ceteris paribus*, expect turnover to be more sensitive to firm performance in a diversified firm. We find the opposite. Finally, it is also possible that our diversification measure is related to the measure by Parrino (1997) of industry homogeneity. We repeat our entire analysis with Parrino's homogeneity measure included in the regressions with similar results.

Table 3B

The sensitivity of turnover to performance is given for focused and diversified firms for both stock-price performance and accounting performance

	Diversification measure	
	Dummy equal to one for multisegment firms	One minus the Herfindahl index
	Model 1	Model 2
<i>Performance measure is stock-price relative to market</i>		
Focused firm	-0.069 (0.001)	-0.067 (0.000)
Diversified firm	-0.017 (0.412)	-0.018 (0.356)
Difference	-0.052	-0.049
<i>p</i> -value of difference	0.000	0.000
<i>Performance measure is industry-adjusted ROA</i>		
Focused firm	-0.271 (0.080)	-0.280 (0.051)
Diversified firm	-0.077 (0.614)	-0.062 (0.672)
Difference	-0.194	-0.218
<i>p</i> -value for difference	0.367	0.629

In model #1, difference is the marginal effect of performance on turnover for a diversified firm minus the marginal effect for a focused firm. In model #2, difference is the marginal effect of performance on turnover for the median diversified firm (Herfindahl index for median diversified firm=0.53) minus the marginal effect for a focused firm (Herfindahl index=1). Marginal effects are evaluated at the means of the variables. Numbers in parentheses represent the *p*-values of the marginal effects, and are computed using the Delta method (see Greene, 2003).

sensitive to stock-price performance (the coefficient estimate on stock-price performance is  $-0.069$ , *p*-value=0.001). In contrast, the likelihood of turnover is not sensitive to stock performance in diversified firms (i.e., the sum of the coefficient estimate on stock-price performance and that of performance interacted with the diversification dummy is  $-0.017$ , *p*-value=0.412).<sup>9</sup> When we use industry-adjusted ROA as the performance measure, we find that the likelihood of turnover in focused firms is sensitive to performance (coefficient= $-0.271$ , *p*-value=0.080), while again, the likelihood of turnover in diversified firms is not sensitive to accounting performance. When we repeat this exercise using our second measure of diversification (Model 2), we find similar results.

Finally, it may be the case that the differences in turnover-performance sensitivities across focused and diversified firms are due to differences in the distributions of their performance measures.<sup>10</sup> For instance, multisegment firms could have worse performance than average, but have lower variance in their performance measures. Consequently, for robustness, we try and account for the fact that the distribution of returns may differ between diversified and single segment firms. Specifically, we repeat the regression in Model 1, but instead measure performance as the number of standard deviations from the mean of firms of that type (i.e., single or multisegment). Although detailed results are not reported in the interest of brevity, we find that the results in Table 3A remain qualitatively unchanged.

<sup>9</sup> This test is similar to the  $\chi^2$  test conducted above. The sensitivity of turnover to stock-price performance for focused versus diversified firms is significantly different at better than 1%.

<sup>10</sup> We thank the referee for suggesting this possibility.

Table 4  
Multivariate regression analysis of performance changes following CEO turnover

Independent variables	Model 1	Model 2
Intercept	−0.014 (0.382)	−0.009 (0.593)
Firm size two years prior to turnover	0.001 (0.725)	0.001 (0.809)
Multisegment dummy variable	0.013 (0.007)	0.009 (0.074)
Change in assets one year prior to one year post-CEO turnover	−0.051 (0.000)	−0.049 (0.001)
Change in assets one year prior to one year post-CEO turnover*multisegment dummy variable	0.028 (0.105)	0.027 (0.116)
Dummy variable for forced turnover	–	−0.032 (0.004)
Dummy variable for forced turnover*multisegment dummy variable	–	0.035 (0.013)
Number of observations	435	435
Adjusted R <sup>2</sup>	0.064	0.078

The sample consists of 453 CEO turnover events from 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. The sample period covers the years 1987 through 1997. The dependent variable is the operating performance changes from the year prior to 1 year after succession (i.e., −1 to +1). Operating performance is measured as operating profit divided by total assets. Independent variables include firm size (the log of total assets the year prior to turnover) and the change in assets during the same performance window (i.e., −1 to +1). Also included as independent variables are a dummy that equals one if a firm reports more operation in more than one business segment and a dummy variable that equals one if turnover is forced. Segment data come from the Compustat Industry Segment database for the years 1987 through 1997. Firms are classified as multisegment if they report operation in more than one business segment under FASB No. 14 and SEC Regulation S-K in the last year of the old CEO's tenure. Financial data come from Compustat.

### 3.3. Changes in firm performance following CEO turnover

The results above indicate that the succession process is different between focused and diversified firms and are consistent with the idea that the costs associated with replacing the CEO are higher in diversified firms. If diversified firms face higher replacement costs, either because CEOs of diversified firms are drawn from a smaller labor pool or because they are more likely to be entrenched, then CEOs in diversified firms will not be replaced until the expected benefits outweigh the costs of succession. This argument implies that performance improvements around CEO succession should be larger in diversified firms compared to focused firms. Furthermore, the largest benefits should occur in diversified firms when turnover is disciplinary or forced.

To examine the benefits (and costs) associated with succession, Table 4 reports the results from multivariate regression analysis of changes in operating performance following CEO turnover in focused and diversified firms. The dependent variable in the regressions is the change in ROA that occurs *beginning* the end of the last year of the old CEO's tenure and *ending* the first full year after the new CEO takes over (i.e., a −1 to +1 window with zero being the turnover year). This measure is similar to the performance measure in Huson et al. (2004).<sup>11</sup> We also examine a −1 to +2 and −1 to +3 window (results not reported) with similar results. Independent variables include firm size (the log of total assets two years prior to turnover) and the change in assets during the same

<sup>11</sup> See also Denis and Denis (1995). We also examined relative accounting performance changes, where ROA is measured net of median ROA at the two-digit SIC industry level. Our results are unchanged.

window (i.e.,  $-1$  to  $+1$ ) over which performance changes are measured. The change in assets is measured as a percentage change, computed as  $\log$  of assets at  $t=+1$  less  $\log$  of assets at  $t=-1$ . We include the change in assets to control for any performance improvements associated with restructuring. Other independent variables include a dummy variable that captures diversification, and a dummy variable for forced turnover.

Model 1 indicates that following CEO turnover, diversified firms show greater improvements in operating performance compared to focused firms. The coefficient estimate on the diversification dummy indicates that operating performance improvements in diversified firms are 1.3% ( $p=0.007$ ) larger than those in focused firms, assuming no change in assets. For the average firm, the change in assets is 0.019 (median=0.004).<sup>12</sup> The operating performance improvement for an average diversified firm relative to a focused firm is therefore significantly positive (sum=0.013+0.028\*0.019=0.014,  $p$ -value=0.007). We also find that firms that reduce assets, as captured by the change in total asset variable, show greater operating performance improvements relative to firms that increase assets. The coefficient on the interaction term is positive indicating that the restructuring effect is weaker in diversified firms, however the coefficient is not statistically significant at conventional levels ( $p=0.105$ ).

Model 2 includes a dummy variable for forced turnover and the interaction of the forced turnover dummy with the diversification indicator. The results indicate that, relative to focused firms, performance improvements are greater in diversified firms following forced turnover. The effect of forced turnover on performance changes in diversified firms *relative* to that for single segment firms is the sum of the coefficients on the multisegment dummy, the change in assets  $\times$  multisegment dummy, and the forced turnover dummy  $\times$  multisegment dummy. The sum of the coefficient estimates (at the mean value of change in assets) for these three terms is 0.045 ( $p$ -value $<0.01$ ). Overall, the results are consistent with the view that diversified firms face higher CEO replacement costs and that turnover in diversified firms occurs only when the expected benefits outweigh the costs of CEO replacement.<sup>13</sup>

#### 4. Sources of higher succession costs in diversified organizations

The previous section provides some evidence that CEO replacement costs are higher for diversified firms compared to focused firms but does not identify the reasons for the higher replacement costs. A potential reason for the higher replacement costs is that diversified firms require higher ability CEOs, which restricts the pool of qualified candidates to

<sup>12</sup> The mean change in assets for diversified firms is  $-0.010$  (median= $-0.006$ ) and for focused firms is 0.067 (median=0.028).

<sup>13</sup> We also examine the market reaction to turnover announcements between focused and diversified firms and find that the most positive stock-price reactions occur in diversified firms following forced CEO turnover. The market reaction to forced turnover in diversified firms, however, is not significantly different from that in focused firms. One potential problem with examining the market reaction is that both the costs and benefits of turnover are incorporated into the market's expectation. Consequently, it is possible that the benefits and costs of turnover are higher in a conglomerate, but the difference between the benefits and costs could be the same for both focused and diversified firms.

replace the incumbent, thereby making CEO replacement costly. Alternatively, the higher replacement costs in diversified firms might arise because CEOs in diversified firms are more likely to be entrenched. To help distinguish between these two hypotheses as sources for the higher replacement costs we focus much of our analysis in this section on the characteristics of the new CEO following turnover. While both hypotheses share some common predictions about characteristics of the incumbent chief executive they differ in predictions as to what type of new CEO is needed as a replacement.

#### 4.1. Characteristics and educational background of the new CEOs

Table 5 presents summary statistics on the characteristics of the departing and new CEOs in our sample. As shown in the table, departing CEOs in diversified firms are approximately one year older than departing CEOs in focused firms ( $p$ -value=0.089) and have about one year less tenure in the CEO post, although the latter result is not statistically significant ( $p$ -value=0.224). Consistent with the idea that CEOs in diversified firms require more human capital, newly appointed CEOs in diversified firms are almost two years older than new CEOs in focused firms ( $p$ -value<0.01) and there is some evidence that inside successors have nearly two years more experience with the firm on average ( $p$ -value=0.109).

Table 5  
Summary statistics on CEO characteristics and educational background conditional on succession

	Single segment	Multisegment	ANOVA (prob>F)	Wilcoxon (prob>Z)
<i>CEO characteristics:</i>				
Age of old CEO in year of turnover	60.69	61.58	0.089	0.080
Age of new CEO	52.49	54.20	0.001	0.001
Number of years as CEO (old CEO)	10.60	9.73	0.224	0.286
Number of years with firm (new CEO)	15.40	17.28	0.109	0.059
<i>Educational characteristics: new CEOs</i>				
Number of college degrees	1.15	1.39	0.000	0.001
Fraction with a graduate degree	0.40	0.50	0.016	0.016
Fraction with an MBA	0.18	0.23	0.204	0.204
Fraction with a college degree from a top-tier school	0.16	0.22	0.150	0.150
<i>Educational characteristics: incumbent CEOs</i>				
Number of college degrees	1.15	1.33	0.000	0.000
Fraction with a graduate degree	0.39	0.48	0.000	0.000
Fraction with an MBA	0.19	0.23	0.000	0.000
Fraction with a college degree from a top-tier school	0.25	0.28	0.018	0.018

The sample consists of 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. Data on CEO characteristics and educational background come from the Forbes surveys covering the years 1987 through 1997. Information on the old CEO comes from the year prior to turnover. Characteristics on the new CEO come from the turnover year. Segment data come from the Compustat Industry Segment database from the years 1987 through 1997. Firms are classified as multisegment if they report operation in more than one business segment under FASB No. 14 and SEC Regulation S-K. Financial data come from Compustat.

The table also reports statistics on differences in the educational backgrounds of the new CEOs in diversified firms and focused firms. We find that new CEOs of diversified firms have more degrees on average ( $p$ -value=0.000), and are more likely to have a graduate degree ( $p$ -value=0.016). These results also hold for incumbent CEOs. Although a greater fraction of new CEOs in diversified firms have MBAs, the difference between diversified and focused firms is not statistically significant. The *current* CEOs of diversified firms, however, are more likely to have an MBA ( $p$ =0.000). Finally, CEOs of diversified firms have a better quality of education as demonstrated by the greater proportion of CEOs from diversified firms with a degree from a top-tier school. The difference, however, is statistically significant only for incumbent CEOs ( $p$ =0.018) and not for new CEOs ( $p$ =0.15).<sup>14</sup> Interestingly, while not reported in the table, we find that when we combine incumbent and new CEOs, diversified firms are more likely to have a CEO with a degree from a top-tier school ( $p$ =0.008).

Although not reported in a table, we also examine the differences in CEO characteristics controlling for firm size and the type of turnover (e.g., inside/outside and forced/voluntary). It is important, however, to recognize that size and diversification are positively correlated and that size may also be related to organizational complexity in ways similar to diversification. In general, the results are similar to those reported in the univariate analysis above. Departing CEOs in diversified firms have similar tenure relative to departing CEOs in focused firms. We find this to be true even when the turnover is forced. The age difference between new CEOs in diversified and focused firms remains statistically significant after controlling for firm size. We also find that the number of degrees held by the CEO, the fraction of CEOs with a graduate degree, and the fraction of CEOs with degrees from a top-tier school are significantly higher for diversified firms (at 1% and 5% and 1% respectively), when controlling for firm size.

Finally, we examine succession planning in both types of firms. We define a firm as having a formal succession plan when the CEO and President titles are separated. This definition of succession plans follows Vancil (1987) and Cannella and Lubatkin (1993). We find that for firms experiencing turnover, 72% of the diversified firms split the President and CEO position the year prior to turnover compared to 64% of the focused firms. This result is consistent with diversified firms establishing a formal succession plan to ease the transition of the new CEO. Of course, it could be the case that diversified firms, being more complex, have a separate President and a CEO position in order to better manage the firm. The presence of a President, therefore, could merely be an optimal organization form for these firms, and may not really represent succession planning. If this

---

<sup>14</sup> We use the school rankings used in Palia (2000) to identify top-tier schools. For undergraduate degree he uses a ranking of undergraduate programs from Coleman (1973) that identifies top schools in the late 60s. He used that particular ranking because most of the CEOs in his sample received their undergraduate degrees at that time. His data cover the period 1988 to 1993, which is slightly earlier than our sample period but does overlap. These schools in alphabetical order include Brown, Columbia, Cornell, Dartmouth, Duke, Georgetown, Harvard, Northwestern, Princeton, Stanford, and Yale. For the MBA programs the schools in alphabetical order are Berkeley, Chicago, Columbia, Harvard, Michigan, NYU, Stanford and Yale. He argues that the labor market slots CEOs with lower quality into regulated business environments. We also have some weak evidence that this occurs in non-regulated industries as well.

is true, we should observe that diversified firms have both a President and a CEO position filled all the time. We observe, however, that the President and CEO positions are typically split in anticipation of the turnover. For example 4 years prior to turnover the proportion of firms that have the President and CEO position split is identical between focused and diversified firms (48%). Our findings are consistent with diversified firms managing the succession process by splitting the President and CEO position over the years prior to turnover (see Naveen (in press) for similar arguments).

While the findings provide evidence in favor of the ability-matching hypothesis one limitation to our analysis is that a number of the results, while consistent with ability-matching, are also consistent with managerial entrenchment. For example, perhaps education and age make it easier for managers to entrench themselves. Several observations are noteworthy at this point. First, under the managerial entrenchment hypothesis we would expect to observe longer CEO tenure in diversified firms, especially when turnover is forced.<sup>15</sup> We do not find this. Second, the results on succession planning also appear to be inconsistent with managerial entrenchment. We would not expect CEOs or the firm to formally plan for their succession if they were entrenched. Finally, our findings that there is a tendency for new CEOs to be more educated in diversified firms appear to be more consistent with the ability-matching hypothesis. To provide additional evidence on the sources of the higher replacement costs, we examine below CEO pay and the level of restructuring activity following CEO turnover.

#### 4.2. Compensation of new CEOs

Another way to examine if CEOs in diversified firms have greater ability than their counterparts in focused firms is to examine the compensation of newly appointed CEOs. If CEOs in diversified firms have greater ability, they should earn a premium relative to CEOs in focused firms. For example, Rose and Shepard (1997) and Anderson et al. (2000) find that CEOs in diversified firms have higher levels of compensation than CEOs in focused firms. Of course it is possible that a compensation premium is the result of CEO entrenchment. We do not expect, however, that the old CEO would be able to pass along the entrenchment premium to a new CEO, especially if the turnover is forced.

To test these hypotheses, we regress the log of salary and bonus of the *new* CEOs in our sample on our diversification measures and several control variables. We also include a dummy variable for forced turnover and its interaction with the diversification measure. We focus on salary and bonus and not total compensation because total compensation as measured by the Forbes survey includes the ex-post value of exercised stock options. When comparing option pay between insiders and outsiders the Forbes measure is problematic because insiders may have exercisable options from prior positions in the

---

<sup>15</sup> Even if we found CEOs with longer tenure in diversified firms this might not be inconsistent with the ability-matching hypothesis. If the CEO replacement costs are higher in a diversified firm then boards of diversified firms may give CEOs more flexibility and power in the decision making process. If the board grants the CEO more leeway in the decision making process we could observe longer tenure for CEOs in a diversified firm, especially following forced turnover. We find, however, no difference in CEO tenure.

Table 6

Determinants of compensation for new CEOs at focused and diversified firms depending on the type of turnover

Independent variables	Dependent variable			
	Log of salary and bonus			
Multisegment dummy	0.117 (0.041)	0.116 (0.043)	–	–
One minus the Herfindahl index	–	–	0.220 (0.030)	0.221 (0.030)
Dummy equal to one for forced turnover	–	–0.275 (0.604)	–	–0.125 (0.805)
Segment dummy*forced dummy	–	0.195 (0.765)	–	–
(One minus the Herfindahl)*forced dummy	–	–	–	–0.058 (0.958)
Log of assets	0.261 (0.000)	0.260 (0.000)	0.261 (0.000)	0.260 (0.000)
Age of new CEO	–0.002 (0.732)	–0.001 (0.762)	–0.002 (0.667)	–0.002 (0.653)
Market return year <i>t</i>	0.227 (0.009)	0.225 (0.010)	0.224 (0.010)	0.220 (0.012)
Accounting return year <i>t</i>	1.432 (0.000)	1.425 (0.000)	1.433 (0.000)	1.43 (0.000)
Year dummies	Yes	Yes	Yes	Yes
Two-digit SIC dummies	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.254	0.254	0.255	0.255
Number of observations	426	426	426	426

The dependent variables include salary and bonus. Independent variables include two different measures of diversification, a dummy equal to one if the turnover is forced, and the diversification measures interacted with the forced dummy variable. Other independent variables include firm size, age of the new CEO, along with market and accounting measures of performance. The sample consists of 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. Data on compensation and CEO characteristics come from the Forbes surveys covering the years 1987 through 1997. When firms drop out of the Forbes survey, data on compensation and CEO characteristics are gathered from corporate proxy statements. Segment data come from the Compustat Industry Segment database for the years 1987 through 1997. Firms are classified as multisegment if they report operation in more than one business segment under FASB No. 14 and SEC Regulation S-K. Financial data come from Compustat. All dollar values are expressed in 1997 dollars.

firm, while outsiders are not likely to have exercisable options.<sup>16</sup> For the control variables, we use current performance measures because we have no prior performance measures for the new CEO. The compensation measures come from the first full year of the new CEOs tenure (i.e., their second year of office). We focus on the second year because compensation in the first year for insiders who become the new CEO may reflect their old position and compensation in the first year for outsiders who become the new CEO may reflect less than a full year's pay. The entrenchment hypothesis predicts that the compensation premium should disappear following forced turnover, while the ability-matching argument predicts that the diversification premium should be similar across both forced and voluntary turnovers.

The results of these regressions are reported in Table 6. Similar to Rose and Shepard (1997), all the model specifications indicate that executives in diversified firms receive

<sup>16</sup> Rose and Shepard (1997) also examine differences in salary and bonus. Anderson et al. look at salary and bonus plus options. They find that CEOs in diversified firms receive more in both salary and bonus and option pay. While we do not have the appropriate measures of option pay for our analysis the results from Anderson et al. (2000) provide some evidence that our findings on salary and bonus can be extended to total compensation.

higher levels of salary and bonus. For example, in the first column of Table 6, the coefficient estimate on the multisegment dummy variable is 0.117 ( $p=0.041$ ), indicating that *new CEOs* in diversified firms earn about 12% more than their counterparts in focused firms. There is no difference, however, in the diversification premium following forced turnovers. Specifically, the coefficient estimates on the forced turnover dummy variable and its interaction with the diversification measures (column two) are not significantly different from zero at traditional significance levels. Similar results are obtained using the Herfindahl-based diversification measure as seen in columns three and four. For salary and bonus, it does not appear that the diversification premium is lost once the old CEO leaves, even when turnover is forced. Therefore, we argue this result is most consistent with the hypothesis that managers in diversified firms earn an ability premium relative to managers in focused firms.<sup>17</sup>

## 5. Restructuring following CEO turnover

In this section, we examine restructuring activities around CEO turnover in diversified and focused firms. Under the ability-matching hypothesis, diversification represents a value-added business structure. Consequently, this hypothesis predicts that CEOs are matched to the firm's assets, and that diversified firms require CEOs with higher ability relative to focused firms. This implies that, following CEO turnover, we should not expect to observe significantly more restructuring in diversified firms relative to focused firms.<sup>18</sup> In contrast, if diversification is associated with managerial entrenchment we expect to find a significant amount of restructuring following CEO turnover in diversified firms, since under this hypothesis CEOs tailor the activities of the firm to fit their specific human capital (or engage in empire building). Additionally, restructuring should be especially more prevalent following disciplinary turnovers, since with voluntary turnover incumbents may be able to pass on entrenchment to their supporters who can maintain the status quo.<sup>19</sup>

---

<sup>17</sup> If the entire management team is entrenched, new CEOs from within the firm may possibly be able to retain the compensation premium. Therefore, we also ran the same regression partitioning by inside and outside succession. The results were similar to those found when partitioning by voluntary and forced turnover.

<sup>18</sup> Potentially we might see significant restructuring activity in diversified firms even under the ability-matching hypothesis. If diversified firms require CEOs with greater ability the board of directors could give these CEO more discretion, which could lead to greater deviation in the asset structure of the firm from its optimal level prior to CEO replacement. Under this scenario we would expect to observe more restructuring following CEO turnover, especially following forced turnover. Consequently, a finding of more restructuring activity following turnover would be consistent with both hypotheses. No difference in restructuring activity following CEO turnover, which is what we find, would appear to be more consistent with ability-matching.

<sup>19</sup> There is some evidence that restructuring activities follow CEO turnover in general. For example, Weisbach (1995) examines divestitures that coincide with CEO succession. He finds that poorly performing acquisitions of the previous CEO are more likely to be divested by the new CEO. Berger and Ofek (1999) examine refocusing activity at diversified firms. They find that diversified firms are more likely to refocus following major events of market discipline. Denis et al. (1997a,b) find similar results. None of these studies focus on what happens following the succession process in a broad sample of diversified firms or how this activity compares to focused firms.

### 5.1. Restructuring activities following CEO turnover

To examine restructuring activity around CEO turnover, we compute the growth in book assets and the change in the number of reported business segments that occur over the two-year period *beginning* the end of the last year of the old CEO's tenure and *ending* the first full year after the new CEO takes over. Although not reported, the results are similar when we measure restructuring activity over longer windows. Asset growth is calculated as the difference in the log of total book assets over this time period, and thus measures the two-year continuously compounded growth rate in assets. To provide a benchmark, we also compute these same variables for nonturnover years. For nonturnover years, the change in assets and the change in business segments are calculated in each two-year interval between 1987 and 1997 *excluding* the two-year period surrounding the turnover year.

Panel A in Table 7 compares differences in asset growth between focused and diversified firms. We also control for firm size, because smaller firms are likely to have higher average growth, and for prior performance, because poorly performing firms are more likely to refocus or restructure their asset base. For turnover years, firm size and accounting performance are measured the year prior to the turnover year. For nonturnover years, firm size and accounting performance are measured the year prior to each calculated two-year change in total assets or change in business segments.

The results from panel A indicate that asset growth is lower for larger firms and for diversified firms. The coefficient estimates on the size variable and the diversification dummy variable are negative and significant. As expected, asset growth is significantly positively correlated with accounting performance. The coefficient estimate on the turnover dummy is negative and significant ( $p$ -value=0.001). This result is consistent with the finding of Weisbach (1995) that firms tend to divest assets following turnover. We do not, however, find a significant difference in asset growth rates following CEO turnover between focused and diversified firms. The coefficient estimate on the interaction dummy variable is positive, but not statistically significant ( $p$ -value=0.233).

Panel B in Table 7 examines whether diversified firms are more likely to refocus following CEO turnover. The dependent variable is a dummy equal to one if the firm reduces its number of reported business segments and equal to zero otherwise. The logit regressions in panel B use only the sample of diversified firms because focused firms can only increase their reported number of business segments. The basic model specification is similar to that reported in Berger and Ofek (1999), but unlike their analysis, we examine a random sample of firm years and not on a sample of firms that reduce their number of business segments.

The first column in panel B shows that diversified firms are more likely to refocus following poor accounting performance. The coefficient estimates on accounting performance are negative and statistically significant. This result is consistent with Berger and Ofek (1999). The coefficient estimate on the turnover dummy, while positive, is only marginally significant ( $p$ -value=0.122). The average change in the number of business segments in our sample, however, is economically small. For example, simple univariate analysis (not reported in the table) indicates that the median change in the number of business segments following CEO turnover is zero.

The second column in panel B, repeats this analysis, but also has an indicator variable for forced turnovers. Interestingly, the likelihood of refocusing in diversified firms does

Table 7

Multivariate regression and logistic analysis of changes in total assets and number of reported segments surrounding CEO turnover in focused and diversified firms

Panel A: Dependent variable is the two-year change in total assets		Panel B: Dependent variable is a dummy equal to one if the firm reduced number of reported business segments (multisegment firms only)		
Intercept	0.268 (0.000)	Intercept	-1.242 (0.006)	-1.250 (0.005)
Firm size	-0.029 (0.000)	Firm size	0.019 (0.694)	0.020 (0.687)
Accounting performance	0.586 (0.000)	Accounting performance	-2.548 (0.004)	-2.525 (0.004)
Dummy equal to one if CEO turnover	-0.071 (0.001)	Dummy equal to one if CEO turnover	0.238 (0.122)	0.210 (0.199)
Multisegment dummy	-0.074 (0.000)	Dummy equal to one if turnover is forced	-	0.230 (0.587)
Turnover dummy* multisegment dummy	0.031 (.233)			
Number of observations	3401	Number of observations	2104	2104
R <sup>2</sup>	0.098	Pr>X <sup>2</sup>	0.007	0.014

The sample consists of 453 CEO turnover events from 502 firms originally included in the Forbes Annual Compensation Surveys from 1988–1997. The sample period covers the years 1987 through 1997. In Panel A, the dependent variable is the change in total assets. Independent variables include firm size, accounting performance, a dummy equal to one if the firm reports more than one business segment, and a dummy equal to one if there was turnover. For the turnover observations, the change in total assets is the continuously compounded two-year growth rate in total assets from the last year of the old CEO's tenure to the first full year of the new CEO's tenure (i.e., -1 to +1 around the turnover year). For nonturnover years, a change in assets is calculated in each two-year interval between 1987 and 1997 excluding the turnover year. For turnover years firm size and accounting performance are measured the year prior to the last year of the incumbent CEO. For nonturnover years, firm size and accounting performance are measured the year prior to each calculated two-year change in total assets. *For panel A, observations include both focused and multisegment firms.* In Panel B, the dependent variable is a dummy equal to one if a diversified firm reduced the number of reported business segments. Independent variables include firm size, accounting performance, a dummy equal to one if there was turnover, and a dummy equal to one if turnover was forced. For turnover years, the change in the number of business segments is calculated between the last year of the old CEO and the first full year of the new CEO. For turnover observations, firm size and accounting performance are calculated the year prior to the change in the number of business segments. For nonturnover years, changes in business segments are calculated for each two-year interval excluding turnover years. Firm size and accounting performance are then calculated for each of the observations for the prior year. *For Panel B, observations include only multisegment firms.* Logistic regressions are performed in Panel B. Segment data come from the Compustat Industry Segment database for the years 1987 through 1997. Firms are classified as multisegment if they report operation in more than one business segment under FASB No. 14 and SEC Regulation S-K in the last year of the old CEO's tenure. Financial data come from Compustat. Dollar values are expressed in 1997 dollars.

not depend on whether turnover is voluntary or forced. The coefficient estimate is positive but not statistically significant for the forced turnover dummy variable ( $p$ -value=0.587). If diversification is the result of managerial entrenchment, we would expect to see the greatest amount of restructuring following forced turnovers.<sup>20</sup>

<sup>20</sup> We recognize that using all nonturnover years results in autocorrelation of the nonturnover observations and potentially overstates the  $t$ -statistics. To address this problem we also performed the same analysis, but selecting a nonturnover observation at random for each turnover observation. The results were identical or provided even weaker evidence that turnover leads to significant changes in asset structure.

The results on restructuring are inconsistent with the entrenchment hypothesis and, taken together with earlier findings, provide additional evidence that CEOs of diversified firms are drawn from a different labor market compared to CEOs of focused firms.

## 6. Conclusions

Despite the importance of the CEO position, relatively little research has been devoted to understanding CEO labor markets, and how characteristics of the organization affect the costs of CEO replacement. In this paper, we provide evidence on these issues by examining how CEO turnover and succession patterns vary with the level of firm diversification. Our results indicate that the nature and scope of a firm's assets affect the costs associated with replacing the CEO, and that the CEO succession costs in diversified firms are higher than those for focused firms. Our evidence suggest that the higher replacement costs in diversified firms occur because diversified firms require CEOs of greater ability. They do not generally support the view that CEOs in diversified firms are more likely to be entrenched. Our analysis therefore suggests there are differences in the labor market for CEOs and that organizational structure does affect organizational costs (Coase (1937)). Further analysis of how firms match new CEOs with the firm's assets and how this affects firm performance are fertile areas for future research.

## Acknowledgments

We are grateful for helpful comments from Naveen Daniel, Dan Deli, David Denis (the editor), Marc Zenner, an anonymous referee, as well as from seminar participants at Duke University, University of Oregon, Texas A&M University, University of Washington, the 2002 Financial Management Association Meeting and the 2002 Northern Finance Association meeting.

## References

- Ai, Chunrong, Norton, Edward C., 2003. Interaction terms in non-linear models. *Economics Letters* 80, 123–129.
- Anderson, R., Bates, T., Bizjak, J., Lemmon, M., 2000. Corporate governance and firm diversification. *Financial Management* 29, 5–22.
- Berger, P.G., Ofek, E., 1995. Diversification's effect on firm value. *Journal of Financial Economics* 37, 39–65.
- Berger, P.G., Ofek, E., 1999. Causes and effects of corporate refocusing programs. *Review of Financial Studies* 12, 311–345.
- Cannella, A., Lubatkin, M., 1993. Succession as a socio-political process: internal impediments to outsider selection. *Academy of Management Journal* 36, 763–793.
- Chevalier, J., Ellison, G., 1998. Career concerns of mutual fund managers. *Quarterly Journal of Economics* 114, 389–432.
- Chevalier, J., Ellison, G., 1999. Are some mutual funds better than others? Cross-sectional patterns in behavior and performance. *Journal of Finance* 54, 875–899.
- Coase, R., 1937. The nature of the firm. *Economica* 4, 386–405.
- Coleman, R., 1973. Report on college characteristic, working paper Harvard–MIT Center for Urban Affairs.

- Coughlan, A., Schmidt, R., 1985. Executive compensation, management turnover and firm performance: an empirical investigation. *Journal of Accounting and Economics* 7, 43–66.
- Denis, D.J., Denis, D.K., 1995. Performance changes following top management dismissals. *Journal of Finance* 50, 1029–1057.
- Denis, D.J., Denis, D.K., Sarin, A., 1997a. Agency problems, equity ownership, and corporate diversification. *Journal of Finance* 52, 135–160.
- Denis, D.J., Denis, D.K., Sarin, A., 1997b. Ownership structure and top executive turnover. *Journal of Financial Economics* 45, 193–221.
- Finkelstein, S., Hambrick, D., 1989. Chief executive compensation: a study of the intersection of markets and political processes. *Strategic Management Journal* 10, 121–134.
- Greene, William H., 2003. *Econometric Analysis*, 5th ed. Prentice Hall.
- Himmelberg, C., and Hubbard, R.G., 2001. Incentive pay and the market for CEOs: an analysis of pay-for-performance sensitivity, working paper, Columbia University.
- Huson, M., Parrino, R., Starks, L., 2001. Internal monitoring mechanisms and CEO turnover: a long term perspective. *Journal of Finance* 56, 2265–2297.
- Huson, M., Malatesta, P., Parrino, R., 2004. Managerial succession and firm performance. *Journal of Financial Economics* 74, 237–275.
- Lang, L., Stulz, R., 1994. Tobin's q, corporate diversification and firm performance. *Journal of Political Economy* 102, 1248–1280.
- Hadlock, C., Lee, D.S., Parrino, R., 2002. CEO careers in regulated environments: evidence for gas and electric utilities. *Journal of Law and Economics* 45, 535–563.
- Matsusaka, J., 2001. Corporate diversification, value maximization, and organizational capabilities. *Journal of Business* 74, 409–431.
- McNeil, C., Niehaus, G., Powers, E., 2003. Management turnover in subsidiaries of conglomerates versus stand-alone firms. *Journal of Financial Economics* 72, 63–96.
- Mikkelsen, W., Partch, M., 1997. The decline of takeovers and disciplinary managerial turnover. *Journal of Financial Economics* 44, 205–228.
- Naveen, L., in press. Organizational complexity and succession planning. *Journal of Financial and Quantitative Analysis*.
- Palia, D., 2000. The impact of regulation on the CEO labor market. *Rand Journal of Economics* 31, 165–179.
- Parrino, R., 1997. CEO turnover and outside succession: a cross-sectional analysis. *Journal of Financial Economics* 46, 165–197.
- Powers, E.A., 2005. Interpreting logit regressions with interaction terms: an application to the management turnover literature. *Journal of Corporate Finance* 11, 504–522.
- Rose, N., Shepard, A., 1997. Firm diversification and CEO compensation: managerial ability or executive entrenchment? *The Rand Journal of Economics* 28, 489–514.
- Rosen, S., 1982. Authority, control and the distribution of earnings. *Bell Journal of Economics* 13, 311–323.
- Schoar, A., 2002. Effects of corporate diversification on productivity. *Journal of Finance*, 2379–2403.
- Shleifer, A., Vishny, R., 1989. Management entrenchment: the case of manager specific investments. *Journal of Financial Economics* 25, 123–140.
- Vancil, R., 1987. *Passing the Baton: Managing the Process of CEO Succession*. Harvard Business School Press, Boston.
- Warner, J., Watts, R., Wruck, K., 1988. Stock prices and top management changes. *Journal of Financial Economics* 20, 461–492.
- Weisbach, M., 1988. Outside directors and CEO turnover. *Journal of Financial Economics* 20, 431–460.
- Weisbach, M., 1995. CEO turnover and the firm's investment decision. *Journal of Financial Economics* 37, 159–188.