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Are outsiders handicapped in CEO successions?

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Abstract

We argue that outsiders are handicapped (chosen only if markedly better than the best insider) in Chief Executive Officer (CEO) successions to strengthen the incentive that the contest to become CEO provides inside candidates. Handicapping implies are that a firm will be more likely to choose an insider to succeed to the CEO position where insiders are more comparable to each other, where outsiders are less comparable to insiders, and where there are more inside candidates. We assess these predictions using a data set containing more than 1,000 observations on CEO succession in large U.S. firms over the period 1974–1995 and a novel measure of the comparability of insiders that identifies those firms with a product or line of business organizational structure. Our evidence is consistent with each prediction. We also explore more carefully our organizational structure variable. We find that where firms switch to a product or line of business structure (making insiders more comparable) the likelihood of outsider succession falls. And we consider the possibility that managers from firms with a product or line of business structure may be more likely to be chosen CEO because their experience as divisional head better prepares them for a CEO's duties. Two tests suggest that this is not the source of our finding that these firms are more likely to promote insiders to be CEO. The first test finds that controlling for prior experience managing a business (a division or a firm) among inside candidates to be CEO, those firms organized along product lines remain

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more likely to promote from within. The second test finds that when outsiders are chosen CEO, these outsiders do not come disproportionately from firms with a product or line of business structure.

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1. Introduction

When picking a new Chief Executive Officer (CEO), a firm can appoint an inside successor, promoting a lower ranked executive to the top position, or it can appoint an outsider, hiring someone new to the firm. Most often, firms choose to promote insiders. For large U.S. firms over the period 1974–1995, better than 80% (848 out of 1035) of all CEO successions involved the promotion of an insider to the CEO position. Clearly, insiders are more likely to be picked as CEO. Why?

One likely possibility is that insiders are typically more able than outsiders. This would not be the case if the same managerial skills were useful everywhere; that is, if all managerial human capital were general. But it could be the case if an important part of any manager's human capital were firm specific. Here, insiders, who have acquired knowledge and relationships by working within the firm, typically would be more able than outsiders who lack these assets. And so firms picking the most able candidate to become CEO would tend to pick insiders. This surely happens.

Another possibility is that, even when insiders are not typically more able than outsiders, they are favored anyway. That is, firms may handicap outsiders, requiring an outsider to be markedly better than insiders in order to be chosen as CEO. But why would outsiders be handicapped? Following the literature on tournaments (Lazear and Rosen, 1981; Rosen, 1986; Chan, 1996), the answer is “to provide an incentive for insiders to work hard.” The selection of a CEO pits executives aspiring to the top position against each other in a contest (tournament).^{3,4} Because becoming CEO is desirable (the CEO job is a prize), aspiring executives will work to try to become CEO. That is, the contest to become CEO provides an incentive to work hard. And a firm benefits from hard work by its executives. Because the strength of the incentive provided by the contest to become CEO depends upon how closely hard work and success (the likelihood of becoming CEO) are linked, a firm gains by making this link stronger. Handicapping outsiders typically does this (Chan, 1996). So firms seeking to provide incentives to aspiring insiders will

³ Interestingly, Gibbons and Murphy (1990) provide evidence that the likelihood of CEO turnover depends upon a firm's relative performance, falling as a firm's own performance improves and rising as other firms' performance improves. This suggests that contests may determine not only *who* is chosen to replace a CEO, but also *when* a CEO is replaced.

⁴ Naveen (2000) looks at succession planning where firms appoint an insider as heir-apparent to the current CEO. She finds that firms with an heir-apparent are more likely to replace the CEO and that being named heir-apparent increases an individual's chances of being named the new CEO. Following Vancil (1987), succession planning can be viewed as an *alternative* to a contest to become CEO (horse race succession); alternatively naming an heir-apparent can be viewed as the *outcome* of a contest to become CEO.

handicap outsiders and, as a consequence, tend to pick insiders as CEO. Do firms do this? That is, are outsiders handicapped in CEO successions?

This is the question that we address. To do so, we consider three implications of handicapping. These are: a firm in which insiders are more comparable to one another will handicap outsiders more and so be more likely to choose an insider as CEO; a firm with insiders more comparable to outsiders will handicap outsiders less and so be less likely to choose an insider as CEO; and a firm with more insiders competing to become CEO will handicap outsiders more and so be more likely to choose an insider as CEO. The first of these is the most interesting and receives the greatest share of our attention because it obtains *only* with handicapping. The latter two implications might also follow from the importance of firm-specific human capital. A firm with insiders more comparable to outsiders is likely less idiosyncratic, making firm-specific human capital less important and so the choice of an insider as CEO less likely. And a firm with more executives, to the extent that it is more complex, may entail more firm-specific human capital and so be more likely to choose an insider as CEO.

We test these implications using a data set with over 1,000 observations on CEO successions in U.S. firms that occurred between 1974 and 1995. Employing a novel variable describing firm organization to measure the comparability of insiders, an indicator of the homogeneity of firms within an industry to measure the comparability of insiders to outsiders, a measure of the number of executives within a firm, and a set of control variables that measure firm performance, firm size, board composition, and the presence of founding family CEO, we attempt to explain the pattern of insider and outsider successions to the CEO position. Overall, this attempt is successful. In nearly every instance, estimated coefficients have the predicted sign and the results are generally both statistically and economically significant.

The most interesting result surrounds our firm organization variable. We identify firms with a product or line of business organizational structure (as opposed to a functional structure) and argue that this structure makes insiders more comparable. And we consistently find that this variable is negatively related to the selection of an outsider as CEO. To explore this result, we extend the analysis in two ways. First, we look at firms with multiple successions and find that those firms that change to a product or line of business organizational structure are more likely to pick an insider as CEO than similar firms that maintain a functional structure. This ‘time-series’ evidence reinforces the main findings in our cross-sectional tests. Second, we consider the possibility that insiders at firms with a product or line of business organizational structure might be more likely to succeed to the CEO position not because outsiders are handicapped but because these particular insiders are more able. Here, we conduct two tests. One controls for the amount of overall business experience among top executives in a sub-sample of our successions and finds that, even with this control, firms with a product or line of business organizational structure are more likely to select an insider as CEO. The other test examines the history of outsiders who are named CEOs. If insiders at product or line of business firms are more able, they should be more likely to succeed to the CEO position in their own firms and also more likely to be selected CEO at other firms. We find no evidence that this is the case. These latter tests offer reassurance that our finding that firms with a product or line of business organizational

structure are more likely to name insiders as CEO really is evidence of outsider handicapping.

The following second section of the paper describes handicapping more fully and develops its three empirical implications. Section 3 describes our data set, details the construction of variables, and outlines our empirical approach. Section 4 presents our main results. Section 5 provides a closer look at the effect of our most novel variable, organizational structure, on CEO succession. The final section offers a summary and a conclusion.

2. Implications of handicapping

Whenever a firm's executives prize being named CEO, insiders will compete to win the CEO position. Perhaps the most noteworthy recent example was the extended contest between division heads Jeffrey Immelt (GE Medical Systems), Jim McNerney (GE Aircraft Engines) and Robert Nardelli (GE Power Systems) to succeed the legendary Jack Welch as CEO of General Electric.⁵ But this three-way contest to become CEO is best viewed as just the final stage in a career of contests in which these executives bested many others as they climbed GE's corporate ladder. That is, many executives beyond these three likely aspired to be GE's CEO during their careers.

Such aspirations provide insiders with an incentive to work hard. The strength of this incentive depends upon the expected reward for exerting greater effort (increasing μ). Defining W as the dollar value of incremental rewards (including non-pecuniary rewards such as power and prestige) that derive from being named CEO (the prize), the expected reward to an executive for exerting greater effort is the induced change in his probability of winning the competition to become CEO, p , times the prize or $(\partial p/\partial \mu)W$. The larger the prize and the more responsive is an insider's chance of winning to his effort, the greater is the incentive effect that CEO aspirations have on insiders' effort.

Adding outsiders to the competition to become CEO typically reduces $\partial p/\partial \mu$, i.e., weakens the relation between hard work by an insider and his chance of succeeding to the CEO position. As a consequence, including outsiders in the succession contest typically dulls the incentive that insiders have to work hard.⁶ To reestablish insider incentives, the firm can make the CEO position more desirable by increasing the prize, W , or it can handicap outsiders (choose the best insider unless an outsider performs markedly better) which raises $\partial p/\partial \mu$. We assume that it is difficult for the firm to raise the prize since this creates incentives for stockholders to renege and invites sabotage (discourages teamwork) among managers (Lazear, 1989) and concentrate instead on handicapping as the means to restore insider incentives.

While handicapping improves insiders' incentives to work hard, it sometimes results in an insider being named CEO despite the existence of a superior outside candidate (the

⁵ Mr. Immelt was named as successor to Mr. Welch in December 2000.

⁶ If insiders are not evenly matched, this may not be true. Where one insider is acknowledged to be clearly better than others, adding outsiders to the competition to become CEO could enhance this insider's incentive to exert effort (the incentive of other insiders, though, would be reduced).

outsider, though performing better, does not beat the handicap). As a result, there is a tension (trade-off) between providing better incentives and picking a better CEO. This tension is key and is the source of the predictions that we develop and test empirically.⁷ Our focus is on the size of the handicap imposed on outsiders and so ultimately on the likelihood that an insider succeeds to the CEO position.

Consider the performance, q , of a candidate for the CEO position to be composed of a deterministic component, μ , that depends positively on his ability and effort and a random component, ε , with zero mean. That is, $q = \mu + \varepsilon$. We assume that the firm uses a contest to pick the new CEO where the winner is the candidate with the highest q . Picking the new CEO based on q does two things. First, it provides an incentive for candidates to work hard since greater effort increases μ and so the expected value of q and the probability of winning ($\partial p / \partial \mu > 0$). Second, it tends to pick the most able candidate (the one with the highest μ) as CEO.

Part of the random component in performance will be common to all candidates, and part will be idiosyncratic to a particular candidate. Let c represent the common part and i the idiosyncratic part, $\varepsilon = c + i$. For any ε realized by one candidate, the division between c and i depends on the make-up of the group of other candidates. The more similar are the circumstances faced by all candidates, the greater will be the common portion and the smaller will be the idiosyncratic portion. We characterize candidates as more comparable when (holding ε constant) c is larger.⁸ Since a relative measure of performance differences out c , greater comparability implies that a contest that rewards based upon relative performance (the winner gets to be the CEO) more closely ties the probability of receiving the reward to effort ($\partial p / \partial \mu$ is greater) and more reliably selects the best CEO. The reason in both instances is that relative q is a more precise (less noisy) measure of relative μ .

Consider a firm that limits its CEO succession contest to inside candidates (i.e., picks the insider with the largest q as the CEO). Here, c measures the comparability of insiders. Greater c means that the succession contest will have a more important incentive effect. The reasons are two. First, as already noted, greater comparability means that the succession contest more precisely rewards effort and so provides a stronger incentive to work hard. Second, since the succession contest is a more effective mechanism to provide incentives, it will likely be relied upon more. That is, it will occupy a more important role and other mechanisms for providing incentives, such as performance pay, stock options, and offer-matching (relying on the managerial labor market) will be used less.⁹

Introducing outsiders to the succession contest (selecting as new CEO the candidate, insider or outsider, with the largest q) entails a cost. This cost stems from the fact that

⁷ Tsoulouhas et al. (2004) presents a formal model in which insiders are assumed to be alike, incentives to work hard arise only from aspirations to be CEO, and the gain from picking a more able CEO is explicit. These predictions, and others, derive (at least under some conditions) from that model.

⁸ A more formal characterization using first-order stochastic dominance is developed in Tsoulouhas et al. (2004).

⁹ This presumes that other mechanisms used to provide incentives are not affected (or are affected less) by greater comparability of insiders.

outsiders typically have less in common with insiders than do other insiders (insiders and outsiders together are less comparable than insiders alone). Introducing outsiders, then, reduces c (and increases i), which in turn reduces $\partial p/\partial \mu$ and so weakens insiders' incentives. The more comparable are insiders (the greater is c for insiders alone), the more c falls when outsiders are added and so the greater is the cost of introducing outsiders to the succession contest. The more comparable are insiders, then, the more reason to insulate insiders from competition with outsiders (to keep the contest closed to outsiders). Since handicapping outsiders offers partial insulation from outside competition, our first prediction is that where insiders are more comparable, outsiders should be handicapped more and so the likelihood of insider succession should be greater.

The extent to which introducing outsiders reduces c and so weakens insiders' incentives depends not just on how comparable insiders are to each other (what c would be if outsiders were excluded) but also on how comparable outsiders are to insiders (what c is when outsiders are included). The more outsiders have in common with insiders (the more comparable are insiders and outsiders together), the smaller the reduction in c and so the smaller the decline in insiders' incentives when outsiders are introduced into the succession contest. So, the more comparable are insiders and outsiders together, the less reason to handicap outsiders. Our second prediction, then, is that where insiders and outsiders are more comparable, outsiders will be handicapped less and so insider succession will be less likely.

Our third prediction concerns the number of candidates (insiders and outsiders) competing for the CEO position. As there are more contestants of any kind, it is likely that the link between an insider's effort and his chance of becoming CEO becomes weaker ($\partial p/\partial \mu$ falls) and so incentives to work become weaker.¹⁰ Outsiders should be handicapped more to restore these incentives. The effect that this has on the likelihood of selecting an insider as CEO depends upon whether the added contestants are insiders or outsiders. The reason is that, holding the outsider handicap constant, the larger is the number of insiders the more chances insiders (as a group) have to win and so the greater is the likelihood that some one of these insiders will indeed win. Similarly, the greater is the number of outsiders, the greater is the likelihood that some one of these outsiders will win.

So, increasing the number of contestants has two effects on the likelihood that an insider will be selected CEO. The first effect is that firms will optimally impose a bigger handicap on outsiders making it more likely that an insider will be selected. If the added contestants are insiders, the second effect works in the same direction. Since there are now more insiders competing, the likelihood that some one of them wins will rise. If the added contestants are outsiders, the second effect opposes the first. Here, the presence of more outsiders reduces the likelihood that an insider will win. Our third prediction, then, is that as the number of insiders competing to be CEO rises, the likelihood that an insider will succeed to the CEO position rises. Since the two effects from adding outside contestants oppose one another, we cannot predict the effect of adding outsiders on the likelihood that an insider is selected CEO.

¹⁰ See Chan (1996, p.565–567).

3. Data and empirical approach

We begin with a sample of 1,035 CEO successions in Forbes 800 firms that occurred between 1974 and 1995.¹¹ To be included in the sample, the succession announcement must be reported by the *Wall Street Journal* and information about the firm's financial performance and about the outgoing and incoming CEOs must be available.¹² Following Parrino (1997), we classify a succeeding CEO as an insider if (s)he had been employed by the firm for more than one year prior to succeeding to the CEO position. All others are classified as outsiders.¹³ We then construct a binary variable, OUTSIDER, that equals 1 for outsiders and 0 for insiders. As shown in Table 1, 187 of the 1,035 successions (18%) involved outsiders. Of the 187 outsiders, 111 (59.4%) were hired from other firms within the same primary two-digit Standard Industrial Classification (SIC) industry. Among the remaining 76 (40.6%) who were hired from firms outside the industry, though, most had some prior experience (e.g., as an outside director, consultant, or outside attorney) within the same or within a related industry (see Parrino, 1997, p.178).

For each CEO succession, we identified the firm and the year of the succession. We then examined the listing of all top executives (vice president and up, typically 15 to 20 people) in the Standard and Poors *Register of Corporations* of that year to determine the organizational structure of the firm. From these listings, we identified firms with executives whose titles indicated that they managed one of several company products (Chevrolet, Pontiac, . . .) or one of several lines of business (chocolate, pasta, . . .). We define a binary variable, PL, that equals one for firms with a product or line of business organizational structure; it equals zero for all other firms (organized along other, such as functional—operations, marketing, finance—lines). As shown in Table 1, about 35% of our sample of CEO successions occurred in firms with a product or line of business organization. These firms tend to be somewhat larger than others with median sales of \$2.5 billion compared to \$1.7 billion for other firms and with median employment of 25 thousand compared to 12 thousand for other firms (not shown in the table). Table 2 provides additional detail. Here, successions are sorted by industry and mean values of PL are presented. Except where the number of successions is small, most industries include both some firms with a product or line of business organizational structure and some firms with other structures. But firms in manufacturing are most likely to have a PL structure while retail and service firms are least likely to do so. Below, when we characterize industries by the homogeneity of their member firms, we also find that firms with a PL organizational structure tend to be in industries that are less homogeneous.

We argue that a PL organizational structure makes inside candidates for the CEO position more comparable to one another. The vice president for Chevrolet products and

¹¹ The sample was kindly provided to us by Robert Parrino. It incorporates most of the sample in Parrino (1997), dropping only successions occurring before 1974, and adds successions occurring between 1990 and 1995.

¹² For a more complete characterization of the criteria for inclusion in the sample see Parrino (1997, p.171).

¹³ An alternative specification that identifies succeeding CEOs as insiders if they had been employed by their firms for more than *three* years prior to succeeding to the CEO position yields essentially the same results as this specification.

Table 1
Descriptive statistics

	Full Sample (n=1,035)		Internal Succession (OUTSIDER=0) (n=848)		External Succession (OUTSIDER=1) (n=187)		t-stat ^a
	Mean	Median	Mean	Median	Mean	Median	
OUTSIDER	0.181	0	0	0	1	1	
PL (Organizational Structure)	0.354	0	0.375	0	0.253	0	3.12 ^b
HOMOGENEITY	0.312	0.325	0.308	0.289	0.327	0.353	-2.93 ^b
SEMP (Supervisory Employees) (‘000)	10.4	3.6	11.3	4.4	6.3	2.0	3.86 ^b
SEMPIND (Industry Supervisory Employees) (‘000)	366.2	394.1	362.1	380.6	385.4	404.8	-1.31
OPS (Operating Performance to Sales) (%)	16.2	14.2	16.8	14.9	13.4	10.5	2.83 ^b
FORCE (Forced Turnover)	0.157	0	0.092	0	0.455	0	-12.34 ^b
ASSET (\$ million)	6,528	2,679	6,640	2,664	6,017	3,092	0.79
FFAMILY (CEO from founding family)	0.070	0	0.067	0	0.080	0	-0.63
OBOARD (proportion of outsiders on board)	0.722	0.750	0.712	0.733	0.768	0.786	-5.09 ^b

The sample consists of 1,035 CEO successions in Forbes 800 firms over the period 1974–1995. Sample sizes for the individual variables range from 965 to 1,035 in the full sample, depending on the availability of data.

Variables are defined as follows:

OUTSIDER=1, if the new CEO is hired from outside the firm (i.e., appointed CEO within one year of joining the firm); 0 if an insider is promoted to the CEO position.

PL=1, if the firm is organized along products or lines of business; 0 otherwise.

HOMOGENEITY=Parrino’s (1997) measure of industry homogeneity. It is the average, across all firms in each two-digit SIC industry, of the partial correlation coefficient for an industry return index in a two-factor regression model of the stock return of a firm on returns for the industry and the overall stock market.

SEMP=The number of supervisory employees at the firm.

SEMPIND=The number of supervisory employees for other firms in the two-digit SIC industry of a firm in the year of succession.

OPS=Operating Performance to Sales, measured as the average of the ratio of operating income before depreciation to net sales for the firm during the year of the CEO succession and the prior year.

FORCE=1, if the departing CEO was forced to leave the firm; 0 otherwise.

ASSET=Firm size as measured by the dollar value of assets.

FFAMILY=1, if current CEO is a member of the founding family; 0 otherwise.

OBOARD=Proportion of non-employee members of the Board of Directors.

^a This column shows the t-statistic for the difference between the means of the internal and external succession sub-samples, except for PL, FORCE and FFAMILY variables; for these three variables, it shows the z-statistic for the difference between the proportions in the two sub-samples.

^b Denotes statistical significance at the 1% level, in two-tailed tests.

the vice president for Pontiac products face more similar circumstances (share more common shocks to performance) than do a vice president for finance and a vice president for marketing. Our first prediction in Section 2 is that greater comparability of insiders increases the likelihood that an insider will be selected CEO. The empirical counterpart is that firms with a PL organizational structure are more likely to select an insider to succeed to the CEO position.

Two related arguments provide additional support for this prediction.¹⁴ First, the decentralization resulting from a PL organizational structure reduces the opportunity for sabotage among competing insiders. This lowers the cost of relying on the contest to become CEO as an incentive device and provides a reason to strengthen this incentive. Second, decentralization also implies that important decisions will be delegated to divisions, making the role of the CEO less critical. This lowers the cost of appointing a somewhat inferior CEO and tilts the trade-off between incentives for insiders and a more able CEO toward better incentives for insiders. Both arguments imply that succession incentives will be more important in firms with a PL organizational structure and, as a consequence, that these firms will impose a larger handicap on outsiders and so be less likely to select an outsider as CEO.

For each of these reasons, firms with a PL structure should be more likely to choose insiders as CEO. The data in Table 1 are consistent with this prediction. Among firms selecting internal candidates to succeed as CEOs, 38% have a PL organizational structure. Among firms selecting external candidates to succeed as CEOs, only 25% have a PL organizational structure. This difference has a *p*-value of less than 0.01.

Since most outsiders who are appointed CEO come from other firms within the same industry, we adopt Parrino's (1997) industry homogeneity index as a measure of the comparability of insiders and outsiders. The more similar are firms in the industry, the more comparable are (the greater the common shocks faced by) insiders and outsiders. Parrino measured this similarity by first using monthly data from the Center for Research in Security Prices (CRSP) for the years 1970 to 1988 to construct an equally weighted stock return index for each two-digit SIC industry. The monthly return of each firm in the industry was, then, regressed on the industry index and on an equally weighted market index. The partial correlation coefficients for the industry index were averaged across firms in each industry. This average, HOMOGENEITY, is the index of homogeneity for the industry.¹⁵ It is obtained from Parrino (1997, Table 5). The greater is HOMOGENEITY, the more correlated are the stock returns within an industry and the more similar are the firms. For our entire sample of successions, HOMOGENEITY has a mean (median) value of 0.312 (0.325). Highly homogeneous industries include metal mining, oil and gas extraction, and air transportation. At the other extreme, fabricated metal products, wholesale trade (non-durable goods), and transportation equipment manufacturing are quite heterogeneous.

We argue that where firms within an industry are more alike (HOMOGENEITY is greater), the comparability of inside and outside contestants for the CEO position is greater. Our second prediction in Section 2 is that where such comparability is greater, the likelihood of selecting an insider as CEO should be smaller. The empirical counterpart is that as HOMOGENEITY increases, firms will be less likely to promote internal candidates to the CEO position. The data in Table 1 support this prediction. Among firms promoting internal candidates to the CEO position, the mean value of HOMOGENEITY is 0.308; but among firms selecting outsiders as the CEO, the mean value of HOMOGENEITY is 0.327. Once again, this difference has a *p*-value of less than 0.01.

¹⁴ We thank George Baker for suggesting the first argument and Tom Noe for suggesting the second.

¹⁵ For more details of the construction of HOMOGENEITY see Parrino (1997, pp. 187–188).

Table 2

Organization structure (PL) and the choice of complete outsider CEO (C_OUTSIDER) by industry

SIC	Industry	Mean PL	Mean C_OUTSIDER	Sample Size
01	Agricultural production—crops	1	0	1
10	Metal mining	0	0.5	4
13	Oil and gas extraction	0.5	0.083	12
14	Mining, quarry, nonmetal minerals	0.75	0	4
15	Building construction—general	0.143	0.25	8
16	Heavy non-building construction	0.571	0	7
17	Construction—special trade	0	0	1
20	Food and related products	0.444	0.044	45
21	Tobacco products	0.333	0	6
22	Textile mill products	0.333	0	3
23	Apparel	0	0	3
24	Lumber and wood products	1	0	3
25	Furniture and fixtures	0	0	3
26	Paper and allied products	0.697	0.03	33
27	Printing, publishing and allied	0.176	0.059	17
28	Chemicals and allied products	0.542	0.071	84
29	Petroleum refining and related	0.452	0.048	42
30	Rubber and miscellaneous plastic products	0.688	0.125	16
31	Leather and leather products	0	0	1
32	Stone, clay, glass and concrete products	0.625	0.0625	16
33	Primary metal products	0.531	0.0625	32
34	Fabricated metal products	0.571	0	7
35	Industrial and commercial machinery, computers	0.468	0.064	47
36	Electronic and electrical equipment	0.514	0.056	36
37	Transport equipment	0.519	0.038	52
38	Measurement, analysis and control instruments	0.467	0.1	30
39	Miscellaneous manufacturing	0	0	2
40	Railroad transport	0.2	0	16
42	Motor freight transport and warehousing	0.4	0	5
45	Air transport	0	0.083	12
46	Pipelines, excluding natural gas	0	0	1
47	Transport services	0	0	1
48	Communications	0.321	0.107	28
49	Electric, gas and sanitary services	0.145	0.094	127
50	Wholesale trade—durable goods	0.333	0	6
51	Wholesale trade—nondurable goods	0.368	0.105	19
52	Building material, hardware and gardening stores	0	0	1
53	General merchandise stores	0.318	0.045	22
54	Food stores	0.095	0.048	21
56	Apparel and accessory stores	0.167	0.333	6
57	Home furniture and equipment stores	0	0.5	2
58	Eating and drinking places	0	0	2
59	Miscellaneous retail	0.333	0.333	6
60	Depository institutions	0.244	0.079	178
61	Nondepository credit institutions	0.111	0.222	9
62	Security and commodity brokers, etc.	0.167	0.083	12
63	Life insurance	0.15	0.238	21
64	Insurance agents, brokers and service	0	0	5
70	Hotels	0	0	2

Table 2 (continued)

SIC	Industry	Mean PL	Mean C_OUTSIDER	Sample Size
73	Business services	0	0.167	6
75	Auto repair, services and parking	0	0	2
78	Motion pictures	0.8	0	5
80	Health services	0	0	2
87	Engineering, accounting, research and management services	0.667	0	3
	Total	0.354	0.073	1,035

The table shows the distribution of our sample by two-digit SIC code industry and the mean values of PL and C_OUTSIDER for each industry. The variable PL=1, if the firm is organized along products or lines of business; 0 otherwise. The variable C_OUTSIDER=1, if the new CEO was appointed to the position within one year of joining the firm from outside the industry; 0 otherwise. The sample consists of 1,035 CEO successions in Forbes 800 firms over the period 1974–1995.

For each CEO succession, we calculate the approximate number of supervisory employees at the firm, SEMP, at the time of the succession. To do this, we first determined the number of employees in the two-digit SIC industry of the firm in the year of succession. From this we subtracted the number of non-supervisory employees (production and related workers for manufacturing industries, construction workers for construction industries, and non-supervisory employees for service industries) to approximate the number of supervisory employees in the industry. The source for these data is *Employment, Hours, and Earnings, United States, 1909–94 and 1988–96*, published by the U.S. Department of Labor, Bureau of Labor Statistics. We then computed the ratio of supervisory to total employees for the industry. Next we determined the number of people employed by the firm at the time of the succession (the source for these data is COMPUSTAT) and multiplied this by the industry ratio of supervisory to total employees. The result is SEMP, our approximation of the number of supervisory employees at the firm at the time of succession. The mean (median) number of supervisory employees is 10.4 (3.6) thousand. We treat SEMP as an index of the number of internal contestants for CEO.¹⁶

Our third prediction in Section 2 is that as the number of internal contestants increases, it becomes more likely that an insider will succeed to the CEO position. The empirical counterpart is that firms with more supervisory employees should be more likely to choose internal candidates to succeed to the CEO position. Again, the data in Table 1 are consistent with this prediction. The mean number of supervisory employees among firms promoting an internal candidate to be the new CEO is 11.3 thousand; that for firms selecting an outsider is only 6.3 thousand. This difference has a *p*-value of less than 0.01.

For each CEO succession, we also calculate the approximate number of supervisory employees at other firms in the primary two-digit SIC industry of the firm at the time of the succession, SEMPIND. To do this, we simply subtracted the number of supervisory

¹⁶ The contest to become CEO comprises multiple rounds as executives work their way up the corporate ladder. In the last round, the number of contestants is always small (three in the GE example cited in Section 2). However, the contest provides incentives not just to those few executives being considered for the next CEO appointment, but also to those lower on the ladder. (For instance, Jack Welch is reported to have stated that he wanted to be CEO from the moment that he joined GE, immediately out of college and 21 years prior to his eventual succession to the CEO position.) Because of this, we seek to measure the total number of internal contestants for CEO, not just those few in the final round competing to be the next CEO.

employees in the firm, SEMP, from the previously calculated number of supervisory employees in the industry. The mean (median) number of such employees is 366.2 (394.1) thousand. As with supervisory employees within the firm, we treat SEMPIND as an index of the number of outside candidates for the CEO position.

In Section 2, an increase in the number of external contestants was shown to have two opposing effects on the likelihood of selecting an insider. The handicap given to insiders should increase making an insider appointment more likely. But a larger number of outside contestants reduces the likelihood that an insider will win. So, it is not clear whether or how an increase in SEMPIND will affect the likelihood that an insider succeeds to the CEO position. The data in Table 1 suggest that the second effect may dominate. Among firms promoting internal candidates, the mean of SEMPIND is 362.1 thousand. Among firms selecting outsiders as CEO, this mean is 385.4 thousand. However, the difference is statistically insignificant.

Others who have analyzed the choice between insiders and outsiders as CEO have documented several empirical effects. To control for these effects, we construct five additional variables. First, poor firm performance increases the likelihood of CEO turnover (see for example, Coughlan and Schmidt, 1985, for U.S. firms; Kaplan, 1994a, for U.S. and Japanese firms; and Kaplan, 1994b, for German firms). Moreover, Borokhovich et al. (1996) and Parrino (1997) find that the likelihood of an outsider appointment increases as firm performance worsens. For each CEO succession, we constructed two alternative measures of firm performance. The first is an accounting measure of operating performance. Using data from COMPUSTAT, we calculated the ratio of Operating Income before Depreciation (data item 13) to net sales for the firm during the year of the CEO succession and the prior year. We then averaged the ratios for these two years and labeled this OPS (operating performance to sales). This is our first measure of firm performance. The greater is OPS, the better is firm performance. Our second measure of firm performance we label FORCE. This is a binary variable that takes a value of one for those successions in which the departing CEO was forced to leave and zero for other firms. FORCE incorporates Parrino's (1997, pp. 171–172) categorization of forced and voluntary departures. The first group (FORCE=1) includes instances in which the *Wall Street Journal* announcement describes the departure as a firing, a forced departure, or the result of unspecified policy differences. To these are added instances in which the departing CEO is under age 60 and neither the *Wall Street Journal* announcement nor other trade publications reported the reason for departure as death, poor health, or the acceptance of another position or reported the impending departure at least six months prior to its occurrence. FORCE=1 identifies poorly performing firms and so is an inverse measure of performance. As shown in Table 1, OPS has a mean (median) value of 16.2% (14.2%), and 15.7% of departing CEOs were forced to leave.¹⁷

Since poor firm performance makes an outside appointment more likely, where OPS is smaller or where FORCE=1 the selection of an outsider as CEO should be more likely.

¹⁷ While operating performance is slightly worse for firms with a product or line of business organizational structure than for other firms (OPS has a mean (median) of 14.6% (13.0%) in PL firms and 17.1% (14.8%) in others), CEOs of PL firms are no more likely to be forced out (15.2% of the time for PL firms and 15.9% for others).

The data in Table 1 confirm this expectation. The mean OPS for those firms promoting internal candidates is 16.8%, while that for firms appointing outsiders is 13.4%. More strikingly, only 9.2% of internal promotions followed forced departures, substantially less than the 45.5% of outside appointments that followed such departures. Both of these differences have a *p*-value of less than 0.01.

Parrino (1997) also finds that both firm size and the presence of a firm founder (or a relative) as current CEO affect the likelihood that an outsider will be selected as new CEO. We measure firm size as ASSET (from COMPUSTAT) at the time of the succession and the presence of a member of the founding family as current CEO as a dummy variable, FFAMILY, that takes the value of one where the current CEO is (or is related to) the firm founder. This is identical to Parrino's (1997, p.183) Founding Family Dummy. As seen in Table 1, mean firm size is slightly larger for firms promoting insiders to CEO (\$6.640 billion vs. \$6.017 billion), but this difference is not statistically significant. Similarly, firms selecting an outsider as CEO are insignificantly more likely to have a member of the founding family as current CEO (on average, 8% of outside hires replace a founder CEO while only 6.7% of internal promotions do so). Finally, Borokhovich et al. (1996) find that boards of directors with a greater proportion of outsiders are more likely to select an outsider as CEO. For each succession, we calculate the proportion of outside (non-employee) directors at the time of succession and designate this as OBOARD. Consistent with Borokovich, Parrino and Trapani, Table 1 shows that outsiders comprise 71.2% of board members at firms promoting from within compared to 76.8% for firms hiring outsiders as CEO. This difference has a *p*-value of less than 0.01.

Table 3 presents Pearson correlation coefficients for all of the empirical variables described in Table 1. The first column confirms the relationships between the appointment of an outsider as CEO and the other variables that were described in Table 1. Beyond this, firms with product or line of business organizational structures tend to be smaller, have more supervisory employees, be in industries that are less homogeneous, and have a smaller proportion of outside board members; firms in more homogenous industries tend to be bigger, to have fewer supervisory employees, are less likely to have a founder CEO, and have a smaller proportion of outside board members; as expected, the forced departure

Table 3
Correlations

	OUTSIDER	PL	HOMOGENEITY	SEMP	SEMPIND	OPS	FORCE	ASSET	FFAMILY
PL	-0.098 ^a								
HOMOGENEITY	0.090 ^a	-0.220 ^a							
SEMP	-0.081 ^b	0.107 ^a	-0.284 ^a						
SEMPIND	0.042	-0.003	-0.569 ^a	0.136 ^a					
OPS	-0.109 ^a	-0.104 ^a	0.246 ^a	-0.049	-0.244 ^a				
FORCE	0.383 ^a	-0.009	0.014	0.002	0.048	-0.208 ^a			
ASSET	-0.021	-0.115 ^a	0.140 ^a	0.353 ^a	0.028	0.044	0.012		
FFAMILY	0.020	0.023	-0.080 ^b	-0.026	0.052	-0.072 ^b	-0.045	-0.040	
OBOARD	0.149 ^a	-0.089 ^a	-0.157 ^a	-0.070 ^b	0.112 ^a	-0.055	0.084 ^a	0.101 ^a	-0.099 ^a

The table shows correlations among variables, defined in Table 1. The sample consists of 1,035 CEO successions in Forbes 800 firms over the period 1974–1995.

^a Denote statistical significance at the 1% level, in two-tailed tests.

^b Denote statistical significance at the 5% level, in two-tailed tests.

of a CEO is more likely when firm operating performance is poor; and firms with a smaller proportion of outside directors are more likely to have a founder CEO but less likely to force CEO turnover.

4. Empirical results

Section 4.1 presents the main results from our examination of handicapping in the choice between insiders and outsiders to become CEO. In this section, we make no distinction between those outsiders from within the industry and those currently employed in other industries. In Section 4.2, we incorporate the origin of outsiders into the analysis. And in Section 4.3, we consider a related implication of outsider handicapping on the compensation of new CEOs.

4.1. Main results

Outsider handicapping in CEO succession yields three predictions. The likelihood that an insider will be promoted to the CEO position is greater when inside contestants are more comparable, when inside and outside contestants are less comparable, and when there are more inside contestants. In addition, we consider the theoretically ambiguous effect of the number of outside contestants.

Our empirical hypotheses state these predictions in terms of the empirical measures for these variables that were described in the previous section and then add the set of control variables.

$$\text{OUTSIDER} = f(\text{PL}, \text{HOMOGENEITY}, \text{SEMP}, \text{SEMPIND}, \text{CONTROLS}). \quad (1)$$

To test our hypotheses, we transform the number of supervisory employees in the firm and in the rest of the industry to natural log form (and change their labels to LSEMP and LSEMPIND).¹⁸ We include as controls a measure of firm performance, either OPS or FORCE; firm size as measured by the natural log of ASSET (labeled LASSET); FFAMILY which indicates a CEO from the founding family; and the proportion of outsiders on the board of directors, OBOARD.

We estimate (1) using the binomial logit model. Table 4 presents results from this estimation. The models in the first two columns delete LSEMP (which is highly correlated with LASSET) and LSEMPIND (which is highly correlated with HOMOGENEITY); the last two models include all variables. Results are consistent with our handicapping predictions. In each model, firms with a product or line of business organizational structure (PL=1) are, as predicted, less likely to hire an outsider as CEO.¹⁹ For the first two models,

¹⁸ This transformation accords with the notion that the number of inside (outside) contestants vying for the CEO position will increase with the number of supervisory employees, but less than proportionately.

¹⁹ In additional regressions we added a variable that identified firms that maintained geographic divisions (these partially overlap with the PL firms). This variable never approaches statistical significance nor does its inclusion affect coefficients on any of the other variables.

Table 4
Binomial logit models of CEO succession: Coefficient estimates (p-values) [effect on outcome probabilities]^a

	(1)	(2)	(3)	(4)
	OUTSIDER=1 (n=161)	OUTSIDER=1 (n=177)	OUTSIDER=1 (n=153)	OUTSIDER=1 (n=166)
INTERCEPT	-3.346 (0.000)	-3.727 (0.000)	-2.662 (0.050)	-3.612 (0.010)
PL	-0.402 (0.046) [-0.051]	-.505 (0.016) [-0.060]	-0.348 (0.096) [-0.043]	-0.430 (0.051) [-0.050]
HOMOGENEITY	2.382 (0.049) [0.025]	2.009 (0.099) [0.020]	-0.363 (0.865) [-0.004]	-0.228 (0.917) [-0.002]
LSEMP			-0.250 (0.027) [-0.045]	-0.243 (0.035) [-0.041]
LSEMPIND			-0.092 (0.595) [-0.010]	-0.018 (0.918) [-0.002]
OPS	-0.033 (0.000) [-0.052]		-0.035 (0.000) [-0.054]	
FORCE		2.162 (0.000) [0.404]		2.156 (0.000) [0.399]
LASSET	-0.139 (0.083) [-0.023]	-0.163 (0.045) [-0.025]	0.005 (0.965) [0.001]	-0.013 (0.912) [-0.002]
FFAMILY	0.633 (0.053) [0.100]	0.750 (0.029) [0.115]	0.554 (0.110) [0.084]	0.674 (0.063) [0.100]
OBOARD	3.688 (0.000) [0.071]	3.341 (0.000) [0.060]	3.498 (0.000) [0.066]	3.022 (0.001) [0.053]
Number of Observations	904	964	859	913
p-value of χ^2 test	0.000	0.000	0.000	0.000

The table shows the coefficient estimates, p -values, and the effects on outcome probabilities from binomial logit models of CEO succession (OUTSIDER). Variables are defined in Table 1. The prefix 'L' to SEM, SEMIND and ASSET denotes the natural log of these variables. Each regression uses all observations with available values out of the sample of 1,035 CEO successions in Forbes 800 firms over the period 1974–1995.

^a For continuous variables (HOMOGENEITY, LSEMP, LSEMPIND, OPS, LASSET, OBOARD), this is the derivative of the outcome probability evaluated at variable means times one standard deviation in the variable. For binary variables (PL, FORCE, FFAMILY), this is the difference in outcome probabilities evaluated at other variable means for values of 1 and 0.

firms in industries that are more homogeneous (HOMOGENEITY is larger) are more likely to appoint an outsider as CEO, consistent with our prediction. However, the inclusion of LSEMP and LSEMPIND in the last two models eliminates this effect. Also consistent with our prediction, firms with more internal contestants (bigger LSEMP) are less likely to appoint an outsider as CEO. We find no effect of more external contestants (larger LSEMPIND) on the likelihood that an outsider is chosen CEO, suggesting that the two opposing effects that we identify offset one another.

To provide a sense of the magnitude of these effects, Table 4 also provides calculations of the estimated effect that each variable has on the probability that an outsider will be named CEO. For the continuous variables, this is the derivative of the probability of selecting an outsider (evaluated at the mean values of all variables) times one standard deviation in the variable. For the binary variables, this is the difference in the probability of naming an outsider when the variable takes a value of 0 and when it takes a value of 1 (all other variables are at their means). The numbers in the table, then, measure absolute

changes in the probability of naming an outsider as CEO. These effects compared to the actual probability of naming an outsider (0.181 from Table 1) are large. Firms with a product or line of business organizational structure are 28%²⁰ (24% to 33%, depending on the model) less likely than the typical firm to name an outsider as CEO.²¹ Firms in industries one standard deviation more homogenous than average are 12% (based on the effects in the first two models, 14% and 11%) more likely to appoint an outsider as CEO. Firms with log of the number of supervisory employees one standard deviation larger than average are 24% (23% to 25%) less likely to name an outsider as CEO.

Table 4 also suggests that the control variables not only matter in CEO selection, but that they matter in an important way. Poor firm performance has a dramatic effect on the likelihood that an outside CEO is appointed. Firms in which the old CEO is forced out are more than twice as likely to select an outsider as CEO. Similarly, firms with operating performance one standard deviation above average are about 29% less likely to appoint an outsider as CEO.²² Larger firms (as measured by LASSET) are somewhat less likely to select an outsider CEO (about 13% less likely for firms one standard deviation larger, based upon the first two models). Quite interestingly, when a founding family member is replaced as CEO, the likelihood of selecting an outsider is about 55% greater than average. Founders do not appear to pass the baton to underlings.²³ Finally, the composition of the board of directors is important. Firms where the proportion of outside directors is one standard deviation larger than average are about one-third more likely to select an outsider as CEO.

One additional variable that may affect a firm's choice between an insider and an outsider as CEO is stock ownership by the firm's insiders. Greater inside ownership may entrench current management and make it more difficult to hire an outsider as CEO. If so, the likelihood that an outsider is appointed CEO will be negatively related to the ownership stake of insiders. Because many of the successions in our sample occur in the 1970s and 1980s, data availability constraints prevent the construction of an insider ownership variable to control for this possible entrenchment effect. Using data that is recently available in Forbes magazine's annual survey of CEO compensation, however, we were able to construct a variable measuring the percentage ownership of the exiting CEO (call this PCEO) in the year of succession for most successions during the 1990s. Employing this variable for the approximately 150 successions between 1991 and 1995, we looked for

²⁰ On average, across the various models.

²¹ These and the subsequent numbers are generally quite similar if we compare the changes in probability to the predicted (rather than actual) probability of an outsider appointment, evaluated at the sample means of the explanatory variables.

²² In models in which OPS and FORCE are included together, FORCE remains statistically significant ($p < 0.001$) and OPS is marginally significant ($p = 0.122$ and $p = 0.070$, respectively, for the models on the left and on the right in Table 4). Marginal effects for both variables are smaller. Operating performance one standard deviation larger than average reduces the likelihood of picking an outsider as CEO by 12%; forced resignation of a CEO increases the likelihood of picking an outsider as a replacement by just less than 200%. Results for the remaining variables are essentially the same as those in Table 4.

²³ Burkart et al. (2003) develop a model which implies that retiring founders in countries like the U.S. where protection of minority shareholders is strong will be replaced by the best professional manager available. The greater tendency among founder led firms to go outside for a new CEO suggests that, consistent with this prediction, firms with founder CEOs handicap outsiders less than do other firms.

an entrenchment effect. The correlation coefficient between PCEO and the appointment of an OUTSIDER is -0.008 with a p -value of .89. For this sub-sample of successions, we re-estimated the Table 4 regressions. The pattern of coefficient estimates is similar to that for the full sample, but significance levels are lower. Importantly, the coefficient on PL remains negative and statistically significant. We then added PCEO as an additional control variable. Its coefficient is always positive (inconsistent with an entrenchment effect) but never significant, with p -values ranging between 0.45 and 0.55. The addition of PCEO has essentially no effect on the coefficients or statistical significance of the other variables. Based on this evidence, it seems unlikely that the inclusion of a control for insider ownership in the Table 4 regressions would affect those results.

4.2. Outsiders from within the industry vs. complete outsiders

The empirical framework in Section 3, the empirical model in (1), and the results in Table 4 all treat any outsider who is selected as CEO (and all outsiders who are contestants for this position) as coming from firms within the industry of the firm choosing a new CEO. But only 111 of the 187 outsiders appointed CEO in our sample were actually employed with firms within the same two-digit SIC industry as the appointing firm. The decision to turn to someone from outside the industry (a complete outsider) as CEO likely reflects some dramatic change in the firm's environment or a decision to make a dramatic change in the firm's internal structure.²⁴ Both of these events suggest a breakdown in internal incentives and are outside of our model and empirical framework. That framework, then, should be less useful in predicting the appointment of these complete outsiders.

To examine this implication, we define a new variable identifying complete outsiders, C_OUTSIDER. This variable takes the value 1 for successions in which the new CEO comes from outside the two-digit SIC industry of the firm and is appointed within one year of joining the firm; it equals zero otherwise. Table 2 shows the mean value of C_OUTSIDER (the proportion of successions in which a complete outsider is chosen CEO) for each two-digit SIC industry. One interesting pattern in these industry means is the tendency for firms subject to more regulation (SIC=4 and SIC=6) to turn more frequently to complete outsiders as CEO (9.16% of the time versus 6.13% for other firms; the z -statistic for this difference in proportions has a p -value of 0.07). Because some deregulation occurred during our sample period (1974–1995) in most of these highly regulated industries, their greater tendency to hire complete outsiders is consistent with the interpretation that dramatic change motivates bringing in a complete outsider.

Using OUTSIDER and C_OUTSIDER, we construct a new variable that takes three values. This variable, OUT, takes a value of 2 for firms that hire a complete outsider; it takes a value of 1 for firms that hire an outsider who was employed within the same industry; and it takes a value of 0 for firms that promote an insider to the CEO position.

²⁴ A recent example of this is the 1996 decision by Sunbeam, a small electric appliance manufacturer, to hire former Scott Paper CEO Al Dunlap ('Chainsaw Al') as its new CEO. His appointment was, at first, greeted favorably by Sunbeam shareholders because of his history of making dramatic changes at poorly performing companies. But he was ultimately unsuccessful and was replaced in 1998.

With OUT as the dependent variable, we use the multinomial logit model to estimate the models in Table 4. Results are provided in Table 5. Columns 1, 3, 5, and 7 examine the choice between an insider and an outsider currently employed in the same industry. Here, we expect coefficients on our handicapping variables to be consistent with predictions and we expect these to be estimated more precisely than in Table 4. Columns 2, 4, 6, and 8 examine the choice between an insider and a complete outsider. Here we expect our handicapping variables to matter less (perhaps not at all) in the choice between insiders and (these complete) outsiders. Both expectations are borne out.

Where the choice is between an insider and an outsider currently employed in the same industry (columns 1, 3, 5, and 7), firms with a product or line of business organizational structure (PL) are, on average, 40% less likely to pick outsiders (33% to 46% depending on the model²⁵). The size of this effect is larger and the *p*-values for the coefficient estimates are consistently smaller than in Table 4. Similarly, firms with more insiders (LSEMP) are about one-third less likely to pick an outsider (31% to 35% depending on the model) as CEO. Again, the size of this effect is larger and *p*-values for the coefficient estimates are smaller than in Table 4. Coefficient estimates for HOMOGENEITY have the same sign as those in Table 4, but (unlike the case for the first two models in Table 4) they are statistically insignificant. Except for the last, these results are exactly as expected.

Where the choice is between an insider and a complete outsider (columns 2, 4, 6, and 8), firms with a product or line of business organizational structure behave no differently than other firms. And firms with more insiders are no less likely to pick an outsider as CEO. In column 2 (and perhaps column 4), however, there is evidence that firms in more homogenous industries are more likely (about 18%²⁶) to pick a complete outsider as CEO. Unless the dramatic changes that lead to the choice of a complete outsider as CEO are industry wide, we have no explanation for this result.

Table 5 provides additional evidence of handicapping in the selection of CEOs. In normal times when the choice is between insiders and outsiders currently working in the same industry, handicapping should matter. And it does. In extraordinary times where there is dramatic change or a breakdown of internal incentives and so the choice is between insiders and complete outsiders, handicapping should matter less. And it appears to matter not at all. Together with the Table 4 results, this is solid evidence that outsider handicapping does influence the choice of successor CEOs.

4.3. New CEO compensation

While our focus is the importance of outsider handicapping to the choice between an insider and an outsider as CEO, there is another implication of such handicapping.²⁷ Since outsiders selected to be CEO must have overcome a handicap, they will typically be more able than insiders promoted to CEO. Presuming that compensation reflects ability,

²⁵ Relative to the actual probability ($111/(1,035-76)=0.116$) of naming an outsider in firms that pick the CEO from within the industry. As mentioned earlier, 111 of the 187 outsiders appointed CEO in our sample of 1,035 CEO successions came from within the industry.

²⁶ Relative to the actual probability of naming an outsider in firms that either promote an insider or pick a complete outsider. In our sample, this probability is 0.082 ($=76/(1,035-111)$). See the previous footnote.

²⁷ We thank the referee for suggesting the analysis in this sub-section.

Table 5
Multinomial logit models of CEO succession: coefficient estimates (p-values) [effect on outcome probabilities]^a

	(1)		(2)		(3)		(4)	
	OUT=1 (n=91)	OUT=2 (n=70)	OUT=1 (n=101)	OUT= 2 (n=76)	OUT=1 (n=84)	OUT=2 (n=69)	OUT=1 (n=93)	OUT=2 (n=73)
INTERCEPT	-4.071 (0.000)	-3.940 (0.001)	-4.657 (0.000)	-4.078 (0.000)	-3.025 (0.079)	-3.767 (0.053)	-4.292 (0.013)	-4.315 (0.025)
PL	-0.656 (0.017)	-0.102 (0.711)	-0.731 (0.007)	-0.232 (0.407)	-0.555 (0.052)	-0.120 (0.668)	-0.621 (0.030)	-0.221 (0.444)
	[-0.050]	[-0.007]	[-0.053]	[-0.014]	[-0.038]	[-0.009]	[-0.042]	[-0.014]
HOMOGENEITY	1.867 (0.224)	2.953 (0.084)	1.483 (0.321)	2.723 (0.102)	-3.445 (0.215)	2.999 (0.318)	-2.704 (0.330)	2.532 (0.394)
	[0.010]	[0.015]	[0.008]	[0.012]	[-0.021]	[0.018]	[-0.016]	[0.013]
LSEMP					-0.419 (0.004)	-0.038 (0.810)	-0.391 (0.007)	-0.069 (0.657)
					[-0.041]	[0.000]	[-0.036]	[-0.003]
LSEMPIND					-0.123 (0.588)	-0.052 (0.826)	-0.009 (0.968)	-0.025 (0.916)
					[0.007]	[-0.002]	[0.000]	[-0.001]
OPS	-0.043 (0.000)	-0.020 (0.108)			-0.046 (0.000)	-0.019 (0.124)		
	[-0.038]	[-0.012]			[-0.037]	[-0.013]		
FORCE			2.152 (0.000)	2.174 (0.000)			2.138 (0.000)	2.159 (0.000)
			[0.304]	[0.261]			[0.284]	[0.267]
LASSET	-0.068 (0.500)	-0.238 (0.041)	-0.085 (0.391)	-0.273 (0.018)	0.172 (0.241)	-0.208 (0.190)	0.129 (0.375)	-0.186 (0.234)
	[-0.005]	[-0.019]	[-0.006]	[-0.019]	[0.017]	[-0.019]	[0.012]	[-0.015]
FFAMILY	0.567 (0.175)	0.729 (0.099)	0.684 (0.111)	0.838 (0.065)	0.350 (0.459)	0.773 (0.082)	0.457 (0.344)	0.893 (0.051)
	[0.056]	[0.070]	[0.069]	[0.072]	[0.029]	[0.076]	[0.039]	[0.082]
OBOARD	3.601 (0.001)	3.789 (0.001)	3.307 (0.002)	3.398 (0.003)	3.393 (0.005)	3.735 (0.003)	2.880 (0.013)	3.239 (0.009)
	[0.037]	[0.033]	[0.033]	[0.026]	[0.032]	[0.034]	[0.026]	[0.026]
Number of Observations	904		964		859		913	
p-value of χ^2 test	0.000		0.000		0.000		0.000	

The table shows the coefficient estimates, *p*-values, and the effects on outcome probabilities from multinomial logit models of CEO succession (OUT). OUT=1 if an outsider employed by another firm within the same two-digit SIC industry is appointed CEO within one year of joining the firm; OUT=2 if a complete outsider (not from the same industry) is appointed CEO within one year of joining the firm; and OUT=0 if an insider is promoted to the CEO position. Other variables are defined in Table 1. The prefix 'L' to SEMP, SEMPIND and ASSET denotes the natural log of these variables. Each regression uses all observations with available values out of the sample of 1,035 CEO successions in Forbes 800 firms over the period 1974–1995.

^a For continuous variables (HOMOGENEITY, LSEMP, LSEMPIND, OPS, LASSET, OBOARD), this is the derivative of the outcome probability evaluated at variable means times one standard deviation in the variable. For binary variables (PL, FORCE, FFAMILY), this is the difference in outcome probabilities evaluated at other variable means for values of 1 and 0.

Table 6
Change in CEO compensation in inside versus outside successions

	Salary and bonus		Total compensation		Sample size
	Mean	Median	Mean	Median	
Inside successions	-6.23	-10.79	-7.47	-12.66	591
Outside successions	5.73	-1.09	15.46	8.03	125
p-value for the difference ^a	0.01	<0.001	<0.001	<0.001	

The table shows the percentage change in the CEO's annual compensation following the succession, computed as: [(New CEO's compensation / Old CEO's compensation) - 1] * 100. The sample consists of 716 CEO successions in Forbes 800 firms during the period 1979 to 1995. Compensation data is from Forbes magazine's annual surveys of CEO compensation. The old (new) CEO's compensation is for the last (first) full year served as CEO. In cases where compensation data for the old and the new CEO are more than one year apart, the percentage change in compensation is annualized.

^a The *p*-value for the difference in means (medians) is based on the *t*-test (Wilcoxon rank-sum test).

outsiders should be paid more than insiders when appointed CEO. To test this implication, we used Forbes annual surveys to determine the salary plus bonus and total compensation²⁸ of the exiting and of the incoming CEO. The percentage difference between the compensation of the exiting and the incoming CEO provides a normalized (by exiting CEO pay) measure of the compensation of newly appointed CEOs. These data are available for 716 successions occurring between 1979 and 1995. Handicapping implies that this measure of incoming CEO pay will be larger for outside appointments than for inside promotions. Table 6 presents a test. In outside successions, the new CEO is paid a mean of 5.73% *more* (median, 1.09% less) in salary and bonus than the exiting CEO. In inside successions, the new CEO receives a mean of 6.23% *less* (median, 10.79% less) in salary and bonus than the exiting CEO. More striking, outsiders are paid a mean of 15.46% *more* (median, 8.03% more) in total compensation than the exiting CEO, while insiders receive a mean of 7.47% *less* (median, 12.66% less) than the exiting CEO. Each of these differences between inside and outside successions is statistically significant at the 0.01 level or better. Incoming CEOs hired from outside receive bigger increases in pay (relative to the exiting CEOs) than incoming CEOs promoted from within. This finding is consistent with CEOs hired from outside being typically more able than inside hires, as implied by handicapping.

5. The effect of organizational structure: a closer look

Our most interesting and novel finding is that firms organized by product or line of business are less likely to pick outsiders as CEO. We argue that organizing a firm this way makes inside candidates more comparable and as a consequence it also makes the contest to become CEO a potentially more effective incentive mechanism. But this potential is realized only if outsiders (who are less comparable) are not also part of the contest. So, firms with a product or line of business structure have more to gain by handicapping outsiders when selecting a CEO and as a consequence they handicap

²⁸ Excluding the value of stock options granted, not reported in Forbes.

outsiders more. This greater handicap explains the smaller likelihood that firms with product or line of business structure select an outsider as CEO. To explore this finding further, we conduct two types of tests. First, in Section 5.1 we look at the behavior of firms that change their organizational structure to see if this ‘time-series’ evidence supports the cross-sectional evidence in the previous section. Second, in Section 5.2 we consider the possibility that the greater tendency to promote from within among those firms with product or line of business structure arises not because outsiders are handicapped but because managers in these firms, due to their experience running a division, are better prepared to be CEO.

5.1. Organizational change: analysis of repeat successions

Our sample incorporates 1,035 successions over the period 1974–1995, but these successions occur in only 632 firms. The reason is that 275 firms replaced their CEO more than once during the period. While most firms with multiple successions replaced their CEO just twice (175 firms), three successions were not uncommon (76 firms) and some firms had four (20 firms) or even five (4 firms) successions. Altogether, 403 (=1,035–632) of the successions in our sample were repeat successions. The interval between successions varied but was typically about five years (mean=5.9 years, median=5 years).

Interestingly, 106 firms changed their organizational structure between CEO successions. Seventy-five firms switched away from a product or line of business structure (from PL=1 to PL=0), and thirty-one firms made the opposite switch toward a PL structure (from PL=0 to PL=1). These organizational changes among firms with repeat successions suggest a ‘time-series’ test of our prediction that greater comparability of insiders will make outside succession less likely.²⁹ Firms that switch toward a PL structure increase the comparability of insiders and so should be less likely, relative to firms that maintain a non-PL structure, to choose an outsider in the repeat succession. Similarly, firms that switch away from a PL structure reduce the comparability of insiders and so should be more likely, relative to firms that retain a product or line of business structure, to choose an outsider in the repeat succession. Table 7 provides a simple test. Firms switching toward a PL structure selected (in the repeat succession) an outsider as CEO only about 10% of the time; those maintaining a non-PL structure chose an outsider about 26% of the time. Similarly but less dramatically, firms that switched away from a product or line of business structure chose an outsider as CEO about 19% of the time; those that maintained a product or line of business structure chose an outsider only about 17% of the time. Both differences are in the predicted direction and the first is statistically significant. This ‘time-series’ evidence reinforces the cross-sectional evidence in Tables 4 and 5.³⁰

²⁹ We thank Randy Krozner for suggesting this analysis.

³⁰ The existence of multiple successions for a firm in the sample used for the regressions in Tables 4 and 5 may violate the assumption of independence among observations. To address this possibility, we re-estimated these regressions requiring intervals ranging from 1 to 5 years between repeat instances of succession for a firm. This had no effect on the estimation results.

Table 7
Analysis of repeat CEO successions

	PL ^{new} =0		PL ^{new} =1		z-statistic
	Mean OUTSIDER	Number of events	Mean OUTSIDER	Number of events	
PL ^{old} =0	0.255	188	0.097	31	2.53 ^a
PL ^{old} =1	0.187	75	0.17	100	0.28

The table shows the proportion of outside CEO hires (mean of the OUTSIDER variable) in subgroups of the sample of 394 instances of repeat CEO successions with data on organization structure (PL variable) available. Data on PL was unavailable in the remaining 9 cases of repeat successions. This sample of 403 events consists of all instances of repeat CEO successions in the sample of 1,035 CEO successions in Forbes 800 firms over the period 1974–1995. ‘Old’ and ‘new’ refer to the immediately prior and current succession events, respectively. The z-statistic is for the difference in the proportions of outside CEO hires between sub-samples with PL^{new}=1 and PL^{new}=0. Variables are defined in Table 1.

^a Denotes statistical significance at the 1% level in two-tailed tests.

5.2. More able insiders vs. handicapping

We interpret the greater tendency to promote insiders to be CEO among firms with a product or line of business (PL) structure as evidence that these firms handicap outside candidates more than other firms. Another possibility is that insiders at these PL firms receive no bigger advantage in the contest to be CEO than insiders at other firms, but instead they are just more able. To assess this second possibility, we conduct two tests. The first presumes that any greater ability of PL firm managers arises from the fact that they are more likely than managers in other firms to have run a business (a division or a firm) and then controls for such overall business experience. The second is more general and does not posit a source for the potential greater ability of managers at PL firms.

5.2.1. Do managers at PL firms have more experience running a business?

If managers at firms with a PL structure are more able (better candidates to be CEO), a likely reason is that, due to firm structure, these managers tend to have more experience running a business.³¹ That is, these managers are more likely to have overall business experience rather than just functional (operations, marketing, finance. . .) experience. Such experience could be an important asset in a new CEO and so may be the source of the greater tendency for PL firms to promote insiders to the CEO position.

To examine this possibility, we first drew a 20% random sample from our 1,035 CEO successions, stratified by the year of succession. For each of these 207 successions, we identified the firm and the year of succession. We then searched for the matching entry in the annual Dun and Bradstreet *Reference Book of Corporate Managements*, which lists firms’ top executives along with a short professional history for each executive. We were able to locate matching entries for 187 of these successions. For each firm we examined the backgrounds of the five executives listed immediately below the CEO. We counted the number of these executives that had overall business experience and labeled

³¹ We thank Jeff Jaffe and Bob Parrino for independently pointing out this possibility to us.

this number $N_OVERALL$.³² We define an executive as having overall business experience if he has served as the head of a company or a business unit at any time in his career. In about 56% of the cases, at most one of these five executives had overall business experience, and in only seven cases did either four or all five of these executives have such experience.

We then sorted the 187 successions by PL and high vs. low values of $N_OVERALL$. Table 8 shows the proportion of successions in which an outsider was chosen CEO for this 2×2 sort. Columns hold the number of executives with overall business experience ($N_OVERALL$) constant; rows hold organizational form (PL) constant. The last column shows the proportion of firms where $N_OVERALL$ is high. Among firms with a PL structure, 47.8% have more than one top executive with overall business experience (Panel A). Among non-PL firms, this is the case for 35.8% of the firms. The direction of this difference is as expected, but is statistically insignificant ($z = -1.61$). Similarly, 17.9% of the firms with a PL structure have more than two executives with overall business experience (Panel B), while 14.2% of non-PL firms do so. Again, the direction of this difference is as expected but is statistically insignificant ($z = -0.67$).

Is this (weak) tendency for managers of PL firms to have more overall business experience the reason why these firms are more likely to promote insiders to be CEO? Table 8 suggests that the answer is “no”. The evidence is in the first two columns which control for the extent of overall business experience among firms. For successions in which at most one of the high ranking insiders had overall business experience (Panel A), 11.4% of firms with a PL structure chose an outsider as CEO while 26% of non-PL firms did so. Similarly, for successions in which at most two of the high ranking insiders had overall business experience (Panel B), 10.9% of firms with a product or line of business structure chose an outsider as CEO while 25.2% of other firms did so. Both differences are statistically significant. Since overall business experience is the same for both types of firms, the strikingly lower tendency among PL firms to hire outsiders can be explained only as evidence of an outsider handicap. Where more insiders have overall business experience, the pattern is similar but the differences are not statistically significant.

5.2.2. Do CEOs hired from outside come from PL firms?

If insiders at firms with a PL structure are more able than insiders at other firms, it should be the case both that insiders are more likely to be promoted at PL firms (which we have shown to be true) and that insiders at PL firms are more likely to be chosen to lead *other firms*. That is, outsiders picked as CEO should come disproportionately from PL firms. We next provide a test of the latter implication.

For each of the 187 successions in which an outsider was named CEO, we identified the prior employer of this executive. We then used Standard and Poors *Register of Corporations* to identify the organizational structure of these prior employers in the year before the succession. For 69 outside successions, the prior employer of the new CEO was not listed. Of the 118 outside successions for which we could identify the organizational

³² In all except nine firms, five or more top executives were listed in addition to the CEO. Seven of the remaining nine firms listed four executives, and two listed three executives.

Table 8
Proportion of outside successions by PL and NOVERALL

Panel A					
PL=	Mean OUTSIDER		Sample Size		Proportion of firms with N_OVERALL>1
	N_OVERALL		N_OVERALL		
	≤1	>1	≤1	>1	
0	0.260	0.186	77	43	0.358
1	0.114	0.094	35	32	0.478
z-statistic	1.75 ^b	1.11			-1.61

Panel B					
PL=	Mean OUTSIDER		Sample size		Proportion of firms with N_OVERALL>2
	N_OVERALL		N_OVERALL		
	≤2	>2	≤2	>2	
0	0.252	0.118	103	17	0.142
1	0.109	0.083	55	12	0.179
z-statistic	2.13 ^a	0.30			-0.67

The table shows the proportion of outside CEO hires (mean of the OUTSIDER variable) in subgroups of firms with a small vs. a large number of top executives with overall business experience (N_OVERALL) within firms organized along products or lines of business (PL=1) vs. other firms (PL=0). Biographical sketches of the top five executives below the CEO were examined from the relevant editions of the Dun and Bradstreet *Reference Book of Corporate Managements*. We define an executive as having an ‘overall business experience’ if he has served as the head of a company or a business unit at any time in his career. The sample consists of the 187 firms with data available on the N_OVERALL variable out of a 20% random sample of CEO successions in Forbes 800 firms over the years 1974–1995, stratified by the year of succession.

^a Denote statistical significance at the 5% level, in two-tailed tests.

^b Denote statistical significance at the 10% level, in two-tailed tests.

structure of the new CEO’s prior employer, 17 were PL firms. The proportion of outside CEOs coming from PL firms, then, is 0.144.

Altogether, there are 1,035 successions in our data set. Of these, data on the PL variable are available for 1,021 cases; 361 of these took place in PL firms. The proportion of PL firms, then, is 0.354.³³ If managers of PL firms are more able, the proportion of outside CEOs coming from PL firms should be greater than the proportion of PL firms. The result is exactly the opposite. Outsiders appointed CEO come disproportionately from firms that are not organized along product lines. The z-statistic for a difference of proportions test is a statistically significant -4.59. That PL firms tend to promote their own managers to the CEO position but that other firms do not tend to hire these same managers to be CEO

³³ Strictly, this is the proportion of PL successions, not the proportion of PL firms. The difference arises because some firms had multiple successions. Because 394 of the 1,021 successions were repeat successions (see Table 7), there are only 627 (=1,021-394) separate firms. Treating the 106 firms that changed organizational structure between successions as new firms, there are 733 (= 627+106) different firms in our data set. Of these, 261 (=361-100) are PL firms. The proportion of PL firms, then, is 0.356 (=261/733) which is almost identical to the proportion reported in the text. The corresponding z-statistic for the difference in this proportion from that of prior employers for CEOs hired from outside is -4.56.

suggests that managers at PL firms are not more able. Rather, they are advantaged within their own firms by a greater outsider handicap.

6. Conclusion

Firms tend to promote new CEOs from within, but not always. We assess the possibility that outsider handicapping is part of the reason: outsiders are handicapped (chosen as CEO only if markedly better than the best insider) so that the contest to become CEO will provide stronger incentives for inside candidates to work hard. If this is true, the size of the handicap imposed on outsiders, and so the likelihood that an insider is chosen CEO, should be greater where inside candidates are more comparable, where outside candidates are less comparable to insiders, and where there are more inside candidates.

We use a data set containing more than 1,000 observations on CEO succession in large U.S. firms over the period 1974–1995 to test these predictions. The evidence is always supportive. We argue that insiders are more comparable in firms with a product or line of business organizational structure (as opposed to a functional structure), and we find that such firms are more likely to choose an insider as CEO. We also argue that insiders and outsiders are more comparable in more homogeneous industries, and we find that greater industry homogeneity reduces the likelihood of insider succession. We use an estimate of the number of supervisory employees at a firm as a proxy for the number of inside candidates and find that more inside candidates increase the likelihood of insider succession. These empirical findings are based on binomial logit models (of the choice between insiders and outsiders as CEO), multinomial logit models (of the choice between insiders, outsiders from within the industry, and complete outsiders as CEO), and an analysis of repeat successions. We also examine more carefully the effect of our novel firm organization variable. To assess whether the greater tendency of firms with a product or line of business structure to promote insiders to CEO stems from a larger outsider handicap or the presence of more able insiders, we conduct two tests. In the first, we find that controlling for prior experience running a business (a division or a firm), firms with a product or line of business structure remain more likely to select insiders as CEO. In the second, we find that firms choosing outsiders as CEO do not tend to select managers from firms with a product or line of business structure. Both findings reinforce our interpretation that the pattern we find in CEO selection is, indeed, evidence of outsider handicapping.

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