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Political Dynamics and the Circulation of Power: CEO Succession in U.S. Industrial Corporations, 1960–1990

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To explain patterns of political dynamics, this paper develops a model of the circulation of power and compares it with an alternative model, the institutionalization of power, in an event history analysis of CEO succession. The circulation of power emphasizes the internal contests for control and opposition to the CEO that emerge with increased executive tenure and under conditions of economic adversity. The study finds support for an increasing rate of CEO succession during the first decade of tenure, consistent with the model of circulation, followed by a slow decline afterward, consistent with institutionalization. The effects of economic adversity were found to trigger circulation when combined with long prior board tenure and large board size. Also, contrary to conventional views, under economic adversity, more inside board members increase CEO succession.●

In political theories of organization, the firm is seen as a political coalition and executives as its primary political brokers (March, 1962; Cyert and March, 1963). According to political models, firm behavior responds to the interests and beliefs of the dominant coalition. Chief executive officers (CEOs) of U.S. industrial corporations play a central role in the dominant coalition, exercising their influence through both their formal authority and their informal power (Pfeffer, 1992). The formal authority of CEOs resides in their title and position in the formal structure and provides a legitimate basis to influence, if not always fully control the corporation and its dominant coalition. But the CEOs' bases for power are subject to both obsolescence and contestation, as CEOs are challenged by both internal political processes and external environmental contingencies.

This paper examines the political dynamics of executive control over the firm's coalition, as reflected in the ability of CEOs to retain their position. The principal thesis is that the dynamics of the CEO's power is subject to circulation, with contesting political coalitions more likely to emerge during periods of poor performance and with increased obsolescence of the schemas and strategies used by the CEO. This model of power builds on theories of the circulation of elites by Pareto and Michels, which were introduced to organization theory by Selznick (1957). The circulation of power connotes both the impermanence and contestation of executive control over the corporation. The model of circulation is compared and contrasted with the model of institutionalization, which has been more prevalent in contemporary organizational theory (Salancik and Pfeffer, 1977; Pfeffer, 1981; Boeker, 1989) and posits the ability of CEOs to build on their power to entrench themselves. These two theoretical models provide alternative conceptualizations of the ability of CEOs to maintain cohesive political coalitions that provide a stable base for their power.

THEORY

The dynamics of political coalitions, while central to understanding power in organizations, remains a relatively unexplored topic in organization theory. Most researchers on

power in organizations have implicitly or explicitly studied it as a static or equilibrium process. In structural contingency models, for example, power is obtained by maintaining an alignment of the capabilities of individuals and subunits with the organization's environmental contingencies and resource dependencies (Hickson et al., 1971; Pfeffer and Salancik, 1978). But if the concept of power is to have independent explanatory power (March, 1966), an equilibrium model will not suffice. If the composition of the dominant coalition is in constant alignment with the firm's environment, power becomes an epiphenomenon, a mere reflection of structural contingencies. If the power of the CEO and the dominant coalition are to have independent explanatory force, the composition of the political coalition must become decoupled over time from its ability to respond to the firm's environmental contingencies. To understand the role of power requires that our theories focus not just on equilibrium states but on the underlying political dynamics.

Political theories of organizations highlight the role of executive turnovers as an opportunity for realigning the firm with its environment (Pfeffer and Salancik, 1978). Poor economic performance, in particular, is seen as a triggering device for executive turnover (Tushman and Romanelli, 1985). But most studies of executive succession have found that the effects of performance on succession are small (Weisbach, 1988; Fredrickson, Hambrick, and Baumrin, 1988), nonexistent (Fizel, Louie, and Mentzer, 1990), or in some cases, that CEO turnover is actually preceded by abnormally good performance (Morck, Shleifer, and Vishny, 1989).

Political dynamics may help explain why succession is relatively independent from firm performance. The observed small, negligible, or perverse effects of economic performance on succession may reflect the shifting over time of the CEO's control over the firm and its dominant political coalition. Political dynamics alter the equilibrium alignment between the CEO's capabilities and his ability to meet successfully the firm's environmental contingencies.[1] This results in a loose coupling of executive succession from the firm's economic performance and suggests that the CEO's power is important to his ability to maintain control over the firm's political coalition. This paper uses an event-history analysis of CEO succession in U.S. industrial corporations from 1960 to 1990 to study whether political dynamics help to couple executives with or decouple them from economic and environmental demands and how political contests affect the ability of executives to maintain their authority, position, and control. Two alternative models of political dynamics are examined: the institutionalization and the circulation of power.

Model of the institutionalization of power. Pfeffer (1981) described three underlying, interrelated processes that may lead to the institutionalization and perpetuation of power. First, an escalation of commitment to a course of action (Staw, 1976) may lead decision makers (e.g., boards of directors) to beliefs that sustain courses of action they have chosen (e.g., CEO selection). Second, beliefs and practices associated with those in power may become institutionalized

[1]
There are few female CEOs in U.S. industrial companies and none in this study's sample. For convenience, I will use the masculine pronoun in all references to CEOs in this paper.

(Selznick, 1957), with the incumbent's actions becoming taken for granted (Meyer and Rowan, 1977; Zucker, 1977) and his power not questioned. Third, incumbents may use their power to expend resources, make appointments, and establish networks of influence in ways that consolidate and perpetuate their power. The concept of institutionalization in this paper is closest to that of Selznick's (1957), which focuses on the role of executive leadership in institutionalizing control within individual organizations. It differs from the new institutionalism (Powell and DiMaggio, 1991), which highlights institutionalization occurring at the level of the organizational field.

According to this first model, the CEO's power is likely to increase over the period of his incumbency as CEO and as a member of the board of directors. Appointments to the board serve to strengthen the CEO's influence over corporate decisions and insulate him from the pressures of economic performance. The power of the CEO will become most evident under conditions of economic adversity, as more powerful CEOs will be able to use their sources of power to maintain their authority and position within the corporation. The institutionalization of the CEO's power within the board is consistent with managerial theories of organization (Berle and Means, 1967) and with views of corporate boards as management "pawns" (Lorsch, 1989).

Model of the circulation of power. The model of the circulation of power builds on the classic political theories of elite circulation developed by Mosca, Pareto, and Michels and adapted by Selznick (1957) to account for organizational change. The model emphasizes the shifting political coalitions and the incessant political struggles prevalent in organizations, yet normally hidden behind the veneer of bureaucratic and managerial rhetoric (Jackall, 1988). While organizations are ruled by political elites, or dominant coalitions, these ". . . elites do not last. Hence—the history of man is the history of the continuous replacement of certain elites: as one ascends, another declines" (Pareto, 1968: 36). The model of elite circulation presented in this paper is closest to that of Michels (1962: 176), who extends Pareto's analysis by recognizing that ruling oligarchies are characterized by struggle among the leaders themselves: ". . . a spirit of general fraternity is conspicuously lacking; we do not see sincere and cordial mutual trust; there is a continual latent struggle, a spirit of irritation determined by the reciprocal mistrust of the leaders." Instead of simply replacing one elite group by another, Michels argued the process is one of amalgamation of power, with old elements intermixing with the new, and new elite members mixing with existing ones. This view stresses intraelite conflict as a driving force for change (Selznick, 1957; Putnam, 1976). It contrasts with the institutionalization of power, which highlights solidarity and cohesiveness among group members, with political change characterized by the full replacement of existing elites. The model of the circulation of power directly challenges the view that CEOs are able to perpetuate their power. Instead, as the organization faces changes in its environment, executive capabilities will be questioned, rivals and enemies will emerge, and the

likelihood is great that those in positions of power will lose their power (Pfeffer, 1992).

The circulation of power is created by the interplay of two underlying mechanisms: obsolescence and contestation. Chief executives develop strategies for matching problems, solutions, and choice opportunities in organizational decision making. When a new CEO takes over formal control, new strategies and solutions gain ascendancy that alter the organization's alignment with its environment. But CEOs' early choices tend to become stable and inert with decreasing fit between the CEO's strategies and programs and environmental contingencies. Miller (1991) found that the fit between environmental demands and organizational structures and strategies declined over the tenure of the CEO, who becomes "stale in the saddle," tied to their past policies and programs, and unable to adapt adequately to environmental contingencies. CEOs suffer from competency traps (Levitt and March, 1988) as their cognitive schemas are tied to skills and patterns of behavior that led to success in the past but that are obstacles to understanding current environmental conditions. The resulting pattern of inertia in executive decisions leads to their technical obsolescence, as incumbent CEOs are increasingly unable to provide satisfactory solutions to organizational problems. As CEOs become technically obsolete, they may also become politically obsolete, with an increasing inability to control political conflict and maintain stable political coalitions. Schemas and management styles that were effective in the past for gaining control over the political coalition may become obsolete as the interests and beliefs of the coalition change. An example of political obsolescence can be seen in Steve Jobs' loss of control over the political coalition at Apple Computers and of his position as chairman. Jobs relied primarily on his personal charisma and entrepreneurial reputation as a basis for controlling Apple's board and the corporation. In a pattern common to corporate founders, he failed to build personal alliances with board members and senior managers (Pfeffer, 1992). While this charismatic style was effective in retaining control in the early stages of corporate growth, it became politically obsolete as John Sculley, his personally anointed president and CEO, emerged as a political rival for control over Apple Computers' dominant political coalition.

According to the model of circulation, the CEO's increasing obsolescence triggers opportunities for contesting his power. Executive officers of the corporations are rivals for the CEO's power and position. Rather than other top executives being directly controlled by the CEO, other members of the dominant coalition have interests independent from the CEO and are potential rivals to his power and position. With the ascendancy of a CEO to power and the emergence of a new dominant coalition, political struggles may become latent but are not permanently eliminated. The power of the CEO is subject to contestation, with periods of stability being only temporary interruptions of an underlying pulling and tugging of contestants for power, position, and privilege. As the CEO's tenure lengthens, and his technical and political obsolescence increases, the latent

conflicts and political contests may come to the foreground and his ability to maintain a working political coalition may become threatened. Economic adversity provides a particularly fertile condition for triggering political contests. As the performance of a firm deteriorates, latent conflicts may become manifest, and the CEO's ability to maintain his power decreases.

Hypotheses

The two models of political dynamics are used to develop hypotheses on the effects of CEO tenure and political influence. Given the emphasis on a dynamic, disequilibrium process, all hypotheses are presented in terms of their effects on the rate of CEO succession. The interaction effects of economic adversity and political variables are highlighted, as political effects become most salient when performance is poor. This emphasis on interaction effects, rather than main effects, is consistent with the view that political contests for control of the corporation are usually latent and that rivalries that are normally overcome by the reigning coalition emerge and become manifest when triggered by poor economic performance. When the two models provide opposite predictions, contrasting hypotheses are presented, but the two models are not fully symmetrical, and in several instances, only one of the two models is used to explain the effects of political dynamics on CEO succession.

CEO tenure. The institutionalization of power implies that long tenure will result in a decreased rate of CEO succession. Increased tenure leads to increased legitimacy of the CEO's authority, an escalation of commitment to the CEO, a taken-for-grantedness of his power, and increased resources for maintaining and perpetuating his power. The opposite prediction is associated with a model of circulation, which is characterized by the obsolescence of a CEO's programs and the impermanence of his power. Obsolescence is likely to increase over the CEO's tenure, with increased opportunities for the CEO's power to become openly contested. The effects of CEO tenure provide the first set of contrasting predictions:

Hypothesis 1a: The length of tenure of the incumbent CEO will decrease the rate of CEO succession.

Hypothesis 1b: The length of tenure of the incumbent CEO will increase the rate of CEO succession.

Although hypotheses 1a and 1b are presented as competing explanations, both processes may be at work. For example, a process of early entrenchment of power, with a decreasing rate of succession, could be followed by a period of obsolescence, with increasing rates of succession. Alternatively, circulation of power may prevail during the early tenure, with power requiring many years before it becomes institutionalized. This study allows for the possibility that both institutionalization and circulation are at work, by testing empirical models of CEO succession that permit both increasing and decreasing rates of CEO succession to be observed over different periods of a CEO's tenure.

According to the model of institutionalization, the CEO will become more immune to performance problems the longer his tenure. According to the model of circulation, the effects of economic adversity on CEO succession will increase with the length of the CEO's tenure, as his power dissipates and becomes subject to increasing contestation. When tenure is short, poor performance can be blamed on the predecessor. The following hypotheses examine the effects of the interaction of length of tenure with economic adversity on the rate of CEO succession:

Hypothesis 2a: Economic adversity will interact with the length of tenure of the incumbent CEO to decrease the rate of executive succession.

Hypothesis 2b: Economic adversity will interact with the length of tenure of the incumbent CEO to increase the rate of executive succession.

Prior board tenure. Prior board tenure measures the experience the CEO has had with the board before assuming the top executive position. Does prior experience increase the CEO's power? Or does prior board experience prove a liability, increasing the potential that enemies of the CEO will emerge under conditions of economic adversity? This issue remains unexplored in past studies. Again, the two models of CEO power yield opposite predictions. According to the model of institutionalization, prior board experience increases opportunities for the CEO to expend resources, build alliances, increase group cohesiveness, and increase the probability that his power can be maintained. Prior board experience will strengthen the power of the CEO under conditions of poor performance. According to the model of circulation, greater prior board experience increases the technical and political obsolescence of the CEO, provides opportunities to develop enemies and rivals for his power, and exposes him to a greater degree of contestation. CEOs with longer prior board tenure are more likely to be committed to past strategies and programs of the corporation and less likely to undertake significant organizational change:

Hypothesis 3a: Economic adversity will interact with the length of prior board tenure of the incumbent CEO to decrease the rate of executive succession.

Hypothesis 3b: Economic adversity will interact with the length of prior board tenure of the incumbent CEO to increase the rate of executive succession.

CEOs' board appointments. CEOs may exert social influence through board appointments favorable to their position (Wade, O'Reilly, and Chandratat, 1990). While board members are nominated by the board and elected by shareholders, CEOs are typically the most influential actors in their selection (Lorsch, 1989). The CEO's power becomes more entrenched as the proportion of his board appointments increases. According to the model of institutionalization, the proportion of board appointments made under the CEO decreases the effects of performance on succession. In this instance, no countervailing hypothesis is provided by the model of circulation. Neither the obsolescence nor contestation of the CEO's power is

affected by the proportion of directors appointed during his tenure:

Hypothesis 4: Economic adversity will interact with the proportion of directors appointed during the CEO's incumbency to decrease the rate of CEO succession.

Outside directors. According to both agency theory (Fama and Jensen, 1983; Weisbach, 1988) and the institutionalization of power model, outsiders are independent from the influence of the CEO and can limit his power. The supposition is that inside directors, as part of the management team, are more loyal to the CEO than outside directors. In this view, insiders and outsiders are seen as two opposing interest groups, with insiders representing managerial interests and outsiders representing shareholder interests. According to this model, the proportion of outside directors is a measure of the power of shareholders to limit the entrenchment of management. According to the model of circulation, both insiders and outsiders can serve as constraints on the CEO's power, and the proportion of outside directors does not limit executive entrenchment. As this argument does not imply the alternative hypothesis, that inside directors are less loyal to CEOs, no competing hypothesis is presented:

Hypothesis 5: Economic adversity will interact with the proportion of outside directors to increase the rate of CEO succession.

Board size. The model of circulation highlights the limits, impermanence, and contestation of the CEO's power. The stability and cohesiveness of the governing coalition under the CEO can best be contested when the number of directors on the board is large. A large board is more likely than a small one to generate alternative political coalitions that challenge the CEO and take control over the firm. A large board also limits the possibility of the CEO exerting social influence to maintain his power. No competing hypothesis on board size is presented for the model of institutionalization:

Hypothesis 6: Economic adversity will interact with the number of directors to increase the rate of CEO succession.

Hypotheses 5 and 6 provide two different views on how the board of directors serves to limit the power of the CEO. In the model of institutionalization of power, managerial interests within the board are seen as fixed and limited by outside board members, who serve the independent interests of the shareholders. By focusing on the effects of the proportion of outside directors, the model compares the relative power of the two groups and its effects on succession. In the model of the circulation of power, the board of directors is seen as a shifting political coalition, subject to change and replacement of its members, including its leader, the CEO. There are no fixed competing interests represented on the board of directors, conflicts between board members are often submerged, board votes are almost always unanimous because boards are governed by expressions of consensus from its members, and power becomes amalgamated among its members. Insiders and outsiders are not seen as two fixed, distinct interest groups but can serve both as supporters and potential opponents of the CEO's power. Inside board members are direct

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subordinates of the CEO but they are also potential rivals to the CEO's power. Membership in the board provides them with greater direct access to outside members. And while outside board members are perceived to represent the interests of shareholders and outside constituents, they are most typically other CEOs (Lorsch, 1989), who are less knowledgeable than insiders about the corporation and its performance and are tied into a network of interlocking boards with the incumbent CEO (Useem, 1984). By focusing on the effects of board size, the model of circulation focuses on the capacity of larger boards to counter the power of the CEO as alternative political coalitions emerge. Pfeffer (1972) found that board size was a function of environmental heterogeneity and the extent of the firm's resource dependence on its outside environment. Large boards tend to be less cohesive than small ones and provide a more likely source for a rival political coalition to emerge within the board and to challenge the one dominated by the CEO. The hypothesis on the effects of number of directors was first suggested to me by an outside director involved in ousting the CEO in three companies. He argued that removing a CEO required a critical mass of key players to shift the coalition against the incumbent, and this was more likely in large boards. In small boards, CEOs may exert greater personal control over individual members and are more likely to prevent the emergence of alternative coalitions that threaten his power and survival.

Separate chairman and CEO positions. According to the model of institutionalization, the power of the CEO can be countervailed by a separate board chairman, who is more likely to monitor the interests of the shareholders. Westphal and Zajac (1993) argued that in serving simultaneously as CEO and chairman of the board, the CEO has greater stature and political influence over board members, thus undermining the independence of the board of directors. A separate chairman should have a greater monitoring role, particularly under conditions of economic adversity. While this hypothesis is most clearly consistent with the model of the institutionalization of power, an anonymous reviewer noted that it could also be implied by the model of circulation, as a separate chairman is a natural candidate for the organization of a political coalition opposed to the CEO.

Hypothesis 7: Economic adversity will interact with the separation of the position of chairman of the board and of CEO to increase the rate of CEO succession.

METHOD

Sample

A random sample of 120 U.S. industrial corporations in the *Moody's Industrial Directory* for 1980 was selected for the analysis, out of the 2,697 listed, or 4.45 percent of the total population. The random sample was selected by assigning a number to each firm and selecting 120 numbers from 1 to 2,697 through a random-number generator. The unit of observation was the company-year, covering the years 1960–1990. Given lack of financial data for six of the companies in the original sample, the sample was reduced to 114 companies. Not all companies had data for the entire

period. Many were founded and/or became publicly held after 1960. Many others merged, went bankrupt, went private, or otherwise ceased to be publicly held companies during the decade of the 1980s. The methodology treats any spells ending in bankruptcy, acquisition, and change to private ownership as right-censored at that point. This means, of course, that the effects being measured relate exclusively to normal forms of succession within the current ownership and organization of the firm.

The sample was selected as of 1980 to permit firms founded since 1960, including high-technology companies, to become part of the sample. This creates some sample selection bias, as firms that disappeared between 1960 and 1980 were excluded from the sample, but sampling as of 1960 would have excluded newer firms from the sample, which then would have been less representative of firms in 1990. Sampling in 1980 was thus a compromise solution that would both reduce sample selection bias and produce a representative sample of industrial firms in 1990. Following Puffer and Weintrop (1991), I estimated and report models for the subsample of CEOs 63 years old or under. This allowed me to separate the political dynamics of succession, the primary concern of this paper, from retirement effects. The results are representative of all CEO successions occurring before the age of 64. There is a statistically significant difference between the subsample of CEOs 63 and under and those 64 and over. For the latter, the political dynamics measures are not significant, as succession is driven primarily by age. The results for this subsample are available from the author upon request.

Independent Variables and Succession Events

CEO turnover. CEO succession events were coded from *Standard and Poor's Directory of Corporations, Officers, and Directors* based on changes in the names of the relevant officers. A total of 225 succession events occurred during the 2,391 company-years of data in the sample. For CEOs 63 years and under, the subsample includes 1,843 CEO-years and 129 succession events, for an average succession rate of 7.0 percent. This provided a relatively low rate of succession for all CEOs, which in itself tends to support the model of institutionalization.

Performance. Return on assets (ROA) was used as a performance measure because of its widespread use in prior succession studies (Zajac, 1990). Following Gibbons and Murphy's (1990) findings that relative firm performance measures are used for CEO compensation, ROA was adjusted for industry average, although a recent study by Janikaram, Lambert, and Larcker (1992) showed that industry differences in performance are unaffected by CEO compensation. In this study's sample, the correlation between adjusted and unadjusted ROA was .94 and the results do not change materially if unadjusted ROA is used as a measure of performance.

Tenure measured the number of years the incumbent has served as CEO. Tenure was used as the duration measure in all models estimated. CEOs appointed prior to 1960 are

subject to left-truncation, as we know when the tenure spells began, but the full information on all variables prior to 1960 was not recorded. For firms in the sample, all CEO-years were included, beginning in 1960, but the tenure prior to 1960 was excluded. To address the problem of left-truncation, data on prior CEO tenure were recorded for all incumbents in 1960, or for the first incumbent in the sample for each company, and only the remainder of the CEO's tenure was included in the sample. This procedure reduces the bias in the estimates and, at least in the case of the exponential model or piecewise-exponential, leads to consistent estimates (Tuma and Hannan, 1984; Guo, 1993). The results of this procedure are conditional on CEOs having survived to 1960.[2]

Prior board tenure was measured as the number of years of the CEO's board tenure before first becoming CEO. This variable was measured in logarithmic form (by taking the natural log of the variable plus 1). *Board size* measured the number of board members, both insider directors and outside directors. *Proportion of outside directors* measured the number of outside board members divided by the total number of directors. *CEO appointees* measured the proportion of all directors first appointed during the CEO's incumbency. *Chairman* is a dummy variable that takes the value of 1 when the chairman of the board of directors differs from the CEO, and 0, otherwise.

Control Variables

I included control variables for firm size, as well as characteristics of the CEO, including age, year of hire, prior status in the firm, and first year of tenure. *Size* was measured as the logarithm of the number of employees (in thousands). No specific effect of size was hypothesized. *Age60* takes the value of zero if the CEO is 60 years old or under, and Age -60, otherwise, where Age equals the current age of the CEO. The Age60 variable assumes that up to the sixtieth year of age, age has no effect on CEO succession, but it has increasing effects for each year afterward. Age60 is expected to have a positive effect on the rate of CEO succession. The effects of age on succession may be discontinuous and are accounted for in the model in two ways. First, the Age60 variable was included to account for discontinuous age effects for CEOs. Second, as previously described, the subsample studied is that of CEOs 63 years old and under. The Age60 variable provided a better fit than if the continuous Age had been included as a control, but the results are robust to alternative specifications of age. *Year of hire* measured the year the CEO was hired (minus 1900) and was intended to capture historical trends in the rate of CEO succession. A positive trend was expected, taking into account increased pressures on CEOs during the 1960–1990 period studied that were associated with increased foreign competition, the declining structural autonomy of American industry (Burt, 1992), reduced environmental munificence, and the emergence of the market for corporate control during the 1980s. This variable assumes that CEOs are affected by changing norms and expectations about CEO succession that were prevalent

2
According to Tuma and Hannan (1984), the alternative procedure of excluding all left-truncated cases from the sample leads to an upward bias in the hazard rate. This procedure also loses substantial information and decreases the power of the test. Because there is disagreement on this point (Guo, 1993), I also tried running the models without the left-truncated observations. The results, which are available from the author, are not materially changed, although some of the political dynamics measures are no longer statistically significant.

during the beginning of their tenure and that these rules are set for the remainder of their tenure. This variable provides a much better fit than an alternative measure of time trend, which assumes that changing norms affect new and incumbent CEOs equally. *Founder* is a dummy variable coded as one if the CEO is the founding CEO, and zero, otherwise. This variable was expected to capture the differential power of a founding CEO and to have a negative effect on the rate of CEO succession. *First year* is a dummy variable coded as one if the CEO is in his first year of tenure, and zero, otherwise. This control variable was included to account both for interim CEOs and for the discontinuous increases in the hazard rates from time zero that result because the data on succession are measured at discrete intervals of one year. This control is particularly critical in the case of nonmonotonic duration dependence, where the model seeks to fit a pattern of a spike in succession at the first year, followed by a decline in the second year, and a rise in subsequent years. *Outsider* is a dummy variable coded as one if the CEO is an outsider, defined as a person who has been employed in the company less than two years prior to becoming CEO, and zero, otherwise. It was included to distinguish the effects of outsider status from the effects of prior board tenure, as presented in hypotheses 3a and 3b.

Data Sources

Data on performance and size were obtained from COMPUSTAT. All other data were obtained from *Standard and Poor's Directory of Corporations, Officers, and Directors,* supplemented by data from proxy statements, 10Ks, annual reports, and *Who's Who in Industry and Finance.* All variables, except financial and employment data, were recorded at the beginning of the year. Financial and employment data used were lagged one fiscal year. In the case of ROA, several alternative lags were examined, including averages of the previous two and five years. The best fit was obtained for the single one-year lag of the ROA variable.

Table 1 presents the subsample (CEOs 63 years and under) means, standard deviations, and the maximum and minimum values for the variables and interaction terms used in the analysis. The unit of observation is the company-year. Table 2 presents the Pearson correlation coefficients, with the corresponding p-values. A succession variable that takes the value of 1 if succession event occurs, and 0, otherwise, is included for comparison.

The correlation matrix reveals a high degree of multicollinearity between ROA and the multiplicative interactions of ROA with other independent variables. The correlations between ROA and its interactions with proportion of outside directors, proportion of directors appointed under the CEO's tenure, and number of directors all exceed 0.9. Individual correlations between the interaction terms are also typically very high. Multicollinearity has the effect of increasing the standard errors of the coefficients and restricting the power of the statistical test of hypotheses.

Table 1

Variables, Means, Standard Deviation, and Observed Range

Variable	Mean	S.D.	Min.	Max.
Succession	.70	.26	0	1
Tenure	8.65	7.67	1	48
ROA	.54	8.78	−185.692	46.03
Age	53.7	6.45	33	63
Age60	.544	1.14	0	4
Year of hire	67.43	11.03	16	90
First year	.11	.313	0	1
Outsider	.217	.412	0	1
Size (log of thousands of employees)	1.14	1.68	−4.96	5.438
Founder	.17	.38	0	1
Prior board tenure (log)	1.28	1.1	0	3.555
Proportion outside directors	.60	.18	0	.938
Proportion appointees	.64	.31	.06	1
Size of board	10	3.37	2	22
Chairman	.216	.412	0	1
Interaction of ROA with:				
Tenure	.46	86.3	−1797.4	448.5
Founder	.16	2.86	−33.09	24.27
Prior board tenure (log)	−.38	12.4	−195.43	59.96
Proportion outside directors	−.53	5.46	−92.85	22.51
Proportion appointees	−.38	7.26	−185.69	46.03
Size of board	−4.75	65.09	−742.77	276.16
Chairman	−.336	3.92	−47.71	46.03

While multicollinearity does not bias the estimate, it may increase the failure to reject the null hypotheses in those cases in which the true effect differs from the null hypothesis. Given the existence of multicollinearity, I tested the hypotheses by first estimating separate models for each individual hypothesis and by subsequently combining those effects found to be statistically significant in the full model.

Modeling Procedure

I tested the hypotheses by specifying continuous-time, event history analysis estimated by maximum likelihood. Implicit in almost all past empirical models on the determinants of CEO succession is the assumption of equilibrium. A study of the effects of political dynamics on succession must explicitly account for the likelihood that adaptations to economic forces will not be instantaneous and that an extended period of disequilibrium in adjustment may follow. Duration-dependent event history analysis is an established methodology (Tuma and Hannan, 1984) for dealing with dynamic processes that has been relatively unused in the CEO succession literature. The models are estimated using the software package TDA (Rohwer, 1991), which provides estimates for both monotonic and nonmonotonic parametric models of duration dependence. TDA allows estimation of models with time-varying covariates and takes right-censoring into account by using the information provided by the cumulative survival time of censored spells (Tuma and Hannan, 1984).

Functional form. The estimation of parametric models of duration dependence requires selecting an underlying distribution. Most applications in organizational analysis have relied on either the Gompertz or Weibull models, which assume monotonic duration dependence. Because the various functional forms for duration dependence are not nested, duration must be specified based on non-nested specification tests and/or on sensitivity analysis. But most forms of non-nested specification tests rely on linearity assumptions or normal error terms, which do not apply to hazard rate models. One exception is comparing alternative specifications that are special cases of a more general model of distribution (McAleer, 1987). In this study, I follow Mitchell (1989) in comparing functional forms within the family of generalized gamma distributions. The generalized gamma distribution is particularly flexible, allowing for both monotonic and nonmonotonic models of duration dependence.

The generalized gamma distribution is based on three parameters **a, b,** and k, where **a** and **b** are vectors of duration-independent and duration-dependent parameters, respectively, and k is known as the gamma-shape parameter. The generalized gamma reduces to the two-parameter Weibull model when $k = 1$ and to the exponential model when $k = 1$ and **b** $= 0$. The generalized gamma converges to the two-parameter log-normal model when k approaches infinity. When k exceeds 100, the generalized gamma closely approximates the log-normal (Rohwer, 1991). Lawless (1982) recommended estimating the generalized gamma model by selecting arbitrary values of k and generating maximum likelihood estimates of **a** and **b** for any given k. This procedure is implemented in TDA (Rohwer, 1991). Lawless further suggested that the optimal value of k be selected by comparing the likelihood ratios for alternative values of k.

I estimated alternative models of the generalized gamma model with values of k ranging from 1 to 1,000,000. The procedure was estimated for the baseline model, with all control variables in the **a** vector and a constant in the **b**-vector.[3] CEO tenure is the duration measure in all models. The results, available from the author, show that as the value of k increased up to 1,000,000, the likelihood ratio of the alternative generalized gamma models increased. This supports the selection of a log-normal model of duration dependence.

I also did a sensitivity analysis by estimating other functional forms that allow for either monotonic or nonmonotonic duration dependence, including the piecewise exponential and the log-logistic. Both result in a nonmonotonic duration dependence that is similar in shape to the log-normal, but the log-normal model provides a better fit, as measured by the likelihood ratio. Space limitations preclude me from presenting the alternative models estimated. The comparison of the various models is available from the author.

I present results here for the log-normal model, with a baseline exponential model presented for comparison. The

3
In the final model, I also include both the year of hire and the Age60 variables in the **b** vector of the log-normal model, as duration dependence may vary by CEO cohorts and age. But including these variables in the **b** vector prevented the generalized gamma model from converging for certain values of k.

Table 2

Pearson Correlation Coefficients

Variable	1	2	3	4	5	6	7	8
1. Succession	—							
2. Tenure	−.052	—						
3. ROA	−.088	.095	—					
4. Age60	.028	.211	.058	—				
5. Year of hire	.080	−.738	−.123	−.117	—			
6. First year	.012	−.351	−.117	−.090	.255	—		
7. Outsider	.031	−.072	−.136	−.089	.064	.063	—	
8. Size (log)	−.020	−.108	.128	.111	.065	−.014	−.217	—
9. Founder	−.053	.525	.083	−.004	−.475	−.162	−.242	−.262
10. Prior board tenure (log)	.026	−.368	.052	.106	.266	.092	−.389	.293
11. Proportion outside directors	.009	−.187	−.077	.054	.269	.002	.140	.173
12. Proportion appointees	−.015	.671	.019	.081	−.555	−.404	.054	−.298
13. Size of board	−.016	−.223	.070	.124	.089	.031	−.116	.580
14. Chairman	.058	−.309	−.052	−.122	.282	.245	−.017	.083
15. ROA × Tenure	−.064	.113	.643	.042	−.159	−.017	−.047	.065
16. ROA × Prior board tenure (log)	−.137	.013	.698	.070	.004	−.047	−.046	.089
17. ROA × Prop. outside directors	−.080	.080	.959	.062	−.103	−.104	−.141	.124
18. ROA × Prop. appointees	−.068	.078	.919	.132	−.118	−.073	−.101	.097
19. ROA × Size of board	−.106	.081	.930	.071	−.080	−.105	−.135	.091
20. ROA × Chairman	−.078	.063	.443	.007	−.107	−.114	−.098	.060

hazard rates $r(t)$ of CEO succession is defined under the two models as follows:

Exponential model: $r(t) = \mathbf{a}$, where $\mathbf{a} = \exp(\alpha_0 + \alpha_1 X_1 + \ldots + \alpha_n X_n)$.

Log-normal model: $r(t) = \dfrac{1}{bt} \times \dfrac{\phi(z_t)}{1 - \Phi(z_t)}$, where $z_t = \dfrac{\log(t) - a}{b}$,

where $\mathbf{a} = (\alpha_0 + \alpha_1 X_1 + \ldots + \alpha_n X_n)$, $\mathbf{b} = \exp - (\beta_0 + \beta_1 Z_1 + \ldots + \beta_n Z_n)$, $\phi(z_t)$ is the density function for the standard normal distribution, and $\Phi(z_t)$ is the cumulative density function for the standard normal distribution. The minus sign is included in the definitions of the $\mathbf{a}$ and $\mathbf{b}$ vectors so that the signs of the coefficients will be comparable to the exponential model. The X variables are the time-independent covariates, and the Z variables are the time-dependent covariates, year of hire and Age60, in addition to the constant term. Both year of hire and Age60 were included in the $\mathbf{b}$ vector to account for the possibility that their effect on the rate of succession varies according to the length of tenure of the CEO. Both year of hire and Age60 are expected to interact with the tenure term to increase the rate of CEO succession. Although most applications of hazard rate models in the organizational literature estimate $\mathbf{b}$ as a constant, any covariate can be selected to affect duration dependency (Tuma and Hannan, 1984; Rohwer, 1991). Singh, House, and Tucker (1986) and Singh, Tucker, and House (1986), in the organizations literature, have used covariates in the $\mathbf{b}$ vector.

RESULTS

Alternative Models Estimated

Table 3 presents the results of the hazard rate models of CEO succession. Model 1 presents the baseline log-normal

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Table 2 (*continued*)

9	10	11	12	13	14	15	16	17	18	19
—										
−.521	—									
−.327	.067	—								
.541	−.442	−.210	—							
−.314	.303	.336	−.354	—						
−.147	.077	−.060	−.406	.109	—					
.068	−.027	−.100	.028	−.180	−.031	—				
.009	.032	−.002	−.048	.060	−.007	.386	—			
.072	.076	−.068	−.002	.071	−.055	.626	.684	—		
.082	.009	−.080	−.019	.037	−.015	.683	.536	.872	—	
.080	.067	−.099	.005	.037	−.068	.624	.743	.922	.792	—
.027	.073	−.054	.070	.039	−.163	.174	.270	.385	.237	.517

model, including the control variables and the duration effect. Model 2 adds the interaction effect of return on assets with tenure, shown in the **b**-vector to test hypotheses 2a and 2b. Models 3–7 successively add both the main effects and interaction effects of variables hypothesized to interact with economic performance. Model 8 presents the full model, which includes all variables that have achieved a .05 level of significance in previous models. If an interaction effect is included, so is the corresponding main effect. Given the existence of multicollinearity when all variables are included in the full model, the power of the test is limited, so that relying on model 8 for hypothesis testing may increase the likelihood of failing to reject the null hypothesis, even when the true underlying relationship differs from zero. The baseline exponential model is presented for comparison purposes.

Duration Dependence

The effects of duration dependence in all log-normal models (1–8) in Table 3 are estimated as a function of a constant, year of hire, and Age60. The effects of duration dependence on the rate of succession in the log-normal model are best examined graphically. These effects are shown for the log-normal model 1 in Figure 1. The figure graphs the duration dependence for six selected years of first hire of the CEO between 1950 and 1985. These results are robust across the eight models estimated. The various hazard rates for the different CEO cohorts are plotted from the estimated coefficients of the model, but the sample period does not contain the full length of tenure plotted. Only for CEOs hired in 1960 does the sample contain 30 years of data. For CEOs appointed after 1960, the later parts of the duration fall outside the observed range.

Figure 1 shows that the results for the log-normal models support a positive duration effect of CEO tenure during the

Table 3

Maximum Likelihood of Hazard Rate of CEO Succession, CEOs 63 Years Old and under, Exponential and Log-normal Models*

	Exponential	Model 1	Model 2	Model 3
a-vector				
Constant	−4.4703••••	−4.2993••••	−4.3150••••	−4.3465••••
	(.7685)	(.5823)	(.5826)	(.6096)
ROA	−.0125•••	−.0063•	−.0081	.0050
	(.0048)	(.0034)	(.0065)	(.0056)
Log of employees	−.0439	−.0342	−.0310	−.0301
	(.0554)	(.0354)	(.0360)	(.0352)
Founder	−.2919	−.2205	−.2059	−.2157
	(.3421)	(.2937)	(.2935)	(.3174)
Age 60	.1187•	.0473	.0482	.0541
	(.0714)	(.0398)	(.0396)	(.0402)
Year of hire	.0258•••	.0282••••	.0283••••	.0290••••
	(.0103)	(.0075)	(.0075)	(.0076)
First year	−.1880	.8877••••	.9012••••	.8855••••
	(.2835)	(.1400)	(.1432)	(.1400)
Outsider	.0880	.1287	.1306	.1739
	(.2213)	(.1280)	(.1276)	(.1512)
Log of prior board tenure				−.0150
				(.0654)
Log of prior board tenure × ROA				−.0099•••
Prop. of appointees				(.0035)
Prop. of appointees × ROA				
Prop. of outside directors				
Prop. of outside directors × ROA				
No. of directors				
No. of directors × ROA				
Chairman				
Chairman × ROA				
b-vector				
Constant		−1.4314••	−1.4542••	−1.5377••
		(.6942)	(.6947)	(.6983)
Year of hire		.0222••	.0226••	.0237••
		(.0094)	(.0094)	(.0094)
Age 60		.1368••	.1348•••	.1414•••
		(.0513)	(.0516)	(.0508)
ROA			.0023	
			(.0058)	
Likelihood ratio	−461.299	−437.956	−437.894	−433.341
Chi-square contrast with log-normal model 1			.144	9.230•••

•p < .10; ••p < .05; •••p < .01; ••••p < .001.
* Standard errors are in parentheses.

first period of the CEO's tenure, even after controlling for age, followed by a period of gradual decline in the rate. Consequently, the models support the hypothesis of increasing circulation of power at first (hypothesis 1b) followed by a more gradual institutionalization in later periods (hypothesis 1a). The institutionalization of power is only

	Model			
4	5	6	7	8
−4.0905••••	−4.1327••••	−4.0686••••	−4.1132••••	−3.9206••••
(.6433)	(.5809)	(.6759)	(.5791)	(.6866)
−.0171••	.0032	.0212	−.0053	.0253
(.0083)	(.0159)	(.0157)	(.0034)	(.0192)
−.0335	−.0236	−.0202	−.0457	−.0306
(.0341)	(.0359)	(.0392)	(.0340)	(.0384)
−.1127	−.2942	−.2130	−.1974	−.1628
(.3096)	(.2869)	(.2993)	(.2886)	(.3143)
.0513	.0482	.0577	.0591	.0707•
(.0385)	(.0390)	(.0398)	(.0389)	(.0400)
.0268••••	.0305••••	.0282••••	.0249••••	.0248•••
(.0076)	(.0074)	(.0079)	(.0076)	(.0080)
.8577••••	.8763••••	.9073••••	.8952••••	.8962••••
(.1392)	(.1395)	(.1361)	(.1306)	(.1295)
.1487	.1342	.1100	.0986	.1560
(.1252)	(.1267)	(.1252)	(.1210)	(.1424)
				.0101
				(.0632)
				−.0073••
				(.0036)
−.2005				
(.2615)				
.0132				
(.0099)				
	−.5646•			
	(.3415)			
	−.0177			
	(.0296)			
		−.0248		−.0226
		(.0210)		(.0202)
		−.0043••		−.0032
		(.0019)		(.0022)
			.2654••	.2646••
			(.1140)	(.1075)
			−.0046	
			(.0085)	
−1.6111••	−1.3094•	−1.7036••	−1.6228••	−1.8579•••
(.7049)	(.7040)	(.6798)	(.6781)	(.6743)
.0251•••	.0207••	.0261•••	.0255•••	.0288•••
(.0095)	(.0095)	(.0092)	(.0091)	(.0091)
.1335•••	.1402•••	.1296•••	.1223••	.1159••
(.0516)	(.0517)	(.0500)	(.0512)	(.0499)
−436.512	−436.574	−433.119	−434.392	−428.054
2.888	2.764	9.674•••	7.128••	19.806•••

achieved after the CEO has been in power for a substantial period of time, however, approaching the second decade of his tenure.

The initial steep increase in the succession rate, followed by a gradual decline suggests that obsolescence per se is

Figure 1. Effects of tenure and year of hire on CEO succession for CEOs 63 years old and under.

Note: Dashed and solid lines graph the observed range; small dotted lines are unobserved in the sample.

CEO Tenure (in years)
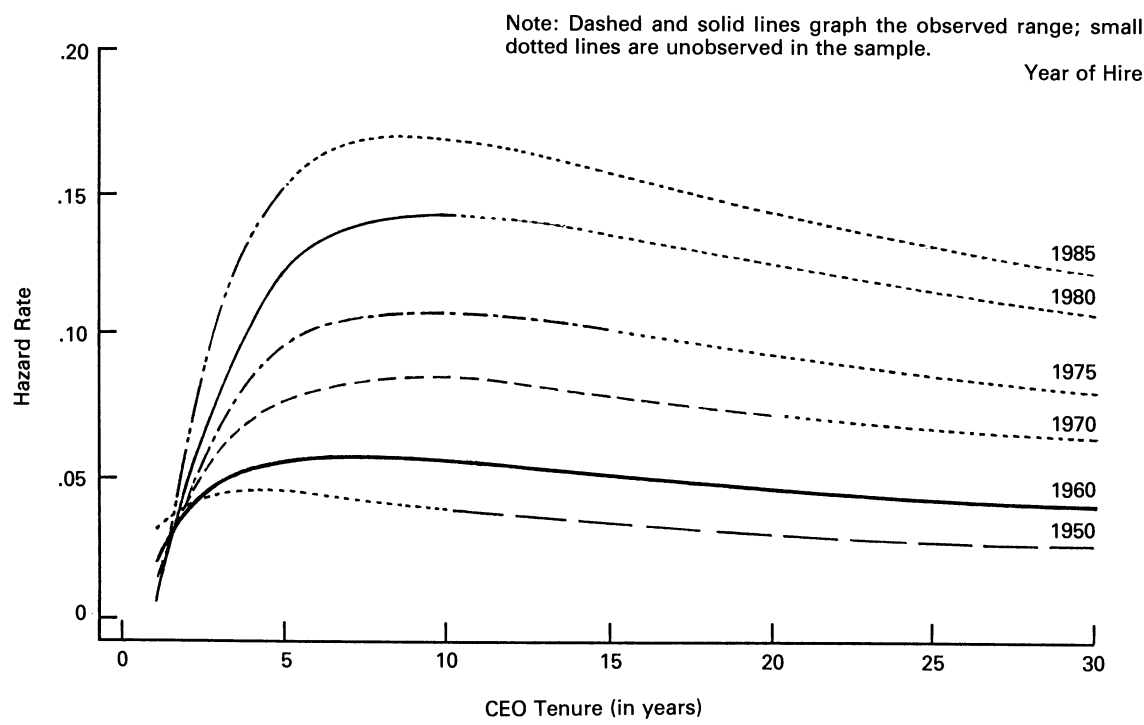
insufficient to trigger CEO succession, at least for CEOs hired prior to 1980. The rate of obsolescence is likely to increase, rather than decrease, during the second and subsequent decades of a CEO's tenure. Contestation appears to be a necessary adjunct to obsolescence for the circulation of power. Also, the initial steep increase in the succession rate is inconsistent with the hypothesis of escalation of commitment to explain the institutionalization of power. Escalation of commitment, if operable, should begin early in the CEO's tenure and increase accordingly.

The combined results of increased circulation of CEO power, followed by entrenchment and institutionalization can be explained as the net result of two underlying forces: contestation and legitimation. The CEO's power can become taken for granted, resulting in decreased rates of succession, but this effect does not occur instantly. The findings are consistent with the hypothesis that a CEO's power is taken for granted only after a decade of increasing contestation, after which the power of the chief executive becomes increasingly legitimate, decreasing the opportunities for contestation to occur.

Temporal shifts in duration dependence. All the log-normal models in Table 3 show that duration dependence is strongly affected by the year of hire of the CEO, as shown by the positive and statistically significant effect of year of hire in the b-vector. Figure 1 illustrates both a significant general increase in the rate of CEO succession for more recent CEOs, as well as a steepening increase in the underlying rate during the first decade of the CEO's tenure. For CEOs hired in 1950 and 1960, conditional on the

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CEOs having survived to 1960, a short period of increase was followed by a low and decreasing rate of succession of approximately .04 and .05, respectively. For these CEOs, the model of institutionalization of power is most descriptive of the relationship between tenure and succession. For CEOs hired in 1975, the model predicts an underlying rate exceeding .10 by the sixth year of tenure. For CEOs hired in 1985, the model predicts a .15 rate of succession by the fifth year, with subsequent increases for remaining years. For CEOs hired in 1980 and thereafter, the circulation of the CEO's power best characterizes the relationship between tenure and CEO succession. This implies that the legitimacy of CEOs' power is eroded over time, at least during the first decade of their tenure.

Control Variables

In the log-normal model 1 in Table 3, return on assets, adjusted for industry average, decreases the rate of succession, but this relationship is only significant at the .10 level. The variable Age60 is positive in all models and leads to an increase in succession, but this effect is only statistically significant in its interaction with tenure in the b-vector. Year of hire leads to an increase in succession and is statistically significant at the .01 level. The interaction between year of hire and tenure is also positive and significant at the .05 level or .01 level, depending on the specific model estimated. The effects of first year are positive and statistically significant at the .001 level for all log-normal models. This last effect may result from temporary CEOs in the sample, by an early but brief liability of newness, and/or because succession events are coded in discrete time, so that all successions occurring during the first year are aggregated to the end of the period. The size of the effects of age, year of hire, and first year and their statistical significance are stable across all the alternative specifications of the hazard rate model. The size of the firm and whether the CEO is a founder or an outsider are not statistically significant.

## Interaction Effects with Economic Performance

The estimations of models 2–7 reveal greater support for the model of the circulation of power than for the model of institutionalization, as measured by the interaction effects of economic performance with the alternative measures of political processes within the corporation and its board of directors. Two of the three hypotheses corresponding to the circulation model (hypothesis 3b, on the effects of prior board tenure, and hypothesis 6, on number of directors) were statistically significant. No statistically significant effects were found for hypothesis 2b, on the interaction between tenure and performance. Of the four interaction effects hypothesized by the model of institutionalization, none was statistically significant. The results for specific hypotheses are described below.

The effects of prior board experience support hypothesis 3b in model 3 at the .01 level of significance. The interaction effect of prior board tenure and performance is negative, showing that poor economic performance has larger effects when CEOs have longer prior board tenures, but the main

Figure 2. Effects of return on assets and prior board tenure on CEO succession for CEOs 63 years old and under.
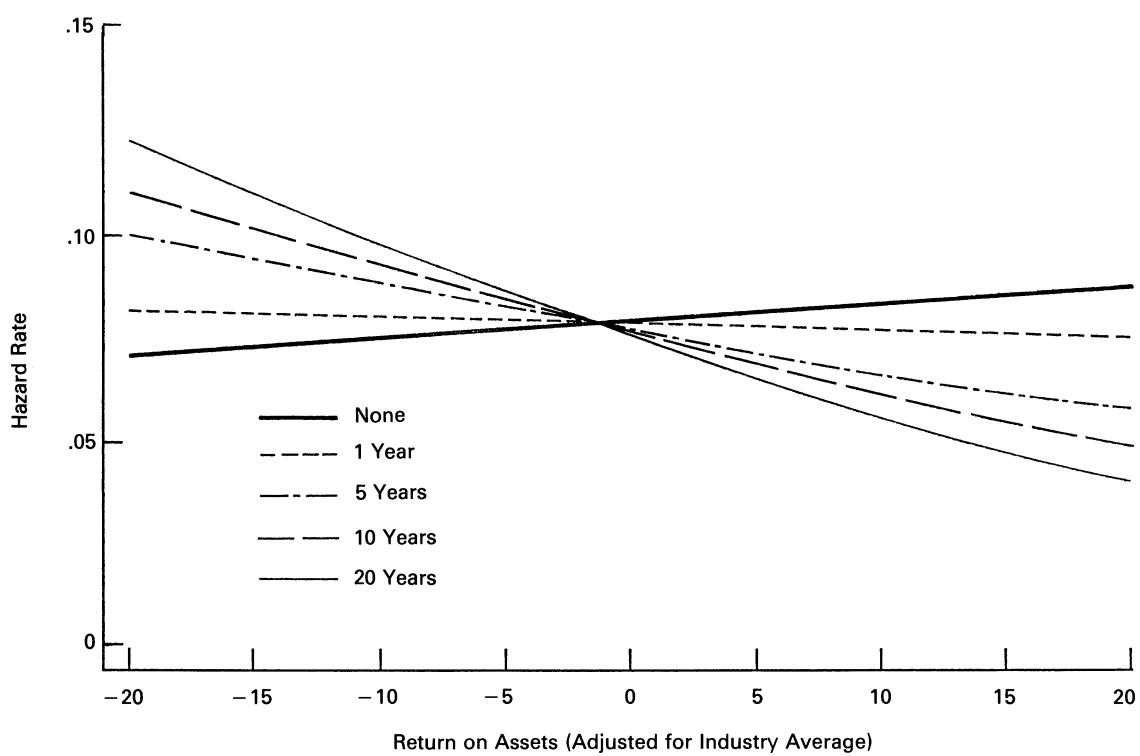
effect of prior board tenure is not statistically significant. The effects of prior board experience on the rate of CEO succession are shown graphically in Figure 2. The five curves correspond to five levels of board experience: none, 1 year, 5 years, 10 years, and 20 years. The curves measure the combined effects of three variables in model 3: return on assets, prior board experience, and the interaction of these two variables. These effects are measured at the mean size of the firm and for CEO tenure equal to seven years. The interaction effects of prior board tenure and return on assets remain negative in model 8, at the .05 level.

Figure 2 shows that prior board experience, rather than increasing the CEO's power and making him more immune to the effects of poor performance (hypothesis 3a), is more likely to lead to a greater susceptibility to the effect of economic adversity (hypothesis 3b). CEOs facing economic adversity may suffer from a liability of experience, so that longer prior board tenure is likely to lead to a larger number of enemies and more CEO succession. While the main effects of CEO tenure showed that obsolescence was tempered by increasing institutionalization, the interaction effects of prior board tenure and ROA support the view that obsolescence may trigger circulation, but only under conditions of economic adversity. CEOs with more extensive board tenure become obsolete because they are more likely to continue the policies and programs of the corporation instituted while they were members of the board and may be less receptive to organizational change. This may serve them well when performance is good, for when there is a

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positive return on assets (i.e., exceeding the industry average), prior board tenure decreases the rate of succession. If performance is good, old enemies are less likely to surface, and obsolescence is less likely to be invoked as a rationale for CEO succession. But if performance is poor, old enemies will emerge, and prior board tenure increases the circulation of power and CEO succession.

The directions of the coefficients in model 4 are consistent with hypothesis 4, but the results are not statistically significant. Alternative models with measures of the proportion of inside or outside directors appointed were also estimated, but the results were again not statistically significant. For hypothesis 5, the results on the interaction of ROA and the proportion of outside directors is not statistically significant in model 5.

Hypothesis 6 receives support in model 6, with the interaction effects of ROA and the number of directors producing a negative and statistically significant effect at the .05 level. As the number of directors increases, economic adversity increases succession, as posited by the model of circulation. The main effect of board size is not statistically significant. CEOs with larger boards are faced with greater contestation, with the effect more likely to hold under conditions of poor economic performance. The interaction effect of board size and economic performance retains the same sign in model 8, but the null hypothesis can no longer be rejected.

Figure 3. Effects of return on assets and number of directors on CEO succession for CEOs 63 years old and under.
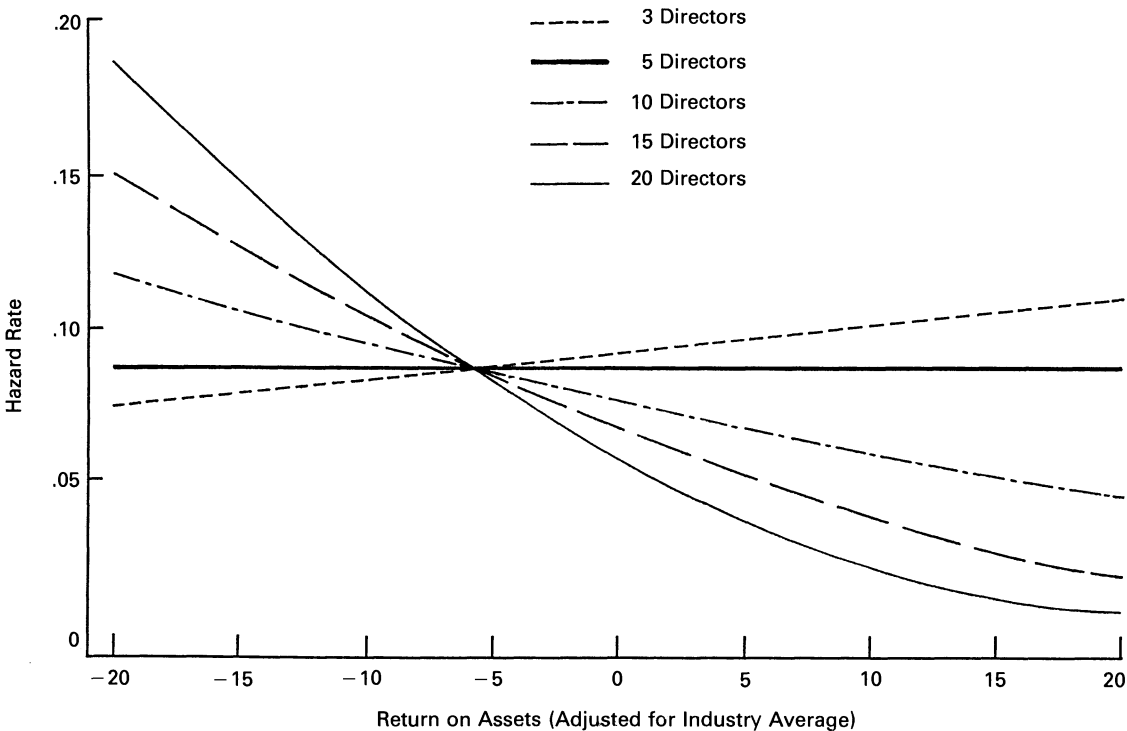
Figure 3 shows graphically how the size of the board interacts with performance to affect the rate of succession. The five curves shown correspond to five selected board sizes: 3, 5, 10, 15, and 20 directors, respectively. The results were estimated for a firm of the size equal to the subsample mean and a CEO tenure of 7 years. Similar results hold for other values. The curve that corresponds to a board size of 3 is upward sloping, so that CEOs in firms with very small boards are better able to maintain the governing coalition as performance worsens. For a relatively small board of 5, performance has very little effect on the rate of succession. But as board size increases, the effects of economic adversity become quite noticeable.

Model 7 in Table 3 presents the results of having a chairman of the board separate from the CEO and its interaction with economic adversity. The main effect of chairman is positive and statistically significant at the .05 level, indicating that independent of performance, a separate chairman will increase the rate of succession. The interaction of chairman and ROA is not statistically significant, and hypothesis 7 is not supported. The results do not support the view that having a separate chairman leads to more effective monitoring of the firm's performance under conditions of economic adversity. While a separate chairman limits the power of the CEO, this effect is unrelated to superior monitoring abilities of the separate chairman.

Model 8 in Table 3 presents the combined effects of board size, prior board tenure, and their interactions with economic performance, as well as the main effects of chairman. Model 8 provides a statistically significant improvement in explanatory power over model 1, at the .05 level, consistent with the view that the effects of economic adversity on CEO succession are mediated by political processes. The interaction effects of prior board tenure remain statistically significant at the .05 level, supporting the model of circulation. The effects of number of directors retains the same direction but is no longer statistically significant. The main effect of chairman remains positive and statistically significant at the .05 level.

Effects of Number of Inside and Outside Directors

In examining the effects of board size on CEO succession, I am implicitly assuming that the effect of an additional inside director is equivalent to the effect of an additional outsider. This view is countered by popular accounts that highlight the role of outside directors in triggering executive succession. Recent highly publicized instances of CEO turnover in General Motors and IBM have been interpreted by the business press as indications of the need for outside directors to have a greater role in corporate governance, particularly under conditions of economic adversity. As the corporation faces a crisis, outside directors meet in private and "decide" to remove the CEO. But such views ignore counterexamples, such as the removal of a CEO by an insider-dominated board in Dow Chemical (Vancil, 1987).

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Table 4

Maximum Likelihood of Hazard Rate of CEO Succession, CEOs 63 Years Old and under, Log-normal Models*

	Model			
	6	6a	6b	6c
a-vector				
Constant	−4.0686••••	−4.5776••••	−4.1024••••	−4.3091••••
	(.6759)	(.6272)	(.6029)	(.6641)
ROA	.0212	.0118	.0074	.0257
	(.0157)	(.0083)	(.0074)	(.0173)
Log of employees	−.0202	−.0418	−.0018	−.0144
	(.0392)	(.0345)	(.0385)	(.0387)
Founder	−.2130	−.1868	−.2885	−.2570
	(.2993)	(.2868)	(.2912)	(.2876)
Age60	.0577	.0528	.0543	.0588
	(.0398)	(.0394)	(.0391)	(.0389)
Year of hire	.0282••••	.0303••••	.0292••••	.0305••••
	(.0079)	(.0077)	(.0075)	(.0077)
First year	.9073••••	.9002••••	.8915••••	.9037••••
	(.1361)	(.1352)	(.1374)	(.1336)
Outsider	.1100	.1607	.1073	.1374
	(.1252)	(.1243)	(.1250)	(.1228)
No. of directors	−.0248			
	(.0210)			
No. of directors × ROA	−.0043••			
	(.0019)			
No. of inside dir.		.0345		.0247
		(.0309)		(.0316)
No. of inside dir. × ROA		−.0071••		−.0067••
		(.0029)		(.0033)
No. of outside dir.			−0.0493••	−0.0441•
			(.0226)	(.0228)
No. of outside dir. × ROA			−.0041••	−.0038
			(.0018)	(.0023)
b-vector				
Constant	−1.7036••	−1.4895••	−1.5040••	−1.5951••
	(.6798)	(.6978)	(.6752)	(.6946)
Year of hire	.0261•••	.0234••	.0234•••	.0250•••
	(.0092)	(.0094)	(.0091)	(.0093)
Age60	.1296•••	.1270••	.1370•••	.1296•••
	(.0500)	(.0508)	(.0504)	(.0501)
Likelihood ratio	−433.119	−433.873	−433.364	−430.558

• $p < .10$; •• $p < .05$; ••• $p < .01$; •••• $p < .001$.
* Standard errors in parentheses.

To separate the effects of inside from outside directors on the rate of CEO succession, Table 4 estimates separate hazard rate models for the effects of number of inside board members (model 6a), the number of outside board members (model 6b), and their interactions with the economic performance measure; model 6c includes the effects of number of insiders and number of outsiders simultaneously. These are contrasted with the original model 6, which includes the total size of the board and its interaction with economic performance. Because the models are not nested, a formal chi-square contrast between the alternative models and the baseline model 6 cannot be undertaken, but models 6a and 6c, and 6b and 6c, respectively, are nested. The comparison of models 6c and 6a yields a chi-square of 6.63, with 2 degrees of freedom, significant at the .05 level. The comparison of models 6c and 6b yields a chi-square of 5.612, with 2 degrees of freedom, significant at the .10 level.

The main effect of number of inside directors is not statistically significant in model 6a or 6b. For outside directors, an increase in their number, independent of performance, will decrease the rate of succession, as the main effect of number of outside directors is negative and statistically significant at the .05 level in model 6b, and at the .10 level in model 6c. The interaction effect of number of inside directors and ROA is positive and statistically significant at the .05 level in models 6a and 6c, while the interaction with number of outside directors is positive and statistically significant at the .05 level in model 6b but not significant in model 6c. These results indicate that as economic adversity increases, the power of board members is stronger and other executive officers who function as rivals of the CEO and serve to limit his power are more likely to contest his power than are outsiders. This result contradicts the long-standing assumption that inside board members serve as pawns of the CEO (Herman, 1981; Weisbach, 1988). Inside board members are more likely to limit the CEO's power and to contest it, particularly under conditions of economic adversity, rather than to uphold it.

DISCUSSION AND CONCLUSIONS

This paper provides a theoretical and empirical contribution to the study of political dynamics in organizations, an area that has received limited attention in the past, and to the study of CEO succession. I developed a model of the circulation of power and applied it to the study of political dynamics in U.S. industrial corporations. According to the model of circulation, CEOs are subject to a liability of experience, as greater familiarity with past practices and politics increases both technical and political obsolescence and increases the potential for contestation of the CEO's power. The model of the circulation of power was contrasted and tested against the model of the institutionalization of power, which had been previously formulated but had been rarely tested.

Results showed that the political dynamics of CEO succession in U.S. industry was characterized during 1960–1990 by both the circulation and the institutionalization of power. The study showed an increasing rate of succession up to the beginning of the second decade of the CEO's tenure, followed by a slower rate of decline once the CEO's power became legitimized.[4] Although CEOs may experience both increasing legitimacy and increasing obsolescence during their tenure, the results indicate that for the average CEO in the sample, it takes over a decade for the legitimacy of his power to decrease the potential of rival political coalitions to emerge.

The effects of tenure on succession are strongly mediated by the year in which the CEO was appointed. Long-term changes have an imprinting effect on the succession rates of CEO cohorts, based on the environmental characteristics and conceptions of control (Fligstein, 1990) prevalent the year the CEO was appointed. While the institutionalization model provides a better overall description of political dynamics for

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An anonymous reviewer suggested an alternative explanation for the increasing rate of succession during the first decade, based on Vancil's (1987) observation of norms of CEO tenure of around ten years, but this explanation does not account for the subsequent decline in the hazard rate during the second decade, nor for the role of political variables in triggering circulation under adversity. The combined findings for all the variables in the study favor an explanation based on political dynamics, rather than one based on norms of CEO succession.

CEOs appointed up to the early 1960s, subsequent cohorts of CEOs were subject to rapidly increasing circulation and decay in their power, particularly during the first decade of their tenure. The results are consistent with the challenge posed to managerialist theories by Davis and Stout (1992), who argued that the takeover of large firms during the 1980s contradicted the managerial discretion assumptions underlying most organization theories. These results indicate that for recent CEO appointees, the managerialist model of corporate control has been increasingly challenged and the legitimacy of their authority is being eroded. This study predicts that this trend will continue, consistent with recent anecdotal evidence of the rising contestation of the power of the CEO and of increased turnover in the CEO position. Additional research could determine the sources for the observed historical trend in CEO cohorts and how they may be affected by a decrease in the structural autonomy of U.S. industry (Burt, 1992), rising foreign competition, pressures from financial markets and institutional investors, major restructuring of the American business community (Jensen, 1993), changes in the institutional concepts of control and of corporate governance, and a decline in the legitimacy of executive authority.

By focusing on the political dynamics of CEO succession, this study permits us to understand how the power of the CEO over the corporation and its board of directors becomes both coupled with and decoupled from the pressures of economic performance and, implicitly, the firm's environmental contingencies. The results showed statistically significant support for the mediating effects of political variables on the rate of CEO succession. While for the average corporation, poor economic performance leads to an increased rate of CEO succession, this result masks a heterogeneous response to economic adversity that is shaped by the political dynamics of the corporation, as structured by the size and composition of the board of directors and by the prior experience of the CEO on the board. The small net effects of performance on succession suggest that the effects of adversity are not automatic but are dependent on the board's perception of whether the CEO's policies and capabilities are adequate for the task. The underlying obsolescence and contestation of the CEO's power that triggers changes in the board's perceptions and the circulation of power is not a continuous process but one that becomes salient under conditions of economic adversity and is tempered by the institutionalization of the CEO's power in later periods of his tenure. Contestation is a latent process, with members of the governing coalition providing support and increasing the CEO's power when performance is good and when authority is legitimized, but serving as challengers and rivals when performance deteriorates.

The results of this study challenge conventional assumptions and beliefs about the role of political dynamics in CEO succession and contradict accounts in the popular press of the effect of outside directors on CEO succession. The results lead us to question unproven assumptions that outside board members are an effective control over the

CEO's power and that insiders serve as pawns of management. They suggest, instead, alternative explanations based on the political dynamics of the circulation of power. A large number of insiders on the board may be required for boards to have adequate information to evaluate the CEO's explanations for the firm's performance. Inside board members serve several functions that may increase CEO succession under adversity: They are readily available candidates for the position, they have essential information on the company's operation, they are sources of social comparison in the board's evaluation of the CEO, and, under adversity, their rivalry with the CEO becomes manifest.

Managerialist models of corporate control have traditionally been based on the notion of a fixed coalition of insiders working to entrench themselves, to gain control over the corporation, and to insulate themselves from economic and environmental exigencies. This study suggests a different, emergent view of managerial politics and the dynamics of executive control. The power of the CEO is becoming increasingly contested as the CEO's schemas and strategies become obsolete over time. Shifting political coalitions and contests for power and control serve to trigger change in the formal authority of the corporation and lead to a decreasing legitimacy of the CEO's power. The contest for control within the board of directors is not one of fixed loyalties, of insiders seeking entrenchment versus outsiders monitoring performance, but one of emergent power struggles, conditioned on environmental contingencies and economic returns, with both insiders and outsiders combining to form new political coalitions. Political dynamics serve not just to insulate executives from economic demands but to link the circulation of power and control to the economic performance of the corporation.

REFERENCES

Berle, Adolf, Jr., and Gardiner C. Means
1967 The Modern Corporation and Private Property. New York: Harcourt, Brace, and World.

Boeker, Warren
1989 "The development and institutionalization of subunit power in organizations." Administrative Science Quarterly, 34: 388–410.

Burt, Ronald S.
1992 Structural Holes: The Social Structure of Competition. Cambridge, MA: Harvard University Press.

Cyert, Richard M., and James G. March
1963 A Behavioral Theory of the Firm. Englewood Cliffs, NJ: Prentice-Hall.

Davis, Gerald F., and Suzanne K. Stout
1992 "Organization theory and the market for corporate control." Administrative Science Quarterly, 37: 605–633.

Fama, Eugene L., and Michael C. Jensen
1983 "Separation of ownership and control." Journal of Law and Economics, 26: 301–325.

Fizel, John L., Kenneth K. T. Louie, and Marc S. Mentzer
1990 "An economic, organizational and behavioral model of the determinants of CEO tenure." Journal of Economic Behavior and Organization, 14: 363–379.

Fligstein, Neil
1990 The Transformation of Corporate Control. Cambridge, MA: Harvard University Press.

Frederickson, James W., Donald C. Hambrick, and Sara Baumrin
1988 "A model of CEO dismissal." Academy of Management Review, 13: 255–271.

Gibbons, Robert, and Kevin J. Murphy
1990 "Relative performance evaluation for Chief Executive Officers." Industrial and Labor Relations Review, 45: 30S–51S.

Guo, Guang
1993 "Event-history analysis for left-truncated data." In Peter V. Marsden (ed.), Sociological Methodology 1993: 217–243. Cambridge, MA: Basil Blackwell.

Herman, Edward S.
1981 Corporate Control, Corporate Power. Cambridge: Cambridge University Press.

Hickson, D., C. R. Hinings, C. A. Lee, R. E. Schneck, and J. M. Pennings
1971 "A strategic contingencies theory of intraorganizational power." Administrative Science Quarterly, 19: 22–44.

Jackall, Robert
1988 Moral Mazes: The World of Corporate Managers. New York: Oxford University Press.

Janakiraman, Surya N., Richard A. Lambert, and David F. Larcker
1992 "An empirical investigation of the relative performance evaluation hypothesis." Journal of Accounting Research, 30: 53–69.

Jensen, Michael C.
1993 "The modern industrial revolution, exit, and the failure of internal control systems." Journal of Finance, 48: 831–880.

Lawless, John F.
1982 Statistical Models and Methods for Lifetime Data. New York: Wiley.

Levitt, Barbara, and James G. March
1988 "Organizational learning." In W. Richard Scott (ed.), Annual Review of Sociology, 14: 319–340. Palo Alto, CA: Annual Reviews.

Lorsch, Jay W.
1989 Pawns or Potentates. Boston: Harvard Business School Press.

March, James G.
1962 "The business firm as a political coalition." Journal of Politics, 24: 662–678.
1966 "The power of power." In David Eaton (ed.), Varieties of Political Theory: 39–70. New York: Prentice-Hall.

McAleer, Michel
1987 "Specification tests for separate models: A survey." In Maxwell L. King and David E. A. Giles (eds.), Specification Analysis in the Linear Model: 146–196. London: Routledge.

Meyer, John W., and Brian Rowan
1977 "Institutionalized organizations: Formal structure as myth and ceremony." American Journal of Sociology, 83: 340–363.

Michels, Robert
1962 Political Parties. New York: Free Press.

Miller, Danny
1991 "Stale in the saddle: CEO tenure and the match between organization and environment." Management Science, 37: 34–52.

Mitchell, Will
1989 "Wither and when? Probability and timing of incumbents' entry into emerging industrial subfields." Administrative Science Quarterly, 34: 208–230.

Morck, Randall, Andrei Shleifer, and Robert W. Vishny
1989 "Alternative mechanisms for corporate control." American Economic Review, 9: 842–852.

Pareto, Vilfredo
1968 The Rise and Fall of the Elites. Totowa, NJ: Bedminster Press.

Pfeffer, Jeffrey
1972 "Size and composition of corporate boards of directors: The organization and its environment." Administrative Science Quarterly, 17: 218–228.
1981 Power in Organizations. Marshfield, MA: Pitman.
1992 Managing with Power: Politics and Influence in Organizations. Boston: Harvard Business School Press.

Pfeffer, Jeffrey, and Gerald R. Salancik
1978 The External Control of Organizations. New York: Harper and Row.

Powell, Walter W., and Paul J. DiMaggio (eds.)
1991 The New Institutionalism in Organizational Analysis. Chicago: University of Chicago Press.

Puffer, Sheila M., and Joseph B. Weintrop
1991 "Corporate performance and CEO turnover: The role of performance expectations." Administrative Science Quarterly, 36: 1–19.

Putnam, Robert D.
1976 The Comparative Study of Political Elites. Englewood Cliffs, NJ: Prentice-Hall.

Rohwer, Gotz
1991 "Analysis of transition data: A practical introduction with TDA." Unpublished manuscript, European University Institute.

Salancik, Gerald R., and Jeffrey Pfeffer
1977 "Who gets power—and how they hold on to it: A strategic-contingency model of power." Organizational Dynamics, 5: 3–21.

Selznick, Philip
1957 Leadership in Administration. Evanston, IL: Row, Peterson.

Singh, Jitendra, Robert J. House, and David J. Tucker
1986 "Organizational change and organizational mortality." Administrative Science Quarterly, 31: 586–611

Singh, Jitendra, David J. Tucker, and Robert J. House
1986 "Organizational legitimacy and the liability of newness." Administrative Science Quarterly, 31: 171–193.

Staw, Barry M.
1976 "Knee-deep in the big muddy: A study of escalating commitment to a chosen course of action." Organizational Behavior and Human Performance, 16: 27–44.

Tuma, Nancy B., and Michael T. Hannan
1984 Social Dynamics: Models and Methods. Orlando, FL: Academic Press.

Tushman, Michael L., and Elaine Romanelli
1985 "Organizational evolution: A metamorphosis model of convergence and reorientation." In L. L. Cummings and Barry M. Staw (eds.), Research in Organizational Behavior, 7: 171–222. Greenwich, CT: JAI Press.

Useem, Michael
1984 The Inner Circle. New York: Oxford University Press.

Vancil, Richard M.
1987 Passing the Baton: Managing the Process of CEO Succession. Cambridge, MA: Harvard Business School Press.

Wade, James, Charles A. O'Reilly, and Ike Chandratat
1990 "Golden parachutes: CEOs and the exercise of social influence." Administrative Science Quarterly, 35: 587–603.

Weisbach, Michael S.
1988 "Outside directors and CEO turnover." Journal of Financial Economics, 20: 431–460.

Westphal, James D., and Edward J. Zajac
1993 "Substance and symbolism in CEOs' long-term incentive plans." Academy of Management Best Papers Proceedings 1993: 232–236.

Zajac, Edward J.
1990 "CEO selection, compensation, and firm performance: A theoretical interpretation and empirical analysis." Strategic Management Journal, 11: 217–230.

Zucker, Lynn G.
1977 "The role of institutionalization in cultural persistence." American Sociological Review, 42: 726–743.