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CEO DUALITY AND FIRM PERFORMANCE: A CONTINGENCY MODEL

BRIAN K. BOYD
College of Business and Public Administration, Old Dominion University, Norfolk, Virginia, U.S.A.

Several studies have addressed the CEO duality–performance relationship, with inconsistent results. This paper proposes that these inconsistencies can be resolved by integrating agency and stewardship perspectives on duality. Using data from 192 firms in 12 industries, both the direction and magnitude of the duality–performance relationship was found to vary systematically across Dess and Beard's (1984) environmental dimensions. These results provide partial support for both agency and stewardship perspectives.

CEO/top management team (TMT) issues and corporate boards are two of the most widely researched topics in strategic management. CEO duality is therefore a salient topic, as it crosses both domains. CEO duality exists when a firm's chief executive also serves as Chairman of the board of directors. Otherwise, the board is described as having an independent structure. The likelihood of CEO duality can vary substantially across industries, and is more common in larger firms (Heidrick and Struggles, 1987; Korn/Ferry International, 1987).

While CEO duality has become more common in American businesses, this practice has recently come under heavy criticism—duality has been blamed for poor performance and slow response to change in firms such as General Motors, Digital Equipment Corporation, and Goodyear Tire and Rubber (*The Wall Street Journal*, 1992a). Consequently, separation of CEO and Chairman positions is expected to become far more prevalent in coming years (*The Wall Street Journal*, 1992b). Despite this popular move for corporate governance reform, empirical evidence linking CEO duality with firm performance is limited and inconclusive. This paper draws on agency and stewardship perspectives to build a framework to better understand and explain the relationship between duality and performance. We integrate these disparate perspectives by hypothesizing that the duality–performance relationship is moderated by environmental uncertainty.

LITERATURE REVIEW AND HYPOTHESES

There has been extensive debate in both academic and practitioner forums over the effect of CEO duality on firm performance. Duality offers the clear direction of a single leader, and a concomitantly faster response to external events. As with other insider-directors, the CEO-chair would be expected to have a greater knowledge of the firm and its industry, and have greater commitment to the organization than an external chair. Evidence positively linking insider board representation to performance (e.g., Cochran, Wood, and Jones, 1985; Vance, 1964) is cited to support this form of governance. Proponents of duality also characterize the board chair position

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as 'being relatively less powerful and more ceremonial and symbolic than the CEO position' (Harrison, Torres, and Kukalis, 1988: 214).

In comparison, the perspective of an independent structure is suggested to help firms avoid some crises (Lorsch, 1989), and to facilitate more objective assessment of firm and TMT performance (Weidenbaum, 1986). An informal survey of board members and corporate executives concluded that 'board leadership would improve appreciably over time if the board chairman were not part of the active management' (Patton and Baker, 1987: 12). CEO-chairs have also been linked with signs of ineffective governance, such as hostile takeovers (Morck, Shleifer, and Vishny, 1989) and the adoption of 'poison pills' (Mallette and Fowler, 1992).

Anecdotal evidence is of little value in clarifying the debate over duality's effect on firm performance. Consider the following examples from 1980: As proponents of independent boards would predict, Storage Technology Corporation's duality structure preceded massive financial losses, and a subsequent restructuring of both the board and the TMT. In contrast, two leaders in their respective industries during this period, Wang Labs and Intel, had CEO-chairs in 1980. Both CF&I and Bethlehem Steel had independent board structures, and both reported negative growth and profitability during this period.

Empirical research on the duality–performance relationship has also produced conflicting results. Berg and Smith (1978) studied *Fortune* 200 firms and reported a negative relationship of duality with ROI, and no relationship with ROE or change in stock price. Supplemental analyses indicated that duality had a *positive* effect on performance in some industries. Chaganti, Mahajan, and Sharma (1985) found no relationship between duality and corporate failure in the U.S. retailing industry. Rechner and Dalton (1989) examined a subset of the *Fortune* 500 with stable governance structures over a multiyear period. Stockholder returns were marginally higher in firms with CEO-chairs, but the differences were not statistically significant. A subsequent analysis of the same firms (Rechner and Dalton, 1991) found duality to be negatively associated with ROE, ROI, and profit margin. In contrast, Donaldson and Davis (1991) reported that CEO duality was associated with significantly higher levels of ROE. Stockholder returns were also higher in firms with CEO-chairs, although the difference was not statistically significant. Finally, two additional papers have reported weak positive correlations of duality with ROE as part of larger analyses (Cannella and Lubatkin, 1993; Mallette and Fowler, 1992). A summary of previous research is shown in Table 1.

To help integrate the inconsistent results of previous research, a metaanalysis of previous findings is reported in Table 1. Test statistics which were reported in each study were used to generate the effect size r, which is analogous to the point biserial correlation (McNemar, 1969). Effect sizes were then aggregated across studies, weighted by sample size (Hunter, Schmidt, and Jackson, 1982). Eleven individual tests of the duality–performance relationship were included, and yielded an aggregate effect size of -0.02.

In summary, integration of previous studies indicates that CEO duality has a weak negative relationship with firm performance. The following hypothesis is included for purposes of comparison and replication:

H1: CEO duality will be negatively related to firm performance

However, as noted in Table 1, contrary results indicating a positive relationship between duality and performance have also been reported. One limitation of previous research is a greater concern with measuring the effect of duality on performance versus building a theoretical basis for understanding this relationship. This paper uses a contingency perspective to build such a theoretical framework. The following sections describe the contrasting role of duality in agency versus stewardship theories. We propose that both theoretical perspectives are correct—under different circumstances. Thus, duality may be negatively associated with performance in some situations, but be positively related in others. Organizational environment is applied as a moderator variable to integrate these divergent perspectives.

Application of agency theory

An agency problem exists when an agent (e.g., a CEO) has established goals which conflict with that of a principal (e.g., shareholders). Such problems are more likely to occur when a key

Table 1. Summary and integration of previous research

Study	Performance measure	Effect size	Sample size
Berg & Smith (1978)	Stock price growth	−0.49	159
	ROI	0.04	194
	ROE	−0.18	193
Cannella & Lubatkin (1993)	ROE	0.05	673
Chaganti *et al.* (1985)	Firm failure	n/a	42
Donaldson & Davis (1991)	ROE	0.13	329
	Stock return	0.06	321
Mallette & Fowler (1992)	ROE	0.04	800
Rechner & Dalton (1989)	Stock return	0.05	141
Rechner & Dalton (1991)	ROE	−0.22	141
	ROI	−0.27	141
	Profit margin	−0.22	141
Aggregated effect size:		−0.02	

Note: Effect size estimates based on comparison of means, t- and F-statistics reported in individual papers.

decision maker has little or no financial interest in the outcome of his decisions (Fama and Jensen, 1983). This is often the norm, as the chief executives of many large U.S. firms are typically not the majority shareholder (Boyd, 1994; Lewellen, Loderer, and Rosenfeld, 1985). Consequently, such senior executives are more likely to pursue strategies which: (a) maximize personal welfare at the expense of shareholders; and (b) minimize their personal risk.

Corporations respond to potential agency problems by delegating the task of *decision management* to the CEO, and *decision control* to the board. Thus, the CEO has primary responsibility for initiation and implementation of strategic decisions, while the board is responsible for ratifying and monitoring decisions by the CEO. The board is the primary internal control mechanism for aligning the different interests of shareholder and top management (Mizruchi, 1983; Walsh and Seward, 1990).

By serving as chairman, the CEO will acquire a wider power base and locus of control (Hambrick and Finkelstein, 1987; Harrison *et al.*, 1988; Patton and Baker, 1987), thereby weakening decision control by the board (Morck *et al.*, 1989). This reduction in board control facilitates pursuit of the CEO's agenda, which may differ substantially from shareholder goals (Mallette and Fowler, 1992). Agency problems and the failure of the board to fulfil its control responsibilities effectively has been linked with numerous adverse outcomes, including higher levels of executive compensation (Boyd, 1994), awarding golden parachutes (Singh and Harianto, 1989), adoption of 'poison pills' (Mallette and Fowler, 1992), payment of greenmail (Kosnik, 1987), and wealth-diluting acquisitions (Lewellen *et al.*, 1985). Thus, agency theory would propose that combination of CEO and Chairman positions would weaken board control, and negatively affect firm performance.

Application of stewardship theory

The agency model just described would suggest a negative relationship between CEO duality and firm performance. However, other perspectives would argue for a very different outcome. This section addresses limitations of agency theory as applied to CEO duality, and examines several perspectives which can be integrated under the umbrella of stewardship theory.

An implicit assumption of the agency model is that executives are inherently opportunistic agents who will capitalize on every chance to maximize personal welfare at the expense of shareholders. Donaldson (1990) voiced concern

with the failure of agency theorists to address and integrate related research in organizational behavior and organizational theory. The desire to maximize income, for example, might be counterbalanced by 'a much larger range of human motives, including needs for achievement, responsibility, and recognition, as well as altruism, belief, respect for authority, and the intrinsic motivation of an inherently satisfying task (Donaldson, 1990: 372).' Thus, Donaldson proposes a very different model—that the CEO 'far from being an opportunistic shirker, essentially wants to do a good job, to be a good steward of the corporate assets (Donaldson and Davis, 1991: 51). Thus, stewardship theory would propose that CEO duality would facilitate effective action by the CEO, and consequently lead to higher performance. The stewardship model is consistent with other research on corporate governance.

Resource dependence theory (Pfeffer and Salancik, 1978) proposes that corporate boards are a mechanism to manage external dependencies and reduce environmental uncertainty. This theory also proposes that characteristics of an effective board will vary as a function of environmental conditions. An 'ideal' board structure for firms in the semiconductor industry, for example, may be very different from firms in service or primary metals industries because the industry pressures are substantially different. The resource dependence framework has been supported by studies linking board composition with environmental conditions (e.g., Boyd, 1990; Pfeffer, 1972, 1973; Pfeffer and Salancik, 1978). This perspective would suggest that CEO duality might actually improve organizational performance in certain contexts.

Pfeffer and Salancik (1978) argued that leaders with greater discretion would be better able to implement their strategic decisions, and more likely to overcome organizational inertia. Duality would increase chief executive discretion by providing a broader power base and locus of control, and by weakening the relative power of other interest groups (Hambrick and Finkelstein, 1987: 379). Pfeffer and Salancik also argued that a single leader will improve responsiveness to external events, and facilitate accountability of decision making. Support for this rationale is provided by Harrison *et al.* (1988), who found that duality facilitated replacement of the CEO when faced with poor corporate performance. Additionally, Worrell and Nemec (1993) reported that announcement of the consolidation of CEO and Chairman positions was positively linked to shareholder returns.

Finally, one must note that even agency theorists acknowledge that CEO duality may not be universally harmful. While Fama and Jensen argued that this practice will theoretically have a negative effect on firm performance, this is not without exception:

> In some cases, this signals the absence of separation of decision management and decision control, and, in our theory, the organization suffers in the competition for survival. We expect, however, that the apparent dominance of some top managers is more often due to their ability to work with the decision control system of their organizations than to their ability to suppress diffuse and separate decision control (Fama and Jensen, 1983: 314–315).

A contingency model of duality

Research on corporate strategy is replete with mutually incompatible perspectives—such as the debate over formal and incremental models of the planning process. Because such perspectives often represent endpoints on an abstract continuum, a main benefit of such debate is the recognition that neither perspective is universally correct, and often yield a more comprehensive understanding (Judge and Zeithaml, 1992).

Similarly, the agency model of the CEO-Chair as the opportunistic, self-maximizing, shirker is as extreme a model as stewardship's depiction of the CEO-Chair as the altruistic, self-sacrificing steward of corporate assets. In practice, elements of both theories are likely to be present. The critical question, therefore, is under what circumstances does the consolidation of power and decision-making afforded by duality outweigh the potential abuses described by the agency model?

To answer this question, it is necessary to bridge several domains of the strategy literature. Summer and colleagues (1990) characterized the most useful studies as those which attempt to integrate different dimensions of strategy research. Similarly, Hrebiniak *et al.* (1989) called for more research which simultaneously addresses

organizational environment, strategy processes, and performance. A prominent example of this research stream is Miller and Friesen's (1983) analysis of environment, strategy-making, and performance.

The separation of chief executive and chairman positions is an important and highly visible aspect of organizational structure. Given the competing rationales provided by agency and stewardship theories, the board must therefore view consolidation of the CEO and Chairman as a strategic decision. Support for this position is provided by Finkelstein and D'Aveni (1993) who concluded that vigilant boards weigh potential agency abuses against gains in leadership when deciding on CEO duality. Under what circumstances, though, do the benefits of duality outweigh the potential disadvantages? Previous research suggests that environmental uncertainty plays a key role in understanding the performance consequences of duality.

For example, Boyd (1990) found that high performing firms responded to environmental uncertainty by creating smaller boards, but with a greater number of interlocks. This combination offers a more compact, adaptable board, with superior access to resources. Similarly, one would expect that the increased responsiveness and consolidation of power afforded by duality would be an asset in high uncertainty environments. Alternately, an organization in a stable environment has a lesser need for a powerful CEO (Hambrick and Finkelstein, 1987). Thus, the presence of a single leader during periods of high turbulence may allow a faster, more unified corporate response to changing events, and outweigh any potential agency costs. Alternately, in a low uncertainty environment, there may be a lesser need for a powerful CEO. Sacrificing CEO power for a reduced likelihood of agency abuses may consequently be desirable in a low uncertainty environment.

Research on strategic decision making also suggests that the performance consequences of CEO duality will vary across environmental conditions. Bourgeois and Eisenhardt (1987, 1988), for example, found that decision speed was critical to organizational performance in high velocity environments. Such environments also benefit from having a strong and decisive CEO, rather than a consensual approach to decision making. Eisenhardt (1989) found that executives of high performance TMTs want to be involved in formulating strategic decisions, but are willing to delegate a final decision choice to the chief executive. However, Judge and Miller (1991) found that decision speed was associated with performance only in high velocity environments. Similarly, duality may lead to faster decision processes, while sacrificing consensus and evenness of participation. This decision structure may be an advantage in high uncertainty environments, and dysfunctional in low uncertainty environments.

Drawing on previous research (Dess and Beard, 1984), environmental uncertainty is defined as having three dimensions: Munificence, dynamism, and complexity. Each of Dess and Beard's dimensions has different implications for the level of uncertainty experienced by the firm. This paper proposes that the value of CEO duality as proposed by the stewardship model will outweigh potential agency abuses in high uncertainty environments. Thus, the correlation between duality and performance is expected to vary at high and low levels of uncertainty for each environmental dimension.

Munificence measures the abundance of resources in the environment. Computer manufacturing, for example, is a fairly munificent environment, while resources are considerably more scarce in hydraulic cement or steel industries. Scarcity implies greater uncertainty regarding access to resources; consequently, munificence is negatively related to uncertainty. Therefore, duality is expected to be advantageous in low munificence environments.

H2: CEO duality will be positively related to firm performance in low munificence environments.

Dynamism measures environmental volatility, and is positively associated with uncertainty. Keats and Hitt (1988) reported that firms respond to dynamism by creating simpler organizational structures. The simplicity of duality, coupled with faster response time and increased accountability, is expected to be advantageous in high dynamism environments.

H3: CEO duality will be positively related to firm performance in high dynamism environments.

Complexity measures inequalities among competitors, and is positively associated with uncertainty (Dess and Beard, 1984). Aldrich (1979) proposed that strategic decisions would be made more frequently in high complexity vs. low complexity environments. Therefore, duality is expected to be advantageous in high complexity environments.

H4: CEO duality will be positively related to firm performance in high complexity environments.

METHOD

Sample

Data were collected from 192 firms in 12 industry groups, which were selected to maximize variability over the three environmental dimensions. A list of firms in each industry was generated using 1989 and 1980 editions of the *Moody's* manuals and the Compact Disclosure data base. This design helps ensure that both high and low performing firms are represented, eliminating any potential 'survivor bias' in the sample. Sample firms were publicly held in 1980, and headquartered in the U.S. Heavily diversified and subsidiary firms were excluded. In smaller industry groups, all firms meeting the selection criteria were included in the sample. In larger industry groups, however, the N was sufficient to permit stratified sampling based on size.

Measurement

Duality

Data were collected from proxy statements and annual reports for 1980. A dummy variable was coded as '1' if the CEO also served as board chair, and '0' otherwise.

Environment

Most theorists acknowledge that organizational environments are composed of multiple dimensions. Additionally, the use of archival-based models is recommended over perceptually-based models when analyzing constraints facing an industry (Bourgeois, 1980; Boyd, Dess, and Rasheed, 1993). Dess and Beard (1984) drew on Aldrich's (1979) theoretical work to develop an objectively-measured, multidimensional model of organizational environment. Their model consisted of three following dimensions: Munificence, dynamism, and complexity. Dess and Beard's model has been applied to several studies of corporate strategy (Boyd, 1990; Keats and Hitt, 1988; Lawless and Finch, 1989).

Dess and Beard's (1984) model has been supported by a confirmatory factor analysis (Rasheed and Prescott, 1992), which reported a three factor structure that explained 94 percent of the variance in the data. Coefficient alphas for these dimensions were in excess of 0.80. Additionally, Keats and Hitt (1988) reported comparative data which supported the construct validity of this model. Measurement of these dimensions was based on previous studies using these constructs (Boyd, 1990; Keats and Hitt, 1988; Lawless and Finch, 1989). **Munificence** was operationalized using a standardized measure of industry sales growth over a 5-year period. **Dynamism** was operationalized using a standardized measure of the volatility of industry sales growth rate over the same period. Formulae used to compute these estimates are provided in the Appendix. **Complexity** is based on Aldrich's (1979) environmental characteristics of homogeneity and concentration. Economic theory (Porter, 1980; Scherer, 1980) suggests two relevant variables: Number of firms in an industry group, and their relative inequalities in market share. The four firm concentration ratio only addresses the latter component, while the Herfindahl index (Herfindahl, 1950; Kelly, 1981) includes both components. The H-index is the sum of the squared market shares for all firms in an industry group, and ranges between 0 and 1. A score approaching 1 would imply only a few competitors in an industry, or a few firms which have a dominant market share (e.g., monopolistic or oligopolistic structures). Such industries would be considered less complex than those approaching more perfect competition. Consequently, complexity was operationalized in this study using the Herfindahl index.

Performance

Policy decisions made by the CEO and board are not likely to be reflected in the balance sheet

for several years. Consequently, performance was operationalized as average return on investment (ROI) over the 5-year period 1980–84. Data were collected from Compustat, and supplemented by annual reports as needed.

Analysis

One criticism of contingency models is the lack of specificity in describing the exact nature of a contingency relationship (Schoonhoven, 1981). This paper proposes that the strength (or degree) of the duality–performance relationship will vary across different organizational environments. This proposition is consistent with Prescott's (1986) conclusion that organization environment moderates the strength but not the form of strategy–performance relationships.

The two most common analytical tools for testing such moderator effects are moderated regression analysis and comparison of correlations across subgroups. Studies which hypothesize a moderator affecting the *strength* of a relationship should use subgroup analysis, while studies hypothesizing a moderator affecting the *form* of a relationship should use moderated regression (Arnold, 1982; Venkatraman, 1989). Because this study hypothesizes that the strength of the duality–performance relationship is moderated by environmental uncertainty, subgroup analysis is most appropriate to test hypotheses. Subgroup analysis estimates correlations across two different populations (e.g., low vs. high levels of munificence) and computes a Z-statistic to determine whether the magnitude of the effect varies significantly across groups. This procedure is described in detail by Bruning and Kintz (1977: 214–215) and Arnold (1982). For purposes of comparison, however, a supplemental regression model is used to determine whether environmental uncertainty also moderates the form of the duality–performance relationship.

RESULTS

CEO duality occurred in 46 pecent of the sample. This is a smaller percentage than in the *Fortune* 500, and reflects the sample's inclusion of smaller firms, where duality is less common. As shown in Table 2, duality occurred most frequently in paper products, semiconductor, and oil refining industries. Duality occurred least frequently in airline, steel, and crude oil industries. Levels of munificence, dynamism, and complexity are also reported for each industry. Correlations among variables are shown in Table 3.

Tests of hypotheses

Hypothesis 1 proposed that CEO duality will be negatively related to firm performance. While the correlation between duality and averaged ROI was in the expected direction (−0.03), it was not statistically significant. Supplemental analysis (available from the author) indicated that this correlation varied widely across industry groups: 0.31 in the semiconductor industry, for example, vs. −0.25 in the crude oil industry.

Hypothesis 2 proposed that CEO duality will be positively related to firm performance in low munificence environments. This hypothesis was supported: duality and averaged ROI reported a correlation of 0.20 in low growth environments, and a correlation of −0.11 in high growth environments. A *Z*-statistic indicated that these correlations are significantly different. Correlations by subgroups are reported in Table 4.

Hypothesis 3 proposed that CEO duality will be positively related to firm performance in high dynamism environments. This hypothesis was not supported: the correlation between duality and averaged ROI was 0.17 in high volatility environments, and a correlation in −0.04 in low volatility environments. While the difference between these correlations was in the expected direction, it was not statistically significant.

Hypothesis 4 proposed that CEO duality will be positively related to firm performance in high complexity environments. Because the Herfindahl index is negatively associated with complexity, we expect a positive correlation in environments with a low Herfindahl score. This hypothesis was supported with a positive correlation of 0.22 in low Herfindahl score environments (e.g., more competitive), and a correlation of −0.11 in high Herfindahl score environments (e.g., more monopolistic or oligopolistic). A *Z*-statistic indicated that these correlations are significantly different.

Additionally, a regression analysis was conducted to assess whether environmental uncertainty also affected the form of the duality–performance relationship. In this model, averaged ROI was

Table 2. Descriptive information for sample

Industry	SIC	*N*	% dual	Sales growth	Sales volatility	Herfindahl index
Crude oil and natural gas	1311	18	38%	0.265	0.066	0.0196
Paper products	2621	15	73%	0.106	0.014	0.031
Book publishing	2731	13	54%	0.098	0.012	0.0185
Oil refining	2911	13	55%	0.230	0.048	0.042
Hydraulic cement	3241	15	42%	0.107	0.019	0.040
Steel	3312	14	36%	0.081	0.026	0.066
Electronic computing equipment	3573	12	52%	0.233	0.018	0.062
Semiconductors	3674	12	55%	0.214	0.025	0.059
Certified air transportation	4511	20	33%	0.164	0.020	0.083
Electrical power utilities	4911	21	47%	0.075	0.053	N/A
Department stores	5311	18	39%	0.077	0.006	0.0619
National banks	6025	22	50%	0.101	0.007	0.0106

Table 3. Correlation matrix of variables

	Duality	Averaged ROI	Sales growth	Sales volatility	Herfindahl index
Duality	1.0				
Avg. ROI	−0.03	1.0			
Sales growth	−0.01	−0.12	1.0		
Sales volatility	−0.06	0.02	0.49**	1.0	
Herfindahl	−0.09	−0.11	0.02	−0.13*	1.0
Mean:	0.46	0.01	0.14	0.27	0.04
S.D.	0.50	0.50	0.07	0.02	0.02

* $p = 0.05$, ** $p = 0.001$

Table 4. Correlations for duality and performance by environmental type and level

	Low		High		Z-score
Sales growth	0.201	(116)	−0.105	(71)	2.01*
Sales volatility	−0.039	(138)	0.169	(49)	1.23
Herfindahl	0.219	(113)	−0.113	(74)	2.20*

*$p = 0.05$

The number of firms in each group is noted in parentheses. Firms were classified into Low/High groups based on the sample mean for each dimension.

Sales growth and the Herfindahl index are negatively associated with environmental uncertainty, while sales volatility is positively associated with environmental uncertainty.

predicted by duality, and the interaction of duality with the three environmental dimensions. This yielded the following equation (NOTE: Significance levels are noted in parentheses. The *F*-statistic for this model is 3.07 ($p = 0.02$) and *R*-squared is 0.08):

$$\begin{aligned} \text{ROI} = & \underset{(0.02)}{0.45\,\text{DUAL}} \underset{(0.03)}{-4.97\,\text{DUALxMUN}} \\ & + \underset{(0.02)}{15.44\,\text{DUALxDYN}} \\ & - \underset{(0.45)}{2.46\,\text{DUALxCOMP}} \end{aligned}$$

The regression model indicates that munificence and dynamism each affect the form of the duality–performance relationship, while complexity does not affect form. Also, when controlling for environmental interactions, duality has an independent, positive relationship with subsequent performance.

DISCUSSION

Previous research has generally reported a null or negative relationship between CEO duality and performance. The meta-analysis of previous research produced an aggregate relationship of −0.02, which is nearly identical to the relationship found for the overall sample of this study ($r = -0.03$). By itself, this finding would suggest that neither agency nor stewardship models can adequately predict the consequences of CEO duality. However, supplementary analyses for different types and levels of environmental uncertainty indicates that duality can have a positive effect on performance under certain industry conditions, and a negative effect under other conditions.

Thus, these findings do not support the current trend in corporate governance of separating the positions of Chairman and CEO. Although duality is correlated with lower subsequent performance, the effect is weak and statistically insignificant. The subgroup analysis also indicates that duality is advantageous under conditions of resource scarcity or high complexity. Also, the regression model indicates that duality has an independent positive effect on subsequent performance, after controlling for interactions with environmental uncertainty. In summary, evidence presented here indicates that duality can help firm performance—under the right circumstances. These results are in stark contrast with the unilateral separation of CEO and Chairman positions recommended by governance reform advocates in the U.S. and the U.K. Rather than 'rewarding' a CEO with the Chairman's title, boards should carefully weigh the merits of duality vs. potential agency abuses before making such a decision. Similarly, separation of CEO and Chairman positions to appease shareholders and institutional investors may prove dysfunctional in the long term. As such, unilateral governance reform on this issue may adversely affect some firms.

This and other archival studies are limited to examination of formal structures (e.g., board composition) and outcomes (e.g., financial reporting). Case studies of the CEO's relationship with board and TMT members could answer several salient questions. For example, how much discretion does the CEO acquire when assuming the board chair? Does the CEO evenly gain power relative to both the board and TMT? Does the elevated status improve a CEO's ability to acquire scarce resources? Case studies could also be applied to dual and independent board structures in an industry which experiences a sudden discontinuity or shock.

Regarding methodology, these results support Venkatraman's (1989) conclusion that subgroup analysis and regression address different aspects of moderation and, as such, produce different results. Results reported here indicate, for example, that munificence moderates both the strength and form of the duality–performance relationship. In comparison, complexity moderates only the strength and dynamism moderates only the form of the duality–performance relationship. Given the complexity of these moderating effects, it is not surprising that previous studies have reported such different findings on the direction and magnitude of the duality– performance relationship. Thus, future studies which propose similar moderating effects may benefit from using both regression and subgroup methodologies.

Another direction for future research is further integration of agency theory with research in organizational behavior and organization theory. As found in this study, both agency and

stewardship models of duality are, by themselves, incomplete and misleading. Through the moderating effect of environmental uncertainty, however, support is found for both theories. Consequently, the generalizability of many normative agency recommendations should be reexamined. For example, the agency literature calls for higher levels of board monitoring and control to facilitate alignment of CEO and stockholder interests. Specific mechanisms to improve control include board representation by outsiders and major investors, and acquisition of company stock by outside directors. Most agency studies using such variables have focused on microlevel outcomes (e.g., CEO compensation, poison pills, and golden parachutes) vs. the effect of control on overall corporate performance. As with separation of CEO and Chairman positions, such attributes may facilitate board monitoring and control, but at the sacrifice of leadership and decision speed. Thus, an important direction for future research is to examine the performance implications of board control across different levels of environmental uncertainty.

A final direction for future research would be to examine the effects of CEO duality on performance among foreign firms. In recent years, shareholder activism has been spreading throughout Europe. This activism has led to the separation of CEO and Chairman positions in numerous firms, particularly in the U.K. The present and previous studies on duality and performance are limited by their exclusive focus on U.S. firms. In addition to broadening our understanding of duality issues, an international comparison would also provide an important test of the generalizability of agency and stewardship models to other cultures.

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APPENDIX: DATA SOURCES USED FOR ENVIRONMENTAL MEASURES

Munificence: Abundance of resources in an industry.
Measurement: Regression slope coefficient, divided by mean value. Coefficients are based on regression of time against value of shipments. Estimate for any given year is based on the five preceding years, i.e., munificence estimate for 1980 is based on data for 1976–1980. Industries are defined using 4-digit SIC codes.
Data Source: *U.S. Industrial Outlook*
Dynamism: Instability or volatility in an industry.
Measurement: Standard error of regression slope coefficient divided by the mean value; using same regression model as for munificence.
Data Source: *U.S. Industrial Outlook*

Complexity: Heterogeneity in the environment, and concentration of resources.
Measurement: Herfindahl–Hirschman index.
Data sources:
Airline: Index was estimated from Table 1: 'Income Statement, data of certified route carriers', *Air Carrier Financial Statistics*. Civil Aeronautics Board, U.S. GPO, Washington, DC, December 1980.
Commercial Banks: Index estimated from table 'The three hundred largest banks in the United States in order of deposits December 31, 1980', *Moody's Bank and Finance Manual*, 1981, pp. a4–a5.
All other groups: U.S. Bureau of the Census, *Census of Manufacturers*, 1982. Index for 1980 based on interpolation of 1977 and 1982 measures, using the MINL approximation suggested by Schmalensee (1977: 187).