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in Electric Utility Firms:
Strategic and Environmental Effects**

**CEO Publication
G 91-10 (195)**

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**CEO COMPENSATION SYSTEMS IN ELECTRIC UTILITY FIRMS:
STRATEGIC AND ENVIRONMENTAL EFFECTS**

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This paper utilizes an agency theory perspective to study the effects of strategic orientation and environmental change on CEO compensation systems. Hypotheses based on this framework are tested in a sample of 50 electric utility firms across two time periods covering a total of ten years. Consistent with theory, we find that strategic orientation has significant, positive effects on the amount, mix and type of CEO compensation. Further, the riskier the firm's strategic orientation, the greater the amount of CEO pay, the greater the proportion of outcome-based cash compensation and the greater the incidence of outcome-based compensation plans. Similarly, an environmental period characterized by increased uncertainty has significant, positive effects on the amount of CEO compensation, the proportion of outcome-based cash compensation and the incidence of outcome-based plans.

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1. INTRODUCTION

In the past few years there have been several empirical studies of CEO compensation that combined the economic and behavioral perspectives (Eisenhardt, 1988; O'Reilly, Main & Crystal, 1988; Tosi & Gomez-Mejia, 1989). A number of studies have attempted to explain variations in the level and composition of CEO pay packages by exploring the role of economic factors such as size and profitability (Finkelstein & Hambrick, 1989) and managerial control (Tosi & Gomez-Mejia, 1989), individual factors such as age, tenure in position and stock ownership (Rajagopalan & Prescott, 1990), and strategic factors such as diversification (Napier & Smith, 1987) and stage in the product life cycle (Balkin & Gomez-Mejia, 1987). Typically, these studies have adopted a cross-sectional, multiindustry perspective and few have examined the role of both firm strategy and environmental change on CEO compensation systems. Also, few studies have examined all three aspects of CEO compensation systems, namely, the amount, mix and type of compensation (Finkelstein & Hambrick, 1988).

In this paper, we examine differences in all three aspects of CEO compensation systems across firms with different strategic orientations. In addition, we investigate how CEO compensation systems are affected by environmental changes. We do this by studying the electric utility industry from 1978 to 1987, a period that included federal legislation to partially deregulate the industry. As such, this paper extends previous work by investigating effects of both strategic orientation and environmental conditions on CEO compensation systems in a rapidly changing industry.

The paper is organized as follows. In section 2 we develop a theoretical framework that utilizes agency theory to hypothesize the effects of strategic orientation and environmental change on the amount, mix and type of CEO compensation systems. In section 3, we discuss the research methods, including sample, measures, data sources and data analysis. Section 4 presents the empirical results. In section 5 we discuss the empirical findings, limitations and directions for future research.

2. THEORETICAL BACKGROUND

The theoretical framework we adopt is that of agency theory. Agency theorists focus on the efficiency of contracts governing principal-agent relationships. The theory has been applied to such diverse organizational phenomena as acquisitions (Amihud & Lev, 1981), board-management relationships (Fama & Jensen, 1983), ownership structures (Jensen & Meckling, 1976), and the effects of pay plans on managerial decisions and firm performance (Brickley, Bhagat & Lease, 1985; Murphy, 1985). Organizational researchers studying

compensation have used agency theory to evaluate when firms use fixed or contingent compensation plans (Eisenhardt, 1985; Eisenhardt, 1988), to study the effects of ownership and control on pay-performance relationships (Gomez-Mejia, Tosi & Hinkin, 1987; Tosi & Gomez-Mejia, 1989), and to test the effects of monitoring and tradition on performance (Conlon & Parks, 1990).

Much of this research builds on seminal work by Jensen and Meckling (1976). They argued that the interests of principals and agents were inherently opposed because of differences in goals and risk-aversion. Emphasis on self-interest, in turn, gives rise to agency costs, which include the loss suffered by the principal if the agent is not monitored and, hence, does not act in the principal's best interests, or the costs of monitoring the agent's behavior to ensure compatibility with the interests of the principal. Agency costs can be minimized by choosing between a contract based solely on behavior and one at least partially based on outcomes or performance. An important consideration in this choice is the trade-off between the cost of monitoring behavior and the cost of monitoring outcomes and transferring risk to the agent (Demski & Feltham, 1978; Eisenhardt, 1989).

Four major factors can be identified within the agency framework as key to the choice between behavior-based and outcome-based compensation contracts. These are (i) the availability of multiple options for the agent, (ii) the non-programmability of behavior (iii) the ambiguity of cause-effect relationships and (iv) outcome uncertainty . Factors (i), (ii) and (iii) limit the a-priori ability of the principal to specify managerial choices and hence, increase the likelihood of opportunistic behavior by the agent. Hence, these three factors increase agency costs to the principal. Factors (iii) and (iv) (cause-effect ambiguity and outcome uncertainty), increase the cost to the agent since they are associated with increased managerial risk.

Because it is difficult to specify appropriate behavior under conditions of multiple options, behavior non-programmability and cause effect ambiguity, outcome-based compensation contracts are likely to be adopted (Demski & Feltham, 1978; Eisenhardt, 1989). However, such contracts transfer risk to the manager and hence, managers need to be compensated for bearing this risk, especially under conditions of outcome uncertainty (Shavell, 1979). Thus, in contexts where all four agency factors operate, agency theorists would argue for a high level of pay to compensate the manager for sharing the risk and outcome-based contracts to minimize the agency costs to the principal (Eaton & Rosen, 1983; Raviv, 1985).

In general, the arguments presented above indicate that variations in the level and composition of compensation packages result from variations in the extent to which the four

agency factors operate within different contexts. Availability of options, programmability of behavior, cause effect ambiguity, and outcome uncertainty influence the amount of pay, the mix between fixed and contingent pay, and the type of compensation contracts (behavior vs. outcome-based) used to reward agents. As argued above, the relationships between the four agency factors and the amount, mix and type of compensation contracts arise from the influence these factors have on monitoring costs to the principal and risk to the agent.

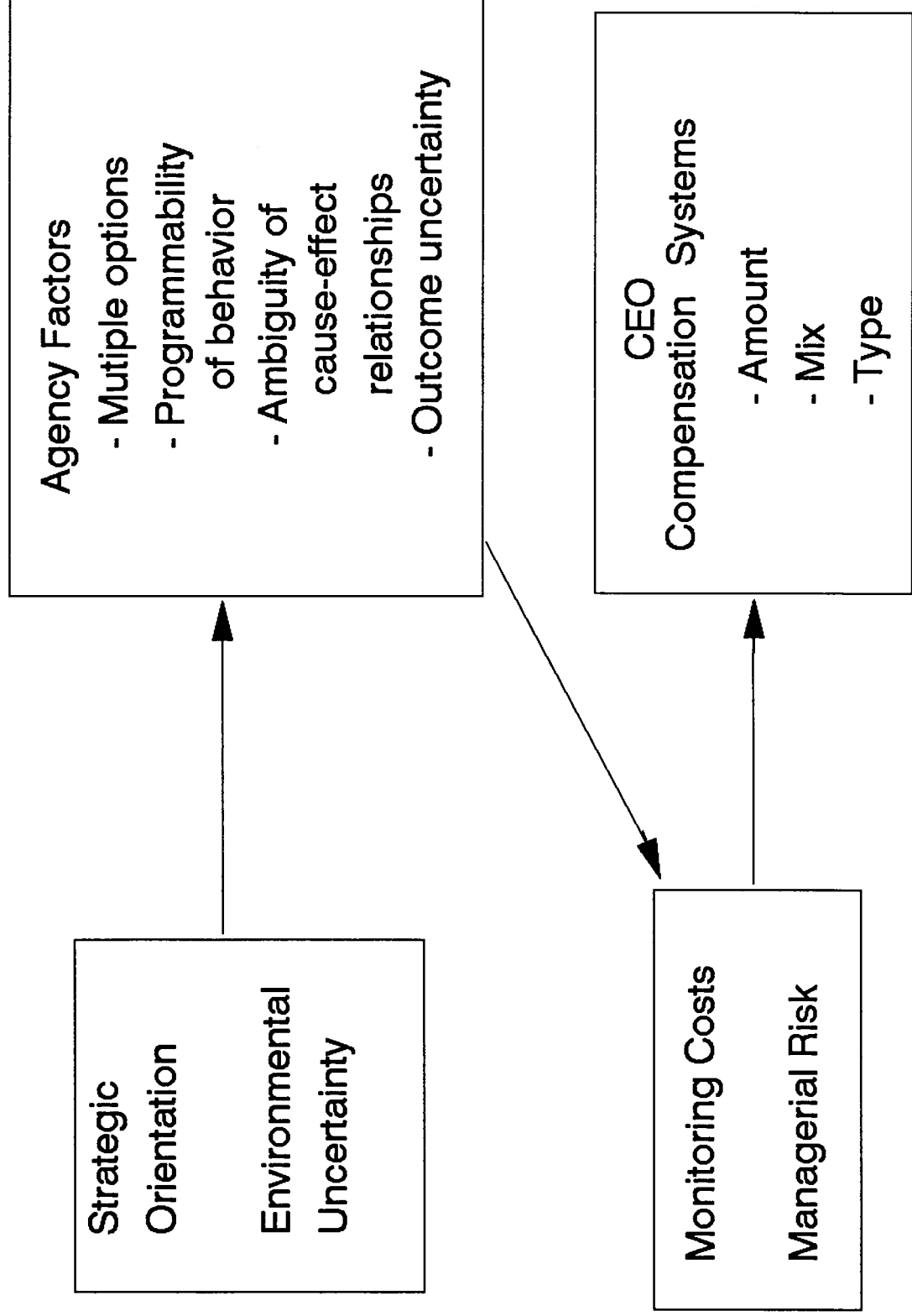
The agency arguments discussed in the preceding paragraphs provide the theoretical basis for understanding the effects of environmental uncertainty and strategic orientation on the amount, type and mix of CEO compensation systems. These relationships are illustrated in Figure 1 and discussed in the following paragraphs.

Insert Figure 1 Here

There are two crucial dimensions of a firm's operating context which influence the scope and effect of managerial behavior- the firm's strategic orientation and its environment. Differences in firms' strategic orientations and environmental conditions directly influence the latitude of options top managers have in setting policy (Hambrick & Finkelstein, 1987). Firms which adopt multifaceted and proactive strategies and environments that are complex and dynamic, provide considerable discretion to their top executives.

It has been argued that there is a greater variance in the strategies pursued by firms in uncertain and changing environments than those pursued by firms in stable environments (Miles & Snow, 1978). This can be partly attributed to the differences in managerial perceptions found among firms competing in rapidly changing environments, even within the same industry (Snow & Hrebiniak, 1980). It is also difficult to pre-specify managerial behavior in rapidly changing environments and for firms pursuing proactive, multifaceted strategies since few precedents exist and the likely effects of managerial actions cannot be predicted with any degree of confidence. In addition, the number of strategic factors that influence outcomes increases in rapidly changing environments and for firms pursuing aggressive, multiple strategies, muddying the link between behavior and outcome. Finally, there is greater variability and uncertainty associated with outcomes in high-discretion contexts than in low-discretion contexts (Hambrick & Finkelstein, 1987), in part because of the range of options pursued by managers in rapidly changing environments. Overall, then, it can be argued that a firm's strategic orientation and

Figure 1
Theoretical Framework



environmental conditions significantly influence the extent to which the four agency factors (identified in Figure 1) are likely to prevail.

Hence, based on our earlier discussion linking variations in these agency factors to variations in compensation contracts, we can argue that firms' strategic orientations and environmental conditions are likely to have significant influence on the amount, mix and type of CEO compensation systems. These arguments lead to two general propositions as follows.

Proposition 1 Strategic orientation will be a significant predictor of the amount, mix and type of CEO compensation systems.

Proposition 2 Environmental uncertainty will be a significant predictor of the amount, mix and type of CEO compensation systems.

In the next section we develop specific research hypotheses which predict the effects of different strategic orientations and environmental conditions on CEO compensation systems.

2.1 Effects of Strategic Orientation

This study adopts the Miles and Snow (1978) typology to assess strategic orientation. This typology is particularly appropriate for studying business-level strategies of firms primarily operating in single industries (Snow & Hrebiniak, 1980; Zajac & Shortell, 1989), since it captures variations in strategic choices among firms facing similar environmental conditions.

In the following paragraphs we utilize the framework presented in Figure 1 to hypothesize differences in CEO compensation contracts between firms with different strategic orientations.

Prospectors. Miles and Snow (1978) define Prospectors as firms that aggressively seek growth opportunities through product and market development, innovation and diversification. These firms tend to adopt aggressive, innovative strategies that are not easily programmable. In addition, the uncertainty generated by frequent interaction with external actors makes formula approaches to strategy unlikely, clouding the link between behavior and outcome. Prospectors tend not to have a long record of implementing unchanging policy, making it difficult for managers to rely on historical precedents, reinforcing equivocality. Hence, Prospectors are characterized by low behavior programmability, multiple options, and ambiguity in cause-effect relationships. Further, Prospector strategies are inherently riskier than are other strategies. Hence, compensation plans that reward managers for risk-seeking seem appropriate for these

firms. For example, several studies have found that outcomebased incentive plans reduce risk-aversion behavior by top managers (Holmstrom, 1979; Larcker, 1983; Shavell, 1979). In addition, short-term incentive plans have been associated with the adoption of riskier investments (Larcker, 1983) and improved performance (Brickley, Bhagat & Lease, 1985; Tehranian & Waegalian, 1985). As a result, we would expect a Prospector orientation to be positively associated with the utilization of outcome-based plans as well as the proportion of outcome-based pay in the CEO pay package.

The risk associated with Prospector strategies also increases outcome uncertainty. Their dependence on customers and their concern for growth implies a greater concern for managing the environment, increasing uncertainty. This enhanced risk level reduces the attractiveness of outcome-based pay plans because such plans shift the burden of risk to managers, who must bear the associated costs (Eisenhardt, 1989). As a result, the amount of compensation is likely to be higher in order to attract and retain managers (Eaton & Rosen, 1983). This suggests a positive relationship between a Prospector orientation and amount of compensation for the CEO.

Defenders. Defenders are firms that adopt, and protect, narrow and stable domains. Just as Prospectors are externally-oriented and innovative, Defenders are internally-oriented and efficient (Miles & Snow, 1978).

Defenders do not operate in as many domains as Prospectors, and their strategies tend to be more narrowly focused on efficiency concerns. This tends to limit the number and variety of options available to managers. Both the programmability of managers' behaviors and the relationship between means and ends are more easily understood when strategies are so stable and narrowly focused, reducing monitoring costs.

The role of top management in these firms is to continue with the policies of the past. As such, there is considerably less risk associated with the strategies pursued by Defenders than those pursued by Prospectors. In addition, the degree of outcome uncertainty associated with internal, efficiency-oriented strategies is much less than that associated with more externally-oriented domain expansion strategies. Hence, we would expect Defenders to utilize outcome-based compensation plans less than Prospectors and, given the lower outcome uncertainty associated with Defender strategies, to pay less as well.

Analyzers. Analyzers are firms that simultaneously defend existing product markets through internal, efficiency-oriented strategies while cautiously penetrating new markets through product/market innovation. Hence, Analyzers exhibit characteristics of both Prospectors

and Defenders (Miles and Snow, 1978). They manage this trade-off of expansion and stability by developing a technological core that is relatively efficient and capable of imitating successful products introduced by Prospectors. As such, flexibility and efficiency are critical to the success of these firms.

Managers in firms following Analyzer strategies tend to have more discretion than they would in Defenders, but less than in Prospectors. While their interest in growth expands the range of options that might be considered, their concern with efficiency limits the resources available to pursue such expansion. In a similar vein, managerial behaviors directed toward efficiency are more easily programmable than are innovative, growth-oriented behaviors. And cause-effect relationships are clearer when managing for efficiency than for growth.

Finally, the level of risk associated with Analyzer strategies tends to fall between that of Prospectors and Defenders. Analyzers often enter new product-markets after Prospectors and try to control costs in their quest for efficiency. These dual strategies reduce the likelihood of outright failure, but also create upper limits to success. Hence, Analyzers face only moderate outcome uncertainty. Compensation contracts are likely to reflect the Analyzer's equivocal position: an Analyzer orientation will have a stronger positive effect on the amount of pay and the utilization of outcome-based pay than Defenders but less so than Prospectors.

Reactors. As opposed to the proactive strategies of prospecting, defending, and analyzing, some firms' strategies tend to be characterized by reaction. These Reactors do not follow a consistent strategy, often because top managers fail to articulate a clear strategic direction (Miles & Snow, 1978).

In the deregulating electric utility industry, some firms may become Reactors because of the dramatic environmental changes that make previous response mechanisms inappropriate. Managers of these firms have the weakest understanding of what it takes to succeed, and their firms' strategies may reflect this. Reactors may have very few options because they do not have the administrative capability to implement a proactive and consistent strategy (Miles and Snow, 1978). Reactors follow relatively simple strategies (mainly that of imitation) that do not involve significant monitoring costs. And senior managers need not be compensated for risk taking, since these firms are not very proactive. As a result, generous rewards are unlikely to be offered, and top managers are unlikely to experiment with new compensation types, preferring guaranteed pay to outcome-based compensation. Overall, in comparison to the other three strategic orientations, a Reactor orientation is likely to have the smallest effect on the amount, type and mix of CEO compensation.

These differences in strategic orientations lead to the first set of research hypotheses.

Hypothesis la. After controlling for firm-specific and individual-specific effects, strategic orientation will be a significant, positive predictor of the amount of CEO compensation. Further, the size of this effect will be the strongest in Prospectors, followed by Analyzers, then Defenders and the smallest in Reactors.

Hypothesis lb. After controlling for firm-specific and individual-specific effects, strategic orientation will be a significant, positive predictor of the proportion of outcome-based cash compensation for the CEO. Further, the size of this effect will be the strongest in Prospectors, followed by Analyzers, then Defenders and the smallest in Reactors.

Hypothesis lc. After controlling for firm-specific and individual-specific effects, strategic orientation will be a significant, positive predictor of the incidence of outcome-based compensation plans for the CEO. Further, the size of this effect will be the strongest for Prospectors, followed by Analyzers, then Defenders, and the smallest in Reactors.

2.2 Effects of Environmental Change

The population we study is investor-owned electric utilities in the U.S. during 1978-1987. This period was marked by significant change, as the Public Utilities Regulatory Policies Act (PURPA) was enacted in 1978, initiating the deregulation of the industry. Although the process of deregulation began in 1978, the permanence of the change did not become apparent until May 1983, when the Supreme Court upheld the provisions of PURPA. Further, by the end of 1983, a majority of state regulatory commissions adopted guidelines for the enforcement of PURPA (Annual Reports, National Association of Regulatory Utility Commissioners). Before that, industry executives strongly resisted deregulation, lobbying intensively to repeal the provisions of the Act (Electrical World, various issues, 1980-85). These events outline two contrasting time periods: (1) 1978-1982, when firms were effectively regulated, in part because managers were reluctant to embrace reforms they were still fighting in court, and (2) 1983-1987, when firms were increasingly deregulated, with firms trying to adapt to a rapidly changing environment (Electrical World Conference, 1986; Munson, 1985; Navarro, 1985).

In comparison to the 1978-82 period, the 1983-87 period was associated with higher

levels of uncertainty for managers, attributable to the greater information complexity and intensified competition associated with increased levels of deregulation. While the process of deregulation did begin in 1978, market forces assumed greater relevance in the post 1982 period as the permanence of the reforms initiated in 1978 became apparent. As environmental uncertainty increases due to deregulation, it becomes increasingly difficult to assess managers' true abilities because their knowledge base becomes less relevant in the changed context (Raviv, 1985). It also becomes more difficult to specify appropriate behavior or understand cause-effect relationships because deregulation upsets established patterns of behavior. These changes increase monitoring costs and make outcome-based compensation contracts more desirable (Holmstrom, 1979; Murphy, 1985). In addition, managers are likely to be paid more to Swmpensate for the added outcome uncertainty and risk they face in a deregulating environment (Eaton & Rosen, 1983).

These arguments suggest a positive relationship between environmental uncertainty stemming from deregulation and the amount of CEO pay as well as utilization of outcome-based pay. The second set of hypotheses tested in this study represent these arguments.

Hypothesis 2a. After controlling for firm-specific and individual-specific effects, an environmental period associated with increased uncertainty (1983-87) will be a significant, positive predictor of the amount of CEO compensation .

Hypothesis 2b. After controlling for firm-specific and individual-specific effects, an environmental period associated with increased uncertainty (1983-87) will be a significant, positive predictor of the proportion of outcome-based cash compensation for the CEO.

Hypothesis 2c. After controlling for firm-specific and individual-specific effects, an environmental period associated with increased uncertainty (1983-87) will be a significant, positive predictor of the incidence of outcome-based compensation Plans for the CEO.

3. METHODS

3.1 Sample

The sample for this study was drawn from a population of 175 investor-owned electric utility firms in the U.S. Consistent with previous research using the Miles & Snow typology (Snow & Hrebiniak, 1980), the CEO was selected as the respondent most knowledgeable about the firm's strategic orientation. Questionnaires mailed to chief executives in each firm during November 1987, follow-up telephone calls, and a second mailing in February 1988, yielded 108 responses, for an effective response rate of 62%. Out of these 108 firms, published data for the study's time period (1978-1987) were available for only 50 firms (listed in Appendix A). However, the size and composition of our study's sample are comparable to other recent studies which have examined investor-owned electric utilities in the U.S. (Abdel-Khalik, 1988).

Eighty-five percent of the respondents were either chief executives or senior vice-presidents responsible for strategic planning, and the remaining 15% directly reported to the CEO. Ninety percent had been in their present position for more than 10 years, suggesting that respondents were quite knowledgeable about the strategic changes taking place in their firms during the study period. To check for non-response bias, four characteristics of responding firms were compared with those of non-respondents - net investment in electric utility plant, net assets, number of retail customers, and return on stockholders' equity- for 1987. No significant differences were found ($p < .05$ in paired t-tests) between respondents and non-respondents along all four characteristics.

3.2 Measures and Data Sources

Three sets of measures were developed: (1) perceptual indicators of strategic orientation; (2) objective measures to validate strategic orientation and act as controls; and (3) objective measures of amount, type, and mix of CEO compensation systems.

The study utilized industry-specific, multi-item, 7-point anchored Likert-type scales to operationalize five measures of strategic orientation. Items for these scales were developed through in-depth interviews with senior executives and a review of industry trade journals and company annual reports. The measures and operationalizations were consistent with those adopted in past studies (Fombrun & Zajac, 1987; Zajac & Shortell, 1989) and are presented in Appendix B.

To assess the unidimensionality and discriminant validity of the five measures of strategic orientation, principal components analysis with varimax rotation was employed (Kim &

Mueller, 1978). Ideally, all items should be factor analyzed jointly in order to assess the number of underlying factors. However, given the limited sample size, this would have resulted in a low sample-to-items ratio and hence, unstable factor solutions (Kim & Mueller, 1978). Hence, items representing each measure of strategic orientation were subjected to an exploratory analysis to check for unidimensionality and all pair-wise combinations of the five measures were subjected to the same analysis to assess discriminant validity between these measures (Nunnally, 1967). The items presented in Appendix B satisfied the requirements for unidimensionality and discriminant validity (criteria for cut-off eigenvalues and factor loadings were consistent with the guidelines provided in Kim & Mueller, 1978). Cronbach Alpha for each of the five measures was greater than .60, satisfactory for survey-based scales (Eisenhardt, 1988; Nunnally, 1967). A composite measure was obtained for each scale by averaging the individual item raw scores (Nunnally, 1967). The five measures are briefly described below.

1. Market Penetration Strategies (MKT1: 3 items - Cronbach Alpha=0.69). Strategies that emphasize cautious penetration and development of existing markets through advertising and promotion, load management and capacity/bulk power sales.
2. Market Innovation Strategies (MKT2: 2 items - Alpha=0.71). Strategies that seek to develop new markets and segments through aggressive, innovative marketing schemes, including innovative pricing, time-of-use, and off-peak rates.
3. Technological Innovation Strategies (INN: 3 items - Alpha=0.74). Strategies that develop new methods of generation and transmission of electricity, such as renewable resource technologies and automated distribution systems.
4. Efficiency-oriented Strategies (EFF: 4 items - Alpha=0.83). Strategies that seek to improve the efficiency of existing operations through costcutting measures and productivity improvements.
5. Domain Expansion Strategies (DOM: 4 items - Alpha=0.83). Strategies that seek to develop new product markets through mergers and acquisitions, geographical expansion, and diversification.

Two different senior executives responded to the questionnaire in twenty out of 50 firms. Construct scores were computed separately for the two respondents and checked for inter-rater reliability. Inter-rater reliabilities for the five measures ranged from 0.71 to 0.85 ($p < .01$), providing further support for the reliability of the measures.

The first set of measures related to strategic orientations and environmental period. Firms were classified into Miles & Snow's strategic types based on the five measures of strategic

orientation described above-dummy variables were used to represent different strategic orientations (the clustering procedure used to derive these categories is described in the Results section). Environmental period was measured as a dummy variable - the period 1983-87 representing increased uncertainty received the score 1 and the period 1978-82 was coded 0.

The second set of measures were objective indicators of strategic orientation (to validate clusters) and control variables.

1. Operating efficiency. Defined as the ratio of operating expenses to operating revenues, this variable was chosen because it is the most commonly used index of efficiency in the electric utility industry (Edison Electric Institute, 1988).
2. Extent of diversification. This variable was operationalized as the percentage of firm revenues from non-electric utility operations (Edison Electric Institute, 1988).
3. Control Variables. Past research (Ciscell & Carroll, 1980; O'Reilly, Main & Crystal, 1988) indicates that firm size and profitability are important firm-specific factors and executive age, tenure in position, and shareholdings are critical individual factors that explain variations in CEO compensation. Hence, these five factors were chosen as control variables.

Firm size was defined as the natural logarithm of total assets (expressed in 1987 dollars using the GNP Implicit Price Deflator). The logarithmic transformation was used to normalize the measure. Firm profitability was defined as return on stockholders equity (Rajagopalan & Prescott, 1990). Age and tenure in position were measured in number of years and CEO shareholdings was defined as shares of common equity held by the CEO as a percentage of outstanding common stock (Finkelstein & Hambrick, 1989).

Data for these measures were obtained from Moody's Public Utility manuals, Financial Statistics of Selected Investor-owned Public Utilities, Compustat, and corporate proxy statements.

The third set of measures related to senior management reward systems and represented amount, mix and type of CEO compensation, the dependent variables in the study. Data for these measures were obtained from annual corporate proxy statements.

1. Amount - Three measures were used: CEO total annual cash compensation, CEO annual salary and CEO annual bonus. CEO total cash compensation was defined as the sum of annual salary, bonus and fringe benefits (Finkelstein & Hambrick, 1989). All three measures were expressed in 1987 dollars using the GNP Implicit Price Deflator.

The definition of total cash compensation used in this study excludes stock options and other contingent compensation, which could potentially result in an understatement of compensation. However, as noted by Kerr & Bettis (1987) and Finkelstein & Hambrick (1989),

valuation of long-term incentives is beset with a number of practical and methodological problems. Moreover, salary and bonus constitute a significant proportion of the total compensation package. Gomez-Mejia and colleagues (1987) found that, on average, salary and bonus made up 75% of total compensation. Hence, our definition of total cash compensation is not likely to result in serious underestimation of the compensation package. In addition, Lewellen and Huntsman (1970) found that the determinants of executive compensation did not differ between measures of total compensation that included or excluded long-term contingent pay.

2. Mix - CEO annual bonus divided by CEO total cash compensation was used as the measure of proportion of outcome-based cash compensation for the CEO (Balkin & Gomez-Mejia, 1987).

3. Type - Three dummy variables representing types of outcome-based compensation plans were defined, as follows:

- a. Bonus plan = 1 if a short-term (annual) bonus plan for the CEO existed and 0 otherwise.
- b. Stock option plan = 1 if a stock option plan for the CEO existed and 0 otherwise.
- c. Long term incentive plan = 1 if a long-term incentive plan for the CEO existed and otherwise.

3.3 Data Analysis

Two types of analyses were conducted. First, firms were divided into different clusters based on the five measures of strategic orientation. For this purpose a K-means clustering algorithm was used (Hartigan, 1975). This algorithm uses the nearest-centroid sorting method to form centroids based on mean distances so that all distances between observations in one cluster are less than all distances between observations in different clusters. Following the procedure outlined in Mascarenhas (1989), the number of clusters were specified from 1 to 10, (i.e., up to one-fifth the total number of observations). The cubic clustering criterion and pseudo-F statistic were noted for each level of clustering and the appropriate number of clusters were identified on the basis of the peaking of the cubic clustering criterion and the pseudo-F statistic. Tukey's tests for multiple comparisons of means were then used to examine pair-wise differences among the clusters along the five variables. Finally, Tukey's tests were used to assess inter-cluster differences along the objective measures of operating efficiency and extent of diversification.

Second, hypotheses were tested through pooled cross-sectional time series regression models. Dependent and independent variables were first transformed using the Cochrane-Orcutt

procedure (and the Prais-Winston correction for the first period's observations) in order to correct for auto-correlation (Pindyck & Rubinfeld, 1981). The Durbin-Watson statistic for the corrected model was close to 2 for all dependent measures, suggesting that no significant autocorrelation was present in the transformed data. The transformed variables were then used to estimate generalized least squares equations for the continuous compensation measures representing amount and mix of CEO compensation. Four separate models were estimated with CEO total cash compensation, CEO annual salary, CEO annual bonus and proportion of outcome-based cash compensation as the four dependent variables. The independent variables included firm size, firm profitability, CEO age, and CEO shareholdings as the four control variables, strategic orientation and environmental period. Two dummy variables were used to represent three types of strategic orientation (discussed in the Results section) and one dummy variable was used to represent environmental period.

Since the three measures representing incidence of outcome-based compensation plans were dichotomous measures, maximum likelihood estimates were obtained through logistic regressions (Aldrich & Nelson, 1987). The model specification for the logistic regressions was identical to the one described for the continuous measures of CEO compensation. Three separate models were estimated for bonus plans, stock option plans and long-term incentive plans.

4. RESULTS

4.1 Characteristics of Strategic Orientations

Table 1 describes the characteristics of the three types of strategic orientations identified through the K-means clustering algorithm. Overall F-values for each of the five cluster-defining variables and Tukey's tests for inter-cluster differences are also provided in this table. All five F-values were significant ($p < .05$), indicating that each of the five measures was a significant determinant of strategic orientation. The three strategic types were labeled Prospectors, Defenders, and Reactors, as follows.

TABLE 1
CHARACTERISTICS OF STRATEGIC ORIENTATIONS^a

Orientation Defining^b Variables	Type 1 Prospectors (N=14)	Type 2 Defenders (N=19)	Type 3 Reactors (N=17)	F-Value	Turkey^c Test
MKT 1	4.30 (0.61)	5.87 (0.52)	4.59 (0.75)	30.21***	2>1; 2>3
MKT2	6.21 (0.66)	5.84 (0.76)	5.36 (0.78)	4.65**	1>2; 1>3; 2>3
INN	4.96 (0.75)	4.90 (0.64)	4.41 (0.53)	3.27*	1>3; 2>3
EFF	5.56 (0.70)	6.33 (0.58)	5.39 (0.74)	10.51***	2>1; 2>3
DOM	6.17 (0.61)	4.89 (0.82)	4.45 (0.57)	22.24***	1>2; 1>3

^a Means are shown with standard deviations in parentheses

^b Orientation-defining variables were measured on a 7-point scale where 1 represented "significant decrease in emphasis," 4 represented "no change" and 7 represented "significant increase in emphasis."

^c Clusters are significantly different at $p < .05$

Significant levels:

- * $p < .05$
- ** $p < .01$
- *** $p < .001$

Type 1 firms were clearly the most innovative, emphasizing innovative marketing, technological innovation, and domain expansion. These firms scored the highest among all three clusters on market innovation (MKT2), technological innovation (INN) and domain expansion (DOM). They were significantly higher than Type 3 on all these measures and were significantly higher than Type 2 on MKT2 and DOM. Hence, the 14 firms in this cluster were labeled Prospectors.

Type 2 firms concentrated on market penetration (MKT1) and efficiency-oriented (EFF) strategies and scored the highest among all three clusters on these two measures. On both

measures Type 2 firms were significantly ($p < .05$) higher than Type 1 and Type 3 firms. In the Miles & Snow (1978) typology, Defenders compete primarily on the basis of operational efficiency and grow cautiously through increased penetration of existing markets. Accordingly, the 19 firms in this cluster were labeled Defenders.

Type 3 firms displayed no consistent pattern in strategic orientation. In fact, Type 3 firms scored lowest on four out of five measures (MKT2, INN, EFF, DOM), indicating that they were not even as efficiency-oriented as Prospectors or as innovative as Defenders. This lack of focus appears to be in line with Miles and Snow's (1978) discussion of Reactors as those firms that do not have clear competencies or consistent strategies. Accordingly, the 17 firms in this cluster were labeled Reactors.

Surprisingly, we found no Analyzers in the sample of 50 firms. In order to qualify as an Analyzer, a firm would have to be more efficient than a Prospector and more innovative than a Defender (Miles & Snow, 1978). None of the firms in the sample exhibited these dual characteristics. To investigate if any of the three clusters included outlier firms that could be Analyzers, we examined the distance between each member and the cluster centroid in all three groups. None of the firms could be classified as outliers, and all three clusters appeared fairly tight-knit. Based on our study of the industry and discussions with executives, two reasons emerge as possible explanations for the absence of Analyzers.

First, it is important to note that the industry is still not completely deregulated. Allowable rates of return and pricing are still regulated, and firms continue to face resource constraints. Given this constrained resource environment, firms may have been unable to deploy resources for both internal efficiency and aggressive innovation, the hallmarks of an Analyzer strategy. In fact, there appears to be a trade-off between efficiency and expansion in the firms in our sample: the correlation between operating efficiency and diversification was $-.38$ ($p < .001$).

And second, since the onset of deregulation is rather recent, firms may still be in the process of developing capabilities to manage in the changed environment. Analyzer strategies, which call for the most comprehensive mix of capabilities, are probably still evolving. In the years to come, it is likely that some Defenders may become Analyzers as they develop innovation skills, and some Prospectors may become Analyzers if their aggressive expansion strategies do not pay off as expected.

To assess the convergent validity of the clusters derived from executives' self-reported measures of strategic orientation, the three clusters were compared along two objective indices,

operating efficiency and degree of diversification. Defenders should be most efficient and Prospectors should be most diversified. Consistent with the Miles & Snow typology, Defenders had the greatest operating efficiency (ratio of operating expenses to operating revenues during 1978-87=66%), which was significantly lower ($p < .05$) than that of Prospectors (ratio= 69.5%) and Reactors (ratio=72%). Prospectors were significantly more diversified (percentage revenues from non-electric operations=17%) than Reactors (nonelectric operations=12%) and Defenders (non-electric operations=7%) during the 1978-87 period. Hence, the results of this analysis provide some support for the convergent validity of the strategy measures. In addition, the same pattern held for the 1978-1982 and 1983-1987 periods separately, suggesting that strategic orientations were stable over the two time periods.

Given that there were no Analyzers identified in this sample, reported results are limited to differences in CEO compensation systems among Prospectors, Defenders, and Reactors. Two dummy variables were used to represent strategic orientation. Since Reactors were expected to have the smallest effect on CEO compensation, this group was used as the base group. The first dummy variable equalled 1 if the firm was a Prospector and 0 otherwise. The second dummy variable equalled 1 if the firm was a Defender and 0 otherwise. These two dummy variables served as the independent measures of strategic orientation in the analysis that follows.

4.2 Descriptive Statistics

Table 2 reports the means, standard deviations and zero-order correlations among the study variables. It is important to note that, given the pooled nature of the data, significance levels of the reported correlations tend to be somewhat overstated. Since age and tenure were found to be highly correlated, only age is used as a control variable in subsequent analysis (however, identical results emerge from the inclusion of tenure instead of age).

TABLE 2-DESCRIPTIVE STATISTICS
ZERO CORRELATIONS

Variables	N	Mean	Standard Deviation	TOT	SAL	BON	BONDUM	OPTPLAN	LTPLAN	BONPER	LMASSETS	ROSE	AGE	TEMPOS	ZSEK	PBUOO	TYPE 1	TYPE 2
1. CEO Cash(TOC) Compensation	500	307.89	120.75	1.00	0.89	0.61	0.49	0.09	0.37	0.54	0.68	0.18	0.13	0.15	0.22	0.37	0.28	0.04
2. CEO Salary (SAL)	406	278.15	92.33	1.00	0.33	0.31	0.13	0.27	0.25	0.79	0.13	0.08	0.16	0.16	0.32	0.28	0.19	0.03
3. CEO Bonus (BON)	406	11.44	40.51	1.00	0.49	0.15	0.09	0.27	0.94	0.12	0.14	0.08	-0.01	0.01	0.30	0.24	0.07	0.07
4. Bonus Plan (BONDUM)	500	0.28	0.45	1.00	0.40	0.09	0.28	0.49	0.76	0.09	0.28	0.01	-0.09	0.01	0.39	0.34	0.06	0.06
5. Option Plan (OPTPLAN)	500	0.08	0.27	1.00	1.00	0.20	0.07	0.03	0.20	-0.01	0.07	0.05	-0.10	0.01	0.11	0.31	0.12	0.12
6. Long-Term Plan (LTPLAN)	500	0.10	0.30	1.00	0.30	0.19	0.07	1.00	0.30	0.12	0.19	-0.06	0.07	0.01	0.29	0.01	0.06	0.06
7. Proprietor Ownership Based Compensation (BONPER)	406	0.02	0.07	1.00	1.00	0.18	0.00	0.07	1.00	0.07	0.18	0.10	0.00	0.04	0.31	0.20	0.08	0.08
8. Firm Size (LMASSETS)	500	8.27	0.80	1.00	1.00	0.02	0.02	0.02	1.00	0.02	0.02	0.02	0.02	0.02	0.12	0.18	0.02	0.02
9. Firm Profitability (ROSE)	500	0.11	0.03	1.00	1.00	1.00	0.04	0.04	1.00	1.00	1.00	-0.00	0.04	0.04	0.13	0.31	0.02	0.03
10. AGE (AGE)	500	57.57	5.23	1.00	0.07	0.04	0.04	0.04	0.07	0.04	0.04	0.07	0.04	0.04	0.17	0.03	0.01	0.13
11. Tenure in Position(TEMPOS)	437	4.49	3.40	1.00	0.44	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.44	0.08	0.09	-0.06	0.10
12. CEO Shareholdings (CSHED)	461	0.01	0.01	1.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.06	0.06	-0.13
13. Environmental Perfed (PERUOO)	500	0.50	0.50	1.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
14. Proprietor Orientation-Type1	500	0.28	0.45	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00
15. Defender Orientation-Type2	500	0.39	0.48	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Less than 500 for some variables due to missing data.
Significance levels:
* p < .05
** p < .01
*** p < .001

4.3 Amount of CEO Compensation: Total Annual Cash Compensation, Annual Salary and Annual Bonus

Table 3 provides the results of the generalized least squares regression models used to explain variations in CEO total cash compensation, annual salary, and annual bonus.

After controlling for firm-specific and individual-specific effects, both, strategic orientation and environmental period were significant predictors of CEO total cash compensation. Consistent with Hypothesis 1a, Prospector and Defender orientations had positive and significant effects on CEO total cash compensation. Also, the difference between these two coefficients was significant ($F_{1,435}=23.53, p < .001$), suggesting that Prospectors had a greater positive effect on CEO total cash compensation than Defenders. The positive, significant coefficient associated with the Defender orientation suggests that Defenders had a stronger positive effect than Reactors. The positive, significant coefficient for environmental period indicates that the 1983-87 period did have a positive effect on CEO total cash compensation as well. Overall, these results provided strong support for Hypothesis 1a (main effects of strategic orientation) and Hypothesis 2a (main effects of environmental period).

The second measure of CEO compensation amount, i.e., annual salary, yielded results identical to that of total cash compensation. Prospector orientation, Defender orientation and environmental period had significant positive effects. The difference between the beta coefficients associated with the two strategic orientations was also significant (Prospectors greater than Defenders, $F_{1,347}=14.05, p < .001$).

For the third measure of CEO compensation amount, annual bonus, results were generally similar to those found for total cash compensation and salary, except that Defender orientation was not a significant predictor. However, as hypothesized, Prospector orientation and environmental period had significant, positive effects. Further, the size of the effect associated with Prospectors was significantly higher than that associated with Defenders ($F_{1,368}=-25.01, p < .001$), indicating that Prospectors did have a stronger positive effect on the amount of bonus than Defenders, consistent with Hypothesis 1a.

Overall, the results provided strong support for Hypothesis 1a and Hypothesis 2a. Prospectors had stronger positive effects on compensation amount than Defenders for all three measures and Defenders had stronger positive effects than Reactors for total cash compensation and annual salary. Environmental period associated with increased uncertainty had a significant, positive effect on compensation amount for all three measures.

TABLE 3
Results of Generalized Least Squares Regressions^a:
CEO Compensation Amount and Mix

Independent/ Dependent Variables	Annual Total Cash Compensation	Annual Salary	Annual Bonus	Outcome-based Cash Compensation
Firm Size	36.25*** (4.95)	39.14*** (3.59)	-0.94 (2.11)	-0.01 (0.01)
Firm Probability	44.38 (127.07)	-26.19 (85.42)	21.77 (51.01)	0.14 (0.10)
CEO Age	0.33 (0.71)	0.82 (0.50)	0.23 (0.29)	0.00 (0.00)
CEO Shareholdings	-37.39 (27.23)	-46.50 (24.80)	11.30 (12.30)	0.01 (0.22)
Prospector Orientation	88.89*** (13.48)	58.11 (10.67)	26.54*** (6.59)	0.03** (0.01)
Defender Orientation	25.02* (12.40)	22.11*** (8.82)	5.05 (4.75)	0.01 (0.01)
Environmental Period	74.52*** (8.04)	35.67*** (5.94)	24.81*** (3.24)	0.05** (0.01)
R ²	0.68	0.84	0.22	0.24
F-value	132.09***	269.73***	14.98***	16.99***
d.f.	7,435	7,347	7,368	7,368

^a Reported statistics are unstandardized regression coefficients with std. errors in brackets

* p < .05
 ** p < .01
 *** p < .001

4.4 Mix of CEO Compensation: Proportion of Outcome-Based Cash Compensation

The last column of Table 3 presents the results obtained with the dependent variable, proportion of outcome-based cash compensation. The results were identical to those obtained for the amount of annual bonus. Consistent with Hypothesis 1b, Prospector orientation was a positive, significant predictor and the size of the beta coefficient associated with Prospector orientation was also significantly higher than that associated with the Defender variable ($F_{1,368}=16.22, p < .001$). However, the positive coefficient associated with Defender orientation was not significant. Consistent with Hypothesis 2b, environmental period was positive and significant.

These results suggest that while Prospector orientation had a stronger positive effect on proportion of outcome-based cash compensation than both Defenders and Reactors, there was no significant difference in the relative effects associated with Defenders and Reactors. Thus, Hypothesis 1b (main effects of strategic orientation) received partial support and Hypothesis 2b (main effect of environmental period) was fully supported.

4.5 Type of CEO Compensation: Incidence of Outcome-based Compensation Plans

The results of the logistic regression models used to explain the incidence of outcome-based compensation plans are presented in Table 4.

Hypothesis 1c which predicted significant effects for strategic orientation was supported for two out of three types of outcome-based compensation plans. The coefficients associated with Prospector orientation and Defender orientation were positive and significant for annual bonus plans and stock option plans but not significant for long-term incentive plans. In order to assess if the Prospector coefficient was significantly higher than the Defender coefficient, the model was reestimated under the assumption that the two coefficients were equal. The chi-square for the restricted model was significantly lower than the chi-square for the unrestricted model for annual bonus plans (difference in chi-square = 33.96 with one degree of freedom, $p < .001$), indicating that Prospectors were more likely than Defenders to have annual bonus plans. Similar results were obtained for stock option plans (difference in chi-square = 16.36 with one degree of freedom, $p < .001$), again indicating that Prospectors were more likely than Defenders to have stock option plans for the CEO.

TABLE 4
Results of Logistic Regressions:
Incidence of Outcome-Based Compensation Plans^a

Independent/ Dependent Variables	Annual Bonus Plan	Stock Option Plan	Long-Term Incentive Plan
Firm Size	-0.08 (0.19)	-0.09 (0.32)	0.09 (0.25)
Firm Probability	18.98*** (5.62)	2.62 (6.86)	14.74* (6.36)
CEO Age	0.01 (0.02)	0.03 (0.04)	0.03 (0.03)
CEO Shareholdings	6.04 (7.57)	31.63** (10.51)	22.09 (14.80)
Prospector Orientation	2.70*** (0.38)	3.46*** (0.79)	0.50 (0.47)
Defender Orientation	0.97** (0.35)	1.66* (0.84)	0.43 (0.43)
Environmental Period	2.02*** (0.31)	0.69 (0.42)	2.57*** (0.62)
Likelihood Ratio Chi- Square^b	163.11***	68.61***	64.70***

^a Reported statistics are maximum likelihood regression coefficients with std. errors in brackets

^b Degrees of Freedom = 7

* p < .05
 ** p < .01
 *** p < .001

Hypothesis 2c which predicted significant, positive effects for environmental period was supported for two out of three types of outcome-based compensation plans. An environmental period associated with increased uncertainty did increase the likelihood of annual bonus plans and long-term incentive plans, but did not have any effect on the likelihood of stock option plans.

Overall, these results suggest that Prospectors were more likely to have outcome-based compensation plans than Defenders and Reactors and Defenders were more likely to have such plans than Reactors. In addition, firms were more likely to have outcome-based compensation plans as environmental uncertainty increased.

5. DISCUSSION

5.1 Empirical Findings

This paper adopted an agency theory perspective to study the effects of strategic orientation and environmental change on the amount, mix and type of CEO compensation systems. We developed a model that related strategic orientations and environmental uncertainty to four agency-related factors - availability of multiple options, ambiguity of cause-effect relationships, behavior non-programmability and outcome uncertainty. It was argued that these four factors directly influence firms' choices between behavior-based and outcome-based compensation contracts. Hence, strategic orientations and environmental periods which differ along these factors are likely to explain variations in the amount, mix and type of CEO compensation systems. Hypotheses based on these arguments were tested in a sample of 50 electric utility firms over a ten year time period. Three major findings can be summarized from Tables 3 and 4.

First, after controlling for firm size, firm profitability, CEO age, and shareholdings, strategic orientation and environmental uncertainty did have significant, positive effects on CEO total cash compensation, annual salary, and annual bonus, the three measures of compensation amount. Compared to both Defenders and Reactors, Prospectors had stronger positive effects on all measures of the amount of compensation for the CEO. Compared to Reactors, Defenders had higher positive effects for total cash compensation and salary but not bonus. Overall, the hypotheses which predicted significant main effects for strategic orientation and environmental period and differences between relative size of the effects for different orientations were well-supported.

Second, strategic orientation and environmental uncertainty were significant predictors of the proportion of outcome-based cash compensation for the CEO. However, the effects of

strategic orientation were not pervasive. While Prospectors did tie a greater proportion of pay to performance than both Defenders and Reactors, the difference between Defenders and Reactors while positive was not significant. However, consistent with the difference in their strategic orientations, Defenders were more likely to have bonus plans than Reactors.

Third, the riskier the firm's strategic orientation, the greater was the likelihood of outcome-based compensation plans. Thus, Prospectors were more likely than Defenders and Defenders were more likely than Reactors to adopt such compensation plans. Similarly, the more uncertain the firm's environment, the more likely was the incidence of outcome-based compensation plans.

Overall, the empirical findings discussed above lend strong support to an agency theory perspective of CEO compensation systems. Linking firms' strategic orientations and environmental conditions to four underlying agency factors - ambiguity of cause-effect relationships, multiple options, non-programmability of behavior and outcome uncertainty - does appear to offer a useful theoretical framework to understand variations in the amount, mix and type of CEO compensation systems.

5.2 Limitations and Future Directions

In conclusion, certain limitations of this study and directions for future research can be identified.

Surprisingly, we did not find any Analyzers in our sample. Although there appear to be several industry-specific reasons for this, their omission in the study meant that some hypotheses could not be fully tested. However, we would expect Analyzers to exist in many other industries, offering other investigators an opportunity to extend the analysis reported here.

Another potential limitation concerns the use of self-reported measures of strategy. Although perceptual data have been used to assess strategy quite often (e.g., Fombrun & Zajac, 1987; Zajac & Shortell, 1989), we attempted to reduce potential bias by collecting objective data to validate perceptual scores and by obtaining multiple responses for a subset of the sample. In addition, the survey was tailored to a specific industry, making questions more meaningful to respondents.

Third, although studying a single industry enables a richer examination of environmental context, external validity is limited. Hence, subsequent work could extend and refine our theoretical framework in different industries.

It is evident that there are many unanswered research questions to investigate in this area. We believe that CEO compensation systems are only partly understood. This study

described one approach that might help improve our understanding of compensation systems by positing a central role for both strategy and environment. We hope other researchers will help extend and refine this approach.

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REFERENCES

- Abdel-Khalik, A.R. 'Incentives for accruing costs and efficiency in regulated monopolies subject to ROE constraint', Journal of Accounting Research, 26, 1988, pp. 144-174.
- Aldrich, J.H. & Forrest D. Nelson. Linear probability. logit. and Probit models. Beverly Hills, CA: Sage Publications, 1987.
- Amihud, Y., & B. Lev. 'Risk reduction as a managerial motive for conglomerate mergers', Bell Journal of Economics, 12, 1981, pp. 605-616.
- Balkin, D.B., & L.R. Gomez-Mejia. 'Toward a contingency theory of compensation strategy', Strategic Management Journal, 8, 1987, pp. 169-182.
- Brickley, J.A., S. Bhagat, & R.C. Lease. 'The impact of long-range managerial compensation plans on shareholder wealth', Journal of Accounting and Economics, 7, 1985, pp. 115-129.
- Ciscell, D.H. & T.M. Carroll. 'The determinants of executive salaries: An econometric survey', Review of Economics and Statistics, 62(1), 1980, pp. 7-13.
- Conlon, E. and J. Parks. 'Effects of monitoring and tradition on compensation arrangements: An experiment with principal/agent dyads', Academy of Management Journal, 33, 1990, pp. 603-622.
- Demski, J. & G. Feltham. 'Economic incentives in budgetary control systems', Accounting Review, 53, 1978, pp. 336-359.
- Eaton, J. & H.S. Rosen. 'Agency, delayed compensation, and the structure of executive remuneration', The Journal of Finance, 38, 1983, pp. 1489-1505.
- Eisenhardt, K.M. 'Control: Organizational and economic approaches', Management Science, 31, 1985, pp. 134-149.
- Eisenhardt, K.M. 'Agency and institutional explanations of compensation in retail sales', Academy of Management Journal, 31, 1988, pp. 488-511.
- Eisenhardt, K.M. 'Agency theory: An assessment and review', Academy of Management Review, 14, 1989, pp. 57-74.
- Fama, E.F., & M.L.Jensen. 'Separation of ownership and control', Journal of Law and Economics, 26, 1983, pp. 301-325.
- Finkelstein, S., & Donald C. Hambrick. 'Chief executive compensation: A synthesis and reconciliation', Strategic Management Journal, 9, 1988, pp. 543-558.
- Finkelstein, S., & Donald C. Hambrick. 'Chief executive compensation : A study of the intersection of markets and political processes', Strategic Management Journal, 10, 1989, pp. 121-134.

- Fombrun, C.J., and E.J. Zajac. 'Structural and perceptual influences on intraindustry stratification', Academy of Management Journal, 30, 1987, pp. 33-50.
- Gomez-Mejia, L., H. Tosi, & T. Hinkin. 'Managerial control, performance and executive compensation', Academy of Management Journal, 30, 1987, pp. 51-70.
- Hambrick, D.C., and S. Finkelstein. 'Managerial discretion: A bridge between polar views of organizational outcomes', In B.M. Staw & L. L. Cummings (eds.) Research in Organizational Behavior, Vol. 9, JAI Press, Greenwich, CT, 1987, pp. 369-406.
- Hartigan, J.A. Clustering Algorithms. New York: John Wiley & Sons, 1975.
- Holmstrom, B. 'Moral hazard and observability', Bell Journal of Economics, 10, 1979, pp. 74-91.
- Jensen, M. & W. Meckling. 'Theory of the firm: Managerial behavior, agency costs, and ownership structure', Journal of Financial Economics, 3, 1976, pp. 305-360.
- Kerr, J.L. & R.A. Bettis. 'Boards of directors, top management compensation, and shareholder returns', Academy of Management Journal, 30, 1987, pp. 645-664.
- Kim, J. & C.W. Mueller. Introduction to factor analysis: What it is and how to do it. Beverly Hills, California: Sage Publications, 1978.
- Larcker, D.F. 'The association between performance plan adoption and corporate capital investment', Journal of Accounting and Economics, 3, 1983, pp. 3-30.
- Lewellen, W.G. and B. Huntsman. 'Managerial pay and corporate performance', American Economic Review, 60, 1970, pp. 710-720.
- Mascarenhas, B. 'Strategic group dynamics', Academy of Management Journal, 32, 1989, pp. 333-352.
- Miles, R.E., and C.C. Snow. Organizational Strategy Structure and Process. New York: McGraw-Hill, 1978.
- Munson, R. The Power Makers. Pennsylvania: Rodale Press Emmaus, 1985.
- Murphy, K.J. 'Corporate performance and managerial remuneration', Journal of Accounting and Economics, 7, 1985, pp. 11-42.
- Napier, N.K., & M. Smith. 'Product diversification, performance criteria and compensation at the corporate level', Strategic Management Journal, 8, 1987, pp. 195-201.
- Navarro, P. The Dimming of America- The Real Costs of Regulatory Failure. Cambridge, MA: Ballinger Publishing Co, 1985.
- Nunnally, J. Psychometric theory. New York: McGraw-Hill, 1967.

O'Reilly, C.O. III, B.G. Main & G.S. Crystal. 'CEO compensation as tournament and social comparison: A tale of two theories', Administrative Science Quarterly, 33, 1988, pp. 257-274.

Pindyck, R.S. & D.L. Rubinfeld. Econometric models and economic forecasts. New York: McGraw-Hill Book Co., 1981.

Power generation and delivery: Problems and prospects for the 1990s. Proceedings of the Electrical World Conference, Washington D.C., 1986.

Problems and limitations of intercompany comparisons of investor owned electric utilities. Washington D.C.: Edison Electric Institute, 1988.

Rajagopalan, N. & J.E. Prescott. 'Determinants of top management compensation: Explaining the impact of economic, behavioral, and strategic constructs and the moderating effects of industry', Journal of Management, 16, 1990, pp. 515-538.

Raviv, A. 'Management compensation and the managerial labor market: An overview',

Journal of Accounting and Economics, 7, 1985, pp. 239-245.

Shavell, S. 'Risk sharing and incentives in principal and agent relationship', Bell Journal of Economics, 10, 1979, pp. 53-73.

Snow, C.C. & L.G. Hrebiniak. 'Strategy, distinctive competence and organizational performance', Administrative Science Quarterly, 25, 1980, pp. 317-335.

Tehrani, H. & J. Waagelein. 'Market reaction to short-term executive compensation plan adoption', Journal of Accounting and Economics, 7, 1985, pp. 131-144.

Tosi, H.L. Jr., and L.R. Gomez-Mejia. 'The decoupling of CEO pay and performance: An agency theory perspective', Administrative Science Quarterly, 34, 1989, pp. 169-189.

Zajac, E.J., and S. Shortell. 'Changing generic strategies: Likelihood, direction and performance implications', Strategic Management Journal, 10, 1989, pp. 413-430. APPENDIX A

SAMPLE FIRMS

1. American Electric Power
2. Atlantic Energy
3. Baltimore Gas & Electric Co.
4. Boston Edison Co.
5. Carolina Power & Light Co.
6. Central & Southwest Corporation
7. Central Illinois Public Service Co.
8. Cincinnati Gas & Electric Co.
9. Centerior Energy
10. Commonwealth Edison Co.
11. Central Maine Power
12. Consolidated Edison of New York
13. Detroit Edison
14. Duquesne Light Co.
15. Florida Power & Light Co.
16. General Public Utilities
17. Gulf States Utilities Co.
18. Hawaaian Electric Industries
19. Houston Industries Inc.
20. Idaho Power Co.
21. Illinois Power Co.
22. Kentucky Utilities Co.
23. Long Island Lighting Co.
24. Middle South Utilities
25. New England Electric Sysyem
26. North East Utilities
27. Northern Indiana Public Service Co.
28. Ohio Edison Co.
29. Pennsylvania Power & Light
30. Philadelphia Electric Co.
31. Portland General Electric Co.
32. Public Service Co. of Indiana
33. Public Service Co. of New Hampshire
34. Public Service Co. of New Mexico
35. Public Service Co. of Colorado
36. Public Service Electric & Gas Co.
37. Pacific Gas & Electric Co.
38. Puget Sound Power & Light Co.
39. PacifiCorp.
40. Rochester Gas & Electric Co.
41. Southern Co.
42. Southwestern Public Service Co.
43. Southern California Edison Co.
44. South Carolina Gas & Electric Co.
45. TECO Energy
46. Texas Utilities
47. United Illuminating Co.

Sample Firms (cont'd)

- 48. Upper Peninsula Power Co.
- 49. Wisconsin Electric Power Co.
- 50. Virginia Electric & Power Co.

APPENDIX B
MEASURES FOR DEFINING STRATEGIC ORIENTATION

Respondents to the survey questionnaire were asked to indicate the actual changes which had occurred in their firm's strategies in the period since 1978, i.e., 1978-87. Each respondent was asked to circle one number on a 7 point scale which best described the change in emphasis with respect to that item. 1 on the scale represented "emphasis has significantly decreased", 4 signified "emphasis has neither increased nor decreased", and 7 signified "emphasis has significantly increased". Items for each of the five measures were as follows.

I. Market Penetration Strategies (MKT1)

1. Development of load management programs to alter patterns/levels of consumption
2. Capacity/bulk power sales to other utilities
3. Advertising and promotion to influence the patterns/level of demand for power sold by your firm

II. Market Innovation Strategies (MKT2)

1. Market segmentation and target pricing
2. Providing competitive electric rates such as off-peak incentive rates, time-of-use rates, and interruptible rate schemes

III. Technological Innovation Strategies (INN)

1. Research and development programs for renewable/alternative sources of power
2. Automation of transmission/distribution systems
3. Development of customer interface/end-use technologies such as automated load management systems

IV. Efficiency-oriented Strategies (EFF)

1. Reduction of operating costs
2. Reduction of fixed costs
3. Improvements in generating plant efficiencies
4. Improvements in overall productivity and efficiency

V. Domain Expansion Strategies (DOM)

1. Increasing the scope of electric operations through purchase of power systems/electric properties of other utilities
2. Increasing the scope of electric operations through acquisitions of/mergers with other electric utilities
3. Building power sales in geographic locations other than your service territory
4. Diversifying into businesses other than the generation, transmission and distribution of electric power