# MICROLEVEL OPPORTUNITY STRUCTURES AS DETERMINANTS OF NON-CEO EXECUTIVE PAY

MASON A. CARPENTER
JAMES B. WADE
University of Wisconsin—Madison

We develop a theory wherein the pay of non-CEO executives can be explained by micro-level opportunity structures—the intersection of functional position, CEO background, human capital, and firm strategic resource allocation decisions. Our theory suggests a positive association between pay and a position made visible by resource allocation decisions, a functional background similar to that of the CEO, and a position that helps the firm manage strategic resource allocations. A unique longitudinal data set that combines survey and archival data on the four highest echelons of senior executives in large U.S. firms provided support for this multilevel framework.

Executive compensation is an integral component of corporate governance. Indeed, "few such topics on strategic leadership generate the same degree of controversy" (Finkelstein & Hambrick, 1996: 263). The tremendous attention paid to compensation can be attributed to beliefs that pay affects executives' perceptions of equity and fairness, motivates their behavior and, as a result, should positively influence firm performance and other significant outcomes when managed and set appropriately (Finkelstein & Hambrick, 1988; Gomez-Mejia & Wiseman, 1997; Jensen & Murphy, 1990). Consequently, understanding the determinants of executive pay is of great theoretical and practical importance.

Most executive compensation research in strategy and organization theory has focused on the pay of CEOs; relatively little attention has been paid to the compensation of other top executives (Barkema & Gomez-Mejia, 1998; Gomez-Mejia & Wiseman, 1997; Murphy, 1999; Tosi, Werner, Katz, & Gomez-Mejia, 2000). While important progress has been made to suggest that non-CEO executive pay may reflect such factors as industry, firm size, diversification strategy, firm-specific compensation systems, and/or a manager's rank or human capital (Balkin & Gomez-Mejia, 1990; Fisher & Govindarajan, 1992; Galbraith & Merrill, 1991; Leonard, 1990; Main, O'Reilly, & Wade, 1993; O'Reilly, Main, & Crystal, 1988; Roth & O'Donnell, 1996), several im-

portant questions remain unanswered (Barkema & Gomez-Mejia, 1998). For instance, how do the resource allocation decisions that result from a firm's strategy differentially impact the pay of its non-CEO executives? Similarly, what influence do CEOs have on the pay of other executives, and who benefits from this influence? And finally, is the effect of human capital on executive pay uniform within a given firm, or does it depend on other critical factors? Therefore, the primary objective of this research was to provide a multilevel theoretical framework that begins to answer these questions and to test it on a unique sample of senior executives in large U.S. firms.

## THEORY DEVELOPMENT

As noted above, our interest in studying the pay of senior executives below the level of the CEO is motivated in part by the observation that previous compensation research in strategy and organization theory has focused almost exclusively on chief executive officers (for comprehensive reviews, see Finkelstein and Hambrick [1996], Gomez-Mejia and Wiseman [1997], Murphy [1999], and Tosi et al. [2000]). Although a few studies have examined lower-level executive pay in the context of tournaments (Lambert, Larcker, & Weigelt, 1993; Main et al., 1993; O'Reilly et al., 1988) or frameworks linking firm strategy and human capital to the pay of the managers of strategic business units (Balkin & Gomez-Mejia, 1990; Fisher & Govindarajan, 1992; Galbraith & Merrill, 1991), research on the determinants of non-CEO executive compensation has all but abated. Indeed, since top executives are typically tasked with implementing strategy, and compensation schemes are an integral component of

this implementation, there remains the practical need to better explain likely determinants of pay.

Most prior theorizing and research on executive compensation has emphasized pay differences across firms, not within firms. For instance, Milkovich, Gerhart, and Hannon (1991) showed that non-CEO executives in R&D-intensive industries were paid differently than those in other industries. Gomez-Mejia (1992) similarly reported that diversification strategy affected executive compensation. However, given the sociopolitical nature of pay determination (Barkema & Pennings, 1998; Elhagrasey, Harrison, & Buchholz, 1999; Gomez-Mejia & Wiseman, 1997; Porac, Wade, & Pollock, 1999; Westphal, 1998; Westphal & Zajac, 1995), there is good reason to suspect that executives' pay varies within firms, in addition to across firms. And, perhaps with the exceptions of Balkin and Gomez-Mejia (1990) and Roth and O'Donnell (1996), little research has examined the conditions giving rise to within-firm differences in executive pay beyond such factors as hierarchical level and title (Leonard, 1990; Main et al., 1993; O'Reilly et al., 1988).

In the following sections, we propose a theoretical framework that describes how executive compensation may be a function of processes operating at multiple levels in organizations. We refer to the outcome of such processes as *microlevel opportunity structures*, a theoretical construct that we define as falling somewhere between the macro concept of managerial discretion (Finkelstein & Boyd, 1998; Finkelstein & Hambrick, 1990) and Zald's (1969) fine-grained notion of strategic decision points. As we demonstrate below, opportunity structures are essentially the result of a confluence of factors and events, and they provide particular executives the prospect of greater pay. Our multilevel framework necessarily integrates several theories, but, as a reflection of the sociopolitical nature of pay determination, draws primarily on the upper echelons perspective (a meta theory), and the power and resource dependence perspectives. The upper echelons view provides insights into the potential roles and consequences of executive characteristics like functional background, position, and human capital (Hambrick & Mason, 1984). Power and resource dependence theory (Pfeffer & Salancik, 1977; Thompson, 1967) allow scholars to specify when such characteristics are likely to solve critical organizational problems and thus generate pay opportunities for particular executives.

Specifically, we argue that the salary accompanying an executive's functional position is influenced by a number of organizational factors, including the actions and resource allocation decisions arising from her or his firm's strategy (like product and international diversification, and investments in advertising, research and development, and plant and equipment), and the functional background of the firm's CEO. Such factors are expected to create micro-level opportunity structures that, in turn, increase incumbents' cash compensation relative to that of other executives in their firms. It is further proposed that those strategic contingency relationships may be strongest when executives have greater human capital in the form of work experience and education. Although cash compensation is often highly correlated with total pay (and has been reported to generate substantively identical results (Lambert et al., 1993; Lewellen & Huntsman, 1970; Main, O'Reilly, & Wade, 1995), we focus on cash compensation because it typically creates less uncertainty for executives than contingent pay schemes (Harris & Helfat, 1997; Sanders, 2001) and is, thus, preferred by them (Jensen & Murphy, 1990). Given the bargaining power that our theory implies for executives, we expect greater cash pay to be the most likely outcome, since it reflects executives' preferences and attitudes toward risk (Gomez-Mejia & Wiseman, 1997; Sanders, 2001). Therefore, cash compensation is the form of pay most conceptually relevant to our theorizing, and it is empirically well-suited to our tests of the compensation consequences arising from microlevel opportunity structures.

## Firm Strategy, Functions, and Executive Cash Compensation

The development of our multilevel theory starts first at the macro level of firm strategy, and then progresses to the more micro antecedents of opportunity structures (CEO and executive characteristics). Following the theorizing of Mintzberg (1978) and empirical work of Finkelstein and Hambrick (1990), Geletkanycz and Hambrick (1997), and Carpenter (2000), we characterize strategy as the pattern resulting from a stream of resource allocation decisions. Such a pattern is comprised, for instance, of a firm's resource allocation choices in research and development, marketing, diversification, capital investments, and international markets. This view follows the strategic choice perspective of Child (1972) wherein firms are under considerable constraints imposed by their environments but also have some latitude in their actions. Those actions, in turn, may generate fundamentally different ways of allocating resources (Bower, 1970), as revealed by differences in patterns across firms. In the context of this study, and controlling

for other factors, we argue that such fundamental differences between firms are likely to create microlevel opportunity structures that, in turn, lead to compensation differences among executives within firms.

Our argument is supported conceptually by research on resource dependence and early research on power (a construct integral to the resource dependence perspective). For instance, Thompson observed that jobs represent both "a unit in the organization and a unit in the career of an individual. Joining of the two [is] a result of a bargained agreement ... determined through power processes" (1967: 99–116). Developing that logic, Hickson, Hinings, Lee, Schneck, and Pennings (1971) proposed that power flows to positions whose incumbents cope with critical contingencies facing their firms. Later, Hambrick (1981) suggested that such contingencies were largely a function of a firm's strategy and showed that individual executives had high power when their positions' domains included dominant requirements imposed by strategy. Extending Hambrick (1981), and consistent with our overarching argument, the work of Pfeffer and Davis-Blake (1987) showed that the degree to which academic administrators were compensated depended on how critical their functions were to their university, vis à vis environmental conditions. Specifically, they reported that athletic directors were more highly paid in public universities than in private ones and reasoned that those pay differentials occurred because public universities were more dependent on athletic directors for raising funds than were private universities.

Whereas the above research identified strategic contingencies on the basis of characteristics of a firm's external environment, we focus instead on those demands created by the actual actions and resource allocation decisions underlying a firm's strategy. Nonetheless, the conceptual argument developed above should apply equally well to external and internal firm-created contingencies (Finkelstein & Hambrick, 1996; Weick, 1979). For most firms, cash and executive attention are finite resources (Thompson, 1967), so when considered in relation to other strategic actions, expenditures on R&D, marketing, and capital investment should provide a reasonable indication of a firm's *relative* reliance or dependence on one functional area rather than others. For instance, Finkelstein and Hambrick (1990: 491), followed by Geletkanycz and Hambrick (1997) and by Carpenter (2000), used such expenditures to identify "important but specific aspects of a firm's strategic profile." And just as a firm's level of product diversification or international diversification has been shown to affect

overall CEO and top management team (TMT) member pay (Gomez-Mejia, 1992; Sanders & Carpenter, 1998), these expenditures may be similarly likely to create different functional dependencies or management problems within the firm (Michel & Hambrick, 1992; Song, 1982).

Moreover, if certain executives are better positioned than others to manage or mitigate the problems arising from such strategic resource allocations—by virtue of the responsibility, experience, exposure, and network centrality accruing to them as a consequence of their functional responsibilities—they are likely to be provided with a microlevel opportunity structure that allows them to personally gain in the form of higher compensation. At the very least, and analogous to the positive effect of firm size on CEO pay (Finkelstein & Hambrick, 1996; Tosi et al., 2000), non-CEO executives may similarly benefit when their respective functional areas are relatively large. That view was echoed by Coff (1999), who theorized that an executive is best poised to bargain for a portion of a firm's profits when his or her role is clearly associated with strategic interests of the firm. Again, in our framework, those strategic interests are represented by a firm's significant resource allocation decisions and other strategic actions. Taken in combination, the arguments presented above suggest the following hypothesis:

*Hypothesis 1. Executives in functional positions associated with larger strategic resource allocations will receive greater cash compensation than will other executives in their firm.*

## CEO Background, Executive Proximity, and Cash Compensation

The first level of our theoretical framework concerns the microlevel opportunity structures arising from firm strategy—specifically, the actions and resource allocation decisions that flow from strategy; the second level of our framework is an effort to show how opportunity structures arising from CEO functional similarity may also impact the pay of executives in particular functional areas. Management researchers often point to top executives, particularly CEOs, as establishing or reinforcing firms' sociopolitical climates. In this upper echelons perspective, theories in organizational behavior, sociocognitive psychology, and social comparison are integrated to portray firms as reflections of their top managers (Hambrick & Mason, 1984). Lending support to that characterization, Song (1982) showed that a CEO's background and prior experience had implications for firm strategy and

the selection of other executives. As noted in upper echelons theorizing (Finkelstein & Hambrick, 1996), this latter effect on the choice of executives would be consistent with the notion of attraction-selection-retention (Schneider, 1987), wherein other executives are hired and rewarded in part owing to their similarity to the CEO. Consequently, salient management characteristics like the functional background of a firm's chief executive may actually become imprinted on an organization.

Over time, executive background effects are further reinforced and amplified, as CEOs develop distinct routines (Keck & Tushman, 1993), strong preferences for strategy formulation and implementation (Gabarro, 1987), "instincts" about protecting their bases of power (Finkelstein & Hambrick, 1988), and interest in their professional legacies (Westphal & Zajac, 1995). Successor chief executives are often picked, recruited, or promoted on the basis of their perceived fit with extant functional priorities in a firm, so that a reinforcing spiral is likely to occur (Michel & Hambrick, 1992; Miles & Snow, 1978). To the extent that a CEO has been chosen on the basis of functional experience, or to the extent that this experience has consequently shaped the strategy of the firm, then the upper echelons perspective might also be invoked to predict that CEOs will favor, in terms of compensation, departments that represent their particular work experience. At the very least, functional similarity is a determinant of group homogeneity and has been shown to result in intentional and unintentional favoritism (Schneider, 1987). Therefore, in our theoretical framework, the second microlevel opportunity structure is a consequence of an executive's and a CEO's functional background similarity. We suggest the following hypothesis linking chief executive background to executive pay:

> *Hypothesis 2a. All else being equal, executives in functional positions that are similar to the functional background of a firm's CEO will receive greater cash compensation than will other executives in the firm.*

The prior hypothesis predicts that executives' microlevel opportunities for higher pay increase with functional similarity to their CEO. To the extent that such pay is partially a function of sociopolitical processes (which both we and extant research assert to be the case), theory also suggests that higher-ranked executives may benefit more from such similarity than lower-ranked ones, even among top executives. For instance, prior research has demonstrated that individuals are more likely to develop respect for others in their work groups

than for those in other work groups. Explanations for this observation range from simple propinquity (for instance, hierarchical proximity to the CEO) to the development of shared worldviews as a result of working toward common goals (Baldwin, Bedell, & Johnson, 1997; Krackhardt & Stern, 1988). We expected the same phenomenon to occur in top management teams because, for the most part, particular executives are afforded greater opportunity to interact with their CEO by virtue of their rank. Similarly, although Hambrick (1995) noted that top management team members' interests and objectives are typically skewed in favor of their business-unit and functional domains, higher-level executives are most likely to have an organization-wide orientation that overlaps that of the CEO, and they are consequently likely to be perceived as having common interests and objectives. As a result of such regular interaction and common interests, chief executives may more easily rationalize paying some executives more than others.

On the one hand, it could be argued that any compensation benefits arising from CEO propinquity are likely to extend equally to all executives as they rise in rank. For instance, chief executives have great discretion over the pay of other executives (Gomez-Mejia & Wiseman, 1997; Hayward & Hambrick, 1997), and they may recommend or support higher relative pay for the colleagues they work with most closely. In that view, rank would predict pay differences, but functional similarity would not. On the other hand, we suggest that pay benefits may be particularly generous for certain executives because hierarchical proximity amplifies the positive effects of functional similarity hypothesized in Hypothesis 2a. Such amplification may be further compounded by the complex sociopolitical processes surrounding selection and hierarchy that resulted in the retention of functionally similar executives in the given firm's upper echelon (Fligstein, 1987; Ocasio & Kim, 1999; Useem & Karabel, 1986). In summary, we predict that:

> *Hypothesis 2b. All else equal, the positive effect of functional similarity on cash compensation will be highest for executives occupying levels closest to the level of the CEO.*

### Strategy, Human Capital, and Executive Cash Compensation

In the third and final level of our theoretical framework, supplementing functional position (Hypothesis 1) and CEO effects (Hypotheses 2a and 2b), we propose that executives' pay will also be a function of their individual human capital. Exam-

ples of relevant human capital include managerial experience, education, functional expertise, and tenure (Becker, 1962; Hogan & McPheters, 1980). While human capital is an integral aspect of upper echelons research (Finkelstein & Hambrick, 1996), only a few studies have tested human capital theories in the context of executive pay; most of those have looked primarily at CEO pay (e.g., Harris & Helfat, 1997).

Among the small number of studies that have reported significant human capital effects, Agarwal's (1981) work showed job-related experience to be significantly associated with executive compensation. Fisher and Govindarajan (1992) similarly reported a weak, but positive, relationship between the pay of business-unit managers and years of education. Most recently, Harris and Helfat (1997) showed that work experience gained outside an industry allowed external successor CEOs to garner greater starting cash compensation than within-industry successors. And, while there have been several studies investigating the association between CEO tenure and pay from a human capital perspective, no consistent patterns have been found (Deckop, 1988; Finkelstein & Hambrick, 1996; Leonard, 1990; Rajagopalan & Prescott, 1990). This overall lack of empirical support for a human capital proposition has compelled some organizations researchers to conclude that such capital "is unlikely to account for much variance in executive pay" (Finkelstein & Hambrick, 1996: 274).

We argue that researchers may have been unable to detect stronger linkages between human capital and managerial pay because of inattention to the microlevel opportunity structures in which particular jobs are embedded. More specifically, our theory suggests that human capital may have its strongest impact on pay when individuals are already in positions that have the potential to be the locus of managing strategic resources. The superior opportunity structure in such positions allows the individuals occupying them both to exploit the political and social capital accruing to them through their formal positions (Burt, 1997; Leonard, 1990) *and* to leverage such sociopolitical capital with their existing human capital (work experience and education) to extract higher salaries.

From both an upper echelons and a resource dependence perspective, the microlevel opportunity structures surrounding critical positions will make it more likely that the individuals occupying them will be better positioned to exploit their human capital. This is an important distinction, since prior work has emphasized the direct (but weak) effect of human capital on pay (Leonard, 1990), suggesting that, typically, such effects will be in-

variant. In contrast, according to our theory, individuals in noncritical areas are unlikely to have much leverage in extracting higher salaries, regardless of the amount of human capital they possess. The following hypothesis summarizes our opportunity structure logic:

*Hypothesis 3. Executives in functional positions associated with strategic resource allocations will receive greater cash compensation for their human capital (their education and work experience) than will other, comparable, executives in their firm.*

## METHODS

### Sample

The data used in the study were taken from a five-year survey of executives conducted annually by a major compensation consulting company from 1981 to 1985. The human resource department of each participating firm was asked to provide data on approximately 120 individuals at different hierarchical levels in the organization. In order to maximize the time series information available for this study, we included only those firms that participated in the survey for all five years in the sample. Participating firms provided data for individuals in their top 12 levels; however, we included only the top 4 levels to be consistent with definitions of top management teams used in prior executive compensation research (Finkelstein & Hambrick, 1996). Since the CEO is assigned as the only member of level 1, this level was dropped from the sample. Level 2 includes the most senior executives, a number of whom may sit on a firm's board of directors. Their job titles include chief operating officer, chief financial officer, president, and division president. Level 3 includes the next tier of executives, such as senior and executive vice presidents. Level 4 includes higher-level vice presidents.

The resulting database included over 17,135 executive-year observations from 90 large, publicly held Standard & Poors (S&P) 500 firms over the five-year period. Executive-level data included base compensation, annual bonus, and salary (base plus bonus), years of education, firm tenure, job tenure, functional responsibilities, and international responsibilities. Following Ocasio and Kim (1999), we took data on CEO functional background from the *Forbes* annual CEO pay survey. Missing CEO background data were compiled from *Dun's Reference Book of Corporate Managements*. Firm-level financial and other quantitative data were obtained from annual reports and Wharton Research Data Services. Executive cash compensation

was lagged one year by gauging it at time $t + 1$ (that is, as salary paid at $t + 1$ plus bonus paid at $t + 1$ based on performance at time $t$), while all other variables were gauged in the preceding year at time $t$.

## Variables

*Dependent.* The survey provided data on executives' salaries and bonuses. As in prior research (Harris & Helfat, 1997; Lambert et al., 1993; Sanders & Carpenter, 1998), *cash compensation* for the executives in the sample was computed as the sum of base salary and annual bonus. The sum was then "logged" so that extreme values would not bias the results. Although cash compensation provides the best test of our theoretical model, as a practical matter no information on the amount of contingent pay (such as stock options) was available at the time of the survey, nor was it required for public disclosure (and even today it is only disclosed for the top five highest-paid executives).

*Independent.* Hypotheses 1, 2a, and 2b predict that executives' functional positions will interact with strategic resource allocations or CEO background to affect their pay. Researchers often make attributions about the nature of an executive's work experience and social position on the basis of their functional departments in their organizations (Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984), but we viewed each executive's current responsibilities solely as indicative of a functional position's criticality or potential power, not of power possessed by the individual apart from his or her department. For each individual in the survey, the company provided information on the functional department, broken out by the category that the employee worked in (such as finance, marketing, and so forth). Positions in such areas as general administration, operations, and law collectively constituted the omitted category. (However, we did use separate dummy control variables for each; see "Control," below.) Using this information, we coded dummy variables denoting an employee's functional position as follows:

The category *finance position* included but was not limited to finance executives, controllers, treasurers, payroll managers, cash managers, and budget managers; the survey identified over 25 executive positions as in finance. *Marketing position* included marketing, sales, and advertising. Typical positions placed into this category were marketing executives, sales executives, product managers, and advertising executives. Finally, we grouped all engineering and research and development executives into the category *research and development position*. Engineering execu-

tives were included in research and development because these individuals are critical in taking the ideas or prototypes developed by those in R&D and transforming them into viable products. Finally, identifying the *international responsibility* function is potentially problematic because many individuals throughout a firm may have international responsibilities. For instance, there may be individuals in finance and marketing departments who spend a large amount of their time dealing with international issues. Consequently, we coded individuals into the category *international responsibility position* if they reported having *any* international responsibilities, part- or full-time. This position classification superseded the other possible functional classification for a given executive. Overall, these four functional categories are consistent with those generally used in upper echelons research, where each TMT member is designated as being from a particular functional background (Bantel & Jackson, 1989; Keck, 1997; Wiersema & Bantel, 1992).

In order to measure the traditional forms of human capital, for Hypothesis 3 and the control variables, we gauged executives' levels of education and work experience. *Education* was simply measured as years of formal education. Thus, those with high school educations would have 12 years of education, and those that stopped after completing their undergraduate degrees would be coded as having 16 years of education. We computed *work experience* using the following formula: work experience equals age minus education minus 6. We assumed that individuals started their formal educations at age six and began working immediately after completing their educations. As we noted earlier, there is some evidence that work experience and education are related to salary levels. Although organizations research has portrayed firm tenure as a measure of human capital (that is, firm-specific work experience [Leonard, 1990]), we found no substantive differences between the effects of firm tenure and our variable. Consequently, results are presented using the measure of work experience described above. As discussed below, following the logic that human capital earns increasing returns up to a point, after which the marginal returns to it begin to fall (Finkelstein & Hambrick, 1996; Mincer, 1970), the effects of both education and work experience were modeled with squared terms to account for their likely curvilinear (inverted U-shaped) effects on pay.

*Strategic contingency variables.* Hypothesis 1 predicts that the actions and resource allocation choices underlying a firm's strategy will moderate the relationship between executives' positions and

their cash compensation; Hypothesis 3, in turn, suggests such strategic actions and choices will determine the value of executives' human capital. To test both those sets of interactions, we examined four categories of strategic resource allocations: (1) *financial* (the logged value of capital expenditures and absolute level of diversification calculated as the number of four-digit SIC codes reported by a firm), (2) *marketing* (the logged value of advertising expenses), (3) *research & development* (the logged value of R&D expenses), and (4) *international* (the logged value of foreign sales). Admittedly, these categories are not exhaustive, but organizations research suggests that they tap into critical aspects of firms' value chains and strategies, and they are often cited as among the most critical strategic determinants of firm success and survival (Gomez-Mejia, 1992; Finkelstein & Hambrick, 1990, 1996; Guthrie & Datta, 1998; Henderson & Fredrickson, 1986; Porter, 1985; Sanders & Carpenter, 1998; Song, 1982).

In general, the larger the value of a strategic resource allocation variable, the greater a firm's dependence on the functional area corresponding to that allocation variable (Finkelstein & Hambrick, 1990; Hambrick, 1981). Contingency relationships were identified intuitively, with specific executive functions linked to those contingencies that appeared most relevant to them. For example, according to our framework, the finance function should be critical to capital-intensive or highly diversified firms (Melone, 1995; Song, 1982). Similarly, the marketing function should be most valuable in firms that devote large amounts of resources to marketing and advertising (Bowman & Daniels, 1995; Chaganti & Sambharya, 1987); executives in R&D are expected to be most valuable to firms that spend a large amount of resources in developing new and innovative products (Chaganti & Sambharya, 1987). Finally, positions with international responsibilities may be particularly important in firms that have significant overseas sales (Carpenter, Sanders, & Gregersen, 2001; Sambharya, 1996).

For our tests of Hypothesis 1, we created specific interaction variables by multiplying an executive's functional background by the relevant strategic resource allocations following the pairing procedure described above. For Hypothesis 3, multiplicative interactions were created between education and work experience and the respective contingency by function interaction; this latter procedure is described more fully in the results section.

*Similarity to CEO functional background.* To test the effects on executive pay of CEO functional background/executive functional position similarity (Hypotheses 2a and 2b), we created a dummy variable in which 1 equals "CEO same," and 0 equals "CEO different." The *Forbes* annual compensation survey categorizes CEO functional background into categories ranging from "administrative" to "technical." The survey identifies a single background for each CEO. Initial analysis of our sample indicated that potential areas of similarity existed in ten *Forbes* categories, which we clustered as follows: (1) administration, (2) finance and investments, (3) legal, (4) operations, (5) research and development, and (6) retail, sales, and marketing. Although the determination of similarity to CEO functional background based on the *Forbes* survey and the numerical job code listings from our survey data was relatively objective and straightforward, we took the additional precaution of using two raters. No disagreements of substance emerged, and the two reviewers reached full agreement on the final coding scheme.

*Control.* We controlled for *firm size* (total assets) and *prior performance* (return on equity). Large firms that are performing well (high-performing firms) may pay their executives most. Because human capital has been cited as a potential determinant of executive pay, we also controlled for work experience and education level using "main effect" and squared terms, as described above (Finkelstein & Hambrick, 1996; Mincer, 1970). We similarly controlled for the main effects of executives' functional positions (finance, marketing, R&D, and international) for the reason that external labor markets for those functions may have unobserved effects on pay (Pfeffer & Davis-Blake, 1987). Since the variable assessing a position's similarity to the CEO's functional background was calculated using other functional backgrounds in addition to those above, as an added precaution we also controlled for administrative, law, and operations and production positions using dummy codes for each in tests of Hypotheses 2a and 2b.

Leonard (1990) suggested that human capital influences executive pay indirectly, as opposed to directly, by serving as an internal sorting criterion. Thus, human capital provides an entrée to higher ranks in an organization, which in turn results in higher pay. To address this issue, we controlled for executives' *organizational rank* using dummy codes for levels 2 and 3 (excluding level 1, the CEO); level 4 was the omitted category. We also created four dummy variables to control for potential period *(year)* effects; the first year was the excluded year. Finally, in addition to the variables mentioned above, all strategic contingency variables used to calculate the interactions were retained as controls.

## Analyses

We tested the hypotheses by estimating fixed-effects models using STATA statistical software. Fixed-effects modeling controls for unobserved differences between firms. The STATA fixed-effects algorithm generates a dummy variable for each firm, and this controls for constant, unmeasured differences among firms that may explain differences in the dependent variable (Greene, 1990). For instance, because economists have long observed that some firms pay very well across all positions, while the pay of other firms for comparable positions is very low (high-wage versus low-wage firms), or have particular evaluation systems in place that reinforce pay differentials, the inclusion of firm controls is important because it accounts for these otherwise unobserved effects. Industry dummies are similarly not included in the fixed-effects time series models because industry membership is constant across each firm during the period studied. As noted above, across-year effects were accounted for using year dummy variables.

Importantly, fixed-effects modeling does not control for potential problems arising from autocorrelation (that is, nonindependence), and this feature could have indeed biased our results, since many executives were observed more than once in the sample (that is, they reappeared each year). Employing a fixed-effects model at the executive level would prove unsatisfactory, since many executive characteristics, such as functional background, are unlikely to vary year to year; the potential for autocorrelation owing to time invariance thus was present, preventing the completion of any analytical algorithms. Recognizing these difficulties, we conducted an extremely conservative test in which we randomly sampled one executive from each level, from each firm, for each year, and ran our regression analyses on this reduced random sample. For the human capital analyses, we randomly sampled one executive from each level, within each function, for each firm, for each year. For all of the hypotheses, we repeated this random sampling procedure ten times and compared the results of the runs.

The outcomes of such a procedure are similar to those generated by using the Quadratic Assignment Procedure (QAP; Hubert, 1987), which other researchers have used to investigate nonindependent relationships (Gulati, 1995; Haunschild & Miner, 1997; Krackhardt, 1987). The common underlying motive is to determine whether results using the full sample are or are not an artifact of nonindependent observations. Our results obtained using the random procedure were substantively unchanged (as to the sign, size, and significance of each coefficient, and the variance explained) from those using the full sample. Therefore, it appears that the results validating our theoretical framework, reported below, are not simply an artifact of autocorrelation and the nonindependence of executive observations.

## RESULTS

Table 1 provides descriptive statistics and correlations among the variables. In Table 2 we report tests of Hypotheses 1, 2a, and 2b. Although all the analyses account for period effects (year), we omitted results for those four control variables from the tables in order to conserve space. As expected, in this sample higher-ranking executives were paid more than those in lower ranks, and average pay increased with calendar year.

Model 1 in Table 2 reports the effects of our control variables. Consistent with prior research, firm size and performance have positive effects on compensation. This model also shows that the human capital measures (work experience and education) are curvilinearly associated with pay for the firms in our sample. Specifically, the positive main effects and negative squared term effects suggest an inverted U-shaped relationship. The dummy variables for all the position functions are similarly significant. With executive rank controlled, the coefficients suggest that marketing positions garner the most pay of the four categories, followed in order by international, R&D, and finance positions. Finally, with the exception of capital expenditures, the strategy contingencies also impact average executive cash compensation for the sampled firms. Since we already accounted for firm size and performance in the regressions (along with our other controls), the proxy effects reported for the financial, marketing, R&D, and international contingencies are independent of those controls. Interestingly, international sales, R&D intensity, and advertising intensity all have positive effects on salary levels, while diversification has a negative impact.

Model 2 in Table 2 reports the tests of Hypothesis 1, stating that executives will be paid most when they occupy critical functional positions, as determined by the actions and resource allocations underlying firm strategy. To test this hypothesis, we created multiplicative terms to capture the interaction of the strategic contingency variables with each executive's department. For instance, where we predicted that executives in finance positions are likely to be paid more, relative to other executives, in firms facing high levels of diversification

## TABLE 1
### Descriptive Statistics and Correlations[a]

| | Mean | s.d. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Cash compensation[b] | 11.45 | 0.51 | | | | | | | | | | | | | | | | | | | |
| 2. Total assets[b] | 14.34 | 1.21 | .46 | | | | | | | | | | | | | | | | | | |
| 3. ROE | 0.13 | 0.25 | .01 | -.04 | | | | | | | | | | | | | | | | | |
| 4. Education | 16.88 | 1.78 | .22 | .13 | .00 | | | | | | | | | | | | | | | | |
| 5. Education squared | 288.36 | 58.58 | .22 | .13 | .00 | .99 | | | | | | | | | | | | | | | |
| 6. Work experience | 24.08 | 8.84 | .29 | .14 | -.02 | -.30 | -.29 | | | | | | | | | | | | | | |
| 7. Work experience squared | 658.47 | 441.53 | .25 | .12 | -.02 | -.31 | -.30 | .98 | | | | | | | | | | | | | |
| 8. Finance position | 0.27 | 0.44 | .03 | -.00 | .00 | .04 | .03 | -.12 | -.11 | | | | | | | | | | | | |
| 9. Marketing position | 0.10 | 0.30 | -.01 | .11 | .00 | -.13 | -.14 | .01 | .01 | -.21 | | | | | | | | | | | |
| 10. R&D position | 0.06 | 0.25 | .00 | -.03 | -.01 | .11 | .12 | .05 | .05 | -.17 | -.09 | | | | | | | | | | |
| 11. International responsibility | 0.36 | 0.52 | .21 | -.00 | -.03 | .08 | .08 | .05 | .04 | .11 | .00 | -.01 | | | | | | | | | |
| 12. Administrative position | 0.06 | 0.23 | .18 | .02 | -.00 | -.02 | -.02 | .06 | .07 | -.15 | -.08 | -.07 | .01 | | | | | | | | |
| 13. Legal position | 0.09 | 0.29 | .09 | .08 | .00 | .39 | .40 | -.06 | -.06 | -.19 | -.11 | -.09 | .00 | -.08 | | | | | | | |
| 14. Operations position | 0.04 | 0.20 | -.09 | .00 | .00 | -.16 | -.16 | .09 | .09 | -.13 | -.07 | -.06 | -.04 | -.05 | -.06 | | | | | | |
| 15. Capital intensity[b] | 4.26 | 2.10 | .34 | .75 | -.05 | .08 | .08 | .09 | .08 | -.01 | -.07 | -.00 | -.00 | .03 | .05 | -.00 | | | | | |
| 16. Diversification | 3.52 | 1.90 | .17 | .34 | -.10 | .08 | .08 | .09 | .06 | .04 | -.10 | -.02 | -.05 | .02 | .05 | -.03 | .23 | | | | |
| 17. Advertising intensity[b] | 1.69 | 2.23 | .14 | .13 | .01 | .06 | .06 | -.01 | -.02 | -.00 | .03 | -.03 | .09 | .00 | .01 | -.00 | .16 | -.05 | | | |
| 18. R&D intensity[b] | 2.45 | 2.19 | .19 | .29 | -.06 | .07 | .07 | .14 | .13 | -.04 | -.03 | .12 | .27 | -.01 | .02 | .00 | .32 | -.04 | .09 | | |
| 19. Foreign sales intensity[b] | 1.52 | 1.93 | .06 | .00 | -.04 | .03 | .04 | .07 | .07 | -.01 | -.02 | .10 | .12 | .00 | -.00 | -.02 | .06 | .12 | -.26 | .41 | |
| 20. Similarity to CEO background | 0.11 | 0.32 | .07 | .06 | .00 | .01 | .01 | -.02 | -.01 | .17 | .11 | -.04 | -.02 | .10 | .01 | -.03 | .00 | .08 | -.02 | -.05 | .02 |

[a] $n = 17,135$. For correlations with values greater than .13, $p < .05$.
[b] Logarithm.

## TABLE 2
### Results of Fixed-Effects Regression Predicting Logarithm of Cash Compensation[a]

| Variables | Model 1 | Model 2: Hypothesis 1 | Model 3: Hypothesis 2a | Model 4: Hypothesis 2b | Model 5: All Hypotheses |
|---|---|---|---|---|---|
| Total assets | 0.15** (.02) | 0.15** (.02) | 0.15** (.01) | 0.15** (.01) | 0.15** (.01) |
| Prior ROE | 0.02* (.01) | 0.02* (.01) | 0.01* (.01) | 0.02* (.01) | 0.02* (.01) |
| Education | 0.11** (.02) | 0.11** (.02) | 0.09** (.01) | 0.09** (.01) | 0.10** (.01) |
| Education squared | −0.00** (.00) | −0.00** (.00) | −0.00** (.00) | −0.00** (.00) | −0.00** (.00) |
| Work experience | 0.04** (.00) | 0.04** (.00) | 0.04** (.00) | 0.04** (.00) | 0.04** (.00) |
| Work experience squared | −0.00** (.00) | −0.00** (.00) | −0.00** (.00) | −0.00** (.00) | −0.00** (.00) |
| Level 2 | 0.66** (.01) | 0.66** (.01) | 0.65** (.00) | 0.65** (.00) | 0.64** (.01) |
| Level 3 | 0.22** (.01) | 0.22** (.01) | 0.22** (.01) | 0.22** (.01) | 0.22** (.01) |
| Finance position | 0.08** (.00) | 0.04* (.02) | 0.06* (.01) | 0.06* (.01) | 0.03** (.01) |
| Marketing position | 0.17** (.00) | 0.14** (.01) | 0.15** (.01) | 0.15** (.01) | 0.13** (.01) |
| Research and development position | 0.10** (.01) | 0.03 (.02) | 0.08 (.01) | 0.08 (.01) | 0.02** (.01) |
| International responsibility | 0.11** (.00) | 0.12** (.01) | 0.11** (.00) | 0.11** (.00) | 0.12** (.00) |
| Administrative position | | | 0.14** (.01) | 0.14** (.01) | 0.14** (.01) |
| Legal position | | | −0.03* (.01) | −0.03* (.01) | −0.03 (.01) |
| Operations position | | | −0.10* (.01) | −0.10* (.01) | −0.10** (.01) |
| Capital intensity | 0.01* (.00) | 0.01* (.00) | 0.01* (.00) | 0.01* (.00) | 0.01 (.00) |
| Diversification | −0.02** (.00) | −0.02** (.00) | −0.02** (.00) | −0.02** (.00) | −0.02** (.00) |
| Advertising intensity | 0.01 (.00) | 0.01 (.01) | 0.01 (.00) | 0.01 (.00) | 0.01* (.00) |
| R&D intensity | 0.02** (.01) | 0.01* (.01) | 0.02* (.01) | 0.02* (.01) | 0.01** (.01) |
| Foreign sales intensity | 0.02** (.00) | 0.02** (.00) | 0.02** (.00) | 0.02** (.00) | 0.02** (.00) |
| CEO background similarity | | | 0.03** (.01) | 0.02** (.01) | 0.01* (.01) |
| CEO proximity (similarity × level 2) | | | | 0.04* (.03) | 0.05* (.03) |
| CEO proximity (similarity × level 3) | | | | 0.02 (.02) | 0.02 (.02) |
| Finance position × capital intensity | | 0.00 (.00) | | | −0.00 (.00) |
| Finance position × diversification | | 0.01** (.00) | | | 0.01** (.00) |
| Marketing position × advertising intensity | | 0.01** (.00) | | | 0.01* (.00) |
| Research position × R&D intensity | | 0.02** (.00) | | | 0.02** (.00) |
| International × foreign sales intensity | | −0.00* (.00) | | | −0.00* (.00) |
| Constant | 6.93** (.21) | 6.92** (.30) | 7.05** (.30) | 7.04** (.30) | 7.03** (.30) |
| Adjusted $R^2$ | .60** | .62** | .61** | .62** | .64** |
| Change in $R^2$ | | .02** | .01** | .01** | .04** |

[a] Standard errors are in parentheses. $n = 17,135$.
[b] Logarithm.
   * $p < .05$
   ** $p < .01$
Two-tailed tests, with the exception of interactions.

or capital intensity, we created a multiplicative interaction with finance and each of these latter contingency variables, obtaining two new interaction variables. Our hypothesis would be supported for each contingency prediction by a positive and significant coefficient for the interaction variable that specifies the main effects of the variables used to create the contingency relationship.

Since the results were substantively unchanged when each interaction was tested in separate models, we report only the fully specified model containing all interactions. The capital expenditures interaction was significant and positive in the individual models, but it was not significant in the full model. Every other interaction is significant, and all but one is in the predicted direction. Finance executives are paid more in highly

diversified firms; marketing and R&D managers are similarly likely to benefit when they are in advertising- and R&D-intensive firms, respectively. These effects are quite substantial. For example, R&D executives in R&D-intensive firms (which we defined as being at the 75th percentile) receive 12 percent pay premiums as compared to their counterparts in firms that have lower R&D expenditures (at the median level). Similarly, the salaries of finance executives in highly diversified firms are also 10 percent higher than those in firms that sell in only a few product-markets. In contrast, although international responsibilities translate into greater pay overall (that is, a positive main effect), the hypothesized relationship is negative—that is, the interaction between international experience and

foreign sales intensity has a negative effect on cash pay. Therefore, except for the results for international sales and capital expenditures, Hypothesis 1 is supported.

In supplemental analyses (not reported), we tested for the possibility that other interactions (beyond our theoretical model) between executive functions and contingencies better explained executive pay. Such a test provides additional evidence that (1) the function/contingency match-ups were appropriate and (2) selected strategic actions and resource allocation choices result in higher pay for the functions we identified, as opposed to all functions. For instance, in the model testing the interaction between R&D intensity and research positions, we added the three other possible functional interactions with R&D intensity (finance position, marketing position, and international responsibility). We repeated these steps for each contingency domain (financial, marketing, R&D, and international). In all cases, our theorized interactions explained more variance in pay than the additional post hoc interactions. Moreover, in most cases the supplemental interactions were not significant; in a few cases, the post hoc interactions were negative and significant (that is, finance executives received less pay in marketing-intensive and R&D-intensive firms). Taken together, these results validate our choice of focal interactions and the general contention that firms make trade-offs among resource allocation choices and that such trade-offs differentially affect executive pay within the firms.

Hypothesis 2a predicts that executives who are in functions similar to the function that is the background of the CEO will receive higher cash compensation. Recall that the CEO background variable was coded 1 to signify such similarity; otherwise it was coded 0. We also controlled for the other position variables used to calculate CEO-executive functional similarity but excluded from our strategic contingency predictions. The positive, significant coefficient for the CEO similarity variable in model 3 provides support for Hypothesis 2a. The magnitude of this effect is modest, however, in that executives who are in functions similar to the background of the CEO receive, on average, a 3 percent pay premium.

To test Hypothesis 2b, which predicts that proximity will positively moderate the effects of CEO-executive functional similarity on executive pay, we created two multiplicative interactions by interacting the similarity variable with each of the dummy variables representing executive hierarchical rank. When these two additional interactions were added in model 4, only the interaction coefficient for the highest level (level 2) was significant.

Moreover, since the significant coefficient is positive, support is provided for Hypothesis 2b. The main effect for CEO-executive functional similarity is somewhat weaker, but it remains positive and significant. From a practical standpoint, executives received a pay premium of nearly 7 percent when they were in functions similar to the CEO's background and proximate in level. Thus, as predicted, the positive effect of CEO functional similarity is clearly strongest for those executives closest in rank to the chief executive officer of their firm.

Finally, the combined results for the CEO similarity variables and all contingency interactions are presented in model 5. Support for Hypotheses 1, 2a, and 2b is reaffirmed in this complete model. However, the coefficient for CEO-executive functional similarity is lower than that reported in model 4 (though it still explains over 6 percent of executive pay). Therefore, the relationship between CEO similarity and executive pay appears to be both direct and indirect (that is, partially mediated) through executive proximity and the strategic contingencies facing a firm and its top managers.

Hypothesis 3 suggests that executives' education and work experience will have the strongest effect on their salaries when they were in positions associated with strategic resource allocations. In order to test this hypothesis, we partitioned the data to create four subsamples composed of (1) executives in finance positions, (2) executives in marketing positions, (3) executives in research and development positions, and (4) executives with international responsibilities. For each group, we reestimated our cash compensation models and interacted the key strategic allocation for a given group with our human capital measures. Because the effects of our human capital variables are nonlinear (squared), it was further necessary to control for the additional possible two-way interactions created by a component of the squared term and the respective strategic contingency.

Table 3 (a–d) shows the results for the tests of Hypothesis 3. To conserve space, we only present results for the human capital main effects and interactions. The other control variables described above were retained in the analyses, but results for them are excluded from the tables. Support for Hypothesis 3 required that the interactions between a strategic contingency variable and the linear and squared terms of the human capital variable be both positive and significant. However, the additional interactions complicated the interpretation of the coefficients because they could produce nonlinear effects over the range of the human capital variables. Consequently, if one of the significant interactions were positive while the other was neg-

## TABLE 3
### Summary of Results of Fixed-Effects Regressions Predicting Logarithm of Cash Compensation for Functional Subsamples[a, b]

| Variables | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| **(3a) Finance positions subsample** | | | |
| Education | .025 (.08) | .127** (.04) | .046 (.08) |
| Education squared | .001 (.00) | −.002* (.00) | .001 (.00) |
| Work experience | .042** (.00) | .043** (.01) | .034** (.01) |
| Work experience squared | −.001** (.00) | −.000** (.00) | −.000* (.00) |
| Education × capital intensity | .005** (.02) | | .002* (.02) |
| Education squared × capital intensity | .001** (.00) | | −.002* (.00) |
| Education × diversification | .016† (.02) | | .017† (.02) |
| Education squared × diversification | .000† (.00) | | −.000† (.00) |
| Work experience × capital intensity | | .004* (.00) | .003** (.00) |
| Work experience squared × capital intensity | | −.001* (.00) | −.000* (.00) |
| Work experience × diversification | | −.000 (.00) | −.002* (.00) |
| Work experience squared × diversification | | .000 (.00) | .000* (.00) |
| Adjusted $R^2$ | .57* | .57* | .59* |
| **(3b) Marketing positions subsample** | | | |
| Education | .076* (.04) | .019 (.04) | .089* (.04) |
| Education squared | .001 (.00) | .001 (.00) | −.001 (.00) |
| Work experience | .033** (.00) | .023** (.00) | .022** (.00) |
| Work experience squared | −.000** (.00) | −.000** (.00) | −.000* (.00) |
| Education × advertising intensity | .021† (.01) | | .014* (.01) |
| Education squared × advertising intensity | −.001* (.00) | | −.001* (.00) |
| Work experience × advertising intensity | | .004** (.00) | .004** (.00) |
| Work experience squared × advertising intensity | | −.000** (.00) | −.000** (.00) |
| Adjusted $R^2$ | .31* | .31* | .32* |
| **(3c) Research positions subsample** | | | |
| Education | .080 (.08) | .005 (.03) | .062 (.08) |
| Education squared | −.001 (.00) | .000 (.00) | −.000 (.00) |
| Work experience | .031** (.00) | .025** (.01) | .024** (.01) |
| Work experience squared | −.000** (.00) | −.000** (.00) | −.000** (.00) |
| Education × R&D intensity | −.019 (.02) | | −.014 (.02) |
| Education squared × R&D intensity | .000 (.00) | | .000 (.00) |
| Work experience × R&D intensity | | −.001 (.00) | −.000 (.00) |
| Work experience squared × R&D intensity | | .000 (.00) | .000 (.00) |
| Adjusted $R^2$ | .30 | .30 | .31 |
| **(3d) International positions subsample** | | | |
| Education | .086* (.03) | .089* (.03) | .086* (.03) |
| Education squared | −.001 (.00) | −.001* (.00) | −.001 (.00) |
| Work experience | .037** (.00) | .038** (.00) | .038** (.00) |
| Work experience squared | −.000** (.00) | −.000** (.00) | −.000** (.00) |
| Education × foreign sales | .000* (.00) | | .000* (.00) |
| Education squared × foreign sales | −.001* (.00) | | −.001* (.00) |
| Work experience × foreign sales | | .000 (.00) | −.000 (.00) |
| Work experience squared × foreign sales | | .000* (.00) | .000 (.00) |
| Adjusted $R^2$ | .33* | .33* | .33* |

[a] Summary tables are provided to preserve space: All models reported above also include controls for year, executive rank, total assets (log), prior ROE, capital intensity, diversification, advertising intensity, R&D intensity, foreign sales intensity, and CEO-executive similarity. Results of control models are available from the authors upon request. Standard errors are in parentheses.

[b] For the samples represented in 3a, 3b, 3c, and 3d, respectively, $n$'s = 4,726, 3,124, 1,786, and 923.

   † $p < .10$
   * $p < .05$
   ** $p < .01$
Tests were two-tailed, except for interactions.

ative, support for Hypothesis 3 could only be determined by decomposing the interaction; this process is explained below and in the Appendix.

Table 3 contains no cases in which the interac-

tions between a strategic contingency variable and the linear and squared terms of the human capital variable are all positive and significant. In contrast, the human capital interactions with capital inten-

sity, between education and diversification (3a), and between advertising intensity and both education and work experience (3b) were significant but had mixed signs; the education interactions and the interaction of squared work experience and foreign sales were also significant (3d). Although such relationships suggested support for Hypothesis 3, it was necessary to decompose and then graph the effects of the human capital variables at high and low levels of the strategic contingency variables in order to determine if the hypothesis was ultimately supported. Given that the contingency interactions contain squared terms, graphing the functional form of the interactions was likely to reveal that the relationships between human capital and strategic contingencies were nonlinear.

To decompose the interactions, we first designated strategic contingency values as low or high using median and 75th percentile values, respectively. As an example, advertising intensity was $25 million (in constant 1980 dollars) at the median and $340 million for those in the 75th percentile among the firms in our sample. Such decomposition based on high and low values revealed that within finance, marketing, and international positions, executives earned significantly higher returns from their human capital when they were in positions made critical to the firm as a result of the actions and resource allocation choices underlying its strategy. The Appendix provides details on these decomposition calculations; additional information is provided in Jaccard, Turrisi, and Wan (1990). For instance, comparisons between firms with low and those with high advertising values showed that marketing executives earned up to 14 percent more for their work experience than peer marketing executives when they were in advertising-intensive firms. Such strategic-contingency-based pay differences were considerably higher among finance executives (facing capital expenditures and diversification contingencies), and considerably lower among executives with international responsibilities (peak pay difference of 6 percent). No human-capital-based differences were detected among R&D executives.

To even better understand the functional form of the contingent relationships suggested above, we graphed the effects of the human capital contingency interactions on cash compensation over the entire range of human capital variables. Such graphing revealed that, for those with finance or international responsibility positions, their human capital effects were a gradually increasing function of their respective strategic contingency. Specifically, at low levels of education and work experience, the marginal effect of human capital on pay

among executives in the finance and international subsamples was negligible; the strongest positive relationships were detected at the high ends of education (20 years) and work experience (35 years). For instance, executives with international responsibilities gained no premium for their work experience when it totaled less than 5 years, even in highly global firms. In contrast, executives in those same firms with 35 years of work experience garnered 6 percent higher pay as a result of their work experience than comparable others when their firms had large foreign sales.

The effects of human capital were similarly striking for marketing executives; even after the main effects of human capital were controlled for, those executives realized greater returns to their education and work experience along with increases in the marketing contingency. For example, marketing executives in marketing-intensive firms with two years of work experience earned 4 percent more for an equivalent amount of work experience than their functional counterparts; that pay spread grew to 10 percent with 12 years of work experience, up to a maximum premium of 18 percent after 26 years, and gradually leveled off thereafter. Therefore, the results of decomposition and graphing suggest some support for Hypothesis 3 and, when taken in combination with the tests of Hypotheses 1, 2a, and 2b, corroborate the prediction that position, strategic resource allocations, and human capital create microlevel opportunity structures for executives, which they in turn translate into higher relative pay.

## DISCUSSION

The primary purpose of this article was to introduce microlevel opportunity structures and present our initial tests of a multilevel theory of executive compensation. Using the complementary lenses of upper echelons, resource dependence, and power theories, we predicted that the confluence of executive positions, strategic contingencies, CEO characteristics, and human capital would lead to microlevel opportunity structures, which in turn could afford particular executives higher pay. We found a consistent pattern of results to support that prediction and provided robust empirical validation for our overarching theoretical framework. Specifically, executives received greater cash compensation when they occupied positions in which they were likely to be associated with strategic resource allocation choices made by their firm and when they had functional responsibilities similar to the background of the CEO. Given the particular resource allocations arising as a result of firm strategy, we also demon-

strated that executives were able to garner greater returns to their education and work experience in some cases. Taken together, our theory of microlevel opportunity structures and supportive results partially answer recent calls for "a better understanding of what determines executive pay" (Barkema & Gomez-Mejia, 1998: 143). The implications of our study for theory and future research are discussed below.

## Implications of Results

Overall, the pattern of results reported here contributes to researchers' theoretical understanding of the upper echelons, resource dependency, and power perspectives by demonstrating how organizational and individual characteristics intersect to affect executive pay. According to an emerging upper echelons perspective, executives, primarily CEOs, are compensated for the criticality of the tasks that they must manage (Finkelstein & Hambrick, 1988; Henderson & Fredrickson, 1996). Similarly, it is reasonable to expect that such relationships extend to the pay of other executives throughout a firm. However, although that perspective has typically emphasized the external and macrolevel determinants of pay (that is, environment, firm size, and corporate strategy), this study showed how the many faces of firm strategy (actions and resource allocation choices) may result in different *internal* resource dependencies, and thus have different pay implications for particular executives. Furthermore, we showed that executives themselves vary in the position and human capital requisite to managing the contingencies arising from differences in leadership (like CEO background) and strategic resource allocations. Consequently, functional position, along with education and work experience, created certain microlevel opportunity structures that executives converted into higher pay.

The majority of results for executive compensation confirmed our theorizing on the importance of executives' positions, in conjunction with strategic resource allocations and CEO similarity, as reflected in Hypotheses 1–2b; however, the negative interaction of international responsibility with foreign sales (Table 2) was directionally opposite our prediction. That counterintuitive result can be explained, perhaps, by a social capital perspective (Burt, 1997). For instance, the literature on expatriates suggests that foreign assignments are often a risky career move for both executives and their firms and that time spent gaining international experience has the concomitant cost of less political clout back at headquarters. In some ways, expatri-

ates may face microlevel *liability* structures, as opposed to *opportunity* structures. Certainly, it has been consistently shown that U.S. expatriates are "out of sight, and out of mind" during international assignments (Lancaster, 1995), a condition that may negatively impact these executives' social capital at headquarters. A related explanation for the observed interaction may be that none of our sampled firms realized more than 30 percent of their revenues overseas. Thus, international executives already low levels of social capital may combine negatively with a low level of expert power when their firms have only small stakes in nondomestic markets.

The human capital hypothesis (Hypothesis 3) also received support. Even though it was important that we demonstrate some human capital effects, in terms of microlevel opportunity structures, a more critical hurdle was the need to show that such capital could explain more than marginal variance in executive pay. We believe that we succeeded in that endeavor. Indeed, executives earned significantly greater returns to their education and work experience in capital- and advertising-intensive firms (over 18 percent), while those with international responsibilities earned up to 6 percent premiums for their work experience, in conjunction with increases in the levels of resources deployed to their respective strategic contingencies. Our results for non-CEO executives complement those of Harris and Helfat (1997), who theorized and found that replacement CEOs from outside the industry of the firm they were entering could bargain for greater cash pay since their presumed lack of both firm- and industry-specific human capital put them at greater risk. In contrast, consistent with the notion of microlevel opportunity structures, we showed how firm-specific human capital (like functional position) could serve to leverage general human capital such as education and work experience when executives' functions were associated with critical contingencies created by their firm.

## Future Research Directions

Our study has left some questions unanswered, suggesting future research opportunities. Four of these questions are particularly important. For instance, the survey data constrained the study to a period spanning the early to mid 1980s. Although this may be a practical limitation of the data set, we have been unable to answer the question as to whether our results generalize to the present. At a fundamental level, we expect our construct of microlevel opportunity structures to generalize well to other periods, since it incorporates a basic

tension: firms manage contingencies and resources through people, and those people can bargain for the price of their services. In view of the changing face of corporate America, and perhaps given the drivers of the opportunity structures that we identified, arguments could be made that our results would be different in contemporary firms, or that changing contingencies would result in different distributions of pay across functions. The latter argument is consistent with the literature on circulation of control in large public corporations (Fligstein, 1987; Ocasio & Kim, 1999).

A related limitation of our data is that it provided information only on cash compensation, and not on other long-term forms of pay, such as stock options; data on these forms of pay would have allowed us to use total pay as a dependent variable. As a practical matter, stock options were not a common component of non-CEO executive pay in the early 1980s. However, compensation studies conducted with data from other periods—prior to ours (Lewellen & Huntsman, 1970), contemporary with it (Main et al., 1995), and after it (Lambert et al., 1993)—have shown cash pay to be so highly correlated with total pay that the former is an adequate proxy for the latter (Gomez-Mejia, 1994). Researchers are still divided as to the reliability of estimating the value of long-term compensation (the component of pay not included in our data), since such estimates are based on a series of complex mathematical assumptions that are seldom entirely met (Finkelstein & Hambrick, 1996: 303; Gomez-Mejia, 1994; Kerr & Kren, 1992). Regardless, valid research questions remain as to whether and how the relationships found in this study would be reflected in executive pay when long-term incentives have been fully accounted for, or during periods when cash pay is not a reliable proxy for total compensation.

The second and third questions concern causality and firm performance, respectively. Indeed, although we used a lagged structure and control variables that allowed us to suggest causal relationships between executives' positions, human capital, and pay, we have not established causality. An alternative motivation may be that, when filling critical positions, firms are more apt to hire "better-qualified" individuals—those whose track records elsewhere allow them to bid up their salaries when they are recruited to key posts. In those cases, executives will be paid more than others in the firms for reasons beyond the human capital we identified. Such an interpretation does not really provide an alternative theoretical explanation, but instead suggests one possible mechanism by which critical positions are filled.

Also implicit in our theoretical model is the notion that executives benefit from their unique positions, in part, because they are able to translate their microlevel opportunity structures into competitive advantage for their firm. Indeed, our argument could be partially an economic one, wherein executives garner a portion of the profits they are expected to generate for a firm by virtue of their positions and backgrounds (Coff, 1999; Hitt, Bierman, Shimizu, & Kochhar, 2001). Nonetheless, we have been able to show that the importance of a position or human capital can be determined, at least in part, absent an assessment of the performance consequences of such importance. However, perspectives such as agency theory suggest that compensation schemes can serve to align the interests of managers and shareholders (Jensen & Murphy, 1990). Therefore, it is still valuable to understand better whether some executives actually apply their position and human capital to the betterment of their firms' financial performance, and whether the pay differentials we observed are a consequence or a determinant of the alignment of position, skills, and performance (Jensen & Murphy, 1990).

A fourth avenue for research arises from the fact that we did not actually measure executives' behaviors, abilities, or individual differences, but instead inferred them from their backgrounds, positions, years of education, and work experience. As a result, by following the norms of past upper echelons and resource dependence research, we have "black-boxed" important underlying processes and causal mechanisms that may have been otherwise interesting or significant to our arguments. Research is missing that would establish a direct link between such factors and the background characteristics and outcomes that we measured. Our theory on microlevel opportunity structures may imply that executives take some action (that is, actively bargain) to realize greater pay, but it is also possible that they simply benefited from being in the right place at the right time. Such a possibility does not deny the existence of microlevel opportunity structures, but instead raises questions about what influences these structures more—factors beyond non-CEO executives' control, or the executives themselves. Therefore, studies are needed to illuminate the relationships among firm strategies, executive positions, and characteristics, and the actual cognitions and behaviors of executives.

## Conclusion

In conclusion, this study contributes to the organization and strategy literatures by integrating

them and advancing prior work on both. Specifically, by developing the notion of microlevel opportunity structures, our research inserts position and human capital into the discussion of non-CEO executive compensation and suggests that executives' functional positions and backgrounds play a significant role in the degree to which they realize pay advantages. We have demonstrated the importance of studying the compensation of executives beyond the top five highest-paid individuals in a firm, and we have explored the distinct yet complementary roles of strategic contingencies, CEO similarity, and human capital that determine the degree to which executive compensation varies within firms. Indeed, by studying the notion that executives' bargaining power is contingent upon the actions and resource allocation choices underlying firms' strategies (which in turn generate microlevel opportunity structures), we hope we have suggested fruitful new avenues for organizations and strategy research. Although our work has clearly shown that there are limits to the impacts of position and human capital on executive pay, it also suggests that such factors can continue to play a valuable role in research on corporate governance and top management teams in the context of complex organizations.

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## APPENDIX

### Human Capital Variable Effects under High and Low Levels of Strategic Resource Allocations

In Hypothesis 3, we propose that executives in positions associated with strategic resource allocations will be paid more for their human capital. In order to test this hypothesis, we needed to interpret the coefficients for the interactions between the human capital variables and the strategic allocations. Because the effects of our human capital variables are nonlinear, it was necessary to control for the additional possible two-way interactions created by a component of the squared term and the allocation. These additional interactions complicate the interpretation of the coefficients. Hypothesis 3 would be supported if the interactions between an allocation variable and the linear and squared terms of the human capital variable were both positive and significant. Insignificant or negative interactions would indicate no sup-

port, and one positive and one negative interaction would indicate a nonlinear relationship that might or might not support our hypothesis. In such instances, we investigated the effects of the human capital variable at high and low levels of the strategic allocation variable in order to assess whether Hypothesis 3 was supported.

To interpret our results, we first had to examine our regression equation, which is of the following form: ln $(pay) = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots \beta_n X_n$, where the betas ($\beta$s) are the coefficients of our independent variables (the $X$s). By exponentiating both sides, one can rewrite the above formula as follows: $pay = \exp(\beta_1 X_1) \times \exp(\beta_2 X_2) \times \exp(\beta_3 X_3) \dots \times \exp(\beta_n X_n)$. Because this is a multiplicative model, we could then compare the salaries of two individuals who were identical in every way (with respect to our independent variables), except that one worked in a firm with low levels of the strategic resource allocation variable, while the other worked in a firm in with high values of that variable. The relevant coefficients to be examined were the interactions between the human capital variables and the strategic allocation variables. The following formula was used to compute the percentage difference in salaries between identical individuals facing differing levels of the strategic allocation variable for a given level of the human capital variable: *percent salary difference* $= 100 \times \{[(\exp(\beta_{hcsc} X_{hcsch}) \times \exp(\beta_{hc^2 sc} X_{hc^2 sch})/\exp(\beta_{hcsc} X_{hcscl}) \times \exp(\beta_{hc^2 scl} X_{hc^2 scl})] - 1]\}$, where $\beta_{hcsc}$ and $\beta_{hc^2 sc}$ are the coefficients for the interactions between the strategic allocation variable and the linear and quadratic effects of the human capital variables; $X_{hcsch}$ is the interaction between the human capital variable and high levels of the allocation variable; $X_{hc^2 sch}$ is the interaction between the human capital variable squared and high levels of the allocation variable; $X_{hcscl}$ is the interaction between the human capital variable and low levels of the strategic allocation variable; and $X_{hc^2 scl}$ is the interaction between the human capital variable squared and low levels of the strategic allocation variable.

To use this formula, we had to first assign values to the strategic allocation variables. For example, using the coefficients from model 2 of Table 3(b), the percentage premium paid to an marketing executive with 30 years of work experience in a firm with advertising expenditures of $340 million (in constant 1980 dollars) could be compared to that received by an identical executive in a firm with expenditures of $25 million as follows:

$$\beta_{hcsc} = .004,$$

$$\beta_{hc^2 sc} = -.00006,$$

$$X_{hcsch} = \ln(340) \times 30 = 174.87,$$

$$X_{hc^2 sch} = \ln(340) \times 900 = 5{,}246.05, \; X_{hcscl} = \ln(25) \times 30$$

$$= 96.57,$$

and

$$X_{hc^2 scl} = \ln(25) \times 900 = 2{,}896.99.$$

Substituting these values in our formula yields the following: percent salary difference $= 100 \times \{[(\exp(.004 \times 174.87) \times \exp(-0.00006 \times 5{,}246.05)/\exp(.004 \times 96.57) \times \exp(-.00006 \times 2{,}896.99)] - 1\} = 18.8\%$.

The one negative coefficient raised the possibility that Hypothesis 3 may not hold over the entire range of work experience. We therefore recomputed the percentage salary difference for various values of work experience. In this instance, we found that executives in firms with high advertising expenditures always received more pay than those in firms with low advertising expenditures over the entire range of work experience. As noted in the text, we performed similar analyses for each functional area in testing Hypothesis 3.

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**Mason A. Carpenter** *(mcarpenter@bus.wisc.edu)* is the William J. Nasgovitz Fellow and an associate professor in the School of Business and the Weinert Center for Entrepreneurship at the University of Wisconsin—Madison. He received his Ph.D. in strategic management and organization science from the University of Texas at Austin. His research concerns corporate governance, top management teams, the strategic management of global firms, and global new ventures.

**James B. Wade** is an associate professor in the School of Business at the University of Wisconsin—Madison. He received his Ph.D. in organizational behavior and industrial relations from the University of California, Berkeley. His research interests include organizational ecology, social movements, and top management team issues.

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