

Overpaid CEOs and Underpaid Managers: Fairness and Executive Compensation

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In this study we propose that norms of fairness are salient to top decision makers and show that over- or underpayment of the CEO cascades down to lower organizational levels. Moreover, it appears that CEOs use their own power not only to increase their own salaries, but also those of their subordinates. One implication of such a process may be that the overpayment of a top executive has higher costs than have previously been realized. We also find evidence suggesting that CEOs serve as a key referent for employees in determining whether their own situation is “fair,” and this influences their reactions to their own compensation. More specifically, we find that when lower-level managers are underpaid relative to the CEO—that is, underpaid more than the CEO or overpaid less—they are more likely to leave the organization. Results obtained from testing our hypotheses on a sample of more than 120 firms over a five-year period demonstrates the importance of considering fairness in the setting of CEO pay. Implications for the design of executive compensation packages are discussed.

Key words: executive compensation; equity; fairness; top management teams; corporate governance; turnover; power

Every year there is an annual ritual played out in the business press: Compensation figures for the highest-paid executives in the United States and United Kingdom are published with the predictable gasps about overpayment (Bebchuk and Fried 2004, Crystal 1991). In recent years, more sophisticated analyses have accompanied the release of these data identifying those executives who are, according to industry, firm size, and performance, over- or underpaid. Special outrage in the business press is reserved for those executives who enrich themselves at the expense of their own employees. A recent business press article headlined “Does Rank Have Too Much Privilege?—Special Deals for Top Executives, While Underlings Lose Jobs and Savings, Are All Too Common” (Hymowitz 2002) captured the general perception most people have about top executives’ compensation and the outrage it can inspire. For example, there have been numerous press accounts of how Donald Carty, the CEO of American Airlines, was pressured to resign in 2002 without a severance package after it was learned that at the same time he was demanding substantial wage concessions from the airline’s employees, he failed to disclose that he had negotiated lucrative retirement perks for top executives. Similarly, in a *Newsweek* article, Sloan and Underwood (1996) contended that top executives are rewarded by

Wall Street for laying off workers en masse. Sobriquets such as “Chainsaw” and “Neutron” are often attached to these executives, who are treated by Wall Street with grudging respect for their willingness to make these “tough” decisions on behalf of shareholders. After reading these accounts, one might conclude that top executives have little regard for fairness and are relatively unconcerned about the welfare of those under them.

Although generally not as well publicized, there are other accounts suggesting that top executives do make sacrifices for their employees and are concerned with fairness. For example, Nucor Steel has an explicit “share the pain” plan that mandates cuts in executive compensation that exceed the wage cuts of rank-and-file employees during tough times (Ghemawat and Stander 1992). Other recent examples include David Neeleman of Jet-Blue Airways who donated his annual salary to provide an emergency fund for employees in need. Roger Enrico of Pepsico also donated his entire salary to fund scholarships for the children of lower-level employees, and David Duffield, founder and former CEO of PeopleSoft, provided cash grants from his own fortune to workers laid off due to the merger with Oracle. Although these are extreme examples, they raise two important questions about the relationships between fairness, CEO compensation, and the pay of lower-level

employees. First, to what extent are outcomes for lower-level employees tied to those of top executives? Second, if salary structures favor the top executive at the expense of lower-level workers, how does this affect the lower-level workers' behaviors?

Limited attention has been paid to the first question. There is some evidence from the psychology literature that those in charge of allocating rewards to subordinates take their own relative under- or overpayment into account (Goodman 1975, Heneman and Cohen 1988, Meindl 1989). Furthermore, in a survey of highly ranked compensation executives that were in the *Business Week* 1000, Levine (1993a, b) found evidence that in assigning raises, executives tried to maintain relative wage differentials within career ladders. These studies and the anecdotal evidence noted above suggest that fairness is an important consideration in the executive suite. For example, Roger Enrico said of his employees that "We can't succeed without them—and if they are recognized and treated fairly our company is going to do better" (Hymowitz 2002, p. B1). However, little systematic research has been carried out that considers how the extent of a CEO's over- or underpayment influences the compensation of lower-level employees. This is an important question because, in addition to the implications it has for our understanding of the role of fairness in executive decision making, it can have significant financial consequences for the organization, because the financial costs of overpayment and the economic and social costs of underpayment at the top become magnified as they "trickle down" through the organization.

The second question has received more scholarly attention. Frank and Cook (1995) suggested that the market for executive talent is a "winner take all" contest, where relatively small differences in ability lead to large differences in compensation. Bok (1993) argued that the huge size of executive salaries and bonuses, even if one grants that they are justified, can have a negative impact on others in the organization by engendering feelings of inequity that can weaken loyalty and increase dysfunctional conflict. In *The Theory of Wages*, Hicks (1963, p. 317) makes a special point of noting that

The labor market is... a very special kind of market which is likely to develop 'social' as well as purely economic aspects... For the purely economic correspondence between wages paid to a particular worker and his value to the employer is not a sufficient condition of efficiency: it is also necessary that there should not be strong feelings of injustice about the relative treatment of employees since these would diminish the efficiency of the team.

Indeed, research on the impact of wage dispersion in organizations has shown that increased dispersion is associated with lower productivity, less cooperation, and increased turnover (Bloom and Michel 2002, Finkelstein 1996, Pfeffer and Langton 1993). Related research has

also shown that social comparisons may be an important determinant of what constitutes a "fair" wage (Major and Testa 1989, O'Reilly et al. 1988). In spite of research highlighting the potential negative effects of large executive compensation packages, there has been little direct research on the potential effects on others in the organization of inequity arising from the size of CEO compensation payments.

We begin with a brief review of the theories relevant for understanding fairness and executive compensation. Drawing on this research, we discuss how perceptions of fairness are likely to affect CEOs' decisions regarding the appropriate compensation for employees at lower levels in their company, and the extent to which CEO over- or underpayment trickles down and has an impact on the salaries of those below them. We then propose that CEOs serve as a key referent to employees in determining whether their own situation is "fair" and consider the effects of employee pay inequity relative to the CEO and the external market on employee turnover. Results obtained from testing our hypotheses on a sample of more than 120 firms over a five-year period demonstrate the importance of considering "fairness" in the executive wage-setting process. We discuss the implications of our findings for the literatures on fairness and executive compensation (Gerhart and Rynes 2003, Kahneman et al. 1986).

Organizational Approaches to Fairness

The idea that fairness has important organizational implications is, of course, not new. Beginning with Festinger (1954), more than five decades of research has documented the ubiquitous tendency that individuals have to make social comparisons with others and the consequences these social comparisons can have on individual perceptions and behavior (Adams 1965, Kruglanski and Mayseless 1990, Suls and Wheeler 2000, Wood 1989). This research has shown that social comparisons in organizations may lead to feelings of inequity (e.g., Kabanoff 1991, Kulik and Ambrose 1992); feelings, which have in turn been linked to lower productivity at both the organizational and individual levels, loss of group cohesion, theft, lower quality, and increased turnover (Bloom 1999, Cowherd and Levine 1992, Dittich and Carrell 1979, Greenberg 1993, Harder 1992, Pfeffer and Langton 1993, Summers and Hendrix 1991, Zenger 1992).

Theories of social exchange (Blau 1964), equity (Adams 1965), relative deprivation (Crosby 1984), procedural and distributive justice (Thibaut and Walker 1975), social comparison (Festinger 1954), reciprocity (Fehr and Gächter 2000), and referent cognitions (Folger and Martin 1986) have all described the importance of comparative judgments in shaping an individual's reactions to rewards and punishments. At a more macro

level, the welfare economics literature (e.g., Easterlin 1995) has also noted that within a society individual happiness is more dependent on relative than on absolute earnings. A basic tenet of all theories of justice and fairness is that employees' attitudes and behaviors are significantly determined by their comparative evaluations of what they deserved compared to their judgments about what others received. In this context, *fairness* implies that rewards are allocated in a manner that properly balances the interests of all parties (Finkel 2000).

Regardless of the specific theory, all theories of fairness share two underlying assumptions. First, they all assume that the impact of rewards in organizations stems largely from social comparisons. The question, am I well paid or not? can only be answered comparatively, whether to others in the organization or industry, or to one's aspirations and experience. That is, theories of equity and justice rely on the premise that in order to determine how a person evaluates a reward, he must first compare his own inputs and outcomes to others'; fairness is determined through a social comparison process (Sheppard et al. 1992).

Second, these theories assume that judgments of fairness matter a great deal in determining peoples' responses to the comparative evaluations. Faced with a lack of fairness, people may withdraw effort, leave, or even sacrifice their own welfare to retaliate (Bazerman 1993). Similarly, while self-interest can play an important role, norms of fairness can have a powerful influence on how allocators distribute rewards (Deutsch 1985, Diekmann et al. 1997). As Diekmann and her colleagues (1997, p. 2) put it, "as social and socialized beings, we want to be perceived by our peers (and to perceive ourselves) as fair and evenhanded."

Unfortunately, with a few exceptions (e.g., Cowherd and Levine 1992, Goodman 1975, Heneman and Cohen 1988), little research explicitly addresses issues of fairness and pay comparisons between higher- and lower-level employees in business organizations.¹ Rather, scholars have focused on the effects of wage dispersion within a class of employees. Below, we develop hypotheses about how CEO compensation, coupled with considerations of fairness, affects both the compensation of lower-level participants and their propensity to remain with or exit the organization.

Theory and Hypotheses

Effects of CEO Compensation on Subordinate Pay

In spite of the attention paid by researchers and the media to CEO compensation (Bebchuk and Fried 2004, Crystal 1991) and the strong social comparison effects that are likely to result from the public reporting of large executive pay packages, little research has been conducted into the equity effects such pay might have on

others in the organization. It stands to reason, though, that the outcomes for an organization's leaders would have an impact on how rewards are distributed among others in the company. In a laboratory experiment, Goodman (1975) found that subjects responded to their relative equity or inequity by changing the allocation of rewards to their subordinates, suggesting that relative equity may be passed on within organizations. In support of this logic, Heneman and Cohen (1988) found in a field study that there was a positive relationship between the raises that supervisors themselves received and the raises that they subsequently gave to subordinates. Similarly, Carpenter and Sanders (2002) found a positive relationship between CEO pay and the pay of others on the top management team (TMT). The idea that top managers would influence subordinate pay is not surprising, given the substantial resources expended conducting and purchasing salary surveys and evaluating firms' salary structures relative to others (Milkovich and Newman 1987). Furthermore, in interviewing top compensation executives, Levine (1993a, b) found that recommendations on compensation based on wage surveys and job evaluations are generally forwarded to the vice president of human resources and then passed on to an executive committee that typically comprises the company's top executives, including the CEO.

While little research has directly linked CEO compensation to subordinate pay, O'Reilly et al. (1988) showed that the salaries of outside CEOs on board compensation committees were positively related to the pay of the CEO that was being evaluated in a focal firm. Consistent with social comparison theory, O'Reilly and his colleagues reasoned that these CEOs were basing their judgments about what an appropriate salary for the focal CEO would be on their own salaries and those of other committee members. If CEOs that are board members use their own pay as a referent in setting the pay of CEOs on whose boards they serve, a similar process might take place with regard to setting salaries of subordinates within their own firms.

The wages of those below the CEO may also be influenced by CEO over- or underpayment because of the board and TMT's desire to maintain relative wage differentials within an organization. For instance, Simon (1957) proposed that wage ratios between executives and their subordinates would remain relatively constant within an organization. Most importantly, as we have argued above, perceptions of fairness are likely to be a central concern of top managers and the board. As Meindl (1989, p. 272, italics our own) noted, "an image of managers as interested in justice and the fair treatment of subordinate others in the execution of their roles is one that *should be* but often is not represented or taken very seriously." Moreover, CEOs and other top managers are likely to be aware of the negative effects that perceived inequity in organizations can

create, including lower satisfaction, increased turnover, theft, and lower product quality (Bloom 1999, Cowherd and Levine 1992, Greenberg 1993, Harder 1992, Pfeffer and Langton 1993, Summers and Hendrix 1991, Zenger 1992). Indeed, a survey of 206 firms conducted in 1998 by the consulting firm William M. Mercer found that managers had a strong belief that dissatisfaction with compensation led to turnover and they had implemented various tools such as exit interviews in an effort to measure reasons for employee departures. They also found that 48% of these firms had modified their compensation programs in the past year to deal with these issues, and another 15% planned to do so. Thus, if a CEO is over- or underpaid, she is likely to be sensitive to the impact that this could have on subordinates. In turn, we expect that judgments about appropriate pay for subordinates may be partially anchored in a CEO's relative degree of under- and overpayment and cascade down through the organization. We therefore propose:

HYPOTHESIS 1A. Overpayment of the CEO will be associated with overpayment of subordinates.

HYPOTHESIS 1B. Underpayment of the CEO will be associated with underpayment of subordinates.

The strength of the effects of CEO over- and underpayment is not likely to be constant across managers at different hierarchical levels. The strongest effects are likely to occur for those closest to the CEO and those most similar to the CEO. Due to similarity in professional responsibilities and frequency of contact, the CEO's immediate subordinates are likely to be seen as the most relevant comparison group and to experience the largest effects of over- and underpayment (Gibbons et al. 1994). In addition, the CEO is likely to have higher task interdependencies with those at higher levels. Bartol and Martin (1988, 1990) found some evidence that managerial pay allocations are influenced by their level of dependence on subordinates. Because dependence would likely be stronger for higher-level managers, we expect that the effect of CEO pay outcomes will be strongest for the CEO's direct subordinates and will weaken at lower hierarchical levels.

The structure of a company's pay system may also serve to diminish the effects of CEO over- and underpayment at lower levels of the organization. Because the jobs of managers below the CEO's most senior lieutenants are likely to be part of a formalized pay grade structure that specifies minimum and maximum salary levels, the CEO may be limited in his ability to influence their pay level beyond the setting of an overall pay strategy and the determination of the bonus opportunity for their pay grade. Both of the preceding arguments suggest the following hypothesis:

HYPOTHESIS 2. The effects of CEO over- and underpayment will diminish as they cascade down to lower levels in the organization.

Although over- and underpayment are expected to cascade down the organization, the effects are not expected to be symmetric. A substantial body of research on distributive and procedural justice has documented the importance of both in affecting outcomes, with distributive justice (or perceived fairness in outcomes) showing stronger effects when outcomes are individually based (e.g., Hauenstein et al. 2001, Tyler 1994). Goodman's study (1975) also illustrated this and showed that overpaid respondents (those who received high pay for low performance) were most generous when rewarding their subordinates. Underpaid respondents (high performers receiving low pay) were the least generous. Because it is easier to share benefits than burdens, the expectation is that overpayment effects will be stronger than underpayment effects (Shefrin and Caldwell 1996). This is also consistent with studies that are more recent of resource allocation showing that advantageous inequalities are preferred over disadvantageous ones (Bazerman et al. 1992, van Dijk et al. 1999). In addition, as Hicks (1963) pointed out, upper management is likely to find life more pleasant with highly compensated workers.

Although both under- and overpayment can create psychological tension, overpayment may create less tension because of the ease with which it can be resolved via generosity. For example, individuals that are overpaid simply change their expectations such that they come to believe the overpayment is justified (Major and Testa 1989). In an effort to create consistency and rationalize their own pay, overpaid CEOs may use the same criteria that they used to justify their own pay in influencing and setting the pay of subordinates, especially because managers are likely to be aware that workers feel it is fair for managers to share excess rents (Levine 1993a, b).

Unlike overpayment, underpayment is more difficult to rationalize and requires more cognitive activity (Taylor 1991). Underpayment also cannot be easily resolved through a socially desirable response such as sharing the wealth. Moreover, because management and the board are likely to be aware of underpayment's negative repercussions, they may be more resistant to allowing underpayment to filter down through the organization. Finally, underpayment may reflect a lack of influence over the pay process on the part of the CEO. In that instance, the link between a CEO's pay and those of her subordinates may be weaker. This suggests the following hypothesis:

HYPOTHESIS 3. CEO overpayment effects are expected to be larger and show greater persistence across hierarchical levels than underpayment effects.

Previous research has demonstrated that CEOs are sometimes able to influence their own compensation levels. Main et al. (1995), for example, showed that when CEOs had strong social influence over their boards, they

were likely to receive significantly higher compensation than that predicted by traditional economic theories. Other researchers have found similar effects for the impact of power and influence on executive compensation (e.g., Belliveau et al. 1996, Finkelstein and Hambrick 1989, Lambert et al. 1993, Pollock et al. 2002, Wade et al. 1990).

Given the ability of powerful CEOs to influence their own levels of pay, it is logical to presume that powerful CEOs may also affect the wages of subordinates. In addition, based on our prior arguments, powerful CEOs may wish to pay more rather than less. Increased pay allocations can be a potential source of control over the dependencies created by subordinates (Bartol and Martin 1988) and may help ensure loyalty to the incumbent CEO. Thus, if powerful CEOs are able to garner increased pay for themselves, they may also be likely to increase their subordinates' pay as well.

In an intriguing study that provides some support for these arguments, Bertrand and Mullainathan (2001) suggested that, when given a choice, managers with higher amounts of discretion will prefer high wages for all of their workers. They reasoned and found that in states that have antitakeover legislation, managers have greater discretion in raising wages because the risk of their firm being acquired with subsequent loss of the managers' positions is less likely. These arguments suggest that CEO power will have a positive effect on both the CEO's compensation and the compensation of subordinates. In addition, CEO power might be expected to amplify the effects of CEO overpayment for those at lower levels. The following hypotheses are proposed:

HYPOTHESIS 4. The more powerful the CEO, the higher the compensation of his subordinates.²

HYPOTHESIS 5. The more powerful the CEO, the larger the expected effects of CEO overpayment on subordinate compensation.

Effects of CEO Pay on Subordinate Turnover

The question of who is likely to be used as a comparison "other" has attracted substantial attention and is a key issue that must be addressed in explaining equity outcomes (Heneman and Judge 2000). Festinger's original proposition that similar others would be frequently chosen as referents has received widespread support (e.g., Kruglanski and Mayseless 1990, Miller et al. 1988, Wood 1989). In general, however, one of the gaps in current theories of social comparison is that little consideration is given to the fact that who is chosen as a referent may vary by situation and individual. Overall, theories of equity and justice do not shed sufficient light on why people choose particular referents for particular types of comparisons (Heneman and Judge 2000). We argue that a key referent for employees is likely to be their CEOs.

Although social comparison theory suggests that similar others are most likely to be chosen as referents, other studies have shown that upward comparisons are frequently made in order to determine one's relative performance against standard setters, even when these comparisons may be ego deflating (e.g., Nosanchuk and Erickson 1985, Wheeler et al. 1982). For example, Nosanchuk and Erickson (1985) found that competitive bridge players routinely made upward comparisons when seeking information about their own ability, even when negative outcomes occurred. There is also good evidence demonstrating that individuals with whom there is a shared identity, such as organizational or group membership, are particularly salient and important referents (Miller et al. 1988). Thus, people in organizations may use CEOs as referents to help understand their own pay and performance (Kulik and Ambrose 1992). Research has also shown how aspects of the situation or organization may act to prime these judgments by making certain information more readily available. Kulik and Ambrose (1992), for instance, noted that when certain informational categories become accepted as available and relevant, these categories may become, in the language of Fiske and Taylor (1984, p. 232), "chronically primed;" that is, these comparisons are cognitively salient such that comparisons are routinely made.

Previous research suggests that CEOs and their actions may be salient to organizational participants. For example, Pfeffer (1981) argued that leaders are quite important because of the symbolic role they play in interpreting and socially constructing reality. Similarly, Meindl and Ehrlich (1987) noted that, over the years, thousands of articles have been written about leadership, and it has become a central way that organizational constituencies make sense of outcomes. Meindl et al. (1985) referred to the strong belief that leaders play a key role in organizational outcomes as the "romance of leadership" (p. 80).

The treatment of CEO pay by the business press is an excellent example of this process. SEC regulations mandate that a CEO's compensation, along with the compensation of the four other highest-paid executives, be published annually in the company's proxy statement, making these data readily available to all employees in the organization. Because of the annual reviews of CEO pay in the business press and the attempts to quantify the returns to shareholders for these often staggering sums, a CEO's compensation and its appropriateness is likely to be particularly salient to the firm's employees. Indeed, Gerhart and Rynes (2003) noted that the AFL-CIO website allows visitors to input the name of their own company and their salary to determine how many years it will take the employee to earn as much as the CEO makes in one year. Thus, information about the senior executives of a company may be particularly salient and accessible, and likely to be used in helping employees

determine the fairness of their own compensation (Feldman and Ruble 1981, Wood 1989).

One form of inequity that can be especially troubling for corporations is when an individual's inputs are undervalued relative to a salient referent. As originally formulated by Adams (1965), equity theory proposes that one means for resolving the tension brought about by this type of inequity is to leave the situation. For example, in a study of almost 1,000 employees at two large high-technology companies, Zenger (1992) found that moderately high performers were more likely to leave because the emphasis on rewarding only the best performers leads to underpayment inequity among the moderately high performers.

Although not a direct test of the relationship between underpayment inequity and turnover, there is suggestive evidence from several studies of the effects of inequity associated with wage dispersion on organizational outcomes. Pfeffer and Langton (1993) found that wage dispersion can diminish cooperation, and Siegel and Hambrick (2005) showed that pay disparities among executives had a greater negative impact on firm performance in high-technology firms than in low-technology organizations. They reasoned that collaboration was more important in high-technology settings and that such collaboration was more difficult when large pay disparities were present. Bloom and Michel (2002) found evidence that managerial turnover was higher and average tenure was lower in organizations that had more dispersion in their pay structures, and suggested that while high pay dispersion enabled firms to keep so-called stars, such policies created instability and turnover among the remaining managers.

Two clever studies by Greenberg (1988, 1993) perhaps most clearly demonstrate the potential consequences of pay inequity. In the first study, Greenberg (1988) used a field experiment involving an office relocation to demonstrate how inequity, characterized by a group of employees temporarily assigned to lower-status office space, lowered their performance, while lower-status employees temporarily assigned to better offices increased their performance. In his second study, Greenberg (1993) manipulated perceptions of equity among students employed to work on a task. Participants were allowed to take their own pay in a manner that they believed precluded the experimenter from knowing exactly how much they took. Equitably paid subjects took exactly what they had been promised. Underpaid participants actually stole money to compensate for their feelings of inequity. In a context more similar to ours, Carpenter and Sanders (2002) found firms in which top executive team members other than the CEO who were paid more than would be expected (overpayment) had higher performance, while firms in which these executives were underpaid had lower performance. Results such as these and others from studies of professional

athletes (Harder 1991, 1992; Bloom 1999) and teachers (Trevor and Wazeter 2006) document the real-world consequences of inequity for organizations. If, as we suggest, the CEO is a key referent to lower-level managers, negative consequences are likely to result if they feel underpayment inequity relative to the CEO. We therefore hypothesize

HYPOTHESIS 6. *The greater the underpayment inequity between a manager and the CEO, the higher the probability the manager will exit the company.*

Method

Data

The data used here were taken from a survey conducted from 1981 to 1985 by a major compensation consulting company. The human resource department of more than 120 firms was asked to provide data on approximately 120 individuals at different hierarchical levels in the organization. Individual-level data included base compensation, annual bonus, salary (base plus bonus), years of education, firm tenure, job tenure, and whether the individual had international responsibilities. At the firm level, the survey provided information on return on assets (ROA) and sales. In order to maximize the time series information available, only those firms that participated in the survey for all five years were included in the sample. Participating firms provided data for individuals in the top five levels of an organization. The CEO is assigned as the only member of Level 1. Level 2 includes the most senior executives, a number of whom may sit on the board of directors. These include job titles such as 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 lower-level vice presidents, and Level 5 includes job titles such as division general managers. The resulting database included over 40,000 observations from 122 large, publicly held firms over the five-year period across 34 industries, identified at the two-digit standard industrial classification (SIC) code level. Several prior studies have used these data for other purposes. For instance, Main et al. (1993) tested propositions based on tournament theory, while Carpenter and Wade (2002) explored how a position's criticality to the firm affected compensation.

Dependent Variables

Executive Compensation. Compensation for the CEO and others in the sample was computed as the sum of base compensation and annual bonus. We confined our analysis to annual compensation, because information on stock options and other long-term incentive compensation was not available from the survey. All compensation variables and sales data were inflation adjusted to a constant dollar basis and log transformed so that extreme values would not drive the results.

Turnover. Individuals were recorded as exiting a company if they appeared in the survey for a given year but did not appear in the survey the following year. A potential problem with this approach could occur if the individual did not leave the company but was simply dropped from the survey by the human resource department. However, the likelihood of this occurring is low, for several reasons. First, the instructions for participating in the survey strongly encouraged firms to drop people from the survey only if they left the firm. The instructions stated that, “an incumbent keeps the same case number for as long as he/she is employed by your company.” The data collection procedure also encouraged firms to keep the same people in the survey: Participating companies received annual feedback information showing the data reported last year for an individual in one column and spaces for filling in current information in a second column. We also checked to see if an individual that left the sample in one year ever returned in a later year. We excluded those individuals from the sample because we felt it was unlikely that these individuals had actually left the company. This problem was relatively rare, resulting in the elimination of 624 observations out of a total of more than 40,000 in the overall data set.

Independent Variables

CEO Under- and Overpayment. To determine whether a CEO was under- or overpaid, we constructed a CEO wage equation as follows:

Log(CEO Salary)

$$\begin{aligned} &= \beta_1 * \text{Education} + \beta_2 * \text{Firm tenure} + \beta_3 * \text{Job tenure} \\ &\quad + \beta_4 * \text{International responsibility} \\ &\quad + \beta_5 * \text{Log(Firm sales)} + \beta_6 * \text{Firm ROA} \\ &\quad + \beta_7 * \text{CEO/Chair duality.} \end{aligned}$$

We also included year dummies for 1982, 1983, 1984, and 1985 to control for unobserved differences between years. These variables were used to estimate a fixed-effects regression model. Estimating a fixed-effects model is equivalent to adding a dummy variable for each firm. This controls for constant unmeasured differences across firms that may explain differences in salary levels. The use of fixed-effects regression is important because some firms pay high amounts across all positions while others pay low amounts (high-wage versus low-wage firms). Fixed-effects regression controls for these firm effects, as well as for any other unmeasured effects that remain constant within firms during our period of study but that may vary across firms, such as the mix of industries in which the firm may be involved.

The extent of CEO under- or overpayment was measured by taking the residuals from the CEO wage equation. The use of regression lines to evaluate the fit of

compensation to market data is common among compensation practitioners (Henderson 1994), and residuals have been used as independent variables in previous compensation research (e.g., Harder 1992, Carpenter and Sanders 2002, Trevor and Wazeter 2006). A positive residual indicated that the CEO was overpaid because his actual salary was higher than his predicted salary. Conversely, a negative residual indicated the CEO was underpaid. Because fixed-effects regressions were used, a positive residual means that the actual change in salary in response to changes in the independent variables within the firm was larger than expected.

Using these residuals, we constructed two variables reflecting the extent of a CEO's over- or underpayment. The CEO overpayment variable was constructed by setting the measure equal to the CEO residual term if the residual was positive, and zero otherwise. CEO underpayment was set equal to the CEO residual term if the residual was negative, and zero otherwise. In order to make the interpretation of the CEO underpayment variable more straightforward, we reversed the sign so that larger positive values were associated with greater underpayment. In order to test Hypotheses 1, 2, and 3, we inserted the CEO over- and underpayment variables into wage equations for managers at Levels 2 through 5, which included the same variables as the CEO pay model, plus some additional controls, discussed below.

CEO/Chairman Duality. In order to test Hypothesis 4, we measured CEO power by constructing a dummy variable that took on a value of one if there was no other executive at the firm with the title of chair, and zero otherwise. One possible problem with this measure is that we could not identify cases in which there is a separate chairman of the board who does not work for the company. However, this circumstance was relatively rare during this period. Moreover, executive chairs are likely to be quite knowledgeable about the company and be more of a constraint to a CEO than a nonexecutive chairman.³

Relative Internal and External Equity. Hypothesis 6 predicted that individuals who are underpaid relative to the CEO would be more likely to leave the company. To investigate this hypothesis, we measured both relative internal and relative external inequities. Relative internal inequity was computed by subtracting the employees' wage equation residuals from the CEO's wage equation residual. Because we use fixed-effects regressions to calculate each wage equation, a positive residual means that the actual change in salary in response to changes in the independent variables *within the firm* were larger than expected. Thus, if the CEO's residual is larger than an employee's residual, it means that the CEO is overpaid relative to the employee and that the employee should feel inequity. Conversely, if an employee's residual is

larger than the CEO's, she should have higher job satisfaction and be less likely to leave. In order to obtain a measure of external inequity relative to the CEO, we estimated the relative difference in how the CEO's and employees' wages compared to the market. This was accomplished by subtracting the firm dummy variable that was estimated in the employee wage equation from the dummy variable estimated in the CEO wage equation. A high firm effect in either equation means that the salary was high relative to the market. Thus, if the firm effect estimated in the CEO wage equation is higher than that estimated in the employee wage equation, the employee should feel inequity and would be more likely to leave the firm.

To test Hypothesis 6, we used logistic regression to predict rates of turnover (Pindyck and Rubinfeld 1981). Because we have multiple managers clustered in each firm, the assumption that observations are independent may be violated. As a result, we calculated robust estimates of the standard errors using Huber's (1967) formula, which takes into account that the observations are clustered into different groups (e.g., firms).⁴

Additional Controls

Next Level Over- and Underpayment. Our arguments suggest that CEO over- or underpayment will have an impact on the salaries of managers at lower levels. One

could argue, however, that a manager's most relevant referent group, in terms of over- or underpayment, is managers in the level directly above them. To control for this possibility, we also computed over- and underpayment residuals for the level directly above a focal manager. Thus, for example, we included the average pay residuals for managers at Level 4 as a control in the wage equation for managers at Level 5. This procedure was repeated for each level. No additional residuals were included for managers at Level 2, because their direct superior was the CEO and these residuals were already in the equation. Including these additional pay residuals, which generally had significant effects, did not materially affect our substantive results.⁵

Close to Retirement. We created a dummy variable coded as one if the executive was within two years of age 65 (presumed retirement age), and zero otherwise to control for the effects of executives who were nearing retirement age on turnover.

Results

Table 1 presents the means, standard deviations, and a correlation matrix for our compensation and turnover analyses for Levels 2–5. To conserve space, we only report these descriptive statistics for the pooled sample. The turnover analyses include one fewer year than the

Table 1 Descriptive Statistics and Intercorrelations*

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1 Ln salary	11.317	0.549																	
2 ROA	0.060	0.052	-0.02																
3 Education	16.617	1.788	0.17	0.01															
4 Tenure with company	14.844	10.417	0.23	-0.05	-0.25														
5 Tenure in position	4.201	3.920	0.05	-0.01	-0.06	0.37													
6 Age	48.167	8.479	0.37	-0.06	-0.14	0.60	0.41												
7 International responsibility	0.306	0.461	0.23	-0.02	0.11	0.01	0.02	0.07											
8 CEO is chair	0.882	0.323	0.00	-0.14	-0.02	0.02	-0.01	0.03	0.02										
9 CEO overpayment	0.046	0.072	0.04	-0.04	-0.01	-0.04	-0.02	-0.03	-0.03	-0.06									
10 CEO underpayment	-0.046	0.079	0.12	0.08	0.01	0.03	0.02	0.03	0.02	0.03	0.36								
11 Next lvl. overpayment	0.148	0.087	0.21	0.02	0.04	-0.02	-0.01	0.04	0.03	0.00	0.36	0.25							
12 Next lvl. underpayment	-0.136	0.070	-0.05	0.03	-0.02	0.02	0.01	-0.01	-0.02	0.00	0.20	0.27	0.19						
13 Turnover	0.187	0.390	-0.05	-0.02	-0.04	-0.01	-0.01	0.02	-0.02	0.02	0.03	-0.01	0.00	0.01					
14 External inequity/CEO	0.028	0.247	-0.10	-0.02	0.01	-0.06	-0.06	-0.02	0.06	0.11	-0.06	0.06	0.00	-0.04	0.06				
15 Internal inequity/CEO	-0.001	0.331	-0.58	0.02	0.00	-0.01	-0.01	0.00	0.00	0.00	0.21	0.25	0.00	0.01	0.04	0.02			
16 External inequity/next lvl.	0.032	0.145	0.02	0.01	0.02	-0.01	0.00	0.01	-0.06	-0.01	0.00	0.02	-0.11	0.10	0.01	0.28	0.01		
17 Internal inequity/next lvl.	0.011	0.316	-0.59	0.02	0.01	0.00	-0.01	0.01	0.01	0.00	0.04	0.04	0.16	0.17	0.04	0.01	0.92	0.00	

*n = 44,056 for overall sample; n = 35,512 for variables unique to turnover analysis since 1985 is excluded. Means and correlations for next higher level over- and underpayment based on n = 40,553 for overall sample and n = 35,512 for turnover variables since Level 2 is excluded.

Table 2 Wage Equations Predicting Ln Salary

Variables	Level 1	Level 2	Level 3	Level 4	Level 5
Ln sales	0.123** (0.038)	0.040 (0.045)	0.112** (0.024)	0.104** (0.015)	0.105** (0.017)
Return on assets	1.247** (0.148)	0.874** (0.172)	0.483** (0.094)	0.453** (0.066)	0.375** (0.077)
Years of education	-0.014 (0.010)	0.014** (0.005)	0.014** (0.002)	0.025** (0.001)	0.030** (0.001)
Tenure with company	0.000 (0.002)	0.002* (0.001)	0.003** (0.000)	0.004** (0.000)	0.004** (0.000)
Tenure in position	0.000 (0.002)	-0.018** (0.002)	-0.017** (0.001)	-0.012** (0.001)	-0.010** (0.001)
Age	0.015** (0.003)	0.023** (0.001)	0.018** (0.001)	0.015** (0.000)	0.012** (0.000)
International responsibility	0.046 (0.047)	0.374** (0.019)	0.204** (0.009)	0.130** (0.006)	0.087** (0.007)
1982	0.043* (0.019)	0.024 (0.021)	0.006 (0.011)	0.015† (0.008)	0.009 (0.008)
1983	-0.015 (0.019)	-0.010 (0.022)	-0.008 (0.012)	-0.003 (0.008)	0.003 (0.008)
1984	0.064** (0.019)	0.065** (0.022)	0.044** (0.012)	0.047** (0.008)	0.042** (0.008)
1985	0.116** (0.019)	0.103** (0.022)	0.079** (0.012)	0.083** (0.008)	0.080** (0.008)
CEO is chair	0.061* (0.030)	0.105** (0.031)	0.075** (0.016)	0.053** (0.011)	0.020 (0.012)
Constant	10.479** (0.589)	9.718** (0.644)	8.606** (0.340)	8.490** (0.221)	8.378** (0.240)
Observations	610	3,536	10,801	16,339	13,377
R-squared	0.37	0.24	0.17	0.17	0.16

†Significant at 10%; *significant at 5%; **significant at 1%.

analyses for compensation. The last year was omitted because it was used to determine whether those in the previous year had exited from their firms. As a result, the descriptive statistics for variables specific to the turnover analyses are based on four years of data. Descriptive data for each separate level are available from the authors on request.

The models in Table 2 show the regression coefficients and standard errors for the wage equations used to compute CEO and employee compensation. In general, the findings are consistent with earlier research. Company size is strongly related to compensation at all levels, except for the anomalous finding for Level 2. As expected, the effects of firm performance are strongest for CEO pay and decline in importance for each succeeding level. Human capital variables (years of education, age, firm tenure and job tenure) generally have weak effects on wages.

Table 3 presents the results when CEO over- and underpayment are added to the wage equations for managers at Levels 2–5. All other variables in these models are the same as those used to estimate the CEO's compensation. Consistent with Hypotheses 1A and 1B, CEO over- and underpayment were both significant predictors of employee wages at lower organizational levels in all

Table 3A Effects of CEO Over- and Underpayment on Lower-Level Compensation

Variables	Level 2		Level 3		
	Model 1	Model 2	Model 3	Model 4	Model 5
Ln sales	0.042 (0.044)	0.044 (0.044)	0.107** (0.023)	0.091** (0.023)	0.088** (0.023)
Return on assets	0.915** (0.171)	0.923** (0.172)	0.530** (0.094)	0.478** (0.093)	0.461** (0.094)
Years of education	0.013** (0.005)	0.013** (0.005)	0.014** (0.002)	0.013** (0.002)	0.013** (0.002)
Tenure with company	0.002* (0.001)	0.002* (0.001)	0.003** (0.000)	0.003** (0.000)	0.003** (0.000)
Tenure in position	-0.018** (0.002)	-0.018** (0.002)	-0.017** (0.001)	-0.016** (0.001)	-0.016** (0.001)
Age	0.023** (0.001)	0.023** (0.001)	0.018** (0.001)	0.018** (0.001)	0.018** (0.001)
International responsibility	0.378** (0.018)	0.378** (0.018)	0.206** (0.009)	0.203** (0.009)	0.204** (0.009)
1982	0.026 (0.021)	0.026 (0.021)	0.010 (0.011)	0.015 (0.011)	0.016 (0.011)
1983	-0.019 (0.022)	-0.020 (0.022)	-0.009 (0.012)	0.007 (0.012)	0.009 (0.012)
1984	0.067** (0.022)	0.067** (0.022)	0.052** (0.012)	0.062** (0.012)	0.063** (0.012)
1985	0.099** (0.022)	0.098** (0.022)	0.082** (0.012)	0.090** (0.012)	0.092** (0.012)
CEO is chair	0.092** (0.031)	0.087** (0.033)	0.071** (0.016)	0.074** (0.016)	0.086** (0.017)
CEO overpayment	0.452** (0.120)	0.355 (0.233)	0.520** (0.063)	0.253** (0.066)	0.440** (0.117)
CEO underpayment	0.487** (0.113)	0.485** (0.113)	0.247** (0.059)	0.110† (0.060)	0.114† (0.060)
Next level overpayment				0.571** (0.053)	0.569** (0.053)
Next level underpayment				0.096† (0.057)	0.102† (0.057)
CEO overpay × chair		0.123 (0.253)			-0.244† (0.126)
Constant	9.709** (0.637)	9.692** (0.638)	8.656** (0.337)	8.840** (0.335)	8.866** (0.335)
Observations	3,536	3,536	10,801	10,801	10,801
R-squared	0.26	0.26	0.19	0.20	0.20

†Significant at 10%; *significant at 5%; **significant at 1%.

but two cases (see Models 1, 3, 6, and 9). In the second model for Levels 3–5 (Models 4, 7, and 10), we control for over- and underpayment at the next-highest adjacent level. Adjacent-level overpayment is significant and positive for all levels, while adjacent-level underpayment is only significant (and in the expected negative direction) for Level 3. Inclusion of these variables weakens the effects of CEO over- and underpayment. This is not surprising, because some of the impact of CEO over- and underpayment is likely to be captured, or partially mediated, by over- and underpayment at the next-highest adjacent level because these effects trickle down through

Table 3B Effects of CEO Over- and Underpayment on Lower-Level Compensation (Cont'd)

Variables	Level 4			Level 5		
	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Ln sales	0.093** (0.015)	0.087** (0.015)	0.088** (0.015)	0.097** (0.017)	0.084** (0.017)	0.085** (0.017)
Return on assets	0.461** (0.065)	0.302** (0.065)	0.308** (0.065)	0.352** (0.077)	0.258** (0.076)	0.258** (0.076)
Years of education	0.025** (0.001)	0.024** (0.001)	0.024** (0.001)	0.030** (0.001)	0.030** (0.001)	0.030** (0.001)
Tenure with company	0.004** (0.000)	0.004** (0.000)	0.004** (0.000)	0.004** (0.000)	0.004** (0.000)	0.004** (0.000)
Tenure in position	-0.012** (0.001)	-0.012** (0.001)	-0.012** (0.001)	-0.010** (0.001)	-0.010** (0.001)	-0.010** (0.001)
Age	0.015** (0.000)	0.014** (0.000)	0.014** (0.000)	0.012** (0.000)	0.012** (0.000)	0.012** (0.000)
International responsibility	0.130** (0.006)	0.127** (0.006)	0.127** (0.006)	0.087** (0.007)	0.080** (0.007)	0.080** (0.007)
1982	0.015† (0.008)	0.013† (0.008)	0.013† (0.008)	0.005 (0.008)	0.002 (0.008)	0.002 (0.008)
1983	-0.001 (0.008)	-0.000 (0.008)	-0.001 (0.008)	0.005 (0.008)	0.007 (0.008)	0.006 (0.008)
1984	0.049** (0.008)	0.044** (0.008)	0.044** (0.008)	0.039** (0.008)	0.041** (0.008)	0.041** (0.008)
1985	0.083** (0.008)	0.072** (0.008)	0.071** (0.008)	0.078** (0.008)	0.073** (0.008)	0.073** (0.008)
CEO is chair	0.060** (0.011)	0.058** (0.011)	0.051** (0.012)	0.022† (0.012)	0.012 (0.012)	0.006 (0.014)
CEO overpayment	0.382** (0.045)	0.132** (0.046)	0.024 (0.083)	0.226** (0.048)	-0.050 (0.049)	-0.155 (0.105)
CEO underpayment	0.154** (0.040)	0.062 (0.040)	0.059 (0.040)	0.174** (0.041)	0.113** (0.041)	0.111** (0.041)
Next level overpayment		0.724** (0.045)	0.725** (0.045)		1.021** (0.066)	1.018** (0.066)
Next level underpayment		-0.022 (0.060)	-0.023 (0.060)		-0.024 (0.088)	-0.022 (0.088)
CEO overpay × chair			0.141 (0.089)			0.125 (0.111)
Constant	8.623** (0.220)	8.654** (0.218)	8.637** (0.218)	8.493** (0.239)	8.587** (0.237)	8.576** (0.237)
Observations	16,339	16,339	16,339	13,377	13,377	13,377
R-squared	0.18	0.20	0.20	0.17	0.20	0.20

†Significant at 10%; *significant at 5%; **significant at 1%.

the organization. While CEO underpayment at Level 4 and overpayment at Level 5 (see Models 7 and 10) drop from significance, all of the other CEO effects remain significant. In general, these results provide relatively strong support for Hypotheses 1A and 1B.⁶

Hypothesis 2 proposed that the effects of over- and underpayment would become weaker at each succeeding level. This generally appears to be the case. The coefficients for CEO over- and underpayment at Level 2 are much larger than those at Levels 4 and 5. However, there are some anomalies. The effect of CEO overpayment at Level 3 is slightly larger than that at Level 2, and the effect of CEO underpayment at Level 4 is marginally smaller than underpayment at Level 5.

While qualitative comparisons of the coefficients are instructive, they do not provide statistical support for, or refutation of, our hypothesis. The statistical program Stata contains the *suest* routine, which offers the ability to compare predictor variables across different samples using seemingly unrelated estimation. This routine tests for differences in the size of the coefficients for the same variable across regression models by calculating a single, simultaneous covariance matrix (*Stata 8.0 Manual* 2003). Using this routine, we ran a variety of models for each level and investigated whether there were significant differences between the coefficients. Our results show that while there is no significant difference in the size of the CEO overpayment coefficients for Levels 2

and 3, the effect of CEO underpayment is significantly greater at Level 2 ($p < 0.06$). When Levels 3 and 4 are compared, this pattern is reversed: CEO overpayment has a significantly greater effect at Level 3 than at Level 4 ($p < 0.07$), and there is no difference in the effect of CEO underpayment. Similarly, when Levels 4 and 5 are compared, CEO overpayment has a significantly greater effect at Level 4 ($p < 0.02$), while there is no significant difference for CEO underpayment. In a separate analysis, we recombined CEO over- and underpayment into a single measure and reran the tests. Using the combined measure, there was no significant difference between the effects at Level 2 and at Level 3, but CEO over- and underpayment had significantly greater effects at Levels 3 than at Level 4, and at Level 4 than at Level 5. While somewhat mixed, these results nonetheless provide general support for Hypothesis 2.

Hypothesis 3 proposed that CEO overpayment effects would be stronger than CEO underpayment. In order to test this hypothesis, we employed the *lincom* routine in Stata, which allows the user to compare the relative influence of two different variables within the same equation. This is accomplished by calculating the linear combination effect of the two coefficients and determining if it is significantly different from the individual coefficient (Ahuja 2000). Our results showed that at Level 2 there was no significant difference between the over- and underpayment effects. At Levels 3 and 4, however, the absolute effect of the overpayment coefficient was significantly larger than that of the underpayment coefficient in the base models (Models 3 and 6) at the $p < 0.01$ level or better. The differences between these variables cease to be significant, however, once over- and underpayment at the adjacent level are controlled for in Models 4 and 7. However, in both cases the overpayment coefficient at the adjacent level is significantly larger than the corresponding underpayment effect, which is broadly consistent with our expectations. For Level 5 there is no significant difference between the CEO over- and underpayment coefficients in the base model (Model 9). However, once over- and underpayment at the adjacent level are added in Model 10, the effect of the CEO underpayment coefficient becomes larger than the effect of the CEO overpayment coefficient ($p < 0.02$). Again, as at Levels 3 and 4, we find that the effect of overpayment at the adjacent level is significantly larger than that of the effect of underpayment. Thus, although somewhat mixed, our results provide general support for Hypothesis 3.

The results in Tables 2 and 3 provide support for Hypothesis 4, that CEO power will have a positive effect on subordinate compensation. The effect of the CEO-chair variable is positive and significant in the base models at all levels, and remains significant after CEO over- and underpayment are included. These effects continue to hold when adjacent-level over- and underpayment are added to the models for Levels 2–4, but fails

to achieve significance for Level 5. Hypothesis 5 proposed that the effects of CEO overpayment would be stronger when the CEO is more powerful. The last model for each level tests this hypothesis by adding an interaction between the CEO-chair dummy and CEO overpayment. We find no support for Hypothesis 5. Indeed, CEO power appears to reduce the effect of CEO overpayment for Level 3. In other analyses not shown here, we interacted the CEO-chair variable with CEO underpayment. All of these interactions were not significant, with one exception: The CEO-chair variable increased the negative effect of CEO underpayment for Level 4.

Table 4 reports the results of the logistic regressions examining the effects of underpayment inequity

Table 4A Effects of Relative Internal and External Inequity on Turnover

Variables	Level 2		Level 3		
	Model 1	Model 2	Model 3	Model 4	Model 5
Ln salary	-0.233* (0.107)	0.157 (0.237)	-0.139 (0.094)	-0.014 (0.227)	0.078 (0.232)
Ln sales	0.192* (0.076)	0.130 (0.090)	0.062 (0.057)	0.018 (0.073)	-0.005 (0.075)
Return on assets	-1.844* (0.815)	-2.105** (0.756)	-0.543 (0.781)	-0.607 (0.768)	-0.712 (0.782)
Years of education	-0.041 (0.040)	-0.047 (0.041)	-0.051** (0.019)	-0.052** (0.019)	-0.054** (0.019)
CEO is chair	-0.086 (0.196)	-0.126 (0.196)	0.262* (0.128)	0.234+ (0.130)	0.229+ (0.127)
Tenure with company	-0.005 (0.006)	-0.005 (0.006)	-0.003 (0.004)	-0.002 (0.004)	-0.002 (0.004)
Near retirement	1.779** (0.216)	1.786** (0.215)	1.507** (0.171)	1.509** (0.172)	1.510** (0.172)
Tenure in job	-0.002 (0.015)	0.004 (0.015)	-0.000 (0.008)	0.002 (0.009)	0.003 (0.009)
Age	0.014 (0.012)	0.004 (0.014)	0.006 (0.006)	0.004 (0.006)	0.002 (0.006)
International responsibility	0.287* (0.115)	0.112 (0.144)	0.020 (0.093)	-0.024 (0.113)	-0.044 (0.119)
1982	-0.009 (0.169)	-0.021 (0.167)	0.016 (0.109)	0.015 (0.109)	0.018 (0.108)
1983	0.164 (0.169)	0.152 (0.168)	0.166 (0.114)	0.164 (0.113)	0.177 (0.111)
1984	0.142 (0.183)	0.110 (0.182)	0.255* (0.124)	0.250* (0.124)	0.249* (0.127)
Rel. ext. inequity with CEO		0.388 (0.290)		0.353 (0.245)	0.361 (0.267)
Rel. int. inequity with CEO		0.484† (0.288)		0.110 (0.241)	-0.276 (0.365)
Rel. ext. inequity with next level					0.072 (0.255)
Rel. int. inequity with next level					0.511 (0.341)
Constant	-1.970 (1.363)	-5.089** (1.967)	-0.783 (1.010)	-1.426 (1.820)	-2.012 (1.813)
Observations	2,857	2,857	8,705	8,705	8,705

†Significant at 10%; *significant at 5%; **significant at 1%.

Table 4B Effects of Relative Internal and External Inequity on Turnover (Cont'd)

Variables	Level 4			Level 5		
	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
Ln salary	−0.257* (0.103)	−0.014 (0.229)	0.138 (0.251)	−0.459** (0.123)	0.114 (0.286)	0.066 (0.311)
Ln sales	0.132* (0.055)	0.073 (0.069)	0.039 (0.073)	0.122* (0.052)	−0.016 (0.076)	−0.006 (0.077)
Return on assets	−0.428 (0.838)	−0.569 (0.809)	−0.516 (0.842)	−0.266 (1.041)	−0.771 (0.932)	−0.745 (0.941)
Years of education	−0.058** (0.016)	−0.064** (0.016)	−0.068** (0.016)	−0.042** (0.014)	−0.056** (0.016)	−0.054** (0.017)
CEO is chair	0.143 (0.154)	0.122 (0.151)	0.095 (0.152)	0.036 (0.217)	0.004 (0.199)	0.003 (0.201)
Tenure with company	−0.018** (0.004)	−0.018** (0.004)	−0.018** (0.004)	−0.009* (0.004)	−0.009* (0.004)	−0.009* (0.004)
Near retirement	1.461** (0.160)	1.445** (0.161)	1.453** (0.162)	1.473** (0.203)	1.472** (0.207)	1.477** (0.206)
Tenure in job	−0.026** (0.009)	−0.022* (0.010)	−0.020* (0.010)	−0.017† (0.011)	−0.010 (0.010)	−0.010 (0.010)
Age	0.014** (0.005)	0.010† (0.006)	0.008 (0.006)	0.006 (0.005)	−0.001 (0.006)	−0.001 (0.006)
International responsibility	0.031 (0.073)	−0.018 (0.080)	−0.048 (0.081)	−0.120 (0.093)	−0.187* (0.092)	−0.179* (0.091)
1982	0.129 (0.103)	0.118 (0.102)	0.115 (0.103)	0.171 (0.136)	0.149 (0.129)	0.147 (0.130)
1983	0.143 (0.106)	0.139 (0.107)	0.139 (0.105)	0.193 (0.150)	0.196 (0.146)	0.196 (0.147)
1984	0.251* (0.105)	0.237* (0.105)	0.226* (0.105)	0.214 (0.130)	0.175 (0.132)	0.175 (0.133)
Rel. ext. inequity with CEO		0.375† (0.216)	0.495* (0.220)		0.805** (0.238)	0.794** (0.242)
Rel. int. inequity with CEO		0.258 (0.232)	−0.041 (0.300)		0.611† (0.323)	0.716† (0.416)
Rel. ext. inequity with next level			−0.707† (0.366)			−0.118 (0.744)
Rel. int. inequity with next level			0.486 (0.332)			−0.169 (0.421)
Constant	−0.176 (0.976)	−1.758 (1.754)	−2.740 (1.889)	2.509* (1.254)	−1.205 (2.082)	−0.869 (2.293)
Observations	13,115	13,115	13,115	10,841	10,841	10,841

†Significant at 10%; *significant at 5%; **significant at 1%.

on turnover. The first model for each level shows the base model, while the second adds in the effects of external and internal underpayment inequity relative to the CEO. For Levels 3–5, we add a third model that includes external and internal underpayment relative to the adjacent level. Focusing first on the base models, the overall effects of the independent variables are as expected. ROA is significant and negative only for Level 2. Because Level 2 executives presumably exert more influence over firm performance, they are more likely to be held responsible for poor firm performance and are more likely to exit the firm under these conditions. Not surprisingly, executives that are within two years of age 65 are more likely to leave the organization. While tenure with the company is only significant

for Levels 4 and 5, the coefficients for all levels are in the expected negative direction: The longer the tenure of senior level executives, the lower the probability of exit. The lack of significant results at higher levels may indicate that higher-level managers have less job security (Finkelstein and Hambrick 1996). Interestingly, a manager's salary seems to be most important in reducing turnover among managers at Levels 4 and 5, suggesting that lower compensation at these levels is associated with a higher likelihood of turnover.

The second model at each level tests Hypothesis 6, that underpayment inequity relative to the CEO increases turnover. Our results provide some support for Hypothesis 6. At Level 2, increases in relative internal underpayment inequity—but not external under-

payment inequity—are associated with higher turnover. At Level 3, neither inequity measure is significantly associated with turnover. At Level 4, relative external CEO inequity increases turnover, but its internal counterpart has no effect. Finally, at Level 5, both forms of underpayment inequity have strong, positive effects on turnover. These results remain substantively the same after internal and external inequity at the next-higher level are included (Models 5, 7, and 11).

One variable that we have not controlled for in our analyses predicting turnover is the level of wage dispersion in the firm. It is possible that our effects for over- and underpayment might disappear once we have controlled for pay dispersion. To investigate this possibility, we performed supplementary analyses that added the coefficient of variation for compensation among the top five levels in the firm to our models. While the coefficient of variation was positive and significant for Levels 4 and 5, these effects disappeared once we included internal and external underpayment inequity. The effects of internal and external inequity remained the same as reported above.

Discussion

Notions of fairness are powerful and ubiquitous features of groups and organizations. In this study, we have drawn on well-documented findings from social comparison and equity theories to explore the consequences of CEOs' concerns with fairness in compensation setting. Two major findings emerge. First, consistent with previous research that has shown that CEOs typically influence the wage-setting process of their subordinates (Crystal 1991, Main et al. 1995), our results show that CEO over- and underpayment is associated with over- and underpayment of managers at lower organizational levels. The effects of inequity cascade down from the highest job levels through the organization. However, these cascades are asymmetric, and decrease in magnitude the farther down in the organizational hierarchy they flow. Second, inequity, expressed as comparative underpayment with the CEO (internal underpayment inequity) and with the average wage for the job in other organizations (external underpayment inequity), was associated with higher levels of turnover. We discuss the theoretical and practical implications of these findings below.

Although our findings of asymmetric trickle-down effects of CEO compensation were somewhat mixed and thus should be interpreted with some caution, they nonetheless have potentially significant implications for research and theory on TMT pay. First, over the past 20 years, agency theory and theories of power and dependence have been the primary theoretical lenses through which executive compensation has been studied. As such, most of the theorizing surrounding CEO

compensation has focused on how, and under what conditions, CEOs are able to garner more compensation for themselves, with little consideration of the broader consequences these actions have for the organization. Our study suggests that CEOs are concerned with fairness as well as self-interest, and that their ability to garner compensation for themselves can also have far-reaching consequences for the fortunes of others.

Our findings that the effects of over- and underpayment are asymmetric and tend to diminish in strength as they trickle down through the organization demonstrate the complexity of this process. Indeed, even though the effects of CEO over- and underpayment tend to fade at lower levels, their potential effect on overall wages is substantial. For example, our results suggest that if the CEO is overpaid by 64% (the maximum in our sample), individuals at Level 2 will be overpaid by 26%, and individuals at Level 5 will be overpaid by 12%. The net effects of overpayment are potentially even higher if one takes into account overpayment at the next-highest level. The overall aggregate effects cannot be estimated here but, depending on the number of employees and how far down the effects cascade within the organization, these levels of overpayment may represent tens of millions of dollars every year. Furthermore, insofar as underpayment is associated with turnover of senior managers, there are also potential costs to the shareholders from turbulence in the management team (e.g., Hambrick and D'Aveni 1992).

Our direct evidence that the effects of CEO overpayment are stronger than those of underpayment is relatively weak. At Level 2, both CEO under- and overpayment are quite strong, and only the effect of underpayment exhibits a difference across levels. Perhaps not surprisingly, the CEO's closest peers share his gains and, to a lesser but significant extent, his losses. At Levels 3 and 4, overpayment is significantly larger than underpayment, although these effects disappear once under- and overpayment at the next-higher level is controlled for, and no differences are found in the effects of CEO over- and underpayment at Level 5. However, our results reveal an interesting and unanticipated finding: While the differential effects of CEO over- and underpayment are relatively limited, there are clear differences between the effects of over- and underpayment of executives at the next-highest level on the pay of executives at Levels 3–5. In all of these cases, the coefficient for overpayment is significantly larger than the coefficient for underpayment. Indeed, at Level 3 this overpayment coefficient is five times larger than the underpayment coefficient, and these differences become even larger for Levels 4 and 5. These findings provide interesting and provocative evidence that the trickle-down effects of CEO over- and underpayment are indeed asymmetric, and that the asymmetry of these effects is perhaps best captured indirectly. These findings suggest that future

research on the effects of excessive executive compensation on organizational outcomes should consider both their direct and indirect effects, and should also explore whether asymmetric or nonlinear relationships exist.

Our finding that lower-level executives generally received higher salaries when the CEO was more powerful further demonstrates how psychological perspectives on fairness can be used to enrich our understanding of executives' use of their influence and power. Managers at Levels 2–4 receive pay premiums of 5%–8% when there is no separate chair of the board. By Level 5, however, this effect virtually disappears. While many studies have shown that CEO power is associated with higher CEO compensation (see Finkelstein and Hambrick 1996 for a review), our findings suggest that these effects may cascade down the organization. Thus, CEOs in structurally powerful positions may use their power to enrich not only themselves, but also their subordinates. We did not find any support, however, for Hypothesis 5, which posited that the effects of CEO under- or overpayment on subordinate compensation would be strongest when the CEO was also the chair. The interaction between the CEO-chair variable and overpayment was only significant for Level 3, and it was in the opposite direction than predicted. Because of our data limitations we were not able to consider the potential main or moderating effects of other indicators of CEO power. Future research should continue to explore the conditions under which CEO power will have an effect on the compensation of those farther down the hierarchy.

The second major implication of our study is that CEO over- and underpayment has significant consequences for employee turnover at lower levels of the organization. These effects were most visible at Levels 4 and 5 of the organizations (vice presidents and general managers) and less visible at the level of senior vice presidents. The largest effects were found at Level 5, and there was only one significant effect above Level 4 (CEO internal inequity at Level 2). There are several possible explanations for the lower turnover rates at higher organizational levels. First, the executives at Levels 2 and 3 (e.g., president, chief financial officers, and senior vice presidents) are generally older than those at lower levels and may be closer to retirement and less likely to move to another job. Some may also lack labor market mobility because they have reached the top of their careers, perhaps having been identified as tournament "losers" (Lazear 1989, Main et al. 1993) within their relevant labor market. Others may be more likely to remain than their lower-level counterparts because they are still in the tournament and competing for the CEO position, and thus are less concerned with temporary pay inequities than they are with their pursuit of the "brass ring." For any or a combination of these reasons, executives at these levels may be less sensitive to pay inequities than are employees at lower levels in the company.

Prior research has also suggested that those lower in the salary structure are most sensitive to pay inequity. Although he was not investigating turnover, Bloom (1999) found that greater pay dispersion in the National Baseball League had the greatest negative performance effect on players at lower levels in the pay structure. Similarly, Trevor and Wazeter (2006) found that pay dispersion had stronger negative effects on satisfaction and commitment for those who had lower salaries.

An important distinction between our study and prior research in this area is that we measure inequity relative to CEO compensation rather than pay dispersion. Indeed, our post hoc analysis showed that the effects we observed were robust even when pay dispersion was included in the model. Furthermore, underpayment inequity relative to those at the next-highest level did not increase turnover rates for Levels 3–5. Together, these findings provide good evidence that managers make both internal and external comparisons in evaluating the fairness of their compensation, and that the CEO is indeed an important comparative referent, even for employees that are not part of the TMT. Perhaps overpayment of the CEO is particularly salient to those at lower levels in the organization because of the fact that their financial situation contrasts most sharply with that of the CEO. In this instance, inequity relative to the CEO may create more intense feelings of injustice. Such a possibility is supported by the outrage that is often displayed by unions and the business press when CEOs of low-performing firms are well compensated, while lower-level members suffer pay cuts and layoffs. Indeed, a final provocative implication of our findings is that, at least at lower levels in the organization, employees are more likely to leave the company, even if they are overpaid relative to the external market, if the CEO is more overpaid than they are. Thus, our results suggest that future research on social comparison should consider the effects of highly visible and salient referents, even if they are not socially proximal, as well as relative levels of internal and external inequity when studying the effects of equity and fairness on organizational outcomes.

Limitations and Future Research Directions

Although our results provide relatively strong support for many of our hypotheses, this study has several limitations. First, although we assume that employees use the CEO as a pay referent, we do not directly test this assumption. However, the public focus on executive compensation in the business press as well as the strength of our findings suggest this is a reasonable assumption. A related limitation is the extent to which the complex statistical approach we have used accurately captures lower-level employees' perceptions of inequity. This issue is a limitation inherent in all nonobtrusive, archival research that attempts to study issues related to individual perceptions and cognitions. However, to

the extent that our approach does not accurately capture these mechanisms, it is more likely to serve as a conservative test of our arguments, rather than make significant relationships more likely to be observed. Thus, a fruitful avenue for future research would be to more directly ascertain who managers use as comparative referents and why they use them, when making upward comparisons in determining pay equity.

Second, although the usage of data collected by compensation consultants has much to recommend it (such as high validity, large sample size, and a diverse sample population), it also suffers from some limitations. For example, information on stock option grants, which would have been useful in our analysis, was not collected by the consultants, and therefore was unavailable. However, during the time period of this study, stock options represented a much smaller proportion of CEO compensation than they do currently (Murphy 1999). Furthermore, annual proxies were far less standardized in the way long-term compensation information was presented than they are today, and annual cash compensation (salary plus bonus) was the only easily identified compensation metric available. The resulting ambiguity in determining equity in long-term compensation may have made this component of an individual's total compensation less relevant.

A related limitation of our data is that it is from the early 1980s rather than from a more contemporary time period. We suspect, however, that CEO pay has become even more salient now than it was during our period of study. Our general impression is that the outcry over high CEO pay has increased over time, particularly in light of recent scandals involving excessive amounts of executive compensation. Moreover, the disparity between CEO pay and the average worker has markedly increased over time. In 2001, the ratio of the CEO's pay to the average worker was over 400:1 (Lavelle 2001, Gerhart and Rynes 2003), versus a ratio of 35:1 in 1974 and 120:1 in 1990 (Crystal 1991). As a result, we suspect our results might be even stronger in a more contemporary sample.

A further limitation of our study is illustrated by the examples we use in the opening of this paper: CEOs vary in the extent to which they are concerned with fairness. Thus, to the extent a CEO is more concerned with self-interest and self-aggrandizement, the effects of overpayment may be less likely to trickle down to lower levels (e.g., Hayward and Hambrick 1997). At the same time, however, there may be other CEOs who are hypersensitive to issues of fairness, as our other examples attest. To the extent there are more self-interested CEOs, it would make it more difficult for us to find significant trickle-down effects of overpayment, and underpayment effects would likely be more pronounced. However, because our approach is to look for patterns of central tendency across firms, to the extent these pressures exist they

would serve to make our tests of the hypotheses conservative. Nonetheless, future research should explore the moderating effect of factors such as CEO self-interest and CEO hubris on the effects observed here.

Future research might also examine how changes in organizational incentive systems in response to environmental pressures affect perceptions of fairness and, in turn, affect organizational outcomes. Kaplan and Henderson (2005) noted that incentive systems often become deeply embedded in the routines of organizations and in the cognitive frames of participants, and are thus difficult to change. As a result, changing the structure of organizational incentives may be disruptive and create perceptions of unfairness even if the new incentive structure is a better fit to environmental contingencies and objectively more appropriate and fair.

A final limitation of this study is that there are other reasons for turnover besides those for which we controlled in our models. We controlled for impending retirement and the reasons for turnover associated with human capital factors, such as education, tenure in the job, and tenure with the organization. However, we have no data on the actual performance of individual employees. Thus, we cannot tell if those leaving are high performers that the company would like to keep or low performers who will not be missed. We suspect, however, that it is the high performers that will be most affected by underpayment inequity because they will be more likely to have greater external opportunities. If so, the effects of underpayment inequity that we find here might become stronger if we could directly control for employee quality. In addition, we are unable to control for nonpecuniary inducements that may keep managers on the job even though they may be underpaid. Further research could continue to explore these issues.

Organizational researchers have long noted that the notion of "pay" is loaded with surplus meaning, and perceptions of fairness and equity reflect these subjective interpretations (e.g., Bazerman 1993, Crosby 1984, Tyler 1994). The results of this study, while not a direct test of the explicit mechanisms of equity and social comparison theory, use these theories to derive hypotheses about their likely effects in organizations. Unlike much previous laboratory research that has documented the mechanisms of social comparison and equity theories, this study shows how these processes can have important organizational consequences stemming from the design of organizational compensation structures.

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Endnotes

¹In a nonbusiness setting, however, Bloom (1999) showed that players on professional baseball teams reacted differently to

the team's level of pay dispersion depending on where they were ranked in the salary structure.

²Previous research has shown strong relationships between CEO power and a CEO's compensation, so we do not hypothesize this relationship here. However, we will investigate whether CEO power has a positive impact on her own compensation. Such a finding would lend support to our interpretation of any positive effects on subordinate pay.

³We also checked to see if there was only a separate chair during a transition period when the new CEO was appointed. However, the average tenure of CEOs in firms that had separate chair was 3.84 years, so this does not appear to be the case.

⁴Robust standard errors were only calculated for the logistic regressions; fixed effects estimations already control for this issue.

⁵In other analyses we included the residuals from every level above the focal level. Thus, for Level 5 we included residuals from Level 4, Level 3, and Level 2 as controls. Our results did not substantively change.

⁶In supplementary analyses not reported here, we reran our analyses with a CEO pay residual that combined under- and overpayment. This overall variable was significant at all levels.

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