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COMPENSATION POLICY AND ORGANIZATIONAL PERFORMANCE: THE EFFICIENCY, OPERATIONAL, AND FINANCIAL IMPLICATIONS OF PAY LEVELS AND PAY STRUCTURE

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In this study, we investigated the relationship between organization-level compensation decisions and organizational performance. Specifically, we examined how companies' pay structures and pay levels relate to resource efficiency, patient care outcomes, and financial performance. We expected both nonlinear and interactive effects. Results from a large database of hospitals support our predictions. We discuss the implications for practice and compensation research theory development in light of the study's results.

Human resource management practices in general (e.g., Becker & Gerhart, 1996; Becker & Huselid, 1998; Huselid & Becker, 2000), and compensation systems in particular (Banker, Lee, Potter, & Srinivasan, 1996; Becker & Gerhart, 1996; Becker & Huselid, 1998; Shaw, Gupta, & Delery, 2002), have been shown to be highly related to organizational performance. Considering the importance and complexities of compensation issues, though, more research on the organizational performance implications of specific practices is still needed (Becker & Gerhart, 1996; Becker & Huselid, 1998; Bloom, 1999; Bloom & Michel, 2002). The purpose of this study was to investigate the relationship between pay level, pay structure, and various measures of organizational performance.

Both theory and empirical research suggest that pay level and pay structure are each important for understanding the organization-level implications of pay policy. Furthermore, as any pay system is characterized by both elements, it is essential to discuss how both pay characteristics operate simultaneously to affect organizational outcomes. We examined the independent and interactive effects of these compensation elements on three types of organizational outcomes: resource efficiency (here, the average length of a hospital patient's stay), patient care outcomes (adjusted coronary survival rate), and organizational financial performance (return on assets). We tested our hypotheses using a sample of 333 short-stay acute care hospitals.

ORGANIZATIONAL PAY CHARACTERISTICS

Pay Level

Pay level represents a firm's average compensation relative to that of other, competing organizations (Gerhart & Milkovich, 1992), and is often labeled as leading, matching, or "lagging" the market (Milkovich & Newman, 2002). An organization with a policy of leading the market offers higher than the average wage of the relevant labor market; a policy of lagging the market signifies lower-than-market-average wages, and a policy of matching the market indicates wages at the relevant labor market average.

Efficiency wage theory helps explain how pay levels relate to organizational performance (Akerlof & Yellen, 1986). Organizations with higher pay levels should experience increases in both individual-level and organization-level efficiency because they are more able to attract, retain, and motivate

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the best performers. High pay levels generate larger applicant pools, which allow organizations to be more selective when hiring (Williams & Dreher, 1992) and to retain highly qualified employees (Akerlof & Yellen, 1986; Campbell, 1993). High pay levels may also improve employee and resource efficiency by decreasing employees' unproductive behaviors (Akerlof & Yellen, 1986). We thus predict:

Hypothesis 1. There will be a positive relationship between pay levels and resource efficiency and a positive relationship between pay levels and patient care outcomes.

Although enhanced resource efficiency and patient care outcomes should be associated with improved financial performance, at some point, the increased costs associated with paying higher compensation will outweigh the efficiency and performance benefits of higher pay levels. Although the efficiency wage theory prediction is that higher pay improves attraction, retention, and motivation, there are limits to the extents to which selection can be improved (owing to limits in validity and selection ratios), turnover can be reduced, and motivation can be affected by pay. Consider an extreme example: We would expect that paying nurses at above-market levels would lead to improved organizational outcomes, but the organizational benefits of paying nurses a million dollars each will certainly not overcome the extreme effect of such a policy on costs. We therefore expect that leading the market by too much should be associated with negative financial performance. Therefore, we predict:

Hypothesis 2. There will be an inverted U-shaped relationship between pay levels and an organization's financial performance: financial performance will be lower with low pay levels and lower with high pay levels.

Pay Structures

In addition to a mean level of pay, an organizational pay plan is also characterized by its pay structures, a term for the array of pay rates within the organization and representing the degree of slope in its pay policies (Milkovich & Newman, 2002). Characteristics of a particular pay structure include the number of levels in the structure, the size of the pay differentials between each level in the structure, and the rate at which employees can progress through each level in the structure (Gerhart & Milkovich, 1992). Pay structures can be broadly characterized as *egalitarian*, a term that indicates a compressed pay distribution, or as *hierarchical*, which indicates more widely dispersed pay.

Equity theory has been used to investigate the performance effects of organizational pay structures. According to equity theory, employees evaluate "exchange relationships" on the basis of comparisons of their perceived ratios of inputs and outputs to the perceived ratios of others' inputs and outputs (Adams, 1965). When employees perceive inequity (for instance, they see themselves as working harder than, but receiving less pay than, coworkers), they may respond with a host of potentially negative reactions in order to restore equity in their exchange relationships. As it has been most typically applied, equity theory suggests that overly hierarchical pay structures can have dysfunctional consequences. As pay structures become too hierarchical, organizational performance may be adversely influenced because employees will become less cooperative and less inclined toward teamwork (Adams, 1965; Bloom, 1999; Pfeffer & Langton, 1993; Main, O'Reilly, & Wade, 1993). These negative consequences may be exacerbated if a hierarchical structure becomes a means of signaling organizational value, spawning feelings of social, psychological, and economic injustice among employees (Bloom, 1999). While overly hierarchical pay systems should be associated with negative organizational outcomes, equity theory also suggests that overly egalitarian pay structures will be similarly detrimental. Greater levels of knowledge, skills, and abilities should be associated with greater pay; thus, pay systems that provide insufficient differences for human capital could also yield feelings of inequity on the parts of those with greater levels of knowledge, skills, and abilities.

Hypothesis 3. Organizational performance (resource efficiency, patient care outcomes, and financial performance) will have an inverted U-shaped relationship with the degree of hierarchy in a pay structure.

Considering Pay Levels and Pay Structure Simultaneously

Previous studies of compensation have typically emphasized only one component of pay (e.g., Bloom, 1999; Bloom & Michel, 2002; Klaas & McClendon, 1996). Yet, because pay level and pay structure are both essential characteristics of a compensation system, it is important to consider them simultaneously in order to relate pay policy to organizational outcomes. Shaw, Gupta, and Delery (2002) found that pay dispersion was neither inherently functional nor dysfunctional, but that its effectiveness depended on other situational factors. We argue that pay level should be examined as one of these factors.

Frank's (1985) work on employees' relative standing suggests that workers may be more likely to accept perceived inequality when they are paid above their "marginal products," a term denoting the value of their organizational contributions. In overly hierarchical pay structures, lower-level employees may have feelings of inequity because of their comparatively low pay. High pay levels may alleviate these feelings of inequity (Bloom & Michel, 2002). Thus, the effects of particular pay structures on employee behaviors, exhibited through resource efficiency and patient care outcomes, should depend upon pay level. Specifically, we expect to observe that the negative effects of nonegalitarian pay structures will become smaller as pay levels increase, and thus that egalitarian and hierarchical pay systems will perform comparably at high pay levels. Thus,

Hypothesis 4. The relationship between pay structure and resource efficiency will be moderated by pay level: pay structure will be less strongly related to resource efficiency at higher pay levels.

Hypothesis 5. The relationship between pay structure and patient care outcomes will be moderated by pay level: pay structure will be less strongly related to patient care outcomes at higher pay levels.

Interactive effects on financial performance are somewhat harder to predict. The negative consequences of an overly egalitarian or hierarchical pay system should be offset somewhat by higher pay levels; however, we must also consider the cost implications of leading versus lagging the market. Although an overly egalitarian pay structure would be expected to be associated with negative resource efficiency and patient care outcomes, a company should save the most financial resources when lagging the market with an egalitarian structure. Thus, we expect higher financial performance in egalitarian structures that lag the market than in egalitarian structures that lead it. At the same time, leading the market with a hierarchical pay system should gain the benefits implied by efficiency wage theory, and leading the market should offset the detriments of an overly hierarchical pay system. Thus, we predict:

Hypothesis 6. The relationship between pay structure and financial performance will be moderated by pay level, with the greatest benefit accruing to egalitarian structures when they lag the market, and to hierarchical structures when they lead the market.

METHODS

Sample

We employed data from the population of short-term-stay, acute care, general hospitals in the state of California. These are facilities with average lengths of stay less of than 30 days that provide a comprehensive range of services (Office of Statewide Health Planning and Development [OSHPD], 1991). We drew the data from state-mandated annual hospital disclosure reports provided to OSHPD from 1991 to 1999. Of the 354 hospitals that identified themselves as short-term-stay, acute care general hospitals, we excluded approximately 6 percent because they showed extreme values on some variables (values more than five standard deviations from the mean on the variable of interest). A qualitative review indicated that these outliers might have been consequences of coding mistakes or inappropriate classifications (that is, the facilities were not acute care hospitals), and so we eliminated affected facilities to ensure a more accurate sample. We analyzed the resulting sample of 333 hospitals. Jobs in each hospital were grouped into nine categories, with definitions mandated by California statutes: physicians, nonphysician medical practitioners, managers and supervisors, technicians and specialists, registered nurses, licensed vocational nurses, aides and orderlies, clerical and other administrative staff, and environmental and food service staff.

Hospitals present a valuable opportunity for studying the organizational performance effects of compensation practices for several reasons. First, over 50 percent of their expenditures are devoted to salaries and benefits (American Hospital Association, 1993; Langland-Orban, Gapenski, & Vogel, 1996), and we could expect notable variance in how hospitals used pay to compete for employees. Second, these hospitals all competed for similar human capital, which allowed us to make pay comparisons across organizations. Furthermore, a focus on short-term acute care hospitals eliminated confounds associated with sampling different types of services, clients, or employees. Third, we had confidence in the similarity of job categories across organizations because of the highly structured reporting format required for certain jobs (nursing, for instance) by the State of California. Fourth, hospitals employ professionals and nonprofessionals, allowing us to include both in this study to represent organization-wide pay strategy and structure, rather than focus on only a subset of employees, as studies of pay dispersion have typically done (e.g., Bloom, 1999; Bloom & Michel, 2002; Shaw et al., 2002).

Dependent Variables

Resource efficiency. To represent the efficiency with which each organization used its resources, we applied a metric of hospital efficiency common in research on health care management: average length of stay. The variable is the average number of days patients stay in a particular hospital. As Thomas (1997) noted, average length of stay has often been used as a measure of hospital performance in public data reports (e.g., Pennsylvania Health Care Cost Containment Council, 2001; Fromberg, 1991; Tauble, 1990) and in studies conducted by vendors and purchasers to evaluate hospital quality (e.g., Solucient, 2000). Typically, hospitals with shorter lengths of stay are considered to be more efficient in their use of resources (Thomas, 1997). Moreover, hospitals with shorter lengths of stay have been found to be more profitable than those with longer lengths of stay (Langland-Orban et al., 1996), in part because fewer resources are used for patient care. We calculated this variable by dividing a hospital's total number of patient days by its total number of discharges (MacEachern, 1962). We note, however, that despite the common use of average length of stay as a measure of hospitals' resource efficiency, quicker discharge of patients is but one dimension of hospital performance and, indeed, good performance on this measure could even be considered to be counter to delivering quality patient care. We thus also considered the quality of hospitals' patient care and the overall financial performance of hospitals.

Patient care outcomes. One important consideration when examining hospital performance is the effectiveness of patient treatment. Simply examining efficiency does not account for the quality of care, which may suffer as efficiency increases. Therefore, we examined each hospital's *adjusted coronary survival rate* for heart attack patients as a dependent variable. For each hospital, this variable is equal to its risk-adjusted expected heart attack death rate minus its actual heart attack death rate. This variable measures the degree to which each hospital performs better or worse than it was expected to perform (thus, positive values represent higher performance). The State of California estimates an expected survival rate for each hospital that is based on each of its heart attack patients' risk factors for a particular year. By incorporating each individual patient's characteristics, the expected survival rate measure provides a means of comparing patient treatment quality across hospitals that takes into account the different severities of cases observed by each hospital (Zach, Romano, & Luft, 1997). The data on the adjusted survival percentage for heart attack patients were provided by the California Office of Statewide Health Planning and Development in the California Hospital Outcomes Project (Zach et al., 1997). Comparable databases for other types of ailments or injuries are not yet available for California hospitals.

Financial performance. We used *return on assets (ROA)* to measure organizational financial performance. ROA is the most ubiquitous measure of organizational financial performance for strategy studies evaluating this outcome (Venkatraman & Ramanujam, 1986), and prior strategic human resource research suggests that ROA reflects the degree to which cost-benefit considerations of human resource programs influence organizations' achievement of their economic goals (Gerhart & Milkovich, 1990). This measure captures a hospital's ability to both control its expenses and use its assets to generate income (Lagland-Orban et al., 1996).

Independent Variables

Pay level strategy. We determined organizations' pay level strategies by averaging wages for the hospitals' job categories. First, the average pay for each job category was standardized. This procedure yielded nine standardized variables per hospital (one for physicians, one for nonphysician medical practitioners, and so forth). Second, we estimated a single variable representing pay level strategy by computing the average of these nine standardized scores. Thus, positive values signified a strategy of leading the market, and negative values signified a strategy of lagging.

We performed a number of alternative measurements to ensure the accuracy of the measure we ultimately employed. We computed the pay level using an average of wages weighted by the total number of hours worked in each job, but this produced essentially the same value as the unweighted measure ($r = .99$). We also calculated the weighted and unweighted measures with and without (1) physicians and (2) nonphysician medical practitioners and again found the resultant pay strategy measures remained highly stable (all r's $> .97$). We also found that each organization's wage strategy was highly stable across all job categories. The standardized wage scores for each job category were correlated from .50 to .80 with the other standardized scores. Conceptually treating each job's pay level as an observation of each company's wage strategy, our aggregate measure of pay level was highly consistent ($\alpha = .93$), and exploratory factor analysis showed that the pay levels from the different categories loaded on a single dimension (the eigenvalue was 4.91 for factor 1 and 0.55 for factor 2). Thus, the hospitals appeared to have unified pay policies that they consistently employed across the job categories.

Pay dispersion. We captured pay dispersion using "gini" coefficients. Recently, management researchers have suggested (e.g., Gerhart & Milkovich, 1992) and employed (e.g., Bloom, 1999; Bloom & Michel, 2002; Shaw et al., 2002) these statistics for investigating pay dispersion. Gini coefficients can be calculated with individual- or subpopulation-level data (Dagum, 1997). For this study, we followed the subpopulation approach to calculation and used average wage values at the job category level. We calculated a separate gini coefficient for each hospital for each year, following the formula presented in Bloom (1999): gini coefficient $= 1 + 1/n - (2/n^2\bar{y})(y_1 + 2y_2 + \ldots + ny_n)$, where $y_1 \ldots y_n$ is a sequence of the average salaries for the job categories in hospital j arranged in decreasing order of size, $\bar{y}$ is the mean of the average salary values for each job category in hospital j, and n is the number of job categories in hospital j. Gini coefficients can theoretically range from 0 (indicating a totally egalitarian pay structure) to 1 (for a totally hierarchical structure). Again, we ascertained the stability of our compensation measure by performing a number of alternative analyses with and without physicians and nonphysician medical practitioners included in the calculation of the gini coefficient. As with the pay level strategy measure, the results of the alternative calculations were very similar to those for the measure reported here (r's $> .82$).

Control Variables

We used a number of variables to control for organizational characteristics, labor market influences, and the patient market. *Time effects* were also controlled for via a dummy variable for each of the years of data. *Ownership status*—coded as 1 for private or 0 for public—may be related to hospital performance (Goodstein & Boeker, 1991); studies have found that a larger number of indigent patients are treated in public hospitals, which engenders outcomes related to measures of firm performance (Billings, Zeitel, Lukomnik, & Carey, 1993; Gardiner et al., 1996; Goes & Park, 1997). *Hospital size,* measured as number of staffed beds, may explain differences on the dependent variables, because it may be related to resources and performance (Gardiner et al., 1996). *Profit status* (coded here as "for profit," 1, and "not for profit," 0) may also explain differences among the hospitals on the dependent variables owing to differences in financial structures or level of innovation (Goes & Park, 1997).

We also sought to control for the intensity of staffing in each hospital. Hospitals' staffing levels are measured using the number of *full-time equivalents (FTEs) per patient bed.* One FTE represents 2,080 worked hours per year. Prior research indicates that staffing levels may influence hospitals' performance because hospitals with lower staffing levels may have both lower employee satisfaction and an increased incidence of employee performance errors (e.g., Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2001). We also controlled for each hospital's unionization status, since the presence of collective bargaining units may relate to hospitals' performance (e.g., Seago & Ash, 2002). Unionization ("unionized" = 1, "not unionized" = 0) data were gathered through telephone interviews with each hospital in the sample.

To control for *cost of living,* which may affect organizational pay policy, we included the median housing values for the county in which each hospital operated using data gathered from the Demographic Research Unit of the California Department of Finance. To control for characteristics of the patient market, we included each hospital's *percentage of Medicare patients, percentage of Medicaid patients,* and *percentage of third-party payer patients* (third parties included indemnities and HMOs). These are presented as percentages of each hospital's total patient days. We also used an OSHDP measure called the *case mix index,* which controls for differences in the intensity of resource utilization by each hospital's patient populations. To calculate this index, the OSHDP initially assigns each patient to one of over 500 diagnosis-related groups (DRGs) on the basis of his or her principal and secondary diagnoses, age, the procedures performed, the presence of complications, discharge status, and gender. Each DRG has a numeric weight reflecting the national average hospital resource consumption by patients for that DRG relative to the national average hospital resource consumption of all patients. Case mix index is calculated by averaging the DRG weights of a hospital's patients discharged within the calendar year. Thus, this measure represents the average severity of the conditions of the patients treated in a hospital and controls for hospital costs that may be higher owing to more severe illnesses. Because the OSHDP did not start calculating case mix until 1995, we used each hospital's average case mix value from 1995 to

1998 to represent the severity of the cases typically seen by each hospital. We are confident in this assumption, given that the average correlation of case mix observations ranged over time from .90 to .98 and as an overall measure had a reliability of .98.

Analyses

To analyze the data, we pooled longitudinal cross-sections composed of unbalanced panel data from the 333 hospitals. The number of observations per hospital ranged from 1 to 9, with a mean of 7.2. A total of 2,410 observations were used in the analyses. We examined the effect of the pay policy and control variables at time T on organizational performance at time T. We chose to use the same time period for both the independent and dependent variables because each variable captures the results, conditions, or policies in place over the entire year studied. Thus, the pay policy variables capture how employees were paid over all of time T, which should most directly affect the resultant performance of employees during time T.

Because curvilinear relationships are easily mistaken for interaction effects (Cortina, 1993), we followed a procedure proposed by Cortina in which potential curvilinear relationships are controlled in each model. In the regression analyses, we entered the control variables in the first step, the pay dispersion and pay level "main effects" in the second step, the curvilinear (squared) pay dispersion and pay level terms in the third step, and the pay dispersion by pay level interaction in the final step.

Because we had multiple observations from each hospital, we performed a number of alternative analyses to test the stability of our results. In addition to ordinary least squares regression analyses, we performed regressions with (1) dummy variables representing each hospital and (2) a random-effects model. In all cases, the results were substantially similar to the OLS regression results; in all cases, the independent variables of interest that were significant in the OLS model were significant and in the same direction in the alternative models (at $p < .05$ or better). For ease of interpretation, we report the OLS results below.

RESULTS

Table 1 presents descriptive statistics and correlations for all study variables. The correlations reveal that our dependent variables capture different dimensions of performance, and although the relationships (r's) among average length of stay, adjusted survival, and ROA are significant (at $p <$ .05), they are not very large: average length of stay and adjusted coronary survival, −.20; average length of stay and ROA, −.04; and adjusted coronary survival and ROA, .08. Note that the correlation between average length of stay and adjusted coronary survival supports the notion that greater efficiency (a lower average length of stay) is related

TABLE 1
Descriptive Statistics and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Profit status	0.27	0.44														
2. Ownership status	0.80	0.40	.28													
3. Hospital size	180.80	140.83	−.14	.22												
4. Cost of living	183,596	52,647	.13	.16	.28											
5. Percent Medicare	40.60	18.30	−.05	.20	−.12	.05										
6. Percent Medicaid	25.00	0.31	−.07	−.35	−.14	−.23	.63									
7. Percent third-party payer	21.50	0.19	.05	.28	.15	.10	−.08	−.42								
8. Case mix index	1.07	0.28	−.03	.20	.42	.22	.30	−.37	.12							
9. Unionization status	0.51	0.50	−.21	−.04	.21	.11	−.01	−.02	−.01	.23						
10. Full-time equivalents per bed	3.57	1.64	−.21	−.09	−.01	−.03	−.08	−.05	.16	.10	.16					
11. Pay level strategy	0.00	0.16	.02	.17	.43	.66	.09	−.35	.22	.34	.26	.10				
12. Pay dispersion	0.22	0.040	−.14	−.14	.02	−.24	−.18	.25	−.04	−.14	−.05	.09	−.23			
13. Average length of stay	6.00	3.48	−.15	−.27	−.04	−.08	−.27	.49	−.31	.05	.02	−.24	−.22	.14		
14. Adjusted coronary survival	13.26	5.89	.07	.05	.16	.01	−.10	−.06	.12	−.02	−.02	.14	.10	.05	−.20	
15. Return on assets	0.03	0.15	.01	−.04	.17	.02	−.09	.12	−.03	.06	.07	.19	.06	.04	−.04	.08

[a] n = 2,410, except for correlations with adjusted coronary survival, where n = 862. Coefficients equal to or greater than .04 are significant at $p < .05$, except for correlations with adjusted coronary survival, where coefficients equal to or greater than .07 are significant at $p < .05$. For ownership status, 1 = "private," 0 = "public"; for profit status, 1 = "profit," 0 = "not for profit." Size was measured with number of staffed beds. Cost of living was the median housing value. Pay structure was measured with a gini coefficient. We transformed hospital size and median housing value using a natural logarithm before performing the correlation analyses.

to more positive health-related outcomes (higher survival).

There were also a number of notable relationships in the data that, although not the focus of this paper, do merit some discussion. For example, unionization status was positively related to pay level ($r = .26$, $p < .0001$) and negatively related to pay dispersion (that is, to a more egalitarian dispersion: $r = -.05$, $p < .05$). Unionized hospitals also had more FTEs per bed ($r = .16$; $p < .0001$). The number of FTEs per bed was also related to all three outcomes, showing negative correlation with average length of stay ($r = -.24$, $p < .0001$) and positive correlation with adjusted survival ($r = .14$, $p < .0001$) and ROA ($r = .19$, $p < .0001$).

Tables 2 through 4 summarize the results of the pooled hierarchical regression analyses on average length of stay, adjusted coronary survival, and ROA. Results indicate that the inclusion of the pay variables (steps 2 through 4) explained significant variance in organizational performance. For average length of stay, the pay-related variables increased the variance explained (total R^2) by the model by 7 percent; for adjusted coronary survival, they explained an additional 4 percent of the variance; and for ROA, an additional 2 percent.

The results provide support for the first hypothesis. Pay level is negatively associated with average length of stay—that is, higher pay levels are associated with greater efficiency—and pay level is positively associated with patient care outcomes. Interestingly, as the results in the third steps of Tables 2 and 3 show, these effects are nonlinear. Furthermore, all three models support the moderation of pay level by pay dispersion.

Given these statistical findings, it is difficult to ascertain support for the hypotheses. To better illustrate the implications of the regression results, we plotted the relationships of the pay level and the organizational performance variables, with separate lines representing the different levels of pay dispersion. The plotted lines represent the values expected on the basis of the results from the fourth steps 4 in Tables 2 through 4. The low pay dispersion lines are represented by using the predicted results from the tables with a gini coefficient that is one standard deviation below the mean. The mean gini coefficient is used to represent the average pay dispersion, and a gini one standard deviation above the mean is used to represent a more hierarchical pay structure. Figure 1 graphically supports Hypothesis 1. As pay levels increase, for all pay hierarchies, the expected resource efficiency improves (that is, average length of stay decreases), and patient care outcomes increase. Furthermore,

TABLE 2
Results of Regression Analysis: Effects of Pay Dispersion and Pay Level on Average Length of Stay[a]

Variables	Step 1	Step 2	Step 3	Step 4
Step 1: Control				
Profit status	−1.45**	−1.27**	−1.11**	−1.11**
Ownership	−0.74**	−0.78**	−0.46**	−0.42**
Size	−0.79**	−0.65**	−0.40**	−0.39**
Median housing value	−0.23**	1.32**	1.08**	1.11**
Percent Medicare	−4.42**	−4.53**	−4.76**	−4.75**
Percent Medicaid	8.50**	7.61**	6.92**	6.85**
Percent third-party	−1.89**	−1.77**	−1.97**	−2.00**
Case mix	6.83**	6.94**	6.71**	6.62**
Unionized	−0.14	0.11	0.10	0.10
Full-time equivalents per bed	−0.75**	−0.71**	−0.70**	−0.69**
Step 2: Linear effects				
Pay level		−4.67**	−5.79**	0.66
Pay dispersion		7.57**	11.82†	18.65*
Step 3: Nonlinear effects				
Pay level squared			21.48**	20.01**
Pay dispersion squared			−9.21	−22.32†
Step 4: Interaction				
Pay level × pay dispersion				−28.47**
Overall adjusted R^2	.48	.50	.53	.55
Change in R^2		.02**	.03**	.02**

[a] For all models, average length of stay is the dependent variable; $n = 2,410$. A lower average length of stay represents greater efficiency. The model includes dummy variables representing the four different years (not shown above). For ownership, 1 = private, 0 = public; for profit status, 1 = for-profit, 0 = not-for-profit. Size was the logarithm of the number of staffed beds. Median housing value was also transformed using a natural logarithm. Pay dispersion was measured with a gini coefficient.

† $p < .10$
* $p < .05$
** $p < .01$

as pay levels increase, diminishing returns from greater compensation are exhibited.

The results do not support Hypothesis 2. As shown in Table 4, pay level did not explain significantly more variance in ROA either linearly or nonlinearly (in either step 2 or 3). In step 4 of the regression, although the interaction term was significant and added explanatory power, Figure 1 does not reveal the inverted U-shaped relationship between pay level and ROA predicted in Hypothesis 2. The analysis also left Hypothesis 3 unsupported. For all of the tables, in step 3 the coefficient of the squared pay dispersion term does not reach significance (at $p < .05$). In fact, the pay dispersion term is only marginally significant ($p < .10$) in step

TABLE 3
Results of Regression Analysis: Effects of Pay Dispersion and Pay Level on Adjusted Coronary Survival[a]

Variables	Step 1	Step 2	Step 3	Step 4
Step 1: Control				
Profit status	1.42**	1.41**	1.33**	1.32**
Ownership	0.25	0.27	0.13	0.20
Size	0.96**	0.85**	0.74**	0.75**
Median housing value	−0.64	−1.29*	−1.15*	−1.09*
Percent Medicare	−4.61**	−4.93**	−4.95**	−4.68*
Percent Medicaid	−5.11**	−5.18*	−4.72*	−4.53*
Percent Third-party	−3.27*	−3.65*	−3.59	−3.37*
Case mix	−2.05**	−2.11**	−1.98**	−2.10**
Unionized	−0.26	−0.37	−0.35	−0.36
Full-time equivalents per bed	0.44**	0.41**	0.40**	0.41**
Step 2: Linear effects				
Pay level		2.63*	3.18*	10.12*
Pay dispersion		2.87	8.37	9.27
Step 3: Nonlinear effects				
Pay level squared			−10.99*	−11.88**
Pay dispersion squared			−9.88	−9.74
Step 4: Interaction				
Pay level × pay dispersion				−30.60*
Overall adjusted R^2	.08	.08	.10	.12
Change in R^2		.00	.02**	.02**

[a] n = 862. For all models, the dependent variable is the adjusted expected survival rate minus the actual observed survival rate. Thus, higher values represent better outcomes. The model includes dummy variables representing the three different years (not shown above). For ownership, 1 = private, 0 = public; for profit status, 1 = for-profit, 0 = not-for-profit. Size was measured the logarithm of the number of staffed beds. Median housing value was also transformed using a natural logarithm. Pay dispersion was measured with a gini coefficient.

* $p < .01$

** $p < .05$

TABLE 4
Results of Regression Analysis: Effects of Pay Dispersion and Pay Level on Return on Assets[a]

Variables	Step 1	Step 2	Step 3	Step 4
Step 1: Control				
Profit status	0.03**	0.03**	0.03**	0.03**
Ownership	−0.02**	−0.02**	−0.02**	−0.02**
Size	0.04**	0.04**	0.04**	0.04**
Median housing value	0.00	−0.01	0.00	0.00
Percent Medicare	0.10**	0.10**	0.10**	0.10**
Percent Medicaid	0.16**	0.16**	0.17**	0.17**
Percent third-party	0.01	0.01	0.01	0.01
Case mix	−0.02	−0.02	−0.02	−0.02
Unionized	0.00	0.00	0.00	0.00
Full-time equivalents per bed	0.02**	0.02**	0.02**	0.02**
Step 2: Linear effects				
Pay level		0.02	0.02	−0.30**
Pay dispersion		−0.07	−0.20	−0.53
Step 3: Nonlinear effects				
Pay level squared			−0.14†	−0.07
Pay dispersion squared			0.25	0.90
Step 4: Interaction				
Pay level × pay dispersion				1.42**
Overall R^2	.12	.12	.12	.14
Change in R^2		.00	.00	.02**

[a] n = 2,410. For all models, the dependent variable is the return on assets. Dummy variables representing the four different years were included but are not shown above. For ownership, 1 = private, 0 = public; for profit status, 1 = for-profit, 0 = not-for-profit. Size was the logarithm of the number of staffed beds. Median housing value was also transformed using a natural logarithm. Pay dispersion was measured with a gini coefficient.

† $p < .10$

** $p < .05$

4 of Table 2, for the prediction of average length of stay.

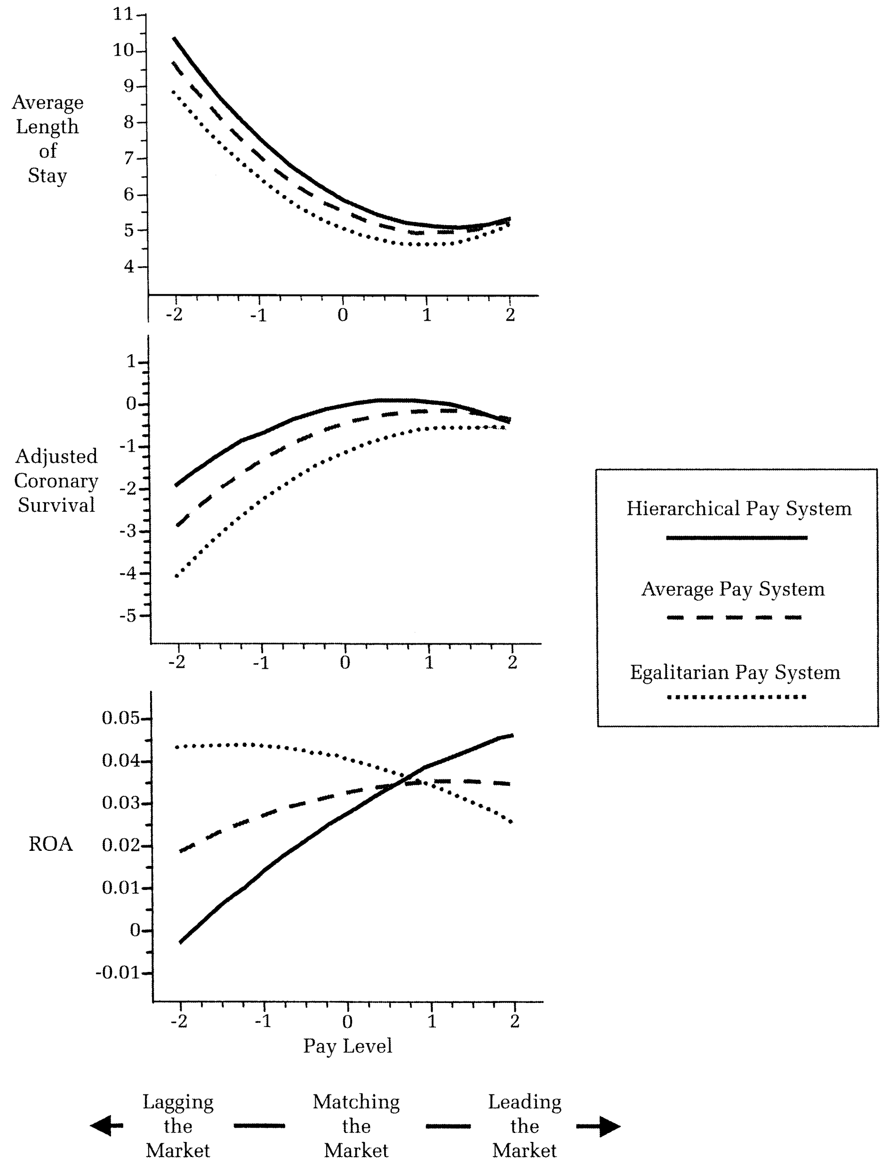
Despite the failure to confirm Hypotheses 2 and 3, the results obtained after including the interaction term did support the remaining three hypotheses. For all three dependent variables, the interaction of pay level and dispersion was significant (for average length of stay and ROA, at $p < .01$; for adjusted survival, at $p < .05$). Furthermore, Figure 1 supports the specific predictions of the hypotheses. For predicting average length of stay and adjusted survival, pay dispersion led to more differences at low pay levels, but it had less (essentially no) effect at high pay levels. For predicting ROA, as expected, the dependent variable was highest under conditions of either (1) an egalitarian pay system lagging the market or (2) a hierarchical pay system leading the market.

DISCUSSION

In this study, we sought to investigate the organizational performance implications of pay structures and pay level. As predicted, our results indicate that pay level practices and pay structures interact to affect resource efficiency, patient care outcomes, and financial performance. Overall, our results demonstrate the importance of considering the different elements of a compensation plan when considering the relationship between pay systems and organizational performance. Additionally, our findings indicate the importance of concurrently considering pay level strategy and pay structure decisions.

The effects we observed also suggest that no single theory can fully explain how compensation re-

FIGURE 1
Relationship between Pay Level and Organizational Performance for Different Degrees of Pay Dispersion



lates to organizational performance. Our results provide support for efficiency wage theory and Frank's (1985) work on employees' relative standing. Efficiency theory was supported in that high pay was associated with better levels of resource efficiency; however, our results suggest that there are diminishing returns for pay's effect on employee performance. We argue that there exist limits to how much selection can be improved, turnover can be reduced, and motivation can be increased by pay; thus, while higher pay is associated with our hypothesized benefits, such effects do not appear to be linear.

The interactions between pay level and pay dispersion in analyses predicting all three organizational outcomes are particularly noteworthy. These findings highlight the importance of considering all aspects of compensation policy simultaneously when determining its effects. For the prediction of ROA specifically, failure to have included the interaction would have led to the erroneous conclusion that compensation plan characteristics were not related to financial performance; only consideration of the interaction revealed the effect of pay policy on compensation. Furthermore, the interaction findings support Bloom and Michel's (2002) proposition that higher wages can compensate for the negative effects of inequitable pay systems.

The use of the hospital sample had a number of advantages, such as the ranges of size, pay structures, ownership, and profit status across the organizations; however, generalizations from our results to practice must be cautious, because of our use of a health care setting and variables relevant to it. For example, although the labor intensiveness of hospitals created a valuable environment in which to test the effects of compensation policies, and although hospitals are a work environment where even the lowest-level employees can have a notable impact on patient care (Langland-Orban et al., 1996), labor costs in hospitals are also a much greater portion of total costs than they are for many other industries.

Although our measure of resource efficiency, average length of stay, is a commonly used measure of hospital performance, it is not without limitations. Conventionally, average length of stay is viewed as a measure of hospitals' efficiency. However, low average stays may represent hospitals' efforts to lower costs and increase profits by prematurely discharging patients (Thomas, 1997). Although this explanation must be considered, robust findings at the individual patient level of a relation between average length of stay and multiple indicators of quality of care suggest otherwise. For instance, at the level of the individual patient, Thomas (1997) found that lower average length of stay indicated higher-quality care for a range of 13 clinical conditions investigated. Moreover, the negative correlation between average length of stay and adjusted mortality in our study appears to suggest that shorter stays were not compromising patient care in any obvious way.

Finally, the inclusion of the unionization data in the study was important, but our measure was somewhat coarse. We were able to determine whether each hospital had a collective bargaining unit present or not; however, we were unable to collect data on the extent to which the employee population at each hospital was represented by the collective bargaining unit. Our results suggest that unionization is a correlate of compensation characteristics, but we found no evidence of its direct effect on organizational outcomes after controlling for the other variables in our study. We acknowledge, though, that this may be a result of the measure's coarseness, and it may be valuable for future research to specifically investigate whether unionization influences organizational performance.

This study represents our having taken the necessary step of considering multiple pay plan elements simultaneously, yet there are many opportunities to build on this understanding. First, we did not examine differences in pay that occur within particular job categories; future research into the interactive effects of pay level and dispersion with these data would be interesting. Second, research should address how elements of compensation systems reflect an overall system of human resources. Although data sets like that provided by the OSHDP, the CAHRS (Center for Advanced Human Resource Studies) database (cf. Bloom & Michel, 2002), and Standard & Poor's ExecuComp database all have their limitations, they allow for sophisticated investigations of topics of critical interest to theory and practice and should be used to further investigate compensation policy research questions.

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