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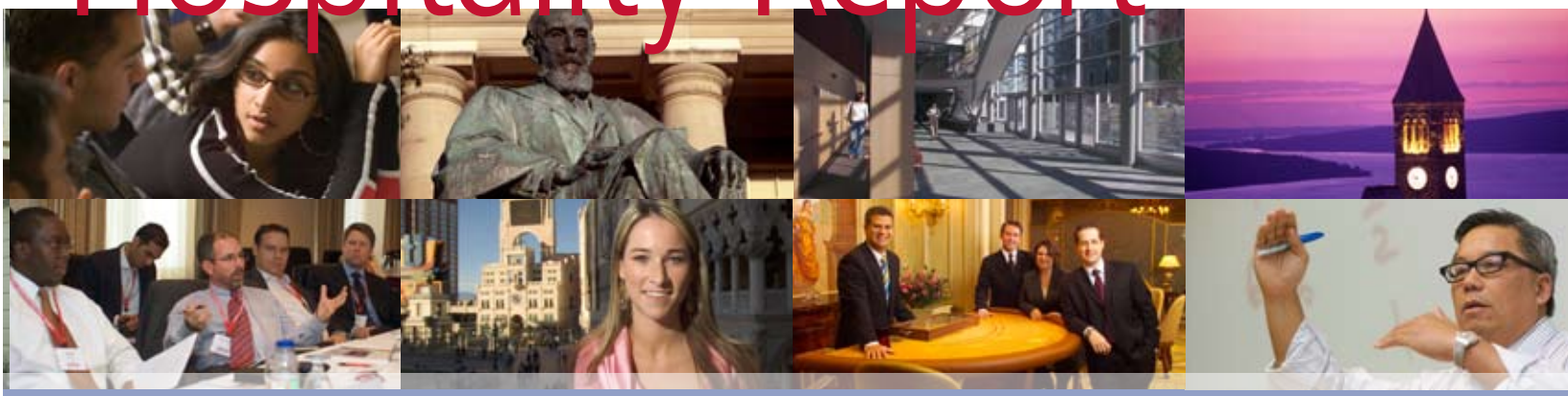
Using Your Pay System to Improve Employees' Performance: How You Pay Makes a Difference

by Michael C. Sturman, Ph.D.



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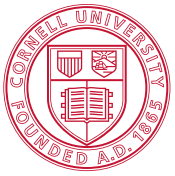

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Using Your Pay System to Improve Employees' Performance:

How You Pay Makes a Difference

by Michael C. Sturman

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EXECUTIVE SUMMARY

One goal of many pay plans is to improve employees' performance. This investigation of pay policy assesses the effects on performance of base-pay levels, merit increases, and lump-sum bonuses. The study shows that both "how much" is paid (the amount of the reward) and "how" the money is paid (the relationship that exists between performance and pay) influence employees' future performance levels. As expected, the results show that how much you pay is important. Both raises and bonuses increase future performance, but merit raises had a greater effect than that of bonuses. In this study, the benefit of a 1-percent increase in base pay was comparable to the benefit from a 3-percent bonus. Even though the absolute level of one's salary was not related to future performance, relative pay levels made a considerable difference. Perhaps most important, the study also showed that how an employee is paid can also influence performance. For merit raises, the link between pay and performance was unrelated to future performance. However, the extent of the pay-for-performance relationship with bonuses was significantly related to future performance—provided the link between pay and performance is clearly established.

Based on these findings, pay structure can be designed to achieve greater employee performance. To begin with, simply spending more on employee pay would yield minimal results. Improving the merit-increase pool by one percentage point but otherwise not making any allocation changes, for example, would be projected to increase performance only by roughly 2 percent. However, if the same money was applied to pay-for-performance bonuses, the analysis suggests a performance increase of better than 15 percent. Indeed, the results suggest that providing a strong pay-for-performance link for bonuses rather than raises had the greatest potential benefit, predicted to improve employee performance by nearly 20 percent.

Using Your Pay System to Improve Employees' Performance:

How You Pay Makes a Difference

by Michael C. Sturman

The widely held belief that an employee's past performance is the best predictor of that person's future performance is true, at least when one examines job-performance ratings. The correlation between performance ratings across a one-year lag ranges from 0.60 to 0.91.[1] Despite that predictability, the purpose of many human resources programs is specifically to improve employees' performance. One way this is commonly attempted is through the strategic design of compensation systems.[2]

[1] The correlation between subjective performance ratings (i.e., supervisor appraisals), after being corrected for internal reliability, ranges from 0.60 to 0.91, depending on the complexity of the job. See: M.C. Sturman, R.A. Cheramie, and L.H. Cashen, "The Impact of Job Complexity and Performance Measurement on the Temporal Consistency, Stability, and Test-retest Reliability of Employee Job Performance Ratings," *Journal of Applied Psychology*, Vol. 90 (2005), pp. 269-283.

[2] Comprehensive reviews of compensation system designs are provided by: E.E. Lawler III, and G.D. Jenkins, Jr., "Strategic Reward Systems," in *Handbook of Industrial and Organizational Psychology,* Vol. 3, ed. M.D. Dunnette and L.M. Hough (Palo Alto, CA: Consulting Psychologists Press, 1992), pp. 1009–1055; and by G.T. Milkovich and J.M. Newman, *Compensation*, 8th edition (New York: McGraw-Hill, 2005).

Despite the value of designing pay systems to improve employees' performance, this topic has attracted only moderate research attention. The underlying premise of compensation research is that money has an incentive value. As a consequence, setting certain pay levels and linking pay to performance will encourage employees to change their performance. Despite the clarity of such a model, specific research detailing how pay systems should be designed to promote that outcome is sparse. Practitioners seeking to devote resources to achieve the greatest return on investment face questions such as the following:

- Do bonuses really motivate better performance?,
- Does tying raises to performance with merit pay really work?,
- How much should be spent on raises versus bonuses?, and
- Does paying above the market in base pay matter more than offering the possibility of enhanced bonus incentives?

The purpose of this report is to address these questions by considering how pay can influence changes in employee performance. Specifically, this paper will compare the effects on performance associated with three major components of pay systems: base pay (both absolute and relative), merit raises (increases to base pay, based on individual performance), and lump-sum bonuses (one-time payments, based on individual performance). In sum, I found not just that compensation can be a powerful tool for managing employees, but that the effects of base pay are different from those of raises, which are, in turn, different from those of bonuses. In particular, bonuses appear to be the most effective pay-for-performance tool. Raises also increase performance, but tying raises specifically to performance levels does not seem to drive performance in the way that bonuses do. That is, across-the-board raises appear to be more effective in motivating employees than are raises based on merit. Nevertheless, leading the market in pay is also associated with improved employee performance. After I explain how my findings lead to these conclusions, I'll suggest specific implications for the design of pay policy and strategy.

Contrasting Expectations for Pay Levels and Pay-for-performance Plans

Cash compensation is composed of base pay (salary or wage) and contingent pay (pay increases, incentives). Employees have different reactions to the various components of their compensation systems.[3] In particular, they make clear distinctions between raises and bonuses.[4] Economic and psychological research suggests that pay plans influence individuals through two mechanisms: **(1)** their effects on motivation connected to the incentives inherent in the pay system, and **(2)** their effects on motivation based on reactions to the plan's specific distributions (i.e., how much pay the employee received). Thus, employees react both to "how" they are paid and to "how much" they are paid. While the amount of award and the way the award is determined are related, the relative importance of each is largely unclear. For this reason I considered these two mechanisms simultaneously. I examined the effects of the amount paid under a plan, and the effects of the relative pay level and a pay-for-performance link existing under a plan, each considered when controlling for the characteristics of the other. In that way, I consider the factors related to base pay, merit raises, and bonuses.

Pay Level

Base pay is clearly a critical component of any individual's total compensation, and many employers consider maintaining high pay levels to be a useful tool to attract, retain, and motivate talent. Indeed, relatively high pay is related to improved attraction and retention when measured both at the individual level and organizational level of analysis. Bloom

[3] H.G. Heneman III and D. Schwab, "Pay Satisfaction: Its Multidimensional Nature and Measurement," *International Journal of Psychology*, Vol. 20 (1985), pp. 129-141; T.A. Judge, "Validity of the Dimensions of the Pay Satisfaction Questionnaire: Evidence of Differential Prediction," *Personnel Psychology*, Vol. 46 (1993), pp. 331-355; and T.A. Judge and T.M. Welbourne, A Confirmatory Investigation of the Dimensionality of the Pay-satisfaction Questionnaire," *Journal of Applied Psychology*, 79 (1994), pp. 461-466.

[4] M.C. Sturman and J.C. Short, "Lump-sum-bonus Satisfaction: Testing the Construct Validity of a New Pay-satisfaction Dimension," *Personnel Psychology*, Vol. 53 (2000), pp. 673-700.

and Milkovich showed, for instance, that the amount of base pay was positively related to a firm's performance.[5] For individuals, the amount of one's pay has consistently been shown to relate to pay satisfaction.[6] This provides support for the view that "how much" is paid is important. Research evidence, however, casts some doubt on the view that absolute pay level is the best predictor of valued outcomes. Rather, current theory and empirical evidence generally support the idea that relative market comparisons matter, and not simply pay level.

Research has cast doubt on the satisfaction value of absolute pay levels, given weak correlations between pay levels and pay satisfaction—typically, r = .15."[7] Although the correlation is typically statistically significant, absolute pay levels explain little variance in pay satisfaction. Instead, research has generally shown that the effect of pay levels on pay satisfaction is mediated by various factors. Pay-satisfaction research has been well served by equity and discrepancy models,[8] all based on the notion that the formation of pay-satisfaction attitudes is influenced by comparisons to others or by the individual's expectations. Some research has found other sorts of comparisons that better explain how pay influences satisfaction, most of them related to external comparisons and perceptions of fairness. For organizations, being the market leader in pay (i.e., a relative measure of pay level) was associated with better organizational efficiency and operational performance.[9] Furthermore, although Bloom and Milkovich examined pay levels, their sample was of comparable managers from participating companies. By examining a set of employees in similar positions, studying absolute pay levels in that particular sample would be equivalent to examining relative pay levels.

Taken in total, the current state of knowledge on the effects of base pay suggests that considering relative pay is more appropriate than considering the absolute level of pay. I therefore expected that greater pay relative to the market average will be associated with increased future job performance. I also expected that relative pay level would be a more useful measure than absolute pay level. So, when examining both of those variables simultaneously, the effect of absolute pay level should be fully mediated by the effect of comparative pay.

Pay for Performance

What is not clear about pay-for-performance plans is whether the amount of award has the greatest effect or whether the method by which the pay is linked to performance matters more. In part, a key issue regarding pay-for-performance systems that are based on subjective evaluations is that an individual cannot be certain in advance what performance level is required to achieve a particular award level. For this reason, an employee's experience with the system plays an important role in creating an expectation of the extent to which performance is actually rewarded.

Three types of theory suggest mechanisms by which the size of reward amounts can influence employee behavior. Economic theory, such as efficiency wage theory, suggests that employees who are paid more will want to reduce the risk of losing their high pay levels.[10] Hence, they will perform better to reduce the risk of being terminated. Equity theory suggests that employees react to the ratio between their inputs to the organization (i.e., their performance) and their outputs (i.e., their pay). If this ratio is out of balance, employees will seek a return to equity by changing their inputs. The theory suggests that greater awards should lead to greater performance as employees match their performance to the perceived value of their pay.

Finally, expectancy theory suggests that the relationship between pay and performance influences the amount of effort exerted by employees. This is the theory on which pay-for-performance plans are typically based. If employees believe that their efforts lead to higher performance ratings, and that higher performance ratings in turn lead to awards, then the pay-for-performance system (i.e., or "how" the person gets paid) will lead to greater employee performance.

Existing studies. Empirical evidence generally supports the effectiveness of greater rewards, but those findings are uneven. Kahn and Sherer found a positive effect linking bonuses with performance, but no effect for merit increases.[11] Heneman found that 28 of 30 studies reported statistically significant associations between pay raises and performance. Only six of these studies, however, looked at raises' effects on future performance, and only four of these showed a positive

[5] M. Bloom and G.T. Milkovich, "Relationships among Risk, Incentive Pay, and Organizational Performance," *Academy of Management Journal*, Vol. 41 (1998), pp. 283-297.

[6] H.G. Heneman III, "Pay Satisfaction," in Research in *Personnel and Human Resources Management*, Vol. 3, ed. K. M. Rowland & G. R. Ferris (Greenwich, CT: JAI Press, 1985), pp. 115–140; H.G. Heneman III and T.A. Judge, "Compensation Attitudes," in *Compensation in Organizations: Current Research and Practice*, ed. S.L. Rynes and B. Gerhart (San Francisco, CA: Jossey Bass, 2000).

[7] The value of r tells how much variance a correlation explains, with 1.00 being the maximum and 0 the minimum. See: Heneman and Judge, p. 71.

[8] *Ibid*.

[9] M. Brown, M.C. Sturman, and M. Simmering, "Compensation Policy and Organizational Performance: The Efficiency, Operational, and Financial Implications of Pay Levels and Pay Structure," *Academy of Management Journal*, Vol. 46 (2003), pp. 752-762.

[10] The tenets of efficiency wage theory are described in depth in: G.A. Akerlof and J.L. Yellen, *Efficiency Wage Models of the Labor Market* (Cambridge, U.K.: Cambridge University Press, 1986).

[11] L.M. Kahn and P.D. Sherer, "Contingent Managerial Performance," *Industrial and Labor Relations Review*, Vol. 43 (1990), pp. 107–120.

Strategic application of pay policies can cause employees to improve their work efforts.

effect.[12] Banker and colleagues showed that the presence of a pay-for-performance plan (linked to bonuses) led to greater employee productivity over time, also supporting the idea that the presence of a link between pay and performance has an effect on future performance for bonuses. But their study did not examine raises.[13] Similarly, Stajkovic and Luthans showed that the implementation of a bonus plan can lead to higher mean employee performance, but they also did not consider the effects of merit raises.[14]

Although this evidence is incomplete, it points to the idea that both "how" one is paid, and "how much" one is paid can influence performance. Still, the relative effects of merit plans and bonuses are not clear. In the analysis that follows, I examine the four variables related to both how and how much a plan pays, for both merit pay and bonuses.

Studying Pay for Performance

Data were obtained from a large organization involved in diversified service-related businesses. Although the company has employees in 35 countries, I examined only its employees working in the United States from 2001 through 2004—a total of 692 individuals. I chose to focus on the U.S. employees **(1)** because the largest number of employees worked in the U.S., **(2)** because U.S. employees were paid under a common merit system, and **(3)** because other countries' different cultures and laws might confound the data.

Pay plan. All employees in the sample were paid a salary and were eligible for bonuses and merit raises. Certain aspects of both the merit-raise plan and the bonus plan are prescribed by the company, but both also include allocation decisions made at the discretion of the supervisor. Regression analysis shows that an employee's 2003 performance rating explained 39 percent of the variance in that person's 2003 merit-raise percentage. After adding in the supervisor as a categorical independent variable, 55 percent of the variance in 2003 merit raises could be explained. For bonuses, only 6 percent of the variance was explained by 2003 performance ratings, but including the supervisor explained 51 percent of the variance in the 2003 bonus percentage. Consequently, we can say that the link between performance and pay is not entirely due to the supervisor, but the supervisor's decisions have considerable weight for raises and even more weight for bonuses.

The mechanism for merit raises works as follows. All employees are eligible for merit raises based on their individual performance. The organization sets a merit grid, which specifies the maximum raise that can be awarded for a given performance level. Managers are given this grid together with a budget for allocating awards. The managers have some discretion to deviate from grid award criteria, and raise amounts are then given final approval by the manager's immediate supervisor.

The bonus system operates in somewhat similar manner. Bonus targets are set according to each employee's pay band at the beginning of the year. The actual bonus is set at year's end as a function of the company's financial performance, the individual's performance rating, and the manager's determination. For example, an employee who "meets expectations" would warrant a bonus in the range of 90 percent to 115 percent of target. The manager, who is given a budget based on all of her subordinates' targets, then determines the exact bonus within the constraints of the system.

Data Collection

Data were collected on employees' performance in 2001, 2002, 2003, and 2004. Performance was rated on a four-point scale of below expectations, meets expectations, exceeds expectations, and significantly exceeds expectations. Data were also collected on employees' 2004 salary, 2003 merit-

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[12] R.L. Heneman, "Merit Pay Research," *Research in Personnel and Human Resource Management*, Vol. 8 (1990), pp. 811–826.

[13] R.D. Banker, S. Lee, G. Potter, and D. Srinivasan, "An Empirical Analysis of Continuing Improvements Following the Implementation of a Performance-based Compensation Plan," *Journal of Accounting and Economics*, Vol. 30 (2001), pp. 315-350.

[14] A.D. Stajkovic and F. Luthans, "Differential Effects of Incentive Motivators on Work Performance," *Academy of Management Journal*, Vol. 44 (2001), pp. 580–590.

Exhibit 1

Summary statistics (correlation matrix)

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Performance 2004	2.31	0.61	1.00													
(2) Performance 2003	2.40	0.63	0.43	1.00												
(3) Performance 2002	2.49	0.68	0.43	0.54	1.00											
(4) Performance 2001	2.48	0.51	0.30	0.29	0.45	1.00										
(5) Performance Change (2002-2003)	-0.09	0.63	-0.04	0.41	-0.55	-0.19	1.00									
(6) Performance Slope (2001-2003)	-0.04	0.34	0.17	0.71	0.17	-0.48	0.52	1.00								
(7) Organizational tenure	13.92	7.27	0.01	-0.01	0.04	0.13	-0.06	-0.11	1.00							
(8) 2004 Salary	$76,972	$30,245	0.30	0.23	0.25	0.19	-0.04	0.08	0.05	1.00						
(9) 2004 Salary / 2004 Market Wage	0.95	0.14	0.11	0.05	0.15	0.13	-0.13	-0.05	0.33	0.12	1.00					
(10) 2003 Merit Increase Percentage	0.020	0.014	0.38	0.62	0.38	0.19	0.21	0.43	-0.19	0.24	-0.20	1.00				
(11) 2003 Total Increase Percentage	0.024	0.021	0.28	0.51	0.27	0.13	0.21	0.37	-0.24	0.13	-0.33	0.79	1.00			
(12) 2003 Bonus Percentage	0.050	0.043	0.32	0.23	0.19	0.14	0.02	0.11	-0.03	0.71	0.04	0.23	0.13	1.00		
(13) Beta for Performance on Merit	0.0085	0.0024	0.08	0.03	0.04	-0.01	-0.02	0.04	-0.17	0.30	-0.27	0.38	0.31	0.15	1.00	
(14) Beta for Performance on Bonus	0.0182	0.0068	0.19	0.07	0.10	0.02	-0.04	0.04	-0.11	0.25	0.06	0.15	0.08	0.42	0.35	1.00

Notes: $N = 692$, and correlations 0.08 and greater are significant at $p < .05$. Numbers on the columns refer to the variables bearing the same number in each row.

increase percentage, and 2003 bonus percentage. Because of the skewed nature of salary data, a natural logarithm (abbreviated *ln*) was used to transform the data—giving us a description of the data that allows further analysis.

In addition to base pay level, 2004 market data were obtained for all jobs. Used to help guide the organization's pay practices, the market data, which are obtained from purchased pay surveys, determine the midpoint of each job's pay range. To provide a measure of relative market position for each employee, I divided each individual's current salary by the average market data for that individual's job. For this calculation, a value of one indicates pay at the market average, while values above one signify greater than market pay and values below one, less than market pay.

Pay-for-performance link. Proponents of pay-for-performance plans argue that the effectiveness of a pay-for-performance system is a function of the strength of the link between performance and the monetary outcome. This firm's merit raises and bonuses were awarded based on employee performance, but also were based on the discretion of managers (together with higher level supervisors). As a result, the relationship between raises and performance could be tenuous, from the employee's point of view.

To approximate the pay-for-performance link for each employee, I grouped employees by their supervisors and regressed 2003 performance on 2003 merit increase. The beta coefficient from this regression would represent the strength of the relationship between performance and merit raises for employees whose pay increase was determined by their particular supervisor. The problem with that approach is that when the supervisor had fewer than five subordinates, the beta coefficient may not be stable or may be overly sensitive to a few values. To overcome that problem, I regrouped those employees with their next-level-up supervisor and computed a new beta coefficient. I repeated this approach to consider the relationship between 2003 performance and 2003 bonuses. To test whether the use of the next-level-up supervisor was warranted, I made the next-level-up calculation for some supervisors with more than five employees. That allowed me to compare the correlation between the manager's beta and the manager's supervisor's beta. The two values were correlated 0.74 for the raise coefficient, and 0.70 for the bonus coefficient, and thus the next-level-up approach is a reasonable stand-in for the original manager's statistics.

Exhibit 2

Predicting 2004 performance

Independent Variables	Model 1 Controls	Model 2a "How much"	Model 2b "How"	Model 3 Both
Intercept	0.83 (0.12)***	0.45 (0.67)	0.37 (0.19)*	0.04 (0.70)
2003 Performance Rating	0.61 (0.05)***	0.45 (0.05)***	0.59 (0.04)***	0.42 (0.05)***
2002-2003 Performance Change	-0.21 (0.04)***	-0.18 (0.04)***	-0.18 (0.04)***	-0.16 (0.04)***
2001-2003 Performance Slope	-0.28 (0.09)**	-0.25 (0.09)**	-0.30 (0.09)**	-0.25 (0.09)**
Tenure	-0.001 (0.003)	0.002 (0.003)	-0.001 (0.003)	0.001 (0.003)
"How Much"				
ln 2004 Salary		0.04 (0.06)		0.05 (0.07)
2003 Merit Increase Percentage		5.89 (1.81)**		7.61 (2.01)**
2003 Bonus Percentage		2.94 (0.55)***		2.31 (0.63)**
2003 Other Percentage		-0.26 (1.53)		0.85 (1.58)
"How"				
Base Relative to Market			0.23 (0.15)	0.34 (0.16)*
Beta for 2003 Performance on Merit Increase			8.05 (9.18)	-8.88 (10.48)
Beta for 2003 Performance on Bonus			11.74 (3.18)**	6.09 (3.11)*
R-Squared	0.25	0.31	0.28	0.32

Notes: For regression models, $N = 692$; * $p < .05$; ** $p < .01$; *** $p < .0001$. Models 2a and 2b are significantly more predictive than is Model 1 (both at $p < .0001$). Model 3 is significantly more predictive than are Models 2a ($p < .01$) and 2b ($p < .0001$).

Control variables. With the baseline 2003 statistics in hand, I went on to examine the effect of base pay and the pay-for-performance plans on employees' 2004 performance. In so doing I applied a highly conservative test and controlled for prior performance by using 2003 performance as an independent variable in my analysis. To avoid the pitfall of the lack of reliability of a single year's performance ratings, however,[15] I also looked at the most immediate performance change (that is, the 2002–2003 performance slope), and the three year-performance slope (2001 through 2003). This is a useful checkpoint, because both immediate change and longer-run changes have been shown to be related to outcomes.[16]

For the analyses all the control variables were entered into a regression analysis as a first step (i.e., 2003 performance, 2002–2003 performance slope, 2001–2003 average performance slope, and organizational tenure). The second step of the regression added either variables related to how

[15] Viswesveran *et al.*, 1996; and Sturman *et al.*, 2005.

[16] For examples of research showing how performance trends relate to outcomes, even after controlling for the current level of performance, see: D.A. Harrison, M. Virick, and S. William, "Working without a Net: Time, Performance, and Turnover under Maximally Contingent Rewards," *Journal of Applied Psychology*, Vol. 81 (1996), pp. 331–345; and M.C. Sturman and C.O. Trevor, "The Implications of Linking the Dynamic Performance and Turnover Literatures," *Journal of Applied Psychology*, Vol. 86 (2001), pp. 684-696.

Exhibit 3

Predicting 2004 performance with full model and standardized betas

Independent Variables	Beta
2003 Performance Rating	0.43***
2002-2003 Performance Change	-0.17***
2001-2003 Performance Slope	-0.14**
Tenure	0.01
ln 2004 Salary	0.03
2003 Merit Increase Percentage	0.18**
2003 Bonus Percentage	0.16**
2003 Other Percentage	0.02
Salary relative to market	0.08*
Beta for 2003 Performance on Merit Increase	-0.04
Beta for 2003 Performance on Bonus	0.07*
R-Squared	0.32

Notes: For regression models, $N = 692$; * $p < .05$; ** $p < .01$; *** $p < .0001$.

much the employee was paid, that is, 2004 salary, 2003 merit percentage, 2003 bonus percentage, and 2003 other percentage, or how the employee was paid, that is, base pay relative to market, beta for 2003 performance on merit percentage, and beta for 2003 performance on bonus percentage. The third step of the regression considered all of the variables mentioned above, but did so simultaneously.

Predicting Performance

All three pieces of past-performance data (namely, 2003 performance, the change in performance from 2002, and the performance slope over the 2001 to 2003 period) significantly predicted an employee's 2004 performance. The regressions predicting 2004 performance, shown on the previous page in Exhibit 2, reveal how the control variables that quantify past performance can predict future performance. More important, these figures provided a point of comparison to see whether the characteristics of the pay plans can predict incremental variance in the 2004 performance.

That finding brings us to the second step of the regression analysis, which is intended to show the individual effects of each of the variables relating to how much employees are paid and how they are paid. With regard to how much employees are paid (Exhibit 2, Model 2a), both merit increases and bonuses explain significant variance in future job performance ratings, even after controlling for the effects of prior performance. Further tests reveal that the effect of merit increases is greater than the effect of bonuses ($p < .01$). Thus, for example, the effect on performance of an increase of 1 percent of total compensation is greater when that 1 percent is delivered through a merit increase than through a bonus. Interestingly, although the correlation between actual salary and 2004 performance was significant,[17] the variable had no effect after controlling for the other variables entered in the regression analysis.

How an employee is paid (Exhibit 2, Model 2b) also explains additional variance in future job-performance ratings. In this case, however, bonuses had more strength than raises. The strength of the pay-for-performance relationship for bonuses was positive and significant ($p < .001$), but the relationship for raises was non-significant ($p = .38$), as was the effect associated with pay relative to the market wage ($p = .13$).

We still cannot draw conclusions about the relative value of raises and bonuses, however, until we compare the two models. That comparison reveals that the variables related to how much employees are paid explains more variance than the variables related to how that pay increase arrives. This is found by noting that the R-square of the *how-much* equation is double that of the *how* equation. Even so, both models

[17] r = .32 for salary, .29 for ln of salary, both $p < .0001$.

Exhibit 4

Expected 2004 performance levels under various pay-for-performance (PFP) strategies

Bonus Plan	Merit Plan: Max PFP Relationship	Merit Plan: Min PFP Relationship	Merit Plan: No PFP Relationship	Merit Plan: No Change
Max PFP Relationship	2.63 (0.32)	2.52 (0.27)	2.67 (0.27)	2.60 (0.31)
Min PFP Relationship	2.14 (0.27)	2.02 (0.22)	2.18 (0.22)	2.11 (0.26)
No PFP Relationship	2.21 (0.26)	2.10 (0.22)	2.26 (0.22)	2.18 (0.26)
No Change	2.32 (0.31)	2.20 (0.26)	2.35 (0.26)	2.31 (0.30)

Notes: Table reports expected mean performance under each condition (with standard deviations in parentheses). Results are the expected values produced by entering the results of the policy decision assumptions into the regression equation estimated in Exhibit 2, Model 3. The no change–no change condition (bottom right cell) is the expected values generated by the regression. As shown in Exhibit 1, the actual standard deviation for 2004 performance is 0.61. The mean of 2004 ratings is the same as in that exhibit: 2.31.

held greater statistical significance than mere pay levels in predicting performance.

The simultaneous analysis of the third model allows a better comparison of the relative effects of the pay-related variables, as reported by the standardized betas in Exhibit 3. When all the how and how much variables are considered simultaneously, the overall model is statistically significantly more predictive than the models that involved only how or how much pay was increased ($p < .01$ compared to the how much model, 2a, and $p < .0001$ compared to the how model, 2b). From this analysis, though, we can see that components of both how much and how an employee is paid are significantly related to future performance. In particular, the 2003 merit increase percentage, 2003 bonus percentage, base relative to market, and relationship between 2003 performance and 2003 bonus were all related to 2004 performance (at $p < .05$ or better).

Exhibit 3 provides a clearer picture of the relative importance of how and how much one is paid. As indicated above, how much one is paid outshines how the pay increase is given. The standardized betas show that the effect size associated with amount (raise percentage and bonus percentage) are twice the size of the standardized betas associated with the how variables.

Predicted Policy Implication Results

Although these results show statistically significant relationships of great potential value, variance explained is not always the best way to evaluate the practical value of this research. Instead, I wanted to consider the magnitude of the expected effects. To accomplish this, I used the prediction formula derived from the third regression analysis and considered four possible scenarios for raises and for bonuses. Scenario one was pay-for-performance at the highest levels observed for any given supervisor; scenario two was the lowest such levels; scenario three set the relationship at zero (meaning that bonuses and raises are allocated at the mean, with no relationship to performance); and scenario four was no change at all (applying current values). Considering each of those four possibilities for both merit increases and bonuses, I computed the amount of pay that would be received in that context in 16 different combinations. Then, using the regression results from Model 3 of Exhibit 2, and with the assumed and computed values for each scenario, I estimated the expected level of performance that would result from the plan. These results are shown in Exhibit 4. In addition, given the results suggesting a positive effect for raises (and the positive effect associated with pay relative to the market), I also ran the analysis with a situation in which I assumed raises were increased by 1 percent from the previous setting. The method was otherwise the same, but with the addition of a 1-percent raise given to all employees. (The results of these policies are shown overleaf in Exhibit 5.)

Among the interesting results that emerged from these analyses, I note that changing the pay-for-performance relationship with raises had little effect. Although using the minimum pay-for-performance relationship for raises (which was essentially zero) with no subsequent across-the-board increase in raises had the largest effect (being roughly 6- to 7-percent lower than providing across-the-board pay

Exhibit 5

Expected 2004 performance levels under various pay-for-performance strategies with 1-percent additional raise

Bonus Plan	Merit Plan: Max PFP Relationship +1% Raise	Merit Plan: Min PFP Relationship +1% Raise	Merit Plan: No PFP Relationship +1% Raise	Merit Plan: 1% Raise
Max PFP Relationship	2.70 (0.32)	2.59 (0.27)	2.75 (0.27)	2.67 (0.31)
Min PFP Relationship	2.20 (0.27)	2.10 (0.22)	2.25 (0.22)	2.18 (0.26)
No PFP Relationship	2.29 (0.26)	2.18 (0.22)	2.34 (0.22)	2.26 (0.26)
No Change	2.38 (0.31)	2.27 (0.26)	2.43 (0.26)	2.36 (0.30)

Notes: Table reports expected mean performance under each condition (with standard deviations in parentheses) with the policy decision including the addition of a 1-percent greater raise for all employees. Results are the expected values produced by entering the results of the policy decision assumptions into the regression equation estimated in Table 2, Model 3.

increases), the difference between the effects associated with implementing the maximum pay-for-performance relationship and with just providing across-the-board increases with no pay-for-performance relationship was relatively small (differences were from 1.2% to 2.2%).

On the other hand, changing the way bonuses were allocated had considerable effects on performance levels. As shown in Exhibit 4, increasing the pay-for-performance link for bonuses can substantially improve performance, particularly when the relationship between pay and performance was set to the maximum observed level for the bonus plan. When considered with a merit plan having the minimum pay-for-performance relationship, the increase was from 2.31 to 2.52, or an increase of 9 percent; when considered with a merit plan with no pay-for-performance relationship but with the same average raise given to employees, the increase was from 2.31 to 2.67, or an increase of nearly 16 percent. Note that these increases come by changing the allocation of resources, and not necessarily by increasing the payroll budget.

It is also worth noting that the biggest projected increase came with the elimination of the pay-for-performance relationship with regard to merit increases, signifying (as suggested by our earlier examination of the regression results) that it may be worth considering the effects associated with increasing the raise budget. When one examines the potential benefits of increasing the raise pool by one percentage point (i.e., so the average raise is 3 percent instead of 2 percent), the maximum predicted average performance level becomes 2.75, or an increase of 19 percent over the current level. It is also worth noting, though, that were the increases of raises to be implemented in an otherwise unchanged system, the increase in performance would only have been from 2.31 to 2.36, or just under 2.2 percent. Thus, while the regression analyses provide strong support for the idea that how much you pay matters, and may even at first appear to suggest that this is the most important consideration, the projected effects of pay decisions on average performance levels shows that how you pay can substantially change the potential effects associated with the compensation allocations.

Of course, whether the benefit of the increased performance outweighs the costs associated with the increased payroll is a question that is job and company specific. But the analyses here at least provide some rationale for the benefits associated with payroll decisions, and gives practitioners at least some guidance to help make these decisions.

Estimating the Value of Pay-policy Changes

These results show that bonus plans and raises each affect future performance, and that both how much and how companies pay has distinct effects on employees' performance.

Bonus plans and raises each affect employees' performance, but in distinct ways.

That said, the permanent nature of merit increases makes such compensation more valuable than comparable percentage increase in bonuses. My results indicate that a 1-percent merit increase has the same effect on future performance as nearly a 3-percent bonus. At the same time, though, managers have to assess the value of merit plans, since these increase base pay permanently, as compared to bonuses. One might conclude that the lower immediate return for bonuses may be justified by the cost savings compared to merit raises.

With regard to that point, I applied the results of research on cost–benefit analysis in human-resources management, which has suggested that increasing employee performance by a single standard deviation is worth on average at least 40 percent of the employee's salary.[18] In this sample, that statistic suggests that a one-standard-deviation increase in performance is worth at least $28,869. When one considers this in conjunction with the results, a 1-percent merit increase will increase performance by 2.2 percent (or 0.08 standard deviations) at a cost of $722 per employee. In other words, one can estimate a benefit of $2,310 per employee at a cost of $722, or a return on investment of 320 percent. If one makes the same budget allocation, but at the same time changes bonuses to be maximally related to performance, the result is an increase in performance of 0.72 standard deviations, or a return of $47,326 at a cost of $722, or a ROI of over 6,500 percent!

While certainly there are flaws associated with this simple cost–benefit analysis,[19] and the idea of estimating the value associated with employee performance has long been a major sticking point in any cost-benefit analysis of this type, the magnitude of these effects suggests that the potential for substantial gains exists with regard to changing both how one allocates pay and how much one allocates to pay. A key lesson in these analyses is that one should not only look at the costs associated with pay decisions, but should also consider the increased effort that can be spurred by properly administered pay programs. Most important, seeing the allocation of raises as purely a loss of money may result in missing potentially profitable opportunities.

In short, these results can provide some guidance for policy formation according to the following two points: **(1)** strengthen the pay-for-performance relationship for bonuses, and **(2)** consider providing more resources for pay raises. The results here provide valuable insights into potential tradeoffs between potentially different compensation expenditures and their associated costs. Specific policy recommendations may be best decided after cost-benefit analysis based on these results with company-specific information.[20]

Limitations and Future Research

The results from this study need to be interpreted with caution, given the nature of the data. First, these results come from a single company. While the diversified nature of the dataset provided a valuable range of pay-for-performance strengths and included employees from many different jobs, it is still possible that the single company's culture influenced how employees reacted to the components of their pay plans. Second, I only considered employees who stayed in the company from 2001 through 2004. While this provided a conservative test for predicting future performance, it excluded both individuals with tenure of less than three years

[18] Extensive reviews related to the estimation of the value of employee performance is provided by: J.W. Boudreau, "Utility Analysis for Decisions in Human Resource Management, in *Handbook of Industrial and Organizational Psychology*, 2nd edition, Vol. 2, ed. M.D. Dunnette and L.M. Hough (Palo Alto, CA: Consulting Psychologists Press, 1991), pp. 621-745; and by W.F. Cascio, *Costing Human Resources: The Financial Impact of Behavior in Organization*, 4th edition (Cincinnati, OH: South-Western College, 2000). Research by M.K. Judiesch, F.L. Schmidt, and M.K. Mount, "Estimates of the Dollar Value of Employee Output in Utility Analysis: An Empirical Test of Two Theories," *Journal of Applied Psychology*, Vol. 77 (1992), pp. 234–250 shows that this 40-percent estimate may drastically underestimate the true value, particularly for complex jobs.

[19] A detailed examination of how complex cost–benefit analyses often leads to reduced estimates of utility is provided by: M.C. Sturman, "Implications of Utility-analysis Adjustments for Estimates of Human-resources Intervention Value," *Journal of Management*, Vol. 26 (2000), pp. 281–299.

[20] For a highly detailed example of using company-specific and research-based findings to perform a cost-benefit analysis on a compensation plan, see: M.C. Sturman, C.O. Trevor, J.W. Boudreau, and B. Gerhart, Is It Worth It to Win The Talent War? Evaluating the Utility of Performance-based Pay," *Personnel Psychology*, Vol. 56 (2003), pp. 997–1035.

and those who left the company during the study period. Performance and turnover are related, as is the strength of the pay-for-performance link and turnover.[21] We have no way of knowing how the pay-for-performance plans affected employees who left. Moreover, increasing the pay-for-performance contingency for bonuses and providing greater merit increases may not improve performance for new hires in the same way that it did for this sample. Consequently, while having three years of performance data was useful for providing a conservative test when predicting future performance, and it does provide stronger evidence of causality associated with compensation choices than would an analysis based on two years of data or cross-sectional analysis, future research should explore the effects associated with these pay-for-performance plans on different samples of employees. Furthermore, by not accounting for turnover, this paper may be missing important effects associated with pay-for-performance plans. For example, although the link between merit increases and performance did not seem to predict future performance, the link could have other important effects.

Finally, I must emphasize that the projections in Exhibits 4 and 5 are just that—projections. While they are based on the analysis of actual data, they apply the results of the regression analysis to hypothetical pay-allocation decisions. As a consequence, these results may be difficult to observe in practice for a number of reasons. First, the increases are projected averages. Because this company's performance-appraisal system has only four levels, one could not observe a numerical increase such as +0.50. One could expect that more people will, on average, be rated in higher categories, but individual improvements will be somewhat harder to observe. Second, since many companies keep control over the distribution of their performance-appraisal scores, performance could improve on average without its being reflected in the performance-appraisal ratings. That is, as performance appraisals generally capture relative performance, if all individuals improve their performance, then the distribution of scores would likely remain the same. Thus, a change in compensation policy may cause increases in performance that would not be captured through the performance-appraisal scores.

Despite these limitations, though, this study takes some important steps for helping practitioners make pay-policy decisions. It provides a strong rationale for considering greater increases to merit budgets, and supports the use of strong pay-for-performance relationships with bonuses. The limitations of the study indicate that the results should be interpreted cautiously, but they should not be discounted. Too often, human-resources expenditures (such as the payroll) are treated solely as a cost—and we all know that costs are to be minimized. This study suggests that pay can be used strategically to improve employees' performance, perhaps quite substantially. The potential benefits associated with better compensation decisions may provide a competitive advantage for those who implement the most effective pay systems. ■

[21] See: C.O. Trevor, B. Gerhart, and J.W. Boudreau, "Voluntary Turnover and Job Performance: Curvilinearity and the Moderating Influences of Salary Growth and Promotions," *Journal of Applied Psychology*, Vol. 82 (1997), pp. 44-61; low performers tend to leave organizations; high performers also tend to leave when there is no relationship between pay and performance, but tend to stay when there is a strong relationship between pay and performance.

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