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Perceived Equity of Salary Policies

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Three systems for distributing yearly salary raises to faculty according to merit were studied to determine which system is judged to be most equitable. In the relative system, persons with equal merit receive equal percentage raises. In the absolute system, persons with equal merit receive equal raises In the adjustment system, persons who are equally underpaid receive equal raises In Experiment 1, faculty and undergraduate judges were asked to assign raises to hypothetical faculty from a fixed raise pool. It was found that the assigned raises were greater for the lower paid of two people of equal merit, consistent with the adjustment system. In Experiment 2, faculty and undergraduate judges examined future salaries produced by the three different systems Both groups judged the raises given by the adjustment system to be the most "equitable, just, and fair" and raises given by the relative system to be the least fair. In Experiment 3, faculty members judged salary deserved as a function of merit and years of experience This deservingness function was used to develop a specific policy for a particular situation, in which raises are proportional to the deviations between actual salary and salary deserved

This article compares the perceived equity of three systems for distributing yearly raises to university faculty according to merit The strategy is to model the salaries given by judges who are instructed to assign raises "fairly," and to compare the judged "fairness" of longitudinal salaries assigned by different systems. The goal of this work is to demonstrate how applied studies can be used to develop a policy for distributing raises that will be deemed to be "fair."

Background

Concepts of "fairness" or equity have been studied by philosophers and psychologists since the time of the ancient Greeks. Aristotle wrote that rewards should be distributed to individuals in proportion to their merits, fairness is achieved, according to Aristotle, when the ratio of rewards equals the ratio of merits. Psychologists have considered variations of Aristotle's concept either as definitions of equity or as empirical theories of judgment (Adams, 1965; Anderson, 1976; Mellers, 1982; Walster, Berscheid, & Walster, 1973). Mellers (1982) provided an excellent theoretical discussion of tests of equity models derived from Aristotle's rule of proportionality and presented data showing that judgments of fairness do not obey the algebra of Aristotle

Applied psychologists have recognized the measurement issues involved in attempting to implement theoretical concepts of equity to the problem of detecting salary inequities (e.g., Birnbaum, 1979, 1981; Roose & Doherty, 1978). A weak form of equity theory is expressed in the Equal Pay Act of 1963, which asserts that persons performing equal work should receive equal pay A number of studies have addressed the issue of sex bias in salaries (see Livernash, 1980, Pezzulo & Brittingham, 1979; and Treiman & Hartmann, 1981).

Birnbaum (1979) pointed out that individual inequities can give the incorrect appearance of group-related bias because of a regression paradox. For example, when the correlation between salary and merit is not

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perfect, the equity null hypothesis (that salaries depend only on true merit and not on group membership) can predict that women will have lower salaries on the average than will men with the same measured merit and simultaneously that women will have less measured merit on the average than will men with the same salaries Birnbaum (1979) also noted that certain salary policies (that are not biased) can actually inflate these paradoxical group differences in salary and merit. The solution is to remove individual inequities, thereby allowing group differences to sort themselves out accordingly.

The applied problem of dividing a fixed budget to assign yearly salary raises to individuals according to merit is addressed in this article. Different concepts of equity lead to different policies; should raises, percent raises, or salaries be a function of merit? The experiments in this article were conducted to demonstrate how these questions can be addressed in a specific situation to design a salary policy.

Definitions and Constraints

It will be helpful at this point to define the notation and to specify constraints. It is assumed that there is a unit (e.g., academic department) of N individuals. Let $\$_i$, M_i, and Y_i, refer to the salary, merit, and years of experience for person i, respectively. The previous salary budget for the unit is the sum of the salaries,

$$B_0 = \sum_{i=1}^{N} \$_i, \tag{1}$$

where B_0 is the budget. It is assumed that the new budget will be at least as large as the old budget and will be increased (by new funds) by an amount, Q. Therefore, the new budget, B_1, equals the old budget plus the increase:

$$B_1 = B_0 + Q. \tag{2}$$

It is useful to define the proportion raise given as $P = Q/B_0$. The average percentage raise is then $100P$. Equation 2 can be rewritten as follows:

$$B_1 = (1 + P)B_0.$$

The raise given to each person is denoted Δ_i. It will be assumed that raises for all individuals must be greater than or equal to zero and that the budget is balanced; that is, that

$$\sum_{i=1}^{N} \Delta_i = Q.$$

Any salary policy requires (at least implicitly) a solution to the following three distinct problems.

The first problem is to determine how the merit of each individual depends on indexes of performance such as the judged quality of that individual's scholarly contributions, teaching, service, and the person's impact and recognition as a scholar. (Each of these components would in turn depend on measured variables.) This problem is called the "measurement of merit." It has been widely recognized as an important issue, and there has been considerable debate whether merit should be computed from an equation based on observable variables (e.g., number of publications in reviewed journals) or based on subjective judgment (Birnbaum, 1979; Roose & Doherty, 1978). This question will not be addressed here. For the purposes of the present discussion, it will be assumed that merit, M_i, has been measured according to some agreed-upon conventions within the unit.

The second problem is to establish the function that maps merit and seniority (years of experience) into "deserved" salary. This deservingness function will be written as follows:

$$D_i = F(M_i, Y_i), \tag{3}$$

where D_i is the salary deserved by person i; F is the function; M_i and Y_i are merit and years of experience, respectively. The function of Equation 3 will be established in Experiment 3, by asking faculty members to judge salary deserved for combinations of M and Y.

A distinction can be made between incremental and cumulative merit. Incremental merit refers to measured performance during a given time interval, whereas cumulative merit refers to a person's total contribution accumulated over an entire career. The term *merit* will be used in Experiments 1 and 2 to refer to cumulative merit including years of experience. Thus, in Experiments 1 and 2 deservingness is assumed to be a function of

merit. In Experiment 3 *merit* will refer to cumulative merit apart from years of experience. With either definition, M and Y would not be perfectly correlated.

The third problem is to devise a system that divides the raise pool among the individuals according to deservingness. The salary increment problem consists of dividing Q among N people. If everyone were given the same absolute raise, then $\Delta_i = Q/N$. If everyone were given the same percentage raise, then $\Delta_i = P\$_i$. These methods, however, do not take merit into account, except to the extent that everyone is equal in merit or that merit is correlated with salary, respectively.

Systems of Salary Increment

The three systems of salary increment discussed by Birnbaum (1979) all use merit to determine raises, and all three systems are equivalent when salary and deservingness are perfectly correlated within a department. However, they differ in their qualitative predictions when there is not perfect equity

Relative System

In the relative system, persons with equal merit and experience receive equal percentage raises. The general model can be written

$$\Delta_i = p(M_i)\$_i, \tag{4}$$

where $p(M)$ is the function that assigns percent raises to merit values and also balances the budget so that $\Sigma\Delta_i = Q$. If $p(M) = P$ for all M, then everyone receives the same percentage raise.

A special case of Equation 4 assumes that merit has been measured on (or transformed to) a scale such that the ratio of percentage raises for two individuals should equal the ratio of their merits. This case can be written:

$$\Delta_i = QM_i\$_i / \sum_{j=1}^{N} M_j\$_j. \tag{5}$$

This equation shows that the raise depends on both current salary and merit and is inversely related to the total of the products of merit ratings and salaries of all faculty members in the unit.

The relative system (Equation 4 or 5) implies that if two individuals have the same merit and the same experience but different salaries, the difference in salary between the two people grows exponentially with time. The difference in salary in year t between persons i and j will be $[1 + p(M)]^t(\$_i - \$_j)$, where M is their (equal) merit. The greater the merit of the two people, the faster the difference in salary grows Thus, the difference in salary between two persons of equal deservingness and unequal salary grows over time

Absolute System

In the absolute system, persons of equal merit receive equal raises. This equation can be written:

$$\Delta_i = f(M_i), \tag{6}$$

where f is the function that assigns raises according to merit and balances the budget. In the special case where raises should be proportional to M_i, Equation 6 can be written:

$$\Delta_i = QM_i / \sum_{j=1}^{N} M_j. \tag{7}$$

The absolute system implies that if two individuals of the same merit (who may also have equal experience) have unequal salaries, their raises are equal. Thus, the difference in salary between persons with equal deservingness remains equal over time, although persons of higher salary receive lower percentage raises than persons of equal merit who have lower salaries.

Adjustment System

In the adjustment system, raises are monotonically related to the amount that a person is underpaid. Thus, two people who are equally underpaid receive the same raise. The adjustment system, a variation of which was introduced by Birnbaum (1979), can be written as follows:

$$\Delta_i = h(D_i - \$_i), \tag{8}$$

where D_i is the salary deserved by person i (as in Equation 3), and h is a monotonic function that maps discrepancies (between salary deserved and salary received) into raises and balances the budget.

A special case of Equation 8, in which

raises are proportional to the discrepancies, can be written:

$$\Delta_i = Q(D_i - \$_i)/\sum_{j=1}^{N} (D_j - \$_j), \qquad (9)$$

where $\sum_{j=1}^{N}(D_j - \$_j)$ is the amount of raise money that would be required to pay each person what he or she deserves, and $D_i - \$_i > 0$.

Under the adjustment system, if two people have equal merit and years of experience but different salaries, the person with the lower salary receives the larger raise. Persons who deserve equal salaries eventually end up with equal salaries

Purposes of the Experiments

Experiments 1 and 2 use different techniques to evaluate the judged equity of the three systems Because such judgments might depend on the judge's point of view (Birnbaum & Stegner, 1979), two groups of judges were studied, including both faculty members (who might be affected by salary plans) and undergraduates (who can be regarded as neutral observers). System A is said to be fairer (more equitable) than System B if it is judged "fairer" by the majority of both interested and disinterested judges. Experiment 3 investigated the nature of the deservingness function for faculty judges.

Experiment 1 Salary Increments

Method

Subjects were asked to assign salary raises to hypothetical faculty members according to merit (deservingness)

Instructions Instructions read (in part) as follows

> Suppose you are the head of a department of eight faculty persons After taking into account *all* relevant factors (years of experience, publication record, teaching quality, service, recognition and impact, etc), the faculty had been rated on merit Assume that any existing differences in salary between persons of identical merit are due to such factors as matched outside offers, budget available in year hired, negotiating differences when hired, or the fact that the person of lower salary has suddenly increased in merit by making great accomplishments How would you divide up the salary increases? Suppose the new funds available were $12,000 Also carry out this task assuming $16,000 are available

Stimuli The hypothetical department consisted of eight faculty members with merits and salaries (M_i, $\$_i$) as follows (1, 14), (2, 14), (2, 20), (3, 14), (3, 20), (3, 30), (4, 20), and (4, 30), where the first number is merit and the second is yearly salary in thousands of dollars The levels were chosen to produce an overall positive correlation between salary and merit while providing two 2×2 factorial designs of Merit $\times$ Salary For this department, $\Sigma\ \$_i = 162$, $\Sigma\ M_i = 22$, $\Sigma\ M_i\$_i = 474$, and $\Sigma\ \Delta_i$ = either 12 or 16

Research participants The participants were 20 faculty members of the Department of Psychology, University of Illinois, who returned the questionnaire in the spring of 1978 In addition, 85 undergraduates who received credit in lower division psychology courses completed the task in the fall of 1978

Results and Discussion

Predictions. Calculations for the models (Equations 5, 7, and 9) are shown in Figure 1. [For the adjustment system, the function for deservingness was arbitrarily set to $D_i = 10M_i + 5$; thus, $\Sigma(D_i - \$_i) = 98$] In Figure 1, predicted raises are plotted as a function of salary with a separate curve for each level of merit. Note that the systems differ with respect to raises given to individuals of equal merit but different salaries, as shown by the positive, zero, and negative slopes in Figure 1.

Judgments of equitable raises. Figure 2 shows the mean judgments of raises given by faculty (left) and undergraduates (right) for the $12 thousand condition. Raises are plotted as a function of previous salary with a separate curve for each level of merit, as in Figure 1.

Figure 2 shows that the data resemble most closely the predictions of the adjustment model: the assigned raises decrease as a function of salary, holding merit constant. The means are highly representative of individual data. All but two of the faculty judges assigned a larger raise to the person with merit of 4 and a salary of $20,000 than to the person with merit of 4 and a salary of $30,000. Of the 85 undergraduates, 60 gave a larger raise to the lower paid of these two, 18 gave them equal raises, and only 7 gave a larger raise to the person of higher salary. (Similar results were obtained for both groups when the task was to divide $16,000.)

In summary, the majority of both faculty and undergraduate judges gave raises that were inconsistent with the relative or absolute

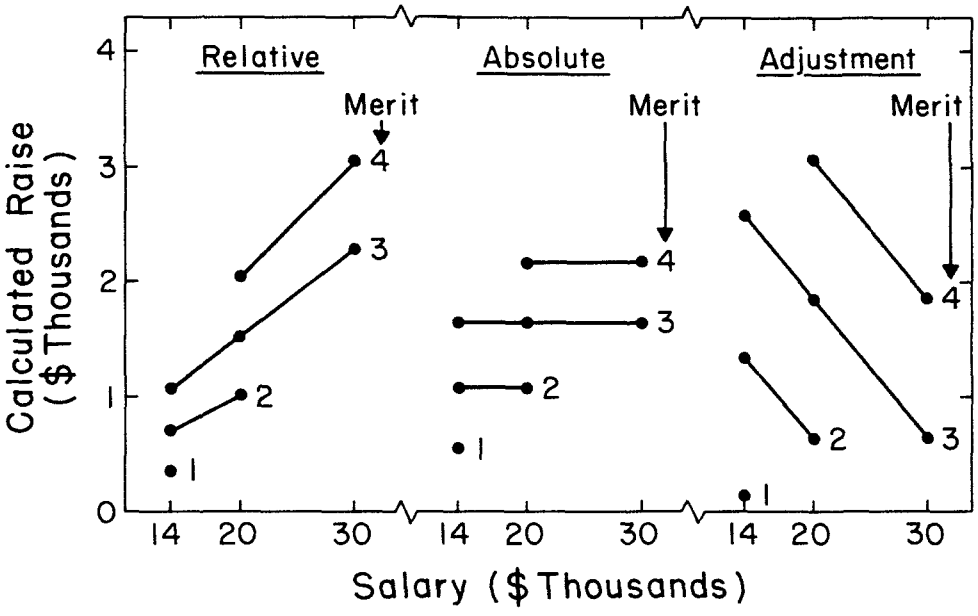

Figure 1 Salary raises as a function of previous salary with a separate curve for each level of merit (Computations were made assuming there were $12,000 to divide among the eight hypothetical faculty of Experiment 1 using the relative, absolute, or adjustment system.)

systems. Instead, the raises given were most consistent with the adjustment system.

Experiment 2: Judged Fairness

Method

Participants were asked to rank order the fairness of salaries produced by 3 years of successive application of each of the three systems. Two versions of the adjustment model that used different deservingness functions were studied.

Instructions Instructions read (in part) as follows:

> A computer program, SALANAL, generated salaries for a hypothetical department like this one. Four different methods were used to generate salaries based on merit. The table below [Table 1] shows results for a selected set of people for the four methods. Each tabled entry is the proposed salary for 1980–81 in thousands of dollars. My question is as follows: Which method seems to be overall the most equitable, just, and fair? Please rank order the methods.

Stimuli The hypothetical faculty and salaries are shown in Table 1. The salaries were computed with the aid of a computer program using a hypothetical department of 60 salaries and merit values.[1]

Research participants The participants were 22 psychology faculty members (who responded in the spring of 1978) and 103 undergraduates of the University of Illinois (who were tested in the fall of 1978).

Results and Discussion

Table 2 shows the number of faculty and undergraduates who ranked each of the four sets of salaries in Table 1 in each position. The most frequent order was D > C > A > B, where D and C are the two adjustment policies, A is the absolute, and B is the relative method. Eighteen of the 22 faculty judges and 51 of the 103 undergraduates ranked both of the adjustment methods (D and C) above the other two methods; only two faculty and 21 undergraduates had B (relative method) ranked above D (adjustment method).

It is interesting to consider how the different hypothetical people in Table 1 would rank order the methods if they cared only about the magnitude of their own salaries. Method C, which uses a deservingness function with a low slope (in which the faculty are less varied in deservingness) produces the

[1] A listing of SALANAL, FORTRAN program for salary allocations by means of the three systems described here (and others), is available from the author.

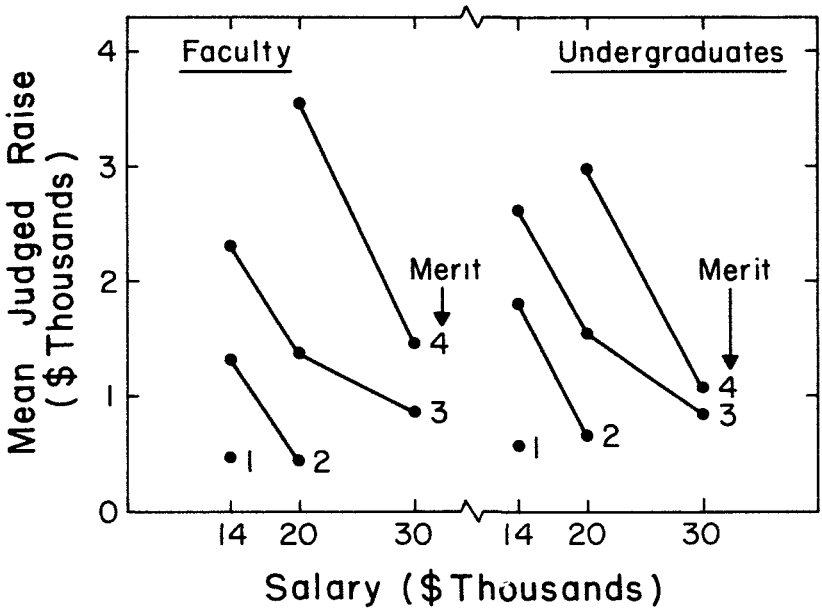

Figure 2 Judged salary raises when $12,000 were available to divide, as judged by undergraduates and faculty, plotted as in Figure 1 (Values do not total to exactly $12,000 because not all judges balanced their budgets Pattern of data resembles adjustment system most closely)

highest raises for people of low salary irrespective of merit. Method B is best for persons with higher salary than deserved by their merit. The person with merit of 1.2 and a salary of $31,000 would have the preference order BACD. On the other hand, the person with merit of 1.2 and a salary of $17,000 has the opposite preference order, DCAB. The person with the highest merit and a salary of $30,000 would find B and D about equal, followed by AC. Thus, the most frequent rank order of "fairness" of the salary systems (for both faculty and undergraduates) is the rank order that most benefits persons of high merit and low salary.

Table 1
Hypothetical Salaries for 1980–1981 Comparison of Four Methods for Selected Cases Assuming Average Raise (P) = 7% Per Year for 3 Years

Merit	Salary (1977–1978)	Method A	Method B	Method C	Method D
4	14	16	15	19	17
.4	16	18	17	21	18
8	17	21	20	24	23
.8	20	24	23	26	25
.8	22	26	26	27	26
1.2	17	23	21	26	27
1.2	31	38	39	36	36
1.6	17	26	23	29	31
1.6	22	31	29	32	35
1.6	30	39	40	37	40

Note Method A is the absolute system, Method B is the relative system, Methods C and D are adjustment systems Merit values range from a low of 4 to high of 1 6 Brackets indicate persons of equal merit Salaries are in thousands of dollars

In summary, the majority of both faculty and undergraduate judges who are asked to judge the fairness of salaries indicate that the adjustment system is more "equitable, just, and fair" than the absolute or relative systems.

Experiment 3: Deservingness

In the first two experiments, the index of merit was assumed to include years of experience. Thus, merit in the preceding experiments could be transformed to deservingness, and a function calibrating deservingness to merit was assumed in the first two experiments in order to make specific cal-

Table 2
Number of Subjects Who Ranked Each System In Each Position

Method	Faculty sample				Undergraduate sample			
	First	Second	Third	Fourth	First	Second	Third	Fourth
D (Adjustment)	12	8	1	1	47	22	26	8
C (Adjustment)	8	11	0	3	28	43	16	16
A (Absolute)	1	3	15	3	18	26	45	14
B (Relative)	1	0	6	15	10	12	16	65

Note Methods D and C used different deservingness functions for the adjustment system First and fourth were also labeled *best* and *worst*, respectively

culations for the adjustment method. However, merit is often defined without reference to experience. Therefore, the third experiment obtained judgments of salary deserved in order to specify how merit and experience combine to produce deservingness and to determine the range of salaries deserved If Person A has twice the merit of Person B and twice the experience, should Person A receive twice the salary?

Method

Faculty were asked to judge "salary deserved" as a function of merit rating and years of experience Merit ratings in the department studied are usually made by 10 members of the Advisory Committee, who rate each faculty member on four dimensions scholarship (research), teaching, service, and impact and recognition The advisory committee members rate all of the faculty on the basis of their career progress reports and a verbal report given by a representative The overall index of merit is the average of the 40 ratings by 10 committee members on four scales This merit index is correlated with experience but is not presumed to reflect experience directly

Instructions. Instructions read (in part) as follows

> Write down in each cell in the matrix below your judgment of the salary deserved by an individual with the specified merit rating
>
> 0 = Unsatisfactory
>
> 1 = Satisfactory
>
> 2 = Meritorious
>
> 3 = Very Meritorious

The average merit rating (over four dimensions and 10 raters) has a mean of about 1.5 The majority of individuals receive mean ratings between 1 0 and 2.0

Stimuli and design A 5 × 6 factorial design of Average Merit Rating × Years of Experience was used The five levels of average merit varied from .5 to 2.5 in increments of .5, the six levels of experience were 1, 2, 4, 8, 16, and 32 years A matrix was created showing the levels of merit and experience for rows and colums, respectively

Research participants The research participants were 20 members of the faculty of the Psychology Department of the University of Illinois, who responded in the spring of 1979

Results

Judged deservingness. The left portion of Figure 3 shows the median judgment of salary deserved as a function of years of experience, with a separate curve for each level of merit. The divergence indicates that differences in salary deserved due to merit should increase with years of experience. All of the individual data contained the divergent interaction.[2] When plotted against the marginal means for years of experience (not shown), the curves form a fan of linear functions that intersect at a common point. Thus, the data can be fit by the product of a function of years of experience and another function of merit. The marginal means for years of experience are a negatively accelerated function of actual years of experience (Figure 3). The marginal means for merit were a linear function of the merit index. The projection of the point of intersection of the curves

[2] In pilot work undergraduates and faculty were asked to judge salary deserved as a function of years of experience and publication rate (one aspect of merit) These data also showed a divergent interaction, resembling that shown in the left of Figure 3 Some investigators have fit actual salaries as an additive function of years of experience and publication rate However, a plot as in the right of Figure 3 would reveal divergence rather than the parallelism implied by additive multiple regression See Birnbaum (1974) for a discussion of how regression can yield misleading conclusions

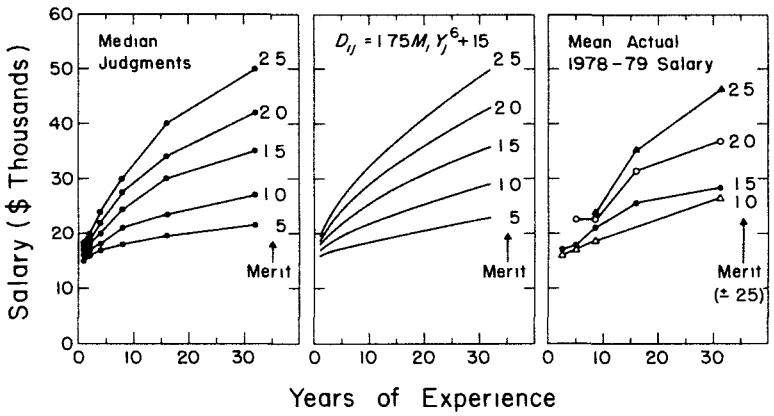

Figure 3 Salary deserved (or obtained) as a function of years of experience, with a separate curve for each level of merit (Left Median judgments of salary deserved Middle Model representing deservingness function Right Actual mean salaries)

on the ordinate was $15,000. The projection of the intersection on the merit index was approximately zero.

Model of deservingness. The center panel of Figure 3 shows curves calculated from the model·

$$D_{ij} = 15 + 1.75M_i Y_j^{.6}, \qquad (10)$$

where D_{ij} is the salary deserved (in thousands) of a person with a merit of M_i with Y_j years of experience. As can be seen by comparing the center and left panels, Equation 10 provides a reasonable approximation to the median judgments of deserved salaries.

Actual salaries. Actual 1978–1979 salaries for 60 members of the Psychology Department of the University of Illinois were analyzed in the same fashion. The right of Figure 3 plots the mean actual salary as a function of years of experience and merit rating. Actual salaries were averaged within homogenous groups to conform to Figure 3 For the averaging, the five levels of merit were .5, 1.0, 1.5, 2.0, and 2.5, plus or minus .25. The ranges for years of experience were 2–3, 4–6, 7–10, 11–20, and 21–41. The mean actual salaries (right panel) resemble the pattern of salaries deserved (left panel). However, among the actual salaries within each group there is considerable variation. For example, among persons with merits of about 2.0 with 16 years of experience, salaries range from $24 to $38 thousand.

Because of the resemblance between the left and right panels of Figure 3, it is interesting to wonder whether the judgments of salaries "deserved" mimic the actual structure in the department or whether concepts of deservingness (as expressed on the left) produced the salary structure on the right.

General Discussion

The results indicate that the adjustment system is judged by both faculty and undergraduates to be more "equitable, just, and fair" than the relative or absolute systems. There appears to be a consensus that a person with high merit and low salary deserves a greater raise than a person whose salary is high for his or her merit. The adjustment system approximates raises given by both faculty and undergraduates. The third experiment developed a deservingness function for a particular situation. This function indicates that differences in salary due to merit should increase over the years. These results can be used to devise a workable system for salary increments, as outlined in the next section.

A System for Salary Allocation

Merit. The measurement of merit was not addressed in this article Discussions of how judgment studies could be used to improve the measurement of merit have been given by Birnbaum (1979) and Roose and Doherty (1978). For the sake of concreteness, suppose merit is measured by the procedures described in Experiment 3. Each of 10 advisory

committee members would rate each faculty member on four dimensions (scholarship/research, teaching, service, and impact/recognition) using a 0 to 3 scale. The 40 judgments would then be averaged to produce a single index of merit, M_i.

Deservingness. After study of judged and actual salaries, as in Figure 3, and discussion with participants in Experiment 3, it was decided to modify Equation 10 for deservingness:

$$D_i = 1.75M_iY_i^6 + 2T_i + 14, \quad (11)$$

where D_i is salary deserved for person i (in thousands of dollars); M_i is the person's merit; Y_i is years since receiving PhD; and T_i is a zero-one binary valued variable indicating tenured or not.

Specification of adjustment function. A simple h function was chosen for use in Equation 8, defined as follows:

$$h(x) = x \quad \text{if} \quad x > 0,$$
$$h(x) = 0 \quad \text{if} \quad x \leq 0, \quad (12)$$

where $x = D_i - \$_i$. Thus, $\Sigma h(D_i - \$_i)$ is the sum of deviations only for persons who are underpaid. The raise, calculated by this method would be as follows:

$$\Delta_i = Qh(D_i - \$_i)/\Sigma\, h(D_i - \$_i) \quad (13)$$

This formula implies that Δ_i for individuals who are paid D_i or more than D_i would be zero. To avoid the consequences of giving zero raises, this system can be used in conjunction with a second salary system to form a compromise policy.

Increment policy. Any weighted average of the raises given by consistent systems will balance the budget. The following equation seems a reasonable compromise between the adjustment system and a type of absolute system:

$$\text{RAISE}_i = w\Delta_i + (1 - w)\delta_i, \quad (14)$$

where Δ_i is defined as in Equation 13 and $\delta_i = QD_i/\Sigma\, D_j$, and w is the weight of the adjustment method as opposed to the absolute method ($0 \leq w \leq 1$). Note that δ_i assigns equal raises to persons who deserve equal salaries; this method gives a raise that is proportional to deserved salary rather than actual salary, but whan salary deserved equals actual salary, it is a type of percentage raise system.

Yearly adjustments. Each year, the value of D_i increases for each individual because Y_i increases. M_i is periodically remeasured for each individual, and can also increase. Deservingness is also adjusted each year by multiplying the values of D_i by a constant that depends on the percentage of the budget increase, increases in merit, and the amount of inequity removed in the previous year. Thus, deservingness for each individual increases over years for at least two and possibly three reasons First, years of experience increases (Equation 11). Second, the entire salary structure grows (exponentially) with time because the values of D_i are multiplied each year by a constant greater than one. Third, M_i could also increase, though it could also decrease over time.

Simulation results. To investigate the long-term consequences of different salary structures, a computer program computed salaries under different systems for 20 years. A hypothetical set of faculty was generated in which the correlation between actual salary and deserved salary was only .90 [3] For simplicity, M_i was assumed constant over time and P was .07 for all years. The adjustment system, Equation 14, was able to produce a perfect correlation between $\$_i$ and D_i within 4 years. On the other hand, the relative and absolute systems were very slow to change the initial rank order of salaries. For example, after 20 years under the relative system, a person with low merit and high initial salary continues to have a higher salary than a person with much higher merit but a lower initial salary. Under the absolute system, the person with higher merit could catch up after 17 years Under the compromise adjustment method (Equations 11–14) this could be accomplished in 3 years

[3] In the study of salaries, a correlation of 9 should be considered low If the standard deviation of salaries is $5,000, then a correlation of 90 implies that the average mistake predicting salary from deservingness is $2,180 About 1 person in 20 would likely deviate from the average salary of those with equal deservingness by $4,360 Remember, under the relative system, salary differences increase exponentially Thus, two persons with equal merit and experience who have salaries that differ by $2,000 may receive total salaries that differ by about half a million dollars over a 25-year span

Birnbaum (1979) simulated the consequences of the three systems for sex differentials in salary and merit. He found that the relative system inflates sex differences in salary (holding merit constant) and sex differences in merit (holding salary constant). By eliminating individual inequities, the adjustment system also eliminates sex differentials.

Issues and Objections

Longitudinal versus cross-sectional salary structures. The deservingness function in Figure 3 should not be mistaken for a longitudinal projection. The deservingness function shows how salaries will be structured within a department in a given year, not how salaries will progress over time. Because both M_i and Y_i increase with time and because the entire structure of D_i is multiplied by a constant that increases exponentially with time (holding M and Y fixed), actual salaries will grow longitudinally as a positively accelerated function of time, in spite of the (cross-sectional) negative acceleration in Figure 3.

Effects of changes. In an actual department there will be sources of fluctuation from year to year. Raises given to compete with outside offers, increases in merit due to the completion of major projects, and the hiring of new faculty at salaries above those prevailing for persons of equal deservingness will introduce deviations between actual and deserved salaries. The adjustment system rapidly corrects these disturbances In the adjustment system, matched outside offers (if the money is provided from outside the department) benefit all faculty. In the relative system, matched outside offers lower the future salaries of others of high merit, even if all of the matched funds are provided from outside the department.

Operant psychology. Some contend that inequity of salaries can have beneficial effects on job performance when cleverly used. They point to animal research in which persistent bar-pressing behavior can be elicited by random partial reinforcement schedules. However, animal research also shows that when animals are given a choice, they avoid the low reinforcement schedules in favor of higher ones. Furthermore, animal and human findings show that the values of reinforcements depend on comparisons among reinforcements. It seems unlikely that the opportunity for job comparisons is so limited that the animal research paradigms will be applicable to human job performance. It would be useful to see empirical research relating systems of salary allocation to job satisfaction and productivity.

Conclusions

This article illustrates how one can model judgments of an organization, derive parameters of the model, and use the model to make longitudinal projections. In Experiment 1, judges were asked to assign salaries fairly, and the model of the judgments represented the policy that would be deemed equitable. Experiment 3 illustrated how the range of salaries deserved can be callibrated to merit and seniority for a given merit rating procedure. Experiment 2 illustrated how longitudinal salary projections can be derived and submitted to judges for their evaluation of the fairness of the consequences of different systems.

The results of Experiments 1 and 2 suggest that for the faculty respondents and undergraduates studied, the relative and absolute systems are not as "fair" as the adjustment system. Apparently, fair raises cause salaries to approach deservingness. Thus, perceived equity appears to operate at the level of resultant salaries rather than at the level of increments to salary.

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