



Cornell University
ILR School

Cornell University ILR School
DigitalCommons@ILR

CAHRS Working Paper Series

Center for Advanced Human Resource Studies
(CAHRS)

June 1995

Rational and Coalition Models of Job Evaluation: Do More Powerful University Departments Have an Advantage?

Theresa M. Welbourne
Cornell University

Charlie O. Trevor
Cornell University

Follow this and additional works at: <http://digitalcommons.ilr.cornell.edu/cahrswp>
Thank you for downloading an article from DigitalCommons@ILR.
[Support this valuable resource today!](#)

This Article is brought to you for free and open access by the Center for Advanced Human Resource Studies (CAHRS) at DigitalCommons@ILR. It has been accepted for inclusion in CAHRS Working Paper Series by an authorized administrator of DigitalCommons@ILR. For more information, please contact hlmdigital@cornell.edu.

Rational and Coalition Models of Job Evaluation: Do More Powerful University Departments Have an Advantage?

Abstract

Job evaluation research has, to date, focused on the individual as the unit of analysis. After approximately 50 years of study, evidence on the basic assumptions supporting job evaluation is still inconclusive. This study expands the research by employing organizational theory to the topic and studying job evaluation at the group level. Prior work on rational and coalition models of resource allocation is used to develop hypotheses that are tested with six years of job evaluation data from a university. The results support the coalition model and the conclusion that departmental power can affect job evaluation outcomes.

Keywords

work, research, employ, job, university, evaluation, model, resource

Comments

Suggested Citation

Welbourne, T. M. & Trevor, C. O. (1995). *Rational and coalition models of job evaluation: Do more powerful university departments have an advantage?* (CAHRS Working Paper #95-09). Ithaca, NY: Cornell University, School of Industrial and Labor Relations, Center for Advanced Human Resource Studies.
<http://digitalcommons.ilr.cornell.edu/cahrswp/199>

Rational and Coalition Models of Job Evaluation: Do More Powerful University Departments Have an Advantage?

Theresa M. Welbourne
Charlie O. Trevor

Working Paper 95-09



**RATIONAL AND COALITION MODELS OF JOB EVALUATION:
DO MORE POWERFUL UNIVERSITY DEPARTMENTS HAVE AN ADVANTAGE?**

Theresa M. Welbourne

Center for Advanced Human Resource Studies
Cornell University
393 Ives Hall
Ithaca, NY 14853-3901
(607) 255-1139

and

Charlie O. Trevor

Department of Human Resource Studies
Cornell University
393 Ives Hall
Ithaca, NY 14853-3901

Working Paper #95-09

www.ilr.cornell.edu/cahrs

All correspondence should be sent to Theresa Welbourne.

Research Funded by CAHRS

This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make results of research, conferences, and projects available to others interested in human resource management in preliminary form to encourage discussion and suggestions.

**RATIONAL AND COALITION MODELS OF JOB EVALUATION:
DO MORE POWERFUL UNIVERSITY DEPARTMENTS HAVE AN ADVANTAGE?**

ABSTRACT

Job evaluation research has, to date, focused on the individual as the unit of analysis. After approximately 50 years of study, evidence on the basic assumptions supporting job evaluation is still inconclusive. This study expands the research by employing organizational theory to the topic and studying job evaluation at the group level. Prior work on rational and coalition models of resource allocation is used to develop hypotheses that are tested with six years of job evaluation data from a university. The results support the coalition model and the conclusion that departmental power can affect job evaluation outcomes.

**RATIONAL AND COALITION MODELS OF JOB EVALUATION:
DO MORE POWERFUL UNIVERSITY DEPARTMENTS HAVE AN ADVANTAGE?**

Formal job evaluation procedures have been in use for more than a century, but after years of experimentation and research they are still a subject of controversy among both practitioners and academics. The goal of job evaluation is to render the organization with a hierarchy of positions, which then allows the assignment of pay rates based on relative contribution to the firm. The assumption that job evaluation is based on the worth of the position, not the worker or situational determinants, is the fundamental premise that drives claims that it produces an unbiased measure of worth (Risher, 1978; Trieman, 1979). This assumption was accepted at a time when scientific management and the notion of reducing a job to component, measurable parts were popular. However, it might not be valid today when concepts such as job enrichment, self managed work teams, and reengineering expand the scope of positions (Rischer, 1978).

As early as 1941, Viteles wrote that "beneath the superficial orderliness of job evaluation techniques and findings, there is much that smacks of chaos" (p. 165). This research proposes that job evaluation outcomes do result from a number of processes that have not been studied to date. However, we suggest that these outcomes are not be the result of chaos, but rather group level dynamics that have not yet been considered within the context of job evaluation. By borrowing from prior research on resource allocation, this study investigates the impact of rational and coalitional determinants of job evaluation outcomes.

We first review the job evaluation research to show that the focus of work conducted to date has been on assessing the psychometric properties of the method. We then introduce a more macro perspective of job evaluation that incorporates group level variables. Lastly, the results of a study that analyzes six years of job evaluation data obtained from a major university are presented, and the implications of these results are discussed.

**AFTER MORE THAN SO YEARS OF JOB EVALUATION RESEARCH,
WHAT DO WE KNOW?**

Studies of job evaluation have been conducted and published in research journals since the 1940s and have predominantly focused on reliability and validity issues. Reliability has been examined by comparing job grades, factor scores, total points, and wages resulting from several raters evaluating positions. Validity has been approached through investigating the results of several types of job evaluation methods, by employing predictive validity procedures, by utilizing factor analytic techniques, and by studying potential sources of bias.

Reliability Research

Studies that focus on reliability can be grouped into work done either in the 1940s or the 1980s; for some reason there is a noticeable gap in research between those decades. Research conducted in the 1940s tended to be field studies designed to determine the degree to which various raters could obtain similar job evaluation results with a variety of job evaluation procedures and formats. This work resulted in interrater reliabilities for total job evaluation points reaching the .90 range (Ash, 1947; Chesler, 1948; Jones, 1948; Lawshe & Farbro, 1949; Satter, 1949). Reliability results for individual factor scores were generally found to be lower than for total points (Lawshe & Farbro, 1949; Lawshe & Wilson, 1947; Satter, 1949;), and the reliability of short-forms was higher than that of long-forms (Ash, 1947; Lawshe & Farbro, 1949; Lawshe & Wilson, 1947). Jones (1948) considered differential reliabilities obtained from employees, supervisors, and personnel representatives and found fairly high (.85 to .89) agreement between those individuals. Lawshe and Farbro (1949) included both labor and management employees as analysts and concluded management attained slightly-higher reliability scores.

The 1940s research seemed to conclude that trained individuals, using simplistic forms, who were familiar with the organization and jobs, could approach similar conclusions on overall job worth when provided with detailed instructions on how to analyze positions. Much of the impetus for the resurgence of job evaluation research in the 1980s was derived from interest in comparable worth and potential bias resulting from the job evaluation process. Therefore, investigations conducted during the 1980s focused on understanding whether certain jobs (those characterized as being occupied predominantly by either females or males) produced differential reliabilities.

Doverspike et. al. (1983; 1984) conducted two lab studies and found no evidence of differential reliabilities by sex-of-job (predominantly female vs. male positions). Fraser, Cronshaw, and Alexander (1984) conducted similar research in field settings, and they obtained similar results. Gomez-Mejia, et. al. (1982) compared seven different methods of job evaluation and found a wider range in interrater reliabilities, between .44 to .80. Madigan (1985), who questioned the usefulness of reliability statistics, discovered that even though reliabilities of several job evaluation methods ranged between .70 and .90, hit rates (the accuracy with which predicted grade matches actual job grade) were much lower. This called into question the predominant focus on reliability in job evaluation studies. After reviewing this research, Arvey (1986) concluded that the studies examining effects of sex bias on job evaluation procedures were mixed.

Validity Research

Although research on validity is somewhat limited, several studies conducted since 1940 provide valuable information for measuring the accuracy of job evaluation procedures in assessing job worth. A series of studies conducted by Lawshe and associates (1944; 1945; 1946a; 1946b; 1946c; 1948) found that utilization of factor analysis collapsed the job evaluation scales into approximately three factors that generally accounted for 98% to 99% of the variance. The research concluded that one factor, labeled "skills" dominated the results, accounting for between 78% to 99% of the variance (Lawshe & Satter, 1944). Rogers' (1946) results supported Lawshe's assertion that the skills dimension was an overriding predictor of job evaluation results. He also commented that this phenomenon provided evidence that job evaluation methods, as practiced, violate the assumption that job evaluation measures the position, versus attributions of the person. He argues that the skills dimension, which explains 90% or more of the variance in job evaluation results, measures abilities that the individual worker brings to the job while the measure of job characteristics tends to explain only 10% or less of the variance. Grant's (1951) research supported this conclusion, with one factor (labeled skills) accounting for 66% of the variance and a second factor (responsibility) accounting for 16% of the variance. A recent study by Madigan (1985) found that for one system, the Guide Chart, knowledge accounted for greater than 90% of the variance.

Several researchers compared job evaluation results using several different methods of job evaluation, such as ranking, paired-comparisons, point-factor, and policy capturing methods. If, regardless of method used, job evaluation results (as measured by resultant wages or total job evaluation points) remained constant, this would provide some evidence for the validity of job evaluation; the results would not be dependent on method. The results of this research have been mixed, with several researchers concluding that regardless of method, job evaluation outcomes will remain the same (Chesler, 1948; Robinson, et. al., 1974; Satter, 1949; Snelgar, 1983), while others interpret their findings as reflecting significant differences with varying job evaluation techniques (Madigan, 1985; Madigan & Hoover, 1986).

Several predictive validity studies attempted to ascertain the degree to which job evaluation methods could accurately predict market wages as measured through wage and salary surveys. However, the use of the market wage as the criterion is not without criticism. Grams and Schwab (1985) noted that market wages can reflect past discrimination against predominantly female jobs. Rynes and Milkovich (1986) support this by arguing that the "going rate" is influenced by a series of subjective judgments on the part of those conducting wage surveys and those utilizing the results. Studies do show that job evaluation systems can predict

going rate, as obtained in market surveys (Dertien, 1981; Satter, 1949; Schwab & Grams, 1985). However, the usefulness of this finding continues to be questioned.

In an effort to expand the job evaluation research, a few studies have begun to explore non-traditional predictors that might impact the validity of job evaluation. For example, Smith, Hornsby, Benson, and Weslowski (1989) examined the effect of job titles on job evaluation results and found that title status significantly influenced ratings. Benson and Hornsby (1988) obtained results from self-report surveys indicating that job evaluators use a variety of influence tactics in committee meetings. They suggest that influence tactics might also affect job evaluation outcomes.

Overall, the validity studies have failed to conclude that job evaluation actually measures job worth. Similarly, the reliability of job evaluation is still in question. Research, to date, has primarily focused on psychometric properties, and even though numerous studies have been conducted utilizing multiple methods, the results remain inconclusive. After more than 50 years of research, the reliability and validity of job evaluation continue to be challenged, and the process of job evaluation is still not well understood. Gerhart and Milkovich (1992: 504) recently reviewed this literature and suggested that "research models need to be expanded beyond focusing on the psychometric properties of job evaluation."

Arvey (1986: 331), in an extensive review of the job evaluation literature, commented that "my own observations have been that there is an increasing realization among employees that job evaluation procedures have a bearing on their real wages, and they are quite interested in preserving or increasing real wages through job evaluation. Whether or not these political realizations substantially distort job evaluation judgments remains to be seen." This suggests that one alternative for studying job evaluation might be an examination of the role of politics and/or power in the job evaluation process.

The Benson and Hornsby study (1988) attempted to understand how individual power might affect job evaluation outcomes; however, the job evaluation research has not yet considered whether departmental power might also determine job evaluation outcomes. Most discussion of influence and power focuses on the way in which an individual employee might alter job evaluation results for personal gain (Gupta & Jenkins, 1992). Even though the focus has been on the individual, Gerhart and Milkovich (1992) suggested that organizational theory models can also be used to understand the way that pay systems function within corporations. The following section utilizes organizational theory to elaborate upon the impact of departmental power on job evaluation outcomes.

JOB EVALUATION: A "MACRO" PERSPECTIVE

To date, job evaluation research has emphasized the individual job as the unit of analysis. Reliability studies determined the consistency with which raters could slot a job into a particular classification or assign job points. Validity studies compared the results of various job evaluation techniques on individual positions, studied the factors chosen to measure specific jobs, and examined the agreement between job evaluation points and external measures of position worth. This approach has left researchers in a quandary because after approximately 50 years of research the basic assumption of job evaluation is still questioned, and the decision process of job evaluation is not well understood.

The underlying premise of job evaluation, that the position can be accurately measured, is derived from work conducted in the 1880s by Frederick W. Taylor. His notion of work implies that jobs should be broken down into component parts, accurately described, measured, and subsequently performed as such (Taylor, 1947). Job evaluation reflects the view that components of work can be isolated, and it builds on the concept by further decomposing the job into elements that are considered worthy of remuneration.

Taylor's work has been criticized by individuals claiming that he viewed "men as machines", expecting workers to function as robots (Locke, 1987). Taylor was supportive of decoupling functions into individual tasks and disfavored the use of groups and subsequent interaction between individual workers. Contrary to Taylor's advice, work groups have become an essential part of organizational life, and groups have been recognized as exerting significant influence on major decisions within organizations, including decisions pertaining to compensation (Pfeffer & Salancik, 1974).

Functional departments are organizationally sanctioned groups with distinct needs and goals, including growth and expansion (Downs, 1967; Katz & Kahn, 1966). Given that departments seek to increase group membership and status through an assortment of mechanisms (Cyert, Dill, & March, 1958; Cyert & March, 1963), groups might influence the job evaluation process. Therefore, job evaluation results might also reflect the relative power of significant groups within an organization.

RATIONAL AND COALITION MODELS OF JOB EVALUATION

Job evaluation results in an allocation of new jobs and the reevaluation of current job grades; these outcomes involve compensation dollars. As the result of job evaluation, departments can hire new employees whose wage levels are determined at least in part via job evaluation. Similarly, departments can improve their ability to retain current workers and enhance incumbent status in the organization by increasing wages and changing job titles

through the reevaluation process. This implies that job evaluation results are valuable organizational resources. Resource allocation outcomes, of which job evaluation outcomes are an example, have been studied at the group level. Hackman (1984: 62) defines resource allocation as "the relative share of internal institutional resources acquired by a unit." Because job evaluation outcomes are resources distributed to organizational groups, research at the group, rather than the individual, unit of analysis is appropriate.

Resource allocation models are based on two competing theories of the organization. The rational model, proposed by Weber (1947), describes the bureaucratic organization where decisions are made by individuals based on objective firm goals such as profit maximization (Cyert, Simon, & Trow, 1956; March & Simon, 1958). Based on the rational model, resource allocation decisions are made based on strict decision rules that assure the firm's goals will be attained. This model assumes that individual and subunit objectives are congruent with those of the organization.

The competing theory, referred to as the coalition or political model of the organization, suggests that firms can be characterized as groups of subunits, each with their own agendas that might or might not be consistent with organizational goals (Cyert & March, 1963; March & Simon, 1958). The needs and goals of each subunit in which one is a member are employed by individual decision makers (Cyert, Dill & March, 1958). The coalition model suggests that negotiation, bargaining, power, and politics are important determinants of decision behavior, particularly resource allocation decisions (Cyert & March, 1963; March & Simon, 1958; Pfeffer & Salancik, 1974; Simon, 1959).

These two views of the organization have been extended to develop rational and political models of resource allocation. Researchers have studied departmental budget allocation decisions and compared the rational model of budget allocation with the political model of budget allocation. The rational model suggests that quantifiable measures, (such as workload, sales, profitability, etc.), should predict budget allocation outcomes. Hills and Mahoney (1978: 454) define rational models as suggesting that "budgeting is a mechanistic activity involving purely 'rational' behavior." Budget allocation studies have found that rational factors do contribute to the prediction of resource allocation decisions, suggesting that there is a rational component to budget allocation (Hills & Mahoney, 1978; Pfeffer & Moore, 1980; Pfeffer & Salancik, 1974). We expect that rational determinants should, to some extent, also predict job evaluation outcomes at the departmental level. This can manifest itself in one of two different ways. As workload increases, departments can add new positions, or they can reevaluate current jobs to reflect additional responsibilities.

Hypothesis 1: Rational criteria (e.g. increases in workload) will predict job evaluation outcomes. Departments with greater workloads should acquire more resources from the job evaluation process in the form of new jobs and or successful reallocations.

The political model states that relative group power will also predict budget allocation outcomes. According to Pfeffer and Salancik (1974: 137) "organizations operate as coalitions in many decisions, with subunits contending for resources, and with resource allocations being shaped by considerations of relative political strength as well as by more bureaucratic, universalistic criteria." Studies have supported the political model by finding evidence to suggest that departmental power influences resource allocation decisions, in particular, budget allocation outcomes (Hackman, 1985; Hills & Mahoney, 1978; Pfeffer & Salancik, 1974; Salancik & Pfeffer, 1974; Schick, 1985; Schwochau, Feuille, & Delaney, 1988). Wright and McMahan (1992), in a review of the human resource management literature, refer to this budget allocation research and suggest that political models of organizations might also be applicable to the study of compensation. They note that "one could hypothesize that much of pay allocations are based on power, rather than just performance criteria" (1992: 311). Given that job evaluation decisions involve the distribution of organizational resources, the political model should also be applicable to job evaluation (Ferris & Judge, 1991).

Budgeting has been described as an incremental process, where departments negotiate over changes to the budget, rather than negotiating over base budget levels (Hills & Mahoney, 1978; Schwochau et. al., 1988). Research has generally supported this description by finding that prior year budget was a rational predictor of the stable portion of the following year's dollars, but political determinants were important for negotiations over incremental changes to the budget. Job evaluation decisions are almost always incremental changes to departmental resources. A department utilizes job evaluation procedures to either add new positions or to reevaluate established positions within a department. Thus, job evaluation outcomes should be particularly susceptible to political determinants because these decisions represent incremental changes to a department's staff.

Lawler (1984: 24) observed that "individuals become quite sophisticated in getting jobs evaluated highly." If this were the case, then the rational model of job evaluation, which would only predict workload-related criterion as determinants of job evaluation outcomes, should be incomplete. Although job evaluation procedures are often deeply entrenched with quantitative components that reflect rational or universalistic criteria, the process also involves many subjective decisions (Gupta & Jenkins, 1992). It is hypothesized, therefore, that units identified

as having more political power can effectively employ the job evaluation system to attain more favorable results from the job evaluation process.

Hypothesis 2: Holding rational criteria constant, organizational subunits with greater political power will attain more favorable outcomes from the job evaluation process. These will be in the form of new positions and/or successful reallocations.

The resource allocation model of job evaluation focuses on departmental outcomes resulting from the job evaluation process. Therefore, the research method utilizes departmental level data for both the independent and dependent variables.

METHODS

Sample

The sample for this study consists of academic departments from a large university in the Western United States. Data were collected from the university archives, department chairs, the university's personnel department, and various administrative offices. The study encompasses the six academic years between 1985-1986 and 1990-1991. Job evaluation records were obtained from the university's human resource data base, which included records of job evaluation transactions. Each time a department requested either a new job (an allocation) or the reevaluation of a current job (reallocation), the request and subsequent decisions were recorded in the data base.

The data were aggregated and analyzed at the department-by-year level and at the department level (across years). We sought yearly information on all 55 departments listed in the university's official publications, which would have provided 330 department-by-year data points. However, missing data due to department consolidation, discontinuation, and emergence, as well as missing data from the university archival sources, reduced the number of usable departments to 41 and the department-by-year data points to 246. For analyses performed at the department level, each observation in the sample of 41 academic departments consists of aggregated data from all six years.

Dependent Variables

Job evaluation outcomes in this study were defined as either the number of successful job allocations or the number of successful job reallocations for non-faculty positions. In each case, the dependent variable was measured as the number of successful outcomes experienced by a department within the relevant time frame (department-by-year or department across years). Allocations result when a department requests the establishment of a new position. The request, submitted to a compensation analyst, includes suggested pay grade and a job description. Successful allocations were operationalized as those in which the personnel

department approved the requested pay grade after formal evaluation of the job. The university used the classification method of job evaluation (see Milkovich and Newman, 1995 for a description of this method). The overall success rate for allocations was 89 per cent.

Reallocation outcomes served as the second dependent measure. Rewritten job descriptions are submitted by university departments to the compensation analysts for reevaluation when it is felt that the job's pay grade, job title, and the job description no longer represent the work required in that position. That is, existing jobs are sent through the job evaluation process to determine whether the current job responsibilities warrant enough change in job evaluation points to result in assignment to a different (higher) pay grade. Thus, the reallocation process represents an incremental change in job evaluation points. Successful reallocations were operationalized as decisions to assign a higher pay grade to the existing job. The overall success rate for reallocations was 69 per cent.

The job evaluation data were available only by calendar year, forcing the partial lagging of all independent variables because they represent school year data (i.e., September through August). Hence, upward reallocations in 1986 are predicted by political and rational measures from the 1985-1986 school year. Although this lagging was artificially imposed by data availability, we argue that it is not an inappropriate representation of how job evaluation decisions are made. It is reasonable to expect that allocation and reallocation outcomes between September and December of an academic year would reflect the rational and coalition factors of recent months (January through August), even though this interval was part of a preceding school year. In fact, it is probable that such timing is more appropriate than expecting September job evaluation outcomes to accurately reflect the rational and political elements associated with the new school year.

Implicit in the operationalization of successful reallocation of a job is the assumption that reassignment to a higher pay grade is the goal of all submissions. Conversations with the human resources employees at the university support this contention, as do the authors' experiences working with job evaluation in private industry. Moreover, a reallocation to a lower pay grade would place any incumbents at a relatively higher point in the new lower pay grade, risking loss of future earnings through topping out sooner at the grade's maximum or through being limited to lower merit increases due to a relatively higher position in the range (Milkovich & Newman, 1995). Finally, fundamental to the political model is the notion that resources are sought out, rather than voluntarily relinquished. Thus, while it is possible to conceive of circumstances under which a department might desire a downgrade for a particular job,

employee interviews, personal experience, practical incumbent considerations, and the body of literature on resource allocation are evidence that this would be a rare exception.

Political Model Variables

Perceived power. The measure of perceived departmental power was constructed from a survey of academic department chairpersons conducted in 1990. Respondents were asked to rate the level of power possessed by each department. Consistent with earlier research on resource allocation within universities, departmental power was defined as "the ability of the department to affect decisions so that they conformed more closely to what the department wanted" (Pfeffer & Moore, 1980; Pfeffer & Salancik, 1974). Responses were made on a Likert type scale anchored by 1 (very little power) and 5 (a great deal of power). Respondents were also allowed to indicate unfamiliarity with any department. Inter-rater reliability was .93. Although measured at only one point, perceived power was included with each department-by-year observation. Rationale for this was the assumption that one's assessment of other departments' power would be the result of cumulative perception of events over several years and would thus apply to the same time frame.

Committee representation. The number of standing Senate committee membership positions that were held by a department comprised this measure of departmental power. Senate committees control resource allocations, making their memberships desirable for departments seeking power and providing additional power to represented departments (Hills & Mahoney, 1978, Pfeffer & Salancik, 1974). In the department-by-year analysis, committee representation for that particular year was used; however, in the overall departmental analysis, committee representation summed across all six years was utilized. Rational Model Variables

Instructional units. Greater departmental workloads correspond with continually evolving responsibilities and job complexities, which would seem to be rational predictors of the need for job allocations and reallocations. A classic measure of departmental workload, used in this study, is instructional units (Hills & Mahoney, 1978, Pfeffer & Salancik, 1974). Instructional units are the multiplicative product of a course's semester hours and the number of students enrolled, summed across the department's courses. At the department level, this variable was averaged across the six years.

Change in instructional units. Increases in a department's workload from one year to the next should directly lead to increases in job content, which in turn should result in job allocations and upward reallocations. At the department-by-year level, change in workload was measured as the proportional change in instructional units between years t and $t-1$. For the department level sample, change was defined as the coefficient of variation, which is the standard deviation

of units over the six years divided by the mean. Both of these measures provide for the slack resources and economies of scale likely to exist in the larger departments (i.e., an instructional unit increase of 500 would be absorbed more easily in the Business School than in Film Studies).

Control Variables

Years. Dummy variables for years were included in the department-by-year analyses to control for any effect of year on job reallocations. The 1985-86 school year was the omitted category.

Faculty. The number of full-time equivalent faculty members in a department initially was intended as an indicator of department size. As will be addressed in the results section, however, faculty was excluded from the analyses due to collinearity in the data.

Analyses

For several reasons, the data were analyzed at both the department and department-by-year levels. The department-by-year level provides much greater statistical power with which to detect effects. It also avoids some of the potential pitfalls associated with data aggregation, such as inflated correlations resulting from idiosyncrasies being washed out due to averaging (Ostroff, 1993). Yet, committee representation seems to justly benefit from aggregating the data at the department level, likely increasing its validity as a measure of political power (Pfeffer and Salancik, 1974). Pfeffer and Salancik maintained that the small number of yearly committee posts limits the validity of what should be a more continuous measure, though the heightened validity at the department level depends upon the assumption that power distributions are relatively stable over time. Also resting somewhat upon that assumption may be our department-by-year level use of perceived power, which was measured at only one time, and, like committee representation, may be more valid at the department level.

Departmental job allocations and reallocations are event count data distributed with multiple zero values and with means and maximums too low to allow the characterization of these variables as continuous. Hence, ordinary least squares regression was inappropriate, and either Poisson regression or the more general case, negative binomial regression, was utilized. Model choice depended on the relationship between the dependent variable's mean and its variance. Nested models were applied to test the significance of political factors in job evaluation outcomes relative to the variance attributable to more rational determinants.

RESULTS

Table 1 presents means, standard deviations, and intercorrelations for variables from each of the two sample levels used in this study. Because they are indicators of a linear

relationship between variables, zero-order correlations can be misleading when using nonlinear models such as Poisson regression to estimate relationships. In such nonlinear models, the effect of a predictor on an outcome is assumed to be nonlinear in that it changes at various levels of the predictor. Caution in interpretation notwithstanding, it is notable that, excepting change in instructional units, most variables were significantly correlated with each other. This suggests that an underlying factor, such as department size, may be common to most key variables in the study. Indeed, excepting its relationship with change in instructional units, faculty, our measure of department size, is significantly correlated (at least $p < .01$) with all variables at both levels of analysis.

TABLE 1
Means, Standard Deviations, and Intercorrelations^a

Variable	<u>Department</u>		<u>Department-</u> <u>by-Year</u>		1	2	3	4	5	6	7
	M	SD	M	SD							
1. Perceived Power	2.94	.92	2.94	.92	---	.22***	.29***	-.07	.49***	.31***	.36***
2. Committee representation	6.51	6.06	.88	1.29	.38*	---	.23***	.20**	.34***	.04	.14*
3. Instructional units (in thousands)	13.44	10.36	13.44	10.36	.29	.38*	---	.02	.81***	.17**	.20**
4. Change in instructional units	.10	.06	.03	.10	-.22	-.28	-.26	---	-.05	-.08	-.13*
5. Faculty	23.54	16.57	23.54	16.57	.49**	.62***	.81***	-.28	---	.27***	.32***
6. Job allocations	5.56	6.81	.75	1.58	.53***	.59***	.41**	-.24	.64***	---	.18**
7. Job reallocations	4.46	4.05	.56	1.02	.69***	.59***	.42**	-.31*	.66***	.82***	---

^aDepartment level correlations in lower triangle (n=41); Department-by-year level correlations in upper triangle (n=246)

*p<.05; **p<.01; ***p<.001

Clearly, then, size is an important consideration in this study due to its substantial relationships with the dependent and independent variables. Much of the data we collected measured some aspect of department size. Faculty was highly collinear with data on departmental budget and the number of graduate students, eliminating their value as possible controls. Additionally, faculty was very highly correlated with instructional units (.81), which indicated that this measure of departmental workload also represented department size to a substantial degree. Linear regressions indicated that the other independent variables accounted for 80% and 69% of the faculty variance at the department and department-by-year levels, respectively. Moreover, inclusion of faculty resulted in somewhat volatile models that were relatively sensitive to minor perturbations in the data. Based on these factors, we excluded faculty from the analyses.

Poisson and Negative Binomial Regression

The decision to use the Poisson model for count data rests upon the assumption that the expected value of the dependent variable is equal to its variance. This assumption was tested through the Cameron and Trivedi (1990) regression based test for overdispersion. Overdispersion denotes that the variance of the dependent variable is significantly greater than its mean, indicating that the Poisson model should be rejected in favor of the less restrictive negative binomial model. Thus the null and alternative hypotheses for the overdispersion test were as follows:

$$H_0: \text{Var}[Y] = E[Y] \quad \text{and} \quad H : \text{Var}[Y] + (\alpha) * g(E[Y])$$

-by

reallocations was not significantly different from its mean (i.e., that alpha was not significantly allocations, however, the variance did differ significantly from the mean, necessitating

Department -Year Analysis

The negative binomial regression coefficients for the predictors of a department-by-year job allocations are reported in Table 2. Additionally, the Poisson regression coefficients are reported for reallocations. In each case, the full model, which contains both political and rational predictors is compared to the rational model for a relative goodness of fit test. For both allocations and reallocations the rational models fit the data significantly better than do the control models, which contain only the intercept and year dummy variables. When the political power variables were added, our ability to explain the variance in job allocations and reallocations was significantly improved.

TABLE 2
Department-by Year Level Negative Binomial and Poisson Regression
Analyses of Job Evaluation Outcomes^a

Independent	Allocations			
	Rational	Political	Rational	Political
1986	(.419)	(.439)	(.291)	(.292)
	-.185	-.296	.515*	.486
1988	(.445)	(.417)	(.270)	(.271)
	.206	.204	-1.124**	-1.137**
1990	(1.099)	(1.213)	(.359)	(.374)
	.029	.020	.030***	.020**
Change in	-1.978	-.547	-3.289**	-3.196**
Perceived power		(.170)		(.110)
representation		(.135)		(.072)
Likelihood ratio b		-235.80	-238.81	49.74***

Understandardized coefficients are reported, with standard errors in

for reallocations.

Likelihood ratio statistic is chi-square with df=2 (two restrictions between

*p<.05; **p<.01; ***p<.001 (two tailed; N=246)

In terms of individual political variable coefficients in the full model, a department's perceived power significantly predicted its successful job evaluation outcomes. Poisson and negative binomial regression coefficients are interpreted at the mean of the dependent variable by multiplying that mean by the predictor's unstandardized coefficient. Assessing the relationship between perceived power and allocations when allocations is at its mean, which is .75, one additional point on the survey's five-point perceived power rating scale, which corresponds to approximately 1.1 standard deviations, results in an average yearly increase of .54 job allocations (.75 multiplied by the .72 coefficient). Similarly, evaluated at the mean of reallocations, which is .56, a one survey point increase in perceived power corresponds to an average yearly increase of .37 job reallocations. The second political model variable, committee representation, was significant only in the reallocation model. At the mean of reallocations, an additional department representative on one of the Senate committees corresponds to an average yearly increase in reallocations of .08.

Regarding the rational predictors, instructional units and change in instructional units were significantly related to job reallocations. As expected, larger departmental workloads and larger departments (by virtue of workload's relationship with department size) result in additional upward reallocations of jobs through the job evaluation process. Reallocations also were significantly predicted by change in instructional units. However, the direction of this relationship was contrary to rational model predictions as greater change from one year to the next corresponded to fewer reallocations. Rational covariates in the allocation model were not significant in the department-by-year analyses.

Department Level Analysis

At the department level, with variables aggregated across years, we found consistent support for the proposition that departmental power affects job evaluation outcomes. Table 3 presents the rational and political models, the coefficients, and the relative goodness of fit indices for both allocations and reallocations. Similar to the results at the department-by-year level, the addition of the political factors to the rational models again resulted in a significantly better fit to the data and an improvement in our ability to explain both types of job evaluation outcomes.

TABLE 3

Department Level Negative Binomial and Poisson Regression Analyses of Job

a

Independent Variable	Allocations			Political
	Rational	Political Model	Model	
Instructional units	.031	.016 (.016)	(.006)	.012
Change in instructional units	(2.889)	1.241	-4.346** (1.569)	(1.662)
Perceived power		(.151)		.613***
Committee representation		(.018)		.042***
Log-likelihood Likelihood ratio stat.	-111.41	-96.77	-116.91	-85.28

^aUnderstandardized coefficients are reported, with standard errors in parentheses;

^bLikelihood ratio statistic is chi-square statistic with df=2 (two restrictions between

*p<.05; **p<.01; ***p<.001 (two-tailed; N=246)

Each of the two political variables was significant at the $p < .001$ level in the prediction of both allocations and reallocations. Perceived power significantly predicted a department's allocations over the six year period as, at the mean of 5.56 job allocations, a one rating point increase in perceived power results in an average increase of 3.47 upward job allocations. For reallocations, at the mean of 4.46, an additional perceived power rating point corresponds, on average, to 2.73 upward job reallocations. Additionally, in support of Pfeffer and Salancik's (1974) contention that aggregating committee representation across years may provide for a more valid measure of power, this variable did emerge as significant for both job evaluation outcomes. At the means of job allocations and reallocations, one additional committee member over the six years, which is only about one sixth of a standard deviation, results in average increases of .37 and .19 job allocations and reallocations, respectively.

In contrast to the significant effects of the coalition variables at the department level, the rational predictors appeared to be much less influential. Neither instructional units nor change in instructional units reached significance in the prediction of job allocations, mirroring the department-by-year findings. For reallocations, change in instructional units failed to reach significance at the department level. The instructional units measure also was not a statistically significant covariate in the strictest sense. However, the fact that it did approach ($p = .06$) that criterion, coupled with the small sample size and low statistical power, suggests that, as at the department-by-year level, workload does predict a department's favorable job reallocations.

DISCUSSION

The results from the department and department-by-year level analyses of the two job evaluation outcomes combine to support the hypothesis that the coalition model improves upon the rational model in the explanation of the resource allotment associated with job evaluation. The perception of university departmental power predicted job allocations and reallocations at both the department-by-year and department levels of analysis. Moreover, committee representation was significantly related to department-by-year reallocations and to both outcomes at the department level, which Pfeffer and Salancik (1974) cited as the more appropriate level at which to evaluate that predictor. In summary, it appears that the university departments with greater political clout were able to obtain resources in the form of job evaluation successes that exceeded what was predicted by rational factors. These job evaluation outcomes ultimately translate into higher wages and additional resources for department members.

That more powerful departments can garner more job evaluation resources prompts the question of just how such influence is wielded. This research focused on departmental

outcomes as the level of analysis, and we found that, controlling for departmental size and workload, more powerful departments received more favorable outcomes from the job evaluation process. However, in order to further investigate the topic, we conducted an exploratory analysis of the effect of departmental power on individual job evaluation decisions. Although we did not have individual level data on the job or the job holder, this analysis does provide some additional insights. Logistic regressions were conducted with the individual job evaluation decision as the dichotomous dependent variable (i.e., 1=successful allocation/reallocation, 0=unsuccessful) and the group level rational and political determinants as the independent variables. In this analysis, which accounts for all requests made, neither perceived power nor committee representation was significant. This might indicate that political power might be manifested in an indirect manner.

Reconciling the primary analyses with the logistic regression indicates that the politically powerful departments might make a greater number of formal job allocation and reallocation requests. Based upon experience in obtaining more than their fair share of finite resources, such as discretionary budget (e.g., Pfeffer & Salancik, 1974), more powerful departments might be prone to making greater demands of the job evaluation process. Conversely, less powerful departments, having learned from historic relative failure in obtaining resources, may refrain from submitting all but the most obviously valid and urgently necessary requests. In order to examine this interpretation, we ran an analysis at the overall department level (similar to Table 3) with all job evaluation requests (vs. only successes) as the dependent variable. The pattern of results parallels those found in Table 3, indicating that departmental power also affects the frequency with which a department employs the job evaluation process.

A second manifestation of departmental power in the job evaluation process may be through the informal communication between the department and the compensation personnel that often precedes the job's submission for evaluation. In reality, the desired pay grade frequently is known to the department before the writing or rewriting of the job description. The job description is often written with the assistance of the compensation personnel. These employees may feel more pressured to help write favorable job descriptions (i.e., consistent with the proposed pay grade) for the more powerful departments. Thus, the less powerful departments might be more likely to receive informal feedback that a job evaluation request probably would be denied, resulting in the decision not to submit the job.

Although our results strongly suggest that political power impacts job evaluation success, the interpretation of the rational predictors is more speculative. The finding that instructional units positively predicted reallocations at the department-by-year level, and

approached significant prediction at the department level, is evidence that greater workload and size result in evolving job responsibilities that require reevaluation. However, failure of instructional units to predict allocations was unexpected, but probably speaks to the qualitative differences between the two job evaluation outcomes. It may be that the more fluid job responsibilities in larger departments tend to be dealt with through reallocations rather than additional allocations. That is, the relatively larger number of jobs in these departments may make it more likely that an existing job approximates the required job. Hence, reallocation under these conditions would be an easier option than starting from scratch with new allocations.

A second unexpected finding was the set of results involving instructional unit change. Its failure to predict allocations at either level of analysis suggests that the six years of the study may have been a relatively stable period in terms of departmental workload. That is, there may not have been enough change to warrant increases in levels of job allocations and subsequent hiring. This might similarly explain the lack of an effect of workload change on department level reallocations. The negative effect of workload change on department-by-year level reallocations, however, remains puzzling. It may be that evolving job responsibilities in times of relative stability tend to be handled through reallocations, while larger changes in job content and workload necessitate other solutions.

A potential limitation of this study involves our use of the single perceived power value across all six years. Although we maintained that survey respondent perception probably would be cumulatively derived over several years, and thus applicable to the same time frame, it also could be argued that a few recent incidents primarily determined the survey response. Our position may be supported, at least in part, by Pfeffer and Salancik's (1974) implicit assumption that departmental power is stable over time and by the perceived power results at the department level, where the other data were aggregated over six years.

CONCLUSIONS

Job evaluation procedures have been studied since the early 1940s, and research conducted since that time has resulted in conflicting results and unanswered questions. The findings of this study suggest that departmental power is also a predictor of job evaluation results, and it reveals alternative methods for studying the job evaluation process.

Future research should continue to examine the coalition model of job evaluation and investigate additional group level variables that might have an impact on job evaluation outcomes. In addition, various methods of job evaluation should be compared to determine each procedure's susceptibility to political influences. Research on various techniques might also isolate those components of the job evaluation systems that are more easily affected by

departmental power. Several studies have examined the rational and coalition models within universities, however, this research needs to be expanded to other types of organizations. The difficulty in conducting this type of work will be the establishment of accepted measures of departmental power. The self report measures will be fairly easy to replicate, however, more objective measures (such as committee membership) need to be developed.

This study considered the effect of one aspect of social context (departmental political power) on job evaluation outcomes. If subunit power affects job evaluation outcomes, then the fundamental assumptions of job evaluation should indeed be called into question. Job evaluation measures more than merely the worth of a job; it also captures the dynamics of the environment that impact the job. This finding reflects an organizational reality that has not received much attention by researchers. In order for organizations to succeed, more powerful departments might need to garner a greater proportion of the resources to continue their work. Additional studies on the way in which the more powerful departments contribute to the success or goals of the organization is needed; we cannot at this time assume that these departments are working against or in concert with the organization's mission.

This research has hopefully shed some light on a process that, to date, has not been well understood. The impact of social context on job evaluation seems to be an important area for further research. As we begin to define job evaluation as a dynamic process that is affected by both individual and group level criteria, new approaches toward research will begin to emerge. The results elaborate upon an important organizational phenomenon that might be less "chaotic" and more consistent with prior knowledge on how organizations function than might have been originally thought.

REFERENCES

- Arvey, R. D. 1986. Sex bias in job evaluation procedures. Personnel Psychology, 39, pp. 315-335.
- Ash, P. 1948. The reliability of job evaluation rankings. Journal of Applied Psychology, 32, pp. 313-320.
- Benson, P. G. & Hornsby, J. S. 1988. The politics of pay. Group and Organizational Studies, 13(2), 208-224.
- Cameron, A., & Trivedi, P. 1986. Econometric models based on count data: Comparisons and applications of some estimators and tests. Journal of Applied Econometrics, 1, 29-54.
- Chesler, D. J. 1948. Reliability and comparability of different job evaluation systems. Journal of Applied Psychology, 32, pp. 465-475.
- Cyert, R. M., Dill, W. R. & March, J. G. 1958. The role of expectations in business decision making. Administrative Science Quarterly, 3, pp. 307-340.
- Cyert, R. M. & March, J. G. 1963. A behavioral theory of the firm. Englewood Cliffs: Prentice Hall.
- Cyert, R. M., Simon, H. A. & Trow, D. B. 1956. Observation of a business decision. Journal of Business, 29, pp. 237-348.
- Dertien, M. G. 1981. Accuracy of job evaluation plans. Personnel Journal, July.
- Doverspike, D., Carlisi, A. M., Barrett, G. V. & Alexander, R. 1983. Generalizability of a point method job evaluation instrument. Journal of Applied Psychology, 68, pp. 476-483.
- Doverspike, D. & Barrett, G. V. 1984. An internal bias analysis of a job evaluation instrument. Journal of Applied Psychology, 69, pp. 648-662.
- Downs, A. 1967. Inside bureaucracy. Boston: Little Brown. Foster, K. E. & Gimplin-Paris, (1984). Job evaluation: It's time to face the facts. Personnel Administrator, 29, pp. 120-125.
- Ferris, G. R. & Judge, T. A. (1991). Personnel / human resource management: A political influence perspective. Journal of Management, 17(2), 447-488.
- Fraser, S. L., Cronshaw, S. F. & Alexander, R. A. 1984. Generalizability analysis of a point method job evaluation instrument: A field study. Journal of Applied Psychology, 69, pp. 643-649.
- Gerhart, B. & Milkovich, G. T. (1992). Employee compensation: Research and practice. In L. M. Hough & M. D. Dunnette (eds.). Handbook of Industrial and Organizational Psychology, 3, 481-569.

- Gomez-Mejia, L. R., Page, R. C., & Tornow, W. W. 1982. A comparison of the practical utility of traditional, statistical, and hybrid job evaluation methods. Academy of Management Journal, 4, pp. 780-809.
- Grams, R. & Schwab, D. P. 1985. An investigation of systematic gender-related error in job evaluation. Academy of Management Journal, 28(2), pp. 279-290.
- Grant, D. L. 1951. An analysis of a point rating job evaluation plan. Journal of Applied Psychology, 35, pp. 236-240.
- Gupta, N. & Jenkins, G. D., Jr. 1992. The politics of pay. Paper presented at the annual meeting of the Society for Industrial and Organizational Psychology, Montreal.
- Hackman, J. D. 1985. Power and centrality in the allocation of resources in colleges and universities. Administrative Science Quarterly, 30, pp. 61-77.
- Hills, F. S. & Mahoney, T. A. 1978. University budgets and organization decision making. Administrative Science Quarterly, 23, pp. 454-465.
- Jones, A. M. 1948. Job evaluation of nonacademic work at the University of Illinois. Journal of Applied Psychology, 32, pp. 15-19.
- Katz, D. & Kahn, R. L. 1966. The social psychology of organizations. New York: Wiley.
- Lawler, E. 1986. What's wrong with point-factor job evaluation? Compensation and Benefits Review, 18, March/April, pp. 20-29.
- Lawshe, C. H., Jr. 1945. Studies in job evaluation II. The adequacy of abbreviated point ratings for hourly paid jobs in three industrial plants. Journal of Applied Psychology, 29, pp. 177-184.
- Lawshe, C. H., Jr. & Alessi, S. L. 1946b. Studies in job evaluation IV. Analysis of another point rating scale for hourly paid jobs and the adequacy of an abbreviated scale. Journal of Applied Psychology, 30, pp. 310-319.
- Lawshe, C. H., Jr., Dudek, E. E., & Wilson, R. F. 1948. Studies in job evaluation VII. A factor analysis of two point rating methods of job evaluation. Journal of Applied Psychology, 32, pp. 118-129.
- Lawshe, C. H., Jr. & Farbro, P. C. 1949. Studies in job evaluation VIII. The reliability of an abbreviated job evaluation system. Journal of Applied Psychology, 33, pp. 158-166.
- Lawshe, C. H., Jr. & Maleski, A. A. 1946a. Studies in job evaluation III. An analysis of point ratings for salary paid jobs in an industrial plant. Journal of Applied Psychology, 30(2), pp. 117-128.
- Lawshe, C. H., Jr. & Satter, G. A. 1944. Studies in job evaluation I. Factor analysis of point ratings for hourly-paid jobs in three industrial plants. Journal of Applied Psychology, 28, pp. 189-198.

- Lawshe, C. H., Jr. & Wilson, R. F. 1946c. Studies in job evaluation V. An analysis of the factor comparison system as it functions in a paper mill. Journal of Applied Psychology, 30, pp. 426-434.
- Lawshe, C. H., Jr. & Wilson, R. F. 1947. Studies in job evaluation VI. The relationship of two point rating systems. Journal of Applied Psychology, 31, pp. 355-365.
- Locke, E. 1987. The ideas of Frederick W. Taylor: An evaluation. In: Donnelly, J. H., Jr., Gibson, J. L., & Ivancevich, J. M. (Eds.) Perspectives on Management. Plano: Business Publications, Inc.
- Madigan, R. M. 1985. Comparable worth judgments: A measurement properties analysis. Journal of Applied Psychology, 70(1), 137-147.
- Madigan, R. M. & Hoover, D. J. 1986. Effects of alternative job evaluation methods on decisions involving pay equity. Academy of Management Journal, 29, pp. 84-100.
- March, J. G. & Simon, H. A. 1958. Organizations, New York: Wiley.
- Milkovich, G.T., & Newman, J.M. 1995. Compensation, 5th Edition. Homewood, IL: Irwin.
- Ostroff, C. 1993. Comparing correlations based on individual-level and aggregated data. Journal of Applied Psychology, 78, 569-582.
- Pfeffer, J. & Moore, W. L. 1980. Power in university budgeting: a replication and extension. Administrative Science Quarterly, 25, pp. 637-653.
- Pfeffer, J. & Salancik, G. R. 1974. Organization decision making as a political process: the case of a university budget. Administrative Science Quarterly, 19, pp. 135-151.
- Pfeffer, J., Salancik, G. R., & Leblebici, H. 1976. The effect of uncertainty on the use of social influence in organizational decision making. Administrative Science Quarterly, 21, pp. 227-245.
- Risher, H. 1978. Job evaluation: mystical or statistical. Personnel, September-October, pp. 23-36.
- Robinson, D. D., Wahlstrom, O. W., & Mecham, R. 1974. Comparison of job evaluation methods. Journal of Applied Psychology, 59, pp. 633-637.
- Rogers, R. C. 1946. Analysis of two point rating job evaluation plans. Journal of Applied Psychology, 30, pp. 579-585.
- Rynes, S. & Milkovich, G. T. 1986. Wage surveys: dispelling some myths about the "market wage". Personnel Psychology, 39, pp. 71-91.
- Salancik, G. R. & Pfeffer, J. 1974. The bases and use of power in organizational decision making, the case of a university. Administrative Science Quarterly, 19, pp. 453-473.
- Satter, G. 1949. Methods of paired comparisons and a specification scoring key in the evaluation of jobs. Journal of Applied Psychology, 33, pp. 212-221.

- Schick, A. G. 1985. University budgeting: administrative perspective, budget structure, and budget process. Academy of Management Review, 10(4), pp. 794-802.
- Schwab, D. P. & Grams, R. 1985. Sex related errors in job evaluation: A "real world" test. Journal of Applied Psychology, 70, pp. 533-539.
- Schwochau, S., Feuille, P. & Delaney, J. T. 1988. Administrative Science Quarterly, 33, pp. 418-437.
- Simon, H. A. 1959. Theories of decision making in economics and behavioral science. American Economic Review, 49, pp. 253-283.
- Smith, B.N., Hornsby, J.S., Benson, P.G. & Wesolowski, M. 1989. What is in a name: The impact of job titles on job evaluation results. Journal of Business and Psychology 3(3), 341-351.
- Snelgar, R. J. 1983. The comparability of job evaluation methods in supplying approximately similar classifications in rating one job series. Personnel Psychology, 36, pp. 371-380.
- Taylor, F. W. 1947. Scientific management, pp. 157-176. In: Pugh, D. S. (Ed.), 1984, Organization theory, England: Penguin Books.
- Treiman, D. J. 1979. Job evaluation: an analytical review. Interim report to the EEOC. Washington, D. C., National Academy of Sciences.
- Viteles, M. S. 1941. A psychologist looks at job evaluation. Personnel, 17, pp. 165-176.
- Weber, M. 1947. Legitimate authority and bureaucracy. In: Pugh, D. S. (Ed.), 1984, Organization theory, England: Penguin Books.