The Effects of Collective Bargaining
on Economic and Behavioral Job Outcomes*

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ABSTRACT

The effects of unions on a variety of job outcomes are estimated using the 1977 Quality of Employment Survey data for hourly wage earners. A theory of how unions affect different job outcomes is presented. Alternative estimating techniques are discussed. The major findings are that unions increase wages and the availability of fringe benefits, produce higher compensating differentials for hazardous work, reduce the wage premium paid for high discretion or skill, increase the perceived value of one's job relative to potential alternative jobs, increase the amount of say workers want on their jobs, increase the willingness of workers to trade off wage increases for improvements in other job conditions, marginally increase job satisfaction with bread and butter issues and decrease satisfaction with job content, and marginally decrease the perceived ability to change employer policies. The need for further analysis of the variation in union effects rather than the "average" effect is stressed.

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The purpose of this study is to specify and apply a theoretical

framework for assessing the effects of collective bargaining on a variety

of economic and behavioral outcomes individual workers experience on their

jobs. The empirical analysis is based on data from the 1977 Quality of

Employment Survey (QES). Greater emphasis is given to the theory than the

specific empirical estimates, however, since better theory is badly needed

in order to draw meaningful conclusions from the expanding number of

empirical studies assessing the effects of trade unions and collective

bargaining.

A number of recent developments in the literature on the effects of

trade unions and collective bargaining make this an opportune time to criti-

cally appraise the approaches taken to the study and analysis of this phenomenon.

First, the growth of micro data sets has moved the analysis of the effect of

unions from industry or occupational to the individual or establishment levels.

Second, the range of job outcomes examined has expanded far beyond wages to

include such outcomes as fringe benefits (Freeman, 1978), layoffs (Medoff, 1979),

occupational safety (Olson, 1979), other working conditions (Duncan and Stafford,

1980), turnover (Freeman, 1978; Borjas, 1979; Farber, 1979), job satisfaction

(Freeman, 1978; Borjas, 1979), and productivity (Brown and Medoff, 1978).

Third, the increasing sophistication of the econometric techniques used to study

union effects has introduced a variety of new models and specifications for

researchers to choose from in estimating the effects of unions and collective

bargaining. For example, the theory of compensating differentials has been used

to justify using a simultaneous equations framework to estimate the joint effects

of unions on wages and working conditions (Smith, 1979; Duncan and Stafford, 1980).

The belief that union membership should be treated as an endogenous rather than an exogenous event has led to the use of two-stage least squares instead of ordinary least squares equations (Schmidt and Strauss, 1976; Lee, 1978; Schmidt, 1978). Fourth, behavioral scientists have begun to show an interest in integrating the effects of unions and collective bargaining into their models of job attitudes, motivation, and behavior (Hammer, 1978; Kochan, 1980; Gordon, et al., 1979; Brett, 1980).

All of these developments represent an encouraging sign that the study of the effects of unions and collective bargaining is undergoing both a revival and a transformation. It is a revival in the sense that it returns to the questions addressed in the classic economic study of Lewis (1963) and the corresponding behavioral studies of a somewhat earlier time period. It is a transformation in that the current generation of studies use larger data sets, more advanced statistical models and techniques, and attempt to integrate the study of unions into prevailing economic and behavioral theories.

While this renewed interest is encouraging, the major shortcoming of efforts so far is the lack of a coherent theory of the effects of unions and collective bargaining on the job outcomes of individual workers. The absense of a coherent theory has led to overexperimentation with a host of different specifications of the estimating equations. Given the cross sectional designs that these studies use, different specifications are very likely to provide different results. Comparison of the conflicting results found in two recent papers (Schmidt and Strauss, 1976; Schmidt, 1978) that use different models and the same data vividly illustrates the problem. The lack of a sound theory, therefore,makes choice of the appropriate model and estimating procedure difficult, and interpretation of the results hazardous. This paper will,there-fore,concentrate quite heavily on presenting a theory of how unions and

collective bargaining influence the job outcomes of workers covered under

union contracts and will attempt to spell out the theoretical assumptions that

underlie the different statistical techniques that have been used to estimate

the effects of unions.

The next section of the paper will outline a theory of how unions affect

the job outcomes of individual workers covered under a union contract. Then

the different statistical techniques used to model the effects of unions and

collective bargaining will be reviewed paying special attention to the implicit

or explicit theoretical assumptions underlying each. Empirical tests using

the QES data follow in the next section. The final section draws together the

empirical findings and the theoretical issues to offer implications for

future research and policy debates on the effects of unions and collective

bargaining.

The Theory

The theory developed here was formulated by integrating four broad sets

of factors that need to be taken into account in conceptualizing the effects

a union will have on the job outcomes of individual workers. The first set of

considerations is the expectations that workers in general, and union members

in particular, have of trade unions. Because unions are representative

organizations they must attempt to order their priorities and allocate their

resources in a manner that reflects the goals and expectations of their members.

Thus, one building block in a theory of what unions do in collective bargaining

should be what workers expect them to do. A second consideration is the power

that a union has to achieve substantive improvements in the job related goals

that it pursues. A union must achieve improvements primarily through collective

bargaining by changing employer behavior or by getting the employer to agree

to make changes in the terms and conditions of employment. Because the interests

of the employer and employees conflict, a union must be able to amass sufficient

bargaining power in order to achieve its goals. A third consideration should be the responses of employers to union negotiated changes in the employment contract. Over time employers engage in a number of adaptive strategies to recoup the labor cost impacts of union induced changes in the employment contract. These adaptive strategies in turn influence the relationship between the initial union induced contract changes and the ultimate effects on the job experiences and outcomes of workers. This adaptive behavior, therefore, should be incorporated into a theory of union effects. A fourth consideration in a theory of union effects should be the exogenous influences of external conditions, particularly, the effects of the competition in the labor and product markets and government policies that regulate the employment relationship. No theory of union effects can afford to ignore the influence of the economic and legal environment in which unions and employers make decisions. Finally, any theory of the effects of unions, and especially a theory that is tested with cross sectional data, must incorporate an understanding of the history of union organizing, the factors that motivated employees to unionize in previous time periods, the conditions that motivate workers to organize now, and the ways workers obtain jobs that are already unionized.

While this may not exhaust all of the factors that should go into a theory of the effects of unions on job outcomes, it does go beyond the more limited views that are found in previous works by economists who often ignore the role of bargaining power and over emphasize the role of competitive market forces or by behavioral scientists who tend to focus more on employee expectations and ignore the role of power and the effects of economic forces.

The major propositions in the theory are diagrammed in Figure 1. The general framework draws heavily on the recent work of Freeman and Medoff (1979). The effects of unions on job outcomes are seen as involving three sequential stages. Stage one focuses on the initial, primary, and dominant effects a union

is expected to have on the economic terms and conditions of the employment contract. Stage two then focuses on the adjustments employers make to cope with these primary effects in order to remain competitive. Stage three examines the joint effects of the managerial adjustment and the union responses they generate on the more behavioral aspects of union members' jobs.
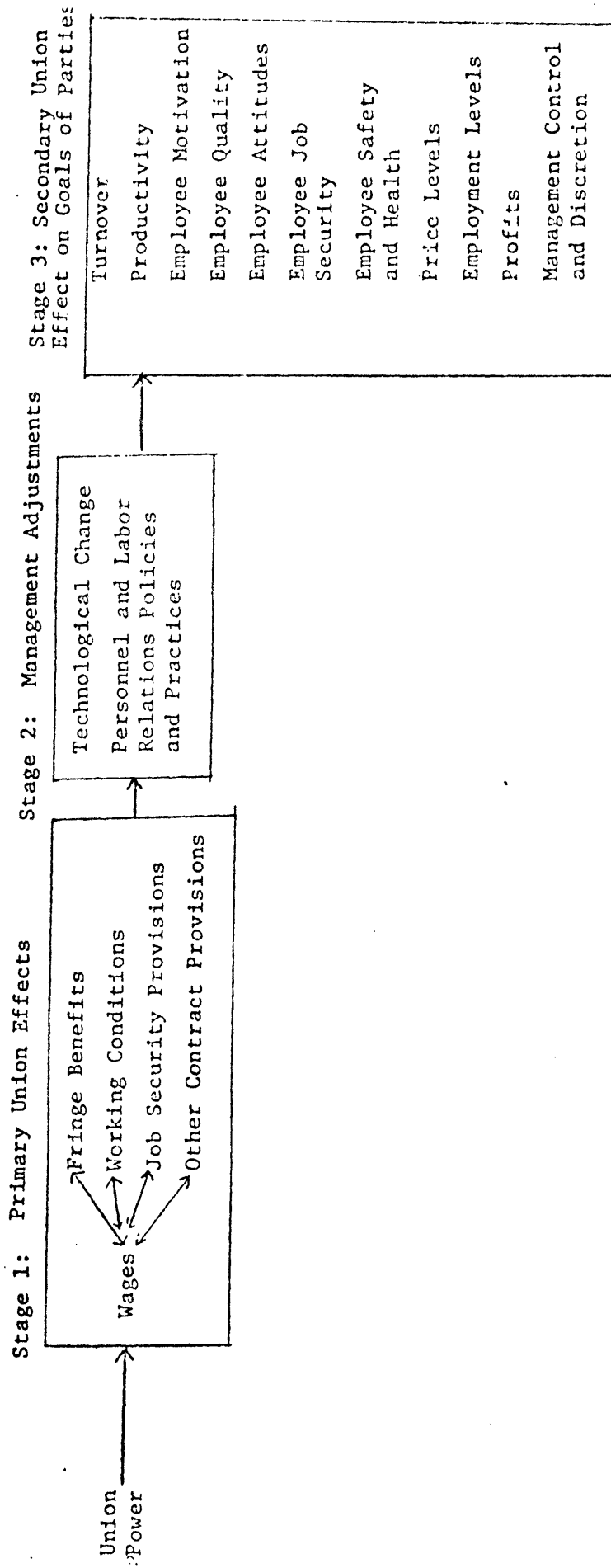
Stage One: The Primary Union Effects

The propositions in the first stage of the model are primarily derived from the goals and expectations that union members have of their unions. American workers have historically been, and currently are motivated to join unions out of a desire to improve their wages, fringe benefits, and working conditions and to increase their ability (power) to bring about changes in other substantive terms and conditions of employment. Furthermore, union members expect their unions to place high priority on the traditional "bread and butter" issues of wages, fringes, job security, etc. (Kochan, 1979). Therefore, the primary or first order effects of unions should be to improve these aspects of the employment relationship. Because wages are the primary factor in setting the price of labor and the economic rewards associated with the job, we will further assert the initial efforts of unions are normally devoted to improving wages.

The ability of a union to achieve improvements in these first order conditions depends on the amount of power it can bring to bear in collective bargaining. Although the concept of union power has proved to be an elusive one, there is sufficient empirical evidence that (1) on average unions do increase the wages and fringe benefits of their members, and (2) the size of the union effect varies considerably across occupations, industries, and over time. Furthermore, there has been some progress recently in identifying the sources of power that help explain the variation in union effects. For example, strikes, the structure of bargaining, extent of union organization,

Figure 1

Sequential Model of Union Effects

Stage 1: Primary Union Effects   Stage 2: Management Adjustments   Stage 3: Secondary Union Effect on Goals of Parties

Union Power

Wages
Fringe Benefits
Working Conditions
Job Security Provisions
Other Contract Provisions

Technological Change
Personnel and Labor Relations Policies and Practices

Turnover
Productivity
Employee Motivation
Employee Quality
Employee Attitudes
Employee Job Security
Employee Safety and Health
Price Levels
Employment Levels
Profits
Management Control and Discretion

the nature of the public policies that regulate bargaining, the degree of
industry concentration and/or regulation, management wage policies, the state
of the labor market, and other economic variables have all been used to
explain variations in wages and other bargaining outcomes under collective
bargaining (Hammermesh, 1970; Farber, 1974; Kochan and Wheeler, 1975;
Gerhardt, 1976; Kochan and Block, 1977; Ashenfelter, Johnson, and Pencavel,
1972; Hendricks, 1975; Anderson, 1979 (a) and (b); Hendricks, Feuille, and
Szerszman, 1979; Mitchell, 1979; Ehrenberg, 1979). The common theoretical
argument underlying these separate studies is that all of the variables
examined in some way contribute to or constrain the ability of a union to
achieve substantive wage gains above what the competitive market or the
employer would unilaterally provide. This theoretical proposition will be
referred to as the "union power" hypothesis.

To the extent that unions are successful in improving wages, there will
be some "roll up" effects on fringe benefits as well. In addition, unions attempt
to improve fringe benefits directly, since members are sensitive to the package
or distribution of benefits, as well as the level of wages and will prefer to
put more effort into improving fringes as their wage levels increase. Thus,
we also expect a positive union-nonunion fringe benefit differential. To the
extent that unions have sufficient power to increase wages and/or benefits, they
should also be able to better achieve other goals that workers expect of them.
Therefore, the "union power" hypothesis would suggest that positive relationships
should exist between unionization, wages, fringe benefits, and other terms and
conditions of employment that are favorable to employees.

Stage Two: The Management Adjustment Process

The next step in tracing the effects of unions requires an analysis of
how management responds to changes in the labor contract. Increases in
wages, benefits, or other terms of the labor argument should set in motion a

set of managerial adjustments. The central question here is how does management cope with or adjust to the increases in labor costs that are likely to occur as a result of collective bargaining? Freeman and Medoff (1979) argue that the effects of unions and collective bargaining on productivity depend on the way management adjusts to union induced changes in the employment relationship. They propose two alternative routes that firms may use to react to unions and collective bargaining. The first route is based on standard neo-classical economic theory and the second route is based on the "shock effect" hypothesis.

Neo-classical theory suggests that increases in labor costs result in some combination of the following responses: (1) a reduction in the scale of output and employment, (2) an increase in the price of the product, or (3) a substitution of capital for labor. The underlying assumption of this neo-classical proposition is that the system was in fact in equilibrium prior to unionization (or prior to the negotiated increase) i.e., that the employer had been operating at peak efficiency.

The shock effect proposition was first developed by Sumner Slichter (1941). He argued that the presence of a union and/or the negotiation of a new contract forces management to search for more efficient means of running the firm. In addition, increases in wages and other improvements in the terms and conditions of employment may have off-setting effects on other personnel costs (e.g., turnover and recruiting costs) and thereby reduce the pressure on unit labor costs. Therefore, in order to trace the effects of collective bargaining through to its conclusion one must also look at _how_ management tries to absorb or adapt to higher labor costs.

Figure 1 illustrates some of the paths these adjustments might take. Increases in wages and fringe benefits, or improvements in other terms of employment may reduce voluntary turnover and thereby reduce hiring and training costs and help the firm retain highly productive employees. Over time, higher

wages should allow the firm to recruit higher quality workers for bargaining

unit positions. Managers may gain increased employee motivation or effort

from improvements in the terms of the contract, invest more in training in

order to improve the ability or skill levels of employees, or become more

efficient in the use of supervisory and human resource planning functions by

formalizing policies, increasing the use of personnel and labor relations

specialists, etc.

Step 3: The Secondary Effects

Suppose a union is successful in increasing wages and fringe benefits and

the employer takes steps that are consistent with either the neo-classical

or the shock effect response to increased labor costs, or some combination or

both. The employer's response affects employee welfare. Depending on its

form, the response may reduce the number of jobs in the bargaining unit, change

the way in which the work is organized or the technology used to perform the

work, increase the speed of production or the closeness of supervision, or

reduce expenditures in other areas affecting the job environment (e.g.,

investment in plant maintenance, new equipment, health and safety devices,

etc.). These managerial responses are likely co produce a counter vailing union

response to deal with the job security and working conditions problems they

generate. The greater the size of the wage and benefit premiums won by the

union, the stronger the motivation on management to tighten up and reduce

expenditures in these other areas, and the more sensitive the union members

will become to these working conditions and job security concerns. Furthermore,

higher wages and improved benefits will lead workers to place a higher priority

on gaining improvements in other areas of the employment relationship for both

economic and psychological reasons. For example, the marginal tax rate on

wages has increased, and these other aspects of the employment relationship

presumably are positive economic goods that the majority of union members will

want to "purchase" as their incomes rise. There is ample behavioral theory and evidence that also explains and documents the fact that employee interest in nonwage aspects of their jobs increases as wages increase.

The traditional response of unions of employer and employee pressures to address these issues has been to negotiate (1) job security protections, (2) work rules that limit the ability of management to speed up the pace of work, (3) more time off with pay to ease job pressures and spread work opportunities as a means of protecting job security (e.g., lunch rest periods, shorter hours, added vacation and holiday time, higher overtime premiums, etc., and (4) safety and health protections and procedures. Employers can be expected to resist these union proposals because many further increase labor costs, reduce managerial discretion, and expand the scope of union influence. The ability of a union to achieve these contract provisions will again, therefore, be dependent on its power.

More recently, unions have been under some pressure from social critics to go beyond these "traditional" responses to try to improve the quality of working life directly by (1) getting workers more say over how their jobs are performed, (2) redesigning the job and work group structures to make work more interesting, and (3), in general, devising more direct strategies for coping with mental stress, job dissatisfaction, and related psychological reactions that workers have to their jobs.

Much less is known about the effects of unions on these aspects of the employment relationship. While a majority of union members apparently would

like to see their unions put some or a great deal of effort into improving these aspects of their employment relationship, members still assign a lower priority to having their unions attend to these issues than the traditional "bread and butter" issues of wages, benefits, and job security (Kochan, 1979).

The ultimate effect of unions on these issues depends on (1) the intensity of effort afforded them, and (2) the intensity of management resistance or support for efforts designed to address the psychological aspects of the employment relationship. Because these issues fall more within the domain of the personnel function of the firm and are at, or in most cases beyond, the frontier of the collective bargaining relationship, we can expect that the effects of unions in general, and of union power, to be weakest in this area. Managerial policies and practices are more likely to exert a dominant effect on the psychological aspects of the employment relationship. If unions are having an effect on those issues, it is most likely to be an indirect one through their influence on (1) working conditions, and (2) personnel policies and practices.

The central implication that can be drawn from the above discussion is that the effects of unions on an array of job outcomes depends on the relative strength of two opposing forces -- the power of the union to achieve its objectives versus the ability of the employer to respond to union gains in one area by holding the line on improvements in other areas. As we move from the primary or traditional areas of union efforts to the issues that are more marginal to the union, the effects of union power are expected to diminish relative to the importance of managerial policies and practices.

The sequential effects of unions in collective bargaining can be summarized in the following propositions:

1. The primary effect of unions will be to increase wages and fringe benefits and to improve working conditions of their members. Of these effects the initial and dominant effect of unions will be on wages.

2. The greater the union power, the more the wages of the union members will exceed wages of nonunion workers on comparable jobs.

3.	The more unions raise wages, the higher fringe benefits tied to wages will be.

4.	The more unions increase wages, the higher priority union members will assign to improving fringe benefits, working conditions, job security, and other provisions of the collective bargaining contract.

5.	The greater the union power, the more successful the union will be in improving the fringe benefits, job security, working conditions, and other terms of the labor agreement and the less the employer will be able to recoup higher wages through tradeoffs or compensating differentials in these areas of the employment relationship.

6.	The greater the union power the more the employer will formalize personnel and labor relations policies and practices in order to recoup the increased costs associated with the terms of the collective bargaining agreement.

7.	The effect of the union on the attitudes and behavior of individual workers, depends on the joint effects of the terms of the collective bargaining agreement and the ways the employer adapts its personnel and labor relations practices and policies.

The above propositions summarize the series of events that are set in motion as a result of unionization and that need to be addressed if we are to trace the overall effects of collective bargaining on job outcomes. In the following sections we will explore the ways these issues have been modelled.

Alternative Estimating Models

Spillover Effects

Several technical problems arise in modeling the effects of unions. One well known problem involves the "spillover" effects of union contract changes to the nonunion sector as nonunion employers match union negotiated wage increases or other improvements in order to discourage their employees from unionizing. This problem is especially severe in the more aggregate level studies because of wage imitation among employers in the same industry or occupations. It becomes less of a problem when large national samples of individuals are used to estimate the effects of unions. For this reason it will not be dealt with in

this research. The effect of unions on wages and other job outcomes will, however, be understated to the extent that spillover bias is not eliminated from the analysis.[1]

Definition of the Union Effect

The choice of an estimating technique must start with a clear definition of the "union effect" being estimated. The traditional definition of the union effect on wages is the proportionate difference in the wage paid a unionized worker relative to a similar nonunion worker (Lewis, 1963). That is, the referrent here is the individual worker and the comparison is presumably what that worker could command in the competitive labor market. This definition, however, may understate the cumulative effects of a union on the terms and conditions of employment offered for the jobs covered in the bargaining units contained in the sample. It is important to remember that unions negotiate conditions of employment for a specified set of bargaining unit positions or jobs. The employer (except in some craft union settings) is responsible for choosing who is hired into these positions, at least at the initial point of entry into the organization.

Suppose for example, a union organizes a bargaining unit at point t_0 and increases the wages paid for the jobs in this bargaining unit by 20 percent. Over time, however, as the original members of the bargaining unit retire, quit, or are terminated, the employer may replace these workers with workers of higher quality. If the Lewis definition of the union effect is used and human capital characteristics are included in the estimating equation as control variables

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[1]An indirect type of union spillover may also occur as follows: If wages rise in the union sector and unionized employment opportunities decline and surplus employment exists in the nonunion sector which further depresses nonunion wages.

(or if a simultaneous equation model is used that includes human capital

variables in a union membership equation), the union effect will be understated.

Instead, an estimate of the effect of the presence of the union at point t_1 on

the wages of that worker will be obtained. It will not, however, capture the

historical effects of the union on the wages paid for the _jobs_ in the

bargaining unit.

Neither of these definitions, i.e., the effects of unions on the wages of

individual workers, or on the jobs included in the bargaining unit, is

inherently superior. If the objective is to capture the complete historical

effects of unions then the job is the more appropriate referent. This is

especially important if one wants to make inferences about what would have

happened in the absence of the union, or what would likely happen over time

if the union was to disappear, since presumably the employer would slowly

readjust to the preunion pattern of recruitment and personnel management. If,

however, the objective is to determine the size of the wage premium that

current workers receive from unionization, net of past employer adjustments,

then the individual worker is the appropriate referent point.

All of the empirical studies that followed Lewis have adopted his

definition of union effect. For the sake of comparison we will do the same, now

that the reader has been duly cautioned about its limitations and biases.

Union Membership as an Exogenous or Endogenous Variable

Another problem relates to whether union membership should be treated as an

exogenous variable, or as one that is caused by some combination of other job

characteristics such as the wage level, working conditions, job security, etc.

A number of researchers have recently argued that unionization is a function of

wages, selected working conditions, individual, or industry characteristics

(Ashenfelter and Johnson, 1972: Schmidt and Strauss, 1976: Duncan and Stafford,

1978: Lee, 1978). Suppose, for example, unions tend to organize high wage indus-

tries or workers. In this case the union coefficient in an ordinary least

square regression equation captures both the effects of unions on wages

(the true effect of interest) and the effects of wages on unions. Therefore,

estimates of unions on wages will be overstated unless this simultaneous

and/or reciprocal causality is eliminated from the estimates.[2] Alternatively

if unions tend to organize low wage workers, failure to eliminate this effect

will understate the true effects of unions on wages. The same problem would

occur in estimating the effects of unions on other job outcomes to the extent that

certain good (bad) outcomes cause unionization. Recognition of this problem has

led to the use of two stage least squares whereby the first stage of the equation

estimates the probability of being unionized, and the second stage uses this

probability as the independent variable for generating the estimate of the net

effect of unions on wages.

In a cross sectional study there is no unambiguous way to determine through

statistical analysis which specification of the model most accurately captures

the true effects of unions. Therefore, we have to depend on the theory

underlying the alternative specifications to make our choice of an appropriate

model. The major problem with the studies using the two stage models is that

the theoretical rationales used to justify their approach are often

contradictory, and in some cases, are based on misguided or illogical premises.[3]

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[2]The technical problem involved here is that OLS assumes the error term is uncor-
related with the independent variables in the equation. If the probability of being
a union member is a function of the wage rate or some other job outcome, this assump-
tion is violated. A two stage least squares system of equations overcomes this problem
by generating an instrumental variable to measure the conditional probability of being
a union member that is independent of the effects of the union on wages. This instru-
mental variable is then entered into the second stage of the model and provides the
estimate of the union effect.

[3]There are other technical problems encountered in using two stage least squares with
a zero/one variable. To deal with these one would prefer to use a complex logit or
probit technique. The programs needed to employ these complex techniques were not
available at Cornell at the time this study was undertaken. Several studies have shown,
however, that the least squares estimates closely approximate the results of these more
complex analyses so that this should not be viewed as a major limitation (see Gunderson,
1974; Borjas, 1978)

Three major arguments have been put forward to justify the use of a two stage model. The first, and the most misguided of the three, is that individuals choose their union or nonunion status and, therefore, the probability of an individual being a union member should be modeled as an individual choice process. This leads to a model where unionization is dependent on the wages paid in union jobs or alternatively, the union-nonunion differential an individual should expect. For example, a recent study adopting this approach is based on the premise that:

> the probability of unionism is not affected by the actual level of earnings or by the level of earnings in the absence of a union, but rather by the difference between earnings without a union and earnings resulting from unionization which is assumed to affect the probability of unionism (Schmidt, 1978: 454).

While this may be a reasonable proposition for a model of the propensity of unorganized workers to vote for unions in a representative election (Farber and Saks, 1980: Kochan, 1979; Getman, Goldberg, and Herman, 1976: Schreisheim, 1978; Hamner and Smith, 1978), it totally ignores the reality that most of the private sector jobs that are currently unionized have been unionized for some time. Therefore, job applicants do not make individual choices as to whether to be unionized or not. Instead, the presence or absence of a union is a fixed characteristic of the jobs available to workers searching for employment. Any analysis, therefore, that tries to use a theory of individual choice behavior to model the probability of being a union member in cross sectional data starts from an erroneous view of reality. Estimates of the effects of unions on wages (or other outcomes) that use this approach should be treated with a great deal of skepticism, especially if the sample is primarily composed of "old" union jobs. Only if the union is of recent origin such that (1) the same individuals who voted for unionization remain on the jobs included in the sample, and (2) some of the preunion conditions that motivated the workers to unionize are still present, e.g., low wages, poor working conditions, etc., can this specification be justified on the individual choice premise. While these two conditions may fit a large

number of public sector union members, they are not likely to be valid for the vast majority of private sector union members, since the majority of jobs held by these workers were unionized between 1930 and 1960.

The second proposition that has been used to defend the two stage estimation models is somewhat more theoretically defensible, however, it yields opposite predictions from the individual choice model. This proposition is labeled the "employer selection hypothesis." It is consistent with the theoretical proposition developed in this paper that employers adapt to unions over time by selecting higher quality workers. Unionized employers are able to do so because they are paying a wage premium. Those using the two stage estimation techniques then extend this proposition to argue that because of this employer selection effect, the probability of being unionized (more particularly, being selected into a unionized firm) is dependent on one's human capital characteristics. Another way of putting this is that workers queue ^{up} for union jobs because they pay higher wages and benefits.

While this proposition can be sensibly applied to the probability of being hired into a unionized firm,it looses much of its validity as we consider the effects of unions on promotional opportunities within an organization. Here the effects of seniority provisions in union contracts mu be taken into consideration. The more seniority governs access to higher level jobs within unionized firms, the less individual differences in education,motivation, performance, etc. are likely to play in gaining access to higher paying positions. This implies that, once hired, workers with the least favorable alternatives in the external labor market are likely to stay within a unionized firm while the "most productive" workers with the greatest human capital (and those least likely to encounter discrimination in the labor market) and, therefore, with the most favorable opportunities in the external labor market, are more likely to leave unionized firms.

If this proposition is correct, and there is some evidence to suggest that it is (see Duncan, 1978; Lee, 1978 and the empirical results to follow on the determinants of the probability of leaving), then the employer selection hypothesis looses some, but perhaps not all, of its theoretical appeal.

The final argument that has been presented to justify treating union membership as an endogenous variable is the most difficult one to evaluate on theoretical or empirical grounds. This argument is that union membership depends on the determinants of the supply of union organizing efforts. It states that to the extent that unions have stronger incentives to organize high wage rather than low wage industries, jobs, or employers, treating membership as an exogenous variable will overstate the union effect because part of the observed wage differential existed prior to unionization (Ashenfelter and Johnson, 1972). Alternatively, to the extent that unions organize jobs with the most objective safety and health hazards or the most unpleasant working conditions, etc., treating membership as exogenous will underestimate their effects on these conditions of employment. To the extent that these types of jobs paid a compensating wage differential prior to union organization treating membership as an exogenous variable will overestimate the effects of union on wages (Duncan and Stafford, 1980). If, however, the union itself is responsible for obtaining the compensating wage differential, it may be appropriate to treat membership as an exogenous variable.

Unfortunately, we lack a good theory or empirical evidence to evaluate the supply of union services hypothesis. If either a high wage or a low wage bias is introduced into the analysis because of union organizing selectivity, the bias would be more of a problem in aggregate, (i.e., industry or occupational level) studies than in micro studies that use individual union and nonunion workers scattered across and within industries. This potential bias can also be reduced by eliminating from the sample individuals whose occupational characteristics effectively put them outside the domain of union activity, e.g., managers,

self-employed, high level administrators, and other salaried professionals in occupations where unions have made few inroads. The more homogeneous the occupational and industry characteristics of the sample and the more intra-occupational and intra-industry variation in union status contained in the sample, the less subject the analysis will be to this potential bias.

A variant on this proposition strays into the propensity to unionize territory again. Duncan and Stafford (1980), for example, argue that unpleasant working conditions, interdependent technologies, and structured work environments increase the propensity of individuals to unionize and reduce employer resistance to unions. Because these job characteristics should have been producing a compensating wage differential prior to unionization, part of the observed union wage differential should be attributable to the unpleasant nature of the union jobs. This argument is less theoretically appealing for two reasons. While it is true that unpleasant working conditions are part of the motivation of workers to unionize, they are no more, perhaps less, important than low wages (Farber and Saks, 1980) or dissatisfaction with wages and fringe benefits (Kochan, 1979). Furthermore, there is no historical evidence to support the contention that employers with interdependent technologies were any less resistant to unionization than employers with technologies in which each worker performed relatively independent tasks. The mass production industries such as steel, autos, rubber, chemicals, cement, oil, etc., would appear to fall into the interdependent technology category. These industries were largely organized by mass sit down strikes and other exercises of union pressure in the 1930's. To argue that these employers were less resistant to union initiatives during the mass organizing drives of this earlier time period is inconsistent with the historical record. There is also no evidence that employers with these characteristics are currently more amenable than others to organizing. Instead, all employers that are unorganized appear

to place a high priority on remaining nonunion (Kochan, 1980; Freedman, 1979) and the large manufacturing industries with interdependent technologies, unpleasant working conditions, and structured work environments do not appear to be an exception to this generalization.

In summary, an evaluation of the theoretical foundation underlying the view that unions should be treated as an endogenous variable suggests that (1) the individual choice hypothesis can be dismissed, except in the case of new union organizing, (2) the employer selection hypothesis may be valid for the initial hiring decision but is offset by the effects of unions on promotional opportunities within a firm, and (3) the supply of union services hypothesis is more difficult to resolve on theoretical grounds. Even this latter issue is more important when studying union effects at an aggregate level of analysis than when the unit of analysis is the individual worker. Furthermore, both the individual choice and the supply of union services hypotheses appear to be most valid for newly or very recently organized workers such as public employees.

Thus, all of the theoretical arguments put forth for treating unions as endogenous are found to be theoretically wanting when applied to studies of predominantly private sector individuals in jobs that have been unionized for some time. Even if one believes that there is some theoretical merit to each of the three arguments, their effects should be offsetting and, therefore, the direction of the hypothesis or their net effect is unclear. This further argues against experimenting with more complex models since whatever result is obtained can be justified or rationalized as being consistent with one of these arguments. Finally, any measurement error in the variables or any error due to misspecification of the model is compounded by adding additional stages to an estimating equation. This especially is true when one of the variables (union membership) is dichotomous. Thus, partly for technical reasons, but predominantly

for theoretical reasons, treating union membership as an exogenous variable is still the most appropriate specification for estimating the effects of unions on wages and other job outcomes.

Interdependence of Job Outcomes

Another factor influencing the choice of an estimating model is the interdependence of the outcomes of a job that a union is expected to affect directly or indirectly. This is where the theory outlined in the previous section plays its most important role in specifying the appropriate estimating equation. Specifically, the estimation technique should be consistent with the sequential propositions discussed earlier, namely, (1) the first effect of unions is to increase wages, (2) unions then will increase fringe benefits both indirectly through the roll up effects of wages and directly by expanding the range of benefits available and improving the level of benefits, (3) the effect of unions on working conditions depends on the outcome of the adjustments that employers make to increased wage and fringe benefit costs and the power of the union to overcome the employer efforts to compensate by reducing expenditures in this area.

The choice of estimating techniques include (1) treating each outcome as independent of the others by using ordinary least squares regression equations for each outcome, (2) treating the outcomes as simultaneously determined in a system of equations, (3) treating the outcomes as a recursive system in which the initial effect is on wages and the remaining effects are a function of exogenous variables and wages. Our theory suggests the effects of unions on wages, benefits, and working conditions can be treated as a "block recursive" system, i.e., wages are causally prior to fringe benefits and wages and fringe benefits together are causally prior to working conditions. All of these primary

effects are then causally prior to the effects of unions on the more behavioral

aspects of workers' jobs. The specific term of the contract or objective job

outcome that should be treated as the path by which the union influences

the behavioral or psychological aspects of the job may vary from one behavioral

dimension to another. For example, the effects of unions on job stress may depend

most on working conditions or on the design of the job. The effects of the

union on satisfaction with wages obviously is most influenced by the effects

of unions on the actual wages, etc.

It is recognized that the preference for ordinary least squares and the

recursive system that the above discussion implies is not consistent with

recent trends in the literature on the effects of unions. Therefore, two

stage solutions and other reasonable alternatives to the theoretically preferred

specification will be presented in this paper wherever it is feasible to do so.

This will illustrate how sensitive results from these types of studies are to

different specifications and will also provide information on the direction of

bias that is present in our results, if our theory is misguided. However, where

differences are found between the results of two or more different estimating

models, we will put more weight on the results obtained from the model that is

consistent with our theory.

The Sample

A complete description of the 1977 QES is found in Quinn and Staines (1979).

The analysis in this report is limited to the 624 hourly wage earners in the

sample. Two reasons influenced the decision to limit the analysis to this

subset of the respondents. First, as noted earlier, limiting the analysis to

hourly wage earners eliminates a large number of managerial, professional, and

other white collar nonunion employees. These groups tend to have higher salaries

and better fringe benefits, more pleasant working conditions, more autonomy and

flexibility in decisions affecting their jobs and work hours, lower exposures to

job hazards, and higher levels of job satisfaction. Since many (but not all)

of these workers lie outside of the potential domain of union organizing, a more

comparable control group of nonunion workers is obtained by excluding them.

A second reason for excluding salaried workers is that it is difficult to

construct a reliable measure of hourly wages from the annual income reported

in the survey. Conversely, it is difficult to construct a reliable measure

of annual income from the hourly wage data without making a number of

questionable assumptions about the number of hours and weeks worked per year.[4]

Wages

Wages serve as the starting point for the analysis of the effects of

unions on job outcomes. Numerous studies have shown that unions significantly

increase the wages of their members above the wages of comparable nonunion

workers. Although the size of the union differential varies considerably from

study to study, there seems to be a convergence of estimates within the 15 to 20

percent range (Ashenfelter, 1976; Bloch and Kuskin, 1978). Those who have

employed two stage estimation techniques, however, generally have found smaller,

and often insignificant union effects on wages. The results of the analysis per-

formed on these data are presented in Tables 1 and 2. The discussion starts with

the preferred model, i.e., the OLS estimates. Equations present the results for

the pooled sample and the union and nonunion samples separately in order to

determine whether the structure of coefficients vary significantly between union

and nonunion equations. The results of the more complex two-stage models in which

unionism is treated as an endogenous variable are then presented.

The coefficient on the union variable in the OLS equation produce estimates

of approximately a 20 to 22 percent increase in the hourly wage rate associated

[4]A description of each of the measures used in the analysis, along with their
means and standard deviations are available from the authors upon request.

TABLE 1

OLS Wage Equations

(Standard Errors in Parenthesis)

| Independent Variable | Pooled Sample | | | Split Sample | | | |
| | | | | Union | | Nonunion | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	.35*** (.14)	.21 (.15)	.55*** (.14)	.30 (.24)	.47* (.24)	.28 (.21)	.74*** (.19)
Sex	.30*** (.03)	.28*** (.03)	.29*** (.03)	.31*** (.05)	.31*** (.05)	.28*** (.04)	.31*** (.04)
Race	-.06 (.04)	-.06 (.04)	-.04 (.04)	-.21*** (.06)	-.19*** (.06)	.03 (.05)	.03 (.05)
Union Cont.	.21*** (.03)	.22*** (.03)	.22*** (.03)				
Age	.01* (.01)	.01 (.01)	.01** (.01)	.01 (.01)	.01 (.01)	.01 (.01)	.01* (.01)
Education	.06*** (.01)	.06*** (.01)	.06*** (.01)	.04** (.02)	.04** (.02)	.07*** (.01)	.07*** (.01)
Trade School	.05*** (.02)	.05*** (.02)	.04*** (.02)	.05** (.02)	.05** (.02)	.03 (.02)	.03 (.02)
Work Exper.	.01*** (.01)	.01*** (.01)	.01*** (.01)	.01*** (.01)	.01*** (.01)	.01*** (.01)	.01*** (.01)
Industry Inj.	.12*** (.02)	.12*** (.02)	.12*** (.02)	.17*** (.04)	.18*** (.04)	.09*** (.03)	.09*** (.03)
North Cent.	.13*** (.04)	.12*** (.04)	.11*** (.04)	.24*** (.06)	.25*** (.06)	.06 (.05)	.04 (.15)
Southern	.03 (.04)	.02 (.04)	.01 (.04)	.15** (.07)	.15** (.07)	-.01 (.05)	-.02 (.05)
Western	.16*** (.05)	.16*** (.05)	.15*** (.05)	.26*** (.08)	.26*** (.07)	.13** (.06)	.10* (.06)
Occupation	-.10*** (.03)	-.09*** (.03)	-.07** (.03)	.01 (.07)	.01 (.07)	-.11*** (.04)	-.08* (.04)
Secondary	-.18*** (.03)	-.19*** (.03)	-.18*** (.03)	-.17*** (.06)	-.15** (.06)	-.19*** (.04)	-.17*** (.04)
Suburb	.08 (.07)	.08 (.07)	.07 (.07)	.04 (.09)	.03 (.09)	.01 (.12)	.01 (.12)
Small City	.01 (.06)	.01 (.06)	.02 (.06)	-.02 (.08)	-.01 (.08)	-.06 (.12)	-.04 (.11)
Rural	-.06 (.07)	-.06 (.07)	-.05 (.07)	-.11 (.08)	-.11 (.08)	-.13 (.12)	-.09 (.12)
Mid-Size Firm	.01 (.06)	.01 (.04)	.01 (.03)	-.04 (.06)	-.04 (.06)	.03 (.05)	.03 (.05)
Large Firm	.02 (.05)	.02 (.05)	.03 (.05)	-.08 (.07)	-.07 (.07)	.09 (.07)	.09 (.07)
Huge Firm	.07* (.04)	.07* (.04)	.09** (.04)	-.05 (.06)	-.04 (.06)	.20*** (.06)	.21*** (.06)
Autonomy		.08*** (.03)		.04 (.05)		.11*** (.04)	
D.O.T. Score			-.01*** (.01)		-.01 (.01)		-.02*** (.01)
R^2	.61	.62	.63	.55	.55	.49	.52
F	41.06	39.80	41.50	11.45	11.63	15.55	16.93
n	518	518	518	196	196	322	322

* = significant at .10
** = significant at .05
*** = significant at .01

with union coverage. These estimates fall within the upper end of the range

of estimates obtained in recent studies.[5] The union coefficients do not

change appreciably when a variety of potential compensating differentials

are added to the equation. Among those added to this pooled equation were

measures of the injury severity in the industry (work days lost), degree of

autonomy the worker perceives on the job, and the Dictionary of Occupational

Titles (DOT) score of measuring the value of the functions of the job in

relation to its work with people, data, and things. When interactions between

union membership and these terms were included in the equation, however, the

union coefficient tended to become unstable and the interactions were sometimes

significant. This suggested the need to split the data into a union and

nonunion sample in order to see whether the effects of these variables differ

significantly across the two sectors.

The overall structure of the coefficients differed significantly between

the union and nonunion samples. Comparison of specific coefficients shows

that there is (1) a significantly higher compensating differential associated

with time lost due to injuries in the union sector,[6]   (2) significantly less of

a positive differential associated with job autonomy in the union sector, and

(3) significantly less of a negative differential associated with a low ranking

on the DOT measure of job skill in the union sector.

The higher compensating differential for injuries observed in the union

sector is especially important for those who are concerned that OLS wage

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[5]One possible reason for the larger estimates obtained here is that the
sample consists entirely of hourly wage earners. This eliminates more salaried
professionals and other white collar workers who generally have
higher wages and lower rates of unionization. Previous studies have shown that
the effects of unions on the wages of these occupations are considerably less
than that of blue collar workers (Bloch and Kuskin, 1978).

[6]Additional analysis performed by Robert S. Smith showed that the compensating
differential for the risk of death was also significantly greater in the
union sector but there was no significant differential when the injury rate
was used. These results are consistent with a recent paper by Olson (1979).

equations overstate the effects of unions because part of the union differential may be due to a compensating differential. This point is stressed in a recent paper by Duncan and Stafford (1980). The finding that there is a larger differential in the union sector suggests that part of the differential may in fact be caused by the presence of a union.

The differences observed between the union and nonunion samples on the autonomy and DOT index are consistent with the argument and evidence that unions compress the wage structure by raising the wages of jobs at the lower ends of the job structure and limiting the wages at the higher ends. In other words, unions increase wages on unskilled jobs but limit the rewards associated with jobs that involve a higher degree of discretion and independent judgement.

The results of the two stage least square equations are shown in Table 2. Several different specifications of the wage and union membership equations were examined, however, the consistent results obtained were that (1) the coefficient on the instrumental variable in the wage equation measuring the probability of being unionized increased in magnitude to between 28 and 31 percent. The standard error on the variable consistently increases as well, however, so that the coefficient did not reach the conventional significance levels. [7] (The t ratios tended to fall in a range of between 1.15 and 1.48). The instrumental wage variable in the union equation was consistently positive and significant.

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[7] It should be noted that since OLS produces minimum variance estimations an instrumental variable estimator will always have a greater variance. In any event, t statistics for the coefficient in the second stage of these equations should only be viewed as general approximations of the true level of significance of these coefficients.

Importance of Fringe Benefits

The theory outlined in section one of this paper argued that union members would place a higher value on the nonwage aspects of their jobs than would comparable nonunion members. Part of this differential is due to the wage effects of unions. This proposition was tested using a question that asked respondents whether they would be willing to forego a 10 percent wage increase for improvements in a list of 11 alternative terms and conditions of employment. The percentage of issues for which the respondent was willing to forego a 10 percent increase was computed. This percentage serves as an overall willingness to trade-off wages for improvements in nonwage benefits. In addition, three subindices were calculated to examine the willingness to tradeoff wages for (1) economic fringe benefits (e.g., health insurance, pensions, holidays, etc.), (2) working conditions (e.g., safety and health improvements, less hard work, etc.), and (3) quality of work improvements (e.g., more interesting work, more control over work decision, etc.). The results of these analyses are shown in Table 3. The estimating equation also included controls for hourly wage rate, demographic characteristics, two measures of perceived exposure to job hazards, and a measure of mental and physical strain the worker reported to be under.

The results for the overall equation show that union membership significantly increases the willingness to trade off a wage increase for improvements in these nonwage aspects of the job. In addition, positive coefficients are found, as expected, for wages, exposure to job hazards, and mental/physical strain. The union coefficient is positive but no longer significant when the fringe benefits subindex serves as the dependent variable. The effect of higher wages dominates this equation. Older workers, as might be expected, also indicate a significantly stronger preference for improving fringe benefits than their younger counterparts. The union coefficient in the working conditions equation

is again positive but insignificant. The effects of being exposed to job
hazards dominates this equation. Workers who report more mental and physical
strain, higher wages, and less formal education and training also indicate a
stronger preference for improved working conditions. Union members again
indicate a slightly higher but insignificant preference for improving the quality
of work aspects of their jobs. The most important determinant of the preference
for improving the quality of work is age--younger workers show a stronger
preference for this aspect of this tradeoff than do older workers. Again,
workers with higher degrees of exposure to job hazards also report a stronger
preference for improving the quality of work.

Fringe Benefits

Unions can be expected to increase both the range of fringe benefits
available to workers and the level of benefits provided within each fringe
category (or the costs of the benefits). The data from the QES only allow
us to examine the effects of unions on availability, since the level of the
benefits was not ascertained.

The central theoretical proposition outlined earlier and tested here is
that unions increase fringe benefits (1) directly because of their members'
interest in fringes and their ability to exert power in collective bargaining,
and (2) indirectly through the roll up effects of wages. The model used to
estimate these direct and indirect effects is an OLS equation that controls
for wage level (see Table 4). The total union effect is computed as the sum of
the regression coefficient in this equation plus the product of the wage
coefficient and the union coefficient in the wage equation. Tables 1 and 4
show that the union coefficient is .21 and the wage coefficient is .12. The
total union effect on the availability of fringes therefore is .052. Evaluated
at the mean of the dependent variable, this total effect implies that compared

TABLE 3
Willingness to Tradeoff Wage
Increase for Improvement in:
(Standard Errors in Parentheses)

Independent Variable	Total Benefits	Working Conditions	Fringe Benefits	Quality of Work
Intercept	.10	-.09	.10	.27
Ln(Hourly Wage)	.01*** (.01)	.01** (.01)	.01*** (.01)	-.01 (.01)
Head of Household	-.02 (.03)	-.01 (.03)	-.05 (.04)	-.01 (.04)
Union Contract	.05** (.02)	.04 (.03)	.04 (.03)	.05 (.03)
Age	-.01 (.01)	.01 (.01)	.01** (.01)	-.01*** (.01)
Education	-.01 (.01)	-.03*** (.01)	-.01 (.01)	.02 (.01)
Trade School	-.02* (.01)	-.03** (.01)	-.01 (.01)	-.01 (.01)
Sex	-.01 (.03)	-.03 (.03)	.02 (.04)	.01 (.04)
Industry Injury	.01 (.01)	.01 (.01)	-.01 (.01)	.01 (.01)
Severity of Job Dangers	.09*** (.02)	.14*** (.02)	.04** (.02)	.07*** (.02)
Personal Injury	-.01 (.01)	.01 (.01)	-.01** (.01)	-.01 (.01)
Physical Condition	.04** (.02)	.06** (.02)	.07*** (.10)	.02 (.08)
R^2	.14	.20	.10	.08
F	8.34	12.14	5.42	4.55

* = significant at .10
** = significant at .05
*** = significant at .01

n = 553

to the average nonunion worker, the average union member has approximately

a 14 percent higher probability of receiving the fringe benefits examined

here. Treating each fringe as a separate dependent variable showed that

union membership significantly increases the probability of receiving

the following fringes: medical insurance, life insurance, pensions,

dental insurance, eyeglass benefits, and thrift or savings programs. Union

membership reduces the probability of being covered by a profit sharing

plan. Two alternative specifications of equations estimating the effects

of unions on fringes could be considered. The first alternative would be

to treat unions as endogenous by using an instrumental variable to capture

the union effect. The second alternative would be to treat the union as

exogenous. The union variable in the fringe and wage equations is the same

as in our OLS model. It is not an instrumental variable. The results

of the two stage least squares fringe model analyses are presented in Table

5. Both the wage coefficient in the fringe equation and the union co-

efficient in the wage equation are positive. These results do not support

the hypothesis that a tradeoff exists between the range of fringe benefits

offered a worker and the wage rate of hourly wage earners. The positive

coefficients might be interpreted as being consistent with either a positive

goods or a union power explanation. In any event, these results should

be interpreted with care for two reasons. First, all of the technical

problems associated with the two-stage equations for estimating union effects

are also present in these equations. Second, to provide an adequate test

of the compensating differential hypothesis the value of the fringe benefits

being offered (or the cost to the employer) should be measured in addition

to the availability of the benefits.

TABLE 4
Fringe Benefits Available
(Standard Errors in Parentheses)

Independent Variable	Full OLS Model	OLS Model Excluding Wage Level
Intercept	.17** (.07)	.21*** (.07)
Sex	.04** (.02)	.08*** (.02)
Race	-.01 (.02)	-.02 (.02)
Union Contract	.03* (.02)	.05*** (.02)
Age	-.01*** (.01)	-.01*** (.01)
Education	.01 (.01)	.02 (.01)
Trade School	-.01 (.01)	.01 (.01)
Work Experience	.01 (.01)	.01 (.01)
Industry Injury	-.02 (.01)	-.01 (.01)
North Central	-.01 (.02)	-.01 (.02)
Southern	.02 (.02)	.02 (.02)
Western	.03 (.03)	.05** (.03)
Occupation	-.02 (.02)	-.04** (.02)
Secondary Industry	.04** (.02)	.02 (.02)
Suburb	-.01 (.03)	.01 (.04)
Small City	.01 (.03)	.01 (.03)
Rural	-.01 (.03)	-.02 (.03)
Mid-Size Firm	.06*** (.02)	.05*** (.02)
Large Firm	.12*** (.02)	.12*** (.02)
Huge Firm	.15*** (.02)	.16*** (.02)
Ln(Hourly Wage)	.12*** (.02)	
R^2	.38	.34
F	13.99	12.66

* = significant at .10
** = significant at .05   n = 485
*** = significant at .01

Occupational Injuries

Efforts to estimate the effects of union membership on the rate
of injuries from these data were generally unsuccessful. The respondents
were asked to indicate the number of days they had lost due to job related
injuries or illnesses in the past year. Regression equations that used
this measure as a dependent variable failed to produce accurate predictions
(the OLS equation had an F value of only 1.65) or explain more than 6
percent of the variance. OLS and two-stage equations are presented in
Table 6. The union coefficients are not significant in either equation,
although the sign changes from negative to positive in moving from the OLS
equation to the two stage equation that uses an instrumental variable to
calculate the probability of being a union member. Again, however, neither
of these equations has sufficient predictive or explanatory power to
take seriously.

Exposure to Job Hazards

In addition to data on personal injuries, respondents were asked
to indicate whether or not they are exposed to a number of job hazards and if
so, the extent to which these hazards presented serious problems to them.
The results of OLS and two stage least squares equations (see Table 7)
both show that union members report more problems with job hazards than
comparable nonunion workers. This is true even after controlling for the
average injury rate in the industry. This result also holds up in a two
stage system which should be adjusting for the fact that unions are more
likely to organize hazardous industries and jobs.

These results can be interpreted in one of two ways. If these
workers perceptions reflect reality, then union members are exposed to more
job hazards, and even after controlling for the location effect of union

TABLE 5
Two Stage Least Squares
Fringe Benefit Systems
(Standard Errors in Parentheses)

	Union Variable:			
	Endogenous		Exogenous	
Independent Variable	Fringes Available	Ln(Hourly Wage)	Fringes Available	Ln(Hourly Wage)
Intercept	.12 (.10)	.29** (.12)	.28*** (.07)	.28** (.12)
Sex	.01 (.03)	.28*** (.04)	.02 (.02)	.29*** (.03)
Race	.01 (.02)	-.07* (.04)	-.01 (.02)	-.06* (.04)
Union Contract			.01 (.02)	.20*** (.03)
Union Cont. Instrument	.20** (.08)	.30 (.25)		
Age	-.01*** (.01)	.01* (.01)	-.01*** (.01)	.01* (.01)
Education		.07*** (.01)		.07*** (.01)
Trade School		.05*** (.02)		.06*** (.02)
Work Experience	-.01*** (.01)	.01** (.01)	.01*** (.01)	.01*** (.01)
Industry Injury	-.03** (.02)	.11*** (.03)	-.04*** (.01)	.11*** (.02)
North Cent.		.10* (.05)		.11*** (.04)
Southern		.02 (.05)		.01 (.04)
Western		.15** (.06)		.17*** (.05)
Secondary Industry		-.11** (.05)		-.13*** (.03)
Mid-Size Firm	.08*** (.02)	-.03 (.06)	.05*** (.02)	-.02 (.04)
Large Firm	.15*** (.03)	-.02 (.07)	.11*** (.02)	-.01 (.05)
Huge Firm	.19*** (.03)	.04 (.09)	.14*** (.02)	.07 (.04)
Ln(Hourly Wage) Inst.	.28*** (.07)		.17*** (.06)	
D.O.T. Score	.01 (.01)		.01 (.01)	

* = significant at .10
** = significant at .05
*** = significant at .01

n = 485

TABLE 6
Personal Injury
(Standard Errors in Parentheses)

Independent Variable	OLS Personal Injury	2SLS Personal Injury	Ln(Hourly Wage)
Intercept	-5.41 (6.27)	-2.35 (6.86)	.30** (.13)
Sex	.69 (2.08)	-.63 (2.38)	.29*** (.06)
Race	-1.52 (2.48)	-1.55 (2.53)	-.06 (.04)
Union Contract	-.11 (2.15)		
Union Contract Instrument		7.98 (6.81)	.36 (.37)
Age	-.06 (.08)	-.05 (.08)	.01* (.01)
Education			.07*** (.01)
Trade School			.05** (.02)
Work Experience	.06 (.06)	.01 (.08)	.01 (.01)
Industry Injury	2.46* (1.44)	1.75 (1.57)	.10*** (.03)
North Central			.09 (.06)
Southern			.01 (.06)
Western			.13* (.07)
Secondary Industry			-.11* (.07)
Mid-Size Firm	.11 (2.32)	-1.40 (2.66)	-.03 (.08)
Large Firm	-1.87 (3.23)	-4.18 (3.76)	-.03 (.11)
Huge Firm	-.49 (2.70)	-3.63 (3.71)	.02 (.13)
D.O.T. Score	-.12 (.22)	-.12 (.22)	
R^2	.0149		
F	.722		
n	489	518	

* = significant at .10
** = significant at .05
*** = significant at .01

jobs through the two stage procedure, there is no evidence that on average unions have reduced exposures to job hazards. Another interpretation might be that unions make their members more aware of the hazards found on their jobs and raise the consciousness of workers about the problems these hazards pose. Unfortunately, there is no clear way of determining which of these is the most accurate interpretation of these findings.

Voluntary Turnover

The evidence from several recent studies suggest that unions significantly reduce the probability that a worker will voluntarily quit his or her job (Freeman 1976; Farber 1979). Two potential explanations have been offered to explain why this is the case, both of which implicitly draw on the propositions offered more than two decades ago in the March and Simon (1958) turnover model. One is that unions increase wages and improve other terms of the employment contract and thereby increase the value of the job to the worker over the value of potential alternative jobs in the external labor market. March and Simon (1958) referred to this type of effect as reducing the ease of leaving an organization. This effect should be especially strong for high seniority workers, for workers with few marketable skills, or for workers most susceptible to discrimination in the labor market. While there is little question that this explanation provides at least part of the explanation for the empirical findings, Freeman argues that even after controlling for the economic effects of union membership the probability that union members will quit is still lower. This led him to suggest an "exit-voice" hypothesis for explaining this finding. The argument is that unionism and collective bargaining provide workers with alternative mechanisms for voicing dissatisfaction on the job. These mechanisms

TABLE 7
Job Dangers

(Standard Errors in Parentheses)

Independent Variable	OLS Job Dangers	2SLS Job Dangers	Ln(Hrly Wg)
Intercept	1.08*** (.20)	1.28*** (.23)	.29** (.12)
Sex	.23*** (.06)	.15** (.08)	.29*** (.04)
Race	.11 (.08)	.10 (.08)	-.06 (.04)
Union Contract	.22*** (.07)		
Union Contract Instrument		.70*** (.22)	.29 (.24)
Age	-.01*** (.01)	-.01** (.01)	.01* (.01)
Education			.07*** (.01)
Trade School			.05*** (.02)
Work Experience	.01 (.01)	-.01 (.01)	.01** (.01)
Industry Injury	.13*** (.05)	.08 (.05)	.10*** (.03)
North Central			.11** (.05)
Southern			.01 (.05)
Western			.15** (.06)
Secondary Industry			-.13** (.05)
Mid-Size Firm	.10 (.07)	.01 (.09)	-.01 (.06)
Large Firm	-.15 (.10)	-.27** (.12)	-.01 (.08)
Huge Firm	.21*** (.08)	.03 (.12)	.05 (.09)
D.O.T. Score	-.01 (.01)	-.01 (.01)	
R^2	.1705		
F	10.55		
n	524	518	

* = significant at .10
** = significant at .05
*** = significant at .01

provide an alternative to leaving when workers experience job dissatisfaction. March and Simon refer to factors that hold workers to their jobs by reducing the desirability of leaving the organization. Most empirical studies test this part of the March and Simon model by relating job satisfaction to turnover.[8]

Two questions were asked of the respondents that allow us to explore the strength of these two explanations for what holds union members to their jobs more strongly than nonunion members. One question asked respondents how likely it was that they would leave their organization in the next year. To test whether the exit-voice argument plays a role in the decision to stay on the job, the effects of job dissatisfaction on the propensity to leave the organization can be compared in the union and nonunion sectors. If the voice effect is operating, job dissatisfaction should be less closely associated with propensity to leave in the union than the non-union sector.

The second question asked respondents how easy it would be to replace their job in the external labor market with one of equivalent value. This latter question provides a relatively straightforward test of strength of the "ease of leaving" explanation for lower propensity of union members to quit their jobs. We would expect, therefore, that union membership is negatively associated with the ease of replacing one's job on the external market and that this effect is strongest for unionized workers who have higher seniority, lower education, and are nonwhite.

The results of the regression equations used to analyze the propensity

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[8] A third interpretation of the association between union membership and turn- over has recently been offered to justify the use of a two stage estimation system. The argument is that employees with low turnover propensities are selected into union jobs. The results of the OLS equations discussed below are checked by estimating a two stage system using an instrumental variable to measure the probability of being unionized. No significant differences from the OLS results were obtained.

to leave are shown in Table 8. OLS equations were run for the propensity
to leave equation controlling for wage level, experience, education and
training, age, sex, race, and job satisfaction. After controlling for these
variables union membership has a negative but insignificant effect on the
propensity to leave. The coefficients on the wage, seniority, age, and
job satisfaction variables have the expected sign and are highly significant.
Race, sex, and education are not significant in this equation. Thus,
after controlling for the wage effects and for job satisfaction, union
membership does not significantly affect the propensity to leave. When wage
rate is dropped from the equation, however, the union coefficient is negative
and highly significant. [9]

Splitting the sample into its union and nonunion components, however,
provides a more appropriate test of the voice hypothesis. These results
are also presented in Table 8. The structure of coefficients for the union
and nonunion sample differ significantly ($F=3.68$; $p.<.01$). The major
differences in the individual coefficients indicate job dissatisfaction
exerts twice as strong an effect on the propensity to quit of nonunion
workers as union members. This is consistent with the voice hypothesis.
In addition, the coefficient on seniority is slightly larger for the
union members indicating that the tendency for high seniority union members
to remain on their job is slightly stronger than for high seniority non-
union workers.

The regressions run using the measure of the ease of replacing one's
job as the dependent variable are presented in Table 9. Being a union

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[9] Additional regression runs showed that the availability of fringe benefits
and the perceived ability to replace one's job with one of equivalent
value in the external market also are significatnly related to propensity
to leave in their expected directions (see Table 8).

TABLE 8
Probability of Leaving Job
OLS Model
(Standard Errors in Parentheses)

Independent Variable	Total Sample	Split Sample Union	Nonunion
Intercept	1.58	1.17	1.83
Sex	.02 (.04)	.02 (.07)	.01 (.05)
Race	.08 (.05)	.26*** (.08)	-.05 (.06)
Union Contract	-.04 (.04)		
Age	-.01*** (.01)	-.01 (.01)	-.01*** (.01)
Education	-.01 (.01)	-.01 (.02)	.02 (.02)
Work Experience	-.01*** (.01)	-.01*** (.01)	-.01*** (.01)
Ln(Hourly Wage)	-.16*** (.05)	-.14* (.08)	-.16** (.07)
Total Satisfaction	-.21*** (.04)	-.11** (.05)	-.30*** (.05)
R^2	.24	.22	.26
F	23.83	9.41	18.21
n	607	237	368

    * = significant at .10
   ** = significant at .05
  *** = significant at .01

member has a significant negative relationship with this measure after
controlling for wage rate, age, sex, seniority, race and job dissatisfaction.
Splitting the sample again shows that the structure of the coefficients
differ significantly between union and nonunion workers (F=4.70; p<.01).
High seniority union members again indicate they would expect to have a
harder time finding a job of equivalent value than do the nonunion workers
of comparable seniority. The effects of education also differ between
these two samples. In the union sample, the higher the education, the
easier it is believed to be to obtain a job of comparable value, while
in the nonunion sector education is not significantly related to this
belief. Race again shows a significant difference in the direction contrary
to our expectations. Nonwhite union members are more likely to believe
they could obtain jobs of equivalent value than white union members while
race has no significant effect in the nonunion sample.

The main conclusions that can be drawn from these results are that
most of the variance in the relationship between union membership and pro-
pensity to stay on the job is accounted for by the wage (and perhaps other
economic benefits as well) advantages that union members enjoy. There
is some evidence supporting the exit-voice hypothesis, however, since union
members who are dissatisfied with their jobs are less likely to quit
than dissatisfied nonunion workers.

Job Attitudes

Do unions affect the job attitudes of workers? The evidence to date
on this question is rather mixed. Most of the studies available have
focused on the rather narrow, and somewhat controversial question (Salancik
and Pfeffer, 1977; Hammermesh, 1976) of the relationship between union

TABLE 9
Job Replacability
OLS Model
(Standard Errors in Parentheses)

Independent Variable	Total Sample	Split Sample	
		Union	Nonunion
Intercept	.41	-.08	.61
Sex	.01 (.05)	.05 (.08)	-.04 (.06)
Race	-.05 (.05)	.08 (.09)	-.14** (.07)
Union Contract	-.23*** (.05)		
Age	-.01 (.01)	.01 (.01)	-.01 (.01)
Education	.03 (.02)	.06** (.03)	.01 (.02)
Work Experience	-.01 (.01)	-.01** (.01)	-.01 (.01)
Ln(Hourly Wage)	-.04 (.06)	-.11 (.09)	.02 (.07)
Total Satisfaction	.11*** (.04)	.18*** (.07)	.05 (.05)
R^2	.12	.10	.03
F	10.31	3.60	1.40
n	605	235	368

   * = significant at .10
  ** = significant at .05
*** = significant at .01

membership and job satisfaction. One study found a significant positive

effect for unions on those facets of the job unions influence most directly,

e.g., pay (Hammer, 1978). Two studies, however, have found negative effects

for unions after controlling for demographic characteristics and wage level

(Freeman, 1978; Borjas, 1979). Both of these studies, however, used a

single item measure of overall job satisfaction. The QES data allow us to

examine the effects of unions on satisfaction with different facets of the

job.

Three sets of analyses were performed on these data. First, the average

using a regression equation controlling for demographic characteristics, region

of the country, firm size, industry, and occupation. Second, the same analysis

was repeated but the hourly wage rate was added as an additional control variable.

Third, within the union sample variations in the ratings of union members' per-

ceptions of their union performance were related to their job satisfaction.

The results of these analyses are summarized in Table 10. On average, unions

have positive and significant effects on members' satisfaction with bread and

butter aspects of their jobs (i.e.,pay, fringes, and job security). Once the wage

level is controlled for (see column two of Table 10), however, the effects of

union membership loses significance. Thus, the average union improves members'

satisfaction with these bread and butter aspects of the job through its effects on

wages. The effects of unions on satisfaction with supervisors, promotion prospects,

job content, the adequacy of resources/information needed to do the job, and job

context were consistently negative. In the case of job content, promotions, and

resource adequacy, the union effect was significant after controlling for wage

level. Thus, while union members are more satisfied with the bread and butter

aspects of their jobs, i.e., on the job dimensions unions have given the most

attention, they appear to be less satisfied than nonunion workers with the other dimensions of their jobs.

Additional OLS equations were run by splitting the sample into groups of workers/age 45[1] and under and those 46 and older, and (2) those with 10 years seniority or more and 9 years or less. These splits were motivated by the recent rather suprising conclusions reached by Borjas (1979) that older union members are less satisfied with their jobs than younger union members.[10] This finding is clearly inconsistent with the expectations that flow from the theoretical framework presented in the first section of this paper. We would expect that because of the increasing economic returns and security that union members gain from seniority, job satisfaction should be higher among older and more senior union members than young union members. The results presented in Table 11 test this hypothesis. As expected, older and higher seniority union members are more satisfied (or less dissatisfied) compared to nonunion workers of their seniority and age cohort than are younger and lower seniority union members relative to nonunion workers in their cohort.

A further check on these results was obtained by using a two stage equation to adjust for the potential that unions are located in jobs with the least desirable characteristics. The results did not differ from the OLS results.

The most straightforward interpretation of these results is that unions have their primary effects on wages and other bread and butter issues and this carries over to affect members' evaluations of these aspects of their jobs. Unions have been less successful,however, in making substantive improvements on these other dimensions of their members' jobs. The negative

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[10]The generalizability of Borjas' conclusion is rather suspect since his sample was limited to workers between the ages of 52 and 64.

relationships found with these other dimensions further suggest that employer adjustments to unionism may produce less favorable job attitudes among union members. This interpretation is consistent with the model presented in Figure 1 and with data collected recently on management labor relations goals and practices (Freedman, 1979; Kochan, 1980).

An alternative interpretation of these results that again draws on the voice hypothesis has also been suggested in earlier studies. That is, because unions are an instrument for voicing dissatisfaction on the job, they raise members' consciousness of the problems associated with their job environment. Thus, union members may respond more negatively to job satisfaction questions because of this "voice effect" of trade unions. This argument does not, however, help explain why the relationship between union membership and job satisfaction varies across different dimensions of the job, or across different age and seniority groups.

Relating a measure of union performance to job satisfaction produced strikingly different results from those discussed above (see columns three and four of Table 10). Strong positive correlations and regression coefficients were consistently found between union performance perceptions and all dimensions of job satisfaction except resource adequacy, even after controlling for wage level. These results are consistent with those obtained in another recent study of the relationship between union attitudes and job satisfaction (Gordon et al., 1979).

It is probably futile to try to sort out which is the cause and which is the effect in the union performance-job satisfaction relationship. One interpretation of these findings would be that unions gain some of the credit for improving workers' jobs and in turn share some of the blame when workers are dissatisfied. Another stronger causal argument would be that higher

TABLE 10

Regression Coefficients of Union Membership and
Union Performance on Facets of Job Satisfaction
(Standard Errors in Parenthesis)[1]

Satisfaction Measure	Union Membership	Membership Controlling for Wage Level	Union Performance	Performance Controlling for Wage Level
Bread & Butter	.14*	.03	.55***	.51***
	(.08)	(.08)	(.08)	(.08)
Promotions	-.11	-.17*	.48***	.47***
	(.09)	(.09)	(.09)	(.09)
Supervisors	-.13	-.13	.27***	.27***
	(.08)	(.08)	(.09)	(.10)
Job Content	-.13*	-.22***	.20***	.18***
	(.07)	(.07)	(.08)	(.08)
Resource Adequacy	-.11*	-.13**	.12	.11
	(.06)	(.06)	(.07)	(.07)
Job Context	-.15	-.17	.29**	.31**
	(.10)	(.10)	(.12)	(.12)

  * = significant at .10
 ** = significant at .05
*** = significant at .01

[1]All regressions were run for hourly wage earners controlling
for demographic characteristics (age, race, sex, seniority,
and education), industry, occupation, region of the country,
size of firm, size of city, and industry injury rate. The
union sample contained 239 observations. The total sample
contained 538 observations.

levels of union performance <u>produce</u> higher levels of job satisfaction.
Undoubtedly both of these interpretations provide part of the explanation
for these findings. It is less important to sort out the direction of
causality between worker evaluations of the performance of their unions and
their job satisfaction than it is to recognize that the two phenomena
move in parallel directions when union members evaluate their jobs. Thus,
both union and management officials apparently have a stake in paying atten-
tion to worker job attitudes. Furthermore, these results again point out
that the "average" union effect on job outcomes can be rather misleading.
The diversity of union effects is perhaps the more important phenomenon to
understand and appreciate.

It is important to go beyond the issue of job satisfaction in evaluating
the effects of collective bargaining on the psychological outcomes of
workers' jobs. For example, a recent study showed that the combination
of a high degree of job pressure or demands placed on workers, along with
low latitude to make decisions, produces a higher level of mental strain
(a measure of mental health) (Karasek, 1979). Application of this model
to the QES data did not find any significant differences on these job
outcomes between union and nonunion hourly wage earners (see Table 12).
As with the job satisfaction results, however, the perceptions of union
performance were significantly related to each of these measures. Higher
levels of union performance were positively related to degree of job lati-
tude and negatively related to both job pressures or demands and to job
strain. These results only begin to scratch the surface of this important
area. Together with the job satisfaction findings, however, they illus-
trate the need to more systematically study the conditions under which
collective bargaining effects employee attitudes, evaluations of their jobs,
and general psychological well being.

TABLE 11
Regression Coefficients of Union
Membership on Facets of Job Satisfaction
(Standard Errors in Parentheses)[1]

Satisfaction	Age		Experience	
Measure	Under 45	45 or Over	Up to 10 Yrs.	Over 10 Yrs.
Bread and Butter	-.04 (.11)	-.26 (.19)	-.14 (.11)	-.10 (.18)
Promotions	-.22* (.12)	-.13 (.21)	-.20* (.12)	-.33 (.21)
Supervisors	-.18* (.11)	.05 (.18)	-.18* (.10)	-.01 (.18)
Job Content	-.19** (.09)	-.14 (.16)	-.17* (.09)	-.18 (.15)
Resource Adequacy	-.15* (.08)	-.02 (.13)	-.15** (.07)	-.10 (.15)
Job Context	-.25* (.14)	.08 (.22)	-.22* (.13)	-.02 (.23)
n	371	145	409	111

* = significant at .10
** = significant at .05
*** = significant at .01

[1]All regressions were run for hourly wage earners controlling for demographic characteristics (age, race, sex, seniority, and education) industry, occupation, region of the country, size of firm, size of city, and the industry injury rate.

Desire for Participation

Much has been written in recent years about the growing desire
of American workers for gaining greater say or influence over decisions
affecting their jobs. One of the questions in the survey allows us to
examine whether union membership significantly influences the interest
workers express in participating in workplace decisions. We would
expect that union members would be more interested in participation for
two reasons. First, one of the objectives of trade unions is to provide
a mechanism for formally giving workers a voice in the determination of
terms and conditions of employment. Thus, by gaining some experience
in this process indirectly through collective bargaining, union members
are made more aware of their rights to participate and accept these rights
as part of their job experience. Second, to the extent that unions increase
wages, we again would expect workers to assign a higher priority to
the nonwage aspects of their job. Interest in participation may also be
one of the nonwage aspects of the job that union members show a greater
interest in as their wages increase.

A regression equation run to test the effects of union membership
(see Table 13) did   find that union membership was positively and signifi-
cantly related to beliefs about the rights of workers to participate in
job related decisions. Similarly, younger workers, and workers with higher
wage rates were also more interested in participating than their older and
lower paid counterparts.

Difficulty of Changing Employer Policies

Since one of the functions of a union is to improve the ability of
workers to achieve their job related goals, we might expect that unionized

TABLE 12
Decision Latitude and
Job Demands
OLS Model
(Standard Errors in Parentheses)

Independent Variable	Decision Latitude		Job Demands	
	Total Sample	Union Sample	Total Sample	Union Sample
Intercept	2.82	2.51	2.31	2.73
Age	.01 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Sex	.14*** (.04)	.12* (.07)	.01 (.03)	-.05 (.06)
Race	.02 (.05)	.15* (.09)	.03 (.04)	.03 (.07)
D.O.T. Score	-.03*** (.01)	-.03*** (.01)	-.01 (.01)	-.01 (.01)
Work Experience	.01 (.01)	-.01 (.01)	-.01** (.01)	.01 (.01)
Mid-Size Firm	-.06 (.05)	-.07 (.08)	.02 (.04)	.01 (.07)
Large Firm	-.03 (.07)	-.05 (.11)	-.09 (.06)	-.16* (.09)
Huge Firm	-.10* (.05)	-.07 (.08)	-.10** (.05)	-.08 (.07)
Union Contract	-.06 (.04)		.06* (.04)	
Union Performance		.13** (.05)		-.10** (.04)
R^2	.13	.16	.04	.07
F	9.59	4.17	2.90	1.64
n	595	205	595	205

* = significant at .10
** = significant at .05
*** = significant at .01

workers would be in a better position to get their employer to change poli-
cies relating to the terms and conditions of employment than would compar-
able nonunion workers. One set of questions in the survey allowed us to
test this hypothesis. The respondents were asked to rate on a five point
scale how difficult it would be to get their employer to change (1) the
duties performed on the job, (2) the days off provided on the job, and
(3) the hours of work associated with the job. Surprisingly, the results
of a regression equation showed that union membership is negatively,
although not significantly, related to the perceived difficulty of changing
employer policies. One interpretation of this finding is that the formaliza-
tion of employer policies that occurs in response to unions and the nego-
tiation of a collective agreement reduce the ability of individual
workers to influence policies.

Variations Within the Union Sector

This paper has emphasized the average effects of unions on a variety
of job outcomes. As noted at various points, however, in addition to
the results reported here, a series of regression equations were also
computed using the union sample to examine the relationship between
measures of perceived union performance and some of the behavioral job
outcomes such as propensity to leave, job satisfaction, job strain, and
difficulty of changing employer policies. The results of these equations
showed that there is a significant positive relationship between satisfaction
with most facets of the job and union performance, significant negative
relationships between union performance and propensity to leave, exposure
to job hazards, mental strain, and difficulty to change employer policies.
If taken at face value, these results suggest that higher levels of union
performance do produce these job outcomes. Two problems limit our

TABLE 15
Desire for Participation &
Difficulty in Changing Employer Policies
OLS Model
(Standard Errors in Parentheses)

Independent Variable	Desire Participation		Difficulty in Changing	
	Total Sample	Union Sample	Total Sample	Union Sample
Intercept	2.40*** (.21)	2.63*** (.44)	3.58*** (.3?)	3.93*** (.57)
Sex	-.07 (.05)	-.07 (.11)	-.14 (.08)	-.44*** (.14)
Race	.16*** (.06)	.11 (.12)	.04 (.10)	.06 (.13)
Union Contract	.15*** (.05)		.14* (.08)	
Union Performance		-.01 (.04)		-.06 (.05)
Age	-.01*** (.01)	-.01 (.01)	.01 (.01)	.01* (.01)
Education	.01 (.02)	.01 (.03)	-.04* (.03)	-.07* (.04)
Trade School	.05* (.02)	-.01 (.04)	.02 (.04)	.03 (.05)
Work Experience	.01 (.01)	-.01 (.01)	-.01 (.01)	-.01** (.01)
Industry Injury	.02 (.04)	-.05 (.08)	-.05 (.06)	.05 (.10)
North Central	-.04 (.06)	.12 (.12)	-.13 (.10)	-.26* (.15)
Southern	.03 (.06)	.22 (.13)	-.11' (.10)	-.11 (.17)
Western	-.01 (.07)	.06 (.15)	-.12 (.12)	-.30 (.19)
Occupation	-.05 (.05)	-.12 (.13)	.05 (.08)	-.17 (.16)
Secondary Industry	.01 (.05)	-.05 (.13)	-.24*** (.08)	-.22 (.17)
Suburban	.03 (.11)	.12 (.16)	.08 (.17)	.19 (.21)
Small City	-.07 (.10)	-.05 (.15)	-.04 (.16)	-.01 (.19)
Rural	-.08 (.10)	-.10 (.15)	.05 (.16)	.03 (.20)
Mid-Size Firm	-.01 (.05)	.04 (.10)	.17** (.09)	.04 (.13)
Large Firm	-.04 (.07)	-.17 (.13)	.14 (.12)	-.02 (.17)
Huge Firm	.13** (.06)	.09 (.10)	.29*** (.16)	.23* (.13)
Ln(Hourly Wage)	-.03 (.07)	.11 (.14)	-.05 (.11)	.01 (.18)
R^2	.10	.10	.10	.18
F	2.61	.88	2.80	1.82
n	518	184	518	184

* = significant at .10
** = significant at .05
*** = significant at .01

confidence in this interpretation at this point, however. First,

a response consistency bias no doubt runs through these data. For

example, those who are satisfied with their job and so indicate in their

responses may feel compelled to also report higher levels of union per-

formance in order to appear to be giving consistent answers to the questions.

This problem (sometimes referred to as a "common method" bias) is often

encountered when correlating two sets of perceptual data which are

obtained from the same respondents on the same questionnaires at the

same point in time.[11]

Summary and Conclusions

This paper used the data contained in the 1977 QES to assess the

effects of unions and collective bargaining on a variety of job outcomes.

To do so it was first necessary to develop a theoretical framework to guide

the specification of a set of estimation equations. The theory stressed

the sequential nature of the effects of unions on different outcomes.

One of the key propositions in the theory is that the effects of unions

on many of these job outcomes depends on the ways in which employers adjust

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[11] One indirect (and only partially satisfactory) precaution was taken in
the analysis to minimize the effects of the response consistency bias.
This was to include a measure of satisfaction with coworkers as a control
variable in equations relating union performance to job attitudes or self
reports of job conditions. The logic behind this approach is that any
positive correlation between union performance and satisfaction with co-
workers is likely to be spurious--an artifact of response consistency.
There is no theoretical reason to expect that union performance should
affect relations among coworkers. Thus, by including satisfaction with
coworkers as a control variable in the job attitudes and other self report
equations, some of the spurious component included in the union performance
measure may be attributed to the coworkers variable. While this technique
is clearly not powerful enough to eliminate the basic problem, it did have
the effect of lowering the size of the union performance coefficient some-
what in all of the equations in which it was entered. If the strategy
worked, then the lower union performance coefficients should more closely
approximate the true effect of this construct than the coefficients obtained
without some control for response consistency in the equation.

to the presence of a union or to union induced increases in labor costs.
Thus, a complete test of the effects of unions and collective bargaining
on these outcomes requires data on employer behavior as well as on the pre-
sence (or absence) of a union.

Considerable discussion was devoted to the technical issue of whether
it is best to treat union membership as an exogenous or an endogenous
variable in these types of analyses. If viewed in purely technical terms,
this comes down to a choice of whether one believes the bias caused by a
correlated errors problem with the OLS equations is greater than the error
introduced by using a more complicated two stage system, which assesses the
union effect through an instrumental variable measuring the conditional
probability of being unionized, given the other variables in the system.
The seriousness of the correlated errors problem, in turn, depends on how
much importance one attaches to the three arguments that have been advanced
for viewing union membership as endogenous in the system: (1) the individual
choice assumption, (2) the employer selection assumption, and (3) the supply
of union services hypothesis. The decision made in this paper was that
these arguments were not sufficiently compelling to automatically justify
reliance on the two stage models. This view is inconsistent, however,
with the approach taken in most recent studies of union/nonunion differentials.[12]
In any event the more complex formulations that were explored did not
produce any major inconsistencies from the OLS results. Generally, the

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[12] One recent study (which appeared after this paper was completed but before
it went to press) that departs from the trend in the literature and relies
on arguments similar to those used in this paper is Mitchell (1980).

Implications for Research and Policy Analysis

After a number of years of relatively few developments, the growth of micro data sets has produced a renaissance in the study of the effects of trade unions. Researchers are now addressing a far richer array of issues than the effects of unions on wages. While this renewed and expanded interest is a welcome development, it makes us vividly aware of the difficulty of doing empirical research in the absence of a well developed theory of how unions and collective bargaining affect employer behavior, and together, how they affect job outcomes. The theoretical propositions outlined in this paper obviously only scratch the surface of the problem. Futhermore, the implications for analysis that we drew from the propositons are bound to spark criticism and debate. We do not claim to have resolved all of the theoretical and technical problems involved in this type of work, even to our own satisfaction. Hopefully, however, we will encourage others to present a stronger theoretical argument for the choice of their empirical specifications so that eventually more consensus will develop around a model that makes sense in terms of the history and current practice of collective bargaining and union-management relations.

Having said this, we further believe that studies of the "average" union/nonunion differential only serve as a starting point for analysis that can be useful for public policy makers and practitioners. The key information that is needed to guide public policy and private practice is not the average union effect, but what causes variations in the performance of unions and employers under collective bargaining. The finding that unions increase wages is not (and should not) lead policy makers to advocate eliminating or suppressing unions. Neither should a finding that unions increase job satisfaction or reduce injuries be sufficient rationale for advocating the spread of unions to new settings. Instead, what policy

coefficients were in the same direction, with larger standard errors.

The results of the analysis suggest that for hourly wage earners the direct effects of union membership are to: (1) increase wages, (2) increase the availability of fringe benefits, (3) produce higher compensating wage differentials for hazardous work, (4) reduce the wage premium paid for jobs involving high discretion and/or skills, (5) increase the perceived value of one's job relative to potential alternative jobs in the external labor market, (6) increase the amount of say that workers want to have in decisions affecting their jobs, (7) increase the willngness of workers to trade off wage increases for improvements in other job conditions, (8) marginally increase job satisfaction with bread and butter issues and decrease job satisfaction on other facets of the job, particularly the content of the job, and (9) marginally reduce the perceived ability to change employer policies. Although no conclusions could be reached on the effects of unions on injuries, union members reported being exposed to more job hazards than comparable nonunion workers. No significant effect for union membership was found for reports of job latitude or discretion job demands or pressures, or mental strain.

Unions also have indirect effects on several of the job outcomes mentioned above through their effects on wages. By raising wages, providing other economic benefits, and perhaps by providing alternative outlets for job dissatisfaction, for example, unions reduce turnover. It was also found that compared to their nonunion counterparts, younger and low seniority union members are less satisfied with their jobs than are older and more senior union members relative to their nonunion counterparts. Finally, perceptions of union performance were found to be positively related to positive job attitudes and positive evaluations of other job conditions.

makers (and practitioners) need to know is what factors within the control of the parties or public policy influence the variations in union effects so that they can encourage efforts to, for example, improve safety, job attitudes, and other job outcomes in the unionized sector of the economy. Addressing this type of question should be the next challenge posed to those interested in assessing the role that trade unions and collective bargaining play in contemporary society.

Bibliography

Anderson, John C., "Bargaining Outcomes: An IR System Approach," Industrial Relations, Vol 18 (Spring, 1979), pp. 127-143.

Anderson, John C., "Determinants of Bargaining Outcomes in the Federal Government of Canada," Industrial and Labor Relations Review, Vol. 32 January, 1979) pp. 224-241.

Bloch, Farrel E. and Kuskin, "Wage Determination in the Union and Non-Union Sectors, " Industrial and Labor Relations Review, Vol. 31 (January, 1978) pp. 183-192.

Ashenfelter, Orley, "Union Relative Wage Effects: New Evidence and a Survey of Their Implications for Wage Inflation," Unpublished paper, Princeton University, 1976.

Ashenfelter, Orley and Johnson, George, "Unionism, Relative Wages and Labor Quality in U.S. Manufacturing Industries," International Economic Review, Vol. 13 (October, 1972) pp. 488-507.

Ashenfelter, Johnson, George, E. and Pencavel, "Trade Unions and the Rate of Change in Money Wages in U.S. Manufacturing Industries, " Review of Economic Studies, Vol. 39 (January, 1972), pp. 27-53.

Borjas, George J., "Job Satisfaction, Wages, and Unions, Journal of Human Resources, Vol. 14 (1979), pp. 21-410.

Brett, Jeanne, "Behavioral Research on Unions and Union-Management Systems," in Barry Staw and L.L. Cummings (ed.) Research in Organizational Behavior, Vol. II (Greenwich, CT: JAI Press, 1980), pp. 177 - 214.

Brown, Charles, and Medoff, James L., "Trade Unions and the Production Process, " Journal of Political Economy, Vol. 86 (June, 1978), pp. 355-377.

Duncan, Greg. A Model of Wage Growth (unpublished paper. University of Michigan, 1978).

Duncan, Greg and Stafford, Frank, "Do Union Members Receive Compensating Wage Differentials," American Economic Review, Vol. 70 (June, 1980), pp. 355-71.

Ehrenberg, Ronald G. Regulation and Labor Earnings, (New York: Academic Press, 1979).

Farber, Henry S., Unions, Bargaining Power, and Wages: An Empirical Analysis, M.S. Thesis, Cornell University, 1974.

Farber, Henry S., "Unionism, Turnover, and Wages of Young Men," Unpublished paper, MIT, 1979.

Farber, Henry S. and Saks, Daniel H., "Why Workers Want Unions: The Role of Relative Wages and Job Characteristics," Journal of Political Economy, Vol. 88 (April, 1980), 349-69.

Freedman, Audrey, Managing Labor Relations (New York: The Conference Board, 1979).

Freeman, Richard B., "Individual Mobility and Union Voice in the Labor Market," American Economic Review Vol. 66 (May, 1976) pp. 361-368.

Freeman, Richard B., "The Effects of Trade Unionism on Fringe Benefits," National Bureau of Economic Research Working Paper No. 292, October, 1978.

Freeman, Richard B., and Medoff, James L., "Two Faces of Unionism," The Public Interest, Fall, 1979, pp. 69-93.

Gordon, Michael E., Philpot, John W., Burt, Robert E., Spiller, William E., and Thompson, Cynthia A., "Commitment to the Union: III Relationships Among Union Commitment, Attitudes Towards the Union, and Job Satisfaction," Journal of Applied Psychology, in press.

Gerhardt, Paul F., "Determinants of Bargaining Outcomes in Local Government Labor Negotiations," Industrial and Labor Relations Review, Vol. 29 (April, 1976), pp. 331-351.

Getman, Julius G., Goldberg, Stephen B., and Herman, Jeanne B. Union Representation Elections: Law and Reality, (New York: Russel Sage Foundation, 1976).

Gunderson, Morley, "Retention of Trainees: A Study With Dichotomous Dependent Variables," Journal of Econometrics, Vol. 2 (1974), pp. 79-93.

Hammer, Tove H., "Relationships Between Local Union Characteristics and Worker Behavior and Attitudes," Academy of Management Journal, Vol. 21 (1978) pp. 560-578.

Hammermesh, Daniel S. "Economic Considerations in Job Satisfaction Trends," Industrial Relations, Vol. 15 (February, 1976), pp. 111-114.

Hammermesh, Daniel S., "Wage Bargains, Threshold EFfects, and the Phillips Curve," Quarterly Journal of Economics, Vol. 84 (August, 1970), pp. 501-517.

Hamner, W. Clay and Smith, Frank J., "Work Attitudes as Predictors of Unionization Activity," Journal of Applied Psychology Vol. 63 (August, 1978) pp. 415-421.

Hendricks, Wallace, "Labor Market Structure and Union Wage Levels," Economic Inquiry, Vol. 13 (September, 1975), pp. 401-416.

Hendricks, Wallace, Feuille, Peter, and Szerszen, Carol, "Regulation and Collective Bargaining in Airlines: Will Deregulation Matter," Unpublished paper, University of Illinois, 1979.

Karasek, Robert A., Jr., "Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign," Administrative Science Quarterly, Vol, 24 (June, 1979), pp. 285-308.

Kochan, Thomas A., "How American Workers View Labor Unions," Monthly Labor Review, Vol. 102 (April, 1979) pp. 23-31.

Kochan, Thomas A., Collective Bargaining and Industrial Relations: From Theory to Policy and Practice, (Homewood, Illinois: Richard D. Irwin, Inc., 1980).

Kochan, Thomas A., and Block, Richard N. "An Interindustry Analysis of Bargaining Outcomes: Preliminary Evidence From Two-Digit Industries," Quarterly Journal of Economics, Vol. 91 (August, 1977), pp. 431-452.

Kochan, Thomas A. and Wheeler, Hoyt N., "Municipal Collective Bargaining: A Model and Analysis of Bargaining Outcomes," Industrial and Labor Relations Review, Vol. 29 (October, 1975), pp. 46-66.

Lee, Fei Jung, "Unionism and Wage Rates: A Simultaneous Equations Model With Qualitative and Limited Dependent Variables," International Economic Review, Vol. 19 (June, 1978) pp. 415-433.

Lewis, H. Gregg, Unionism and Relative Wages in the United States (Chicago: University of Chicago Press, 1963).

March, James G. and Simon, Herbert A. Organizations (New York: Wiley, 1958).

Medoff, James L., "Layoffs and Alternatives Under Trade Unions in U.S. Manufacturing," American Economic Review, Vol. 69 (June, 1979) p. 380-395.

Mitchell Daniel J.B., "Union Wage Determination: Policy Implications and Outlook," Brookings Papers on Economic Activity, Vol. 3 (1978) pp. 537-591.

Mitchell, Daniel J.B., Unions, Wages and Inflation (Washington, D.C.: The Brookings Institution, 1980).

Olson, Craig, "An Analysis of Wage Differentials Received by Workers on Dangerous Jobs," Journal of Human Resources (In press).

Quinn, Robert P. and Staines, Graham L., The 1977 Quality of Employment Survey, (Ann Arbor: University of Michigan, Survey Research Center, 1978).

Salancik, Berald R. and Pfeffer, Jeffrey, "An Examination of Need-Satisfaction Models of Job Attitudes," <u>Administrative Science Quarterly</u>, Vol. 22 (September, 1977) pp. 427-456.

Schmidt, Peter, "Estimation of a Simultaneous Equations Model with Jointly Dependent Continuous and Qualitative Variables: The Union-Earnings Question Revisited," <u>International Economic Review</u>, Vol. 19 (June, 1978), pp. 453-465.

Schmidt, Peter, and Strauss, Robert P., "The Effect of Unions on Earnings and Earnings on Unions: A Mixed Logit Approach," International <u>Economic Review</u>, Vol. 17 (February, 1976), pp. 204-212.

Slichter, Sumner, <u>Union Policies and Industrial Management</u> (Washington, D.C.: The Brookings Institution, 1941).

Smith, Robert S. "Compensating Wage Differentials and Public Policy: A Review" <u>Industrial and Labor Relations Review</u>, Vol. 32 (April, 1979) pp. 339-352.

Schriesheim, Charles A., "Job Satisfaction, Attitudes Towards Unions, and Voting in a Union Representation Election," <u>Journal of Applied Psychology</u>, Vol. 63 (1978) pp. 548-552.