EMPLOYMENT RENTS AND THE INCIDENCE OF STRIKES

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Abstract—A new measure of labor market tightness on workers' behavior—the employment rent—is modelled as a determinant of workplace conflict. An empirical estimate of the employment rent—workers' expected cost of job loss—is calculated. It is argued that the cost of job loss affects strike incidence. This relationship is tested by estimating an econometric model of strike incidence for the United States from 1955 to 1983. The cost of job loss is shown to explain a large percentage of the variation in strike incidence. The cost of job loss is a far superior explanatory variable than the unemployment rate, which is commonly used in strike models.

Introduction

THE relationship between macroeconomic conditions and workers' collective behavior has been explored in a wide variety of historical and theoretical work.[1] Marx's writings on the "industrial reserve army," arguably the *locus classicus* of this literature, stressed the importance of unemployment in tilting the balance of power in favor of employers, and thereby disciplining labor. We propose a new indicator of the effects of macroeconomic conditions on workers' behavior —the employment rent—which measures the extent of job scarcity. We construct an empirical estimate of the employment rent—*the cost of job loss*—which measures the loss of income which a representative worker may expect will be associated with an employment termination. While we believe that this measure is of general applicability in macroeconomic modeling, we use it here for a more limited objective—to explain strike activity in the United States over the period 1955–1983.[2]

We hypothesize that when the cost of job loss is low workers will be more likely to strike. This effect operates through a negative relationship between the cost of job loss and the ability of a union to prevent members or non-members from contracting with employers at a wage less than the union wage demand. Thus, when the cost of job loss is high, it is more difficult for workers to win strikes, and they are therefore less likely to strike. Our econometric results strongly confirm our expectation; the cost of job loss provides a considerably more powerful and more robust predictor of strike incidence than do conventional labor market tightness measures.

The Cost of Job Loss

In a bargaining situation the relative power of the contending parties depends, at least in part, on the losses which each may inflict on the other by withdrawing from the relationship. According to this reasoning, the power of employers over employees depends on the cost to the worker of losing his or her job, which in turn depends on the scarcity of jobs, which may be measured by what we term the value of the employment rent.

Traditionally, the aggregate unemployment rate has been used as a proxy for the relative power of workers and firms. The logic of this view is that the unemployment rate is a measure of job scarcity and the degree of competition for jobs. However, the unemployment rate is only a partial indicator of job scarcity, and hence only weakly related to the relative power of labor and capital. It does not take account of alternative income sources available to the unemployed worker; increases in multiple-earner families, the availability

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[1] See, for example, Mitchell (1941), Rees (1952), Soskice (1978) and Hibbs (1978).

[2] The cost of job loss has been shown to explain a change in the cyclical variability of wages, cyclical and secular movements in the rate of growth of labor productivity, and the profit rate in the non-financial corporate business sector. See Schor (1985), Weisskopf, Gordon and Bowles (1983), and Bowles, Gordon, and Weisskopf (1986).

of credit, and means-tested social welfare benefits may have cushioned the effect of a spell of unemployment on workers' living standards. A second reason is that the expected cost of losing one's job depends on the expected duration of unemployment rather than the unemployment rate. Finally, the unemployment rate does not incorporate either the pre- or post-job loss wage level, which is related to any reasonable measure of job scarcity.

We have constructed a measure which attempts to provide a more complete account of the economic impact of unemployment. Our cost of job loss index includes one important source of non-wage income—income-replacing social welfare benefits—as well as estimates of both pre- and post-job loss earnings, and a measure of unemployment duration.[3]

The cost of job loss is the hypothetical difference between the worker's expected income with and without a spell of unemployment, defined arbitrarily over the period of one year.[4] It is based on the situation of a composite employed worker relative to the same worker if unemployed. We have created this composite worker by calculating various combinations of social welfare benefits, program eligibility, and reemployment wage rate loss, and weighting these combinations by the labor force composition of the group to which they correspond.[5]

More precisely, the cost of job loss is the difference between current earnings and expected income during the year following an employment termination. Expected income is calculated as the average of future earnings and income-replacing social welfare benefits, weighted by the expected duration of unemployment. If the worker expects to be reemployed at the current wage, the cost of job loss, w^*, is

$$w^* = (w - w^r)u^d \tag{1}$$

where w is annual after-tax earnings,[6] w^r is the average annual income-replacing social welfare benefit,[7] and u^d is the expected duration of unemployment for job losers, expressed as a fraction of a year. If the average expected reemployment wage is less than the current wage:[8]

$$w^* = w - [u^d w^r + (1 - u^d)w^n]. \tag{1a}$$

We assume that workers base their expectations of unemployment duration on the actual duration of completed spells of unemployment. We have made two adjustments to the official unemployment duration figures.[9] First, we estimated the duration of unemployment for job losers, rather than all unemployed, because voluntary job leavers are irrelevant to our analysis and tend to have

[3] For a discussion of the estimating procedures, data sources, and the properties of alternative measures, see an appendix available from the authors. We have not included alternative income sources such as borrowing or intra-family transfers. There is some evidence that this latter source of support is substantial. See Lampman and Smeeding (1983).

[4] We adopt a simple one-period model here, abstracting from income losses in later years. We have also calculated the present value of the cost of job loss, over a substantially longe period of time, on the assumption that the current wage and the reemployment wage eventually converge.

[5] Where a demographic breakdown is not available or relevant, labor force averages have been used. Expected income loss differs among various groups on the basis of demographic or other characteristics. Although we consider these differences among workers to be important in the analysis of many aspects of workplace behavior, we have not yet developed disaggregated time series of our measure and use a much simpler aggregate measure.

[6] Due to widely recognized problems with the Bureau of Labor Statistics' spendable earnings series, we have used a recent calculation of after-tax hourly earnings by Weisskopf (1984). Annual earnings are Weisskopf's hourly earnings times average annual private nonagricultural hours.

[7] This measure includes Unemployment Insurance, Food Stamps, Aid to Families with Dependent Children, General Assistance, and Medicaid, each weighted by the eligibility characteristics of the labor force. Unemployment insurance is a major component of the measure. In recent years, there has been an unexplained decline in the effective coverage rate of the UI program. (See Burtless (1983), Burtless and Saks (1984), and Corson and Nicholson (1984).) To take account of the recent divergence of the official and effective coverage rates, we have estimated an effective coverage rate on the basis of data on total job losers and total insured unemployment. This estimated effective coverage ratio is consistent with the previously cited studies.

[8] Evidence on reemployment earnings for recent years is available from a special supplemental survey attached to the Current Population Survey. We used the categorical estimates reported in Podgursky and Swaim (1986), weighted by the composition of the employed labor force to estimate a reemployment earnings ratio for 1979–83. The expected reemployment earnings for each year is then this reemployment earnings ratio (0.87) multiplied by the annual earnings figure. Unfortunately, there is no existing time series estimate of reemployment earnings.

[9] Deficiencies of the official unemployment duration figures have been extensively noted. See, for example, Clark and Summers (1979). Further, income losses due to spells of unemployment estimated by Terry (1982) and Gramlich and Laren (1983) cannot readily be reconciled with official unemployment duration figures.

TABLE 1.—THE COST OF JOB LOSS

Year	w^* Annual Cost of Job Loss (in 1977 dollars)	$u^d \times 52$ Unemployment Duration (in weeks)	$(w - w^r)$ Annual Income Loss (in 1977 dollars)
1955	$2790	25	$4762
1956	2594	22	4835
1957	2434	20	4728
1958	2723	27	4366
1959	3018	28	4772
1960	2731	25	4638
1961	3013	30	4461
1962	2898	28	4442
1963	2863	27	4537
1964	2930	26	4822
1965	2680	23	4681
1966	2425	20	4516
1967	2156	17	4363
1968	1980	14	4271
1969	1896	13	4272
1970	2090	18	3941
1971	2471	25	3959
1972	2567	23	4366
1973	2344	19	4368
1974	2271	22	3903
1975	2346	27	3576
1976	2559	29	3704
1977	2544	26	3936
1978	2307	22	3926
1979	2073	19	3813
1980	2040	23	3393
1981	2294	29	3371
1982	2109	25	3313
1983	2973	46	3250

Note: w^* is cost of job loss from equation (1a). u^d is unemployment duration for job losers corrected for multiple and completed spells. $(w - w^r)$ is current earnings minus expected income-replacing social welfare benefit.

shorter spells of unemployment.[10] Second, we used estimates of completed spells adjusted to treat multiple spells separated by labor force withdrawal as single episodes.[11]

Our estimates of the cost of job loss appear in table 1 along with two of its components—the estimated unemployment duration and the difference between annual after-tax earnings and the annual income-replacing social welfare benefit $(w - w^r)$. As one might expect, the cost of job loss is counter-cyclical, and exhibits a downward secular trend over the period. Somewhat surprisingly, however, a time trend and the current

TABLE 2.—ZERO-ORDER CORRELATIONS OF CYCLICAL MEASURES WITH THE COST OF JOB LOSS: U.S., 1955–1983

Variable	Current	Lagged One Year
Capacity utilization (FRB)	−0.15	−0.56
Unemployment rate, experienced workers	0.25	0.49
Vendor performance (slower deliveries)	0.00	−0.41
Nominal interest rate	−0.58	−0.47

unemployment rate explain only 49% of the variance of w^*, and the residuals of the equation are strongly serially correlated. Table 2 presents simple correlations between w^* and the three cyclical measures used below, as well as with the Federal Reserve Board's measure of manufacturing capacity utilization. These correlations indicate that w^* is weakly associated with the current values of all of the cyclical measures except the nominal interest rate, but moderately strongly correlated with the lagged values. We may conclude that w^* is a lagging cyclical indicator with a significant variance not accounted for by the standard cyclical measures.

The extent to which this measure captures an important influence on workers' behavior will be suggested by a study of the incidence of strikes.

Strike Incidence

Using a standard model of rational economic behavior, the simple answer to the question "Why do strikes occur?" is that they should not. Anticipating the outcome of a strike, workers and firms should be able to negotiate that outcome ex ante and thereby avoid the income losses associated with a strike. This view finds strong expression in the literature, beginning with Hicks (1932), who argued that strikes are "doubtless the result of faulty negotiation" and can be avoided with "adequate knowledge" on both sides.[12]

Attempts to combine rational behavior with a Hicksian formulation have not been wholly suc-

[10] Data on job losers are unavailable prior to 1968. Therefore, we adjusted the earlier figures by an average of the 1968–1979 ratio of median unemployment duration for job losers to all unemployed.

[11] Our estimates were derived from Duguay and Treyz' (1982) data on completed spells for "determined job seekers."

[12] Hicks (pp. 146–147). Modern treatments echo Hicks' view. For instance, Reder and Neumann (1980) describe strikes as "accidents;" Farber (1978) says workers are "not acting rationally when they strike;" and Kaufman (1981) concludes that we still have not arrived at a "satisfactory theory of strike causation." Hicks did note that some level of strikes is inevitable, as unions must occasionally use the strike weapon in order to maintain it as a credible threat.

cessful, in our view.[13] Ashenfelter and Johnson (1969) departed from the Hicksian tradition by distinguishing between union officials and the rank and file. In their model, strikes are the mechanism by which the union and the firm force the rank and file to moderate unrealistic wage demands. But Ashenfelter and Johnson's workers are irrational: Why do they strike when they could moderate their demands without a strike?[14]

We conclude that we still lack a fully articulated model of strike incidence. Moreover, we do not attempt to present one here. Our purpose is more modest: we will provide the key elements of a causal model and link them to the cost of job loss.

Because it is workers who choose to strike, we consider them to be the principal agent whose behavior must be modeled.[15] Workers decide to strike, we propose, when there is greater scope for employer concessions and when the probability of winning the strike is high.[16]

We measure the scope for employer concessions by the after-tax profit rate for the non-financial corporate business sector. The probability of winning depends on the union's ability to impose costs on the employer during the strike, relative to the costs imposed by the strike on union members. The costs felt by the employer will depend on the level of product demand and the ease with which striking workers may be replaced or other sources of product supply secured (for example, through outsourcing or hiring replacement workers). We measure the level of demand by an index of capacity utilization—the percentage of vendors reporting slower deliveries.

Alternate sources of product and labor supply are more complex to model. Both depend on the supply of labor available at lower than the union wage demand either directly or to subcontractors. We assume that this labor is recruited from the currently non-employed. For these workers, accepting a wage offer at less than the union wage demand increases their income by the difference between the firm's current wage offer and alternative income-replacing sources of income, multiplied by the time the worker would expect to remain non-employed if he or she rejects the offer. Assuming the firm's offer is the current average wage level w, this "income gain for the non-union wage bargain," w^{nu}, is approximated by

$$w^{nu} = (w - w^r)zu^d \tag{2}$$

where z is the fraction of the average duration of unemployment which the potential recruit might expect to remain non-employed should he or she reject the non-union wage offer. Comparing (1a) and (2), the income gain for the non-union wage bargain is closely related to the cost of job loss, a not surprising result given that both reflect the size of the employment rent. Where the pre- and post-job loss wages are equal ($w = w^n$), it can be readily seen that

$$w^{nu} = w^*z. \tag{3}$$

We therefore propose that the union's ability to control the supply of labor to the firm (either directly or to its subcontractors) and hence the probability of winning a strike, is negatively related to the level of employment rents as measured by the cost of job loss.

The cost of the strike to strikers will depend on the availability of alternative sources of income during the strike, the perceived probability of losing one's job as a result of the strike multiplied by the cost of job loss, and the level of fixed costs faced by the worker and his or her family. While the cost of job loss captures some of these dimensions, the availability and expense of credit will influence both the cost of borrowing and the level of fixed costs. We therefore include a measure of credit costs in our strike equation. We conclude that holding constant credit costs, the profit rate and the level of product demand, the incidence of strikes will vary inversely with variations in the level of w^*.

But why would the cost of job loss vary? Empirically, our measure reveals counter-cyclical movement. Why do firms not vary the wage rate

[13] For instance, Mauro (1982) invokes the assumption of imperfect information, but his assumption of informational asymmetry between employers and employees is inadequately motivated. Kaufman (1981) provides an interesting model of the bargaining process which includes learning through striking, but ultimately his model attributes strikes to misperceptions. No compelling explanations are offered for the systematic nature of these misperceptions, nor for their persistence over time.

[14] For critiques of Ashenfelter and Johnson along other lines, see Shalev (1980) and Kaufman (1981).

[15] Some strikes may be primarily instigated by employers. See Naples (1987).

[16] Here, we are following Rees (1952), who attributed strike incidence to the probability of success, as determined by business conditions.

so as to attain an optimal cost of job loss over the course of the business cycle? If we are correct in proposing that strikes vary (inversely) with w^*, the answer to this question is presumably an important clue to the "why do strikes occur?" puzzle. The empirical nature of this paper and reasons of space militate against a full development of this question here, but a brief sketch of the underlying model is in order.[17]

Consider an economy in which labor is the only input and there is no distinction between product prices and consumer prices. Monopolistically competitive profit-maximizing firms set prices according to the marginal revenue equals marginal cost rule, implying a mark-up over marginal unit labor costs equal to $e/(e-1)$, where e is the absolute value of the perceived price elasticity of demand facing the firm. During a business cycle expansion, and particularly as capacity utilization rises, e falls, as an increasing portion of the firm's competitors are perceived to be quantity-constrained and demand is therefore less price elastic. As a result each firm raises its price, in order to maintain a profit-maximizing mark-up. Because all firms do this, consumer prices rise, putting downward pressure on the real wage which therefore falls—even in the presence of nominal wage increases—or more likely, does not rise enough to offset the shorter duration of unemployment.

As a result, the cost of job loss declines. This unintended consequence of the profit-maximizing product price behavior thus displaces the firm's optimal labor relations strategy (real wages and hence w^* are now suboptimal). It also results in an unintended increase in the probability that workers may win should they choose to strike. In this situation the firm is unable to simultaneously pursue two simple but contradictory profit-maximizing rules of thumb: to price so as to equate marginal costs and marginal revenues and to adopt a cost-minimizing labor relations strategy. This larger model may help explain why (apart from inertia and long-term contracts) the employer does not adjust the wage to offset the union's cyclically increased probability of winning a strike.

[17] The strike model which we have outlined above is part of a simple but comprehensive general equilibrium model of the cyclical movement of wages, optimal labor discipline strategies, optimal mark-up pricing, and strikes (Bowles, 1986a,b).

Econometric Results

Can variation in the cost of job loss explain variations in the number of workers who strike each year? First it is necessary to take account of two determinants of the opportunity to strike: the number of trade union members[18] and the frequency of renewal of the collective bargaining agreement.[19] We have used strikers as a percentage of all trade union members as our dependent variable, and as an independent variable—the number of workers experiencing contract renewals, also measured as a proportion of union members.[20]

In addition to these controls for the opportunity to strike, we have included the four variables discussed earlier as determinants of strike incidence: the cost of job loss (lagged), the nominal interest rate—a proxy for availability and cost of credit, the net after-tax rate of profit in the nonfinancial corporate business sector (lagged), and the percentage of companies reporting slower deliveries.[21] The results of various experiments with the model are presented in table 3.

The model was estimated in linear form using ordinary least squares.[22] Equation 1 is a successful

[18] In the United States, virtually all strikers are union-affiliated. See Kaufman (1982).

[19] The vast majority of strikes occur at the time of contract renewal. The average duration of contract has risen from roughly one to three years over the period.

[20] Because some strikers are not union members, but are striking in order to gain union recognition, we subtracted from the total number of strikers those who were striking for union recognition.

[21] We have used the nominal rather than the real interest rate both because of the difficulty of correctly specifying the ex ante interest rate and the existence of liquidity constraints facing the worker. Experimentation with a real interest rate variable yielded similar, although less robust results. The cost of job loss and the rate of profit were entered with a one-year lag on the grounds that it takes some time for workers to accumulate evidence on the cost of job loss. In addition, if strikes influence wages, the current cost of job loss may introduce simultaneity bias into the estimates. The profit rate was lagged one year because in current negotiations workers generally consider last year's profits. By contrast, both the current interest rate and the vendor performance measure represent immediately available information. For all variables we experimented with various polynomial distributed lags but in no cases did their use substantially improve the estimates.

[22] The period was defined by data availability. The series on strikers (for strikes of six or more workers) was discontinued in 1981. Workers striking over union recognition were last collected in 1980. (The 1981 figure is the average over the previous business cycle.) Contract renewals are available only from 1955. We interpolated on the basis of scattered data for the

TABLE 3.—ESTIMATED STRIKE INCIDENCE, 1955–81
DEPENDENT VARIABLE: *STRKRS*

Independent Variable	Eq. 1 (OLS)	Eq. 2 (AR1)	Eq. 3 (AR1)	Eq. 4 (OLS) (log-log)	Eq. 5 (INST)	Eq. 6 (OLS) (1955–83)
w^*_{t-1}	−0.945	−0.597			−0.855	−0.919
	(−9.58)	(−3.48)			(−7.14)	(−9.10)
i	−0.759		−0.394	−0.417	−0.722	−0.775
	(−6.18)		(−1.26)	(−3.74)	(−4.75)	(−6.58)
r_{t-1}	0.260		−1.059	0.162	−0.014	0.306
	(1.47)		(−1.78)	(0.72)	(−0.06)	(1.67)
VEND	0.050		0.059	0.317	0.073	0.046
	(2.39)		(1.53)	(2.00)	(2.60)	(2.23)
CONT	0.208	0.274	0.280	0.366	0.301	0.201
	(4.27)	(4.25)	(3.57)	(2.26)	(4.31)	(4.00)
$UEXP_{t-1}$			−0.339			
			(−0.62)			
u^d				−1.113		
				(−5.90)		
$w - w^r$				−1.448		
				(−2.22)		
c	28.855	18.677	12.304	5.705	25.449	28.241
	(9.02)	(4.28)	(1.97)	(2.07)	(6.90)	(8.59)
rho		0.663	0.779			
		(4.51)	(6.33)			
$\bar{R}^2$	0.831	0.498	0.315	0.677	0.714	0.815
D.W.	2.04			1.38	1.52	1.93

Note: Figures in parentheses are t-statistics.
The dependent variable, *STRKRS*, is number of strikers minus strikers involved in strikes over union recognition all divided by total trade union members. w^* is the cost of job loss measure, as defined in the text, measured in hundreds of dollars. i is the interest rate on 3-month U.S. Treasury securities. r is the net after-tax rate of profit in the non-financial corporate business sector. *VEND* is vendor performance, percentage of companies receiving slower deliveries. *CONT* is number of workers experiencing contract renewals in that year divided by total trade union members. *UEXP* is the unemployment rate for experienced workers. u^d is the expected duration of unemployment for job losers, expressed as a fraction of a year (see text). $w - w^r$ is annual earnings minus annual income-replacing social welfare benefits, in hundreds of dollars (see text). c is a constant. Equations labelled AR1 were estimated using Cochrane-Orcutt correction for first-order serial correlation. *INST* is an instrumental variables procedure, as described in the text. Equation 4 (log-log) was estimated in double log form. For data sources, see appendix.

model of strike incidence, explaining over 80% of its variance in this period. All the explanatory variables have their expected signs and are significant at standard levels, with the exception of the profit rate. There is no evidence of serial correlation in the residuals. The coefficient on the cost of job loss indicates that a $100.00 increase (in 1977 dollars) in the yearly cost of job loss lowers the proportion of trade union members striking by one percentage point. The coefficient and statistical significance of the cost of job loss measure have been found to be extremely robust upon experimentation with numerous alternate specifications of the model.[23]

period of 1949–54 and re-estimated the equation over the period 1949–81. The results are very similar, although the explanatory power of the entire equation and the coefficient values and significance levels of the variables are slightly reduced, in particular for the profit rate and vendor performance.

[23] In addition to the cost of job loss variable described in the text we have calculated two variants which represent the cost of job loss relative to pre-job loss earnings and to earnings plus

TABLE 4.—NORMALIZED REGRESSION COEFFICIENTS FROM EQUATION 1
(standard deviations in parentheses)

$\beta_{w}*$	−0.989
	(6.25)
β_i	−0.723
	(2.95)
β_r	0.130
	(1.55)
β_{VEND}	0.213
	(13.27)
β_{CONT}	0.420
	(6.27)
σ_{STRKRS}	(3.1)

The interest rate proved to be an important explanatory variable, and was also quite robust.[24] For example, an equation (not shown) with only w^*, i, and contract renewals was able to explain 75% of the variance in the dependent variable, and showed no evidence of serial correlation.

The remaining two variables provide less explanatory power. Nevertheless, they both had the expected signs, and the profit variable is significant at lower confidence levels.[25] These variables capture the cyclical variation faced by firms and ensure that the cost of job loss measure is not merely a proxy for the business cycle.

The impression that the cost of job loss and the interest rate are dominant is also confirmed by examination of the normalized regression coefficients from equation 1. (See table 4.) A standard deviation change in both the cost of job loss and the interest rate yield a combined 1.7 standard deviation change in predicted strikers.

In equation 2, we estimated an underspecified model using only contract renewals and the cost of job loss. The misspecification introduces serial correlation; however, the cost of job loss retains most of its explanatory power.

Our strike model can be compared to standard formulations in the literature. Kennan (1985) reviewed the empirical evidence on strikes and noted a negative relationship between strike incidence and unemployment, as well as real wages.[26] A positive relationship between strikes and inflation has also been found.[27] We have estimated models which attempt to reproduce these relationships. Equation 3 substitutes a conventional labor market variable—the unemployment rate for experienced workers—for our measure.[28] The standard formulation is clearly inferior to our model. The unemployment rate is not statistically significant and the explanatory power is very low overall.[29] "Target wage" models fared equally poorly.[30] We also tried specifications with a weighted average of past inflation rates. In no case did these variables have their expected sign.

If reemployment earnings are equal to current earnings, we can decompose our measure into two components—the expected duration of unemployment and the wage loss, measured as the difference between earnings and the social welfare benefit, $(w - w^r)$ as in text equation (1). Our definition of the cost of job loss implies that these

non-income-replacing social welfare benefits, respectively. In both cases, the significance levels and other properties of the estimates are vitually unchanged. We also estimated equation 1 with the contemporaneous cost of job loss. The coefficient was −0.831, and the t-statistic was −3.80.

[24] We attempted to determine whether the explanatory power of the interest rate was due to its high level from 1979–1981, a low strike period. Truncating the sample in 1978 reduced its coefficient estimate only slightly and it retained its significance level.

[25] Substituting a polynomial distributed lag for the one-year lag used here marginally improves the performance of the profit variable.

[26] However, Kennan argues that the existing studies have been plagued by deficiencies, for example, failure to account for contract renewals, contamination of significance tests by serial correlation, and failure to test for the existence of time trends which may alter the estimates. Our model does not suffer from any of these problems. Adding a trend variable to equation 1 does not alter the results, and the trend is not itself significant.

[27] Kaufman (1981).

[28] The unemployment rate for experienced workers excludes new entrants to the labor force and is therefore a more sensitive measure of labor market conditions facing those workers whose strike incidence we seek to explain. Estimates of alternative labor market measures (the aggregate unemployment rate, the prime-aged male unemployment rate, and the ratio of actual to potential GNP) yielded no improvement in results. In addition, when both the cost of job loss and the standard labor market measure are included in the equation, the latter is insignificant and the former retains both the value of its coefficient and its significance level. Finally, the results using contemporaneous unemployment are virtually identical.

[29] A model (not shown) including only the unemployment rate and contract renewals, comparable to equation 2, confirms the weak performance of the unemployment rate. It is difficult to know exactly why our results reveal a substantially weaker relationship between strikers and unemployment than the literature suggests. We suspect the difference may be due to various factors: taking into account contract renewals, union membership, and recognition strikes; extension of the sample period (Shalev, 1983); and correction for serial correlation. Additionally, Kennan reports on number of strikes while our dependent variable is strikers.

[30] We used the current rate of growth of real wages, an average of past years' growth, and the deviation of current from past years' growth, as proxies for the real wage target.

components should have identical coefficients if they are estimated in the double logarithmic form. Equation 4 performs this experiment. The results indicate that the two coefficients are indeed statistically significant and close in magnitude, thereby lending support to our interpretation of the variable and its particular formulation.

It may correctly be objected that the duration of unemployment is endogenous, for the extent of the worker's job search will depend on the availability of alternative sources of support. In this case variations in the cost of job loss measure will understate the true variance of the cost of job loss, as variations in the level of income support will be partially offset by variations in the extent of job search and hence in the duration of unemployment. To account for this possible endogeneity we re-estimated equation 1 using an instrumental variable for u^d.[31] The results are presented in equation 5. The coefficient of w^* is virtually unchanged, indicating the lack of significant bias.

The final equation (equation 6) extends the sample period to 1983. Using a highly correlated measure which is available through 1983—strikers in strikes involving 1000 or more workers—we estimated our dependent variable for 1982 and 1983.[32] The results are virtually unchanged. We also added a dummy variable for the years after 1980 (not shown) in order to test the widely held view that in recent years labor relations have undergone profound structural changes. While the dummy variable had the expected negative sign, its t-statistic was relatively low ($t = -1.77$). The coefficients and significance levels of our basic equation were unchanged, with the exception of a reduction in the interest rate coefficient, thereby suggesting that our model has been relatively successful in explaining strike variation even in the 1980s.

Conclusion

These econometric results suggest a systematic relationship between strike incidence and general economic conditions. The strength of these results, we believe, derives from the use of a more comprehensive measure of economic conditions, and particularly of labor market tightness. We do not know if our measure would produce similarly strong results in explaining strikes in other countries or during other periods in the United States. A long-term historical study or international comparative research would require more careful attention to institutional differences governing the employment relation. However, for the United States over the period 1955–1983, our cost of job loss index appears to have successfully captured the dynamics of strike incidence.

[31] We predicted our unemployment duration variable using the high employment budget surplus, expressed as a percentage of GNP and the capacity utilization rate. The cost of job loss was then recalculated using the predicted values for the unemployment duration. The simple correlation between the original and predicted w^* is 0.91.

[32] The proxy explains 90% of the variation in our dependent variable over the period 1955–1981.

APPENDIX

Data Sources

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