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Martin G. Evans and Daniel A. Ondrack

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Article abstract

Recently in the United States there has been a reawakening of interest in the wage effect of unionization (Freeman and Medoff, 1984). The question asked is what is the impact of unionization on overall pay levels and on the wage differentials within the work force? Although there has been considerable research on this issue in the United States (see Lewis, 1984 for a review), there is very little pertinent Canadian analysis (Gunderson, 1980).

The Effect of Unionization on Wages

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THE WAGE LEVEL EFFECT OF UNIONS

It can be argued that unions can have a positive effect, a negative effect, or no effect on wage levels. As one of the major economic rationales of the union is to increase the total compensation package of its members (usually narrowly defined as wages and fringe benefits) then, through the collective bargaining procedure, we may expect that wages in union establishments would be higher than those in non-union establishments. In contrast, it could be argued that non-union establishments, in order to avoid unionization, pay a premium wage to their employees to encourage them not to join a union. In such cases, non-union firms would have higher wages than union firms, especially if the non-union firm is willing to pay a premium for control of its workforce. The third argument, based upon market equilibrium considerations, suggests that there should be no dif-

* EVANS, M.G. and D.A. ONDRACK, Professors, Faculty of Management Studies, University of Toronto.

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ferences in wages between union and non-union firms; all firms pay the going rate in the market place. If union firms have to pay a large premium, they may have to adjust their labor quality requirements and alter their working conditions to offset the union wage premium; so net, of such effects unionization will have no impact on wage level.

Especially in the United States there has been considerable work on estimating this type of wage effect, with estimates of the impact of unionization in the United States varying widely (-9% to +50%, with a mean of 20%) and seeming to depend upon the sex, occupational category of the worker, the concentration ratio of the industry, the age and education of the worker, the year in which the data were gathered, and the analytic techniques employed (Lewis, 1984). On methodological grounds, Lewis (1984) argues for an effect of about 10%.

The Canadian estimates show a similar magnitude (c. 20%) (Kumar, 1972; MacDonald and Evans, 1981; MacDonald, 1983), though Starr (1973, cited in Gunderson, 1980) finds a smaller estimate (9%). We therefore expect to find an effect of similar magnitude in our data.

THE DISPERSION OF WAGES

The effect of unions on wage dispersion is also theoretically ambiguous. Wage dispersion may be increased by unionization by its impact on creating a dual economy where skilled unionized workers (and, through labor market factors, their non-unionized colleagues) have increased wages while the unskilled non-unionized languish in low wage ghettos. In contrast, if unionization encompasses the unskilled, then differentials will be reduced. This occurs through such processes as «flat rate» wage increments, union pressure for the removal of regional wage differentials, and union and employer pressure for the removal of inter-firm differentials (Freeman, 1980).

Freeman (1980) provides the most complete analysis of this issue. He shows a marked union effect in reducing the dispersion of wages for blue-collar male employees in both the manufacturing and non-manufacturing sectors. These differences are maintained even when the differential characteristics of union and non-union employees (in terms of education and experience) are controlled and when additional controls for region, industry, and individual race, marital status, and number of dependents are included in the regression equations. The data used by Freeman (1980) encompassed all employed males whether they are in the periphery or core economies. Therefore this wage compression effect must be economy wide (at least for male workers) and not simply be true of a high skilled segment of the labor market. As far as we have been able to ascertain, there has been no attention to this issue using Canadian data. Our expectation is that there will be a compression effect.

Our study contributes to the empirical literature on union effects in a number of specific ways: i) it is based on Canadian data and because of the absence of questions on union status of workers in conventional wage

surveys, the number of Canadian studies is limited; ii) it examines the impact of unions on both the level and dispersion of wages; iii) it examines the union impact in different sectors where the impact varies systematically; iv) it is based on a new data set, gathered by the authors for other purposes, but that provides explicit measures of job complexity and job experience that are usually captured by proxies in most studies.

SAMPLE

The sample consisted of 1193 male blue-collar employees from the Sarnia/Lambton County area of southern Ontario. These were men who had a) been screened as eligible to take part in a survey studying work and leisure (Evans and Ondrack, 1984), i.e. they had to have worked for at least six months, be in a blue-collar occupation, and have no supervisory responsibilities; and b) responded to a mail questionnaire. We obtained a 60% response rate from those who agreed to complete questionnaires.

The data used in the subsequent analyses are self-report data provided by the individual. The independent variable was salary¹. In our analysis we tried to incorporate controls for both human capital and structural variables. We included: education, experience (measured directly as years of experience in one's current occupation; this may be a better indicator than the usual «age-education-5» used in most studies), experience-squared, marital status, number of people in the household (including the respondent himself, as a measure of the number of dependents), job complexity (measured with the Motivating Potential Score of Hackman and Oldham (1976)), and size of firm.

There are two peculiarities with our data. The manufacturing sector is dominated by the petrochemical industry. The non-manufacturing sector does not include any white collar workers; thus the subsample is lacking clerical workers who make up a large proportion of the traditional service sector.

RESULTS

Separate OLS regression analyses were performed for wage level and wage dispersion. Equations were estimated for the manufacturing and non-manufacturing subsamples as well as for the petrochemical and non-petrochemical subsamples of the manufacturing group.

1 = Annual income (\$) was measured by the following classification:

1 = under 10,000; 2 = 10,000-14,999; 3 = 15,000-19,999;

4 = 20,000-24,999; 5 = 25,000-29,999; 6 = 30,000-34,999;

7 = 35,000-39,999; 8 = 40,000-44,999; 9 = 45,000-49,999;

10 = more than 50,000

Wage Levels

The first analysis² examined union effects in each of the manufacturing and non-manufacturing sectors of the local economy. In the non-manufacturing sector ($n = 305$) we found the typical union wage effect. Net of the control variables, unionization had a positive effect on wage level ($b = 0.35$; $R^2 = 0.34$). However, an anomalous result was found for the manufacturing sector ($n = 795$): net of the control variables, unionization had a small significant negative effect on wage level ($b = -0.086$; $R^2 = 0.40$).

We pointed out earlier that some theorists have argued that non-union firms compensate their employees for *not* joining a union. Foulkes (1981) found that the non-union firms in his sample «paid at least as well as their union competitors» and that they paid well by both industry and community standards. The petrochemical industry is very capital intensive, the wage bill is a small portion of the operating cost. It is in such an industry that market discipline would be least effective in the pricing of labor so that non-unionized firms could afford to pay a premium over union rates for their labor.

We find evidence of marked differences between the petrochemical and non-petrochemical manufacturing firms. For petrochemicals ($n = 616$), unionization has a marked significant negative effect upon wages ($b = -0.156$; $R^2 = 0.23$); for non-petrochemical employees ($n = 166$), unionization has the usual significant positive impact upon wage levels ($b = 0.277$, $R^2 = 0.47$).

Although unionization has these negative effects in the petrochemical industry, we should point out that both unionized and non-unionized workers in petrochemicals are more highly paid than those in the rest of manufacturing or those in the non-manufacturing sector.

Wage Dispersion

When we look at the dispersion of wages we find an effect similar to that found by Freeman (1980). The variance in salary is higher for non-union workers in both the manufacturing and non-manufacturing sectors. The difference in variances is less marked in the petrochemical sector. The question is whether these differences (manufacturing and non-manufacturing) between union and non-union workers are a real union effect, or whether they are due to the different variances in the wage determining factors (education, experience, etc.)? The analysis to answer this question is identical to that of Freeman (1980). We look at the wage equations to determine how much of the difference in variances in salary is due to different distributions of education, etc. in the two groups.

The relevant data show that though the variances in salary are higher in non-union than union sectors, the variances in most of the wage determining factors are lower in the non-union situations. Thus the correction to

2 Tables for this and other analyses can be obtained from the authors.

salary variances is such as to *increase* the difference in variances. We may therefore conclude that in the union situations, net of other wage determining effects, the variance in wages is reduced in comparison with non-union situations. This effect holds in both manufacturing and non-manufacturing situations but not in the petrochemical industry where the wage variation is low in both the union and non-union areas.

CONCLUSION

The results presented here, in their broad outlines, confirm the findings of previous investigators. In most situations, the effect of unions is to increase wage levels and to reduce wage dispersion. However, the observed effects in the petrochemical industry are quite different: variances are narrow in both sectors; the non-union employees have higher wages.

While Freeman and Medoff (1984) conclude that on the whole unionization has had a beneficial effect upon society (e.g., a contribution toward equality, the moderation of the wage effects of larger firms), our data also raise some points of caution. One of our additional findings shows that in the petrochemical sector (though not in the other subsamples) the union moderates the wage effect of job complexity. It has no effect on wages in the union sample. Clearly this raises issues of equity (not equality); people working on more complex tasks may deserve higher monetary compensation, or is complexity its own reward? Most advocates of improving the quality of working life emphasize the necessity of maintaining wage equity. The skill progression compensation plans to be found in three of the petrochemical firms (Ondrack and Evans, 1980, 1982, 1984) demonstrate a response to equity considerations. Our data suggest that although, in specific cases, unions do agree to such systems (Ondrack and Evans, 1980; Davis and Sullivan, 1980), across the petrochemical industry they have a dampening effect on differential pay for tasks of different complexity.

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