

Union Rent Seeking and Import Competition in U.S. Manufacturing

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ABSTRACT

We investigate how union rent seeking is affected by import competition. The myopic theory of union rent extraction assumes that unions attempt to maximize current rents. In such a scenario, unionization, even with import competition, may increase the rents earned by union workers. On the other hand, import competition may also induce unions to favor a more cooperative strategy in order to maintain insider employment. This empirical investigation at the industry level using data from 1975-1984 focuses on union rent seeking. This focus differentiates our study from previous work emphasizing union wages. The results indicate that union membership significantly and positively affects union rent seeking in the U.S. manufacturing sector, whereas import competition reduces union rents. Surprisingly, however, there is no compelling evidence that union rents are higher in more unionized import-competing industries as compared to the less unionized ones.

JEL Classification: F12, F14, F10.

Key Words: unionization, import penetration, wage differentials, union rents

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1. Introduction

There has been widespread discussion in the literature about the extent to which import competition has affected the wages of U.S. workers. The late 1970s and 1980s witnessed a slowdown in the growth of real wages and a growing inequality in the wages of skilled and unskilled workers, together with a steady increase in the U.S. trade deficit. Hence, conventional wisdom blamed low-cost imports for the decline in U.S. wages, especially those of low-skilled workers. The existing literature includes studies on the effects of trade volumes, prices, and protection on wages.¹ Our study focuses on another interesting dimension of the same problem, namely, how union rent seeking responds to import competition.

Our contribution is empirical and seeks to extend the existing literature on the effects of import competition on union wages² by focusing specifically on how import competition affects union rent seeking. The union wage differential, i.e, the differential wage earned by a worker in an industry because of union membership as compared to the average worker in the manufacturing sector, is estimated for each industry and used as a proxy for union rent seeking.³ We empirically evaluate two issues: how union rents respond to import competition and whether union bargaining power, as proxied by union membership, moderates how import competition affects union rents. The empirical work covers the period from 1975 to 1984. Our main results indicate that the proportion of the labor force unionized in an industry positively and significantly affects union rent seeking in the U.S. manufacturing sector, whereas import competition does, indeed, reduce union rent seeking. Surprisingly, however, we find no evidence that union rents

are higher in more unionized import-competing industries as compared to the less unionized ones.

Section II of this study provides our theoretical considerations and empirical propositions. Section III presents the results of the empirical analysis. Finally, Section IV provides the key conclusions and policy implications.

2. Theoretical Considerations

In a competitive market, changes in import competition are inversely related to product and labor demand in the domestic industry. However, the employment response may be moderated by wage adjustments that also occur in response to import competition. Under collective bargaining, wages diverge from market clearing rates, and hence the links between import competition and wages in a unionized labor market are somewhat more complex. When wages exceed outside alternatives, as in the unionized sector, there is the possibility of greater-than-competitive downward wage adjustment in the union sector, as unions offer wage concessions to preserve union jobs (Rose, 1987; Freeman and Katz, 1991). On the other hand, unions may also opt for higher wages at the expense of jobs. Industries characterized by “end-game bargaining” may witness perverse union wage responses to shifts in product demand, as the union tries to extract maximum rents in a declining industry (Lawrence and Lawrence, 1985).

In cases where workers with seniority (hereinafter “senior workers”) dominate the union, the pattern of response to demand shifts is likely to be more complex. In particular, when senior workers dominate the union, a positive demand shock may result in large wage gains because existing union members are likely to value wage gains more than employment gains. If

there is a moderate negative shock, they are also likely to be less inclined to sacrifice rents. However, in the face of large negative demand shocks and potential plant shutdowns, the union members may be willing to offer large wage concessions to protect employment. Grossman (1984) analyzes the conditions under which wages in unionized markets that are dominated by senior workers are less responsive to trade-induced changes in demand than when wages are competitively determined. He finds that an exogenous decrease in the price of the product has two opposing effects. First, for a union of a given size, a lower wage is desirable as greater international competition increases the risk of layoffs. Second, however, as union membership declines with a system of seniority layoffs, it raises the average seniority level and results in a median union member who desires a higher wage.

Mezzetti and Dinopoulos (1991) develop a partial-equilibrium model of a unionized domestic firm and a foreign firm competing in the domestic market and producing a homogeneous good. Their analysis indicates that if the union is employment-oriented, then an increase in its relative bargaining power increases domestic output and welfare, has an ambiguous effect on domestic profits, and increases the union's utility level. On the other hand, if the union is wage-oriented, protection may decrease welfare and output. They also find that a credible threat to transfer production abroad increases domestic profits and lowers the negotiated wage.

Brander and Spencer (1988) model a three-stage game, where lower import competition as a result of a tariff results in higher union wage demands. As the foreign firm becomes less competitive because of the tariff, and the domestic firm's competitive position improves, the

union is able to raise its wage demands. Bhagwati and Dehejia (1994) model the effects of import competition on trade-union generated rents and jobs using an insider-outsider model. If the insiders (union workers) correctly anticipate a terms-of-trade shock in their sector, they will bargain for a nominal union wage that ensures full employment for insiders. Their real wage remains unchanged in terms of their own good, but declines vis-à-vis other goods as their nominal wage declines in proportion to the terms-of-trade shock in their sector. However, in the alternative scenario in which the decline in terms-of-trade was unanticipated by the union, unions bargain for higher nominal wages, resulting in fewer jobs for insiders.

These theoretical models clearly show that the impact of import competition on union wages depends critically on the assumptions of the model in question. In the words of Freeman and Katz (1991 p. 239), “As there is reasonable a priori logic for expecting unions to respond less, more, or even ‘perversely’ to shocks due to trade or other factors, the question of which response pattern dominates wage setting in the United States is an empirical one.”

The existing empirical evidence suggests a negative relation between import competition and wages (Grossman, 1982; Lawrence and Lawrence, 1985; Mishel, 1986). However, empirical evidence regarding how import competition affects union wages is mixed. For example, Lawrence and Lawrence (1985), using aggregate industry-level data for 1980 and 1984, find a significant and negative effect of import share on wages, but no differential impact across union and nonunion sectors. Meanwhile, Mishel (1986) analyzes establishment data from 1968 to 1979 and finds that union wages are negatively correlated with import shares. In yet another study, MacPherson and Stewart (1990) use CPS data from 1975-1981 and find

that international competition was a significant determinant of union and nonunion wages; the negative effect of a given import share on both union and nonunion wages decreased sharply in absolute magnitude as the percentage of labor organized in an industry increased.

Our study contributes empirically to this debate by focusing explicitly on *union rents*, instead of *union wages* as in most of the existing literature. We proxy unions rents by the union wage differential, which we define as the differential wage earned by a worker in an industry because of union membership as compared to the average worker in the manufacturing sector, after accounting for other variations in individual worker characteristics. We analyze the effects of international competition on union rents and investigate whether the union-rent response to international competition depends on the percentage unionized in the industry and the degree of imperfection in the product market.

3. Empirical Analysis

Our dataset has industry-level information on union wage differentials as well as other characteristics and covers the period from 1975 to 1984.⁴ The time period was influenced in part by data availability. The data are aggregated into 41 industry groups. Data on earnings of individuals from the May Current Population Survey (CPS) are used to construct inter-industry union wage differentials. The methodology used for calculating union wage differentials is a variation of the Krueger and Summers (1988) approach and is discussed in detail in the next sub-section. The inter-industry wage differentials were merged with trade and industry data from the NBER Trade and Manufacturing files to obtain 410 observations covering 41 industries over a period of ten years. For our purposes, import competition is proxied by the

import penetration ratio: the ratio of the value of U.S. imports to the value of U.S. production plus imports minus exports. An appendix containing a description of the variables used and the data sources is available from the authors on request.

*Calculation of Union Wage Differentials.*⁵ The first stage in this empirical analysis is the calculation of inter-industry union wage differential (*WDEMP*) from micro-level data on individual characteristics and earnings contained in the May issues of the Current Population Survey (CPS). The May files contain information on workers' union affiliations. Individuals in the age group 16 to 64 working between 10 and 70 hours a week were included in the sample.

The union wage premium is calculated in terms of the inter-industry wage differential due to unionization, i.e., that part of a union worker's wage that cannot be explained by her individual characteristics H_{ij} but which is a result of her union membership in her industry. The *union wage differential* is then calculated as the differential wage earned by a worker because of union membership as compared to the average worker in the manufacturing sector. Krueger and Summers (1988) provide the basis for calculating inter-industry wage differentials. The inter-industry wage differential (w_j^{**}) attributable to unionization is captured by the coefficient on the interaction term between the industry dummy and the union membership variable, such that:

$$\log(w_{ij}) = \mathbf{a} + \mathbf{b}_h H_{ij} + \mathbf{b}_j D_j + w_j^{**} (D_j * U_i) + \mathbf{e}_{ij}, \quad (1)$$

where $\log(w_{ij})$ is the log of hourly wages; H_{ij} is the vector of human resources, location, and demographic variables; w_j^{**} is the wage differential a union member in that industry receives in

comparison to the worker in the omitted industry; D_j is the industry dummy; U_i is the union dummy; and e_{ij} is the error term.

This estimate of union wage differentials cannot be directly used in our trade model because the wage differentials are in comparison to the omitted industry. Hence, in this study, the extent to which wages deviate from the average wages in the manufacturing sector because of unionization in an industry is determined. w_j^{**} is modified to obtain $WDEMP$ such that $WDEMP = w_j^{**} + k$, where k is the employment-weighted mean of w_j^{**} .

$WDEMP$ can be interpreted as the wage differential because of being a union member in industry j in comparison to the wages of an average worker in the manufacturing sector. The coefficient for the omitted industry is the value of k itself. The variables included in H_{ij} are commonly used in the literature and include gender, race, marital status, veteran status, educational achievement, education squared, SMSA, region, age, occupation, and interaction variables for education and gender, marital status and gender, and age and gender. Note that this calculation of the union wage differential does not include non-wage or fringe benefits and hence may be biased downward.

Union Rents and Import Competition. We combine the union wage differential calculated for each industry from the CPS data with industry characteristics and trade data to determine the impact of import penetration on union rent seeking. The primary emphasis of the theoretical model is on import competition as proxied by the import penetration ratio. Existing literature (Freeman and Medoff, 1981; Hirsch and Neufeld, 1987) also suggests that the percentage of labor organized in an industry positively affects union wages. Grossman (1984) predicts that

there will only be partial union wage adjustment in response to import competition if the elasticity of substitution between labor and capital is less than unity and the coefficient of risk aversion is greater than unity.⁶ The interaction between proportion unionized and the import penetration ratio is hypothesized to generate a positive coefficient and is designed to capture the moderating effect of the extent of unionization on the negative relationship between import competition and union rents. The combined effects of import penetration and the interaction between import penetration and unionization suggests that as the percentage of labor unionized increases, the negative effect of the import penetration ratio on union rents will be smaller.

Many other factors also influence union rents. Of interest here is portrayal of unions in the rent-sharing literature as bargaining for a share of the economic profits or rents earned by firms in an imperfectly competitive industry. The industry concentration ratio and R&D expenditures are used as proxies for the extent of imperfect competition and the existence of rent-generating assets. In order to specify correctly the union-rents equation, this model includes explanatory variables that have been commonly used elsewhere, such as establishment size and the number of establishments in an industry. Union rents may also be influenced by the alternative wage available for the union members. Because the alternative wage depends on workers' skills, the average education of the work force is used to proxy the alternative wage.

The union rent equation to be estimated is given by:

$$\begin{aligned}
WDEMP_{jt} = & \text{CON} + b_{ww}WDEMP_{jt-1} + b_{wT}IMPEN_{jt} + b_{wTu}IMPEN_{jt}*UNPER_{jt} \\
& + b_{wcr}CR4_{jt} + b_{wRS}RDSAL_{jt-1} + b_{wUN}UNPER_{jt} + b_{wUU}UNPER_{jt}^2 \\
& + b_{wEN}ESTNUM_{jt} + b_{wES}ESTSZE_{jt} + b_{wESU}ESTSZE_{jt}*UNPER_{jt} \\
& + b_{ws}AVGED_{jt} + b_{wAU}AVGED_{jt}*UNPER_{jt} + e_{wjt},
\end{aligned} \tag{2}$$

where $WDEMP$ is the union rent; $IMPEN$ is the import penetration ratio; $CR4$ is the 4-firm

concentration ratio; *RDSAL* is the R&D ratio; *UNPER* is the proportion unionized; $UNPER^2$ is the square of proportion unionized; *ESTNUM* is the number of establishments in an industry; *ESTSZE* is the establishment size; *AVGED* is the average education; *j* indexes industry; and *t* indexes time.

In a linear regression model, the error variance is assumed to be constant across observations. In this model, however, heteroskedasticity arises because we are using an estimated regressor, the union rent, as the dependent variable in the union-rents equation; hence the error variance in our model is not constant across observations. To correct for heteroskedasticity, as well as any possible simultaneity between import penetration and union rents, generalized two-stage least squares (2SLS) is used.

Table 1 presents the generalized 2SLS results of the union rents regressions. Model I includes only import penetration, whereas Model II includes both import penetration and its interaction with percentage unionized. The coefficient on the one-period lagged union rent is positive and significant as expected. The theoretical models suggest that union rents are affected by union bargaining power. The results from the wage regression in Table 1 reveal a positive and highly significant coefficient on the proportion unionized in the industry and lend support to the hypothesis of union rent extraction. The idea that union rents decline in the face of international competition is confirmed by the fact that import penetration significantly and negatively affects the wage premium.

In Model II, the interaction term between import penetration and proportion unionized is positive, as expected; however, rather surprisingly, it is statistically insignificant. This finding suggests that the extent of unionization in a industry does not substantially impact upon union

response to import competition. This result, which is robust to changes in specification, contrasts to the positive and highly significant results estimated in the union wage equation by MacPherson and Stewart (1990). However, the two results are not directly comparable, although it is reasonable to expect that they may be similar. Our sample covers more years than MacPherson and Stewart, and we are also focusing on union rents instead of union wages and the difference between union and nonunion wages. Our results (a) suggest that the union response to import competition is not significantly different in a highly unionized industry as compared to a less-unionized industry and (b) lend support to the hypothesis that union appropriation of rents from the domestic market is sensitive to maintaining insider employment. When interpreting these results, it is noteworthy to remember that our method of estimating union wage differentials does not include the non-wage component of union rent extraction. Hence, the overall union rent extraction may be even larger than suggested by this model.

Among the other variables of interest indicating that union rents are affected by the degree of imperfect competition in the product market is the one-period lagged R&D ratio, which negatively and significantly affects the union wage differential. One possible explanation for this finding is that R&D has a long gestation period, and the union may view the one-period lagged R&D only as a use of resources rather than a source of rents in the domestic market. There is also no evidence of greater union rent extraction in more concentrated import-competing industries. This result is similar to other findings in literature that market power is not an important source of union rents as the effect of unions on firm profits is independent of union structure (Hirsch and Connolly, 1987; Chappell et al., 1991). However, the negative and

significant coefficient on the interaction term between average education and proportion unionized lends some support to the notion that unionization may reduce differences in the wages of different skill groups. In summary, our results support the hypothesis that while union rent seeking is sensitive to import competition, there is no significant difference between more- and less-unionized industries in the responsiveness of union rent seeking to import competition. Furthermore, the degree of domestic market concentration in import-competing industries also does not affect union rents significantly.

We analyze our results further in Table 2 by using the coefficients from the regression analysis to simulate the joint impact of import penetration (*IMPEN*) and the interaction between import penetration and percentage unionized (*IMPEN *UNPER*) on union rents for different values of *IMPEN* and *UNPER*. Depending on the extent of unionization, there is a modest amount of variation in the impact of import penetration on union rents. For example, the predicted union rent response to the mean import penetration ratio (0.0735) is -9.92 percent when the percentage unionized is 20 percent, but drops to -4.18 percent when the percentage unionized is 50 percent. Furthermore, the predicted union rent response to the mean import penetration ratio (0.0735) changes signs and becomes +1.57 percent as the percentage unionized is increased to 80 percent. Given that our estimates deal expressly with union rents, in contrast to other studies such as MacPherson and Stewart (1990) that deal with union wages, it is unfortunately not possible to directly compare our estimated results with these other studies. Nonetheless, it is important to note that our estimated coefficients are smaller than in other studies that address similar issues.

4. Concluding Remarks

We empirically evaluate two issues: (1) how the union rent seeking responds to import competition and (2) whether union bargaining power, as proxied by the proportion of the labor force in an industry that is unionized, moderates the impact of import competition on union wage differentials. Unlike other studies, our emphasis is on the influence of import competition on *union rent seeking, rather than on union wages per se*. Our primary results indicate that while import competition negatively and significantly affects union rent seeking, the extent of unionization does not substantially influence the impact of import competition on the union wage differentials. This is a somewhat surprising result since the literature suggests that union wages are greater in the presence of stronger unions.

Among the interesting policy implications of this analysis both for trade unions and national governments is the finding that union bargaining in import-competing industries during the period 1975-1984 was sensitive to import competition and was focused more on employment for its members than on wage increases. This may well have been part of a deliberate union strategy to moderate rent seeking and thereby stem the decline in union membership when faced with the overall decline in the U.S. manufacturing sector. This challenges the widespread notion of myopic unions, whose actions often diminish the effectiveness of government policy aimed at boosting the U.S. manufacturing sector.

It is also useful to compare these results to the findings in Nair-Reichert and Pomery (1998) which indicate that while union rent extraction declines in the face of export competition, it is higher in more unionized exporting industries, as compared to the less unionized ones. One

possible explanation for differences in union rent-seeking behavior in export- and import-competing industries is that unions have more complete and first-hand information about import competition in the domestic market, as compared to competition in foreign markets, and hence are more responsive to import competition. So government subsidy policies aimed at promoting U.S. manufacturing may have a varying impact on industries with unionized labor markets, depending on the nature of their trade orientation (i.e., whether predominately exporting or importing). Extensions to this research that may have policy relevance include analysis of firm-level data and the use of broader measures of union rents accruing from both union wages and non-wage union benefits.

Table 1

Union Rent Regressions^a

Variable Name ^b	Model I	Model II
<i>CON</i>	-1.00 (-1.32)	-0.88 (-1.15)
<i>WDEMP (-1)</i>	0.16 (2.33)	0.16 (2.35)
<i>IMPEN</i>	-1.26 (-2.1)	-1.87 (-2.42)
<i>IMPEN*UNPER</i>		2.61 (1.33)
<i>CR4</i>	0.10 (0.51)	0.05 (0.26)
<i>RDSAL (-1)</i>	-9.08 (-2.54)	-9.75 (-2.7)
<i>UNPER</i>	4.63 (2.01)	4.15 (1.78)
<i>UNPER²</i>	-1.39 (-1.14)	-0.95 (-0.76)
<i>ESTNUM</i>	0.03 (0.18)	0.02 (0.11)
<i>ESTSZE</i>	2.33 (1.47)	2.44 (1.53)
<i>ESTSZE*UNPER</i>	-3.26 (-1.28)	-3.4 (-1.3)
<i>AVGED</i>	0.06 (1.13)	0.07 (1.15)
<i>AVGED*UNPER</i>	-0.25 (-1.65)	-0.26 (-1.68)
<i>R-square</i>	0.39	0.40

^a Time dummy variables and industry dummy variables were included to control for year and industry effects. *T*-values are in parenthesis.

^b (-1) indicates one-period lagged value.

Table 2
*Combined Effects of IMPEN and IMPEN*UNPER on Union Rents^a*

Percent Unionized	Effect on Union Rents
When Import Penetration Ratio=0.0074	
20%	-1.0%
35.21%	-0.71%
50%	-0.42%
80%	0.16%
When Import Penetration Ratio=0.0735	
20%	-9.92%
35.21%	-7.01%
50%	-4.18%
80%	1.57%
When Import Penetration Ratio=0.1375	
20%	-18.85%
35.21%	-13.32%
50%	-7.9%
80%	2.98%

^a The average value for *IMPEN* is 0.0735 with a standard deviation of 0.0661; hence *IMPEN*=0.0074 and *IMPEN*=0.1396 are one standard deviation above and below the mean. The average *UNPER* is 0.3521 or 35.21%.

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NOTES

1. Some examples are Borjas et al.(1991), Murphy and Welch (1991), Katz and Murphy (1992), Bound and Johnson (1991, 1992), Katz and Revenga (1989), Grossman (1987), Revenga (1992), Gaston and Trefler (1992), Leamer (1992), and Sachs and Shatz (1994). Some of these studies also examined the effects of trade on different demographic groups, based on sex and education levels.
2. For example, Freeman and Katz (1991) used annual and hourly earnings. McPherson and Stewart (1990) use union and nonunion wages and approximate the percentage union wage differential as the difference between the log of real union and nonunion hourly wage rates.
3. The union wage differentials are calculated using a modified version of the technique in Krueger and Summers (1988).
4. Union wage differential data for 1982 is the average for 1981 and 1983, since data were not readily available for 1982.
5. This description closely follows Nair (1995) and Nair-Reichert and Pomery (1998).
6. Research by Freeman and Medoff (1983) and Friend and Blume (1975) confirm that these conditions are satisfied in the U.S.