

Union Wage Advantage : Myth or Reality?

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The demand for higher union wages can be heard from migrant union workers in Florida to GM autoworkers in Detroit, Michigan. Do these wage demands cause members of unions to receive higher wages than their non-union counterparts? Economists (Fritz Machlup 1947) have hypothesized that wages for comparable work are higher in union establishments. One aim of this paper is to suggest that this view is inadequate because the reasoning behind it is far too simple. By focusing too exclusively on the union's role in raising wage rates, the theory fails to capture the dynamics that ultimately influence the pervasiveness of union wage demands.

The purpose of this paper is to test the conventional hypothesis that union wage members earn higher wages than their non-union counterparts. First, the typical union wage model is estimated examining the impacts of union status, schooling, tenure, race, age and location. The second line of inquiry is a more sophisticated model that focuses on the estimation of the union wage differential by occupation, size of labor force, size of company, class or worker, and industry and union dummy interaction variables. Here the sensitivity of wages to union membership is examined in the context of the additional control variables. This paper concludes by emphasizing a contrast between the union wage advantage and the findings of this study.

I. LITERATURE REVIEW

One school of thought views the policies of unions and employers as having more to do with wage movements than free competitive forces. The objective of such policies developed by these groups is to limit the free operation of the forces of supply and demand. Institutional policies—rather than the market—set the upper and lower limits of wages (William Miernyk 1965).

Fritz Machlup (1947) argues that the institutional policies of unions will cause union members to receive higher wages than their non-union counterparts: “The wage rates, fixed between the union and the employers, are in excess of the competitive rates. From the point of view of the whole economy, monopoly in business or in labor will always result

in a misallocation of resources and will usually result in an under-utilization of resource” (300-301). Machlup views the union as a monopoly force: one that can dictate to an employer the wage at which the workers will work or risk the consequence of receiving no labor. This wage rate is above what the competitive market would have produced, resulting in higher wages and restricted unemployment in the union sector and lower wages and overcrowding in other competitive firms (Maher 1965).

Michael Yates (1998), whose empirical studies found union workers earn higher wages for comparable work, feels that “there is nothing sacred about the almighty market. Workers make low wages not because the market dictates that they be so but because they are not powerful enough to make their employers pay them more. There is no doubt that unions force employers to pay their workers higher wages” (18).

In the long run, competitive supply and demand market forces ultimately control the wage rate and counteract any perceived wage differential between union and non-union members. The union can only continue to dictate increases in wages so long as the company they are negotiating with is profitable enough to sustain such wage increases. Following Machlup’s argument, as the union companies continue to pay higher wage rates, those rates are representing a growing cost to the firm and the firm must increase its profitability by increasing productivity or raising prices to sustain the wage increases. But the firm's production frontier will be maximized at a certain point and it can only raise prices so much before demand for its product will decrease. The firm will not survive if it continues to bear higher costs than its competitors. When unions secure higher wages for their workers without the firm increasing production or successfully raising its prices, the returns on investment will be invaded by the increased wage rates, thus discouraging investment. This can lead to a decrease in the productive stock of capital, decreased production and eventually a decrease in profits. Management will not make payments for labor in an amount that will preclude a profit, at least not for any sustained period of time.

Martin Estey (1981) maintains that the union-nonunion wage differentials may be shrinking due to the “threat effect”. That is, the tendency of nonunion firms to match or nearly match union wage rates to reduce the likelihood that their employees will want to unionize, or to ensure their access to qualified labor.

“Management has been surprised more than once to find that a unilateral decision granting a substantial wage increase failed to prevent union organization of

employees (Woytinsky 1953 18).” Workers are interested in unions not only because of their reputation for improving wages, but also for the ability of unions to improve working conditions as well. This is one reason why unions are not solely interested in wages, but also in securing economic benefits other than wage increases. Union presence can prevent management from making arbitrary wage adjustments, firings, and job changes and in this capacity they have a tremendous impact on their members' economic welfare. Woytinsky documents economic benefits as including pension and welfare plans, vacation time, overtime and holiday pay, union security, and financial aid in the form of death and loan benefits. Unions often lobby for better working conditions, reduction of hours, and have strong apprenticeship and vocational training. Securing these types of fringe benefits can inhibit the success of unions in securing higher wages for their workers because these benefits come at a cost to the firm. Not only does union membership benefit workers in terms of wages, it also benefits them in terms of fringe benefits. The union's work in securing total economic welfare for their workers is often valued above their ability to simply raise wage rates and for this reason union wages may be similar or even less than their non-union counterparts' wages.

Since there is no theoretical consensus among economists as to the union's perceived wage advantage, the question remains: Can unions set the wage limits or are the wage limits determined by competitive supply and demand conditions?

II. METHODOLOGY

The hypothesis to be tested is whether union members earn higher wages than their non-union counterparts. As Woytinsky (1953) documents, unions provide a good deal of economic benefits to their members, including pension plans, various training opportunities, and, according to Machlup (1947), heightened wages. In spite of this, the present study concentrates only on of the wage benefits of union membership: wages as the logged dependent variable. The independent variables include standard variables, created variables that include union dummy interaction variables to further measure the wage impact of the union and a set of additional labor market variables.

In this analysis, two models are estimated. The first is the basic model with a set of base variables and three union dummy interaction terms. The second model estimates the union wage impact with additional labor market controls and a full set of union dummy interaction terms.

It is expected that the set of base variables and three union dummy interaction variables, race, tenure, and ownership of a library card in regression 1 will result in statistically insignificant union membership and union interaction variables. Once the additional labor market controls and all of the union interaction variables are included in the equations it is expected that the wage impact from the union membership variable and its interaction terms will remain statistically insignificant. Moreover, this will provide further evidence that membership in a union does not necessarily enhance wages.

Variable information comes from the National Longitudinal Survey database of young men that reported the earnings status and other characteristics of a cross-section of workers for 1966. 1981 was chosen as a representative year because this was the only year that included the key variables needed to test the hypothesis that union members earn higher wages than their non-union counterparts. This study includes 8,321 men. This paper deals with a subset of this group, 1063 males, who were in the mining, construction, manufacturing, and transportation industries. Union wages are prevalent in industries such as mining, transportation, transit, automobile manufacture, and construction (Woytinsky 1945). Because these industries are historically populated with unions, the pool of respondents was narrowed to these industries so that the direct influence of unionism could be assessed.¹

Since the cross-sectional data used is likely to be heterogeneous in a regression on the log of income, a test for heteroscedasticity is necessary. The results of a Goldfeld-Quandt test failed to reject the assumption of homoscedastic variances at the five- percent level.²

III. RESULTS

A. MODEL 1

To compare two groups of workers that are alike in all respects except union status, other wage-determining factors must be considered. The following dummy variables which might influence wages besides union status are considered: hours worked per week in 1981 (HRS), the location (LOC), race (R), and marital status of the respondent (MS), and whether the respondent had health limitations (HL), collected unemployment compensation (UE), owned a library card (LIB), and obtained a high school degree (HSD).³

Whether the respondent had a library card is expected to have a positive effect on wages because it represents avid and curious readers. Owning a library card might subsequently lead people to do better in the work world because of their positive work ethics and attitudes. Tenure (TEN) on their current job and age of the respondent were numeric variables that were included to control for the low earnings of young workers that reflect not only their lack of skill and experience, but also their higher rate of job turnover (Woytinsky 444).

The main focus is on the impact of the set of union specific variables. The dummy union membership variable appears in regressions 1 and 2 and measures the variation that can be attributed to the union's general influence upon wages. Research indicates that there may be an interaction between the union membership variable and several other variables. According to a study conducted by Richard Freeman (1979), tenure has been known to create union wage advantages. Ellen Wood (1998) cites that unions are known to narrow the wage dispersion between the top and bottom and since minorities tend to be among the lowest paid, union organizations tend to raise their wages by a greater proportion than wages of white males. Dummy interaction variables were created to specifically test the simultaneous presence of the union membership variable with several other attributes. These interaction variables can be defined as the union membership variable multiplied by race, tenure and ownership of library card variables.

$$(1) \ln(W) = f(HRS, TEN, HSD, HL, LIB, R, AGE, UM, LOC, UE, R * UM, TEN * UM, LIB * UM)$$

The above variables were entered in Model 1 as a set of independent variables to test the theory that workers in unions receive higher wages than their non-union counterparts. The results are reported in Table 1. The union membership variable indicated that union workers receive 30% higher wages than non-union workers do. These results, indicating that union members receive higher wages, are consistent with Machlup (1947) and Yates' (1998) theory that unions can set the wage rates to secure higher wages for their members. Though none of the member interaction variables were significant, the remaining variables had the expected coefficient sign. The tenure variable showed that for every year workers were at their job their wages increased by three percent. If the respondent lived in a large city their wages were 20 percent higher than respondents in rural areas were. If the respondent had health limitations their wages were decreased by 32 percent.

TABLE 1: MODEL 1 REGRESSION RESULTS

Variable	Estimate	Standard Error
Intercept	8.495693a	0.24859499
Hours Worked	0.008920	0.02395826
Location	0.190991	0.04679797
Tenure	0.032019a	0.00551387
Health Limitations	-0.317440a	0.06721767
Library Card	0.187969a	0.05406020
Unemployment Comp	-0.391898a	0.06627496
Race	-0.225580a	0.06001956
Age	0.015221b	0.00710966
Union Membership (UM)	0.303258b	0.13857243
Marital Status	0.265006a	0.05104344
Race * UM	0.061814	0.12027111
Tenure * UM	-0.005852	0.01121833
High-School Degree	0.070741	0.05104803
Library Card *UM	-0.168106	0.10724829

Adj R-square 0.233
 F Value 18.885

Note: a and b are significant at .01 and .05 levels, respectively

B. MODEL 2

Potential labor market influences were considered before asserting that observed differences in earnings were attributable to union membership. Woytinsky notes that differences in the earnings of workers result largely from occupational influences, high and low wage industries, and differences that may occur between large and small size firms.⁴ The Bureau of Labor Statistics (BLS) reports that the size of the labor force increases with the long-term growth of population and responds to economic forces and social trends that could be a source of wage variation (2000).⁵ Similarly, the BLS suggests that wage variation may be caused by the differences between government and private workers (2000).⁶ These potential labor market effects were captured by including occupation, industry, company size, size of labor force and class of worker dummy variables.

The main focus is again on the impact of the set of union specific variables. Research indicates that there may be an interaction between the union membership variable and several other variables. According to a study conducted by Richard Freeman (1979), certain occupations have been known to create union wage advantages. Since larger firms are more likely to be organized, large firms may be willing to pay somewhat higher wages in order to deter unionism (Hirsch 1986). Dummy interaction variables were created to specifically test the simultaneous presence of the union membership variable with several other attributes. These interaction variables can be defined as the union membership variable multiplied by occupation, company size, size of labor force and class of worker.

When detailed labor market characteristics were added, particularly occupation and the remaining dummy interaction variables, not only does the coefficient for the union membership variable become negative, but several of the union interaction dummy variables become significant. The explanatory power of the model increased by almost 27 percent. The results of model 2 are reported in Table 2 and indicate that union members earned 40% less than their non-union counterparts. This is a striking departure from the first regression, which indicated that union members make 30% more than non-union members and does not support Machlup's (1947) theory that union members receive higher wages than non-union workers do.

TABLE 2: MODEL 2 REGRESSION RESULTS

Variable	Estimate	Standard Error
Intercept	9.006015a	0.31982642
Hours Worked	-0.018596	0.03004627
Location	0.043310	0.07537043
Tenure	0.022793a	0.00685205
Hlth Lim	-0.190084b	0.08304174
Library card	0.052355	0.07206999
Unemp Comp	-0.506693a	0.07656646
Race	-0.092707	0.07565023
Age	0.003204	0.00837856
Union Mem(UM)	-0.401571c	0.21140170
Marital Status	0.232543a	0.06003264
HS Degree	0.037591	0.08081393
Occupations:		
Managers	0.054222	0.11188677
Clerical	-0.357565b	0.15740794
Sales Workers	0.305234c	0.17006066
Craftsmen	-0.138462	0.10264175
Operatives	-0.228771b	0.10982963
Service	-1.212456a	0.37356668
Laborers	0.618246a	0.15721824
Size of Labor Force		
200,000-399,999	0.032930	0.08063859
400,000-499,999	0.157646	0.09673798
500,000-799,999	-0.340758	0.35226143
800,000-999,999	0.369711c	0.19674248
1000000-2999999	0.076306	0.16857885
>3,000,000	0.358763c	0.18394065
Class of Worker		
Gov Emp,State	-0.091714	0.35563203
Gov Emp	-0.132799	0.36033438
Gov Emp,other	-0.252064	0.16797190
# of people employed at job		
<25	-0.682038a	0.08415883
25-99	-0.211651b	0.09520404
100-499	-0.124089	0.09718366
500-999	-0.189902c	0.10164752
Race*UM	-0.150265	0.12893695
Tenure*UM	0.013244	0.01188008
# of people employed at job		
<25*UM	0.383868	0.30577095
25-99*UM	0.276574	0.19606068
100-499*UM	0.219873	0.15228672
500-999*UM	0.083579	0.18288499
Class of Worker		
Govt Emp,State	-0.090285	0.62132013
Gov Emp,Other	0.158424	0.24426022
Size of Labor Force		
50,000-199,999*UM	.023586	.15086629
200,000-399,999*UM	-.126046	.18922905
400,000-499,999*UM	1.007874c	.52678664
500,000-799,999*UM	.088343	.1973431

800,000-999,999*UM	-.031098	.26882395
1000000-2999999*UM	.000998	.29727638
>3,000,000 *UM	-.200459	.28848580
Operatives*UM	0.224401c	0.12854075
Clerical*UM	0.255729	0.26616139
Service *UM	1.182612a	0.44829938
Laborers*UM	0.350157c	0.19932922
Library*UM	0.105541	0.13051416
Location*UM	0.041503	0.15772335
Industry		
Mining	0.170884	0.11950070
Construction	-0.127460	0.08911765
Manufacturing	-0.1236	0.07473188

Adj R-square .4942

F Value 8.421

Notes: a,b,c are significant at .01, .05, .10 levels, respectively

The member interaction dummy variables were all insignificant with four exceptions.⁷ Members of unions from operatives, service, and laborer occupations and members of unions in the size four labor force with 400,000-499,999 people were positive significant variables. However, the sign reverses on the operative and laborer coefficients when added to the union membership variable's coefficient and results in union membership having a negative influence on wages in these occupations. But the 400,000-499,999 sized labor force and service occupation coefficient remained positive when added to the union membership variable. Members in this size labor force make approximately 61%⁸ more than their non-union counterparts, a coefficient magnitude that is unusually high. Union members in the service occupation make approximately 35% more than their non-union counterparts. Union membership, therefore, only has a positive influence on wages in one size labor force and the service occupation.

When comparing a union and non-union worker in comparable industries, it is reasonable to expect that the non-union worker would receive less wages. While the non-union company is paying their worker a high wage, they are not providing the same benefit packages that unions often provide. When fringe benefits and other economic benefits are included, the total amount that a union company has to pay its workers will be larger than a non-union company that is only paying its workers wages and less benefits.

The coefficient on the membership variable (UM) is negative and significant. Though this is consistent with the idea that unions do not concentrate solely on wages, there may be another explanation. When controlling for the occupational impact on wages, the dummy variables were created comparing those respondents outside of the professional and technical occupations with those working in professional and technical occupations. These occupations, which are the basis of the comparison, have little union membership even though they generally earn high wages. As a result, it is likely that the sign of the coefficient on the union membership variable would be negative. This could be a possible reason why the union membership variable is negative. Despite this potential limitation, a clear picture emerges of the union's effect on wages.

IV. INTERPRETING THE RESULTS

To put the results of Model 2 in perspective, frequency tables, which are found in Table 3, were constructed. This table measures the percentage of union members in the occupation and size labor force that received higher wages due to their membership in a union. These results indicate that 86% of union members receive no substantial wage benefit from their membership in the union. Only 14% of union members were in the size labor force and service occupation that resulted in higher wages for union members. This result was in contrast to Machlup (1947) and Yates' (1998) theory that unions create a positive wage differential.⁹

TABLE 3: FREQUENCY TABLES (Variables That Resulted in Higher Earnings for Union Members)

Variable	Percent of Total Union Members That Receive Higher Wages
Service Occupation Union Member	12%
400,000-499,000 Size Labor Force Union Member	2%
Percent of Union Members In Sample Making Higher Wages	14%

* There are a total of 319 union members in the entire sample.

A comparison between the two regressions reveals an interesting contrast in the union's impact on wages. In a basic regression where important control variables are not included, union membership led to enhanced wages and misleading results. When additional control and union dummy interaction variables are included, union membership does not successfully increase the majority of their member's wages.

V. CONCLUSION

Many authors, including Machlup (1947) and Yates (1998), argue that union workers receive higher wages than their non-union counterparts. This paper has tested that theory. The results suggest that when important control variables are accounted for, 86% of union members get no substantial wage benefit from their membership in the union. These findings indicate that the perceived union wage advantage is generally a myth.

It is important to recall that wages are not the ultimate, long-term goal of unions. Unions try to protect their members' civil rights in their industry by lobbying for better working conditions, union security, and preventing management from making arbitrary wage adjustments, firings and job changes. While union workers might not make significantly more than their counterparts in the way of wages, the benefits they receive from their membership better secure their long-term economic welfare and the unions' work to provide their members with these benefits is often considered to be their most important function.

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FOOTNOTES

¹ Thirty percent of the men were represented by a union in the sample.

² Heteroscedasticity was suspected in the tenure variable, but it was not possible to tested.

³ If the respondent is white it will equal 1, otherwise it will equal zero.

All variable definitions are listed in the Data Appendix.

The unemployment rate was not available to use in this sample.

⁴ Company size was entered as four dummy variables: less than 25 people, 25-99 people, 100-499 people, 500-999 people, with any number of people 1,000 or greater being the omitted category.

⁵ The size of the labor force was entered as seven dummy variables: 50,000-199,999 people, 200,000-399,999 people, 400,000-499,999 people, 500,000-799,999 people, 800,000-999,999 people, 1,000,000-2,999,999 people, any amount of people 3,000,000 or greater, with 0-49,999 people being the omitted category.

⁶ Class of worker was entered as four dummy variables: government employed workers, federal government employed workers, state government employed workers, other government employed workers, with workers earning wages and salaries from a private employer being the omitted category.

⁷ Partial F-tests were performed for each of the insignificant member-interaction dummy variables and I failed to reject the null hypothesis that those variables significantly increased the explained sum of squares and hence the R-squared value.

⁸ This magnitude appears quite large. The 90% confidence interval for a union member in this size labor force however is -27%-147%. Because the standard error is so large, the precision of this estimate is questionable.

⁹ The mean age and tenure of union and non-union workers were calculated to help explain why union workers would have smaller starting incomes than non-union workers would. The mean age of the union and non-union worker was approximately 33 years old and the mean tenure for the two groups was approximately eight years.