Tilburg University

International market integration and union wage bargaining

Huizinga, H.P.

Published in:
The Scandinavian Journal of Economics

Publication date:
1993

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
Huizinga, H. P. (1993). International market integration and union wage bargaining. *The Scandinavian Journal of Economics*, 95(2), 249-255.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

International Market Integration and Union Wage Bargaining

Harry Huizinga *

Tilburg University, Tilburg, The Netherlands

I. Introduction

The establishment of a North American Free Trade Agreement and ongoing integration in Europe unify and enlarge international goods markets. A major concern, especially to organized labor, is how goods market integration affects wages, employment and profits in the unionized sector. An integration of goods markets is a change in market structure that implies a simultaneous increase in the number of competing firms and in market size. Previous work on the relationship between market structure and union wage bargaining has focused on the former aspect. Dorwick (1989), in particular, examines the relationship between the number of competing union-firm bargaining units and wage demands for a fixed market size throughout. Unions and firms in Dorwick (1989) are assumed to reach efficient bargaining outcomes. This paper instead examines the case where the change in market structure is accompanied by a change in market size, and where, in the monopoly union model, the bargaining outcome is inefficient.

We specifically analyze the integration of two single union-firm bargaining units into a unified market with two bargaining units. The creation of firm level competition first increases the elasticity of labor demand facing each individual union. This moderates each union's wage demand. Lower wages and increased goods market competition then lead to higher employment. The end result is that market integration can benefit firms and unions alike. With linear product demand, in particular, integration benefits both bargaining parties, if unions maximize the wage bill and firm level output competition is Cournot. The possibility that market integration benefits all parties only arises because the original pre-integration bargaining outcomes are inefficient. The main result that goods market integration can benefit firms and unionized workers has been derived

*I am grateful to two anonymous referees and to Susan Collins and Jeffrey Sachs for comments and suggestions.

independently by Sørensen (1992a). Asymmetries in the degree of union power between the two integrating economies are considered by Sørensen (1992b).

As goods market integration benefits the firm as well as the union, it follows conversely that firm level cooperation in the form of a division of markets between the two firms is detrimental to both the firm and the union. The result that interfirm cooperation can be harmful to all parties is analogous to the result in Rogoff (1985) that international cooperation between monetary authorities can have negative repercussions for the public as well as the private sectors.

The remainder of the paper is organized as follows. The basic model of international market integration is outlined in Section II. The implications of integration are then examined for the case of linear goods demand. Section III concludes.

II. The Model

There are two fully symmetric and initially separate markets. The assumption of symmetry allows us to focus on how market integration *per se* affects union wages and employment. Each separate market consists of a unionized sector comprising a monopolist firm and a union that is the sole supplier of labor to the firm. Labor is the only factor of production, and the technology is linear.

The literature proposes several objectives for union behavior. As an approximation, we assume the union is interested in maximizing union rents, given by the union wage bill minus the opportunity cost of union labor.¹ Union members not employed in the union sector earn an alternative nominal competitive wage $\hat{w}$. Following McDonald and Solow (1981), the alternative wage $\hat{w}$ is assumed to be exogenously given. Union rents, denoted u , can be written as

$$u = (w - \hat{w})\ell, \quad (1)$$

¹ This union objective corresponds to a utilitarian union objective and to the maximization of individual union member expected utility, if union members are risk neutral and union membership is fixed; see Oswald (1985). Evidence in MaCurdy and Pencavel (1986) for the International Typographical Union suggests that this union places greater weight on employment in pursuing its goals compared with a rent maximizing objective. With greater emphasis on employment, presumably employment will be higher in both the pre- and post-integration markets. Relative post-integration employment and other variables will be different as well. However, if the increased stress on employment is small enough, then the qualitative results on relative union welfare and firm profits will be as indicated in this paper.

where w is the union wage and ℓ is union employment. In each market the unionized sector carries a small weight in determining the overall price level, so that the union can ignore the effects of wage changes on prices.

Firms maximize profits π as given by

$$\pi = (p - w)\ell, \quad (2)$$

where p is the union sector goods price. Units are chosen such that output equals employment. The firm and its union can settle on the wage and on employment in several ways, and obviously the implications of market integration for union wages and employment depend importantly on the union-firm bargaining convention. Evidence from labor contracts suggests that unions frequently stipulate the wage and then permit firms to select the desired employment levels; cf. e.g. Freeman and Medoff (1984). Following the monopoly union model, we assume that the firm specific union sets the union wage w knowing the firm's labor demand, and then lets the firm set employment.

Before integration, labor demand is simply the labor demand schedule offered by the monopolist firm. After integration, firms are assumed to be engaged in Cournot output competition, given their respective unions' wage demands. Each individual union, when setting the wage, takes into account how both firms' output levels respond, while it takes the other union wage as given. For the rent maximizing union, the optimal wage demand is characterized by the following condition

$$w = \frac{\varepsilon}{\varepsilon - 1} \cdot \hat{w} \text{ if } \varepsilon > 1, \quad (3)$$

where

$$\varepsilon = -\frac{d\ell}{dw} \cdot \frac{w}{\ell}$$

is the elasticity of labor demand.

Let $p^m(\ell)$, $p^{m'} < 0$, be the inverse goods demand function facing a monopolist firm that supplies a quantity of output, ℓ , to one of the pre-integration markets. At the same time, let $p^d(\ell_1 + \ell_2)$, where ℓ_1 and ℓ_2 are the output levels of firm 1 and firm 2, respectively, be the inverse demand function relating the two firms' combined output to the post-integration goods market price. Maintaining the assumption of symmetry, the duopoly price p^d is related to the monopoly price p^m by

$$p^d(\ell_1 + \ell_2) = p^m\left(\frac{\ell_1 + \ell_2}{2}\right). \quad (4)$$

At this level of generality, unfortunately, little can be said about how market integration affects union rents and firm profits. The relationship between market integration and union wage bargaining is complex, as market integration implies a change in the number of firms as well as in total market size. To proceed, we take the particular case of linear demand. Specifically, the pre-integration monopolist inverse demand function is given by

$$p^m = a - b\ell^m, \quad a, b > 0. \quad (5)$$

From the first-order condition of the firm's employment determination problem, we can solve for the monopolist labor demand, ℓ^m , as follows

$$\ell^m = \frac{a - w^m}{2b}, \quad (6)$$

where we assume $a > \hat{w}$.

The monopoly union selects its wage demand, w^m , given labor demand in (6) as follows

$$w^m = \frac{a + \hat{w}}{2}. \quad (7)$$

It is now straightforward to solve for the pre-integration union rents, goods price and firm profits by performing the requisite substitutions. The results are summarized in Table 1.

After integration, the demand for union i 's labor, ℓ_i^d , depends on its own wage and on the wage demanded by the other union as follows

$$\ell_i^d = \frac{2}{3b} (a - 2w_i + w_j) \quad i = 1, 2 \quad j \neq i. \quad (8)$$

Each union maximizes its welfare in (1) subject to labor demand in (8). In equilibrium, both union wages are equal. In particular, the common post-integration union wage demand is given by

$$w^d = \frac{a + 2\hat{w}}{3}. \quad (9)$$

The solutions for the post-integration employment, union rents, goods price and firm profits are again given in Table 1, which also compares the pre- and post-integration values of the wage and other variables. As indicated, integration lowers the union wage, it increases employment, and it lowers the goods price. Union rents and firm profits are both shown to

Table 1. Solutions for pre-integration and post-integration variables for the case of linear demand

pre-integration variables		post-integration variables
$w^m = \frac{a + \hat{w}}{2}$	>	$w^d = \frac{a + 2\hat{w}}{3}$
$\ell^m = \frac{a - \hat{w}}{4b}$	<	$\ell^d = \frac{4}{9b} (a - \hat{w})$
$p^m = \frac{3a + \hat{w}}{4}$	>	$p^d = \frac{5a + 4\hat{w}}{9}$
$u^m = \frac{1}{8b} (a - \hat{w})^2$	<	$u^d = \frac{4}{27b} (a - \hat{w})^2$
$\pi^m = \frac{1}{16b} (a - \hat{w})^2$	<	$\pi^d = \frac{8}{81b} (a - \hat{w})^2$

be higher in the post-integration case. This finding is somewhat paradoxical and it arises as the pre-integration wage and employment bargains are not efficient. Underlying the result is also the assumption of pre-integration market symmetry. In realistic cases of integration, such as the proposed integration of the U.S. and Mexican markets as part of the North American Free Trade Agreement, important pre-integration differences exist, for instance, in the competitive wage $\hat{w}$ and in market size.² With such differences, integration does not necessarily improve the welfare of all parties. Furthermore, the union welfare is higher only as the expected wage income of union members increases. The actual union wage falls, and hence previously employed union members experience a lower wage income.

Let us now turn to the implications of possible post-integration collaboration between unions or firms. First, we can consider the case where the two unions band together and present harmonized wage demands to the two firms that compete in the integrated goods market. Wage harmonization of this kind eliminates interunion competition for employment. The labor demand schedule facing the single union i is now

² In our model, differences in pre-integration market size can be modeled as differences in the b 's in equation (5). Specifically the smaller market is characterized by a larger value for the parameter b . As shown in Table 1, the optimal post-integration duopoly wage and goods price do not depend on b . The firm and the union in the smaller market can now be shown to gain from integration relative to the case of equal market size and vice versa.

given by (8), after recognizing that $w_i = w_j$. Now the two unions' post-integration wage demands will be equal to the pre-integration wage as in (7). In this instance the union clearly gains from integration, as integration increases union employment for an unchanged wage level. Firm profits are lowered by integration, however, as the introduction of product competition leads them to extend employment beyond the monopolist level.

Finally, let us consider the possibility of collusion between the two firms, each with its separate union. Collusion, whether or not in the form of a multinational enterprise, improves the firms' bargaining position. Now the firm combination, with production facilities in each of the two markets, can essentially play the two unions against each other. For the case of a linear technology, the competition for employment between the two unions amounts to a Bertrand-style wage setting game, with a union wage equal to the competitive wage as the outcome. In this instance, firms clearly gain from integration, while union rents are reduced to zero.

III. Conclusion

We have examined how goods market integration affects the wage and employment bargaining outcome in the unionized sector. Market integration is a change in market structure that entails an increased number of competing firms and a larger unified market. The focus has been on the integration of two single union-firm markets into a larger duopoly market for the specific example of linear demand.³ Union rents are shown to increase with market integration for the monopoly union convention of wage and employment determination. Firm profits also rise unambiguously. While these results are for a rather specific model, they point out the possibility that market integration is more beneficial to the unionized sector than is usually assumed. The ongoing process of market integration in Europe and North America will undoubtedly shed more light on how market integration affects the unionized sector.

References

- Dorwick, Steve: Union-oligopoly bargaining. *Economic Journal* 99, 1123–1142, 1989.
 Freeman, Richard & Medoff, James: *What Do Unions Do?* Basic Books, New York, 1984.

³ Alternatively to (5), demand can be chosen to be iso-elastic as follows:

$$p^m = (\ell^m)^{-\alpha} \quad 0 < \alpha < 1.$$

For this specification, workers again unambiguously gain. Firms, however, gain for roughly $\alpha < 0.16$, and they lose otherwise.

- MaCurdy, Thomas E. & Pencavel, John H.: Testing between competing models of wage and employment determination in unionized markets. *Journal of Political Economy* 94, S3-S39, 1986.
- McDonald, Ian M. & Solow, Robert M.: Wage bargaining and employment. *American Economic Review* 71, 896-908, 1981.
- Oswald, Andrew J.: The economic theory of trade unions: An introductory survey. *Scandinavian Journal of Economics* 87, 160-193, 1985.
- Rogoff, Kenneth: Can international monetary policy cooperation be counterproductive? *Journal of International Economics* 18, 199-217, 1985.
- Sørensen, Jan Rose: Integration of product markets when labour markets are unionized. Mimeo, University of Aarhus, 1992a.
- Sørensen, Jan Rose: Market integration and imperfect competition in labour and product markets. Mimeo, University of Aarhus, 1992b.

First version submitted October 1991;
final version received December 1992.