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How Labor Markets and Imperfect Competition Affect Tariff Policy

Martin Rama

Labor market institutions provide a rationale for the difference between the "corporatist" consensus on free trade and the "populist" resistance to trade liberalization.

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This paper — a product of the Trade Policy Division, Policy Research Department — is part of a larger effort in the department to understand how labor market policies and institutions affect economic performance. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Dawn Ballantyne, room N10-023, extension 37947 (June 1993, 22 pages).

Protection may be a second-best policy when the domestic sector is imperfectly competitive. But the optimal tariff depends on labor market institutions too.

Rama considers two theoretical settings. The first is fully centralized wage bargaining, where all workers are unionized and wage differentials are redistributed among workers (the "Scandinavia" case). The second is negotiation at the firm level, where workers are unionized in imperfectly competitive sectors only, and wages may differ from sector to sector (the "Latin America" case). He uses the case of the competitive labor market as a benchmark.

In Scandinavia, free trade maximizes welfare. The central trade union internalizes the consequences of imperfect competition in the domestic sector. Since prices in this sector are a mark-up over labor costs, there is a wedge between the sectoral productivities of labor and, therefore, an inefficient allocation of manpower. By choosing a "moderate" wage, the central trade union replicates the effects of a subsidy to the imperfectly competitive sector so that no government intervention is required.

In Latin America, decentralized wage bargaining increases the wedge between the sectoral productivities of labor. While wages in the export sector are constrained by harsh competition in world markets, trade unions in the domestic sector can get higher wages without completely squeezing labor demand. An import tariff improves manpower allocation by reorienting demand toward the domestic sector. Since the second-best tariff is strictly positive, opening the economy leads to a drop in welfare.

Rama's analysis sheds some light on the political economy of protection. Particularly, it suggests that trade liberalization is more likely to raise welfare in the Latin America case when it is accompanied by changes in labor market institutions.

How Labor Markets and Imperfect Competition Affect Tariff Policy*

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1. Introduction

Although the welfare theorems of the theory of international trade imply the optimality of free trade, there are some relevant qualifications, even within the framework of the traditional approach. Among the second-best arguments for protection, the case of a government confronting monopoly in the labor market is well known.[1] If policies dealing directly with this distortion cannot be implemented, then the second-best policy is to impose a tariff on imports, so as to increase labor demand.

However, the optimal tariff level depends on the prevailing wage setting mechanism too, or more generally, on labor market institutions. In addition to the perfectly competitive labor market case, this paper considers two "pure" institutional arrangements. In the first one, all workers are unionized, there is a fully centralized negotiation, and wage differentials are redistributed among workers. In the second one, workers are unionized in imperfectly competitive sectors only, the negotiation is carried out at the firm level, and wages may differ from sector to sector.

These settings are called the Scandinavian case and the Latin American case respectively. These labels are not intended to imply that the settings in the paper faithfully describe reality, but rather to remind the ongoing debate on the virtues of corporatism. Indeed, many authors have suggested that negotiation at the national level, as in Austria and the Nordic countries, makes workers internalize the effects of wage setting.[2] Pervasive free riding by distributive coalitions, in turn, is often seen as a distinctive feature of Latin American countries.

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1 See, for instance, Bhagwati (1971) and Corden (1984).

2 This idea is discussed by Olson (1982), Bruno and Sachs (1985), Calmfors and Driffill (1988) and Rama (forthcoming), among others.

In order to highlight the role of labor market institutions, the paper assumes an imperfectly competitive domestic sector. Labor being the only production factor, the price of domestic goods is a mark-up over wages. Hence, if the labor market is competitive, there is a wedge between the sectoral productivities of labor. This inefficiency can be corrected by means of an employment subsidy shifting labor towards the domestic sector. However, a tariff on imports may be preferred to the subsidy if the latter has high operating costs.

Consider now the Latin American case. Since the domestic sector is imperfectly competitive, the corresponding trade unions can get higher wages without completely squeezing labor demand. But wages in the export sector are constrained because of harsh competition in world markets. Therefore, there is a sectoral wage differential, which increases the wedge between the sectoral productivities of labor. The inefficiency being larger than in the former case, a higher tariff rate is required.

In the Scandinavian case, the central trade union internalizes the consequences of inefficient manpower allocation. By choosing a "moderate" wage level for the domestic sector, it replicates the effects an employment subsidy would have on labor allocation, so that no tariff is required. Since this would lead to a sectoral wage differential (with the opposite sign compared to the Latin American case), the central trade union has to "tax" workers in the export sector and redistribute the proceeds among all its members.

This intuitive discussion sheds some light on the political economy of protection. In the Scandinavian case, free trade is the first-best policy in spite of imperfect competition in both the labor market and the market for domestic goods. In the Latin American case, on the contrary, there is a strictly positive second-best tariff, so that opening up the economy leads to a welfare drop. Thus, labor market institutions provide some rationale for the difference between "corporatist" and "populist" policy making.

The paper is organized as follows. Section 2 presents the basic assumptions of the model, particularly as regards individuals' and firms' behavior. Section 3 determines the second-best tariff level when the labor market is competitive. Sections 4 and 5 analyze the Scandinavian and Latin American cases respectively. Section 6 draws some consequences regarding the political economy of protection and trade liberalization. Section 7 concludes.

2. The Model

The structure of the economy is similar to the one considered by Helpman and Razin (1983). There is a perfectly competitive export sector, which produces a composite good and faces an infinitely elastic demand curve in world markets. Export revenues are used to pay for imports of a composite good for which there is no domestic production, and whose world supply is infinitely elastic. Units are chosen so that the international prices of both the exported and the imported goods are equal to one.

There is also an imperfectly competitive domestic sector, which produces a differentiated good. Free entry endogenously determines the number n of varieties available, given the existence of fixed production costs. These varieties can be seen either as traditional non-traded goods (e.g. services) or as domestic-taste substitutes for the imported good. The first interpretation is best suited to the Scandinavian case; the second one, to the Latin American case.

All individuals have the same preferences, represented by the utility function U:

$$U = \left[\sum_{i=1}^{n} c_i^{(\sigma-1)/\sigma} \right]^{\alpha\sigma/(\sigma-1)} c_m^{\beta} c_x^{1-\alpha-\beta}$$

where $\alpha > 0$, $\beta > 0$, $\alpha+\beta < 1$ and $\sigma > 1$. In this expression, c_i represents the consumption of the variety i of the domestic good, c_m is the consumption of the imported good, and c_x is the consumption of the exported good.

The budget constraint is given by:

$$Y = \sum_{i=1}^{n} P_i c_i + \theta c_m + c_x$$

where Y represents nominal income, P_i is the price of the variety i of the domestic good and θ (≥ 1) is the tariff-inclusive price of the imported good. It is assumed that θ is an economic policy instrument controlled by the government.

The Cobb-Douglas aspect of the utility function U implies that the income share devoted to the consumption of each of the three types of goods is constant:

$$\sum_{i=1}^{n} P_i c_i = \alpha Y \quad , \quad \theta c_m = \beta Y \quad , \quad c_x = (1-\alpha-\beta)Y \tag{1}$$

The embedded C.E.S. aspect of the function, in turn, implies:

$$c_i = \frac{\alpha Y}{n P_d} \left(\frac{P_i}{P_d}\right)^{-\sigma} \tag{2}$$

where P_d is the standard average price of the n varieties of the domestic good:

$$P_d = \left[\left(\sum_{i=1}^{n} P_i^{1-\sigma} \right)/n \right]^{1/(1-\sigma)} \tag{3}$$

The general price index P is:

$$P = P_d \Theta^{\alpha\ \beta} \tag{4}$$

Replacing equations (1) to (4) into function U leads to the individual's utility level:

$$U = \alpha^{\alpha}\ \beta^{\beta}\ (1-\alpha-\beta)^{1-\alpha-\beta}\ n^{\alpha/(\sigma-1)}\ (Y/P) \tag{5}$$

The n varieties of the domestic good and the export good are produced with labor only. The physical productivity of labor is constant in both sectors. It is normalized to one in the domestic sector, and is equal to e in the export sector. Whereas the export sector is perfectly competitive, there is only one firm producing each of the varieties of the domestic good. The number n of varieties is constrained by the existence of a fixed cost of production of the domestic good, which is assumed to be proportional to the general price index P.

Firm i maximizes pure profits B_i. For a fixed cost of production equal to f in real terms:

$$B_i = c_i P_i - L_i W_i - fP$$

where W_i represents the wage firm i has to pay to its workers. Because of the assumptions on technology, $L_i = c_i$, with the analytical expression of c_i given by equation (2). On the other hand, if n is large enough, firm i has no incidence on either average prices, aggregate income, or the number of varieties of the domestic good. Therefore, the price it sets is:

$$P_i = \frac{\sigma}{\sigma-1}.W_i \tag{6}$$

In equilibrium, pure profits should be zero because of free entry into the domestic sector. After replacing $L_i = c_i$ and equations (2) and (6) into the analyitcal expression of B_i, the zero-profit condition can be written as:

$$n = \frac{\alpha Y}{\sigma f P}\left(\frac{P_i}{P_d}\right)^{1-\sigma} \tag{7}$$

The model is completed by imposing the equilibrium of the balance of trade. Since there are no fixed costs of production in the export sector, and there is no domestic production of the imported good, exports equal imports measured at international prices if:

$$eL_x - c_x = c_m \tag{8}$$

where L_x measures employment in the export sector.

3. Competitive Labor Market

When the labor market is perfectly competitive, all workers earn the same wage, equal to the marginal productivity of labor in the export sector. The latter is constant, given the assumptions on technology and the elasticity of foreign demand. Therefore, the labor-demand schedule becomes flat at the wage level e, and there is full employment. Normalizing labor supply to one, this implies:

$$W_i = e \quad , \quad L_x + \sum_{i=1}^{n} L_i = 1$$

Since all domestic firms pay the same wage, $P_i = P_d$ for all i (see equation (3)). Replacing $L_i = c_i$ and equations (1) and (8) into the full-employment condition leads to the following expression for nominal income:

$$Y = e\left[\ \alpha e P_d^{-1} + \beta\Theta^{-1} + (1-\alpha-\beta)\ \right]^{-1} \qquad (9)$$

where the average price P_d of domestic goods is:

$$P_d = \frac{\sigma}{\sigma-1}.e \qquad (10)$$

Hence, the wedge between the marginal productivities of labor in the two sectors is equal to the mark-up ratio $\sigma/(\sigma-1)$.

Equations (5), (7), (4), (9) and (10) allow writing the utility level associated with a competitive labor market (U_M) as function of Θ:

$$U_M(\Theta) = z.\left\{ e^{1-\alpha} \left(\frac{\sigma-1}{\sigma}\right)^{\alpha} \Theta^{-\beta} \left[\ \alpha.\frac{\sigma-1}{\sigma} + \beta\Theta^{-1} + (1-\alpha-\beta)\ \right]^{-1} \right\}^{1+\alpha/(\sigma-1)} \qquad (11)$$

with:

$$z = \alpha^{\alpha}\,\beta^{\beta}\,(1-\alpha-\beta)^{1-\alpha-\beta} \left(\frac{\alpha}{\sigma f}\right)^{\alpha/(\sigma-1)}$$

The relationship between U_M and Θ is represented in Figure 1. The maximum welfare level is reached for $\Theta = \Theta_M$, with:

$$1 < \Theta_M = \frac{1-\beta}{\alpha.\frac{\sigma-1}{\sigma} + (1-\alpha-\beta)} < \frac{\sigma}{\sigma-1} \qquad (12)$$

Therefore, the optimal tariff-inclusive price of imports is a Fisher index of the ratios $\sigma/(\sigma-1)$ (for the domestic sector) and 1 (for the export sector), with weights given by the corresponding consumption shares.

(Insert Figure 1)

The rationale for protection comes from the wedge between the sectoral productivities of labor, which reflects an inefficient manpower allocation.[3] The tariff on imports shifts demand towards the domestic sector. If there was no domestic consumption of the exported good ($\alpha+\beta = 1$), then protection would allow reaching the first best. Indeed, in this case $\theta_M = \sigma/(\sigma-1)$, so that the price of domestic goods relative to the price of imported goods would be e, the same as the ratio between the sectoral productivities of labor.

Except for this limiting case, the first-best policy would be a sectoral employment subsidy. If the private cost per worker in the domestic sector was $W_i = (\sigma-1)e/\sigma$, then the price of domestic goods would reflect the marginal productivity of labor ($P_d = e$). However, employment subsidies may be difficult to implement, particularly in developing countries. Hence, for $\alpha+\beta$ close enough to one, protection may still be the best available policy. This is assumed in what follows.

4. "Scandinavian" Trade Unions

The "Scandinavian" label is used to identify in an abridged manner labor market institutions characterized by three features. First, all individuals

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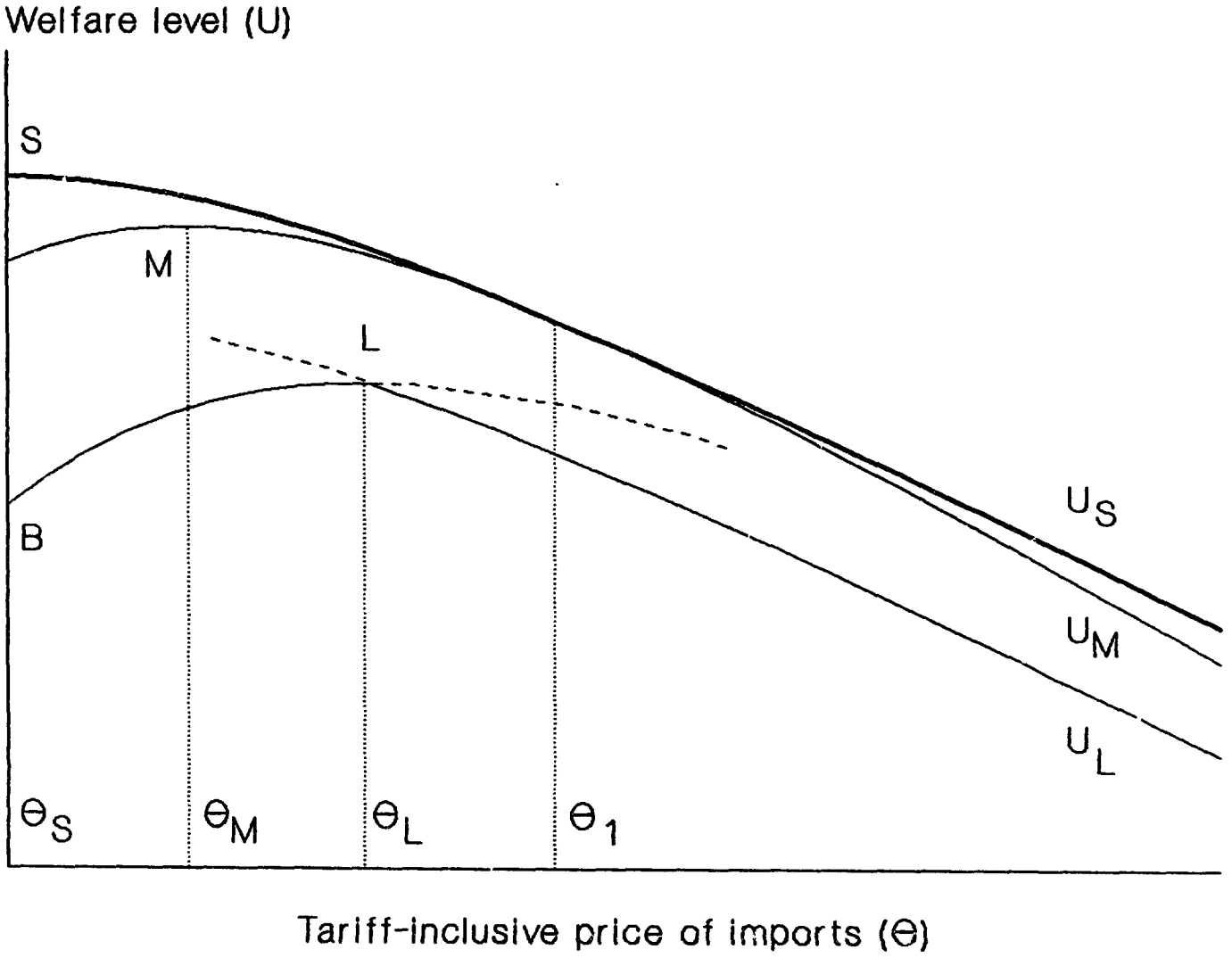
[3] In this sense, the setting is similar to the one in the appendix of Bentolila and Blanchard (1990).

WELFARE AS A FUNCTION OF TARIFFS



are unionized. Second, wages are unilaterally set by a central trade union operating at the national level.[4] And third, if optimal wages differ from sector to sector, then the union redistributes earnings so that in the end all members receive an equal pay.

Note that this third feature is not actually essential to the model. Its only goal is to replicate the heavy taxation of labor incomes which characterizes the "corporatist" model.[5] However, the main analytical results would be unchanged if wage differentials were not allowed. Since this would lead to pure profits in the export sector, the model should have to be completed by the assumption that pure profits are fully reverted to workers in one way or another.

The central trade union has no interest in moving wages in the export sector from their competitive level e. Indeed, a lower wage level would lead to pure profits. A higher wage level, in turn, would squeeze the firms in this sector out of the market, given that labor productivity is constant and foreign demand is infinitely elastic. By contrast, because of imperfect competition in the domestic sector, the central trade union can set the corresponding wage level either above or below e.

Since the central trade union is fully encompassing, it internalizes the effects of wage setting on both the general price level P and the number of varieties n of the domestic good. Therefore, its objective function T_S and the objective function U_S of the planner are one and the same. For $W_i = W_S$ being the wage level in the domestic sector, it follows that:

$$T_S = z.\{\ e\left(\frac{\sigma}{\sigma-1}.W_S\right)^{-\alpha}\,\Theta^{-\beta}\ [\ \alpha e\left(\frac{\sigma}{\sigma-1}.W_S\right)^{-1} + \beta\Theta^{-1} + (1-\alpha-\beta)\ ]^{-1}\ \}^{1+\alpha/(\sigma-1)} \qquad (13)$$

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4 But firms decide on employment, i.e. they keep the "right to manage". This corresponds to the monopoly union model (see Oswald, 1985).

5 See Summers, Gruber and Vergara (1992).

(this is the same as for U_M, but replacing $W_i = e$ by $W_i = W_S$). The difference between the central trade union and the government is that the latter decides about θ, whereas the control variable of the former is W_S.

The objective function T_S has a maximum for:

$$W_S(\theta) = \frac{\sigma-1}{\sigma} \cdot \frac{1-\alpha}{\beta\theta^{-1} + (1-\alpha-\beta)} \cdot e \qquad (14)$$

The wage W_S resulting from equation (14) is an upward function of the tariff-inclusive price of imports. It is equal to e for $\theta = \theta_1$, with:

$$\theta_1 = \frac{\beta\sigma}{\beta\sigma - (1-\alpha)} > \frac{\sigma}{\sigma-1} \qquad (15)$$

Therefore, the central trade union redistributes earnings from export-sector workers to domestic-sector workers if $\theta < \theta_1$, and the other way round if $\theta > \theta_1$. Figure 2 represents the relationship between W_S and the tariff-inclusive price of imports.

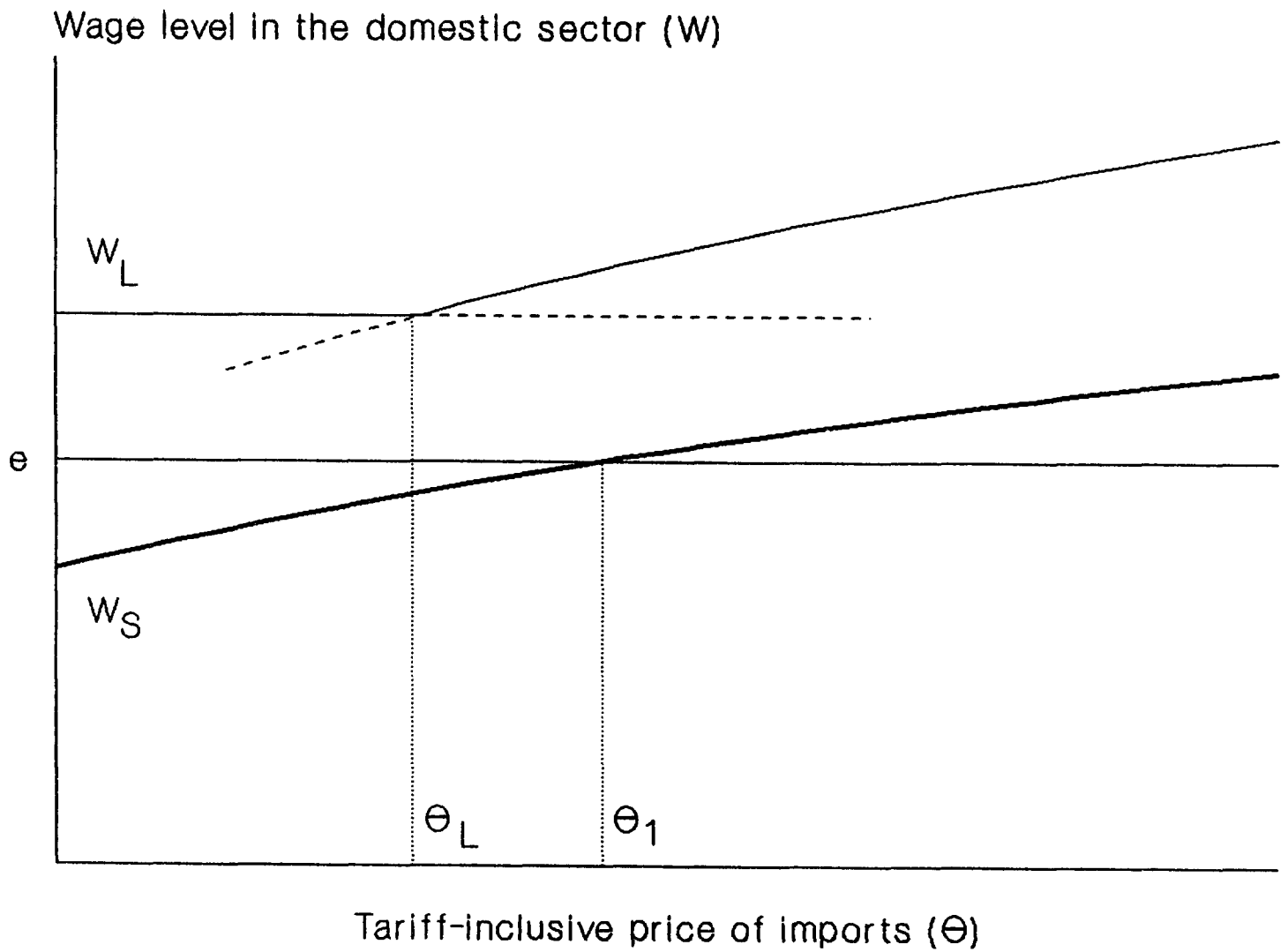
(Insert Figure 2)

Replacing the analytical expression of W_S into equation (13) gives the objective function U_S of the government when labor market institutions are of the Scandinavian type:

$$U_S(\theta) = z.\{ e^{1-\alpha} \theta^{-\beta} [\frac{1-\alpha}{\beta\theta^{-1} + (1-\alpha-\beta)}]^{1-\alpha} \}^{1+\alpha/(\sigma-1)} \qquad (16)$$

This function is represented in Figure 1. The welfare level with Scandinavian

WAGES AS A FUNCTION OF TARIFFS



trade unions is the same as if the labor market was competitive for $\theta = \theta_1$. This is because wages are equal to e across sectors in both cases. But except for this tangency point, welfare is higher in the Scandinavian setting.

If there was no domestic consumption of the exported good ($\alpha+\beta = 1$), then $\theta_1 = \theta_M = \sigma/(\sigma-1)$ and $U_S(\theta) = U_M(\theta_M)$ for all θ. Since there would be only one relative price, the central trade union would always be able to set W_S in such a way that the domestic sector attains its optimal size. According to equations (6) and (14), for $\alpha+\beta = 1$, the wage level W_S would be such that the ratio between the prices of domestic goods and imported goods would always be e, no matter the level of θ. This would reflect the actual relationship between the sectoral productivities of labor. However, in the general case ($\alpha+\beta < 1$), equation (16) implies $dU_S/d\theta < 0$ for all $\theta > 1$, so that the optimal tariff-inclusive price of imports is:

$$\theta_S = 1 \qquad (17)$$

5. "Latin American" Trade Unions

The "Latin American" label is used to indicate labor market institutions whose main features are exactly opposite to those characterizing the Scandinavian case. First, not all individuals are unionized, which means that the economy is "dual" from the institutional viewpoint. Second, there is a fully decentralized negotiation, so that each union has an incidence on the wage level paid by its own firm only. Finally, there is no redistribution of sectoral wage differentials.

The firms in which there are no trade unions are those producing the exported good. Indeed, the productivity of labor being constant at level e, and foreign demand being infinitely elastic at price one, a firm that pays

more than e to its workers is squeezed out of the market. Since there is no room to raise wages, there is no rationale for homogeneous workers to unionize either. It follows that $W_x = e$ for all Θ.

Things are different in the domestic sector. Let $M_i = M/n < 1/n$ be the membership of the trade union operating in firm i. If the wage set by the union is such that $L_i < M/n$, some of its members have to move to the export sector, where they earn $W_x = e$. Therefore, the expected utility of a member of the trade union in firm i can be written as:

$$T_L = \alpha^{\alpha}\,\beta^{\beta}\,(1-\alpha-\beta)^{1-\alpha-\beta}\; n^{\alpha/(\sigma-1)}\left[\frac{L_i}{M_i}.W_i + \left(1-\frac{L_i}{M_i}\right)e\right]^{-1}P \qquad (18)$$

(see equation (5)). Under a utilitarian approach, T_L is the objective function of the union in firm i.

The employment level L_i is also a function of W_i. Since the productivity of labor in the domestic sector is equal to one, $L_i = c_i$, with c_i given by equation (2). On the other hand, since labor demand in the export sector is infinitely elastic, there is full employment, and the equilibrium level of output Y is still given by equation (9). Taking equation (6) into account:

$$L_i = (\alpha/n)P_d^{\sigma-1}\left(\frac{\sigma}{\sigma-1}.W_i\right)^{-\sigma} e\left[\alpha e P_d^{-1} + \beta\Theta^{-1} + (1-\alpha-\beta)\right]^{-1} \qquad (19)$$

Decisions by the trade union in firm i have no significant effect on the general price indexes P_d and P, nor on the number n of varieties of the domestic good. Hence, the wage level W_L that maximizes T_L is:

$$W_L = \frac{\sigma}{\sigma-1}.e \qquad (20)$$

Equation (20) means that wages in the domestic sector are a mark-up over wages in the non-unionized sector of the economy, with the mark-up ratio being the one used by the corresponding firms to set their prices. The lower the elasticity of substitution between varieties of the domestic good, the larger the wage differential. Therefore, "duality" results in this model from imperfect competition in the domestic sector.

However, the wage level indicated in equation (20) can be such that $L_i(W_L) > M/n$. In this case, none of the union members has to move to the export sector, and the objective function T_L in equation (18) becomes:

$$T_L = \alpha^{\alpha}\,\beta^{\beta}\,(1-\alpha-\beta)^{1-\alpha-\beta}\; n^{\alpha/(\sigma-1)}\; W_i P^{-1} \qquad (18')$$

This reflects the fact that hiring outsiders does not increase the utility level of insiders. Now, the trade union in firm i sets W_i in order to maximize T_L subject to $L_i = M/n$. The equilibrium wage level W_L can be drawn from equations (6) and (19) under the symmetry condition $P_i = P_d$:

$$W_L(\Theta) = \frac{1-M}{M}\cdot\frac{\sigma-1}{\sigma}\cdot\frac{\alpha}{\beta\cdot e^{-1} + (1-\alpha-\beta)}\cdot e \qquad (20')$$

When W_L is determined by equation (20), the aggregate utility level has the following analytical expression:

$$U_L(\Theta) = z\cdot\left\{ e^{1-\alpha}\left(\frac{\sigma-1}{\sigma}\right)^{2\alpha-\beta}\Theta^{\sigma-1}\left[\alpha\left(\frac{2}{\sigma}\right) + \beta\Theta^{-1} + (1-\alpha-\beta)\right]^{-1}\right\}^{1+\alpha/(\sigma-1)} \qquad (21)$$

(this is the same as for U_M, but with $W_i = W_L$ instead of $W_i = \theta$).[6] This expression has a maximum for $\theta = \theta_2$, with:

$$\theta_M < \theta_2 = \frac{1-\beta}{\alpha\left(\frac{\sigma-1}{\sigma}\right)^2 + (1-\alpha-\beta)} < \left(\frac{\sigma}{\sigma-1}\right)^2 \qquad (22)$$

Note that the optimal tariff is higher than in the competitive labor market case. This is because Latin American trade unions increase the labor productivity wedge from $\sigma/(\sigma-1)$ to $[\sigma/(\sigma-1)]^2$ (see equations (6) and (20)). Hence, the required demand shift is larger than before.

When W_L is determined by equation (20'), in turn, the aggregate utility level becomes:

$$U_L(\theta) = z.\{\, e^{1-\alpha}\,(1-M)^{1-\alpha}\,(M/\alpha)^{\alpha}\,\theta^{-\beta}\,[\,\beta.\theta^{-1} + (1-\alpha-\beta)\,]^{\alpha-1}\,\}^{1+\alpha/(\sigma-1)} \qquad (21')$$

(the involved equations are the same as before). This expression is decreasing in θ. Tariffs lead now to a loss of consumers' surplus only. They do not affect the sectoral allocation of manpower anymore, since insiders appropriate all the resulting transfer.

In contrast, as long as some of the union members have to work in the export sector, the wage level in the domestic sector is constant, and employment is an upward function of θ. Suppose there exists a

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[6] Equation (21) can be chosen as the aggregate utility level, despite the fact that earnings differ from individual to individual, based on the Hicks-Kaldor compensation criterion. Redistribution does not affect the number of varieties n of the domestic good, nor the general price index P, so that the individual utility level is a linear function of nominal income (see equation (5)).

tariff-inclusive price of imports $\theta = \theta_3$ such that L_i becomes equal to M/n. Clearly, if $\theta_2 < \theta_3$, the highest welfare level is attained for $\theta = \theta_2$. If, on the contrary, $\theta_2 > \theta_3$, then the government has no interest in raising the tariff-inclusive price of imports above θ_3.

The critical value θ_3 depends on the membership M of Latin American unions. From equations (19) and (20), it follows that:

$$\theta_3 = \frac{\beta}{\alpha\left(\frac{1-M}{M}\right)\left(\frac{\sigma-1}{\sigma}\right)^2 - (1-\alpha-\beta)}$$

Assume that the "initial" membership M is the total number of workers in the domestic sector "before" unionization (i.e. for $W_i = e$). Such a membership depends on the "initial" tariff level, but is never lower that the employment that would have resulted from free trade (i.e. for $\theta = 1$). Therefore, according to equations (10) and (19), $M \geq \alpha(\sigma-1)/(\sigma-\alpha)$, so that $\theta_3 > \theta_1$.

In summary, the optimal policy with Latin American labor market institutions is to choose $\theta = \theta_L$ such that:

$$\theta_M < \theta_L = \text{Min } \{ \theta_2 , \theta_3 \}$$

In a long-run perspective, one can expect unionized workers who are unable to find a job in the domestic sector to resiliate their membership.[7] Hence, θ_L is also the critical value for which the wage setting rule switches from equation (20) to (20'). Similarly, the utility level is the one in equation (21) for $\theta \leq \theta_L$, but the one in equation (21') for $\theta \geq \theta_L$. Figures 1 and 2

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[7] This endogeneity of membership is what leads to hysteresis of the employment level in unionized countries, according to Blanchard and Summers (1987).

represent U_L and W_L as functions of the tariff-inclusive price of imports.

6. Trade Liberalization

The impact of labor market institutions on welfare can be assessed by replacing the optimal level of θ associated with each of the three settings (competitive labor market, Scandinavian unions and Latin American unions) into the aggregate utility function. Equations (11), (12), (16), (17), (21) and (22) yield:

$$U_M(\theta_M) = z.\{ e^{1-\alpha} \left(\frac{\sigma-1}{\sigma}\right)^{\alpha} (1-\beta)^{1-\beta} [\alpha.\frac{\sigma-1}{\sigma} + (1-\alpha-\beta)]^{\beta-1} \}^{1+\alpha/(\sigma-1)}$$

$$U_S(\theta_S) = z.\{ e^{1-\alpha} \}^{1+\alpha/(\sigma-1)}$$

$$U_L(\theta_L) = z.\{ e^{1-\alpha} \left(\frac{\sigma-1}{\sigma}\right)^{2\alpha} (1-\beta)^{1-\beta} [\alpha.\left(\frac{\sigma-1}{\sigma}\right)^{2} + (1-\alpha-\beta)]^{\beta-1} \}^{1+\alpha/(\sigma-1)}$$

where $U_S(\theta_S) > U_M(\theta_M) > U_L(\theta_L)$, as shown by points S, M and L in Figure 1 (the proof is presented in the Appendix).[8]

Consequently, compared to the competitive labor market case, Scandinavian institutions improve welfare whereas Latin American institutions reduce it. This means, particularly, that fully centralized wage bargaining and negotiation at the firm level are *not* equivalent, contrarily to the assertion by Calmfors and Driffill (1988). This is due to the existence of a distortion (the productivity wedge between sectors) whose effects are

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[8] It is implicitly assumed that $\theta_L = \theta_2$. If this was not the case, the Latin American welfare level would be lower.

amplified by the lack of coordination between trade unions.[9]

The welfare comparison above stands on the assumption that tariff determination is based on a Pigouvian approach. However, actual trade policies may result from rules of thumb, rather than from an accurate appraisal of the prevailing market imperfections. Typically, drawing from the traditional textbook approach, governments are likely to favor free trade under all circumstances. This has interesting consequences from the political economy viewpoint.

In the Scandinavian case, setting $\theta = 1$ leads to the first best, no matter whether free trade is chosen for the right or the wrong reasons. In the Latin American case, on the contrary, moving from $\theta = \theta_L$ to $\theta = 1$ reduces welfare, since it leads to an excessively small domestic sector. In terms of Figure 1, the relevant comparison is now between points S and B, rather than S and L. Hence, under a realistic approach to economic policy, the welfare gap resulting from different institutional settings may be even higher than suggested by the Pigouvian approach.

The model results can account for the observed resistance to trade reform. The current explanations of this resistance focus on uncertainty about its net benefit for either individuals or groups. Thus, Alesina and Drazen (1991) analyze the "war of attrition" between groups, the "losers" being those who have to pay for the costs of structural reform. Fernández and Rodrik (1991), in turn, stress the role of individual-specific uncertainty. But in both cases the reform is assumed to be welfare improving in the aggregate. This is not the case here, unless there is a change in labor market institutions too.

A first way to get the required institutional change would be that workers moved by themselves from a Latin American to a Scandinavian setting.

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[9] Something similar happens in the model by Rama (forthcoming), where fully centralized wage bargaining is better, since it allows exploiting the country's monopoly power in the foreign market.

Unfortunately, union members face no individual incentive to do such a move, as shown by the corresponding wage levels in Figure 2.[10] In this sense, the two "pure" institutional arrangements considered in this paper are similar to the symmetric equilibria (cooperation and defection) of a Prisonner's Dilemma. Slipping from Scandinavia to Latin America seems easy, moving the other way is unlikely.

A second way to get rid of Latin American labor market institutions would be just banning trade unions. This may have been one of the basic ingredients of the successful Chilean trade liberalization of the 70s. However, as long as there is imperfect competition in the domestic sector, workers face an incentive to unionize. This is because having the monopoly of labor supply allows exploiting the monopoly power of firms. Therefore, it is unclear whether this second possibility may hold without a significant degree of political repression.

In fact, according to the model in this paper, the key to trade reform in countries with Latin American labor market institutions would be to make the domestic sector more competitive (i.e. to increase σ). This would dissipate rents, thus reducing the wedge between sectoral productivities and, hence, the second-best tariff level. Note that the need for this improvement in competition introduces a timing issue similar to the one discussed by the development literature in the early eighties, concerning the "right" sequence of financial and trade liberalization.[11]

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10 A similar analysis can be found in Cahuc and Zylberberg (1991), concerning the shift from sectoral to centralized wage bargaining in the context of a closed economy.

11 See Edwards and van Wijnbergen (1983) and Edwards (1984).

7. Concluding Remarks

The model in this paper sheds some light on the role of labor market institutions in a small open economy. By choosing two "pure" institutional settings, it accounts for wage differentials of different signs in different countries. It also shows that these settings have important consequences on welfare. Finally, it provides a rationale for both the "corporatist" consensus on free trade and the "populist" resistance to trade liberalization. All of these seem in accordance with the historical experiences of Scandinavian and Latin American countries.[12]

However, rather than summarizing the results of the paper, it is worth pointing out an interesting follow up. In the model above, the level of trade barriers is unilaterally determined by the government. Unions act as followers, since they set wages for given tariffs. But in fact, the labor movement has some incidence on the protection level, which is likely to result from some sort of negotiation between unions and the government. Therefore, further steps of the research should address policy making in a more realistic manner.

In the Scandinavian case, this would not change the main results, since the central trade union and the government share the same objective function. Things may be different in the Latin American case, because unions capture some of the transfer created by trade barriers. In order to analyze this issue, the model should probably include many imported goods, each of them coupled with a single domestic-taste substitute, and having its own specific tariff.

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[12] For a comprehensive comparison of these experiences, see Blomström and Meller (1991).

APPENDIX

To be able to compare the welfare level under different institutional settings, define:

$$\phi(x) = z.\{ e^{1-\alpha} (1-\beta)^{1-\beta} x^{\alpha} [\alpha x + (1-\alpha-\beta)]^{\beta-1} \}^{1+\alpha/(\sigma-1)}$$

This function boils down to $U_S(\Theta_S)$, $U_M(\Theta_M)$ and $U_L(\Theta_L)$ when x is equal to 1, $(\sigma-1)/\sigma$ and $[(\sigma-1)/\sigma]^2$ respectively. Moreover, $d\phi/dx > 0$ if $x < 1$ and $d\phi/dx = 0$ if $x = 1$. Since $1 > (\sigma-1)/\sigma > [(\sigma-1)/\sigma]^2$, this implies that $U_S(\Theta_S)$ is the first best, and that $U_S(\Theta_S) > U_M(\Theta_M) > U_L(\Theta_L)$. Q.e.d.

REFERENCES

Alesina, A. and A. Drazen, 1991, "Why Are Stabilizations Delayed?", *American Economic Review*, 81, p. 1170-88.

Bentolila, S. and O. Blanchard, 1990, "Spanish Unemployment", *Economic Policy*, 10, p. 233-81.

Bhagwati, J., 1971, "The Generalized Theory of Distortions and Welfare", in J. Bhagwati, R. Jones, R. Mundell and J. Vanek (Eds.): *Trade, Balance of Payments and Growth: Essays in Honor of Charles P. Kindleberger*, North Holland, p. 69-90, 1971.

Blanchard, O. and L. Summers, 1987, "Hysteresis in Unemployment", *European Economic Review*, 31, p. 288-95.

Blomström, M. and P. Meller (Eds.), 1991, *Diverging Paths: a Century of Scandinavian and Latin American Economic Development*, Johns Hopkins University Press, Baltimore.

Bruno, M. and J. Sachs, 1985, *The Economics of Worldwide Stagflation*, Harvard University Press, Cambidge, MA.

Cahuc, P. and A. Zylberberg, 1991, "Niveaux de Négotiation Salariale et Performances Macroéconomiques", *Annales d'Economie et de Statistique*, 23, p. 1-12.

Calmfors, L. and J. Driffill, 1988, "Bargaining Structure, Corporatism and Macroeconomic Performance", *Economic Policy*, 6, p. 16-61.

Corden, M., 1984, "The Normative Theory of International Trade", in R. Jones and P. Kenen (Eds.): *Handbook of International Economics*, Volume I, p. 63-184.

Edwards, S., 1984, "The Order of Liberalization of the External Sector in Developing Countries", *Princeton Essays in International Finance*, 156.

Edwards, S. and S. van Wijnbergen, 1983, "Welfare Effects of Trade and Capital Market Liberalization: Consequences of Different Sequencing Scenarios", *NBER Working Papers*, 1245.

Fernández, R. and D. Rodrik, 1991, "Resistance to Reform: Status Quo Bias in the Presence of Individual-Specific Uncertainty", *American Economic Review*, 81, p. 1146-55.

Helpman, E. and A. Razin, 1983, "Increasing Returns, Monopolistic Competition, and Factor Movements: a Welfare Analysis", *Journal of International Economics*, 14, p. 263-76.

Olson, M., 1982, *The Rise and Decline of Nations: Economic Growth, Stagflation and Social Rigidities*, Yale University Press, New Haven.

Oswald, A., 1985, "The Economic Theory of Trade Unions: an Introductory Survey", *Scandinavian Journal of Economics*, 87(2), p. 160-93.

Rama, M., "Bargaining Structure and Economic Performance in the Open Economy", *European Economic Review*, forthcoming.

Summers, L., J. Gruber and R. Vergara, 1992, "Taxation and the Structure of Labor Markets: the Case of Corporatism", *NBER Working Papers*, 4063.

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