Who is Better Able to Get Protection?

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The title needs clarification because it suggests a broad theme concerning the relative ability of contending groups to obtain tariffs or quotas or other special devices serving to raise that industry or firm's domestic prices above their levels if trade were free. In this note I intend to focus more narrowly on a particular model scenario, that of the specific factors type, in which two firms in different industries argue to the government that their firm (industry) should be the recipient of protection and /or is better able to lobby for such protection.

1. The Importance of Being Unimportant

Focus on two industries, 1 and 2, a pair of industries in an economy with many sectors of production, characterized in each case by production taking place using as inputs labor from a common economy-wide pool and a factor of production specific to that industry. All markets are purely competitive and industries 1 and 2 suffer local competition from foreign exporters and would like to obtain tariff protection. The theory of effective protection, discussed by W. M. Corden (1966) among others, pointed out that if industries make use of materials or goods in process obtained from abroad and subject to import duties, the relevant measure of protection to local value added in import competing sectors is that of an *effective tariff rate*, one that measures the percentage increase in proposed tariff changes not merely on the final product, but on the net increased protection to the national industry. Leaving aside the issue of imported intermediate middle products used in production, the idea of an effective rate can be applied in this specific factors setting to the return to the factor specific to the industry as distinguished from the total national return that includes wages paid to mobile labor.

Consider the effect of protection that raises the net price to each industry by the same relative amount. That is, either $\hat{p}_1$ equals $\hat{p}$, or $\hat{p}_2$ equals $\hat{p}$. Let $\hat{r}_i$ equal the relative increase in the return to specific factor, *i*, if the i^{th} sector (alone) receives protection, and $\hat{w}_i$ represent the economy-wide change in the wage rate in such a case. (Of course in each case the wage change is common to all industries, but $\hat{w}_1$ is generally different from $\hat{w}_2$). The competitive profit equations of change are in either case represented by (1):

$$(1) \qquad \theta_{Li}\ \hat{w}_i + \theta_{Ki}\ \hat{r}_i = \hat{p}$$

I assume that the first industry is labor-intensive relative to the second, implying that labor's distributive share there, θ_{L1}, exceeds its share in the second sector, θ_{L2}.

Now compare the alternatives of each sector getting the same degree of protection if there were no repercussions in the labor market. In such a case the return to industry *i* if it should be the industry receiving protection, would increase by $\hat{r}_i$ equal to $\frac{\hat{p}}{\theta_{Ki}}$. That is, if the first industry were the recipient of protection instead of the second, specific capital's rate of return would increase by more than would that of specific capital in the second industry if it, instead, were the recipient of protection. Why? Because the first industry is labor intensive, and with capital receiving a smaller share in the first sector than in the second, its return would have to increase by a larger percentage in order to raise unit costs to the higher price level provided by protection. This is what I earlier referred to (e.g. Jones, 2000, ch. 7) as "the importance of being unimportant".

2. What Happens to the Wage Rate?

The effect on the wage rate in each alternative cannot be ignored, for in general it depends on whether the first or the second industry is the recipient of protection. To illustrate, suppose this is the first industry: $\hat{p}$ equals $\hat{p}_1$. The effect of protection on the wage rate in the specific factor context is well known (e.g. Jones, 1971, 1975), but is simple enough to reproduce here. The labor-market clearing condition in the many-sector case is shown in (2):

(2) $$\Sigma_j \hat{a}_{Lj} \hat{x}_j = L$$

The overall labor supply is assumed to be constant, so that once the economy is disturbed by a relative increase in the price of commodity *i*,

(3) $$\Sigma_j \lambda_{Lj} [\hat{a}_{Lj} + \hat{x}_j] = 0$$

where λ_{Lj} indicates the fraction of the labor force employed in *j* yields.

The output change in any sector is constrained by the availability of the specific factor employed in that sector (assumed constant), so that

(4) $$\hat{x}_j = - \hat{a}_{Kj}$$

Substitution in (3) yields:

(5) $$\Sigma_{(j \neq 1)} \lambda_{Lj} (\hat{a}_{Lj} - \hat{a}_{Kj}) = - \lambda_{L1} (\hat{a}_{LI} - \hat{a}_{KI})$$

A change in the labor/capital ratio in any sector is related to the change in the wage/price ratio in that sector by definition of the elasticity of the marginal product of labor schedule in that sector, γ_j:

(6) $$(\hat{a}_{Lj} - \hat{a}_{Kj}) \equiv - \gamma_j (\hat{w} - \hat{p}_j)$$

Here the only price change is in the first sector, so that substitution into (5) yields:

(7) $$\lambda_{L1}\,\gamma_1\,(\hat{w} - \hat{p}_1) = -\Sigma_{(j\neq 1)}\,\lambda_j\,\gamma_j\,\hat{w}$$

The solution for the wage change (now labeled $\hat{w}_1$) when the only price change ($\hat{p}$) is in the first sector is:

(8) $$\hat{w}_1 = \{\lambda_{L1}\gamma_1 / \gamma_L\}\ \hat{p}\,,$$

where the symbol γ_L represents the economy-wide average elasticity of the marginal product of labor:

(9) $$\gamma_L \equiv \Sigma_j\,\lambda_{Lj}\,\gamma_j$$

As discussed in Caves, Frankel and Jones (2007, Supplement to Ch. 5), the coefficient of $\hat{p}$ (equal to $\hat{p}_1$) in (8) can be written as the product of three terms, so that

(10) $$\hat{w}_1 = \{\theta_1 i_1 s_1\}\ \hat{p}\,,$$

where, taking them in reverse order: s_1 denotes the elasticity of demand for labor in the first industry measured relative to the economy-wide average, γ_L. i_1 denotes another "relative", that of labor intensity in the first sector, λ_{L1}/θ_1, where θ_1 indicates the fraction of total domestic product represented by the value of production in the first industry. As easily shown, this ratio is the same as θ_{L1}/θ^L, the ratio of labor's distributive share in the first sector divided by labor's distributive share in the economy.

If sector *2* were to receive the same degree of protection (captured by $\hat{p}$) instead of sector *1*, the expression for $\hat{w}_2$ would be given by (10) with all number 1's changed to number *2*'s.

How does $\hat{w}_1$ compare with $\hat{w}_2$? It will be larger if technology is such that the elasticity of demand for labor in the first sector tends to be larger than that in the second sector. Similarly, it would tend to be larger if the first industry looms larger in the national income than does the second. Instead, assume that in both these respects the two sectors are comparable. But they differ in that it has been assumed that the first sector is labor intensive compared with the second: $i_1 > i_2$. By implication, if protection is given to the first sector instead of the second (of the same relative amount), the wage rate is driven up by more. The specific factor in the first industry can argue that it *deserves* protection more than does the second because the first industry is labor intensive and, were it to receive protection, the wage rate would increase by more than it would if protection were given to the second industry instead.

Given that $\hat{w}_1$ is likely to exceed $\hat{w}_2$, does this mean that the return to capital in the first industry may not increase as much as it would in the second industry? No. It can easily be the case that comparable levels of protection would serve to increase both the wage rate by more *and* the return to capital by more if protection is given to labor-intensive industry *1*. The rationale is that in either case the wage rate increase will not be very large if these two sectors do not represent a large fraction of total economic activity. Re-examine equation (1). Even though a higher value for θ_1 than θ_2 will eat more heavily into capital gains in the first sector than in the second sector for any given wage increase, and even if such a wage increase will tend to be larger if the first sector is the recipient of protection, the existence of many other sectors of the economy ensures that the size of the relative wage increase in either case will tend to be small. That is, already shown is that if the wage rate did not increase at all, labor-intensive specific factor *1*'s return will increase by more than in sector *2*, and by equation (1) for the specific factor model such a result will not be overturned if the relative wage increase, which in any case is lower than $\hat{p}$, is very small.

What can be said about the effect of protection on *real* wages? It has been argued (in Ruffin and Jones, 1977) that in the specific factor model there is a presumption that if workers' tastes are similar to those of others and if the protected sector is similar in factor intensities and substitution characteristics with the national average, workers will find that protection harms the real wage. So why should labor be willing to urge protection for the labor-intensive sector? Because the question raised is whether they would prefer protection for that sector or an alternative less labor-intensive import-competing industry. Furthermore, in popular circles protection often is urged by labor even if, in the new equilibrium, real wages are reduced.

3. Concluding Remark

This model setting has suggested an ironic result wherein the specific factor in the labor-intensive sector is apt to see its relative return increase by more than a specific factor in another less labor-intensive import-competing sector if the same degree of protection were granted to it instead. The specific factor in the labor-intensive sector can argue in favor of it being the recipient of protection precisely because it is more labor intensive. (We deserve protection for *them* – i.e. the laborers). To back up this claim, the more labor-intensive sector can argue that if the two competing sectors are roughly of the same size and roughly of comparable substitution possibilities in production, it's protection will raise the wage rate by more.[1] Note the importance for the political economy issues

[1] Referring again to the Caves, Frankel and Jones text, it is easy to show that the elasticity of demand for labor in a sector equals the elasticity of substitution between factors in that sector divided by capital's

involved: Protection for the labor-intensive sector, by serving to raise the return to *both* factors used there more than if protection were granted to the other sector, can expect to result not only in more strenuous lobbying effort by its specific factor but also a greater effort by labor. Efforts directly made by the specific factor in the labor-intensive sector to obtain protection are likely to be matched by labor's willingness to favor this outcome.

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distributive share. Thus if elasticities of substitution are equal between the two sectors, the elasticity of demand for labor will tend to be higher in the labor-intensive sector, further encouraging labor's support for protection in that sector.

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