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**Asymmetric Labor Markets and the Location of Firms:
Are Multinationals Attracted to Weak Labor
Standards?**

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October 2003

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Asymmetric Labor Markets and the Location of Firms: Are Multinationals Attracted to Weak Labor Standards?

Abstract

This paper studies the strategic behavior of multinationals towards weak labor standards in developing countries (South). Without a marginal cost pricing policy, abundant labor in the South gives firms the power to set wages through their choice of output. A strategic reduction in output offsets or weakens direct gains from lower wages. In an open economy, it also increases output and profits of a competitor that operates in a perfect labor market. These effects lower profitability of locating in the South casting doubts on traditional beliefs that multinationals are always attracted to lower wages. Adopting standards enhances Southern welfare unambiguously.

JEL classifications: J80, F23, J42, F12, R38, L13

Keywords: Labor standards, Labor market imperfection, Oligopsony, Location of firms, Wages, Strategic behavior, Multinationals, Welfare.

1. Introduction

The economic consequences of labor standards and the question whether WTO should have an active role in promoting regulatory standards in the South have been highly controversial issues in recent trade rounds.¹ Strong differences in opinions amongst major players have blocked attempts by industrialized nations (North), mainly the United States, to provide the WTO with the power to resolve issues dealing with labor standards. Officials from developing countries (South) view these efforts as nothing but attempts to take away the only competitive advantage of the South, namely abundant and relatively cheap labor. Though the Northern interest is claimed to be for humanitarian purposes, many suspect that the true motive behind it is egoistic, protectionist concerns. These concerns originate from a demand for 'fair trade' that itself originates from fears of an outflow of activity towards a more competitive South and a subsequent loss of employment in Northern unskilled sectors. The advocates of fair trade have even converged with the anti-globalization activists, who denounce the poor working conditions in the South and are critical of multinationals for failure to pay their workers living wages. Both fronts nowadays join forces, participate in protests outside major international organizations, and blame the world trading system for omitting labor standards from trade agreements and not protecting the interests of workers. Whether these complaints truly address the interest of workers in the South or those in the North remains unclear.

There is a vast literature on labor standards that deals with their social, philosophical and economic aspects. Much of the economic literature such as Srinivasan (1997) and Brown, Deardorff and Stern (1998) reviews the issue in a non-technical context and discusses the consequences of potential social clause tariffs used by the WTO to enforce labor standards. They

¹ Discussions on labor standards often refer to the five „core“ labor standards, which consist of (1) elimination of exploitative use of child labor, (2) prohibition of forced labor, (3) elimination of discrimination in employment, (4) freedom of association, and (5) provision of the right to organize and bargain collectively. Here, we concentrate on “economic” labor standards by contrast dealing essentially with issues such as minimum wages and working conditions. See Irwin (2002).

all come to the same conclusion that the indirect use of trade policy for this purpose harms precisely the people that the policy is intended to help.²

Although several direct policy measures have been suggested as preferable measures to address the problem, a theoretical model to look at the crux of the problem and the consequences of implementing the suggested policies has not yet been presented in the economic literature. A significant portion of this gap is the behavior of multinationals towards the asymmetry in the labor markets brought about by the lack of labor standards in the South. Multinationals have to make decisions concerning their production and location when regions are not identical with respect to their labor market. Particularly in an era of economic integration, where remarkably rapid liberalization of foreign direct investment (FDI) policies has caused the flow of capital between countries to grow much faster than trade flows, FDI plays a major role in the development of the South (Dewit, Leahy and Montagna 2003). The mobility of firms can of course carry jobs with it giving rise to an important missing link between the labor market and the location of firms. Yet, it is generally taken for granted that firms always wish to move to region where wages are lower to take advantage of lower marginal costs.

This paper introduces a new theoretical approach to the study of labor standards by exploring the strategic decisions of multinationals on output and location in response to labor standard policies in the South. It argues that, contrary to conventional wisdom, multinationals are not always attracted to regions with low labor standards to take advantage of lower labor costs. Potential market power in the Southern labor market can in fact make them reluctant to base their production in the South. My results give one theoretical explanation to the paradoxical empirical

² Freeman (1994) and Krueger (1996) are two of few papers that hint their support for such policy initiatives.

findings of Rodrik (1996) that showed that multinationals tend to locate more in countries where labor standards are enforced.³

The distribution of firms across countries is simply derived from the profitability of each region, which is in turn determined by the strategic actions of firms in an open economy. In the absence of labor standards, a firm in the South enjoys a monopsony position due to an abundant supply of labor in the region. This enables the firm to set wages through its choice of output. When more than one firm locates in the South, the situation turns to oligopsony, where firms compete for labor with other similar firms while maintaining their market power. Firms also compete in the product market against each other, and in an open economy also with firms operating in a perfectly competitive Northern labor market.⁴ The dual imperfect market concept creates a link between the labor market and the product market as firms compete in an oligopsonistic/oligopolistic market. Firms located in the South tend to exploit their market power and suppress wages and employment by strategically reducing their output. This creates an indirect negative scale effect on profits that offsets or at least weakens the direct positive gains from lower wages. On the other hand, if a firm remains in the North it can free ride from the presence of monopsony in the South as it is now facing a less aggressive competitor. The firm in the North would hence strategically increase its output. This along with the disadvantage a firm faces in the South from lower production could make the North the more profitable region even with the prevailing lower wages in the South.

A mandatory increase in the degree of competition for labor by forcing firms in the South to pay competitive wages and produce competitive output has often been thought of as a remedy for

³ This study was done on US multinationals and the receptivity of their locational decision on labor standards in force in host countries. Brown, Deardorff and Stern (2002) provide additional evidence to show that even when multinationals do decide to go South, they are not interested in paying the lower wages prevailing in the market there.

such form of market imperfection.⁵ The model investigates the adoption of labor standards in the South by looking at the consequence of imposing a marginal cost pricing policy.⁶ It will be seen that when the product market is taken into account, introducing labor standards in the South does not eliminate its competitive advantage. Indeed, endogenizing the demand side of the labor market that emerges from a parallel product market shows in accordance with Martin and Maskus (2001) that adopting labor standards can increase the competitiveness of the South. Present fears in the North of losing jobs to a more competitive South are thus not legitimate as a weaker labor standard regime in the South increases production and profits in the North and can even induce firms to stay in the North. The paper also looks at the implications of implementing such policies on Southern welfare and show that the South always gains from harmonizing its labor standards policy with the North.

The rest of this paper is organized as follows: Section 2 introduces the model and builds a benchmark by looking at the symmetric case, where both regions enjoy a perfectly competitive labor market, i.e. fully enforced international labor standards. The asymmetric labor market imperfection and the effects of loose labor standards in the South on output and location of firms are then brought into the model in section 3. Section 4 looks at the welfare implications of imposing labor standards in the South. Section 5 concludes.

⁴ Monopsony has been a common argument used to model the lack of labor standards in the South. Maskus (1997) and Corden and Vousden (1998) for example have used the monopsony form of market imperfection to discuss labor standards. The demand side of labor emerging from a product market has however been left out of their analysis.

⁵ As all core labor standards share one similar feature that workers are paid less than their value (marginal value product of their labor), wages can be used as an indicator of the enforcement of standards in the region. Lim (2001) quotes that higher wages are usually correlated with better labor standards.

⁶ This method has been used by Rodrik (1996), which treated an increase in Southern labor standards as increasing wages towards their perfectly competitive level, namely getting rid of the market imperfection. Brown, Deardorff, Stern (1996) also concluded that economic welfare is best served when countries act to correct their market failure. Alternatively, unions can be organized to bargain for the competitive equilibrium as long as they do not try to restrict labor and raise wages simultaneously. See Maskus (1997).

2. Globally Enforced Labor Standards

There are two countries: the North and the South. The difference between the two regions solely lies in whether or not labor standards are enforced. The North is assumed to always abide fully by international labor standards, therefore enjoying a perfectly competitive labor market. The South on the other hand could suffer from an imperfect labor market as the lack of marginal cost pricing gives firms there exploitative market power. As a benchmark, the model initially assumes identical countries with labor standards fully in force globally. This represents the case where the South is forced to abide by international labor standards and impose marginal cost pricing in the labor market similar to the North. There are two firms: a Northern multinational, which is fully mobile, and a local Southern firm producing only at home. With symmetric labor markets firms are wage-takers, so there is no strategic relationship between output and wages. This implies equal wages in the two regions.

On the product side of the market, firms produce a homogenous good for an integrated world market under imperfect competition. A single factor of production, labor, is used to produce the good. Workers are paid the market wage w , which is also the marginal cost of production. Firms compete in an oligopolistic framework à la Cournot in an open economy. The game consists of two stages: the Northern multinational decides on plant location in the first stage and firms engage in production in the second stage.

Free trade is assumed throughout the paper to focus on differences between the labor markets of the North and the South. Firms are initially located in their home country.⁷ The Northern firm can locate in either region basing its activity in the more profitable region.

Demand takes the familiar linear form

$$p = a - \sum Q_i \quad \text{for } i = N, S \quad (1)$$

where subscripts N and S stand for the North or the South, and Q represents total output in each country.

Profits in each country are

$$\pi_i = q_i (p - w) \quad \text{for} \quad i = N, S \quad (2)$$

where w is the competitive wage that here applies to both regions. Firms maximize profits and solve for the optimal quantity, which with a perfectly competitive labor market is the typical Cournot outcome

$$q_N = q_S = q_P^* = \frac{a - w}{3} \quad (3)$$

P denotes a perfect labor market and a is the market size, which is assumed to be identical for both countries. It can easily be seen that the absence of trade costs integrates the two regions and creates a joint global market. This makes relocation irrelevant to the problem of the Northern firm, as profits are always the same in both regions. With no incentive to move in the symmetric case, firms are assumed to locate in their home region. This simply makes the total output in each region equal to the output by one firm giving

$$Q_i^* = q_P^* \quad \text{for} \quad i = N, S \quad (4)$$

Profits for both firms in case of symmetry is illustrated as the horizontal line in figure 3 and is equal for both firms.

3. Asymmetric Labor Standards: Monopsony in the South

3.1. The Model

A monopsony labor market imperfection in the Southern labor market is assumed to illustrate the lack of labor standards in the region. Under the typical monopsony argument, the firm (or a cartel of firms) is the single employer and gains from infra-marginal reductions in wages for all workers

⁷ Transport costs are also ignored in the model to see the direct role labor markets play in determining the location of firms. The significance of transport costs is mentioned in the appendix particularly in case of symmetry.

whenever it cuts hiring. This generates a marginal cost curve for labor that lies above the labor supply curve. The firm maximizes profit by setting employment where the marginal cost of labor equals its marginal revenue product, causing a markup of marginal cost over wages. Wages are therefore set lower than their perfectly competitive level with the differential being higher the more inelastic is the labor supply.

If a multinational moves to the South, it has to compete for labor with other local firms there, giving rise to an oligopsony situation.⁸ With oligopsony, firms can still exercise their market power due to abundant labor there and can exploit workers by paying them a wage below their marginal value. As no policy is being practiced to stop labor exploitation, wages are lower than their competitive level. Meanwhile, as the North is always assumed to abide by internationally accepted labor standards, firms pay workers their marginal value product.⁹ Thus, wages in the North continue to be w as in section 2.

Firms in the South take the labor supply into consideration when choosing output. More production means higher employment, which in turn increases wages due to the now upward sloping Southern labor supply curve. Southern wage or the inverse labor supply function can be written as¹⁰

$$w_S - w = \beta [Q_S^* - Q_S] \quad (5)$$

The slope of the supply curve is represented by β , where a higher slope normally implies lower wages.¹¹ The link between wages and output arises from the fact that q_S appears in the wage

⁸ See Bashkar, Manning and To (2002).

⁹ It is assumed throughout this paper that labor standards are always perfectly enforced in the North. The assumption of full Northern labor standards is used only as a benchmark in this paper as it is a reasonable supposition in most industries when looked at in relative terms compared to the South.

¹⁰ This form of a labor supply function gives a vertical intercept of $w - \beta Q^*$.

¹¹ This is the case as long as the term in brackets in (8) is positive. With a low enough β , a high number of firms in the South increases total quantity produced in the South beyond its level under a perfectly competitive labor market making the term in the brackets negative. This gives the awkward result that wages in the South are higher than their competitive level that prevails in the North. It will be seen that as this situation is always dominated by other outcomes, it is never reached in equilibrium and is therefore not relevant.

function of firms in the South. Figure 1 represents the Southern labor market. A lower β brings about higher wages by flattening the labor supply curve, whereas an increase in q_S towards the perfectly competitive output does so by moving up the supply curve towards w . A higher number of firms in the South also means higher wages as there is more competition for labor in the region.

The profit function of a firm in the North takes the same form as (2), whereas w is replaced by w_S from (8) in the profit function of a firm located in the South to get:

$$\pi_S = q_S [p - w_S] \quad (6)$$

Asymmetry between the two regions arises in the labor market as the wage would be internalized in the profit maximization problem of a firm if it moves to the South. A higher quantity produced by firms decreases the profit margin in the South by increasing wages. Total profits of a firm however also depend on its total production shown by the q_S outside the bracket.

3.2. Production

Assuming free trade, firms compete in quantity in an open market. If the multinational keeps production in the North, profit maximizing output for the Northern and the Southern firm respectively is¹²

$$q_N^* = \frac{5\beta + 3}{3(4\beta + 3)} \quad (7)$$

$$q_S^* = \frac{2\beta + 3}{3(4\beta + 3)} \quad (8)$$

The subscript shows the identity of the firm and the superscript indicates the locational scenario by showing where the Northern multinational is located. Alternatively, if the Northern firm moves production to the South, quantity produced by each firm becomes

¹² $a-w$ is set to unity throughout the analysis for simplicity of notation as it appears in all upcoming equations and hence cancels out in all comparisons.

$$q_N^S = q_S^S = \frac{3 + \beta}{9(1 + \beta)} \quad (9)$$

By differentiating the optimal quantities in (7), (8) and (9) with respect to β , we can see how firms react to different degrees of labor supply elasticity by changes in output. As

$$\frac{\partial q_S^N}{\partial \beta} \leq 0, \frac{\partial q_N^S}{\partial \beta} \leq 0, \frac{\partial q_S^S}{\partial \beta} \leq 0$$

we can conclude that the quantity produced by a firm located in the South is lower the more inelastic is the labor supply curve (higher β). Cutting output by one unit reduces wages by more when labor supply is more responsive to wages. This gives a bigger market power to firms in the South inducing them to reduce wages further by cutting production and employment. Firms in the South also compete with those in the North, a strategic environment is created as the latter also respond to the practice of market power by the monopsonist. The production by a multinational operating in the North as a result increases in β

so that $\frac{\partial q_N^N}{\partial \beta} \geq 0$ because it faces a less aggressive competitor. Subsequently, it moves up its

reaction curve when there is less production by its monopsonist competitor in the South.

The number of firms in each region is another factor that firms' output depends on and hence also plays a role on profits. As the multinational moves into the South, quantity produced by each firm falls due to the competition effect. Figure 2 shows the output level for each case. It is easy to see that output of the multinational is always higher if it stays in the North than when it relocates to the South.

Substituting the optimal quantities back into the profit functions, optimal profits of locating in the North and the South can be simplified to

$$\pi_N = q_N^{*2} \quad (10)$$

$$\pi_S = (1 + \beta) q_S^{*2} \quad (11)$$

Equations (10) and (7) clearly show that profits of locating in the North are higher when labor standards are not enforced in the South and to a higher degree the more inelastic is the labor supply (higher β). This is due to the strategic increase in output that stems from the lower output in the South. On the other hand, equation (11) along with (8) and (7) shows that β can make profits of locating in the South go either way. In the absence of labor standards, a higher β brings about two effects: there is a direct positive effect on profits as a higher β leads to lower wages and the latter entails higher marginal profits. There is also an indirect strategic effect as firms produce less to cause these lower wages. This has a negative effect on total profits as the firm lowers its scale of production. Whether Southern profits increase or decrease with monopsony depends on which of these two effects dominate. The number of firms in the South also plays a role as it influences the magnitude of the scale effect. When there are more firms in the South, production per firm is lower not only due to monopsony, but also because of the competition effect. This magnifies the effect of reduced quantity on profits, making the loss more likely to outweigh the gains from lower wages. The combination of these effects and increased profits in the North from higher output determines whether lack of labor standards in the South raises or lowers the profitability of locating there.

Replacing the optimal output for each firm into (10) and (11), we can derive the optimal profits of each firm when the multinational locates in the North:

$$\pi_N^* = \frac{(5\beta + 3)^2}{9(4\beta + 3)^2} \quad (12)$$

$$\pi_S^* = \frac{(1 + \beta)(2\beta + 3)^2}{9(4\beta + 3)^2} \quad (13)$$

and when both firms locate in the South:

$$\pi_N^S = \pi_S^S = \frac{(3 + \beta)^2}{9(1 + \beta)} \quad (14)$$

Figure 3 shows the profits earned from each region for all locational scenarios. Profit of a firm located in the North is always increasing in β because of increased production. For a firm located in the South on the other hand, profits decrease with β as a result of lower output up to a critical value of β and start rising thereafter.¹³ After this level of β the direct gain of locating in the South from lower wages start dominating the indirect loss from the strategic reduction in output. The β where profits of a firm in the South is at its minimum increases as firms move to the South indicating that the scale effect dominates for a larger range of β with more firms in the South. This happens as the competition effect reduces output, increasing the net cutback in quantity brought by a firm's monopsony power.

[In summary, a monopsonist in the South must compete in the product market with firms operating in a perfectly competitive Northern labor market when the economy is opened. This gives rise to the importance of strategic changes in output when calculating the profitability of each region. The direct gain in marginal profits from lower wages and the indirect loss in total profits due to a strategic cut in the scale of production determine whether or not profitability of locating in the South increases with weaker labor standards. The combination of these two effects along with the strategic increase in output of a firm located in the North as reaction towards a less aggressive competitor determines which region is more profitable to locate production.

3.3. Location

The Northern multinational decides on production location in the first stage of the game. If the South offers higher profits than the North, the Northern firm delocates to the more profitable region. Looking at the problem from a game theoretic perspective, figure 3 can be divided into four regions. It can easily be seen that relocation to the South is always dominated by other outcomes in areas I, II and III. In area I, a firm can always earn higher profits by locating in the

¹³ Note that these traits indicate the usual case. If we are at a region where β is low enough and the number of firms in the South is low, wages are higher in the South and increasing in β .

North. In this area, lack of labor standards makes the Northern firm better off and the Southern firm worse off compared to a situation with harmonized standards. It even makes the Southern firm wish to locate in the North if it were mobile. The β up to which profits of locating in the North is unconditionally higher is where profits of a firm in the symmetric case is equal to the profits of the Southern firm when there is one firm in each country. This occurs at $\bar{\beta} = \sqrt{3}/2$.

In areas II and III both firms have higher profits if they locate in separate regions. Profits of locating in the North are higher than that of the South up to a critical value of β , which makes profits of locating in the North and the South equal. This value can be found by solving for the value of β that makes (12) and (13) equal to get $\tilde{\beta} = 3$. For $0 < \beta < \tilde{\beta}$ (area II) the multinational is thus tempted to forgo the market power it could acquire by relocating. When $\beta > \tilde{\beta}$ (area III) the firm is tempted to move to the South to take advantage of the negligible wages there as the Southern firm makes higher profits. However if it relocates to the South, the profits of both firms fall due to competition effect. Thus in this area lower wages are attractive, but that is not sufficient to induce the multinational to move production. Furthermore, both firms lose by a move towards a global labor standard policy and location of firms remains unchanged. When β reaches high levels, its direct linear effect on wages gains more significance as its marginal effect on quantity gradually diminishes. Only for a quasi-vertical Southern labor supply curve (very high values of β) in area IV the multinational moves to the South as profits of locating in the South dominates that of locating in the North for all cases.¹⁴ Note that both Northern and Southern profits are higher for a large range of β when they disperse than when they cluster in the South.

¹⁴ Much of the previous literature such as Maskus (1997) on labor standards have used constant elasticity of substitution form of labor supply function, namely $w_S = w/(1+1/\eta)$ where $1/\eta$ represents the elasticity/slope of the labor supply curve, to show an imperfect labor market in the South. Their analysis is limited to labor supply curves with a maximum slope of 1, as $\eta \geq 1$ must hold to satisfy the second order condition of profits of a monopsonist. The wage function in this paper is modelled in a linear manner and no restrictions on the slope of the labor supply curve (β) arise from second order conditions as $\partial^2 \pi_S / \partial q_S^2 = -2/(1+\beta)$ is negative for all values of β . It is interesting to note that for a significant range of slopes of the labor supply curve

We can conclude that the negative strategic quantity effect of monopsony on profits weakens the profitability of lower wages in the South. The North can therefore be more attractive or at least as attractive as the South for a significant range of β with the help of its strategic increase in output and the competition effect regardless of the higher marginal costs associated with it. In fact, the analysis shows that for a large range of β lack of labor standards does not attract if not drive away multinationals from the South. This is paradoxical to conventional wisdom that believes weak labor standards to always lead to social dumping in developing countries. The strategic behavior of firms and the resulting outcome in quantity produced can be an explanation why multinationals forgo lower wages and tend to locate in the North, where labor standards are fully implemented. This also takes away any justification for worries by the North over loss of jobs due to transfer of activity to the South. We saw that firms in the North not only increase activity, i.e. production, as a strategic reaction towards lower Southern output, but also that in most cases they are not induced by lower wages to relocate to the South. Lack of labor standards could in fact even increase the number of firms and therefore employment in the North if the Southern firm were mobile.

Proposition 1

Lack of labor standards in the South make the North unconditionally the more attractive region for low non-zero values of β where $0 < \beta < \bar{\beta}$. Lower wages in the South are not sufficient to make multinationals relocate to the South for a large range of β when $\beta \geq \bar{\beta}$. The monopsony situation in the South induces multinationals to remain in the North to free ride on the existence of a less aggressive competitor in the South up to $\tilde{\beta}$. Even after $\tilde{\beta}$, where lower wages make the South more profitable than the North, the multinational is better off by operating at home to

considered in previous literature ($\beta \leq 1$), the locational equilibrium is agglomeration in the North. Although the analysis for the South in this paper is extended to consider highly inelastic labor supply curves, very high values of β are of small significance.

avoid competition effect. Only for very high values of β , where wages approach zero, lower marginal cost (quasi-free production) in the South can take significance and attract multinationals.

4. Welfare Implications of Increasing Southern Labor Standards

After proving that the lack of labor standards in the South does not necessarily attract more multinationals to the region, it is essential to find out if a move towards perfectly enforced labor standards actually helps improve Southern standards of living. Means of implementing the standards can take several forms, but they all point towards a marginal cost pricing policy ($w_S=w$). Setting a minimum wage equal to competitive wages is an example of such policy that can lead both production (employment) and wages toward their optimal level under a perfect labor market. The aim of such policies is to reduce the market power of the multinationals that exploit workers in the South by reducing output and wages. Therefore, this section looks at an exogenous increase in wages and consequently employment towards their competitive level as the monopsony power is stripped away from multinationals, indicating a move towards fully enforced labor standards in the South.¹⁵ Output and wages in the South become identical to those in the North and results from the symmetric case in section 2 are the outcome. Yet, multinationals operating in the South are not the only firms affected by higher standards. When the South upgrades its standards, local firms that are already established in the South are also forced to abide by the newly set standards. There are concerns that the South may lose in terms of welfare as the local firms could undergo huge, maybe unrecoverable, losses when forced to increase wages.

Southern welfare is usually measured in terms of quantity as the sum of consumer surplus, producer surplus and worker surplus in the South with the latter being the triangle under the wage level and above the labor supply curve in figure 1. The most interesting case however would be to

disregard the demand side (consumer surplus) and check for competitive concerns mentioned above by checking to see if gains from worker surplus outweigh losses in profits brought about by higher wages. This assumption also takes care of the fact that most goods produced by multinationals are not really targeted for the Southern market. This gives consumer surplus small importance when investigating Southern welfare.¹⁶ Welfare is thus derived as a sum of profits and worker surplus to see if labor standards result in a more than proportional transfer of income from firms to labor. Southern welfare can be written as

$$\pi_S + WS_S = (1 + \beta)q_S^{*2} + \frac{\beta Q_S^2}{2} \quad (15)$$

In case of fully enforced labor standards, (15) can be calculated by substituting the competitive output q_P^* from (3) for Q_N , Q_S and q_S^* . The equation for welfare when labor standards are not enforced is found using (5) to replace for w_S and (7), (8) or (9) for output of a firm in each country. Higher wages paid to workers and higher output both bring about a larger worker surplus in the South. The worker surplus gain is increasing in β as a result of a more drastic change in wages that follows the enforcement of labor standards.

Southern welfare with no labor standards is

$$W_S^N = \frac{(3 + 2\beta)^2 (3\beta + 2)}{18(3 + 4\beta)^2} \quad (16)$$

$$W_S^S = \frac{(3\beta + 1)(3 + \beta)^2}{81(1 + \beta)^2} \quad (17)$$

for when the Northern firm locates in the North and the South respectively. When the standards are adopted, welfare becomes

$$W_S^P = \frac{2 + \beta}{18} \quad (18)$$

¹⁵ This rules out the introduction of unions as means of the introduction of labor standards unless they are specifically designed to increase wages without allowing employment to fall below its competitive level.

Figure 4 illustrates the welfare for each scenario. To see the effects of standards on profits, it may be helpful to first look back at figure 2. As the Northern firm remains in the North for areas I, II and III, the change in the profits of the Southern firm from the adoption of labor standards can be seen as a move from the curve π_S^N to π_S^P . It is easy to see that with the introduction of standards profits of the Southern firm actually rise for area I when $\beta < \bar{\beta}$, but fall thereafter. Yet referring back to total welfare in figure 4 shows that the loss is more than compensated by a higher worker surplus brought about by higher wages and increased production. It is easy to see that adopting standards improves Southern welfare regardless of the initial locational situation and by more the more inelastic is the labor supply. The only situation when welfare with no standards surpasses that under a perfectly competitive labor market is an oligopsony situation when both firms are in the South for $\beta < 3$ which was omitted from the analysis (see section 3.2). We can conclude that even when we disregard consumer surplus gains in the South, labor standards bring about a net gain for the South as the gains from the worker surplus always outweigh losses suffered by the Southern firm. Therefore, the South gains unambiguously in terms of welfare when labor standards are harmonized with the North.

The outcome suggests to representatives from the South that marginal cost pricing can be a useful tool for the enforcement of labor standards as it raises welfare in the South in all cases. It increases output, raises wages and can even make the South a more attractive region for production than when the authorities in the South turn their back on labor standards. Looking back at figure 2, we can see that if β is in area I, II, or III location is unchanged and one firm remains in each country. Only in area IV higher labor standards in the South makes the Northern multinational leave the South to relocate back in the North. However, higher production (employment) in the South by the remaining firm along with higher wages offsets any loss caused

¹⁶ Recall that consumer surplus trivially always increases by adopting standards. Including in the welfare would only strengthen the results.

by the one firm leaving the South. Unambiguous welfare gains here can give grounds in favor of actions for extending the international enforcement of regulatory standards to include the South.

Proposition 2

Adopting labor standards improves Southern welfare unambiguously when marginal cost pricing measures are taken to increase wages, output and hence employment to their competitive level.¹⁷

Losses in profits of the Southern firm are always compensated by gains from higher wages and employment brought about by labor standards.

5. Conclusion

This paper builds a simple model to study the relationship between labor standards and the location of firms. It explains the strategic behavior of firms towards weak labor standards where firms compete in an open economy with asymmetric labor markets. It attempts to answer commonly asked questions about the labor standards and the action of multinationals such as: Do firms react to lower wages in the South and relocate to produce with lower labor costs (social dumping)? How does the ability to affect wages in the South influence a firm's decision on location? Does the South gain at all in terms of welfare by adopting labor standards? And if so, do social gains from higher wages and employment make up for possible losses suffered by Southern firms?

The framework shows the linkage between the product and the labor market caused by the market imperfection in the South and shows the importance of this link in firms' decision on output and location. Due to the capacity of firms to influence Southern wages through their choices on location and output, both decisions turn strategic towards the labor market. Market power and lower wages in the South can actually turn the latter to a less attractive region due to a lower scale of production by firms placed there. Meanwhile, the North can become the more profitable as firms located there can free ride on the presence of a monopsonist in the South by increasing their

¹⁷ The term competitive here refers to the labor market.

production. These strategic moves induce firms to remain in the North and can even at times tempt the Southern firm to move away from the South when no labor standards are enforced, regardless of lower Southern wages. The new paradoxical results build a theoretical background for recent empirical evidence showing that multinationals do not necessarily choose production location on a basis of weaker labor standards.

The paper also delivers a policy message by proving that the positive consequences of labor standards on the location of firms for the South carry over to the welfare analysis. It demonstrated that imposing marginal cost pricing in the Southern labor market always enhances Southern welfare. Even when competitive advantage issues are taken into account, the gain from standards is so high for workers that it overcompensates losses in producer surplus brought about by higher wages. The paper gives a hint of justification for those who see such efforts as a humane act. The results confirm that there is not necessarily a protectionist motive for the North to push for labor standards in the South through international organizations such as the WTO. More detailed work remains to be done on the issue to research for example the effect of imperfect labor markets in the South on the location of firms in presence of trade costs. In addition, the model can be extended to include the impact of social clause tariffs and the efficacy of threats to apply them in case of non-compliance on the decisions of multinationals on output and location. As this paper showed that the South always benefits from adopting labor standards anyway, such punishments would be deemed unnecessary and inefficient to bring about a change if governments acted rationally in the real world. Yet if substantiating these benefits does not prove useful in convincing the representatives of the South, leaving the job to a trade-related organization with the power of enforcement such as the WTO may be the only solution to assure long-term prosperity and growth in the poorer regions of the world. A good first step may be the implementation of Bhagwati's "Do in Rome as Americans do, not as Romans do" view that suggests extending our key standards to our firms abroad on a mandatory basis. (Bhagwati 2002)

Appendix I: The Multi-Firm Case

This appendix extends the model to include several firms to show the dynamics of multinationals' movements in a more general setting. The key difference with the main text is that there are now N firms in the world market, of which n firms are located in the North and $N-n$ in the South. Total output in each region is now

$$Q_N = q_N + (n-1)\bar{q}_N \quad (\text{A.1})$$

$$Q_S = q_S + (N-n-1)\bar{q}_S \quad (\text{A.2})$$

where the bar above quantity produced indicates production by all other firms in the same region.

The output of each firm with symmetric perfectly competitive labor markets generalizes to

$$q_N^* = q_S^* = q_P^* = \frac{1}{N+1} \quad (\text{A.3})$$

where $a-w$ has been normalized to one as in the main text. Profits of all firms are identical regardless of their location. The location of firms in this case is formally indeterminate. However with smallest traces of transport costs, each firm locates near its customers to avoid unnecessary costs. As the two regions are symmetric in every aspect and hold an equal share in the world market, half the firms establish in each region to serve their local market. The identity of firms in this situation becomes irrelevant. Total production in each country under symmetry is hence the output of each firm multiplied by half the total number of firms.

Moving on to asymmetric labor markets, the inverse labor supply function in the South is (5) in text where with many firms

$$Q_S^* = \frac{N}{2(N+1)} \quad (\text{A.4})$$

$$Q_S = q_S(N-n)$$

The profit maximizing quantity produced by each of the n firms in the North and the $N-n$ in the South is respectively

$$q_N(n, N) = \frac{\beta N(N - n + 4) + 2(N + 1 + \beta - \beta n)}{2(N + 1)[\beta n(N - n) + (1 + \beta)(N + 1)]} \quad (\text{A.5})$$

$$q_S(n, N) = \frac{\beta N(n + 1) + 2(N + 1)}{2(N + 1)[\beta n(N - n) + (1 + \beta)(N + 1)]} \quad (\text{A.6})$$

When a multinational that initially resides in the North has to make its decision on location, it must compare the profits of not moving to the ex-post profits that will prevail after it relocates to the South. After a Northern firm moves to the South, $n-1$ firms remain in the North while the number of firms in the South increases to $N-n+1$. The ex-post optimal quantity that will be produced by firms in each region after the move becomes

$$q_N(n-1, N) = \frac{\beta N(N - n + 5) + 2(N + 1 + 2\beta - \beta n)}{2(N + 1)[\beta n(N - n + 2) + (N + 1)]} \quad (\text{A.7})$$

$$q_S(n-1, N) = \frac{\beta Nn + 2(N + 1)}{2(N + 1)[\beta n(N - n + 2) + (N + 1)]} \quad (\text{A.8})$$

Using the optimal output of a firm in the North from (A.5), optimal profits of remaining in the North can be found:

$$\pi_N(n, N) = q_N(n)^2 = \frac{[\beta N(N - n + 4) + 2(N + 1 + \beta - \beta n)]^2}{4(N + 1)^2 [(\beta n(N - n) + (1 + \beta)(N + 1))]^2} \quad (\text{A.9})$$

The profits of the same firm if it moves to the South would become

$$\pi_S(n-1, N) = (1 + \beta)q_S(n-1)^2 = \frac{(1 + \beta)[\beta Nn + 2(N + 1)]^2}{4(N + 1)^2 [\beta n(N - n + 2) + (N + 1)]^2} \quad (\text{A.10})$$

It can be seen that profits for each case take the same simple form as equations (9) and (10) in the main text. Figure 5 simulates these profits for $N=10$ and calculates the threshold β for all possible initial values of n where the profitability of the two regions is equal. The multinational keeps production in the North if β is below this level and chooses to relocate otherwise. This value of β is equivalent to the intersection of the two curves π_N^N and π_N^S in figure 3 for the duopoly case. It is decreasing in n signifying that when the number of firms in the North is higher, a smaller β is

required for a firm to move to the South to take advantage of lower wages. This occurs as the competition effect brought about by a lower number of firms in the South leads to more production and higher profits per firm. The competition effect in turn weakens the scale effect and causes the positive effect of lower wages to outweigh the negative effect of oligopoly on profits at a lower β .

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Figure 1

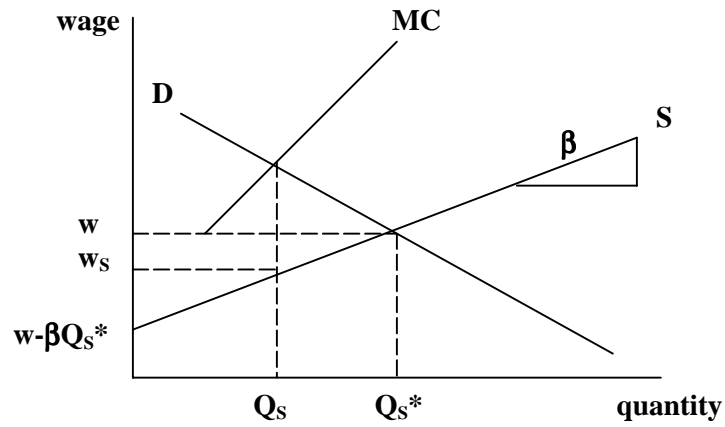


Figure 2

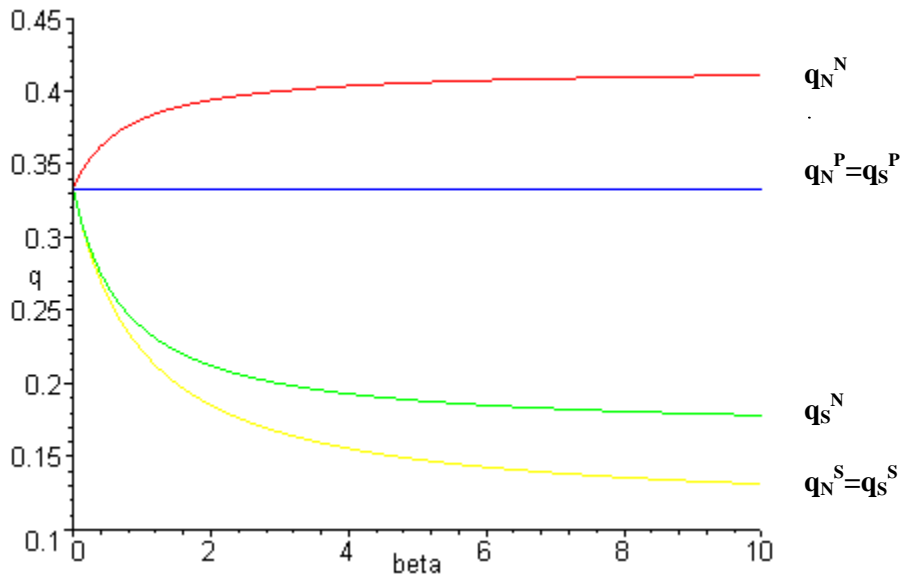


Figure 3

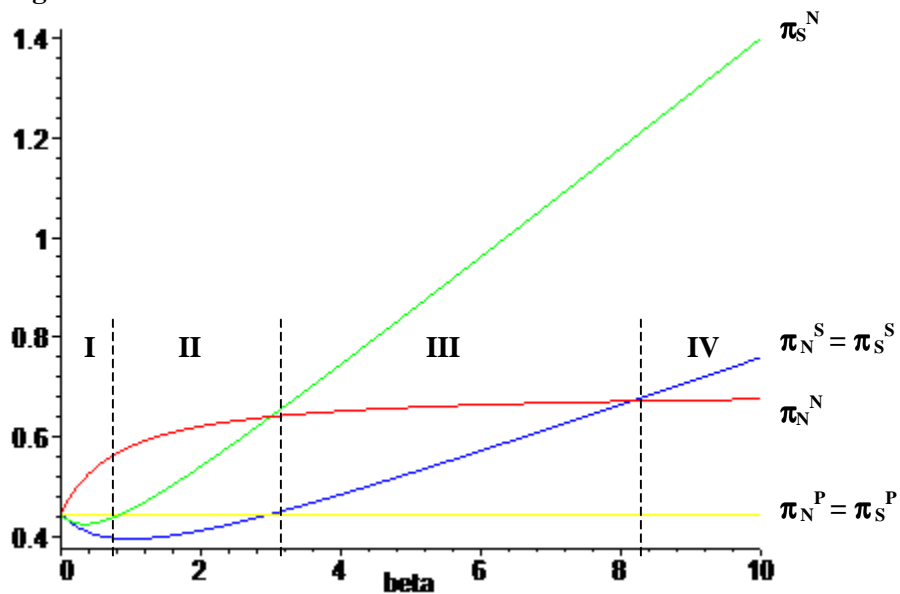


Figure 4

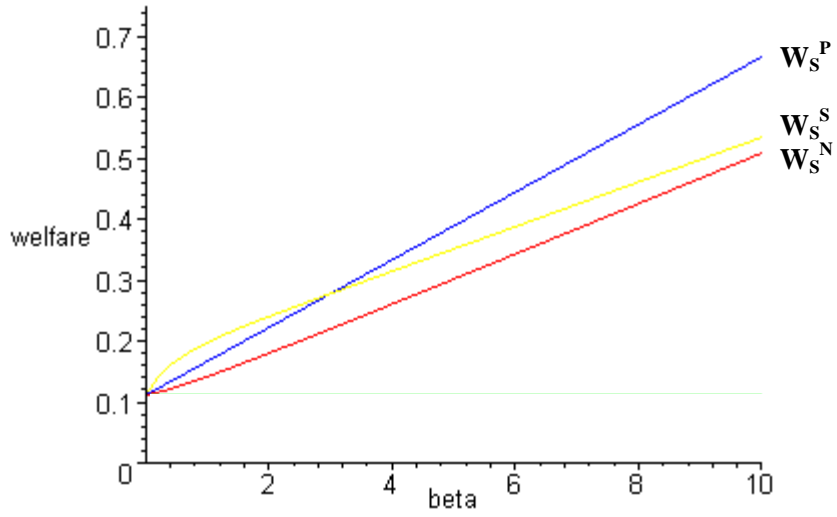


Figure 5

