

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

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Abstract

This paper studies the strategic behavior of multinationals towards loose 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, F21, J42, F12, R38, L13

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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 of 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 deal 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 it to simply symbolize egoistic, protectionist concerns. These concerns come principally from a demand for 'fair trade' that originates from fears of an outflow of activity towards a more competitive South and subsequent loss of employment in the Northern unskilled sectors. The issue has even transformed the quiet man in the street into an active protestor, who nowadays participates in gatherings amongst anti-globalists outside major international organizations to express his demands. They denounce the poor working conditions in the South and are critical of multinationals for failure to pay their workers living wages. They 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 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) review the issue in a non-technical context and discuss the consequences of the use of social clause tariffs by the WTO to enforce labor standards. They all come to the same

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).

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 go about the problem, a theoretical model to look at the crux of the problem and the consequences of implementing the suggested policies has surprisingly been ignored in the economic literature. A significant portion of this gap remains to be the behavior of multinationals towards the asymmetry in the labor markets brought about by the lack of labor standards in the South. Multinationals surely 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 on 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 the importance of the missing link between the labor market and the location of firms. Yet, to my knowledge there have only been myopic pictures that when allowed, firms always move to region where wages are lower to take advantage of lower marginal costs.

Introducing a new branch of theoretical literature on labor standards, I attempt to close this gap by demonstrating the strategic decisions of multinationals on output and location in response to the labor standard policy in the South. I argue that, contrary to conventional wisdom, multinationals are not always attracted to regions with low labor standards to take advantage of lower labor costs. A potential market power in the Southern labor market can even at times make them reluctant to base their production in the South. My results give a theoretical explanation to

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

the paradoxical empirical 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 are now facing a less aggressive competitor. Subsequently it strategically increases its output, which along with the disadvantage of lower production by the firm in the South can 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 multinationals to pay competitive wages and produce the 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 I investigate 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 increases the competitiveness of the South. Present fears in the North of losing jobs to a more competitive South are thus not legitimate as a looser labor standard regime in the South increase production and profits in the North and can in fact even cause a flow of firms to the North. I also look at the welfare implications of such policy implementations for the South and show that the latter always gains from harmonizing its labor standards policy with the North to its perfect level.

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 markets 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.

2. Globally Enforced Labor Standards

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 the cause and effects of 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 could 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).

There are two countries: the North and the South. The difference between the two regions lies in the severity of the enforcement of labor standards in each. 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 multinationals 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 similar to the North and impose marginal cost pricing in the labor market. There are two firms, which are footloose and both owned by the North.⁷ Multinationals are always wage takers in the case of symmetric labor markets eliminating any strategic relationship between output and wages. This implies equal wages in the two countries.

In the product side of the market, multinationals 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 market wages w , which is also the marginal cost of production. Firms compete in an oligopolistic framework ala Cournot in an open economy. Firms face two decisions: they decide on plant location in the first stage and then on production in the second stage.

Free trade is assumed throughout the paper to focus on differences in the labor markets of the North and the South. Firms are freely mobile and can locate in either region basing their activity in the more profitable region. There are three possible scenarios in regards to location: both firms can locate in the North, one can operate in each region, or both can shift production to the South.

⁷ The usual assumption in duopoly models, especially in a symmetric case, is that each country owns one firm. As the context of this paper is that of a North-South nature and the concern for abusing market power always related to multinationals from the North, who try to take advantage of weak standards in the South, I assume that all firms in the model are owned by the North. This leaves the location outcome unchanged and only becomes relevant in the welfare analysis.

γ represents each situation where $\gamma=[0, 1/2, 1]$ is the proportion of firms located in the North so that

$$n_N = 2\gamma \quad (1)$$

$$n_S = 2(1-\gamma) \quad (2)$$

where n is the number of firms in each region and subscripts N and S stand for where the firm locates, namely the North and the South.

Demand takes the familiar linear form

$$p = a - Q_W \quad (3)$$

where Q_W stands for world output and is the sum of total output in each country:

$$Q_W = Q_N + Q_S = q_N n_N + \bar{q}_N (n_N - 1) + q_S n_S + \bar{q}_S (n_S - 1) \quad (4)$$

with q representing the quantity produced by a firm and \bar{q} the production by the other firm if it is in the same region. Profits in each country are

$$\pi_i = q_i (p - w) \quad \text{for } i = N, S \quad (5)$$

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

$$q_1^* = q_2^* = q_P^* = \frac{a - w}{3} \quad (6)$$

Numbered subscripts represent each firm, 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 location irrelevant in the problem of firms, as profits are always the same in both regions. I assume that firms spread their activity evenly between the two regions in the symmetric case with one firm locating in each region. This simply makes the total output in each region equal to the output by one firm giving

$$Q_i^* = q_P^* \quad \text{for } i = N, S \quad (7)$$

3. Asymmetric Labor Standards: Monopsony in the South

3.1. The Model

I now apply the monopsony labor market imperfection to the Southern labor market 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 small infra-marginal reductions in wages for all workers 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.

Multinationals in the South may have to compete for labor with other firms there, giving rise to an oligopsony situation.⁸ With oligopsony, firms can still exercise their market power due to abundant labor there and exploit workers by paying them a wage under 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 there 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 indirect labor supply function can be written as¹⁰

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 $w - \beta Q^*$.

$$w_s = w - \beta[Q_s^* - Q_s] \quad (8)$$

The slope of the supply curve is represented by β , where a higher slope in a normal case implies lower wages.¹¹ The link between wages and output arises from the fact that q_s appears in the wage 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 (lower γ) 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 (5), whereas w is replaced by w_s from (8) in the profit function of a firm located in the South to get:

$$\pi_s = q_s [p - w_s] \quad (9)$$

Asymmetry between the two regions arises in the labor market as the wage is internalized in the profit maximization problem of a Southern firm. A higher quantity produced by firms decreases the profit margin in the South by increasing wages. Total profits of a firm clearly 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. Profit maximizing output of a firm locating in the North and the South respectively is¹²

$$q_N^* = \left[\frac{\beta(7 - 4\gamma) + 3}{3[4\beta\gamma(1 - \gamma) + 3(1 + \beta)]} \quad \text{for } \gamma > 0; 0 \quad \text{for } \gamma = 0 \right] \quad (10)$$

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.

¹² I have set $a-w=1$ throughout the analysis for simplicity of notation as it appears in all upcoming equations and hence cancels out in all comparisons.

$$q_S^* = \left[\frac{\beta(1+2\gamma)+3}{3[4\beta\gamma(1-\gamma)+3(1+\beta)]} \text{ for } \gamma < 1; 0 \text{ for } \gamma = 1 \right] \quad (11)$$

To see the output level of firms in reaction to different degrees of the elasticity of labor supply, we differentiate optimal quantities in (10) and (11) with respect to β to get¹³

$$\begin{aligned} \frac{\partial q_N^*}{\partial \beta} &= \frac{4(1-\gamma)^2}{[4\beta\gamma(1-\gamma)+3(1+\beta)]^2} \geq 0 \\ \frac{\partial q_S^*}{\partial \beta} &= -\frac{2(1+2\gamma)(1-\gamma)}{[4\beta\gamma(1-\gamma)+3(1+\beta)]^2} \leq 0 \end{aligned} \quad (12)$$

We can see from expression (12), 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. As the multinationals 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 firm in the North as a result increases in β 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. Note that when all firms move to the North, the quantity produced by firms in either region becomes independent of β , and both expressions in (12) equal zero.

The number of firms in each region also plays a role on profits as it is another factor that firms' output depends on. Taking the derivatives of q_N and q_S with respect to γ we get

$$\begin{aligned} \frac{\partial q_N^*}{\partial \gamma} &= \frac{8(1-\gamma)[\beta(2\gamma-5)-3]}{3[4\beta\gamma(1-\gamma)+3(1+\beta)]^2} \leq 0 \\ \frac{\partial q_S^*}{\partial \gamma} &= \frac{2[\beta(2\gamma+1)^2+3(4\gamma-1)]}{3[4\beta\gamma(1-\gamma)+3(1+\beta)]^2} \geq 0 \text{ for } \beta \geq \frac{3(1-2\gamma)}{1+2\gamma} \end{aligned} \quad (13)$$

¹³ The differentiations are shown in their general form here to show the signs for all three values of γ .

The signs of the derivatives signify nothing but the standard competition effect. As a firm moves into a region, quantity produced by each firm falls. Note that the condition for competition effect to take place in the South reveals the nonzero β , where wages are equal in the two regions as total production in the South matches its level under a perfect labor market.¹⁴

The quantity produced by each firm for the three scenarios can be reduced to

$$\begin{array}{ccc}
 & \gamma = 0 & \gamma = 1/2 & \gamma = 1 \\
 q_1^* & \frac{3 + \beta}{9(1 + \beta)} & \frac{5\beta + 3}{3(4\beta + 3)} & \frac{1}{3} \\
 q_2^* & \frac{3 + \beta}{9(1 + \beta)} & \frac{2\beta + 3}{3(4\beta + 3)} & \frac{1}{3}
 \end{array} \quad (14)$$

where numbered subscripts represent the firm, assuming that firm 1 is the firm located in the North when $\gamma=1/2$. Figure 2 shows the output level for each case. It is easy to see that output of a firm located in the North is always higher than what a firm would produce in 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

$$\pi_N = q_N^{*2} \quad (15)$$

$$\pi_S = (1 + \beta) q_S^{*2} \quad (16)$$

Equation (15) clearly shows 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 (16) shows that β can make profits from 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.

¹⁴ β 's below this level result in wages in the South being higher than in the North. This occurs for $\gamma=0$ in the duopoly case for $\beta < 3$.

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 the 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 reduced form of the optimal output for each firm from (14) into (15) and (16), we can derive the optimal profits of each firm in terms of β for each locational scenario:

$$\begin{array}{rcccl}
 & \gamma = 0 & \gamma = 1/2 & \gamma = 1 & \\
 \pi_1^* & \frac{(3 + \beta)^2}{9(1 + \beta)} & \frac{(5\beta + 3)^2}{9(4\beta + 3)^2} & \frac{1}{9} & (17) \\
 \pi_2^* & \frac{(3 + \beta)^2}{9(1 + \beta)} & \frac{(1 + \beta)(2\beta + 3)^2}{9(4\beta + 3)^2} & \frac{1}{9} &
 \end{array}$$

Figure 3 shows the profits earned from each region all three scenarios. When both firms locate in the North, profits are independent of β and horizontal due to a fully elastic labor supply curve. When both firms locate in the South, profits decrease with β as a result of lower output up to a critical value of β and start rising thereafter.¹⁵ 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 is decreasing in γ indicating that the quantity effect dominates for a smaller range of β when there are less firms in the South. This happens as the competition effect increases output, reducing the net cutback in quantity brought by a firm's monopsony power.

¹⁵ Note that these traits indicate the usual case. If we are at a region where β and γ low enough for wages to be higher in the South than the North, then wages are increasing in β .

When one firm resides in each country, profits of a firm located in the North are always higher than an agglomeration situation in the North and higher for a large range of β than when both firms produce in the South. Profits of locating in the North are always increasing in β at a decreasing rate because of increased production. Profits are higher than that of locating in the South up to a critical value of β . This value can be found by setting profits of locating in the North and the South for $\gamma=1/2$ in (17) equal and solving for β to get $\tilde{\beta}=3$. After $\tilde{\beta}$, a firm located in the South makes more profits than its counterpart in the North. When β reaches high levels, its direct linear effect on wages gains more significance as its marginal effect on quantity gradually diminishes. It is important to notice that both Northern and Southern wages are higher for a large midrange of β when they disperse than when they cluster in one region.

Proposition 1

In an open economy, the strategic changes in output determine the profitability of regions when a monopsonist competes in the product market with a firm that operates in a perfectly competitive labor market. 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 profitability of locating in the South increases with weaker labor standards. The combination of these two effects along with the strategic increase in the output of the firm in the North in response to a less aggressive competitor makes the North the more profitable region for $\beta \leq \tilde{\beta}$.

3.3. Locational Equilibrium

I now look at the decision making stage of multinationals to study the distribution of firms across regions when countries are asymmetric in their labor standards regimes. If one region offers higher profits than the other, there is a flow of firms towards that region until profit differential between regions falls to zero or until all firms cluster in the more profitable region. A locational

equilibrium is a situation where a division of firms across the two regions is reached so that no locational deviation by a single firm is profitable.

Looking at the problem from a game theoretic perspective, figure 3 can be divided into four regions. We can first eliminate agglomeration in the South ($\gamma=0$) from the evaluation in areas I, II and III as it is always dominated by other outcomes. In area I a firm can always earn higher profits by being in the North even if both locate there. This makes $\gamma=1$ the sole Nash equilibrium for this area. Lack of labor standards in this range therefore drives multinationals away from the South. The β up to which profits of locating in the North is unconditionally higher is where profits of a firm in the North with $\gamma=1$ is equal to the profits of a firm staying in the South when $\gamma=1/2$. This occurs at $\bar{\beta} = \sqrt{3} / 2$.

Area II is one of the two regions in which profits are higher for both firms if they locate in separate regions than when they agglomeration in one region. For $\beta < \tilde{\beta}$ profits in the North are higher when $\gamma=1/2$ due to the monopsony situation the South. This tempts the firm in the South to forgo its market power and relocate in the North. If the firm moves to the North however, the output and hence profits of both firms are lowered due to the competition effect, eventually stopping the flow or the temptation to move. The locational equilibrium is reached exactly at the point where the competition effect neutralizes the gains from relocation. As profits of both firms are higher when one locates in the North and one in the South, agglomeration in the North ($\gamma=1$) becomes an unstable equilibrium. Firms hence choose to scatter in the two regions making $\gamma=1/2$ the only equilibrium outcome. Similarly in area III when $\beta > \tilde{\beta}$ the firm in the North is tempted to move to the South to take advantage of the negligible wages there. The firm knows however that its profits are higher if it stays in the North than the ex post level after moving to the South. Thus $\gamma=1/2$ is again the only Nash equilibrium in area III, where lower wages are attractive, but not sufficient enough to induce firms to relocate to the South. Only for a quasi-vertical Southern

labor supply curve (very high values of β) in area IV as profits of locating in the South dominates that of locating in the North for all cases making $\gamma=0$ the Nash equilibrium outcome.¹⁶

We can conclude that the negative strategic quantity effect of monopsony on profits weakens the profitability of lower wages of 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, I show that for a large range of β , lack of labor standards do 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 about loss of jobs due to transfer of activity to the South. We not only saw that firms in the North increase activity, i.e. production, as a strategic reaction towards lower Southern output, but also that lower wages do not induce firms to relocate to the South. Lack of labor standards could in fact even increase the total number of firms in the North and therefore employment there.

Proposition 2

Lack of labor standards in the South can makes the North the more profitable region and causes agglomeration of firms in the North for low non-zero values of β where $0 < \beta < \bar{\beta}$. Lower wages in the South are not sufficient to attract multinationals to relocate to the South for a large range

¹⁶ 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 $\eta \geq 1$ just 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

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, both firms are better off by operating in separate regions. Only for very high values of β , where wages approach zero, lower marginal cost (quasi free production) in the South takes significance and attracts 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, I look 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.¹⁷ 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.

considered in previous literature, the locational equilibrium is agglomeration in the North. The analysis for the South is however extended to consider highly inelastic labor supply curves.

¹⁷ 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.

When multinationals are owned by the North, Southern welfare can simply be measured in terms of quantity as the sum of consumer surplus and worker surplus in the South.¹⁸ The latter is the triangle under the wage level and above the labor supply curve in figure 1:

$$W_S = CS_S + WS_S = \frac{[Q_N + Q_S]^2}{2} + \frac{\beta Q_S^2}{2} \quad (18)$$

with CS denoting the consumer surplus and WS the worker surplus. Welfare under fully enforced labor standards can be calculated by substituting the competitive output q_P^* from (7) for Q_N and Q_S , and $\gamma=1/2$ due to the equal distribution of firms with symmetry. The equation for welfare when labor standards are adopted in the South is found using (8) to replace for w_S and (10) and (11) for production of a firm in each country. Looking first at the worker surplus, subtracting welfare with no standards from that with imposed competitive wages (and output) turns out to be

$$WS_S^P - WS_S^M = \frac{\beta[2\gamma(\beta+3) + \beta - 3]}{18[4\beta\gamma(1-\gamma) + 3(1+\beta)]} \geq 0 \quad \text{for} \quad \beta \geq \frac{3(1-2\gamma)}{(1+2\gamma)} \quad (19)$$

where superscripts P and M stand for a perfect labor market and monopsony respectively. Equation (19) confirms that worker surplus in the South is always higher when labor standards are imposed as long as the condition discussed in (13) holds and Southern wages are not higher than that in the North.¹⁹ Higher wages paid to workers and higher output 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 coming with the enforcement of labor standards. Notice that imposing standards increases this value even when it causes a firm to leave the South and relocate back in the North.

¹⁸ Recall that the North owns both firm. This is the most relevant case in this context as consumption and wages can reasonably be assumed to construct a vital part of welfare in developing countries, where standards of living are below average. As the discussion pertains to low-skill industries and multinationals with possible sweatshops, this simplification is made to focus the analysis on welfare effects brought about by employment and wages.

¹⁹ This only occurs for $\beta \leq 3$ and $\gamma=0$ which was proved to never be an equilibrium outcome.

The other element in Southern welfare is the consumer surplus and is similarly found by substituting the relevant values of output for the each case. Subtracting consumer surplus with no standards from that with fully enforced standards gives

$$CS_S^P - CS_S^M = \frac{32\beta(1-\gamma)^2[3+2\beta+\beta\gamma(6-5\gamma)]}{9[4\beta\gamma(1-\gamma)+3(1+\beta)]^2} \geq 0 \quad (20)$$

It is clear that the consumer surplus is also always higher with labor standards for all values of γ as correcting the market failure in the South always increases world output. This difference is also increasing in β as a stronger monopsony power magnifies the reduction in output carried out by the firm. This shows that citizens in the South also enjoy gains in the demand market when a labor standards policy is adopted in their country. With combining the results from (19) and (20), it can easily be concluded that the South gains unambiguously in terms of welfare when labor standards are harmonized to their perfect level in the North.

Welfare can be written for each scenario in a simplified form as

	$\gamma = 0$	$\gamma = 1/2$	$\gamma = 1$	
W_S^M	$\frac{2(3+\beta)^2}{81(1+\beta)}$	$\frac{(1+\beta)(4\beta^2+57\beta+36)}{18(3+4\beta)^2}$	$\frac{2}{9}$	(21)
W_S^P	–	$\frac{4+\beta}{18}$	–	

Figure 4 compares welfare with no labor standards at all three locational scenarios with that when labor standards are enforced. 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 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. Output is increased, wages are higher, and last, but not least, it can but need not 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, adopting labor standards

actually gives firms the incentive to move to the South. In area II and III, location is unchanged and one firm remains in each country. Only in area IV higher labor standards in the South makes one firm leave the South to relocate back in the North. However, higher production (employment) in the South in the remaining firm along with higher wages offsets any loss caused 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 3

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.²⁰

Consumer surplus and Worker surplus always increase in the South regardless of the initial locational distribution of firms prior to the adoption of standard in the South.

In the viewpoint of some, these welfare results may not suffice to suggest actions for harmonization of labor standards as there are still concerns that the South can lose in competitive terms. This argument brings the issue of ownership into the picture. If there are already local firms operating in the South, they will also be forced to upgrade their worker standards. Concerns come from the fact that the South may lose as the local firms could undergo huge, maybe unrecoverable, losses when forced to increase wages. Therefore, I now look at an extension where the North and the South each own one firm. Welfare now also includes producer surplus or the profits of the Southern firm. The most interesting case would be to disregard the demand side (consumer surplus) and check to see if gains from worker surplus outweigh losses in profits brought about by higher wages. This assumption 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.²¹ I thus focus on profits and worker

²⁰ The term competitive here refers to the labor market.

²¹ Recall that consumer surplus trivially always increases by adopting standards. Including in the welfare would only strengthen the results.

surplus to see if labor standards result in a more than proportional transfer of income from firms to labor. Welfare can be measure by adding profits of the Southern firm to worker surplus to get

$$\pi_s + W_s = (1 + \beta)q_s^* + \frac{\beta Q_s^2}{2} \quad (22)$$

It can be simplified for each scenario to

	$\gamma = 0$	$\gamma = 1/2$	$\gamma = 1$	
W_s^M	$\frac{(3\beta + 1)(3 + \beta)^2}{81(1 + \beta)^2}$	$\frac{(3 + 2\beta)^2(3\beta + 2)}{18(3 + 4\beta)^2}$	$\frac{1}{9}$	(23)
W_s^P	–	$\frac{2 + \beta}{18}$	–	

Note from figure 2 that that the Southern firm always locates at home except when $\beta < \bar{\beta}$ (area I). A move to full labor standards therefore only changes the location of the Southern firm at such low values of β . Figure 5 illustrates the welfare for each locational scenario. Although the introduction of standards reduces profits of the Southern firm at all cases except when $\beta < \bar{\beta}$, the loss is more than compensated by the rise in worker surplus brought about by higher wages and increased production. 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 $\beta < 3$. However, recall that this range of β has been omitted from the analysis for $\gamma = 0$ as it entails higher wages in the South than the North and is never an equilibrium outcome. We can conclude that even when the South owns firms and the producer surplus issues are taken into account, labor standards still bring about a net gain for the South as the gains from the worker surplus always outweigh losses suffered by the Southern firm.

Proposition 4

When one firm is owned by the South, losses in the profits of the Southern firm is always compensated by gains from higher wages and employment brought about by labor standards.

5. Conclusion

This paper achieves a thorough study of the relationship between labor standards and the location of firms. It develops a technical model to explain the strategic behavior of firms towards loose labor standards in an open economy where multinationals compete in asymmetric labor markets. It attempts to answer common questions asked about the labor standards and the action of multinationals: 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 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 gains from higher wages and employment make up for losses in profits of Southern firms (if present) brought about by lower wages?

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 with quantity produced and their locational choice, 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 turns more profitable as firms there free ride on the presence of a monopsonist in the South by increasing their output and quantity. These strategic moves induce firms to remain in the North and can even at times cause a flow of multinationals away from the South when no labor standards are enforced, regardless of the lower wages there. The new paradoxical results build a theoretical background for recent empirical evidence that discloses the fact that multinationals do not seem to choose production location on a basis of lower labor standards.

The paper also shows that positive consequences of labor standards for the South on the location of firms carry on to the welfare implications by demonstrating 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 any loss in producer's surplus brought about by higher wages. The paper may give a hint of justification for those who see such efforts as a humane act. The results confirm 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. Much work remains to be done on the issue to for example find the consequences of imperfect labor markets in the South in presence of trade costs. In addition, the use of social clause tariffs and the efficacy of threats to apply it in case of non-compliance on the decisions of multinationals and actions of governments in the South can be interesting extensions to the model. As the South is shown to gain from labor standards anyway in this paper, such threats are deemed unnecessary and inefficient to bring about a change. If explaining and substantiating these consequences does not prove useful in convincing the representatives of the developing world, leaving the job to a trade-related organization with the power of enforcement such as the WTO may yet be the only solution for long-term prosperity and growth in the poorer regions of the world. A good first step would 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)

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Figure 1

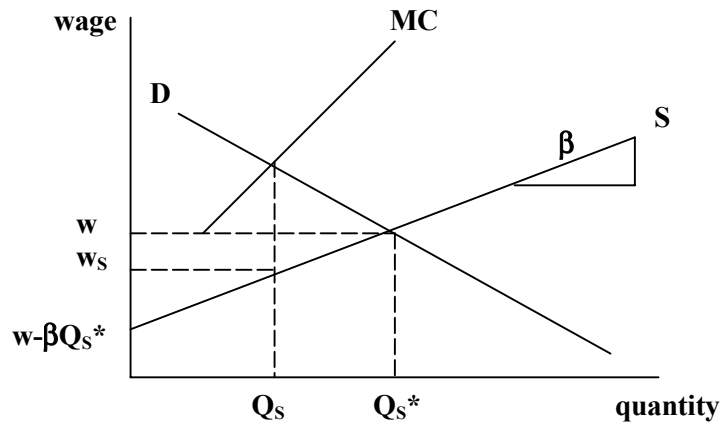


Figure 2

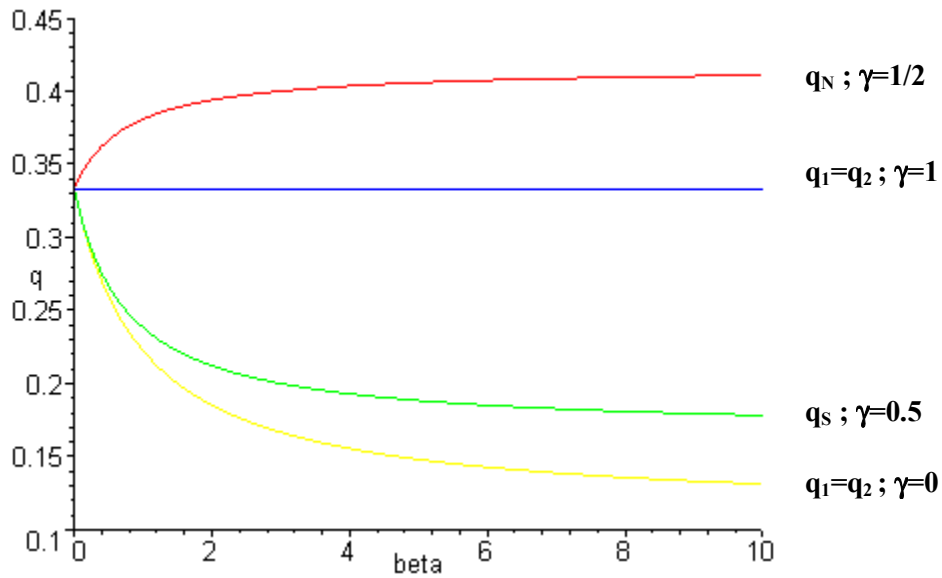


Figure 3

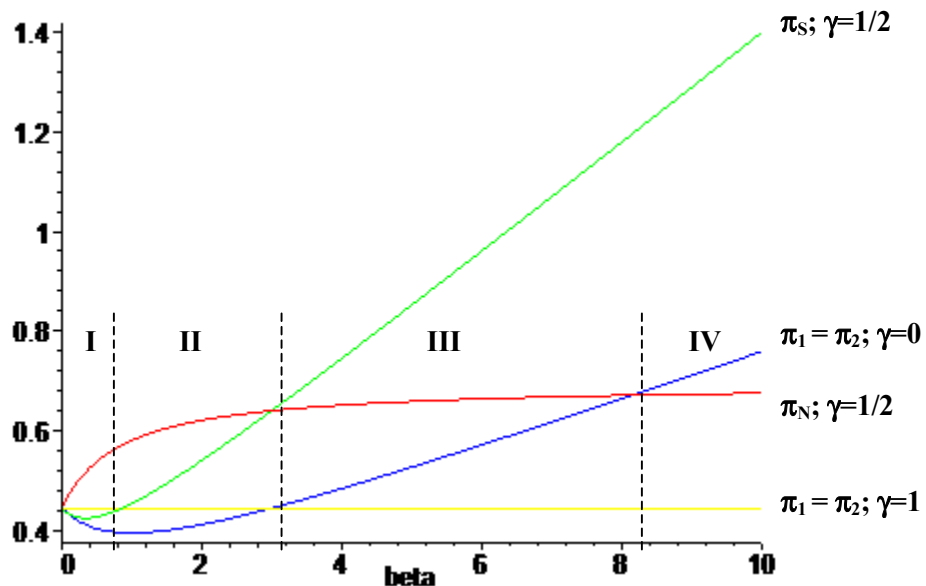


Figure 4

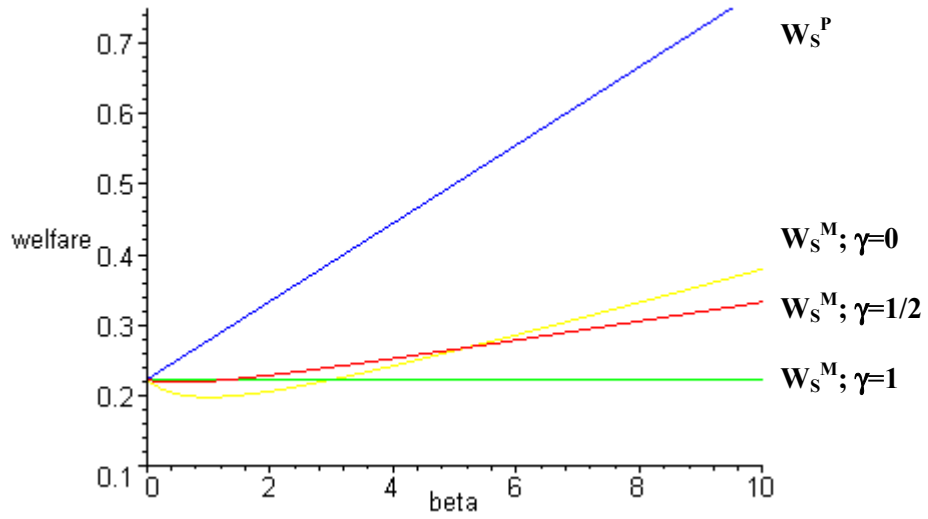


Figure 5

