Social Dumping and International Trade

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July 15, 2005

Abstract

In this paper, I investigate the effects of social dumping in a North-South trade model when firms strategically interact in the output market. The South firm practices social dumping due to its monopsonistic power in the labour market. I show that, contrary to a common complaint by firms in developed countries, social dumping by the South firm is beneficial to the North firm. The South firm, on the other hand, may be better off by not practicing social dumping. North consumers suffer from social dumping. Imposing social clause tariffs or labour standards results in conferring a strategic advantage on the South firm, whereas it improves social welfare in the North.

Keywords: social dumping; monopsony; oligopsony; labour standards; social clause tariffs; Cournot oligopoly.

JEL classification: F12; F13; J42; J80; L13.

Very preliminary and incomplete!! Please do not quote without author's permission. Comments and suggestions are welcome.

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*Financial support from Japan Society for the Promotion of Science under the Grant-in-Aid for Young Scientists (B) is gratefully acknowledged.
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1 Introduction

*Social dumping* refers to a situation in which firms that are located in countries where labour standards are weak produce and export goods by using unduly cheap labour under poor working conditions (Corden and Vousden, 2001). In the case of multinational enterprises (MNEs), social dumping also means “the decision of a home firm to serve the domestic market through a plant located in a foreign country, where workers’ protection does not meet home standards and labor costs are thus significantly lower” (Cordella and Grilo, 2001: p. 645). Social dumping is not just the choice of firms. It is argued that the governments of developing countries often set lax labour standards “to create a competitive cost advantage for their own industries” (Sinn, 2001: p. 3) or to attract MNEs. Such behaviour of the governments may result in a “race to the bottom.”

In order to prevent social dumping and protect firms located in developed countries from the threat of “unfair competition” arising from social dumping, labor unions in European countries and other developed countries and human rights activists argue that “market access in the North should be conditioned on raising labor standards in the South” (Golub, 1997: p. 20). The legal linkage between labour standards and trade restrictions is sometimes referred to as “social clauses.” Adoption of a particular type of social clauses in international trade agreements has been proposed and discussed.\(^1\) However, developing countries argue that such social clauses are disguised protectionism.

It is important to know the sources of social dumping to examine the effects of social dumping. Maskus (1997) and Martin and Maskus (2001) point out that one potential source of social dumping is the monopsonistic labour markets in developing countries. Monopsony and oligopsony in labour markets have recently been a hot issue in the literature (Boal and Ransom, 1997; Bhaskar, Manning, and To, 2002). This is partly because empirical studies support such structures in labour markets.

The main purpose of this paper is to examine the effects of social dumping in inter-

national markets when social dumping is based on monopsonistic labour markets. The potential importance of the interaction between the strategic relationship of firms in the output market and the monopsonistic power in the labour market is emphasized. In order to examine this issue, I construct a simple duopoly model with asymmetric labour markets. Two firms located in different countries in which conditions of labour markets are different. In one country, the labour market is perfectly competitive, whereas in the other country the labour market is monopsonistic. This asymmetry in the labour markets affects the strategic relationship of firms in the output market. I also examine the effects of various policies, such as tariffs and labour standards, by the government of the country in which the output market is located. I only consider the case in which the output market is located in the country whose firm does not practice social dumping.

The major results in this paper are as follows. First, I show that the monopsonistic power of one firm in the labour market causes the firm to conduct social dumping in the sense that the wage rate paid to workers is below the marginal value product of labour. When firms are price takers in the output market, the firm gains a competitive advantage from social dumping. However, it is shown that, when the output market is under Cournot competition, the firm that practices social dumping may ironically suffer from its own social dumping. Under some plausible conditions, it could earn higher profits by not practicing social dumping. The rival firm that does not conduct social dumping, on the other hand, actually benefits from the other firm’s social dumping.

Second, since social welfare in the country in which the output market is located is reduced by the foreign firm’s social dumping, its government may have an incentive to implement some policies to improve domestic welfare. I show that any of the three policy instruments, namely, ad valorem tariffs, social clause tariffs, and labour standards, can improve domestic welfare. However, the effects of these policies on domestic and foreign firm’s profits are different. An ad valorem tariff works as a tool of shifting rents from the foreign to the domestic firm. A social clause tariff, on the other hand, works against the domestic firm. It may or may not increase profits of the firm that practices social dumping, depending on the conditions in the labour market. Labour standards, which
increase the wage paid by the firm of engaging in social dumping, hurt the domestic firm and help the foreign social-dumping firm.

The results in this paper brings out the striking contrast between social dumping and ecological dumping, which refers to a “situation in which a government uses lax environmental standards to support domestic firms in international markets” (Rauscher, 1994: p. 823). The existing studies have shown that ecological dumping is typically seen when the output market is imperfectly competitive and that ecological dumping actually confers a competitive advantage on domestic firms in international markets (Conrad, 1993; Barrett, 1994; Kennedy, 1994; Rauscher, 1994). By contrast, I show that social dumping based on the monopsonistic labour market may be harmful to the firm that practices social dumping and is beneficial to the rival firms. This surprising result holds when the output market is imperfectly competitive but does not when it is perfectly competitive.

A number of existing studies are related to this paper. First, Naghavi (2005) is most closely related to this paper. Like this paper, he investigates the consequences of asymmetric labour market in a North-South trade model. In the Southern country, the labour market is under oligopsony, while it is perfectly competitive in the Northern country. Unlike this paper, however, he assumes that the North firm can choose its plant location in either country and focuses on the effects of oligopsony in the Southern labour market on the North firm’s location choice. He shows that the North firm is not always attracted to the Southern country, in which wage is lower. However, he does not analyze how the market outcomes differ, depending on the conditions in the Southern labour market. He does not examine the effects of tariff policies, either.

Maskus (1997) and Martin and Maskus (2001) also analyze the effects of monopsony in the labour market. These two papers also examine the effects of tariffs on imports from the country in which the labour market is under monopsony. However, since they do not consider the strategic interaction between firms in the output market, the relationship between imperfect competition in the output market and social dumping in the input

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2Ecological dumping is alternatively called eco-dumping or environmental dumping.
market is not clarified by their analysis.³

Corden and Vousden (2001) examine the effects of improving labour standards in the export sector of developing countries. Although their main purpose is to analyze the effects of improving labour standards in the export sector on the wage differential between the export and import sectors, they also explore the interaction between the monopsonistic labour market and terms-of-trade effects. However, the strategic interaction between firms in the output market is again not considered.

Cordella and Grilo (2001) analyze the effects of imposing social clause tariffs on social dumping. However, their main concern is about firms’ location choices and how social clause tariffs work for preventing domestic firms from relocating to the country of low wages.⁴ They assume that the wages in the domestic and foreign countries are fixed and do not consider the role of oligopsonistic structure in labour markets.

The interaction of oligopoly in the output market and oligopsony in the factor markets is analyzed by Okuguchi (1998, 2000). He considers the model in which firms that play Cournot competition in the output market are oligopsonists in the factor market. His model is different from mine in that firms share the same factor market. In my case, since firms are located in different countries, they do not share the same factor market.

The remainder of the paper is organized in the following way. Section 2 sets up the model. Section 3 examines the effects of social dumping. As a benchmark, the case in which firms are price takers in the output market is first analyzed. After that, the case of Cournot competition in the output market is investigated. Section 4 analyzes the effects of policies by the government of the country in which the output market is located. Section 5 concludes.

³In the trade literature, the effects of the monopsony and oligopsony power in primary factor markets (Feenstra, 1980; Markusen and Robson, 1980; McCulloch and Yellen, 1980) and in intermediate good markets (Devadoss and Song, 2003a, b) have been examined in general equilibrium models with perfectly competitive final good sectors. Kuroda (2004) examines the effects of local content protection in a small open economy with monopsonistic local intermediate good market. See also Bhagwati, Panagariya, and Srinivasan (1998, Chapter 24).

⁴Leahy and Montagna (2000) investigate the issue of social dumping and the location choice by MNEs from the viewpoint of the governments in developing countries. They show that the governments of developing countries have an incentive to engage in social dumping in the sense of banning labour union in the short run to attract MNEs and extract higher rents in the long run.
2 The Model

There are two countries: Country N and Country S. In each country, one firm is located. Call these firms firm N and firm S. These firms produce a homogenous good. Let \( y^N \) and \( y^S \) be firms N and S’s output, respectively. Labour is the only production factor. I assume identical labour supply curves in the two countries. The inverse labour supply in each country is given by

\[
    w(l^i) = \gamma + \beta l^i, \quad i = N, S, \tag{1}
\]

where \( l^i \) is employment by firm \( i \), \( w(l^i) \) is wage rate when the employment level is \( l^i \), \( \gamma > 0 \), and \( \beta > 0 \). For simplicity, I assume that one unit of labour is required to produce one unit of output. That is, \( y^i = l^i, i = N, S \).

The labour market in Country N is competitive and hence firm N is a price taker in the labour market. The labour market in Country S is, on the other hand, monopsonistic.\(^5\) Firm S realizes that it faces an upward-sloping labour supply curve.

The output market is duopolistic. I assume that firms compete in quantities in Cournot fashion. For simplicity, I assume that the output market exists only in Country N. The inverse demand in the market in Country N is given by

\[
    p(y) = a - y, \tag{2}
\]

where \( y \equiv y^N + y^S \) and \( a > 0 \).

Firm \( i \)'s profit, \( \pi^i(y^N, y^S) \), is given by

\[
    \pi^i(y^N, y^S) = (p(y) - w(y^i))y^i, \quad i = N, S. \tag{3}
\]

Consumer’s surplus in Country N, \( CS^N \), is given by

\[
    CS^N = \int_0^{y} p(t)dt = \frac{y^2}{2}. \tag{4}
\]

Then, social welfare in Country N, \( W^N \), is measured by the sum of firm N’s profit and consumer’s surplus, i.e., \( W^N = \pi^N + CS^N \). When the government of Country N imposes any tariffs on imports, tariff revenue is added to the social welfare measure.

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\(^5\)In the subsequent analysis, I also consider the case of the competitive labour market in Country S as a benchmark.
The government of Country N implements various policies, which will be examined in section 4. I only consider the case in which the government commits to a certain policy before firms act. Throughout the paper, the government of Country S is assumed to be passive and allow its domestic firm to practice social dumping unless Country N requires labour standards on its imports.

3 Social Dumping

In this section, I analyze the effects of firm S’s practicing social dumping. As will be shown below, the strategic interaction between firms in the output market plays an important role to determine the effects of social dumping. In order to make this point clear, I first consider a benchmark case in which the output market is competitive.

3.1 The competitive output market

Suppose that firms are price takers in the output market. In this case, firm N’s output is determined by

$$y^N = \frac{a - \gamma - y^S}{1 + \beta}.$$  \hspace{1cm} (5)

Firm S’s optimal output is, on the other hand, given by

$$y^S = \frac{a - \gamma - y^N}{1 + 2\beta}.$$  \hspace{1cm} (6)

Assuming interior solutions, outputs and profits in Nash equilibrium (NE) are given by

$$y^N_p = \frac{2(a - \gamma)}{3 + 2\beta}, \quad y^S_p = \frac{a - \gamma}{3 + 2\beta},$$

$$\pi^N_p = 0, \quad \pi^S_p = \beta (y^S_p)^2,$$  \hspace{1cm} (7)

respectively, where the subscript $p$ indicates equilibrium variables in the case of price takers in the output market. In order to have interior solutions, I assume that $a - \gamma > 0$ holds. Since firm N is a price taker both in the factor market and in the output market, it earns zero profits in this case. Firm S, on the other hand, earns positive profits because
it has a market power in the factor market. Consumer’s surplus in this case is given by

$$CS^N_p = \frac{9(a - \gamma)^2}{2(3 + 2\beta)^2}. \tag{9}$$

In order to understand the effect of social dumping by firm S, consider a case in which firm S is a price taker in its factor market. In this case, firm S’s output is determined by

$$y^S = \frac{a - \gamma - y^N}{1 + \beta}. \tag{10}$$

Outputs and profits in NE are then given by

$$\tilde{y}^N_p = \frac{a - \gamma}{2 + \beta}, \quad \tilde{y}^S_p = \frac{a - \gamma}{2 + \beta},$$

$$\tilde{\pi}^N_p = 0, \quad \tilde{\pi}^S_p = 0, \tag{11}$$

respectively, where a tilde (˜) indicates variables in the case where the labour market in Country S is perfectly competitive. Consumer’s surplus in this case is given by

$$\tilde{CS}^N_p = \frac{2(a - \gamma)^2}{(2 + \beta)^2}. \tag{13}$$

From (7) to (13) I obtain the following proposition:

**Proposition 1** When the output market is perfectly competitive, firm S earns higher profits by practicing social dumping. Firm S’s output and employment level are lower when it practices social dumping. Although Firm N’s output is higher when firm S engages in social dumping, its profit is unaffected by firm S’s social dumping. Consumers in Country N suffers from social dumping by firm S.

**Proof.** Since $\pi^S_p > 0 = \tilde{\pi}^S_p$, firm N earns higher profits by social dumping. On the other hand, $\pi^N_p = \tilde{\pi}^N_c = 0$. For output levels, it is easily shown that $y^S_p - \tilde{y}^S_p = -(a - \gamma)(1 + \beta)/(3 + 2\beta)(2 + \beta) < 0$ and $y^N_p - \tilde{y}^N_p = (a - \gamma)/(3 + 2\beta)(2 + \beta) > 0$. Moreover, it follows that $CS^N_p - \tilde{CS}^N_p = -(a - \gamma)^2\beta(2 + 7\beta)/2(3 + 2\beta)^2(2 + \beta)^2 < 0. \blacksquare$

This result is just as expected. The firm that practices social dumping benefits from social dumping. This is because firm S has a monopsony power in the labour market in Country S, whereas firm N does not have any market power in the labour market. Firm N located in Country N, on the other hand, does not care about whether firm S
conducts social dumping, as long as the output market is competitive. However, since consumer’s surplus is lower in the presence of social dumping, Country N suffers from social dumping by firm S.

3.2 Cournot competition in the output market

I now turn to the case of Cournot competition in the output market. In this case, from the first-order condition (FOC) for profit maximization, firm N’s reaction function is given by

\[ y^N(y^S) = \frac{a - \gamma - y^S}{2 + \beta}. \]  

(14)

Firm S’s reaction function is, on the other hand, given by

\[ y^S(y^N) = \frac{a - \gamma - y^N}{2(1 + \beta)}. \]  

(15)

Assuming interior solutions, outputs and profits in NE are respectively given by

\[ y^N_c = \frac{(a - \gamma)(1 + 2\beta)}{2\beta^2 + 6\beta + 3}, \quad y^S_c = \frac{(a - \gamma)(1 + \beta)}{2\beta^2 + 6\beta + 3}, \]  

(16)

\[ \pi^N_c = \left( y^N_c \right)^2, \quad \pi^S_c = (1 + \beta) \left( y^S_c \right)^2, \]  

(17)

where the subscript c indicates equilibrium variables in the case of Cournot competition in the output market. Consumer’s surplus and social welfare in Country N in this case are respectively given by

\[ CS^N_c = \frac{(a - \gamma)^2(2 + 3\beta)^2}{2(2\beta^2 + 6\beta + 3)^2}, \]  

(18)

\[ W^N_c = \frac{(a - \gamma)^2(17\beta^2 + 20\beta + 6)}{2(2\beta^2 + 6\beta + 3)^2}. \]  

(19)

As in the previous subsection, as a benchmark I consider a case in which firm S is a price taker in its factor market. In this case, firm N’s reaction function does not alter and hence is given by (14). Firm S’s reaction function in this case is, on the other hand, given by

\[ y^S(y^N) = \frac{a - \gamma - y^N}{2 + \beta}. \]  

(20)
Outputs and profits in NE are then given by

\[ \tilde{y}_N^c = \frac{a - \gamma}{3 + \beta}, \quad \tilde{y}_S^c = \frac{a - \gamma}{3 + \beta}, \]

\[ \tilde{\pi}_N^c = \left( \tilde{y}_N^c \right)^2, \quad \tilde{\pi}_S^c = \left( \tilde{y}_S^c \right)^2, \]

respectively, where a tilde (\( \tilde{\} \)) indicates, as in the previous subsection, variables in the case where the labour market in Country S is perfectly competitive. Consumer’s surplus and social welfare in Country N in this case are respectively given by

\[ \tilde{CS}_N^c = \frac{2(a - \gamma)^2}{(3 + \beta)^2}, \]

\[ \tilde{W}_N^c = \frac{3(a - \gamma)^2}{(3 + \beta)^2}. \]

From (16) to (24), the following proposition is obtained.

**Proposition 2** Under Cournot competition in the output market, (i) firm N benefits from firm S’s social dumping; (ii) firm S earns higher profits by not practicing social dumping if \( \beta \) is low; (iii) the employment by firm S is lower when firm S practices social dumping; and (iv) Country N suffers from social dumping by firm S.

**Proof.** (i) From (17) and (22), it yields that \( \pi_N^c - \tilde{\pi}_N^c = (a - \gamma)^2 \beta (4 \beta^2 + 13 \beta + 6)/(2 \beta^2 + 6 \beta + 3)^2 (3 + \beta)^2 > 0 \). (ii) From (17) and (22), it follows that \( \pi_S^c - \tilde{\pi}_S^c = (a - \gamma)^2 \beta (\beta^4 + 5 \beta^3 + 6 \beta^2 - 2 \beta - 3)/(2 \beta^2 + 6 \beta + 3)^2 (3 + \beta)^2 \). It is shown that \( \pi_S^c \leq (\text{resp.} >) \tilde{\pi}_S^c \) if \( \beta \leq (\text{resp.} >) \bar{\beta} \), where \( \bar{\beta} \approx 0.6658 \). (iii) Using (16) and (21), it yields that \( l_S^c - \tilde{l}_S^c = \tilde{y}_S^c - \tilde{y}_c^c = -(a - \gamma) \beta (2 + \beta)/(3 + \beta)(2 \beta^2 + 6 \beta + 3) < 0 \). (iv) Comparing (19) with (24) yields \( W_N^c - \tilde{W}_N^c = -(a - \gamma)^2 \beta^2 (7 \beta^2 + 22 \beta + 9)/2(2 \beta^2 + 6 \beta + 3)^2 (3 + \beta)^2 < 0 \). \( \blacksquare \)

A surprising result in this proposition is that firm N benefits rather than suffers from firm S’s social dumping. Firm S, on the other hand, is not always better off by practicing social dumping. In particular, if \( \beta \) is lower than approximately 0.6658, firm S earns higher profits by not practicing social dumping. This makes a sharp contrast with the result in the case of competitive output market. The strategic interaction between two firms in the output market makes this difference.
When firm S has a monopsony power in the labour market in Country S, it takes into account the fact that, given firm N’s output, it can increase its profits by reducing employment from the competitive level. However, since the output is proportional to the employment level, this choice decreases firm S’s output level for a given level of firm N’s output. This means that firm N is now facing a less-aggressive rival and hence that it can expand its output because outputs are strategic substitutes. Consequently, firm N’s output in NE is higher and firm S’s output in NE is lower when firm S has a monopsony power in the labour market.

Figure 1 depicts reaction curves of the two firms. \(R^N\) indicates firm N’s reaction curve. \(R^S\) and \(\tilde{R}^S\) indicate firm S’s reaction curves with and without social dumping, respectively. As drawn in the figure, by practicing social dumping, firm S’s reaction curve shifts inward, changing the Nash equilibrium point from \(\tilde{E}_c\) to \(E_c\). As a result, \(y^N\) in NE becomes higher and \(y^S\) in NE becomes lower.

Although firm S’s social dumping causes its output to contract, it increases the mark-up. With social dumping, the mark-up is given by \(\lambda_c \equiv p_c - w^S_c = (a - \gamma)(1 + \beta)^2/(2\beta^2 + 6\beta + 3)\). Without social dumping, on the other hand, the mark-up is given by \(\tilde{\lambda}_c \equiv \tilde{p}_c - \tilde{w}^S_c = (a - \gamma)/(3 + \beta)\). Thus, it follows that

\[
\lambda_c - \tilde{\lambda}_c = \frac{(a - \gamma)(\beta^2 + 2\beta + 1)}{(2\beta^2 + 6\beta + 3)(3 + \beta)} > 0.
\]

Firm S’s monopsony power in the labour market becomes higher as the labour supply becomes less elastic, i.e., as \(\beta\) becomes higher. It holds that \(\partial(\lambda_c - \tilde{\lambda}_c) / \partial \beta = (a - \gamma)(6\beta^4 + 38\beta^3 + 78\beta^2 + 54\beta + 9)/(2\beta^2 + 6\beta + 3)^2(3 + \beta)^2 > 0\). Thus, when \(\beta\) is low, the effect of a reduction in the output dominates that of an increase in mark-up by practicing social dumping. Hence, firm S’s profit is lower under social dumping. As \(\beta\) becomes higher, the effect of an increase in mark-up by social dumping tends to dominate that of a reduction on the output, yielding higher profits for firm S by social dumping.

Although firm S’s social dumping is good for firm N, it is not good for Country N as a whole, because consumers in Country S suffer from firm S’s social dumping, as in the case of competitive output market.
4 Tariffs and Labour Standards

In the previous section, I show that when the output market is imperfectly competitive, social dumping by firm S benefits firm N. However, since social welfare in Country N is lower when firm S practices social dumping, the government of Country N may have an incentive to implement policy to improve social welfare in its own country. In this section, I consider three policy instruments. I first consider the usual tariffs on imports. Although the case of ad valorem tariffs is examined, qualitative results do not alter when specific tariffs are considered. Second, I consider so-called social clause tariffs. These tariffs are imposed as a fraction of the difference between the competitive and the actual level of wage in Country S. Finally, I consider labour standards.

In this section, I only consider the case of Cournot competition in the output market with monopsonistic labour market in Country S.

4.1 Ad valorem tariffs

I first consider ad valorem tariffs on imports. Let \( t \) be an ad valorem tariff imposed by the government of Country N on imports from abroad.

When a tariff is imposed, firm S’s profit is given by

\[
\pi^S(y^S, y^N; t) = \left((1 - t)p(y) - w^S(y^S)\right) y^S.
\]

(25)

From the FOC, firm S’s reaction function in this case is given by

\[
y^S(y^N) = \frac{(1 - t)(a - y^N) - \gamma}{2(1 - t + \beta)}.
\]

(26)

Firm N’s reaction function remains the same, which is given by (14). Then, assuming interior solutions, outputs and profits in NE are respectively given by

\[
y_t^N = \frac{(a - \gamma)(1 + 2\beta) - t(a - 2c)}{2\beta^2 + 2(3 - t)\beta + 3(1 - t)}, \quad y_t^S = \frac{(a - \gamma)(1 + \beta) - t(a + a\beta + \gamma)}{2\beta^2 + 2(3 - t)\beta + 3(1 - t)},
\]

(27)

\[
\pi_t^N = (y_t^N)^2, \quad \pi_t^S = (1 - t + \beta) (y_t^S)^2,
\]

(28)

Note that the social clause tariff considered in this paper is slightly different from that in Cordella and Grilo (2001). They define the social clause tariff as the fraction of the difference between the domestic and the foreign wages, assuming constant wages. In my case, since firms do not relocate, their definition of social clause tariff is not appropriate.
where the subscript $t$ indicates equilibrium variables in the case in which an ad varolem tariff is imposed. Consumer’s surplus and tariff revenue in Country N, $\text{CS}_N^t$ and $\text{TR}_N^t$, in this case are respectively given by

$$
\text{CS}_N^t = \frac{\{(a - \gamma)(2 + 3\beta) - t(2a + 2a\beta - \gamma)\}^2}{2(2\beta^2 + 2(3 - t)\beta + 3(1 - t))^2},
$$

$$
\text{TR}_N^t = \frac{t\{2a\beta^2 + \gamma + (a + \gamma)(1 + 3\beta) - t(a + a\beta + \gamma)\}\{(a - \gamma)(1 + \beta) - t(a + a\beta + \gamma)\}}{(2\beta^2 + 2(3 - t)\beta + 3(1 - t))^2}.
$$

Social welfare in Country N in this case is given by $W_N^t = \pi_N^t + \text{CS}_N^t + \text{TR}_N^t$.

The effects of a small ad valorem tariff are shown in the following proposition:

**Proposition 3** A small ad valorem tariff on imports of goods by Country N has the usual rent-shifting effect. That is, it raises firm N’s profits and reduces firm S’s profits. It also improves Country N’s social welfare.

**Proof.** Differentiate $\pi_N^t$ with respect to $t$ and evaluate the derivative at $t = 0$ to yield

$$
\frac{\partial \pi_N^t}{\partial t} \bigg|_{t=0} = \frac{2(a - \gamma)(1 + 2\beta)(2a\beta^2 + 2(a + 2\gamma)\beta + 3\gamma)}{(2\beta^2 + 6\beta + 3)^2} > 0.
$$

Similarly, differentiate $\pi_S^t$ with respect to $t$ and evaluate the derivative at $t = 0$ to obtain

$$
\frac{\partial \pi_S^t}{\partial t} \bigg|_{t=0} = -\frac{(a - \gamma)(1 + \beta)^2(4a\beta^3 + 2(7a + 3\gamma)\beta^2 + 2(7a + 8\gamma)\beta + 3(a + 3\gamma))}{(2\beta^2 + 6\beta + 3)^2} < 0.
$$

Moreover, differentiate $W_N^t$ with respect to $t$ and evaluate the derivative at $t = 0$ to yield

$$
\frac{\partial W_N^t}{\partial t} \bigg|_{t=0} = \frac{(a - \gamma)\Gamma}{(2\beta^2 + 6\beta + 3)^2} > 0,
$$

where $\Gamma \equiv 4a\beta^5 + 2(8a + 3\gamma)\beta^4 + 4(9a + 4\gamma)\beta^3 + 3(13a + 10\gamma)\beta^2 + 6(3a + 4\gamma)\beta + 3(a + 2\gamma) > 0$.

Proposition 3 shows that a small ad valorem tariff in this context works in the same way as in the standard models of strategic trade policy.\(^7\) It has a strategic effect of rent-shifting and also can be used as a tool to improve domestic welfare.

\(^7\)With respect to the effects of tariffs in the standard models of strategic trade policy, see, for example, Helpman and Krugman (1989, Chapter 6).
4.2 Social clause tariffs

I now turn to the case in which the government of Country N imposes a social clause tariff on imports from Country S. When a social clause tariff is imposed, firm S’s effective wage is given by

\[ w^S_\tau = w^S + \tau(w^{S*} - w^S) \]
\[ = (1 - \tau)w^S + \tau w^{S*}, \tag{29} \]

where \( \tau \) is a social clause tariff rate and \( w^{S*} \) is the wage rate when the labour market in Country S is competitive, given the imperfectly competitive output market. \( w^{S*} \) is given by

\[ w^{S*} = \gamma + \beta \tilde{y}_c^S \]
\[ = \frac{a\beta + 3\gamma}{3 + \beta}, \]

where \( \tilde{y}_c^S \) is given by (21).

When a social clause tariff is imposed, firm S’s profit is given by \( \pi_S^\tau = (p - w^S_\tau)y^S \). From the FOC, firm S’s reaction function in this case is given by

\[ y^S(y^N) = \frac{(3 + \beta)(a - \gamma - y^N) - \tau(a - \gamma)\beta}{2(3 + \beta)(1 + (1 - \tau)\beta)}. \tag{30} \]

Then, assuming interior solutions, outputs and profits in NE are respectively given by

\[ y^N_\tau = \frac{(a - \gamma)(2(1 - \tau)\beta^2 + (7 - 5\tau)\beta + 3)}{(3 + \beta)(2(1 - \tau)\beta^2 + 2(3 - 2\tau)\beta + 3)}, \tag{31} \]
\[ y^S_\tau = \frac{(a - \gamma)((1 - \tau)\beta^2 + 2(2 - \tau)\beta + 3)}{(3 + \beta)(2(1 - \tau)\beta^2 + 2(3 - 2\tau)\beta + 3)}, \tag{32} \]
\[ \pi^N_\tau = (y^N_\tau)^2, \tag{33} \]
\[ \pi^S_\tau = (1 + (1 - \tau)\beta)\left(y^S_\tau\right)^2, \tag{34} \]

where the subscript \( \tau \) indicates equilibrium variables in the case in which a social clause tariff is imposed.

Consumer’s surplus, tariff revenue, and social welfare in Country N in this case are
respectively given by

\[ CS_T^N = \frac{(a - \gamma)^2(3(1 - \tau)\beta^2 + (11 - 7\tau)\beta + 6)^2}{2(3 + \beta)^2(2(1 - \tau)\beta^2 + 2(3 - 2\tau)\beta + 3)^2}, \]

\[ TR_T^N = \frac{(a - \gamma)(2 + \beta)\beta^2\tau(1 - \tau)}{(3 + \beta)(2(1 - \tau)\beta^2 + 2(3 - 2\tau)\beta + 3)}, \]

\[ W_T^N = \frac{(a - \gamma)\Delta}{2(3 + \beta)^2(2(1 - \tau)\beta^2 + 2(3 - 2\tau)\beta + 3)^2}, \]

where \( \Delta \equiv (a - \gamma)(3 + \beta)^2(17\beta^2 + 20\beta + 6) + 4\beta^3(3 + \beta)(2 + \beta)^2 - \beta^2(8\beta^4 + 60\beta^3 - (17a - 17\gamma - 154)\beta^2 - (82a - 82\gamma - 150)\beta - 99a + 99\gamma + 36)\tau^2 + 2(3 + \beta)\beta(2\beta^4 + 10\beta^3 - (17a - 17\gamma - 15)\beta^2 - (51a - 51\gamma - 6)\beta - 24(a - \gamma)\tau). \]

Using (31) to (37), I obtain the following proposition concerning the effects of a small social clause tariff:

**Proposition 4** A small social clause tariff by Country N reduces firm N’s profits, whereas it improves Country N’s social welfare. Moreover, it increases firm S’s profits if \( \beta \) is low and reduces them if \( \beta \) is high. It always raises employment by firm S.

**Proof.** Differentiate \( \pi_T^N \) with respect to \( \tau \) and evaluate the derivative at \( \tau = 0 \) to yield

\[ \frac{\partial \pi_T^N}{\partial \tau} \bigg|_{\tau=0} = \frac{-2(a - \gamma)^2\beta(1 + 2\beta)(3 + 2\beta)}{(3 + \beta)(2\beta^2 + 6\beta + 3)^3} < 0. \]

Differentiate \( W_T^N \) with respect to \( \tau \) and evaluate the derivative at \( \tau = 0 \) to obtain

\[ \frac{\partial W_T^N}{\partial \tau} \bigg|_{\tau=0} = \frac{(a - \gamma)\beta\Lambda}{(3 + \beta)(2\beta^2 + 6\beta + 3)^3} > 0, \]

where \( \Lambda \equiv 4\beta^3 + 32\beta^2 + 96\beta^3 + 2(3a - 3\gamma + 61)\beta^2 + (11a - 11\gamma + 81)\beta + 3(a - \gamma + 6) > 0. \)

Moreover, differentiate \( \pi_T^S \) with respect to \( \tau \) and evaluate the derivative at \( \tau = 0 \) to obtain

\[ \frac{\partial \pi_T^S}{\partial \tau} \bigg|_{\tau=0} = \frac{-(a - \gamma)^2\beta(1 + 2\beta)(2\beta^2 + 8\beta^2 + 7\beta - 3)}{(3 + \beta)(2\beta^2 + 6\beta + 3)^3}. \]

It is shown that \( \frac{\partial \pi_T^S}{\partial \tau} \bigg|_{\tau=0} \geq (\text{resp.} <) 0 \) if \( \beta \leq (\text{resp.} >) \hat{\beta} \), where \( \hat{\beta} \approx 0.3101 \). Finally, differentiate \( y_T^S \) with respect to \( \tau \) and evaluate the derivative at \( \tau = 0 \) to yield

\[ \frac{\partial y_T^S}{\partial \tau} \bigg|_{\tau=0} = \frac{(a - \gamma)(3 + 2\beta)}{(3 + \beta)(2\beta^2 + 6\beta + 3)^2} > 0. \]
This proposition implies that, unlike the case of ad valorem tariffs, a small social clause tariff does confer a strategic advantage on firm S by reducing its market power in the labour market. In fact, a small social clause tariff allows firm S to commit to a higher employment level, which in turn means a higher output level, for a given level of firm N’s output. Because of this, the tariff hurts firm N. Nevertheless, it improves social welfare in Country N because it increases consumer’s surplus and also generates tariff revenue. The effect of a small social clause on consumer’s surplus can be seen by differentiating (35) with respect to \( \tau \) and evaluating the derivative at \( \tau = 0 \):

\[
\left. \frac{\partial CS_N^\tau}{\partial \tau} \right|_{\tau=0} = \frac{(a - \gamma)^2 \beta (1 + \beta)(2 + 3\beta)(3 + 2\beta)}{(3 + \beta)(2\beta^2 + 6\beta + 3)^2} > 0.
\]

Despite the strategic advantage conferred by the tariff, firm S does not always benefit from a small social clause tariff. This is because its mark-up is reduced by the tariff, which can be confirmed by differentiating \( \lambda_\tau \equiv p - w_S^\tau \) with respect to \( \tau \) and evaluating the derivative at \( \tau = 0 \):

\[
\left. \frac{\partial \lambda_\tau}{\partial \tau} \right|_{\tau=0} = -\frac{(a - \gamma)\beta (1 + \beta)(2\beta^3 + 10\beta^2 + 14\beta + 3)}{(3 + \beta)(2\beta^2 + 6\beta + 3)^2} < 0.
\]

Proposition 4 also implies that a small social clause tariff may yield a Pareto improvement in the sense that both countries are better off. This is possible because a small social clause tariff improves the economic efficiency of the global economy by mitigating the monopsony distortion in the labour market in Country S.

Since social clause tariffs partly aim to correct the distortion in the labour market abroad, it may be argued that tariff revenues should be rebated to the country of origin. In that case, tariff revenue is not counted as part of Country N’s social welfare. However, a small social clause tariff still improves Country N’s social welfare, which is confirmed by differentiating \( \pi_N^\tau + CS_N^\tau \) with respect to \( \tau \) and evaluating the derivative at \( \tau = 0 \):

\[
\left. \frac{\partial}{\partial \tau} \left( \pi_N^\tau + CS_N^\tau \right) \right|_{\tau=0} = \frac{(a - \gamma)^2 \beta^2 (1 + 3\beta)(3 + 2\beta)}{(3 + \beta)(2\beta^2 + 6\beta + 3)^2} > 0.
\]

4.3 Labour standards

In this subsection, I consider labour standards as a policy instrument. Suppose that certain labour standards are imposed in international trade agreements. Or, alterna-
tively, suppose that Country N unilaterally requires non-discriminatory certain labour standards to imports of goods from abroad. In either story, the effect of imposing labour standards is to increase wage paid by firm S. 8

Let $\bar{w}$ be the wage rate when firms comply with the labour standards. When the labour standards are binding for firm S, $\bar{w} \geq w^S_c$, where $w^S_c \equiv \gamma + \beta y^S_c$ is the wage rate paid by firm S when it practices social dumping under Cournot competition in the output market. Note that $y^S_c$ is given by (16).

When the labour standards are imposed, firm S’s profit maximization problem is expressed as

$$\max_{y^S} \pi^S = (p(y) - w^S(y^S))y^S \text{ s.t. } w^S(y^S) \geq \bar{w}.$$  

From the FOC, firm S’s reaction function in this case is given by

$$y^S(y^N) = \begin{cases} \frac{a - \gamma - y^N}{2(1 + \beta)}, & \text{if } y^N \leq \frac{a\beta + (2 + \beta)\gamma - 2(1 + \beta)\bar{w}}{\beta}, \\ \bar{w} - \gamma, & \text{if } y^N > \frac{a\beta + (2 + \beta)\gamma - 2(1 + \beta)\bar{w}}{\beta}. \end{cases} \tag{38}$$

I assume that firm S perfectly complies with the labour standards and does not consider the possibility of hidden violations of the standards.

Assuming that the labour standards are not binding for firm N, the reaction function of firm N is not affected and hence is given by (14). When $\bar{w} \geq w^c$ holds, outputs and profits in NE, where both firms stay in the market, are respectively given by

$$y^N_s = \frac{a\beta + (1 - \beta)\gamma - \bar{w}}{\beta(2 + \beta)}, \quad y^S_s = \bar{w} - \gamma, \tag{39}$$

$$\pi^N_s = (y^N_s)^2, \quad \pi^S_s = \frac{(\bar{w} - \gamma)((a - \bar{w})\beta^2 + (a + 2\gamma - 3\bar{w})\beta + \gamma - \bar{w})}{\beta^2(2 + \beta)}, \tag{40}$$

where the subscript $s$ indicates equilibrium variables in the case under labour standards. Consumer’s surplus and social welfare in Country N in this case are given by

$$CS^N_s = \frac{(\beta(a - 2\gamma + \bar{w}) + \bar{w} - \gamma)^2}{2\beta^2(2 + \beta)^2}, \tag{41}$$

$$W^N_s = \frac{\Psi}{2\beta^2(2 + \beta)^2}. \tag{42}$$

8Corden and Vousden (2001) take a similar approach. They argue that the effects of raising minimum wages, improving labour conditions, and allowing the operation of labour unions can be captured by an increase in the real wage.
respectively, where $\Psi \equiv (\beta^2 + 2\beta + 3)\bar{w}^2 + 2((a - 2\gamma)\beta^2 - (a + \gamma)\beta - 3\gamma)\bar{w} + \beta^2(3a^2 - 8a\gamma + 6c^2) + 2a\gamma\beta + 3\gamma^2$.

Now, the following proposition shows the effects of the labour standards that marginally increases $w^S$ from $w^S_c$.

**Proposition 5** Requiring labour standards to firm S, which marginally increases $w^S$ from $w^S_c$, is beneficial to firm S and harmful to firm N. It, however, improves Country N’s social welfare.

**Proof.** Differentiate $\pi^S_s$ with respect to $\bar{w}$ and evaluate the derivative at $\bar{w} = w^S_c$ to obtain

$$\left. \frac{\partial \pi^S_s}{\partial \bar{w}} \right|_{\bar{w}=w^S_c} = \frac{(a - \gamma)(1 + \beta)}{\beta(2 + \beta)(2\beta^2 + 6\beta + 3)} > 0.$$  

Similarly, differentiate $\pi^N_s$ with respect to $\bar{w}$ and evaluate the derivative at $\bar{w} = w^S_c$ to obtain

$$\left. \frac{\partial \pi^N_s}{\partial \bar{w}} \right|_{\bar{w}=w^S_c} = -\frac{2(a - \gamma)(1 + 2\beta)}{\beta(2 + \beta)(2\beta^2 + 6\beta + 3)} < 0.$$  

Moreover, differentiate $W^N_s$ with respect to $\bar{w}$ and evaluate the derivative at $\bar{w} = w^S_c$ to obtain

$$\left. \frac{\partial W^N_s}{\partial \bar{w}} \right|_{\bar{w}=w^S_c} = \frac{(a - \gamma)(1 + 3\beta)}{(2 + \beta)(2\beta^2 + 6\beta + 3)} > 0.$$  

■

Proposition 5 implies that, similarly to the case of social clause tariffs, the imposition of labour standards confers a strategic advantage on firm S. This is because it allows firm S to commit to a higher employment level than the level in the monopsony case. Firm N suffers from labour standards, because it responds to an increase in $y^N$ by reducing $y^N$. Figure 2 depicts the case of labour standards. The thin line of $R^S$ indicates firm S’s reaction curve without labour standards. The thick line that bends at $E_c$ indicates firm S’s reaction curve with labour standards of $\bar{w} = w^S_c$, which is denoted by $R^S_s$. The Nash equilibrium point remains at $E_c$. As labour standards are raised from the level corresponding to $\bar{w} = w^S_c$, the flat part of $R^S_s$ shifts up, as is drawn by the thick dotted
line in the figure. As a result, the Nash equilibrium point moves to $E'_s$, yielding a lower $y^N$ and a higher $y^S$.

Unlike the case of social clause tariffs, however, firm S benefits from labour standards that marginally increases $w^S$ from $w^S_c$, regardless of the value of $\beta$. The reason is that in the case of labour standards firm S can commit to a certain level of employment without worrying about the response in the wage rate. In the case of social clause tariffs, by contrast, the magnitude of the response in the wage rate for changing the employment level still matters. As a result, labour standards have a stronger commitment effect and hence are beneficial to firm S, regardless of $\beta$.

Similarly to the case of social clause tariffs, Country N is better off by requiring labour standards, despite the loss in firm N’s profits. This is because the gain in consumer’s surplus dominates the loss in firm N’s profits.

5 Conclusions

To be concluded.
References


Keio Economic Studies 35: 45-53.


Figure 1: Reaction curves with and without firm S’s oligopsonistic power
Figure 2: The effects of labour standards