

Direct Democracy and Labour Standards of a Small Open Economy

Uk Hwang *

This paper investigates the controversial relationship between labour standards and globalisation within a 2×2 Heckscher-Ohlin-Mayer political-economy trade model. We adopt the median voter model to characterise the labour standards chosen under majority voting. We found that labour standards are more lax in economies with large income inequalities. More importantly, we also show that globalisation may or may not promote stricter labour standards depending on the factor abundance of each country. Thus, a race to the bottom is not an necessary implication of globalisation.

Keywords: Median voter theorem, Endogenous labour standard, Globalisation

JEL Classification: F16, J80, D72

I. Introduction

The interaction between trade and the enforcement of labour standards has caused a controversy that is often linked to the process of rapid globalisation. The conventional view is that intense international competition escalates the pressures on cost cutting, including labour costs, for the achievement of more flexibility in the production processes. These pressures may lead to demands for laxer labour standards. For instance, the increasing mobility of capital, a result of globalisation, puts downwards pressure on labour standards and alter aspects of industrial relations, in which the bargaining power of employers relative to government and

* Research Fellow, Korea Environment Institute, 613-2, Bulkwang-dong, Eunpyung-gu, Seoul 122-706, Korea, (Tel) +82-2-380-7685, (E-mail) uh202@kei.re.kr.

workers is increased. The reason for this is that governments often attach greater importance to attracting foreign direct investment, and therefore may prefer lax labour standards. Thus, one could argue that, in an age of globalisation, labour standards are being weakened due to the competition between countries, and this could provoke a so called '*Race to the Bottom*' in labour standards for the global community. A detailed inspection of the relation between labour standards and globalisation will advance our understanding of these complex issues.

In this study, we aim to contribute to the theoretical literature on this fundamental issue. Specifically, the main objective is to design a model that can directly show the interaction between labour standards and globalisation. We begin with the two sector-two factor neoclassical trade model to determine the role of labour standards in production and the contentious issues linking international trade with labour standards.

This paper will study labour standards which regulate the allocation of labour input in production, in the sense that they may prevent for example *child labour*, *forced prison labour*, and *exploitative working hours*. Labour standards mostly stem from a concern for basic human rights and the quality of working environments. Therefore, labour standards in the present context may be interpreted as regulations that are targeted at the exclusion of those labour practices that are undesirable due to humanitarian concerns. This implies that the standards embrace public good attributes in themselves. Thus, once implemented, the labour standards, in the explicit form of laws or regulations governing the labour market, can share the following properties of collective consumption: *Non-excludability* and *non-rivalry*.¹ A political or social consensus may be needed for the legislation of the labour standards in a society. Hence, a political procedure, such as majority voting, is one possible mechanism for making decisions on the provision of the labour standards.

However, from an economic viewpoint, labour standards may be classified as being distortionary in that they directly restrict a firm's demand for labour inputs, raising the cost of production, and

¹ In contrast, the private good type standards include safety and health rights to improve hazardous conditions in the workplace and are more closely related with the issue of worker's productivity.

shifting back its labour demand curve. Thus, in a small open economy, the benefits of the stringent labour standards accrue only at the cost of lower wages and reduced production levels.² A worker, as a voter, takes these relative costs and benefits into consideration when the labour standard is voted on.

The major questions to be addressed in this paper can be summarised as follows: 1) *How is the legislation of labour standards related to the economic condition of a country?*; 2) *what are the effects of imposing labour standards on international trade?*; 3) *how does globalisation affect the choice of the labour standard?*; and 4) *can the findings for questions 1), 2), and 3) be observed empirically or not?*

There have only been a few theoretical studies on these questions - for instance, Brown, Deardorff, and Stern (1996). Based on the standard 2×2 Heckscher-Ohlin (**H-O**) model, they analysed the effects of labour standards on economic welfare. They showed that, depending on the type of model assumed, the resulting implications of imposing a standard would differ. The theoretical connection between labour standards and trade liberalisation has been examined by Casella (1996). On the assumption that it is income differences that drive differences in labour standards, they consider if openness to trade makes global convergence in labour standards possible in two different trade models. First, in the **H-O** model, in which skilled and unskilled labour are used as production factors, perfect convergence occurs only if the two countries have identical factor intensities. Second, in the Ricardian model in which trade is due to technological differences, it is shown that convergence is possible only when the small economy has a less efficient technology than its large trade partner.

Our study is different from these studies in that our model assumes: 1) Trade between small open economies with given international prices; 2) the labour standards under consideration are either labour market regulations or industrial law, while the standards in previous studies were resource using when implemented; and 3) a political process for the provision of the labour standards in that we narrow down our attention to the public good nature of the labour standards, which are therefore

² Higher prices could be an additional cost borne by the consumer of a large open economy.

subject to the socioeconomic environment of a society.

The basic framework for the characterisation of the equilibrium labour standard in this study owes much to the work of Mayer (1984). He uses the median voter theorem to explain the tariff decision mechanism in a conventional **2×2 H-O** model. The literature of endogenous labour standards by use of the median voter theorem can be found in the following papers and they all discuss the effects of globalisation on the labour policy.

The work by Gabszewicz and Ypersele (1996) is close to our analysis in that they consider the political decision process of minimum wage policy (a form of social protection) under autarky using the median voter model. With a simple one sector trade model and the assumption of homogeneous countries (in terms of factor endowment and technology), they showed that the minimum wage policy deteriorates under international capital mobility. The intuition behind this is that the minimum wage policy affects the changes in the rental rate and so policy makers compete to attract the foreign capital by unilaterally lowering the minimum wage. Following Gabszewicz and Ypersele (1996), Boccard, Ypersele, and Wunsch (2003) recently presented an elaborated result on the minimum wage within a two sector framework with skilled and unskilled labour inputs. They formalised the equilibrium minimum wage setting as a non-cooperative game between the voters of the relevant countries and showed that trade will put a downward pressure on the level of the minimum wage due to international spillover in the minimum wage setting.³ Both papers predict the downward convergence of the specific labour standard (minimum wage) through capital mobility (Gabszewicz and Ypersele 1996) and trade liberalisation (Boccard, Ypersele, and Wunsch 2003). Dutt and Mitra (2002) provide empirical evidence which is consistent with the predictions made by Mayer (1984) concerning the median voter model.

Contrary to above models, our paper examines the relationship between labour standards of a public good nature and technology driven globalisation. We use the decline in transport costs, due to advances in modern transport technology, as an indicator of

³In addition, Hefeker and Wunner (2002) analyse the relation between the demand for labour standards and globalisation within the framework of interest group politics.

globalisation (*the death of distance*).⁴

More specifically, we adopt Samuelson's (1954) *iceberg* transport cost in order to explain the effects of globalisation on the equilibrium labour standards. We find the followings: 1) The labour standards are positively related to the income equality of a society in the distribution of capital endowments; 2) globalisation is modelled as a decline in transport costs. It is shown that the labour standards could diverge according to the factor abundance of a country; and 3) free international capital mobility either leads countries with a lower rental rate to actively seek for the higher rental rates of the other countries or leads countries with a higher rental rate to attract foreign direct investments. These features consequently put diverged pressure upon the median voter's decision on the labour standard of each country, which is the similar consequence of the technology driven globalisation case. Thus, the changes in the labour standard implied both by the decrease in transport costs and by free international capital movement predict the existence of the different equilibrium labour standards in the world.

The remainder of this paper is structured as follows. Section II discusses the distortionary impacts of the labour standard on production through simple comparative statics. Section III presents a median voter model that allows us to determine the labour standard endogenously. In section IV, the relationship between the labour standard and globalisation is examined through 1) a reduction in the (*iceberg*) type transport costs and 2) through changes in international capital mobility. Section V concludes the paper with suggestions for further research.

II. The Impact of Labour Standards on Production

Can labour standards cause *distortions* of production? We focus on labour standards that restrict the firms' labour demand, but at the same time deliver higher utility to workers.⁵ Examples include

⁴ A recent dramatic reduction in communication costs along with a price reduction in relevant equipment could be another representative indicator of globalisation.

⁵ According to the standard analysis, the model assumes homogeneous labour, implying each worker has identical productivity.

banning exploitative labour such as child or prison labour and restrictions on the length of the working day. This study interprets the imposition of labour standards as technical de-progress in a standard two sector framework.

We consider a 2×2 H-O model of a small open economy.⁶ The country produces two goods Q_1 and Q_2 using a constant returns technology and employing labour (L) and capital (K). Good 1 is capital intensive while good 2 is labour intensive. We consider both the case where the country is endowed with relatively large quantities of labour (the case of a labour abundant country) and the case where the country is endowed with relative large quantities of capital (the case of a capital abundant country).

A. Sector Specific Impacts of the Labour Standard $\theta_i = \theta_i(s)$

The labour standards are denoted as $s \in [0, \bar{s}]$.⁷ The regulatory impact on the production of the capital intensive good (good 1) is generally denoted $\theta_1(s)$ and the impact on the production of the labour intensive good (good 2) is $\theta_2(s)$. The labour standards reduce the effective labour input such that if the firms in sector i demand L_i then the effective labour input is $\theta_i L_i$. We assume that the regulatory impact of the standard is given by

$$\begin{aligned} \theta_i(s) &\rightarrow 1 \quad \text{as } s \rightarrow 0 \\ \theta_i(s) &\rightarrow 0 \quad \text{as } s \rightarrow \bar{s} \end{aligned}$$

Moreover, we assume that $d\theta_i(s)/ds \leq 0$, $d^2\theta_i(s)/ds^2 \leq 0$ and $0 < \theta_i(s) < 1$ for $i=1, 2$ and $\forall s \in [0, \bar{s}]$.⁸ Finally, we also assume that the impact of the labour standard is larger in sector 2 (the labour intensive

⁶ It is initially assumed that world trade is opened according to differences in the factor endowments between countries as the *Heckscher-Ohlin* (H-O) theorem predicts. Later the case, in which one of the crucial assumptions that the factors are not internationally mobile is relaxed, will be discussed for further implication of the labour standards.

⁷ We may arbitrarily define a maximum level of the labour standard as $\bar{s} (\ll \infty)$.

⁸ $0 < \theta_i(s) < 1$ suggests that the standards will be imposed to keep the production level strictly positive. This implicitly indicates that the production functions require strictly positive input levels so as to keep strictly positive production levels. Thus the conditions we assumed for the production functions in the model are $Q_1 = F(0, K_1) = 0$ and $Q_2 = G(0, K_2) = 0$ when an extreme case of labour standards is imposed.

sector) than in the capital intensive sector 1, i.e.,

$$\begin{aligned}\theta_2(s) &\leq \theta_1(s) \\ |\theta'_2| &\geq |\theta'_1|\end{aligned}\tag{1}$$

where $\theta'_i = d\theta_i/ds$. This assumption says that implementing the standards is more costly for the labour intensive industry than for the capital intensive industry.

B. The Impact on Production and Factor Rewards

Each industry employs a standard linear homogeneous production function with constant returns to scale using labour and capital as inputs. The production functions can be expressed in intensive form as function of the factor intensity ($k_i = K_i/L_i$, $i = 1, 2$), where $k_1 > k_2$.

$$\begin{aligned}Q_1 &= F(K_1, \theta_1 L_1) = \theta_1 L_1 f(\theta_1^{-1} k_1) \\ Q_2 &= G(K_2, \theta_2 L_2) = \theta_2 L_2 g(\theta_2^{-1} k_1)\end{aligned}\tag{2}$$

Hence, the industry producing good 2 uses a labour intensive technology while the industry producing good 1 uses a capital intensive technology. Under perfect competition, a factor's reward is the value of its marginal product, and it is equal across sectors due to the assumption that the production factors are mobile between industries within the country.

We now turn to how the level of the labour standard is determined by political competition. Due to its impact on factor demands, imposing a stricter labour standard may cause social conflict because individuals with a larger capital endowment benefit from the increasing rental rate, while those who derive most of their income from labour lose out because of the decrease in the wage. This trade off is resolved in the political arena as discussed in the next section.

III. Endogenous Labour Standards

We consider a 2×2 Heckscher-Ohlin-Samuelson general equilibrium trade model of a small open economy. The economy is endowed with given quantities of intersectorally mobile capital and labour.

For a clear presentation of the mechanism for endogenous labour standards, explicit forms of technology and preference are adopted in this section.⁹

The labour standard is regarded as a *public good*, such as for example common rules or regulations through which a society achieves a public goal (see Casella (1996)), but at the same time the standard increases the cost of production (as in Hefeker and Wunner (2002)). Before we look at the determination of the labour standard in political equilibrium, we briefly consider producer and consumer choices in the economy.

A. The Firm's Cost Minimisation Problem

Taking factor prices as given, firms employ labour and capital so as to maximise profits. The regulatory impact of the labour standard is assumed to be common to both sectors with

$$\theta(s) = (1 - s)^\gamma$$

where $s \in (0, 1)$ is the standard.¹⁰ The term $(1 - s)^\gamma$, which regulates the labour input, reduces the effective amount of labour $L_i(1 - s)^\gamma$ in each sector below the potential L_i .

We assume that the production technology is of the *Cobb-Douglas* type and write

$$\begin{aligned} Q_1 &= \Theta_1 K_1^{1-\alpha} \{L_1(1-s)^\gamma\}^\alpha \\ Q_2 &= \Theta_2 K_2^{1-\beta} \{L_2(1-s)^\gamma\}^\beta \end{aligned} \quad (3)$$

⁹As previously discussed, the labour standards are the types which generate some distortionary effect on the production process by regulating labour demand on one side, but increase the utility of workers by protecting and improving either working conditions or the employee's rights in the working place on the other. Thus, the national labour standards in this model could be classified as a labour market regulation or a labour related mandated industrial law.

¹⁰The regulatory impact is assumed to be a nonlinear function of the labour standards so that the wage rate does not quickly decline when higher labour standards are imposed. The common regulatory impact ($\theta_1 = \theta_2 = \theta_3$) to each sector is considered for a clear presentation of the model. As will be shown, only the wage rate is the function of the labour standard when the common regulatory impact is applied specially in the Cobb-Douglas type production functions. This distinctively makes the indirect utility function of an individual (voter), who lives on the factor income, globally concave (single-peaked).

where α and β are labour income share and $\alpha < \beta$ and $0 < \alpha, \beta, \gamma < 1$ are assumed. Furthermore, $\Theta_1 = \alpha^{-\alpha}(1-\alpha)^{-(1-\alpha)}$ and $\Theta_2 = \beta^{-\beta}(1-\beta)^{-(1-\beta)}$ are assumed.

Notice that it is more costly in terms of the foregone production to impose the labour standards on a labour intensive industry.

Since firms are assumed to operate under perfect competition, they earn zero profits in equilibrium and factor demands are given by standard marginal productivity conditions. Then, the firm's profit maximisation problem says

$$\max \pi_i = p_i Q_i - c_i(w, r, s) Q_i$$

where $i=1, 2$ and $c_i(w, r, s)$ is the unit cost function which determines the cost of producing one unit of i good at given factor prices and for a given labour standard.

At equilibrium, the price of each good is equal to the unit cost such that

$$\begin{aligned} 1 &= c_1(w, r, s) = r^{1-\alpha} w^\alpha (1-s)^{-\alpha\gamma} \\ p &= c_2(w, r, s) = r^{1-\beta} w^\beta (1-s)^{-\beta\gamma} \end{aligned} \tag{4}$$

Here, the capital intensive good 1 is assumed to be the numeraire. So the price of good 2 ($p = p_2/p_1$) is expressed in terms of the price of good 1. Since we focus on a small open economy, p is given at the world markets for goods. *Shepherd's Lemma* implies that the units of capital and labour required to produce one unit of good i are $\partial c_i(w, r, s)/\partial r (=a_{Ki})$ and $\partial c_i(w, r, s)/\partial w (=a_{Li})$, respectively. Thus, the conditions for full factor employment can be expressed as

$$\begin{aligned} \frac{\partial c_1(w, r, s)}{\partial r} Q_1 + \frac{\partial c_2(w, r, s)}{\partial r} Q_2 &= K \\ \frac{\partial c_1(w, r, s)}{\partial w} Q_1 + \frac{\partial c_2(w, r, s)}{\partial w} Q_2 &= L \end{aligned} \tag{5}$$

where K and L are the endowments of capital and labour, respectively.

From the cost functions in *Eq.(4)*, the factor prices are determined as follows¹¹

$$r=p^{\frac{\alpha}{\alpha-\beta}} \quad (6)$$

$$w(s)=p^{\frac{\alpha-1}{\alpha-\beta}}(1-s)^{\gamma}$$

We note that the higher the labour standard is, the lower the wage rate ($\partial w/\partial s < 0$) is. On the other hand, the return to capital is unaffected by the labour standard. This is because the impact of the standard is the same in each sector and enters as technological de-progress in the *Cobb-Douglas* production function. Note that a stricter labour standard increases the relative price of capital (r/w).

B. Preference

As for the direct utility function, the separable log linear form for an individual j is assumed:

$$\begin{aligned} U^j(Q_1^j, Q_2^j, s) &= \ln C(Q_1^j)^\delta(Q_2^j)^{1-\delta} + s^g \\ &= \ln C + \delta \ln Q_1^j + (1-\delta) \ln Q_2^j + s^g \end{aligned} \quad (7)$$

where C is a constant which is equal to $(\delta^\delta(1-\delta)^{1-\delta})^{-1}$, and the parameters δ and g are between 0 and 1 ($0 < \delta, g < 1$). Q_i^j denotes the demand for good i by individual j .

As discussed above, the labour standard is like a public good in that no individual is excluded from the benefits it generates. Notice that we assume that the standard enters additively in the utility function and that there is diminishing returns to the “strictness” of the standard. The individual’s factor income is equal to

$$y_j(s) = w(s)L_j + rK_j = w(s) + rK_j \quad (8)$$

Each individual is assumed to be endowed with one unit ($L_j = 1$) of labour, whereas the capital endowment is assumed to be

¹¹ With general production function forms specifying the different regulatory impacts of the labour standard ($\theta_1 > \theta_2$) upon each sector, it can be shown that the rental rate is an increasing function of the labour standard such that $dr(s)/ds > 0$. However, with the specific *labour augmenting* form ($\theta = (1-s)^\gamma$), which is commonly applied to the production function in (3), we are able to pay sole attention to the regulated labour market for simplicity of our analysis.

unequally distributed among the individuals in the economy. Thus, the heterogeneity among individuals derives from an unequal distribution of the capital endowment. As shown in Alesina and Rodrik (1994), each individual can be indexed by her relative capital endowment σ_j , which is defined as

$$\sigma_j = (K_j/K)(L_j/L), \quad \sigma_j \in [0, \infty)$$

This implies that an individual with a high σ_j is capital-rich, while one with a low σ_j is capital-poor. Hence, the individual's factor income can be written as

$$y_j = w + r\sigma_j k, \quad k = K/L \quad (9)$$

where k is the average capital endowment *per capita* in the economy.

Solving the consumer's optimisation problem for given prices and labour standard, we can derive the indirect utility function:

$$V_j(p, y_j, s) = (\delta - 1)\ln p + \ln y_j + s^g \quad (10)$$

The indirect utility function represents the individual's policy preference and is referred to as "the policy preference function of individual j ."

C. Trade Patterns

Next, we consider the relationship between international trade and the labour standards. In the model, two possible motives for trade are possible: 1) Capital/labour endowments may differ across countries as the standard H-O model predicts; and 2) the level of the labour standard may differ across countries. By describing the relative demand and supply of good 1, we will illustrate the effects of differences in factor endowments and the impacts of the labour standard on the pattern of trade when an economy moves from autarky to free trade.

From Eq.(7), the relative demand Q_1/Q_2 of the economy is

$$\frac{Q_1}{Q_2} \Big|_{\text{Demand}} = \frac{\delta}{1-\delta} p$$

trade pattern. For simplicity, suppose that the world consists of many small open economies and that the factor endowment ratio of each country is the same. Then, 1) there would be no trade between the countries when each country imposes an identical level of the labour standard, 2) a country exports the capital intensive goods when it implements the labour standard which is relatively stricter than the labour standards of the rest of the world, and 3) a country exports the labour intensive goods when it implements a relatively laxer labour standard than the labour standards of the rest of the world.

In contrast, if labour standards are identical across countries, then trade is driven by the difference in factor endowments as in the standard H-O theory of trade.¹⁵

D. The Labour Standard under Majority Voting

This study assumes that the equilibrium labour standard in a country is determined by a political process such as voting. Specifically, the labour standard is the result of majority voting (see Mayer (1984)). We assume that votes reflect the economic interests of those who are eligible to vote and that voting is sincere.

An equilibrium level of the labour standard is defined as one whereby no majority of voters can be formed to alter that level. According to the median voter theorem, if individual voters' policy preference are single peaked and the policy space is one-dimensional, there exists a condorcet winner, *i.e.*, an alternative that cannot be beaten by any other alternative in a pair-wise majority vote. It is assumed that each individual factor owner *j* can vote and that the capital endowment is unevenly distributed, ranging from individuals with no capital endowment, $\sigma_j k = 0$, to individuals with the maximum capital endowment, $K_j^{\max} = \sigma_j^{\max} k$. We assume that the economy is inhabited by a continuum of people and we normalise the size of the population to 1. Moreover, we assume σ_j is distributed according to a probability density function $\xi(\cdot)$ with mean σ and median σ^m . Hence, $\int_z \xi(\sigma_j(z)) dz = 1$ and z is an index which maps $0 \leq z \leq 1$ to $0 \leq \sigma_j(z) \leq \sigma^{\max}$. The mean of $\sigma_j (= \sigma)$ accordingly defined as

¹⁵ This can be immediately shown by differentiating (11) with regard to *K* and *L* respectively.

$$\sigma = \int_z \sigma_j(z) \xi(\sigma_j(z)) dz$$

The individual's indirect utility function can be written as

$$V_j(p, \tau, \sigma_j, s) = (\delta - 1) \ln p + \ln(w(s) + r\sigma_j k) + s^g$$

The first order condition with regards to s is

$$\frac{\partial V_j}{\partial s} = y_j^{-1} \left(\frac{-\gamma w(s)}{1-s} \right) + g s^{g-1} \quad (12)$$

The second order condition for a maximum is satisfied

$$\frac{\partial^2 V_j}{\partial s^2} = y_j^{-1} \left\{ \frac{\gamma(\gamma-1)w(s)}{(1-s)^2} \right\} - y_j^{-2} \left(\frac{\gamma w(s)}{1-s} \right)^2 + g(g-1)s^{g-2} < 0 \quad (13)$$

The negative second order condition confirms the *single peakedness* of the utility function (global concavity of the policy preference function). Therefore, it can be deduced that the optimal level of labour standard (s_j^*) for individual j' is determined at the point where the marginal cost is equal to the marginal benefit when there is one unit increase in the standard. More specifically, from the first order condition in (12), the direction of the change in the labour standard with regard to a change in σ_j is determined as follows.

$$\frac{ds_j^*}{d\sigma_j} = - \left(\frac{\partial^2 V_j / \partial \sigma_j \partial s}{\partial^2 V_j / \partial s^2} \right) \quad (14)$$

This implies that

$$\text{The sign of } \frac{ds_j^*}{d\sigma_j} = \text{The sign of } \frac{\partial^2 V_j}{\partial \sigma_j \partial s}$$

And from (12),

$$\frac{\partial^2 V_j}{\partial \sigma_j \partial s} = y_j^{-2} \frac{rk\{\gamma w(s)\}}{1-s} > 0 \quad (15)$$

Therefore, we note that $ds_j^*/d\sigma_j > 0$. The sign indicates that an individual who is relatively well endowed with capital prefers a higher labour standard. This is because the loss of factor income due to a higher labour standard is relatively minor to individuals who are well endowed with capital as compared to those who are poorly endowed with capital.

With a continuum of individuals, single peaked preference, and one dimensional policy space, the preference of the median voter determines the equilibrium policy, which is unique (see Persson and Tabellini (2000, ch. 2)), $s^*=s^*(\sigma_j)$. Thus, under majority voting, the equilibrium labour standard established is the individual optimal labour standard for the median voter $s(\sigma^m)$. This is because $s(\sigma_j)$ is increasing in σ_j , the median bliss point corresponds to the bliss point of the median value of σ_j ($=\sigma^m$). The equilibrium labour standard therefore depends on the characteristics of the median voter and the actual distribution of the capital endowment of the economy. Notice that the social optimal level of the labour standards solves the following programme;

$$\max_s \int_z \{(\delta-1)\ln p + \ln(w(s) + r\sigma_j k) + s^g\} \xi(\cdot) dz$$

It is clear that the socially optimal labour standard is a function of σ , $s=s(\sigma)$, *i.e.*, it depends on the mean capital endowment, σ . We can summarise the predictions regarding the equilibrium labour standard as follows.

Proposition 1

Depending on the distribution of capital endowment in a society, the following features of the median voter equilibrium are predicted: (1) If all individuals are endowed with equal amounts of capital ($\sigma_j = \sigma = \sigma^m$), then the equilibrium labour standard is equal to the social optimal labour standard (*e.g.* an egalitarian or socialist country); (2) if the distribution of relative capital endowments is right skewed as is commonly observed in the real-world, then the political equilibrium of the labour standard is lower than the one preferred by the voter with average capital endowment; and (3) if the distribution of relative capital endowments is left skewed, then the political equilibrium of the labour standard is higher than the one preferred by the voter with average capital endowment.

The most realistic case is case (2) where the labour standard in political equilibrium is lower than the socially optimal one $s(\sigma)$. This is because, in real world distributions, the capital/labour ratio (σ^m) for the median individual m relative to the overall capital/labour endowment for the economy is less than the average ratio (σ) for all countries (see Alesina and Rodrik (1994)). Thus it is $s(\sigma) > s(\sigma^m)$ due to $ds_j^*/d\sigma_j > 0$.

The equilibrium level of the labour standard may diverge among countries depending on differences in the political or economic condition of a country, even though the countries are endowed with identical amounts of capital and labour. Below we shall investigate how the equilibrium labour standard is affected by the process of globalisation.

IV. Globalisation and Labour Standards

The effects of globalisation on the equilibrium level of the labour standard is examined in the following. Globalisation is defined as the closer integration of the world economy through trade, and we focus on the decline in transport costs as one of its main causes.¹⁶ Although there are several key features pertaining to globalisation, we will address the following questions;

1. How does globalisation geared by the transport revolution affect the labour standards adopted by individual countries?
2. Given the frequent movement of capital across borders and the reduction in labour migration in recent times, what are the implications for the equilibrium labour standard of increasing capital mobility?

A. The Transport Revolution: The Iceberg Model

The transport cost is modelled according to the ‘‘iceberg’’ model introduced by Samuelson (1954). That is, for every unit shipped internationally, only $1/\tau$ units reach the export market, where $\tau > 1$. In a small economy, the transport cost has similar economic effects as a tariff on the effective price of imported goods and an export tax on exports, but the fundamental difference is that there is no

¹⁶ For detailed discussion of the nature of globalisation, see George and Wilding (2002).

revenue generated. The import of the product market prices faced by firms in the two sector depends on the trade patterns before the introduction of the transport costs. The followings present this implication.

First, suppose that a country is labour abundant and that determines trade patterns. Then the labour intensive good is exported and the capital intensive good is imported. The exporters can sell at the price p at the world market. However, for cost that the good is delivered to the world market, additional $1/\tau$ units must be produced so the effective price faced by an export firm producing for the world market is p/τ . Competition between firms producing labour intensive good to serve the domestic market also brings the price faced by all firms down to p/τ . Likewise, import good can be bought at the price 1 at the world market. However, for each unit sold in the domestic market, additional τ units must be imported. This allows domestic purchase of capital intensive good to increase the price to τ .

Second, suppose that a country is capital abundant and that determines trade patterns. Then the capital intensive good is exported and the labour intensive good is imported. Though the exporters can sell the good at the price 1 at the world market, they have to produce additional $1/\tau$ units for each unit exported considering the transport costs. This leads the exporters to be faced with the effective price $1/\tau$. The firms which serves the domestic market will also competitively charge $1/\tau$. The labour intensive good is bought at the price p at the world market. Since importers have to buy additional τ units for each unit to be sold in the domestic market, the price rises up to τp . The firms producing the labour intensive good to serve in the domestic market also charge τp for their profits maximisation.

Next, we investigate how the fall in the transport cost (globalisation) affects changes in the labour standard of a small open economy according to the two cases discussed above.

a) Case 1: A Capital Intensive Good Exporting Country

Let us first consider the case in which a country exports capital intensive goods. Then, the profit maximisation problem of the firm producing capital intensive goods for export with transport costs, τ is

$$\pi_1(Q_1) = \tau^{-1}Q_1 - c_1(w, r, s)Q_1$$

Thus, the unit cost function is equal to

$$\tau^{-1} = r^{1-\alpha} w^\alpha (1-s)^{-\alpha\gamma} \quad (16)$$

On the other hand, the profit maximisation problem of firms producing labour intensive goods is

$$\pi_2(Q_2) = p\tau Q_2 - c_2(w, r, s)Q_2$$

And the unit cost function is

$$p\tau = r^{1-\beta} w^\beta (1-s)^{-\beta\gamma} \quad (17)$$

From the unit cost functions (16) and (17) in which the transport costs are taken into account, factor prices are derived such that

$$r(\tau) = p \frac{\alpha}{\alpha-\beta} \frac{\alpha+\beta}{\tau^{\frac{\alpha+\beta}{\alpha-\beta}}} \quad (18)$$

$$w(\tau, s) = p \frac{\alpha-1}{\alpha-\beta} \frac{\alpha+\beta-2}{\tau^{\frac{\alpha+\beta-2}{\alpha-\beta}}} (1-s)^\gamma$$

A change in the transport cost affects the factor prices as follows

$$\partial r / \partial \tau < 0, \quad \partial w / \partial \tau > 0 \quad (19)$$

That is, the effective price of the labour intensive good faced by import firms increases with the transport cost, while the price faced by exporters fall. This raises the wage since this is the factor extensively used in the domestic production of the import good, while the return to capital decreases. This is because producers of labour intensive goods, motivated by an increase in the price they face produce more, whereas domestic producers of the capital intensive good, who face a lower price reduces production and thus, the demand for capital. Hence, the result indicates that the effects of the transport cost, which results in a change in the effective relative prices faced by importers and exporters, induce changes in the factor prices according to the predictions of the

Stolper-Samuelson theorem (1941).

Next, the effects of transport costs (globalisation) on the labour standard in political equilibrium are analysed. With transport costs, the policy preference function (10) can be expressed as

$$V_j(p, \tau, y_j, s) = (\delta - 1)\ln p + (2\delta - 1)\ln \tau + \ln y_j + s^g \tag{20}$$

where $y_j = w(\tau, s) + \sigma_j r(\tau)k$.

Using the same procedure as in section III-D, we can characterise the political equilibrium as the choice of the median voter of a capital rich country:

$$s_m^* = s^*(\sigma^m, \tau)$$

where the choice of the labour standard now depends on the transport cost and s_m^* is the solution to

$$y_m^{-1}\{-\gamma w(\tau, s)/(1-s)\} + gs^{g-1} = 0 \tag{21}$$

We want to determine the sign of $ds_m^*/d\tau$ to see how globalisation affects the median voter's choice of the labour standard. The sign of $ds_m^*/d\tau$ can be derived using the implicit function theorem,

$$\frac{ds_m^*}{d\tau} = - \left(\frac{\partial^2 V_m / \partial \tau \partial s}{\partial^2 V_m / \partial s^2} \right) \tag{22}$$

Given the second order condition,

$$\text{The sign of } \frac{ds_m^*}{d\tau} = \text{The sign of } \frac{\partial^2 V_m}{\partial \tau \partial s}$$

Hence, from Eq.(12),

$$\frac{\partial^2 V_m}{\partial \tau \partial s} = y_m^{-1} \frac{(-\gamma w')}{(1-s)} - y_m^{-2} \frac{(-\gamma w)(w' + r' \sigma_m k)}{(1-s)} \tag{23}$$

where $w' = \partial w / \partial \tau$ and $r' = \partial r / \partial \tau$. This can be further rewritten as

$$\begin{aligned} & = (w' + r' \sigma_m k - \frac{w'}{w} y_m) \left\{ \frac{\gamma w}{y_m^2 (1-s)} \right\} & (24) \\ & = \left(\frac{\partial y_m}{\partial \tau} - \frac{\partial w}{\partial \tau} \frac{y_m}{w} \right) \left\{ \frac{\gamma w}{y_m^2 (1-s)} \right\} \\ & = \{ \varepsilon(y_m) - \varepsilon(w) \} \left\{ \frac{\gamma w}{y_m \tau (1-s)} \right\} \end{aligned}$$

where $\varepsilon(y_m) = (\partial y_m / \partial \tau)(\tau / y_m)$ and $\varepsilon(w) = (\partial w / \partial \tau)(\tau / w)$ are the transport cost elasticity of factor income and the wage rate, respectively. This calculation allows us to determine the sign of $\partial^2 V(m) / \partial \tau \partial s$. The second term is obviously positive while the first term can be simplified to yield

$$\varepsilon(y_m) - \varepsilon(w) = \left(\frac{2}{\alpha - \beta} \right) \frac{r \sigma_m k}{y_m} < 0$$

Since $0 < \alpha, \beta < 1$, the sign of the $\varepsilon(y_m) - \varepsilon(w)$ term is clearly negative.¹⁷ Therefore, the overall sign of $ds^*/d\tau$ is negative, meaning that the transport cost is *negatively* related to the equilibrium labour standards in a capital rich country. Surprisingly, higher equilibrium labour standard is adopted in response to lower transportation cost. Thus, globalisation needs not (for countries that export capital intensive goods) reduce labour standards.

The intuition is as follows. From the first order condition (21), the labour standard is determined in the point where the marginal benefit with the stricter standard is equal to the marginal cost owing to the factor income loss. It is also noticed that an increase in the transport cost is accompanied by a fall in the price of the factor (the rental price in this case) which is abundant in that country. Thus, the factor income loss of the median voter of a capital abundant country is relatively larger than that of the median voter of a labour abundant country when the transport cost increases. In this case, the median voter would like to compensate

¹⁷The clear-cut positive sign of (14) and negative of (22) are based on our assumptions of the model; the *Cobb-Douglas* type production functions, the log-linear indirect utility function, and the sector common labour standards. Hence, it will not be easy to obtain clear signs with other forms of the assumptions of the fundamentals of the economy.

his relative income loss by choosing the lax labour standard. This is because the changes in the relative factor price due to the standard has opposite direction to the changes due to the transport cost. An identical logic is applied to explain the changes in the labour standard affected by a fall in the transport cost in a labour abundant country.

b) Case 2: A Labour Intensive Good Exporting Country

Consider a labour abundant country that exports the labour intensive good 2 and imports the capital intensive good 1. The profit maximisation problem of producer of the capital intensive good is

$$\max \pi_1(Q_1) = \tau Q_1 - c_1(w, r, s)Q_1$$

and the problem faced by the producers of the labour intensive good is

$$\max \pi_2(Q_2) = p\tau^{-1}Q_2 - c_2(w, r, s)Q_2$$

The unit cost functions are

$$\tau = r^{1-\alpha} w^\alpha (1-s)^{-\alpha\gamma}$$

for the sector 1 and

$$p\tau^{-1} = r^{1-\beta} w^\beta (1-s)^{-\beta\gamma}$$

for the sector 2 respectively. The wage and rental rate can be derived from these unit cost functions as follows

$$r(\tau) = p \frac{\alpha}{\alpha-\beta} \tau^{\frac{-(\alpha+\beta)}{\alpha-\beta}}$$

$$w(\tau, s) = p \frac{\alpha-1}{\alpha-\beta} \tau^{\frac{-(\alpha+\beta-2)}{\alpha-\beta}} (1-s)^\gamma$$

A change in the transport cost affects the wage and rental rate as follows

$$\partial r / \partial \tau > 0, \quad \partial w / \partial \tau < 0$$

The result is exactly opposite to the case of a capital intensive goods exporting country. This is because the price increase in capital intensive goods, caused by the transport cost, motivates firms to increase production, giving the capital owner higher rents. However, faced with a lower export price for labour intensive goods, the firms in that industry can pay lower wages to workers. Again, this is just an application of the *Stolper-Samuelson* theorem.

Globalisation changes the labour standards in the opposite direction to those in capital intensive good exporting country case. To find the sign of $ds^*/d\tau$, we need to find the sign of $\partial^2 V_j / \partial \tau \partial s$. As before, it will suffice to find the sign of $\{\varepsilon(y_j) - \varepsilon(w)\}$ as in (24), which in this case is given by

$$\varepsilon(y_j) - \varepsilon(w) = \left(\frac{-2}{\alpha - \beta} \right) \frac{r\sigma_j k}{y_j} > 0$$

Thus, the result predicts that the labour standard in labour rich countries would decline as the world market becomes better integrated. The iceberg transport cost model suggests quite surprising results in two factor-two sector **H-O** political trade model for the labour standards.

Proposition 2

Suppose that iceberg transport costs are introduced in the **2×2 H-O** trade model with endogenous labour standards. Then, globalisation ($\tau \downarrow$) is accompanied by increasing labour standards ($s \uparrow$) in capital abundant countries and by decreasing labour standards ($s \downarrow$) in labour abundant countries.

This happens in this model through the relative increase in the export goods price, and in the income share of the factor which is intensively used in exporting goods production. The proposition implies a possibility that the divergent labour standards between countries. The foregoing findings on the relation between the labour standards and globalisation will be empirically examined to check whether they are supported by the data or not.

B. International Capital Movement

The standard H-O model assumes that production factors are

immobile across borders. The trade occurs only due to the unequal distribution of the production factor endowments between the countries. In order to highlight the relationship between capital mobility and the labour standards, conventional trade policy tools, such as tariff and taxes to import or export, are ignored, as are transport costs.

As we have assumed through the paper, we keep the small open economy assumption for the analysis of changes in the labour standards under international capital mobility. The world consists of many small countries and each single country, when it changes its domestic labour standard level, generates a negligible effect on the changes in the capital/labour ratio of the rest of world, and thus on the international rental rate which is determined in the international capital market.

The following briefly discusses how the equilibrium labour standard is related to international capital movement.¹⁸ Suppose that, before the international free capital movement is allowed, the relative capital endowment (σ^m) of the median voter in each country is assumed to differ across countries. This assumption leads to the legislated level of the labour standards being unequal across countries.¹⁹ Then, the factor prices also differ internationally due to (15). Thus, the key determinant of capital flow in this model is the initial differences in the labour standards between countries. To explicitly show this argument, we generalise the assumption of the production functions specified in (3) as follows;

$$\begin{aligned} Q_1 &= \theta_1 K_1^{1-\alpha} \{L_1(1-s)\}^{\alpha} \\ Q_2 &= \theta_2 K_2^{1-\beta} \{L_2(1-s)\}^{\beta} \end{aligned} \tag{25}$$

That is, we generalise the impact term of the labour standard in each sector such that $\theta_1(s) = (1-s)^\alpha$, $\theta_2(s) = (1-s)^\beta$ and $\alpha < \beta$ so that they satisfy the assumption of (1). Then the factor prices are represented as functions of the labour standard such that

¹⁸ Recently there have been many countries that generally welcomed foreign direct investment (inflow of capital) but fear immigration and strictly restrict it.

¹⁹ If the labour standards across the countries are identical, the factor price equalisation theorem, one of core theorem of the H-O model, will be hold in our framework (see, Samuelson (1949)).

$$r(s) = p^{\frac{\alpha}{\alpha-\beta}} (1-s)^{-\alpha\beta} \quad (26)$$

$$w(s) = p^{\frac{\alpha-1}{\alpha-\beta}} (1-s)^{-(\alpha+\beta-\alpha\beta)}$$

This shows that $\partial r(s)/\partial s > 0$ and $\partial w(s)/\partial s < 0$. It is assumed that countries are incompletely specialised in the production of the two goods before free capital movement. Thus, the differences in the labour standards can explain the differences in the factor prices across the countries.

Then, by allowing international capital movement, world capital will freely move from countries with a low rental rate to countries with a high rental rate.²⁰ Free movement of capital leads to rental rate equalisation and the direction of capital flow of a country depends on the sign of difference between the initial rental rate of that country and the international rental rate. In the presence of capital flow, the corresponding change in the relative factor price ratio in terms of the rental rate equalisation affects individual's factor income. Then, it will also affect the median voter's preference on the labour standard in the sense that the factor prices depend on the labour standard.

The following analysis examines how the equilibrium labour standard in a particular country changes after international capital movement is allowed in the model. Since countries either import or export capital in accordance with the sign of difference in rental rates, we study, in turn, the case of a capital importing and a capital exporting country.

a) Case 1: Capital Importers

Suppose that the relative capital endowment of the median voter in country A is larger than capital holdings of median voters of the rest of the world (represented by W). That is, if $\sigma_A^m > \sigma_W^m$, then the equilibrium labour standard in country A would be stricter than the labour standards of the rest of the world; $s_A > s^W$ due to $ds_m^*/d\sigma^m > 0$. The differences in the factor prices caused by non-uniform labour standards provide incentives for capital to migrate away from low reward countries to high reward country ($W \Rightarrow A$) when capital moves freely across borders. This is the case

²⁰ Labour is only mobile between sectors.

in which imposing a stricter labour standard attracts foreign capital. Capital inflow would continue until the return to capital is equalised across countries. The total amount of capital employed in production in country A is increased to $\hat{K}_A = K_A + \kappa$, where K_A stands for the initial amount of capital endowment of country A and κ denotes the amount of capital inflow from abroad. Accordingly, as a result of international capital movements, the rental rate of country A ($=r_A$) is lowered and pegged at the international level ($=r^W$). It is observed that the amount of capital inflow (κ) is negatively related to the changes in the rental rate in country A.

Given the relative commodity price p and the initial labour standard, capital inflow and resulting change in the factor proportion will induce a change in the relative production of each sector. But the small open economy assumption requires that the factor proportion of each sector must be retained in the initial level before capital import. Therefore, with capital inflow, reduction in the production of good 2 and increase in the production of 1 are needed to satisfy this condition in country A. Capital inflow will continue until the production of good 2 reaches none.²¹ Thus, country A becomes specialised in the production of capital intensive good 1 when it initially has the stricter labour standard than the rest of the world and attracts internationally mobile capital.²²

The capital inflow determines the new optimal capital-labour ratio $(K_A + \kappa)/L_A$ for the production of good 1, which depends on the wage-rental ratio and the labour intensity parameter α ;

$$\frac{K_A + \kappa}{L_A} = \left(\frac{1 - \alpha}{\alpha} \right) \frac{w_A}{r^W}$$

²¹ See McGuire (1982) for further details of the process of specialisation in production. A similar situation is studied in his study when he examined the effect of unilateral imposition of environmental regulation in the face of international capital movement.

²² Bhagwati *et al.* (1998) discusses the question of whether a standard 2×2 model would exhibit incomplete specialisation in the face of free capital movements and international differences in technology and reviews the related literature (see Jones (1967), Inada and Kemp (1970), Chipman (1971), Uekawa (1972), and Wong (1983)). Here, we follow the approach adopted by McGuire (1982), in which complete specialisation happens in response to free capital movement.

Since good 2 is no longer produced in country A, the factor prices with given level of the labour standard are

$$\begin{aligned} r_A &= r^W \\ \omega_A(r^W, s_A) &= (r^W)^{\frac{\alpha-1}{\alpha}} (1-s_A)^\alpha \end{aligned}$$

The changes in the wage rate concerning the changes in the international rental rate shows that

$$\frac{\partial \omega_A(r^W, s_A)}{\partial r^W} = \frac{\alpha-1}{\alpha} (r^W)^{\frac{-1}{\alpha}} (1-s_A)^\alpha < 0$$

This says that, as the amount of capital inflow increases, the wage rate also rises. Intuition behind this is that the marginal productivity of labour input increases with the given level of labour endowment when the inflow of foreign capital to country A is gradually increased.

We then analyse the effects of international capital mobility on the labour standard in political equilibrium. The policy preference function (10) of an individual j in country A can be expressed as

$$V_j(p, y_j, s_A) = (\delta-1) \ln p + \ln y_j + s_A^g \quad (27)$$

where $y_j = w(r^W, s_A) + \sigma_j r^W k$.

Like the procedure in section III-D, we can characterise the political equilibrium labour standard (s_A^*) as the choice of the median voter of country A in face of foreign capital inflow;

$$s_A^* = s_A^*(\sigma_A^m, r^W)$$

where the equilibrium level of the labour standard now depends on the international rental rate. Then s_A^* is obtained from the first order condition;

$$\partial V_m / \partial s_A = y_m^{-1} \{ -\alpha w(r^W, s_A) / (1-s_A) \} + g s_A^{g-1} = 0 \quad (28)$$

To see how international capital mobility affects the median voter's choice of the labour standard, we examine the sign of ds_A^* / dr^W . The sign of ds_A^* / dr^W is obtained by using the implicit

function theorem as shown previously,

$$\frac{ds_A^*}{dr^W} = - \left(\frac{\partial^2 V_m / \partial r^W \partial s_A}{\partial^2 V_m / \partial s_A^2} \right) \quad (29)$$

The second order condition is

$$\frac{\partial^2 V_m}{\partial s_A^2} = \frac{\alpha}{(1-s_A)^2} \frac{w_A}{y_m} \left(\frac{\alpha r^W \sigma_A^m k}{y_m} - 1 \right) + g(g-1)s_A^{g-2} \quad (30)$$

which is clearly negative. Then, the sign of ds_A^*/dr^W can be decided upon the sign of $\partial^2 V_m / \partial r^W \partial s_A$. From the first order condition in (28),

$$\frac{\partial^2 V_m}{\partial r^W \partial s_A} = y_m^{-1} \frac{\alpha}{(1-s_A)} \left\{ \frac{1-\alpha}{\alpha} \frac{w_A}{r^W} \left(1 - \frac{w_A}{y_m} \right) + \frac{w_A \sigma_A^m k}{y_m} \right\} > 0$$

Hence, ds_A^*/dr^W is positive and suggests that the equilibrium labour standard decreases as capital increasingly migrates from abroad. The implication of the result is as follows; as the foreign capital flows into the domestic capital market, there are pressures for lowering the domestic rental rate. This is because the domestic capital competes with the foreign capital that tries to capture the higher domestic rental rate in the market. Also, the marginal productivity of labour increases in accordance with the capital inflow. Then demands for 1) raising wage rate and 2) lowering rental rate would grow. Thus, the median voter of the capital import country would like to minimise her loss in factor income by choosing the laxer labour standard, which results in the higher wage rate and the rental rate equalised to the international level. This is why the median voter prefers the lowered labour standard in the face of capital inflow.

b) Case 2: Capital Exporters

Changes in the equilibrium labour standard of a capital export country (say, country *B*) is our next concern. In contrast to the capital import country case, we consider the case in which the relative capital endowment of the median voter in country *B* is

smaller than capital holdings of median voters of the rest of the world. That is, if $\sigma_B^m < \sigma_W^m$, then the equilibrium labour standard in country B would be laxer than the labour standards of the rest of the world; $s_B < s^W$ due to $ds_m^*/d\sigma^m > 0$. Thus the rental rate (r_B) of country B is lower than the international rental rate (r^W). Hence, the domestic capital migrates to the foreign countries because of imposing a laxer labour standard. Capital outflow would continue until the return to capital is equalised to the international level. The total amount of capital used in each sector is decreased; $\hat{K}_B = K_B - \kappa$, where K_B stands for the initial amount of capital endowment of country B and κ denotes the amount of capital export to foreign countries. As a result of international capital movements, rental rate of country B is raised to the international level ($r_B = r^W$). The lower the rental rate relative to r^W is, the greater the amount of exported capital (κ) is. Capital outflow could lead country B to the complete specialisation in the production of the labour intensive good. The factor prices of country B are

$$\begin{aligned} r_B &= r^W \\ w_B(r^W, s_B) &= (r^W)^{\frac{\beta-1}{\beta}} (1-s_B)^\beta \end{aligned}$$

The changes in the wage rate with regard to the changes in the international rental rate is

$$\frac{\partial w_B(r^W, s_B)}{\partial r^W} = \frac{\beta-1}{\beta} (r^W)^{\frac{-1}{\beta}} (1-s_B)^\beta < 0$$

This means that, as the amount of capital outflow increases, the wage rate decreases. This is because the marginal productivity of labour input decreases when the capital migrates away to foreign countries for capturing higher the international rental rate.

We next analyse the effects of international capital movement on the equilibrium labour standard of a capital export country. The policy preference function (10) of an individual j in country B can be expressed as

$$V_j(p, y_j, s_B) = (\delta - 1) \ln p + \ln y_j + s_B^g \tag{31}$$

where $y_j = w(r^W, s_B) + \sigma_j r^W k$.

The political equilibrium labour standard (s_B^*) is the choice of the median voter of country *B* in face of foreign capital outflow:

$$s_B^* = s_B^*(\sigma_B^m, r^W)$$

where the equilibrium labour standard is a function of the international rental rate. Thus the equilibrium labour standard (s_B^*) in country *B*, is the solution to

$$\partial V_m / \partial s_B = y_m^{-1} \{ -\beta w(r^W, s_B) / (1 - s_B) \} + g s_B^{g-1} = 0 \quad (32)$$

To see how international capital mobility affects the median voter's choice of the labour standard in country *B*, we look for the sign of ds_B^* / dr^W . It can be obtained by using the implicit function theorem as shown previously,

$$\frac{ds_B^*}{dr^W} = - \left(\frac{\partial^2 V_m / \partial r^W \partial s_B}{\partial^2 V_m / \partial s_B^2} \right) \quad (33)$$

The second order condition with regard to s_B is negative as in (30). The sign of ds_B^* / dr^W depends on the sign of $\partial^2 V_m / \partial r^W \partial s_B$. From the first order condition in (32),

$$\frac{\partial^2 V_m}{\partial r^W \partial s_B} = y_m^{-1} \frac{\beta}{(1 - s_B)} \left\{ \frac{1 - \beta}{\beta} \frac{w_B}{r^W} \left(1 - \frac{w_B}{y_m} \right) + \frac{w_B \sigma_B^m k}{y_m} \right\} > 0$$

The positive sign of ds_B^* / dr^W indicates that the equilibrium labour standard increases as more capital migrates to abroad. The implication of the result is as follows; as capital outflow continues, the marginal productivity of immobile labour declines and the demand for the higher rental rate from the capital holders who allocate their capital to the domestic production would grow. This is because, unless the domestic rental rate is equalised to the international level, all the capital of country *B* would fly away. Then faced with the growing demands for lower wage rate and higher domestic rental rate, the median voter in country *B* is motivated to minimise her loss in factor income by choosing the stricter labour standard, which exactly raises the rental rate and

lowers the wage rate. Thus, the median voter in country *B* would more be inclined toward choosing higher labour standard when capital migrates away.

We have so far examined the changes in the labour standard of a small open economy in consideration of the cases for 1) capital import country (*A*) and 2) export country (*B*). Our model predicts that the stricter labour standard attracts internationally mobile capital while the laxer labour standard induces the domestic capital to flow out due to the differences in the domestic and international rental rates. It is noted that the changes in the labour standard as a result of international capital movement generate the consequences that are similar to those generated by the technology induced globalisation examined in the previous subsection.

V. Concluding Remarks

In this paper, we have attempted to clarify the controversial relationship between labour standards and globalisation within a two factor-two sector *Heckscher-Ohlin-Mayer* political economy trade model. The study is restricted to a particular class of labour standards which regulate undesirable exploitation of labour use, such as excessive working hours, child labour and forced labour. The economic consequences of these labour practices are identical in the model. We use transport costs as a direct measurement of globalisation. The median voter theorem is adopted to characterise the equilibrium level of the standard. The model yields the following insights. First, the introduction of the labour standards generates distortions of factor prices and the production, and can even determine the trade pattern of a country by influencing its comparative advantage. Second, the political equilibrium labour standard is negatively associated with a society's inequality in the distribution of capital endowments. Third, and most importantly, the equilibrium labour standard is either positively or negatively associated with globalisation (by a fall in transportation costs) depending on the factor abundance of a country. This suggests that there exists divergent directions of change in the labour standards in the global economy. Globalisation resulted from increasing international capital movement also leads to either laxer or stricter labour standards across countries, implying that an overall trend towards a race to the bottom between countries is not the

consequence of globalisation. This is because a median voter with relatively greater amount of capital than median voters of the rest of the world would suffer loss in the rental income when capital moves in. This is caused by the stricter labour standard initially set before free capital movement. Thus the median voter would prefer the lower labour standard to compensate the loss in factor income after capital inflow. A median voter with relatively lower capital endowment than median voters of the rest of the world would behave exactly opposite way.

These results are based on restricted assumptions including an inelastic labour supply and full employment. Some argue that recent unemployment problems, particularly in the developed countries, may be ascribed to the increase of imports produced by the cheaper labour of other developing countries. Further studies on the issue could incorporate this view into the current analysis. Moreover, the following suggestions for the possible developments in the paper would be of interest in future research: 1) the major findings presented in this theoretical model need to be justified by empirical evidence and 2) acknowledging that the dominant form of polity in the most modern states follows party representative democracy system, the episode of labour standard policy may be better explained by adopting the probabilistic voting theory to the original model rather than by majority voting, which is only relevant in the countries such as Switzerland where important national affairs are often decided through direct democracy.

(Received 28 June 2006; Revised 23 August 2006)

References

- Alesina, A., and Rodrik, D. "Distributive Politics and Economic Growth." *Quarterly Journal of Economics* 109 (No. 2 1994): 465-90.
- Bhagwati, J., Panagariya, A., and Srinivasan, T. *Lectures on International Trade*. Cambridge, MA; London: MIT Press, 1998.
- Boccard, N., Ypersele, T. V., and Wunsch, P. "Comparative Advantage and Social Protection." *European Journal of Political Economy* 19 (No. 2 2003): 247-64.
- Brown, D., Deardorff, A., and Stern, R. "International Labor

- Standards and Trade: A Theoretical Analysis.” in J. Bhagwati and R. Hudec (eds.), 1996.
- Casella, A. “Free Trade and Evolving Standards.” in J. Bhagwati and R. Hudec (eds.), 1996.
- Chipman, J. S. *International Trade with Capital Mobility: A Substitution Theorem*. in J. N. Bhagwati *et al.* (eds.), “Trade, Balance of Payments and Growth.” *Papers in International Economics in Honor of Charles P. Kindleberger*, NorthHolland: Amsterdam, 1971.
- Dutt, P., and Mitra, D. “Endogenous Trade Policy through Majority Voting.” *Journal of International Economics* 58 (No. 1 2002): 107-34.
- Gabszewicz, J. J., and Ypersele, T. V. “Social Protection and Political Competition.” *Journal of Public Economics* 61 (No. 2 1996): 193-208.
- George, V., and Wilding, P. *Globalization and Human Welfare*. Palgrave, 2002.
- Hefeker, C., and Wunner, N. “The Producer Interest in Foreign Labor Standards.” *European Journal of Political Economy* 18 (No. 3 2002): 429-47.
- Inada, K., and Kemp, M. C. “International Capital Movements and the Theory of International Trade.” *Quarterly Journal of Economics* 83 (No. 3 1970): 524-8.
- Jones, R. W. “International Capital Movements and the Theory of Tariffs and Trade.” *Quarterly Journal of Economics* 81 (No. 1 1967): 1-38.
- McGuire, M. C. “Regulation, Factor Rewards, and International Trade.” *Journal of Public Economics* 17 (No. 3 1982): 335-54.
- Mayer, W. “Endogenous Tariff Formation.” *American Economic Review* 74 (No. 5 1984): 970-85.
- Persson, T., and Tabellini, G. *Political Economics: Explaining Economic Policy*. MIT Press, 2000.
- Samuelson, P. A. “International Factor Prices Equalisation Once Again.” *The Economic Journal* 59 (No. 234 1949): 181-96.
- _____. “The Transfer Problem and the Transport Costs.” *The Economic Journal* 64 (No. 254 1954): 264-89.
- Stolper, W., and Samuelson, P. A. “Protection and Real Wages.” *Review of Economic Reviews* 9 (No. 1 1941): 58-73.
- Uekawa, Y. “On the Existence of Incomplete Specialization in International Trade with Capital Mobility.” *Journal of*

International Economics 2 (No. 1 1972): 1-23.

Wong, K-Y. "On Choosing among Trade in Goods and International Capital and Labour Mobility." *Journal of International Economics* 14 (Nos. 3-4 1983): 223-50.