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Abstract

This study theoretically investigates the economy of a small country that exports skilled labor to higher developed countries and simultaneously imports unskilled labor from lower developed countries. Compared with the free immigration case, if this country adopts an optimally controlled immigration policy by imposing income tax on immigrants to maximize national income, skills formation is negatively affected and the number of domestic unskilled workers increases. Moreover, under certain conditions, it can be asserted the counter-intuitive possibility that the wage rate of domestic unskilled workers may decrease but that of skilled workers may increase owing to the restriction of foreign unskilled workers.

Keywords: International migration, Economic integration, Skill formation.

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1. Introduction

Multilateral economic integration arising from globalization has different outcomes for countries at different stages of economic development, in terms of not only trade liberalization but also liberalization of foreign direct investment (FDI) and migration. As against the numerous studies on the effects of trade liberalization between multilateral countries, free factor mobility has attracted insufficient attention.

The word 'international migration' usually refers to labor inflows for higher developed countries (HDCs) such as Germany, Japan, and the United States. For lower developed countries (LDCs) such as Bangladesh, Cambodia, and most African countries, migration implies an outflow of labor. Most of the economic literature has focused on mutual relationships between the source and host countries and studied the effects of international migration on the economies of those countries. However, globalization in the more recent past has resulted in several new types of international migration. In

observing the recent expansion of multilateral economic integration between countries at various phases of development, we recognize that several medium developed countries (MDCs) are playing a new role in the international labor market. These MDCs export labor to HDCs and, simultaneously, import labor from LDCs. In other words, these countries are coincidentally host as well as source countries and are at the midstream of international labor flows.

For example, the Romanian economy is placed almost precisely between those of HDCs such as Belgium, Germany, and the Netherlands and LDCs such as Albania, Moldova, and Ukraine. Until 2007, Romania was excluded from a large economic bloc of developed countries, the European Union (EU), and thus, free mobility of goods and factors was not permitted. Hence before 2007, even though its relatively lower wage rates and limited job opportunities could be resulted in high levels of migration from Romania to the EU, this did not occur. . When the EU expanded in 2007, Romania was permitted to join the bloc and its local economy was successfully integrated into the EU. Romania has now started to enjoy rapid economic progress by attracting foreign investment and exporting workers to Germany, Italy, and

Spain. Remittances enable those left behind to consume several types of modern manufactured goods produced only in developed countries. The labor market of the country has undergone drastic changes owing to FDI inflows, which create job opportunities, as well as the outflow of domestic workers. A key problem of this new economic wave is that quick changes have caused serious labor shortages in Romanian urban areas. To maintain its economic performance, Romania started to introduce Chinese workers from the spring of 2008, although their employment is limited to permitted firms. As of 2013, more than 3,000 Chinese workers are still employed in Romania, although several workers returned to China because of the 2008 global recession sparked by the collapse of Lehman Brothers.

Another example of an MDC in the international labor market is Thailand. In 2009, about 150,000 relatively skilled Thai workers went to Taiwan and countries in the Middle East for job opportunities, while the country had a large inflow of lower skilled workers, amounting to 1300 thousand from Cambodia, Laos, and Myanmar. As seen by this substantial labor inflow, the government of Thailand has been ineffective in controlling the number of foreign workers. The government took the only option

available and decided to confirm the present situation of numerous illegal workers by permitting their employment. Since 2006, immigrants have been required to submit documents issued in their home countries that establish their nationalities. This new policy still includes several points but Thailand has nevertheless started to introduce an optimally controlled immigration policy, which is regarded as the most important and urgent issue in the country¹.

A similar case is seen in Mexico. More than 25 million workers migrate from Mexico to the United States, while southern Mexico is simultaneously faced with immigration from Central American countries such as Guatemala. Those immigrants' final destinations are often the United States or Canada. Thus, to them, Mexico serves as a transit country until they find good opportunities elsewhere.

Numerous theoretical studies on the economic effects of international migration employ two-country models or small-country models. One pioneering study is that by MacDougall (1960), who studied the gains from free factor movement by means of a simple two-factor, two-country, one-good model. Even though free factor movement might be best for the global

economy, most countries adopt several types of policies restricting such movement to maximize domestic welfare. The choice between an optimally controlled labor import policy and a capital export policy is investigated by Ramaswami (1969) in his seminal study that is an extension of MacDougall (1960); several studies followed as extensions to Ramaswami (1969)².

As regards immigration policies, Djajic (1989) studies the economic effects of qualitative restriction policies on legal immigration, while Kondoh's (2000) study on illegal immigrants, in which illegal workers optimally choose not to legalize their employment status despite having the option to do so in due course, is a minor extension of Djajic's study. Applying a three-country model—two developed countries and one developing country—Coniglio and Kondoh (2013) studied the effects of economic integration between countries with heterogeneous immigration policies—one country adopts a qualitative restriction policy while another adopts a quantitative restriction policy. However, no studies consider the economies of midstream countries that face both outflows and inflows of workers and need to introduce immigration and emigration policies simultaneously.

As the case of Thailand demonstrates, given the possibilities associated

with skilled workers' emigration to HDCs, the most important issues for such midstream countries affected by international migration are to control brain drain caused by outflow of skilled workers as well as the immigration of LDCs' unskilled workers. The latter issue may result in positive effects on the economic welfare of the midstream country; it may also have negative effects on the wage gap between domestic skilled and unskilled workers. This study adopts a two-factor, three-country model with one good, following MacDougall (1960). The two factors are skilled and unskilled labor and their endowments are flexibly changeable by skill formation. The three countries comprise an HDC, LDC and MDC. Using this framework, we investigate the economic effects of immigration restriction policies on the number of domestic skilled/unskilled workers, the number of foreign unskilled workers, and economic welfare (as measured by national income). We compare two different cases: free immigration (or out of control immigration) and optimally controlled unskilled workers' immigration.

The main findings are as follows. Compared with the case where free immigration is allowed, if the MDC adopts an optimally controlled immigration policy and imposes income tax on immigrants to maximize

national income, skill formation is negatively affected and the number of domestic unskilled workers increases. Moreover, under certain conditions, we can assert the counter-intuitive possibility that the wage rates of domestic unskilled workers may decrease but that of skilled workers may increase owing to the restriction of foreign unskilled workers.

The remainder of this paper is organized as follows. In Section 2, we present the model. Comparative static analyses are performed in Section 3, while Section 4 presents concluding remarks.

2. A Simple Three-country Model of International Migration

2.1 Production and Wage Rates

We assume the manufacturing industry of Country B, a medium developed country (MDC), is labor intensive. Similar to, for example, Chao and Yu (2002), we assume a relatively scarce role for capital in the production of this country, with capital being completely substituted by skilled workers. Therefore, the primary factors of production in Country B

are two types of labor: skilled workers (S) and unskilled workers (U). For full employment, the following condition needs to be satisfied:

$$L_B^U + L_B^S = \bar{L}_B, \quad (1)$$

where \bar{L}_B denotes fixed labor endowment in Country B. However, note that the distribution of the two types of workers is determined endogenously by solving the individual's lifelong income maximization problem; thus, the two factors are substitutable in production, as ordinarily in the case of capital and labor. To simplify our analysis, let us specify the production function as follows:

$$X_B = L_B^U L_B^S - \frac{a}{2} (L_B^U)^2 - \frac{b}{2} (L_B^S)^2, \quad (2)$$

where L_B^U and L_B^S are the number of domestic unskilled and skilled workers, respectively, in Country B. We assume the following conditions are satisfied

before and after international migration: $0 < a < \frac{L_B^S}{L_B^U}$ and $0 < b < \frac{L_B^U}{L_B^S}$, which

are necessary to obtain positive marginal products of labor in both sectors.

Now we have the following properties under perfect competition in both

factor markets: $\partial X_B / \partial L_B^S = L_B^U - bL_B^S = w_B^S > 0$, $\partial X_B / \partial L_B^U = L_B^S - aL_B^U = w_B^U > 0$,
 $\partial^2 X_B / \partial (L_B^S)^2 = -b < 0$, $\partial^2 X_B / \partial (L_B^U)^2 = -a < 0$, and $\partial^2 X_B / \partial L_B^S \partial L_B^U = 1 > 0$, where
 w_B^S and w_B^U denote the wage rates of skilled and unskilled workers,
respectively, in Country B, while the price of the products is taken as a
numeraire. Without loss of generality, we assume

$$L_B^U > \frac{1+b}{1+a} L_B^S, \quad (3)$$

which implies $w_B^S > w_B^U$ in equilibrium.

In contrast, we assume that in the highly developed country (HDC),
Country A, the manufacturing industry is capital intensive, with the
primary factors of this country being capital and skilled workers. Here, we
emphasize a difference from the case of the MDC, in that through
negotiations between capital owners and labor unions, minimum wage rates
for workers employed in Country A are fixed: $\bar{w}_A^S (> w_B^S)$. The number of
domestic workers in Country A's industrial sector is not sufficient, and some
skilled workers in Country B, L_{AB}^S , are permitted to migrate legally to satisfy
this shortage of workers. Those workers are welcomed to be members of
unions and are treated equally to domestic workers in Country A.

Finally, in a lower developed country (LDC), Country C, the main industry is agriculture. The primary factors of production are land and labor, while all workers are unskilled. Similar to the case of Country B, we specify the production function as follows:

$$X_c = T_c L_c^U - \frac{a'}{2} (L_c^U)^2 - \frac{b'}{2} T_c^2, \quad (4)$$

where L_c^U and T_c denote the number of unskilled workers and fixed endowment of land, respectively, in Country C. We also assume perfect competition and full employment in this country. Under the assumption of a sufficiently large fixed labor endowment, \bar{L}_c^U , we can assert $w_B^U > w_c^U$ in autarky, where w_c^U is the competitive wage rate of Country C.

2.2 Brain-drain Migration from Country B to A

Assume each individual in Country B is identical and survives for the period T . The wage rate of an unskilled worker in country B, w_B^U , is low and, for simplicity, we assume that income is spent entirely on consumption and not saved for sustaining future consumption. In other words, the desired minimum level of consumption is, by assumption, lower or equal to w_B^U . On the other hand, the income of a skilled worker is higher than that of an

unskilled worker; moreover, some skilled workers have the opportunity to migrate to Country A legally for employment at a fixed higher wage rate. Thus, each individual in Country B intends to be a skilled worker at the beginning, but this requires spending for the education cost of a specific human capital, μ . At age τ ($0 < \tau < T$), the individual finishes accumulating the required level of skills and will then be employed as a skilled worker. The following condition should be satisfied in equilibrium in which nobody has an incentive to invest in human capital in order to be a skilled worker anymore:

$$(p\bar{w}_A^S + (1-p)w_B^S - w_B^U)[T - \tau] - \mu = 0, \quad (5)$$

where p is the rate of Country B's skilled workers being employed in Country A, which satisfies the following relationship, $p = L_{AB}^S / L_B^S$. For simplicity, we assume no inter-temporal discount factor.

2.3 Unskilled Workers' Migration from Country C to B

Assume that Country B confronts the inflow of unskilled foreign workers from Country C, the neighboring LDC. Following the case of Thailand, we assume that at the beginning, the government does not control these immigrant inflows. We call this benchmark case as Case 1. After

several immigration challenges faced by the government, Country B succeeds in controlling the optimal number of immigrants to maximize its national income. We call this Case 2³.

First, we consider Case 1. As there are no restrictions on migration, workers migrate from Country C to Country B until there is no income gap between the two countries. Then, the number of immigrants, L_{BC}^U , should satisfy the following condition:

$$(1-p)L_B^S - a(L_B^U + L_{BC}^U) = T_C - a'(\bar{L}_C^U - L_{BC}^U). \quad (6)$$

In Figure 1, which is frequently applied to explain MacDougall's model, O and O*, denote the origin point of Country B and Country C, respectively. The vertical line shows the value of marginal products of labor in Countries B and C, while the horizontal line shows labor inputs. The distance OR and RO* denote L_B^U and \bar{L}_C^U , respectively; therefore, the distance between O and O* equals the total endowment of unskilled workers of both countries.

In Case 1, because of the arbitrage condition between countries, the number of immigrants from C to B is equal to the distance RN. Then,

considering that the national income (NI) of country B is equal to GDP minus immigrants' income, NI can be expressed by the area OGEDR:

$$NI_B^1 = \frac{a}{2}(L_B^U + L_{BC}^U)^2 + L_B^U[(1-p)L_B^S - a(L_B^U + L_{BC}^U)], \quad (7)$$

and by applying (1) and (6), NI_B^1 can be expressed as a function of L_B^S .

Second, in Case 2, immigrants confront restriction policies imposed by the government of the host country. We assume that individuals are risk-neutral when they decide to migrate illegally. Considering that developed countries usually accept the entry of sightseeing travellers, and a considerable number of illegal workers camouflage themselves as such at borders, we assume no restriction of entry into Country B. Illegal immigrants are assumed to be well-disguised as domestic workers but the government of B makes a political effort to reduce illegal residency via internal enforcement policies. This means that an illegal worker, if detected while working, is fired and deported. We let $\rho \in [0,1]$ denote the probability of detection in every period. The probability of detection is known to potential illegal migrants and is negatively related to the total number of illegal immigrants from Country C, L_{BC}^U . In other words, as the government's

efforts to reduce illegal migrants remains constant, the probability of detection for an illegal worker is a decreasing function of the total number of illegal workers. Let the penalty cost that an illegal immigrant should pay in the case of detection, θ , be constant. In a steady state, in each period, the expected income of illegal migrants should be equal to that of those left behind:

$$(1 - \rho(L_{BC}^U))w_B^U + \rho(L_{BC}^U)(w_C - \theta) = w_C, \quad (8)$$

where we assume, for simplicity, that the travel cost of migration (and return) is null.

We consider a situation in which, given the skills accumulation of domestic workers, the number of illegal workers is determined endogenously by the government of Country B in order to maximize the economic welfare of its native population, the sum of domestic skilled workers' income, unskilled workers' income, and government income. Government income consists of penalty charges paid by illegal workers who are detected. In Figure 1, this implies the optimal choice of RM, the number of illegal workers, to maximize the area OGABR. This area can be expressed

numerically as

$$NI_B^2 = -(a' + \frac{a}{2})(L_{BC}^U)^2 + L_{BC}^U [(1-p)L_B^S - a(L_B - L_B^S) - T_C + a'L_C^U], \quad (9)$$

and the first order condition of the national income maximizing problem is,

$$\frac{\partial NI_B}{\partial L_{BC}^U} = -(2a' + a)L_{BC}^U + [(1-p)L_B^S - a(L_B - L_B^S) - T_C + a'L_C^U] = 0. \quad (10)$$

Making use of $w_B^S = w_B^S(L_B^S)$, $w_B^U = w_B^U(L_B^S, L_{BC}^U)$, in Case 1, two endogenous variables L_B^S and L_{BC}^U are determined from the two equations (5) and (6); while in Case 2, these two variables are determined from equations (5) and (10), whilst the optimal level of θ is determined from equation (8). This completes the set-up of the model.

3. Multilateral Economic Integration

First, we consider Case 1. By differentiating equations (5) and (6) and considering that $L_B^U + L_B^S = L_B$ and that therefore dL_B^U also implies $-dL_B^S$, we derive the following equation:

$$\begin{bmatrix} \Psi & \Phi \\ 1-p+a & -(a+a') \end{bmatrix} \begin{bmatrix} dL_B^S \\ dL_{BC}^U \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \end{bmatrix} d\mu + \begin{bmatrix} -p \\ 0 \end{bmatrix} d\bar{w}_A + \begin{bmatrix} -W \\ 0 \end{bmatrix} d\tau, \quad (11)$$

where $\lambda_i \equiv (\bar{w}_A^S - w_B^S) \frac{dp}{dL_B^S} = (\bar{w}_A^S - w_B^S) L_{AB}^S (L_B^S)^{-2} > 0, i = 1, 2,$

$$\begin{aligned} \Psi &= \left\{ (1-p) \frac{\partial w_B^S}{\partial L_B^S} - \frac{\partial w_B^U}{\partial L_B^S} + (\bar{w}_A^S - w_B^S) \frac{dp}{dL_B^S} \right\} (T - \tau) \\ &= \{ -(1-p)(1+b) - (1+a) - (\bar{w}_A^S - w_B^S) L_{AB}^S (L_B^S)^{-2} \} (T - \tau) < 0, \end{aligned}$$

$$\Phi = \left\{ -\frac{\partial w_B^U}{\partial L_{BC}^U} \right\} (T - \tau) = a(T - \tau) > 0, \text{ and } W = p\bar{w}_A^S + (1-p)w_B^S - w_B^U.$$

The determinant of the matrix of the LHS of equation (11) is

$$\Delta_1 = (T - \tau) \{ (a + a') [(1-p)(1+b) + (1+a) + \lambda_1] - a(1-p+a) \} > 0$$

Similarly, for Case 2, from equations (5) and (10) we obtain

$$\begin{bmatrix} \Psi & \Phi \\ 1-p+a & -(a+2a') \end{bmatrix} \begin{bmatrix} dL_B^S \\ dL_{BC}^U \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \end{bmatrix} d\mu + \begin{bmatrix} -p \\ 0 \end{bmatrix} d\bar{w}_A^S + \begin{bmatrix} -W \\ 0 \end{bmatrix} d\tau. \quad (12)$$

The determinant of the LHS of equation (12) can be expressed as

$$\Delta_2 = (T - \tau) \{ (a + 2a') [(1-p)(1+b) + (1+a) + \lambda_2] - a(1-p+a) \} > 0.$$

Under given parameters $\bar{w}_A^S, \mu,$ and $\tau,$ we can numerically express

Figure 2 that shows the schedules in (L_B^S, L_{BC}^U) dimension. Considering that

$\frac{dp}{dL_B^S} = -L_{AB}^S (L_B^S)^{-2} < 0,$ we can ascertain that line G_6 corresponds to equation

(6) in Case 1 and that line G_{10} corresponds to equation (10) in Case 2,

respectively, as convex functions of $L_B^S.$ In addition, considering that

$\frac{d\lambda}{dL_B^S} = -L_{AB}^S (L_B^S)^{-2} \{2(\bar{w}_A^S - w_B^S)(L_B^S)^{-1} + (1+b)\} < 0$, we can ascertain that line F corresponds to equation (5) and, in Case 1 as well as Case 2, is a concave function of dL_B^S . Thus, in equilibrium, in Case 2, we can conclude smaller L_B^S and L_{BC}^U with larger L_B^U . That is, in the case where Country B enacts an immigration restriction policy, there will be less domestic skilled labor, less unskilled labor from Country C, and more domestic unskilled labor. Again, as both equilibrium points in Figure 2, E_1 and E_2 , are on line F , the slope of which is $\frac{dL_{BC}^U}{dL_B^S} = \frac{(1-p)(1+b) + (1+a) + \lambda_t}{a} > 1$ and $\frac{d\{(1-p)L_B^S\}}{dL_B^S} = 1$, we can conclude that both the number of skilled workers and unskilled workers in Country B are smaller in Case 2 than that in Case 1. This implies that an immigration restriction policy adopted by Country B will have negative effects on skill formation in that country. Furthermore, if $a < \frac{L_B^S}{L_B^U} < 1$, which implies that the number of domestic skilled workers is less than domestic unskilled workers, because of $\frac{dL_{BC}^U}{dL_B^S} > 2$, we can conclude that the marginal product of skilled workers—equal to the wage rate of those workers in Country B—is smaller in Case 2 than that in Case 1. By contrast, the wage rate of unskilled workers in Country B is larger in Case 2 than that of Case 1.

Thus, under an optimally controlled restriction policy, the wage rate of skilled workers is lower than that under free migration. On the other hand, if parameter a is sufficiently large to satisfy $\frac{dL_{BC}^U}{dL_B^S} < 2$, under an optimally controlled restriction policy, the wage rate of skilled workers is larger than that under free migration, while that of unskilled workers is smaller. This counter-intuitive result, which implies that a restriction of the inflow of unskilled foreign workers results in wage reduction for domestic unskilled workers, could be caused by a change in domestic workers' optimal choices in skills formation. This skill formation effect dominates another effect caused by a change in the number of unskilled immigrants. Figure 3 shows this case. Finally, we find that as Country B optimally controls the number of immigrants—free immigration remains an option—by imposing taxes, its economic welfare is larger in Case 2 than it is in Case 1.

With regard to comparative statics analysis, we obtain

$$\Delta_i \frac{dL_B^S}{d\mu} < 0, \Delta_i \frac{dL_{BC}^U}{d\mu} < 0, \Delta_i \frac{dL_B^S}{d\bar{w}_A^S} > 0, \Delta_i \frac{dL_{BC}^U}{d\bar{w}_A^S} > 0, \Delta_i \frac{dL_B^S}{d\tau} > 0, \text{ and } \Delta_i \frac{dL_{BC}^U}{d\tau} > 0,$$

in line with our ordinary intuition. Although the signs of changes in endogenous variables caused by increases in parameters are identical in both

cases, the magnitudes of the effects should differ depending on the parameters.

Now, we have the following proposition:

PROPOSITION

Consider the case that a country confronts the legal outflow of skilled workers to a higher developed country as well as the inflow of illegal, unskilled workers from a lower developed country.

1) An increase in the wage rate of a higher developed country, an increase in the necessary period of studying to be a skilled worker, and a decrease in the fixed initial cost for skills accumulation have positive effects on the number of domestic skilled workers and the inflow of illegal workers.

2) Compared with a case of free migration, if immigration of foreign unskilled workers is optimally controlled to maximize the national income of the country, the numbers of domestic skilled workers as well as foreign unskilled workers are smaller.

3) If the number of domestic skilled workers is less than that of domestic unskilled workers, an optimally controlled immigration policy will reduce

the wage rate of domestic skilled workers but enhance that of unskilled workers. However, there is a counter-intuitive possibility that the above effects could be reversed if the number of domestic skilled workers is larger than the number of unskilled workers.

4. Concluding Remarks

This study investigated the economy of a small country that exports skilled labor to higher developed countries and simultaneously imports unskilled labor from lower developed countries. Analysis results revealed that compared with the case of free immigration, if this country adopts an optimally controlled immigration policy by imposing income tax on immigrants to maximize national income, skill formation is negatively affected and the number of domestic unskilled workers increases. Moreover, under certain conditions, we can assert the counter-intuitive possibility that the wage rate of domestic unskilled workers may decrease but that of skilled workers may increase owing to the restriction of foreign unskilled workers. Therefore the a policy implication of this study is that even though it yields lower national income, free immigration of unskilled workers might be better

if the host country stress skill formation of domestic workers.

This study is based on a simple model that excludes international trade, FDI, and definite dynamic skill formation systems, in line with Djajic (1989). Other types of immigration restriction policies such as quotas or permission for short-period stays were also not considered. Furthermore, we assume the source country to be somewhat passive, and we did not consider any interactions with Country C. Incorporating these issues could change our simple results; this remains a topic for future studies.

APPENDIX

The detailed calculations of the comparative statics are as follows:

$$\Delta_1 \frac{dL_B^S}{d\mu} = \begin{vmatrix} 1 & \Phi \\ 0 & -a-a' \end{vmatrix} = -(a+a') < 0$$

$$\Delta_1 \frac{dL_{BC}^U}{d\mu} = \begin{vmatrix} \Psi & 1 \\ 1-p+a & 0 \end{vmatrix} = -(1-p+a) < 0,$$

$$\Delta_1 \frac{dL_B^S}{d\bar{w}_A^S} = \begin{vmatrix} -p & \Phi \\ 0 & -a-a' \end{vmatrix} = p(a+a') > 0,$$

$$\Delta_1 \frac{dL_{BC}^U}{d\bar{w}_A^S} = \begin{vmatrix} \Psi & -p \\ 1-p+a & 0 \end{vmatrix} = p(1-p+a) > 0.$$

$$\Delta_1 \frac{dL_B^S}{d\tau} = \begin{vmatrix} -W & \Phi \\ 0 & -a-a' \end{vmatrix} = W(a+a') > 0$$

$$\Delta_1 \frac{dL_{BC}^U}{d\tau} = \begin{vmatrix} \Psi & -W \\ 1-p+a & 0 \end{vmatrix} = W(1-p+a) > 0$$

$$\Delta_2 \frac{dL_B^S}{d\mu} = \begin{vmatrix} 1 & \Phi \\ 0 & -a-2a' \end{vmatrix} = -(a+2a') < 0$$

$$\Delta_2 \frac{dL_{BC}^U}{d\mu} = \begin{vmatrix} \Psi & 1 \\ 1-p+a & 0 \end{vmatrix} = -(1-p+a) < 0,$$

$$\Delta_2 \frac{dL_B^S}{d\bar{w}_A^S} = \begin{vmatrix} -p & \Phi \\ 0 & -a-2a' \end{vmatrix} = p(a+2a') > 0,$$

$$\Delta_2 \frac{dL_{BC}^U}{d\bar{w}_A^S} = \begin{vmatrix} \Psi & -p \\ 1-p+a & 0 \end{vmatrix} = p(1-p+a) > 0.$$

$$\Delta_2 \frac{dL_B^S}{d\tau} = \begin{vmatrix} -W & \Phi \\ 0 & -a-2a' \end{vmatrix} = W(a+2a') > 0$$

$$\Delta_2 \frac{dL_{BC}^U}{d\tau} = \begin{vmatrix} \Psi & -W \\ 1-p+a & 0 \end{vmatrix} = W(1-p+a) > 0$$

Notes

¹ Yamada (2012) surveys the backgrounds and transition of immigration policies of Thailand.

Fujita et al. (2010) shed light on the actual working conditions and life of Myanmar migrants in Thailand, based on an intensive survey in Ranong in southern Thailand in 2009.

² See Webb (1970), Bhagwati (1973), Calvo and Wellisz (1983), Bhagwati and Srinivasan (1983), Ruffin (1984), Jones and Coelho (1985), Jones, Coelho and Easton (1986), Kuhn and Wooton (1987), and Jones and Easton (1989).

³ Djajic and Michael (2009) and (2013), respectively, studied the political interactions between the host and the source countries in the case of temporary workers and skilled workers' migration. In addition, Djajic, Michael, and Vinogradova (2012) studied similar subjects under the guest-worker system. To simplify our study, we consider only that the host country can introduce some restriction policies.

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Figure 1 – Unskilled Workers’ Immigration to Country *B*

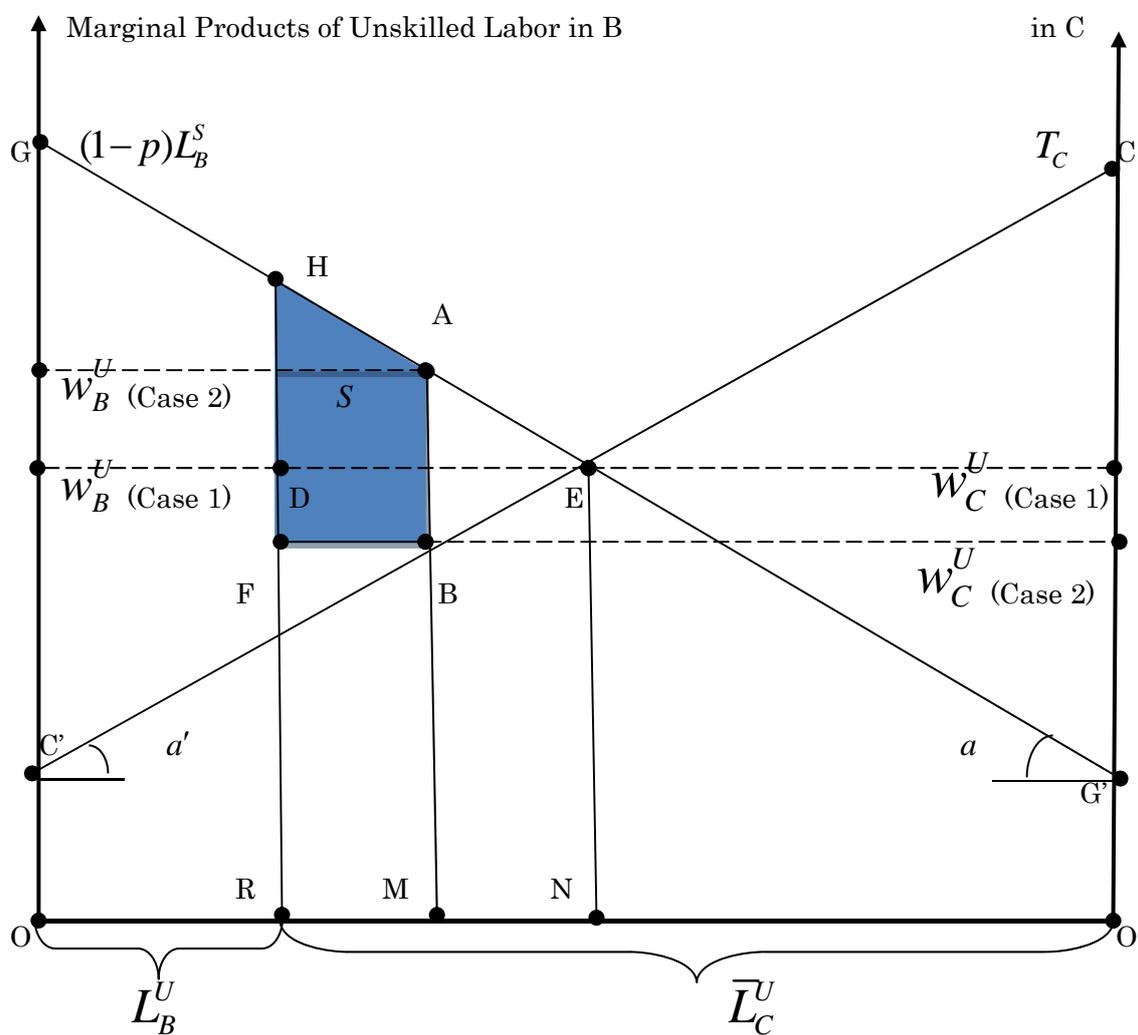


Figure 2 – The Determination of L_B^S and L_{BC}^U

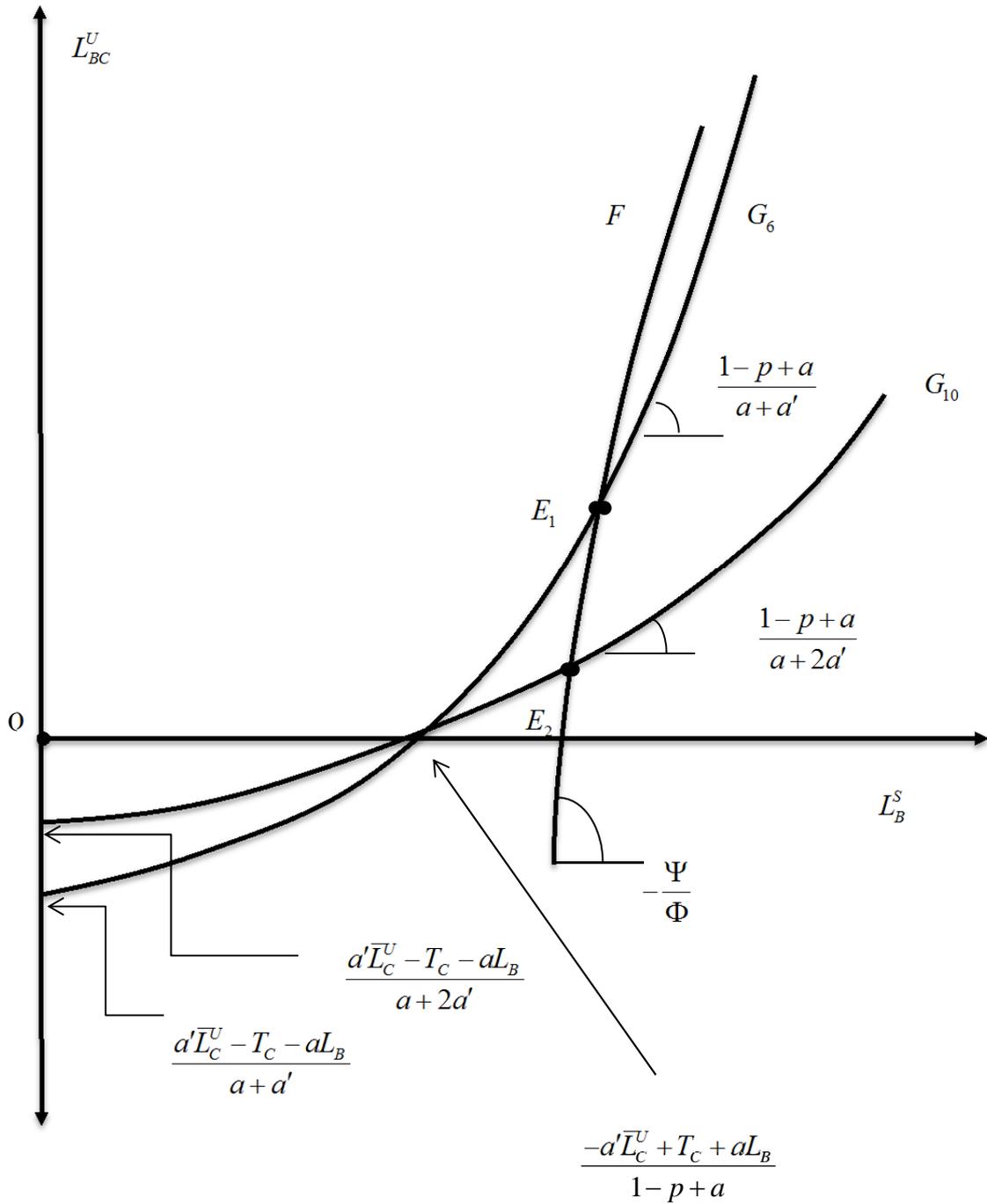


Figure 3 – The Counter-intuitive Case Considering Skill Formation

